Science for Sustainable Societies

Isabel B. Franco *Editor*

Corporate Approaches to Sustainable Development

International Experiences and Insights

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Preface

In recent times, the world has experienced major challenges in the achievement of inclusive, sustainable development through various approaches to corporate sustainability. Business leaders have embarked on activities aimed at integrating sustainability principles into business strategies. However, a major problem confronting these companies is a lack of knowledge regarding the operationalisation of sustainable development mandates, which compromises their ability to operate in an impactful and contextualised manner. Some corporate leaders have proactively become participants in the implementation of sustainable development precepts across their businesses, representing a potential for overall sustainability.

This book contributes to sustainability science by seeking to resolve the apparent paradox between lack of corporate knowledge on sustainable development operationalisation and increased need for sustainability practices at the corporate level. This is a situation that is not only causing a major disconnect between business and society, but is also hampering opportunities to find pathways for solutions to pressing sustainability issues across the globe. Corporate approaches to sustainable development aimed at providing communities with sustainable outcomes are being considered important assets which citizens have a right to benefit from. Business practices that are disconnected from global and local sustainability expectations create scepticism about businesses' potential to resolve important sustainability issues. Thus, the current corporate model needs to engage in more sustainable business practices that tackle real and contextualised issues across various sectors, working toward achieving inclusive, sustainable development. Preliminary investigations identified that a few reasons for business failure to align impactfully with sustainability principles were: limited understanding of the local context where the industry operates; lack of an integrated approach to corporate sustainability; and inadequacies in the private sector, specifically in existing collaboration processes between businesses and their stakeholders to achieve local and global sustainability targets.

This book aims to answer the questions: how can organisations (private sector, government and civil society) use corporate sustainability approaches to achieve

sustainable development? What is the role of sustainability science in addressing the paradox of a lack of corporate knowledge on sustainable development and the increased need for sustainability practices? With these questions in mind, this book examines how existing and potential approaches to corporate sustainability can address conflicting demands within sustainable development in a responsible manner. This manuscript explores the role of corporations in operationalising sustainable development principles as an integral part of corporate sustainability strategy. It does this by presenting empirical research findings and application of corporate approaches to sustainable development in selected cases in the Americas, Africa and Asia and the Pacific.

This manuscript also presents cases in which a solution-oriented approach of sustainability science was at work. Selected cases also show that sustainability science can contribute to resolving issues of concern through a more inclusive, integrated understanding of limitations in corporate practice. Thus, this manuscript present cases in which sustainability science principles have been applied to resolve through integrated and participatory methodologies for studying the problem and identifying solution options.

This manuscript also advances sustainability science through the development of both research and corporate models for sustainability integration and localisation. It does this through case studies and primary research across various topics in corporate sustainability and across contexts as diverse as Angola, Colombia, Bangladesh, Nepal and Zambia, among others. Understanding the way that academia and practitioners target sustainable development through corporate sustainability approaches is also important in planning for future sustainable industries. The use of sustainable development as the conceptual framework of this book enables a better and more nuanced understanding of issues in corporate sustainability and their impact at the local level. The case studies in this book present research and best practices that target a myriad of corporate approaches to sustainable development. The case studies span varied locations, each with their own sustainability challenges.

Brisbane, QLD, Australia Isabel B. Franco

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About the Editor

Isabel B. Franco MBA, MA, PhD is an international leader in sustainable development interested in exploring the role of the industry in fostering overall sustainability. Having worked across multiple industries, namely, extractives, gemstones, fashion, finance and banking, manufacturing, tourism, public sector, international development and higher education, she has conducted impact research in five continents and +20 countries. With Postdoctoral Studies from the United Nations University—Institute for Advanced Studies of Sustainability, Dr. Franco's impact research has contributed to evidence-based decision-making at various international organisations, such as UNDP, UNESCAP, UNU and British Council, where she has also held advisory positions on large multilingual, cross-regional, cross-sectoral projects on sustainable development and sustainability science. Awardee of the Japan Society for the Promotion of Science Fellowship (JSPS); she holds academic affiliations to the Australian Institute for Business and Economics (AIBE), the University of Queensland (Australia); Earth System Governance, Utrecht University (Netherlands); Editor at Sustainability Science Scientific Journal; Founder of the Women Sustainability Forum. Her work can be consulted at DrIsabelFranco.com.

Chapter 1
Introduction

Isabel B. Franco

Abstract Issues concerning corporate sustainability practices, procedures, motivations and effects are traditionally focussed at the global level. At this level, large-scale multinational corporations, states, NGOs and national businesses are the focus. This approach places local and regional stakeholders in relatively passive or indirect modes of interaction. In this way, sustainability measures are widely understood to be implemented from the top down through public or corporate policy. The general assumption is that businesses only pursue profit, whilst public policy contains business interests and acts as the sole drivers of social and environmental outcomes. The political and social power of large-scale corporations through their capacity to redirect enormous financial reserves, and to enable systemic changes, is cited as evidence to support this view (Potts, J Clean Prod 18:713–725, 2010). Such a position would further suggest that enforcement and reactive responses are characteristic of the current process towards sustainability practices (Strand, J Bus Ethics 123:687–706, 2014). This chapter provides an overview of such issues to introduce this manuscript.

Keywords Sustainable development · Corporate sustainability · International development · Industry · Americas · Asia and the Pacific · Africa · Science diplomacy

Issues concerning corporate sustainability practices, procedures, motivations and effects are traditionally focussed at the global level. At this level, large-scale multinational corporations, states, NGOs and national businesses are the focus. This approach places local and regionalstakeholders in relatively passive or indirect modes of interaction. In this way, sustainability measures are widely understood to be implemented from the top downthrough public or corporate policy. The general assumptionis that businesses only pursue profit, whilst public policy contains

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business interests and acts as the sole drivers ofsocial and environmental outcomes. The political and social power of large-scale corporations through their capacity to redirect enormous financial reserves, and to enable systemic changes, is cited as evidence to support this view (Potts 2010). Such a position would further suggest that enforcement and reactive responses are characteristic of the current process towards sustainability practices (Strand 2014).

In the past, corporations werereactive rather than proactive in the implementation of corporate approaches to sustainable development. Corporations reluctantly responded to civil society organisations and local community groups demanding environmental, social and governance changes, and in doing so, they were able to recover their brand's reputation.This approach is no longer the norm; large corporations actively take measures to increase sustainability acrossall areas and present a responsible image to bothshareholders and stakeholders (Strand 2014). For example, the number of sustainability officers in top management positions has increased in recent decades. Although the positions are frequently short-lived, they establish (as was theirmission) systems and procedures within the organisation that have an impact beyond the roles and individuals themselves (Strand 2014). On a large scale, these changes are slower and less dynamic. Research suggests that this proactive approachis a phenomenon that arises more frequently at regional levels. Perhaps it is a case of norm subsidiarityin which norms and values move bottom up rather than, as typically understood, top down (Potts 2010).

Whilst corporate sustainability practices are understood and appreciated, social and environmental bottom lines are effectively secondary in that they are not intrinsic goals in decision-making processes at the local and regional levels of governance (Potts 2010; Wolf 2014). The involvement of local actors in contributing to the design of corporate approaches to sustainable development is an area that remains underinvestigated. Regional contexts comprisingsmall businesses, local supply chain networks and closer, often interpersonalrelationships to stakeholders requirea different definition of natural advantage and social sustainability from that oflarge corporations (Potts 2010; Wolf 2014). Whilst the combined potential of businesses in regional areas is lower than those at the national and multinational level, regional businesses are agile and better adapted to the local context. Such localised knowledge economies have a greater understanding of the needs and attitudes of the communityand tailored skills and corporate approaches to sustainable development (Lucas et al. 2009; Wolf 2014). The sense of social responsibility in the regional context is far greater because management and staff comprise individuals that are a part of the regional community. The sense of social and environmental responsibility is greater as livelihoods depend on stableweather conditions and maintenance of natural resources like water and reciprocal limiting of 'down-stream' impacts (Potts 2010; Wolf 2014). This is particularly troubling in countries in the global south with abundant natural resources that could potentially assist their development. However, these resources are not always evenly allocated among segments of society or can have significant adverse social and environmental impacts if mismanaged (Franco et al. 2018; Gasparatos et al. 2017). Therefore,

sustainability science can contribute to this research whilst making it more robust that it might be otherwise.

As addressed above, typically businesses are assumed to pursue economic bottom lines with public policy and local demands beingthe only checks to relentless profiteering and the main drivers promoting social and environmental outcomes. Research suggests the picture is far more nuanced. In a regional context, local businesses are embedded into a direct network of responsibility. In being directly responsible to the local economy, society and environment, regional corporate sustainability managers are proactive in thinking ahead and harnessing local leadership and knowledge to understand the consequences of development and business actions.

Evidence suggests that regional businesses that have some access to national markets often promote their sustainable 'green' image to great effect. This strategy is now widely used by multinationals to tailor their public image. 'The greening' of a brand is a sound economic move, but as sustainability reporting and disclosure increase,maintaining animage also involves maintaining the correct procedures and systems (Strand 2014; Wolf 2014). Literature suggests the complexity of modern economics means models of self-interest are inadequate (Elkington 1997; Elkington 2004). Commitment to broadening business communities, government action and regulation is required to fully transform existing corporate approaches to sustainable development (Lucas et al. 2009).

In this context, this bookprovides academics and practitioners with an exploration of a myriad of approaches, tools and solutions that canbe applied to the contexts they operate within whilst aiming to foster inclusive, sustainable development. Each of the chapters in this book applies corporate approaches to sustainable development to local case studies across the world. Chapters 2, 3 and 4 explore emerging corporate approaches to sustainable development globally. Chapter 2 explores the potential role of using climate finance and carbon markets as emerging approaches to meet the targets of the United Nations (UN) regional agenda on climate change. Chapter 3 examines the notion of 'corporate purpose' as an approach to make purposeful profits and find equative synergy between people, planet and profits. Chapter 4 presents an overview of sustainable finance and linkages with the sustainable development agenda.

Chapters 5 to 11 examine the role that the extractive industry could play in the delivery of sustainable solutions for the communities and environment in selected cases, in Africa and the Americas.Specifically, Chap. 5 presents the assessment of the socio-economic impacts of mining on people's livelihoods in communities surrounding the Kansanshi mine and the role of corporate social responsibility (CSR) in mitigating these effects. Chapter 6 explores the role of transnational corporations (TNCs) and existing corporate approaches to sustainable development in Zambia. Chapter 7 examines the impact that governance and legal frameworks have on communities adjacent to mining operationsacross the mine life cycle and proposes legal reforms to operationalisethe concept of sustainable development in local communities. By actioning the United Nations Agenda for Sustainable Development, Chap. 8 explores the relationship between socio-economic impacts of

mining and conflict in Colombia. Chapter 8 presents existing corporate approaches to sustainable resource governance in Angola inthe oil and mining sectors. Chapter 9 applies the sustainable livelihoods framework (SL) to a mining operation in La Guajira, Colombia. The sustainable livelihoods framework is used as a corporate approach to sustainable development and as a methodological tool in sustainability science for the study of issues related to sustainable development. Also taking mining in Colombia as a case study, Chap. 10 tackles key issues associated with resettlement in resource regions of Colombia whilst Chap. 11 explores the linkages between sustainable development agenda and mining.

Chapters 12–16 explore corporate approaches to sustainable development within the context of Asia and the Pacific region, particularly Nepal and Bangladesh. Chapter 12 explore the various impacts of climate change on forest areas and local people's livelihoods in Nepal by reviewing existing climate change adaptation and mitigation methods as corporate approaches to sustainable development. Chapter 13 explores the role of sustainable tourism in Nepal and the impacts of COVID-19. It examines opportunities for recovery as one of Nepal's biggest economic sectors. Chapter 14 explores adaptation strategies adopted by indigenous communities for sustainable livelihood response to changing climate in Nepal. Chapter 15 examines the role of independent directors in managing risk through CSR disclosure in Bangladesh and the potentialappeal forpolicymakers. Chapter 16 examines 'corporate environmental disclosure' as an approach to sustainable development. It examines agent efficiency, organisational power and resources in terms of organisational capacity. The book finishes by drawing conclusions and proposing future solutions for the implementation of corporate approaches to sustainable development globally.

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Chapter 2
Policy Responses to COVID-19- Climate Finance and Carbon Markets

Isabel B. Franco, Masato Abe, Daniel Nieto, Gabriel Sunol, and Summer Lamont

Abstract This chapter explores the potential role of using climate finance and carbon markets to meet the targets of the United Nations (UN) regional agenda on climate change in the Asia-Pacific. This agenda includes obligations under the Kyoto Protocol and the Paris Agreement to reduce greenhouse gas emissions and limit global warming. Climate finance refers to local, national or transnational financing that seeks to support mitigation and adaptation actions to address climate change (UNFCCC 2020a). Carbon markets represent a market-based strategy, whereby a price is placed on greenhouse gas emissions allowing companies and governments to purchase carbon credits or offsets to meet greenhouse gas emissions reduction targets. The proposal to employ climate finance and carbon markets is informed by growing economic and environmental challenges in the region that have been further exacerbated by COVID-19. This chapter analyses carbon markets case studies across industry and the public sector in the region. This chapter identifies the opportunity to build climate finance infrastructure post-COVID-19 and makes policy recommendations for governments and corporations.

Keywords Carbon markets · Climate finance · Corporate sustainability · COVID-19 · Climate diplomacy · Policy · United Nations

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2.1 Introduction

The COVID-19 pandemic is exacerbating challenges to finance the United Nations (UN) regional agenda on climate change in Asia and the Pacific. Vulnerable groups face significant challenges and are predicted to be negatively affected long after the current crisis. COVID-19 has exacerbated social and environmental issues limiting access to financial resources and communication technology, amongst other challenges. Countries in the region are working on reducing the spread of the virus while boosting the economy to reduce unemployment rates and are supporting initiatives to mitigate the adverse effects of climate change. The region is also at high risk of climate change impacts, due to its extensive coastlines and small islands that make it susceptible to floods, heatwaves and droughts (UNDP 2019). For example, Kiribati, a group of 33 Islands located in the Pacific with a population of 100,000 inhabitants, is already suffering from climate change impacts with high sea levels contaminating freshwater and flooding crops and homes (Aung et al. 2009). Similar impacts have been considered in Indonesia, where the government is planning to move its capital Jakarta to Borneo as an adaptation strategy to ensure flood safety measures (UNDP 2019). Therefore, addressing environmental challenges and economic recovery remains a top priority of the regional agenda (Abe and Franco 2017). Extensive periods of lockdown have shown an improvement in air quality in the region (Huang and Saxena 2020), reducing greenhouse gas (GHG) emissions that had been rising in previous years (Samuwai and Hills 2018). More financial and private institutions are seeking to incorporate policies that consider climate and environmental impacts (Durrani et al. 2020). As a matter of fact, the Asia-Pacific region has lost more than US$1.5 trillion as a consequence of climate change since 1970 (ESCAP 2020). Therefore, recovery of this recession is an opportunity for governments to implement policies to support a recovery aligned with the UN agenda on climate finance and carbon markets (ESCAP 2020; Huang and Saxena 2020). The COVID-19 pandemic has undoubtedly impacted the regional landscape in different sectors and has created one of the worst global economic recessions since the 2008 global financial crisis. Asia and the Pacific region, home to more than half of the global population and comprising more than 40 developing countries, is suffering its largest economic downturn since the 1970s (Huang and Saxena 2020; Samuwai and Hills 2018). More than 4.2 million people have acquired the virus, and approximately 100,000 have died as a result (Huang and Saxena 2020).

Climate finance as referred to in this chapter“refers to local, national or transnational financing—drawn from public, private and alternative sources of financing—that seeks to support mitigation and adaptation actions that will address climate change” (UNFCCC 2020a). [Need to present carbon market here.] Generally defined as a market-based approach to climate change mitigation, carbon markets provide a system that enables companies and governments to meet greenhouse gas emission reduction targets through the purchasing of carbon credits or offsets (Paterson 2012). By putting a price on greenhouse gas emissions, carbon markets are used as a low-cost instrument to alleviate the environmental costs of carbon pollution.

One of the objectives of climate finance mechanisms is to support programmes to enhance adaptation to climate change impacts. Adaptation initiatives aim to reduce a countries' vulnerability to the impacts of climate change such as rising sea levels, prolonged extreme weather conditions, food insecurity, droughts and floods. Adaptation strategies consider expected and actual impacts of climate change and can be long or short term (Moser and Ekstrom 2010). In a business context, adaptation strategies aim to address more than climate change-related issues alone (Moser and Ekstrom 2010). However, Ford et al. (2011) argue that climate change is the main driver for the implementation of adaptation strategies in business. At a government level, adaptation action can be seen in regional and national perspectives.

Another aim of climate finance is to mitigate the impacts of climate change through the reduction of GHG (Michaelowa 2012). Climate change mitigation focusses on the reduction and prevention of GHG emissions (United Nations 2020). At a policy level, climate change mitigation actions can be seen in the form of carbon markets, emissions limit regulations, taxes or emission reduction schemes. These mechanisms aim to reduce the total emissions of greenhouse gases from companies (Paterson 2012). To reduce emissions of GHG, nations can support programmes to increase the usage of renewable technologies or low-carbon technologies, hence reducing the usage of fossil fuels that generate GHG emissions. Additionally, other projects utilise carbon capture, utilisation and storage (CCUS) that capture the CO_2 from an industry process or from the atmosphere and use it as a resource in a new process or store it underground in depleted forms.

This chapter aims to provide detailed reporting and analysis on the present responses to COVID-19, particularly in the context of climate finance and carbon markets. It highlights responses taken by governments, the private sector (large corporations and SMEs) and civil society organisations to meet the targets of the UN Sustainable Development Goals or SDGs on climate change. This chapter explores the current policy context of climate finance and carbon markets in the Asia-Pacific region and highlights pressing challenges and opportunities for advancing the climate agenda. Moreover, it shows how carbon markets could enhance the development of sustainable projects to mitigate the impacts of climate change in developing countries and support a sustainable economic recovery post-COVID-19.

The first section reviews climate finance concepts and highlights the frameworks, agreements and funds that support its development. The second section defines carbon markets and its mechanisms. The third section outlines case studies of governments, industry, banks and SMEs using climate finance and carbon markets. The last section provides policy recommendations and conclusions.

2.2 Climate Finance

2.2.1 What Is Climate Finance?

Climate finance relates to investments on projects from organisations, government and households to achieve a sustainable future and mitigate and adapt to climate

change impacts (Gupta 2016; Hong et al. 2020). Climate change refers to the effects on climate patterns as a consequence of increasing greenhouse gases (GHG) on the atmosphere (Gupta 2016; United Nations 2020). To address these changes in weather patterns, governments have agreed to limit their countries' CO2 emissions in order to "limit global warming to well below 2, preferably to 1.5 degrees Celsius, compared to pre-industrial levels"'(UNFCCC 2020b). This is known as nationally determined contributions (NDCs) and was adopted by 196 parties in 2015.

To achieve the goals of the Paris Agreement and enhance mitigation and adaptation initiatives, governments from developing countries can receive support from international entities or foreign governments. Commonly the funds are provided to developing countries by public and private institutions from the developed world, aiming to reduce the impacts of climate change through adaptation and mitigation projects (Gupta 2016; Hong et al. 2020; Warren 2019). According to Glemarec (2011), 90 percent of the capital investment for adaptation and mitigation initiatives comes from the private sector, and public investment is required to improve the "readiness" of nations to receive these incentives. Figure 2.1 illustrates the sources, agents and channels of climate finance (Glemarec 2011):

The objective of climate finance is to create a governance environment that facilitates international financial cooperation and capacity building. This will

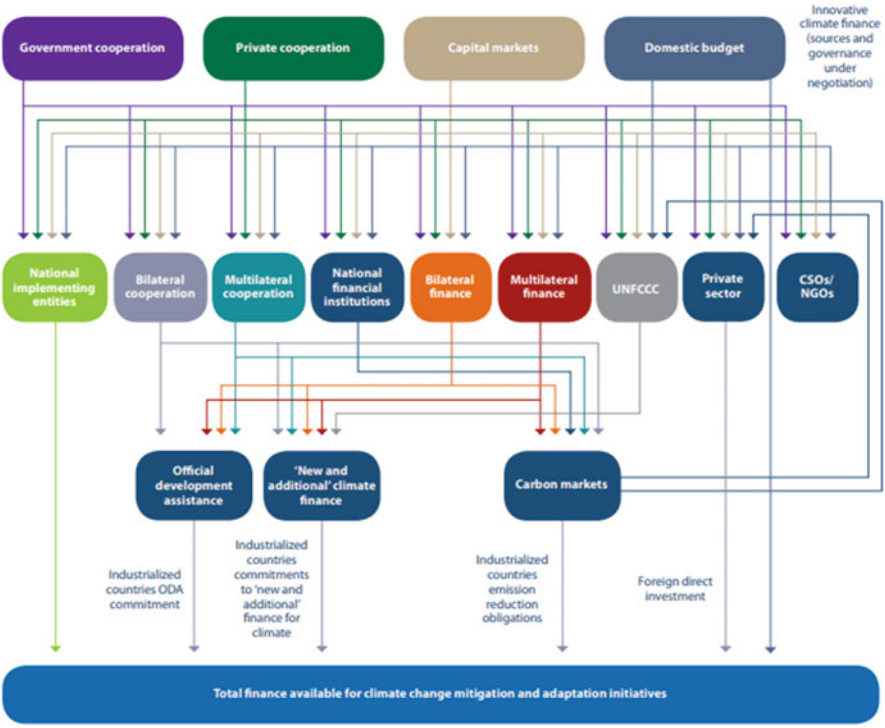

Fig. 2.1 Sources, agents and channels of climate finance. Source: Glemarec (2011)

provide recipient countries with access to capital and technology to address climate change in line with Paris Agreement commitments.

Climate change mitigation requires a better distribution of financial capacity of countries according to the availability of resources, policies and incentives. Therefore, developed nations are encouraged to provide financial support to developing countries following the principle of "common but differentiated responsibility and respective capabilities" (UNFCCC 2020c). This is aligned with meeting countries' targets under the Paris Agreement (Leggett 2020; Michaelowa 2012; Morita and Pak 2018; United Nation n.d.-b). These targets represent the actions of nations to *mitigate*[1] and *adapt*[2] to the effects of climate change. Both concepts have been recognised as essential elements to manage climate change impacts.

Individual government contributions to climate finance differ significantly according to the specific government (Pickering and Mitchell 2017). Government implementation of climate finance is driven by internal public pressure and international intervention. It influences decisions around how Paris Agreement targets will be met, notably how to meet the obligation to reduce global temperatures below 2 °C (Pickering and Mitchell 2017).

The Paris Agreement encourages developed countries to financially support developing countries to achieve their goals. However, governments in developing countries and in Asia and the Pacific more generally could show a firm commitment to the development of mitigation and adaptation projects to attract investors. The capacity of recipient countries to incentivise support has been defined as "readiness" and refers to the capacity of countries to demonstrate strong regulations, incentives, capacity building, effective monitoring systems and risk management systems to attract climate financial investment (Morita and Pak 2018; Samuwai and Hills 2018). The readiness of recipient countries is an essential governance mechanism to foster an effective climate finance environment in the Asia-Pacific region. Studies from Morita and Pak (2018) showed that legal requirements to achieve the desired readiness levels are not currently being fulfilled by countries in the region despite apparent readiness status playing a key role in gaining financial support. Developing countries claimed a need for simplified processes to access climate fund mechanisms to mitigate the impacts of climate change (Samuwai and Hills 2018). Therefore, it is crucial to understand the political and legal barriers in the region and to identify options to reduce regulatory gaps to increase climate financing.

[1] Mitigation: "Technological change and substitution that reduce resource inputs and emissions per unit of output. Although several social, economic and technological policies would produce an emission reduction, with respect to climate change, mitigation means implementing policies to reduce greenhouse gas emissions and enhance sinks" (IPCC 2007).

[2] Adaptation: "Initiatives and measures to reduce the vulnerability of natural and human systems against actual or expected climate change effects. Various types of adaptation exist, e.g. anticipatory and reactive, private and public, and autonomous and planned. Examples include raising rivers or coastal dikes, the substitution of more temperature-shock resistant plants for sensitive ones, etc." (IPCC 2007).

Funding to mitigate and adapt to climate change impacts includes a comprehensive global fund managed by the United Nations Framework Convention on Climate Change (UNFCCC). In 2010, a budget of US$100 billion per year was agreed by nations to fund climate change activities for developing countries (United Nations n.d.-a). During the 21st Conference of the Parties (COP),[3] under the Paris Agreement, parties agreed on a goal of US$100 billion per year for climate finance in developing countries post-2025 (ESCAP 2020; Morita and Pak 2018; United Nations n.d.-a). Locally, the Asian Development Bank (ADB) committed US$4 billion for mitigation and US$2 billion for adaptation activities (Morita and Pak 2018). A review of the mechanisms for funding is presented in the next section.

2.2.2 Agreements, Funds and Enablers

International agreements on climate finance enable stakeholders to commit effectively to the international agenda of climate change. Such frameworks also facilitate the coordination, implementation, monitoring and reporting of climate-related initiatives as seen in Table 2.1.

Climate finance initiatives are supported via international financial mechanisms that support the goals of the existing frameworks (see Fig. 2.2). The goals of the frameworks and mechanisms provide guidance for the development of projects that can receive financial support through the funds below:

2.2.2.1 Global Environment Facility (GEF)

The GEF has been a financial mechanism for this initiative since 1994 (United Nations n.d.-b). The GEF has a focus on finance mitigation and adaptation climate change projects, and it includes 183 countries along with the public and private sector to tackle global environmental problems (Gupta 2016). Allocation of funds is determined by the readiness of countries to implement the programme and the potential of the project to generate a global environmental impact.

2.2.2.2 Green Climate Fund (GCF)

Similarly, to the GEF, the GCF is accountable to the Conference of Parties and was established in 2010 during the 16th session and chosen as the operating entity in 2011 (United Nations n.d.-b). The GCF aims to support low-income countries to develop activities, policies, programmes and projects to adapt and mitigate the

[3] Parties of the convention meet at the Conference of Parties annually to make decisions to achieve the goals of the Convention. The first COP was held in 1995 in Berlin.

Table 2.1 Climate finance: agreements and framework

	Description
Kyoto protocol (agreement)	The Kyoto Protocol is an international agreement to reduce emissions under the UNFCCC. The protocol commits industrialised countries to reduce GHG emissions, with an average of 5 percent reduction between 2009 and 2012 based on 1990 emissions levels (Leggett 2020; Michaelowa 2012). Developed countries under this agreement had a higher responsibility to reduce GHG emissions since they have "historically contributed the most to the problem of global warming" and have the financial capacity to implement strategies to reduce GHG emissions (Gupta 2016)
Paris agreement (agreement)	The Paris Agreement (PA) was the first time that all parties agreed to take part and commit to intended NDCs. The PA should replace the Kyoto Protocol as the main framework to take action on climate change (Leggett 2020). The agreement aims to "Holding the increase in the global average temperature to well below 2 °C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 °C above pre-industrial levels" (UNFCCC 2015). Article 6 supports international trading in emissions reductions, to achieve NDCs establishing a broad framework that supports mitigation and adaptation strategies through a collaborative approach (UNFCCC 2015). It also highlights the leading role that developed countries have in achieving the goals of the agreement, by providing financial support for developing countries as stated in Article 9 (UNFCCC 2015)
Country-driven, multi-stakeholder climate finance (framework)	The framework proposed by the United Nations Development Programme (UNDP) has four mechanisms related to a bottom-up approach to address the impacts of climate change. These mechanisms are outlined below (UNDP 2010): • Low-emission, climate-resilient development strategies: Bottom-up strategies to ensure GHG emission reductions. • Financial and technical support platforms: a database with initiatives to reduce investment risk and to incentivise international, private and public investment in national development. • Nationally appropriate mitigation action/national adaptation plan instruments: Provide access to international public finance and support countries' readiness to access funds. • Coordinated implementation and monitoring, reporting and verification instruments systems: This aims to integrate the mechanisms and report the effectiveness, efficiency and transparency of them

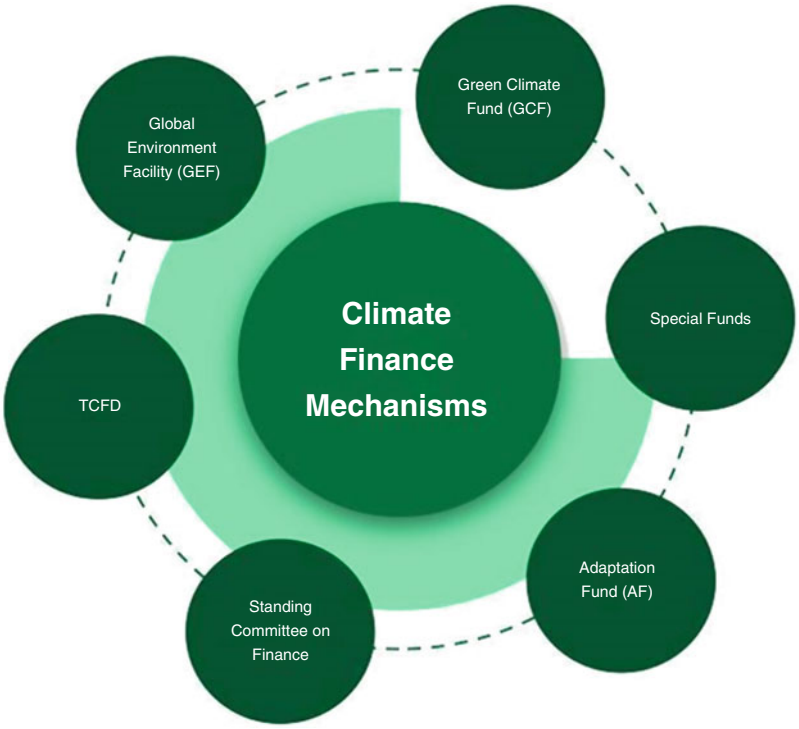

Fig. 2.2 Climate finance mechanisms

adverse effects of climate change (Gupta 2016; Leggett 2020). In 2019, 27 countries pledged US$9.8 billion to cover the operation of the next 4 years of the fund, with a contribution of more than US$1 billion by the United Kingdom, Japan, Germany and France (Leggett 2020; Morita and Pak 2018). Additionally, specific funds have been allocated by parties as special funds.

2.2.2.3 Special Funds

These funds were created under the United Nations Framework Convention on Climate Change (UNFCCC) of 2001. Nonetheless the funds share similar governance and structure; they differ on their targets and end of use as seen in Table 2.2.

2.2.2.4 Adaptation Fund (AF)

This mechanism supports and manages the special funds in conjunction with the FEF and was established under the Kyoto Protocol in 2001. It was the first policy to

Table 2.2 Special funds in climate finance

Special climate change fund (SCCF)	Least developed countries fund (LDCF)
Established in 2001, it aims to finance projects related to energy; forestry and waste management; industry; adaptation; agriculture; technology transfer and capacity building; transport; and economic diversification (United Nations, n.d.-a). The SCCF covers all the non-annex I countries and aims to boost the development of projects in developing countries	Similarly, to the SCCF, the LDCF was established in 2001 and aims to support the poorest countries with the preparation and implementation of the National Adaptation Programmes of Action (NAPAs) (Sovacool et al. 2016; United Nations, n.d.-a). It also focusses on the adaptation needs of developing countries only. The LDCF faces insufficient funding and a complex structure that limits its capacity to create change (Sovacool et al. 2016)

enhance adaptation initiatives in developing countries (Michaelowa 2012). The AF aims to finance adaptation projects in countries that are significantly susceptible to the effects of climate change (Gupta 2016). The fund has been financed by voluntary contributions and emissions trading mechanisms (explained in the next section) that have been applied by developed countries to achieve their targets aligned with the Kyoto Protocol and later the PA (Leggett 2020).

2.2.2.5 Standing Committee on Finance

The SCF aims to promote collaboration between projects and investors for climate finance initiatives to achieve the PA commitments, and according to the UN, the SCF has these four main objectives (United Nations n.d.-a):

- Assisting the COP in improving coherence and coordination in the delivery of climate change financing.
- Assisting the COP in the rationalisation of the financial mechanism of the UNFCCC.
- Supporting the COP in the mobilisation of financial resources for climate financing.
- Supporting the COP in the measurement, reporting and verification of support provided to developing country parties.

2.2.2.6 Task Force on Climate-Related Financial Disclosure (TCFD)

A lack of interlinkages in the Asia-Pacific region creates fragmentation in terms of reporting sustainable standards to achieve goals set out to adapt and mitigate effects of climate change. Market standardisation is required to achieve an adequate disclosure of information between government, financial institutions, industry, investors and communities (Huang and Saxena 2020). Post-COVID 19 recovery is an opportunity to build trust and effective channels of communication between key

stakeholders to incentivise climate change investment. The Task Force on Climate-Related Financial Disclosures (TCFD), for example, is an international standard to disclose climate-related risks initiatives. The Asia-Pacific region has strong participation from Japanese organisations but significantly less from other countries with 245 of the 396 being from Japan (ESCAP 2020). Thus, a significant commitment is required for organisations to report their performance.

The pandemic also revealed the critical vulnerabilities within the current import base economies, especially when examining the early shortages of essential goods like food and medical supplies. The recovery should enhance national production to boost the regional economy and support the development of new low-carbon technologies that enhance a reduction of GHG emissions. Thus, the creation of these opportunities requires inclusion of the most vulnerable communities (e.g. minorities, women, indigenous communities) to support local growth.

While the COVID-19 recovery creates an opportunity for developing countries to boost their economy based on low-emission technologies, complex and overlapping climate finance sources make it complicated for developing countries to maximise their benefits. By 2018, there were more than 6000 private equity funds, 50 international public funds and 60 carbon markets (Samuwai and Hills 2018). Carbon markets provide an effective option for countries and businesses to develop capabilities to mitigate the challenges associated with climate change. A cost-effective instrument for emissions abatement, carbon markets promote low-emission technological developments while reinforcing early stage emission reduction and economic development. These markets can serve as an essential tool for rebalancing sustainable economic growth in the post-pandemic Asia-Pacific region.

2.3 Carbon Markets

Environmental markets often act as a stimulant for ecosystem preservation. Developed as a policy-based approach to complement traditional conservation programmes, environmental markets span across different areas including: greenhouse gases, water quality, environmental habitats and energy. For the purpose of this report, a focus will be placed on carbon markets and the role this type of market plays in reducing greenhouse gas emissions. During the past 15 years, carbon markets have become a key policy-level instrument in addressing GHG emission reductions worldwide with the main goal of decarbonising a growing and carbon-intensive global economy.

There are two main categories of carbon markets: regulatory compliance and voluntary markets. The size of these two markets varies considerably. In 2019, on the regulated market, US$214 billion was traded in the form of emission allowances (permits) or offsets in order to meet regulatory targets. A regulatory compliance carbon market is a government-regulated scheme in which a cap or limit is set on the maximum number of emissions allowed by an organisation or business. Regulated compliance carbon markets abide by the mechanisms listed in the Kyoto Protocol,

specifically ETS (Emissions Trading Scheme), CDM (Clean Development Mechanism) and JI (Joint Implementation) (Stephan 2012).

The voluntary market with a size of approximately US$5.5 billion (Watson 2020) represents companies and individuals that offset their own emissions. With smaller size but greater flexibility, voluntary markets drive innovations in climate finance, emissions monitoring and carbon offsetting projects (e.g. renewable energy, reforestation, carbon-neutral fuels, methane abatement and energy efficiency). Corporate social responsibility (CSR), reputation and ethics are often the motivation for the purchasing of carbon credits in voluntary markets. In this type of market, the private sector can buy carbon credits directly from projects (e.g. eco securities) or carbon funds (e.g., the World Bank's BioCarbon Fund), with the intention of offsetting their emissions. Voluntary markets coexist with regulatory markets driven by given caps or limits on GHG emissions. The difference is that voluntary emission credits (VERs) cannot be used in a compliance scheme; however, a compliance carbon credit (CERs) can be accepted by entities looking to voluntarily compensate their emissions.

2.3.1 Types of Market-Based Instruments

At a policy level, countries employing carbon markets in their legislation are constantly implementing carbon mechanisms as a way of achieving their climate goals (Staff 2016). Table 2.3 explains the concepts and mechanisms that constitute carbon markets. Different applications of these mechanisms are explained based on circumstances and the potential uses of each one.

Based on the concepts identified, carbon markets employ different mechanisms depending on the sustainable and economic development priorities of a country, both at a regulated and voluntary level. Mechanisms that exist at a regulatory level only include carbon tax and emission trading schemes (ETS). At both regulatory and voluntary levels, market-based tools like crediting mechanisms, the clean development mechanism (CDM) and joint implementation (JI) are implemented.

2.3.1.1 Regulatory

Emission trading schemes (ETS) and carbon taxes can rely on income streams from the government meaning the price on carbon can have a larger societal impact, making it a more suitable alternative for industrialised countries (Staff 2016). A clear example of an ETS in Asia and the Pacific is *Australia's Carbon Pollution Reduction Scheme* which aims to set an annual cap equivalent to Australia's Co2 emissions reduction targets.

Table 2.3 Carbon market-based mechanisms

Types of market-based instruments	Description
Carbon tax (regulatory)	A price set on carbon by defining a tax rate on GHG emissions, allowing regulators (governments) control over the price of GHG emissions (Staff 2016). Strictly used in compliance markets, governments set a price per ton of carbon and translate it into a tax on electricity, natural gas and/or oil
Crediting mechanism (regulatory and voluntary)	Credits that represent reductions in emissions relative to emission targets – "Crediting may occur at the project or the programme level or involve the development of sectoral or policy-based approaches" (Staff 2016). Carbon credits in a regulatory compliance market are known as "Certified Emissions Reduction" (CER) and "Verified Emissions Reduction" (VER) in a voluntary market where 1 credit represents 1 tonne of CO2 equivalent that can be traded or sold. Crediting mechanisms are employed in both compliance and regulatory markets
Emissions trading schemes (ETS) (regulatory)	Also known as a "cap and trade", emissions are capped at a predetermined level, and the market establishes an emission price necessary to meet that cap. This price on emissions is based on the supply/demand of the market (Staff 2016). With a "unit" currency, governments can issue permits allowing holders (typically companies) of this permit to emit one tonne of GHG emissions. Currently, there are 11 emissions trading schemes operating in the Asia-Pacific region with the main ones being China's carbon trading scheme covering coal and gas, New Zealand's emissions trading scheme (ETS) and Australia's carbon pollution reduction scheme
Clean development mechanism (regulatory and voluntary)	The Clean Development Mechanism (CDM) allows a country with an emission-reduction commitment to implement an emission reduction project in developing countries (UNFCCC 2020c). These projects earn certified emission reduction credits (CER) with each credit equivalent to one tonne of CO2 emissions. CDM applies to both voluntary and compliance markets, with voluntary markets able to create projects under CDM's guidelines. Examples of CDM projects include clean energy generation, reforestation initiatives and energy efficiency programmes. The implementation of these projects enables countries to earn certified emission reduction credits (CERs) with each credit being worth one tonne of CO2
Joint implementation (regulatory and voluntary)	Joint Implementation (JI) allows a country with an emission reduction or limitation target to earn emission reduction units (ERUs) from an emission removal project, which can be counted towards meeting its own emission reduction targets (UNFCCC 2020b). Similarly to the CDM, Joint Implementation is a project-based emission reduction mechanism under the compliance of the Kyoto Protocol. Joint Implementation projects range from energy efficiency, conservation, renewables to water purification

2.3.1.2 Regulatory and Voluntary

Crediting mechanisms can help develop a source of financing for emissions reductions and boost a low-carbon growth focussed on certain sectors, particularly in developing countries (Staff 2016).

Specific project-based mechanisms like the CDM and JI allow different entities to reduce their emissions through the exchange of emission reduction units (ERUs) or certified emission reduction credits (CERs) with each one of these units representing one tonne of Co2. Project-based mechanisms operate regardless of location and enable emissions created in one location to be compensated by projects in another location. The mechanisms allow carbon markets to coexist simultaneously in one market and complement each other with the end goal of allowing governments and businesses to meet emissions targets.

In the Asia-Pacific region looking to recover from a post-pandemic economic downturn, the implementation of the adequate combination of carbon market instruments can pave the way for an accelerated low-carbon growth model (McAfee 2015) – a model in which climate action acts as the key driver for technological innovation, increased resource productivity and sustainable economic growth.

2.4 Case Studies

Showcasing selected case studies, this section highlights the untapped potential of pursuing effective climate practices. These cases were selected from various sources and industries and differ substantially in nature, geography and scope. However, they show commonalities and differences in driving the global agenda for climate change.

2.4.1 Governments

2.4.1.1 DFAT

The Department of Foreign Affairs and Trade in Australia supports the implementation of climate change and resilience strategies and renewable technologies in the region. In 2020 they provided a $500 million budget for the region to be delivered over 5 years. The aim of the aid is to enhance risk management of climate change in the region. Though the Pacific Nationally Determined Contributions Hub (NDC Hub), the Australian government supports initiatives to mitigate the impacts of climate change. Similarly, Australia works with local governments to support a sustainable recovery from COVID-19.

2.4.1.2 Indonesia

In a collaborative project between local governments in Indonesia and the United Nations Development Programme (UNDP), a project was developed in the Nusa Tenggara Timor province, one of the poorest of the country, to integrate climate resilience into their development plan. The region is highly dependent on agriculture and has experienced weather pattern change with more extreme wet seasons associated with El Niño/Southern Oscillation, thus increasing the risk of floods and food insecurity in the area. The programme (1) increased the understanding of climate change threats in communities and (2) provided resilience development policies and (3) diversification of sources of income (UNDP n.d.-a).

2.4.2 Large Enterprises and Banks

2.4.2.1 Orica

Orica is the largest provider of commercial explosives globally and supply services to mining (oil and gas) and construction markets. Operations from Orica generate GHG emissions, and therefore, the company has considered the risk that climate change possesses for its operations. The company disclosed climate-related information following the TCFD from FY20. Disclosure and assessment of climate-related risks are considered at Orica, and they participate in carbon markets to offset financial impacts using carbon credits. Yet, the company could potentially implement projects to support the adaptation and mitigation of climate change in Asia and the Pacific by supporting local initiatives to reduce emissions of GHG or initiatives that enhance the capabilities of developing countries to receive financial aid.

2.4.2.2 BHP

BHP is one of the largest mining companies globally, with operations in essential resources for the economy, including iron ore, oil, gas, coal and copper. The company has considered the effects of climate change as a key element for the short and long term. Following this commitment, BHP has created a plan to be carbon neutral by 2050 and has highlighted the relevance of collective work from each sector to achieve the goal of the Paris Agreement. Hence, the company in 2019 announced an investment of US$400 million for the development of low-carbon technologies, climate projects and partnerships to support these developments.

2.4.2.3 Newcrest

Newcrest is one of the world's largest gold-mining companies. The organisation has recognised climate change as one of the biggest challenges of our time. The

company has a commitment to reduce GHG emissions by a 30% reduction per tonne of ore treated by 2030 and manage climate-related risks to maximise returns to shareholders. The company is working together with the Australian and the Papua New Guinea governments to develop local projects to achieve regional goals. The company is promoting development through local programmes in PNG education, health and the empowerment of women. Additionally, the company is following TCFD guidelines for external reporting.

2.4.2.4 Santos

Santos is a leading supplier of liquefied natural gas (LNG) for Asia and the Pacific and the largest domestic gas supplier in Australia. The company supports the goals of the PA to limit global temperatures well below 2 °C. To achieve this, the company recognises gas as a key element to reduce global GHG emissions. Supply of LNG to the Asia-Pacific market is one of the goals of the company for the economic growth of the region. The company currently supplies three million tonnes per annum of LNG to the Asia-Pacific markets. According to their sustainability report, "for every tonne of carbon dioxide emitted during production in Australia, liquefied natural gas saves between three and ten tonnes of emissions when it replaces coal in power generation in Asia and the Pacific" (Santos 2020). Therefore, the company has an important role to play in limiting the impacts of climate change in the Asia-Pacific market and could also work with local governments to support the development of projects to achieve the sustainability goals.

2.4.2.5 National Australia Bank (NAB)

National Australia Bank is one of the fourth largest financial institutions in Australia and top 50 worldwide measured by total assets. Their commitment to sustainable and climate finance can be seen in the issuance of green bonds, being the first Australian bank to issue green bonds in Australia and New Zealand. In efforts to transition to a low-carbon economy, NAB has provided $33.6 billion since 2015 to support climate change mitigation projects. Climate financing provided by NAB includes energy efficiency, renewable energy (solar and wind) and technology. At a product level, green, social, sustainability and social impact bonds; green and sustainability linked loans; green deposits; and financing solutions are also provided by NAB. Green bonds provide funds for new or existing projects with environmental sustainability benefits in mind.

2.4.2.6 Singapore DBS

DBS Bank is a multinational bank and financial services group with headquarters in Singapore. As a leading bank in Singapore, DBS was in charge of issuing the first

green bond in Singapore. Furthermore, the bank also issued a $500 million green bond to the international debt market. DBS' commitment to sustainability can also be seen with the introduction of ESG (environmental, social and governance) funds to encourage green consumer behaviour through its products. ESG funds are investment portfolios for which environmental and social values are included in the investing process.

2.4.2.7 The Industrial and Commercial Bank of China (ICBC)

ICBC is the largest commercial bank in the world, headquartered in Beijing, China. ICBC is the first bank in China to become a member of the United Nations Environment Programme Financial Initiative (UNEP FI). ICBC's green finance strategy encompasses strategy, governance and green products. ICBC's domestic green credits granted to energy conservation and environmental protection projects such as ecological protection, clean energy and resource recycling had a steady growth of 12% in the year 2013. Furthermore, 60% of loans given to the power sector were focussed on renewables and clean energy. On behalf of Chinese institutions, in 2016, ICBC issued six green bonds, with a total of US$9.7 billion, actively contributing to the development of China's green bond market.

2.4.2.8 HSBC

HSBC is a multinational investment bank and financial services company headquartered in the United Kingdom, with operations all over the world. They have a strong commitment to climate finance-related initiatives and aim to make their client's investment portfolios carbon neutral by 2050. HSBC currently has a dedicated ESG solutions unit to guide the launch of new environmental and socially responsible products. HSBC invested US$100 million through a dedicated venture debt fund in clean technology. Furthermore, a US$100 million philanthropy programme to help climate innovation will be launched on their behalf.

2.4.3 SMEs

2.4.3.1 GreenCollar

GreenCollar is a natural resource management and environmental markets consultancy. Through research, native forest preservation, reef credit and carbon farming initiatives, GreenCollar provides innovative market-based solutions to meet the challenges of reducing the impact of climate change. GreenCollar works closely with landowners, government organisations and financial organisations to find ways to extract value from markets like carbon finance, ecosystem services, biodiversity

and watershed management in order to generate revenues from economically and environmentally sound activities. Reef Credits provide a credible, unique and robust market that opens the door to environmental, social and governance (ESG) investment, helping organisations meet their environmental targets while protecting the future of the Great Barrier Reef.

2.4.3.2 EcoCred

EcoCred is a sustainability technology platform that empowers consumers and small businesses to offset their carbon emissions. Through their mobile application, EcoCred offers verified, science-backed carbon offsets that help their users to get closer to a carbon-neutral life. Through their different products, users can offset emissions based on different projects like forestry, habitat restoration, renewable energy and clean tech education providing their users with certified emissions reductions units based on their specific offsetting needs.

2.5 Conclusion

Climate finance and carbon markets are presented as opportunities for governments in the Asia-Pacific to enhance their policy setting to allow more investment in adaptation and mitigation of climate change strategies. A recovery from the COVID-19 pandemic will require international cooperation to leverage the capital and technology required to boost the economy in the region. This section suggests recommendations for governments to maximise the aforementioned financial climate financial mechanisms.

2.5.1 Governments

2.5.1.1 Governance and Regulatory Barriers

- Existing regulatory barriers have been detrimental to climate and carbon processes. The above sustainability initiatives have been implemented despite these limitations.
- Two major difficulties exist in relation to the governance environment and existing barriers: poor governance structures create serious difficulties for regulatory processes, and weak institutional capacity at the government level hinders relevant stakeholders from effectively engaging in the implementation of emerging sustainability trends. These two factors have escalated the complexity of existing governance arrangements, diminishing the possibilities for positive impacts in the region.

2.5.1.2 Capacity Building

- Support the development of projects aligned with the UN regional agenda on climate change through partnerships between private sector, government, civil society and local and international organisations.
- Boost regional cooperation to support critical projects aligned with international mandates, especially by providing financial, technical and policy support in developing countries.
- Foster multi-stakeholder collaboration amongst the private sector, academia, government and civil society organisations on the design and implementation of policies that support a transition towards a more sustainable future post-COVID-19.
- Align sustainability reporting with publicly accessible international standards to enhance public disclosure from the top-down.
- Build government capacity in Asia and the Pacific to increase readiness, therefore facilitating investment on climate-related projects, from private and international entities.

2.5.2 Banks, Large Enterprises and SMEs

2.5.2.1 Technology

- Implement a multidimensional process of technological development, capacity building, financial stability and strong legal and political systems. A more technology-centred approach for carbon markets and climate finance will help corporations (large enterprises, SMEs and banks) play a strong role in relation to sustainability initiatives, allowing them to contribute strongly to the development of a climate finance ecosystem. The implementation of technology involving the broader community, investors and external stakeholders has been found to be more valuable for corporations.

2.5.2.2 Financial Projects

- Address the complexity of the financial system to access funds, increasing the opportunity for developing countries to develop climate adaptation and mitigation initiatives. An aspect that remains problematic at the corporate level is the administration of financial projects in coordination with government agencies. This has not only compromised the effectiveness of carbon markets and climate finance initiatives but has also impacted negatively on the target countries and communities in developing countries.

In light of the vulnerability of the Asia-Pacific region to climate change impacts, climate finance and carbon markets offer dynamic solutions to mitigate and adapt to climate change threats. In recovering from COVID-19, countries in the region have the opportunity to embrace climate finance to recover economically and sustainably in a way that is aligned with the Sustainable Development Goals. This involves the participation of public and private stakeholders at both the national and international level. At the national level, countries can improve their "readiness" to receive climate finance by addressing regulatory gaps, while at the international level, there exists opportunities for collaboration between developing and developed countries under the Kyoto Protocol and the Paris Agreement.

Carbon markets serve as a systemic way of enabling companies and governments to meet greenhouse gas emission targets through a market-based approach. An effective climate change mitigation tool, carbon markets are made up of voluntary and regulatory types. These two types often coexist with the implementation of different projects and the creation of carbon credits. With the correct implementation of market-based instruments, carbon markets serve as an essential tool for low-carbon growth and increased resource productivity within a nation.

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Chapter 3
Corporate Purpose: An Emerging Approach to Corporate Sustainability

Danielle Duell, Isabel B. Franco, Dayana Jimenez, and Summer Lamont

Abstract This chapter presents a literature review of an emerging research agenda, the 'Corporate Purpose', as a tool to solve today's corporations and for-profit challenges to define the future of the corporation. The Corporate Purpose of a company is simply its reason for being. It defines why it exists and the impactful contribution it intends to make to society (Mayer, Principles for purposeful business: how to deliver the framework for the future of the corporation: an agenda for business in the 2020s and beyond. British Academy Future of the Corporation Programme, London, 2019a). It is an avenue to assist institutional transformation to transcend the flaws of capitalism and crisis to create more sustainable and regenerative businesses and economies. This review reveals four major antecedents of the Corporate Purpose phenomenon: inequality and distrust, technological challenges, intangible nature of companies and environmental degradation. It also distinguishes three types of drivers behind a corporation's shift to adopt a Corporate Purpose: regulatory, business and leadership.

Keywords Corporate sustainability · Corporate governance · Business model · Strategy · Purpose · Regenerative economy

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3.1 Introduction

Corporate Purpose is an emerging concept that will define the future of business in the twenty-first century (Mayer et al. 2017; Mayer 2019a). Business leaders are becoming increasingly interested in adopting a 'purpose-led business' approach to creating synergistic value between people, planet and profits (Murray 2017; Hurth et al. 2018; Big Innovation Centre 2017). For example, in 2019, the US Business Roundtable (BR) comprised of CEOs of more than 200 of America's largest corporations issued a new mission statement on 'the purpose of a corporation'. The new statement points out the commitment to lead their companies for the benefit of all stakeholders, instead of endorsing the principle of maximising shareholder value as had occurred in every meeting since 1997. In the same year, 87 organisations, with a combined market capital of $2.3tn, united in a UN campaign to maintain global warming below 1.5 degrees centigrade (Mayer 2019b). Meanwhile, Larry Fink – CEO of Blackrock, a multinational investment management corporation – publicly mandated the need for purpose to be embodied in corporate strategy and now considers ESG factors in the selection criteria and feasibility of its investments (Fink 2019). This influential interest in Corporate Purpose signalled a shift in for-profit organisations' willingness to adopt business models that enable the transition to a more sustainable and regenerative economy, society and planet (Porter and Kramer 2011; Raworth 2012).

Like traditional profit-led strategy, the *purpose-led* strategy consists of both a design and an implementation stage. Unlike profit-led strategy, the design stage of purpose-led strategy begins with defining the 'Corporate Purpose,' i.e. a statement that describes why the company exists and the impact it wants to make (Graham 2014) beyond making a profit. Corporate Purpose embeds economic, social and environmental value creation in the core business of an organisation, creating meaningful impact for all stakeholders. That statement is then used as the overarching guiding principle and filter for all subsequent strategic choices, such as the organisation's vision, mission, goals, strategies and KPI's.

According to the literature, purpose goes beyond corporate social responsibility (CSR), or philanthropic initiatives (Eckert and Silten 2020; Mayer 2018a). It is a way to embed action and measurement of activities and outcomes that matter to customers, employees and financial performance in the long term (Chouinard et al. 2011). However, many studies on purpose-led strategy lack holistic measurement, excluding essential proxies (Hsieh et al. 2018; Mayer 2018b). Therefore, the novelty and scarcity of relevant academic studies on this topic depict the need for scholarly understanding of purpose-led business.

3.2 Literature Review

3.2.1 Research Insights and Corporate Purpose Drivers

A review of the literature shows that purpose contributes to modern management doctrines aiming to solve four main corporation failures in today's society (Mayer 2019b; Murray 2017; Big Innovation Centre 2017), namely: inequality and distrust, technological challenges, the intangible nature of companies and environmental degradation (see Fig. 3.1).

First, income inequality and wealth inequality are fuelled by corporations (Mayer 2019b; Bell and Keating 2019; Collier 2018). The increasing income disparity and sluggish wages increase has become a glitch in capitalism, producing, for example, economic stagnation in the US economy (Bell and Keating 2019). Similarly, it has been proved that market failures in many sectors increase investors' profits at the expense of social well-being. A growing level of mistrust in business has intensified in recent years (Mayer 2019a, 2019b). Trust is the base of the social contract and one of the most important elements for long-term cooperative transitions and interactions; legal contracts and markets cannot work without trust (Huang and Wilkinson 2013; Mayer 2013, 2019a, 2019b). A breach of trust between corporations and the public has resulted from irresponsible actions and failures that have questioned the

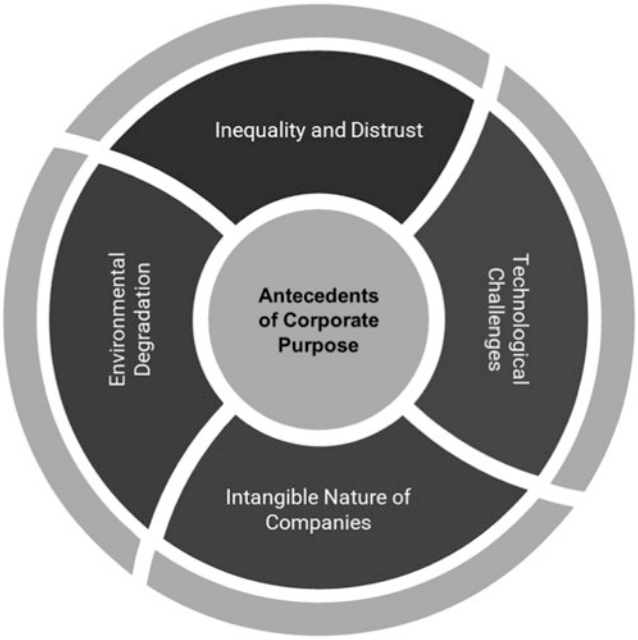

Fig. 3.1 Several issues identified in the emerging research agenda point to the need to redefine the future of the corporation as having a purpose greater than profit

legitimacy of for-profit enterprises. Scandals such as Volkswagen's emissions violations and fraud in diesel motors pollution measurements in 2014, Lehman Brothers' irresponsible investment in mortgage debt in the USA in 2008 and accusations of Australia and New Zealand Banking Group's (ANZ) harmful culture tolerating drugs and strip clubs in 2015 are just a few examples that have eroded public trust in corporations. For capitalism to survive, trust needs to be repaired and maintained. Companies that have a clear purpose *and* consistently act in alignment with that purpose can address the lack of trust that threatens many companies' licence to operate (Millstein 2019; Big Innovation Centre 2016, 2017).

Second, technological advances present challenges and opportunities for future market dislocations. For instance, 8.5% of the global workforce could be displaced by robots by 2030 (Oxford Economics 2019), and employers are not skilling up employees for future jobs demands. The velocity of technological advances has outpaced regulation to efficiently manage their implications for broader society, such as when Cambridge analytics a consulting company collected personal data from millions of Facebook users for political advertising influencing democratic elections. Regulations are far behind the latest technologies and business models. Thus, purpose is an opportunity to rethink standard practices and cultural norms to adjust for a new workplace and competitive landscape and avoid unintended social and environmental consequences of technological progress (Porter and Heppelmann 2015).

Third, according to an annual intangible study (Ocean Tomo LLC 2015), assets of top companies have switched from 83% tangible assets such as machinery, equipment and buildings to 87% intangible assets such as brand reputation and intellectual property. Similarly, traditional shareholders, families and individual held 90% of corporate ownership in the 1940s (Goranova and Ryan 2021; Rydqvist et al. 2014). This is no longer the case; institutions such as public and private pension funds, union, mutual and hedge funds among others currently own more than 70% of the stock of the largest US corporations (Goranova and Ryan 2021; Jung and Dobbin 2012). This shift challenges management and shareholder mindsets on managing companies based on ownership and managing intangible assets and renders many traditional economic tools used to assess corporate performance inapplicable. Purpose provides an opportunity for corporations to rethink the way value is created and measured.

Finally, environmental degradation caused by corporate activities is driving the decline of natural capital, loss in biodiversity, increasing CO_2 emissions and climate crisis. Scientific evidence shows that society has already reached some tipping points in regard to the planetary boundaries that threaten humankind existence (Steffen et al. 2015; Steffen and Smith 2013). The climate crisis is the most immediate threat. Climate change risks to companies have been well identified representing a disruptive force to undermine business models but also represent an opportunity for new perspectives in regulation and governance systems (Mayer 2019a). To react appropriately, 'business as usual' is no longer an option.

A review of grey literature shows that purpose-led companies display more competitive advantages over non-purpose-led corporations, as they can transform

and innovate better, improve overall performance and increase employee and stakeholder engagement (Claremont 2019; Radley 2016; Wood 1991, HBR, EY 2015). The notion of corporate purpose has been widespread and promoted among global consulting firms and is the central element in global movements and initiatives such as B corporation, conscious capitalism and shared value.

Many business practitioners identify embracing Corporate Purpose and purpose-led strategy as a competitive advantage and a higher form of governance in highly volatile, uncertain, complex and ambiguous environments, citing benefits such as increased legitimacy and risk management; ability to attract, retain and engage talent; stronger customer and stakeholder relationships; increased employee psychological well-being; a clearer context for daily decision-making; and improved business performance in the short and long term (Hurth et al. 2018; Big Innovation Centre 2016; Gartenberg et al. 2018; Henderson and Van den Steen 2015). These factors are the main motivation for practitioners to shift into purpose-led organisations. A survey carried out by Harvard Business Review Analytic Services found that 90% of 474 executives agreed that organisational purpose is important and should be a priority, but just 46% mainstream purpose into their strategy and operational decision-making. In those organisations in which purpose is a driver of strategy and decision-making, executives reported a greater ability to deliver revenue growth and drive successful innovation and ongoing transformation. Corporate Purpose still needs further research to prove that it is not just transforming managerial activity for the common welfare but also helping the corporation thrive.

3.2.2 Definition and Dimensions of Corporate Purpose

Despite growing in popularity across management consulting, business practitioners and practice-oriented researchers (Gartenberg et al. 2018; Gartenberg and Serafeim 2019), there is a dearth in the management literature on the role of purpose in strategic management (Hollensbe et al. 2014; Henderson and Van den Steen, 2015; Gartenberg et al. 2018, Gartenberg and Serafeim 2019). In contrast, fundamental questions related to the underlying assumptions of the purpose of the corporation have a long history. There is an increasing debate on corporate purpose development in philosophy, economics, corporate governance and law fields. There are two opposite issues discussed in the literature. First, the 'Friedman doctrine' posits that value maximisation for shareholders is the only social purpose of corporations: (Friedman 1982). Alternatively, stakeholder theory suggests that the purpose of a corporation is value creation for, and accountability to, all stakeholders (Freeman et al. 2010; Donaldson and Preston 1995; Freeman et al. 2004; Freeman et al. 2010). Although influential voices have stood up from both sides, the 'Friedman doctrine' is the prevailing paradigm that has shaped business practices, business policy and business education in contemporary society. This prevailing paradigm has supported business practices that foster growing inequality, environmental degradation and mistrust (Mayer 2018b; Stout 2012; Henderson and Van den

Steen 2015). Stakeholder theory fosters a 'new set of assumptions about how value is created', where a firm should be responsible as well for creating value for non-shareholders including customers, employees, suppliers, communities and others (Donaldson and Preston 1995; Freeman et al. 2004; Freeman et al. 2010). Corporate Purpose aligns with this shared value creation mindset.

Although there is not a single definition of corporate purpose in the managerial context, most definitions coincide with a corporate purpose beyond profit. Evidence shows two major themes across purpose-related definitions: purpose influences business performance and business should serve society (Jimenez et al. 2021).

Definitions identified in this literature review suggest that 'Corporate Purpose' does not have to do with philanthropy or other charitable endeavours, but rather focusses on core business model and company operations. This perspective implies a positive new light to transform business as usual that contributes not just to society's well-being but also business legitimacy, public trust, employee engagement and corporate performance.

Most socially and environmentally minded strategic tools and approaches – e.g. corporate social responsibility (CSR) and triple bottom line (TBL) reporting – have failed to sufficiently address social and environmental trade-offs; Corporate Purpose instead represents a transformational approach that helps navigate those trade-offs holistically and to create more sustainable and regenerative businesses and economies. We present Corporate Purpose as an emerging research agenda that differs from CSR.

Evidence shows that the notion of CSR focusses on premises such as (a) being a 'responsible' corporation and causing no harm; (b) complying with social and environmental standards; and (c) being a good citizen and generous company (Porter and Kramer 2011). These premises are not related to the profitable activities of the corporation but are rather treated as a cost centre funded from profits (Porter and Kramer 2011). Therefore, motivation to be a responsible company is separated from the core business activities. Consequently, CSR practice results exclusively in a trade-off for business and occasionally in redistributions of wealth (Porter and Kramer 2011). Other authors (Barnett 2006; Glauner 2019) share a similar perspective highlighting several constraints to creating economic value from CSR. Consequently, in practice, CSR's reach usually just extends to minimum compliance requirements and is highly related to reputation and brand image. In contrast, Corporate Purpose coupled with a purpose-led strategy uses the core business to drive societal and environmental change determining how companies can profit by responding to the needs of society and not produce harm. Sustainable economies and societies require a transformational approach to the role of business that accelerates integration of purposeful across the organisation.

A critical review of the literature shows that the notion of Corporate Purpose is a highly heterogeneous concept that manifests from one or more types of key drivers: regulatory, leadership drivers and business drivers, as shown in Fig. 3.2.

Regulatory approaches invite institutional design (or redesign) around purpose and a structural reconceptualisation of legal and financial aspects of the business (Hollensbe et al. 2014; Tomo 2015; Mayer 2019a), such as ownership, governance,

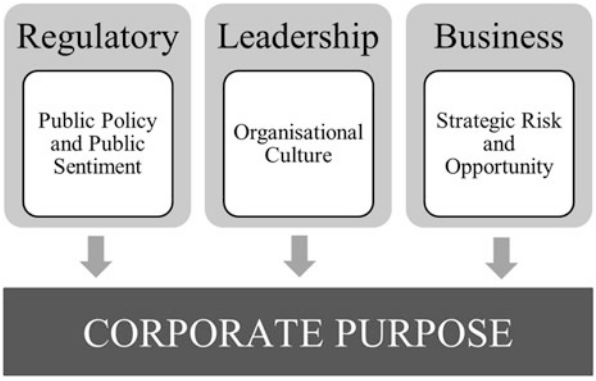

Fig. 3.2 Key drivers behind the shift to adopt a Corporate Purpose

performance measurement and management incentives. In the regulatory approaches, scholars argued that governments should establish a clear direction towards purposeful business via legal reform, whereas research related to the other two approaches focusses mainly on shifts inside the corporation as the driving force for purpose principles being lead and applied.

Leadership approaches focus on transforming the organisational culture, driving emotional engagement across employees and key stakeholders and fostering good socio-environmental practices (Bartlett and Ghoshal 1995). 'Regulatory approaches' identify the importance of Corporate Purpose to organisational culture and identity by acknowledging that regulation is difficult to put in place without a culture and values around Corporate Purpose (Mayer 2019a). This is not fixed with regulation (Mayer 2019b). Although good markets do not make good companies, it is possible for good companies to make good markets.

Business approaches see Corporate Purpose as a living strategy to optimise opportunities for developing business model innovations that contribute directly to society well-being (including environmental well-being) while making profitable business. They focus on long-term revenue maximisation linked to stakeholder-centric value creation.

3.2.3 Regulatory-Oriented Approach to Purpose

This approach has gained prominence with The Purposeful Company (TPC) Task Force which aims to transform British business towards a higher competitive advantage by creating long-term value and meeting social needs. The task force published the Purposeful Company Policy report (Big Innovation Centre 2016, 2017) which included contributions from more than 30 institutions. It gathers evidence linking purpose and performance. For example, it shows evidence that links purpose with higher business performance, estimating an increase in business

performance by 6–7% a year in the British business context (Big Innovation Centre 2017).

The TPC Task Force steering group made four blocks of policy recommendations in the Purposeful Company Policy Report (Stroehle et al. 2019). Highlights include company law that includes company purpose statements in articles of association, reporting and accountability that includes enhancing intangible measures and assessment methodologies to focus reporting on long-term value creation, financial reforms to stimulate a higher flow of equity investments and eliminate impediments for block holding and a review of executive remuneration practices to simplify and focus more on long-term equity. The report also shows examples of how companies can be highly successful while also serving the needs of society.

The Purposeful Company in the UK has created a movement of scholars and practitioners to stimulate the 'Purpose' agenda. Therefore, programmes such as the Future of the Corporation conducted by the British Academy propose reforming business for the twenty-first-century society, aligning with Corporate Purpose compliance. 'Corporate Purpose' is aimed to produce profitable solutions for people and the planet's problems rather than doing business with high revenues by creating problems (Mayer 2017; Mayer 2019b).

As Mayer (2018a) states, this is 'a radical reinterpretation of the nature of the corporation that centres on Corporate Purpose, its alignment with social purpose, the trustworthiness of companies and the role of corporate culture in promoting purpose and trust' (p.11). This approach conceives Corporate Purpose from a fundamental standpoint, arguing that business should be structured, owned, regulated and managed in alignment with 'purpose' (Mayer 2018a, 2018b). It differentiates two concepts of purpose: (1) social purpose as desired contributions of companies to society in the production of products and services (eg. expected societal contributions) and (2) Corporate Purpose defined as the objective actively pursued by corporations in the production of products and services (eg. clear management objectives beyond financial metrics). Advocates of this view pursue an alignment of the Corporate Purpose and the social purpose.

Regulatory approaches consider that 'A Corporate Purpose is the expression of the means by which a business can contribute solutions to societal and environmental problems. Corporate Purpose should create value for both shareholders and stakeholders' (Rebecca 2018; Mayer 2019b). In contrast with other perspectives of purpose such as scholars of business and leadership approaches, the expression or statement of purpose is just the first step to reorganise the business around purpose. The expression or statement of purpose must be supported by appropriate structures within the corporation and outside the corporation that allows delivery of the Corporate Purpose. Appropriate structures must be compliant with eight principles:

1. Law: adopt a purpose by law.
2. Regulation: maintain social license to operate.
3. Ownership: encourage shareholders to hold share blocks in the long term.
4. Governance: foster an inclusive culture and values to support purpose.

5. Measurement: set up metrics that include financial, social and environmental value creation
6. Finance: capital raises, risk management and investments should be made in alignment with the fulfilment of the Corporate Purpose.
7. Corporate Financing
8. Corporate investment

The scope and incentive for managers to define 'purpose' somewhat depend on policy regulators. Public policymakers have the responsibility to frame Corporate Purpose since the fundamental legal frame is currently based in the narrow view of Friedman's interpretation of Corporate Purpose (Hsieh et al. 2018; Mayer 2018b).

This regulatory stream of Corporate Purpose incorporates a controversial discussion not just among Corporate Purpose detractors but also other Corporate Purpose views. Recent debates centre attention on whether Corporate Purpose should focus less on mandatory approaches and more on purpose-led mindset, leadership and corporate strategy within the company. Standpoints that have been clearly made by authors such as Hurth et al. (2018), Eckert and Silten (2020) and Murray (2017), among others, locate purpose from more of an organisational culture and strategy position, avoiding legal compliance.

3.2.4 Business-Oriented Approach to Purpose

The success of our economies and our societies is highly correlated. Companies demand successful societies to thrive in the long term and healthy societies demand competitive businesses to thrive also. Businesses are actively seeking competitive advantage to enter emerging markets more efficiently and to prosper over the long term in established markets. Using business as a force for good is seen as a way to gain competitive advantage fostering business innovations and profitability while solving social and environmental problems.

The concepts of Corporate Purpose and purpose-led business have become more prevalent in the strategy management field in the past decade. Key contributions such as Michael Porter and Mark Kramer's 2011 Harvard Business Review (HBR) article 'Creating Shared Value' have helped shape ideas on the future of capitalism and 'unusual businesses' aiming to address social concerns using a profitable business model (Eckert and Silten 2020; Moon and Parc 2019).

Porter and Kramer (2011) argued that the purpose of the corporation is to create shared value (CSV). CSV hinges on the idea of 'doing well by doing good'. CSV advocates argue that the purpose of the corporation is to pursue opportunities that simultaneously address societal needs, leverage company resources and capabilities and strengthen company competitiveness (Porter and Kramer 2011). Shared value is considered a powerful practice to fulfil Corporate Purposes. From this perspective, shared value and Corporate Purpose are linked concepts. The purpose must be 'significant' and meet society needs. It must be 'authentic' corresponding with the

culture and the company's history. The purpose also needs to be 'profitable' as an incentive to constantly innovate at scale. Lastly, purpose must be 'accountable' by reporting initiatives.

Corporate Purpose management requires a set of interconnected practices within three areas: strategy, operations and people (Eckert and Silten 2020). Strategically, organisations should identify societal needs to address, examine the business model to better serve the purpose, define how the business creates shared value and, for whom, sets the goals and allocate resources to meet the purpose. Purpose should be embedded in the operations fostering, firstly, open innovation to pivot business models; secondly, public-private alliances; and third, suitable measurements and reporting. Finally, purpose should be embedded in people and culture; thus it often requires organisation design/redesign to create structures and roles to fulfil the purpose and engage employees and stakeholders around purpose.

Purpose recognises that capitalism needs strong corporate governance and governments to survive (Eckert and Silten 2020; Spitzeck and Chapman 2012). The past view on capitalism of building a resilient economy and society that can respond to crises without interventions or regulation from governments has been invalidated (Collier 2018). This is a common perception with 'regulatory approaches' of purpose. However, what differs is the profitable nature of purpose. Scholars of Corporate Purpose argue that purpose-led companies can maximise profits by sharing value and fulfilling the corporation's purpose. Therefore, business leaders provide solutions to social issues using a profitable, scalable business model (Mayer 2019a).

In conclusion, Corporate Purpose is considered a living strategy under this view. A company that has developed its strategy, operations and culture in alignment with its Corporate Purpose meaningfully can address societal and environmental challenges and maximise monetary value for the corporation. There is little academic literature on the steps that organisations take in articulating their purpose. This is an opportunity for further research.

3.2.5 Leadership Approaches: Organisational Culture and Sense of Purpose

We found a clear pattern in the literature that connects Corporate Purpose to corporate identity. Yet, relevant contemporaneous advocates on the topic are Hurst (2019), Murray (2017) and Hurth et al. (2018). For instance, Hurst (2019) introduces the term 'purpose economy' focussing on the power of stakeholder engagement to improve company performance and community well-being. Others emphasise that Corporate Purpose is the foundation for the organisational culture. The reasoning of this approach is based on research that shows people and teams with a sense of purpose perform better. These imperatives have emerged from the need to define and classify 'sense of purpose' in the workplace. Authors (Murray 2017; Hollensbe et al. 2014; Barrick et al. 2013) suggest that a sense of purpose is derived from three

factors: a compelling purpose statement beyond profit, focussing on doing positive actions for others, solid values and culture to anchor the Corporate Purpose and stretch goals that align the personal employee's goals with the corporation goals.

Similarly, this view presents 'Corporate Purpose' as a distinctive notion that places a particular meaningful inspiration at the core of company operations (Hurth et al. 2018). From this perspective, Corporate Purposes can be better understood through five key elements: (1) it is a meaningful motive describing why a company exists, (2) it is a fundamental attribute of a company identity, (3) it contributes to financial returns in the long term, (4) it provides guidelines for daily decision-making, and (5) it acts as a force to motivate and unify relevant stakeholders (Hurth et al. 2018). Based on a workplace study (Gartenberg et al. 2018), purpose is mainly related to the 'meaning' of work. When there is a clear correlation between work activities and purpose, employees can experience high engagement rates as they actively believe they are contributing to the community; they feel proud and a sense of accomplishment to be part of their organisations; they believe that executives and directors have clear expectations; and their leadership roles are inspiring and assertive.

Leadership approaches might also seem similar to business-oriented approaches to purpose (Porter and Kramer 2011). However, business and regulatory approaches centre their attention on doing good through the business itself, whereas leadership approaches see Corporate Purpose as a function of employee engagement and consequently productivity. On the other hand, business approaches remain at the strategic level. Enhancing opportunities for shared, leadership approaches start at the pre-strategy level and so it can be seen as the motivational foundation for business approaches.

Research also suggests that although some companies have engaged with the concept of purpose, just a few have achieved considerable progress (Hurth et al. 2018). Many announced Corporate Purpose statements have been shown to be inconsequential 'cheap talk' (Guiso et al. 2015). Therefore, 'purpose washing' is a related term that has become much more prevalent among business practitioners. The notion describes marketing initiatives where a brand claims a commitment to a cause or belief, without this professed commitment being translated into aligned action.

Corporate Purpose is not a marketing strategy. Purpose should be rooted in the core business model, corporate strategy and operations to ensure alignment with corporate goals. Evidence shows that a major challenge when applying 'Corporate Purpose' to business has to do with finding metrics that help companies identify the genuine impact of their purpose (Gartenberg et al. 2018; Guiso et al. 2015; Robin 2018). To avoid 'purpose washing', the literature also shows that 'Corporate Purpose' should be embedded at the governance, performance measurement and management incentives levels (Mayer 2018a, Mayer 2019a; Robin 2018).

3.3 Conclusion

Corporate Purpose has rapidly become a topic of prolific discussion, and the concept has reached an inflection point. Our literature review revealed that prevailing conditions of inequality and distrust, technological challenges, the intangible nature of companies and environmental degradation are some of the key antecedents to the growing interest in Corporate Purpose. It also revealed an existing agreement that adopting a Corporate Purpose can enhance long-term company performance. In addition, this detailed review contributes to proposing three drivers influencing the adoption of a Corporate Purpose, namely, 'regulatory' drivers, 'business' drivers and leadership drivers.

All three approaches to Corporate Purpose agree that having a Corporate Purpose statement is not an end state; rather it is a journey – starting point – that aligns with five elements as follows: (1) 'values' that are the principles in which the purpose operates and when lived becomes the organisational culture; (2) 'vision', a picture in words of what the desired future will look like; (3) 'objectives', the intentions and key goals that if realised will contribute to the purpose being fulfilled; (4) 'strategies', various initiatives to achieve the objectives; and (5) 'KPIs', to measure purposeful progress and success. Despite such insights, there is a dearth in the academic literature about approaches to a Corporate Purpose design and strategy implementation.

This review represents a starting point in the debate on how purpose-led business can serve as an innovation in the strategic management field. It requires more evidence-based research and open exchange contributions to scientifically examine the effect of purpose-led business in solving both failures of capitalism and individual corporations and sustainable development trajectories. There is also the need for the stewardship and agency of influential leaders to mobilise the paradigm shift and translate the appetite of the public conversation about Corporate Purpose to an established, knowledge-based practice.

Together, these results provide important insights into a resurgence of academic interest in the constructive role of Corporate Purpose in organisations and their legal, strategic and cultural contexts. However, Corporate Purpose has little empirical progress in strategic management (Gartenberg et al. 2018; Gartenberg and Serafeim 2019), and further conceptual clarity is needed. Significant opportunities for future research were identified in this article to locate studies on Corporate Purpose at the centre of strategy research.

This literature review found that Corporate Purpose strategy strategically integrates the sustainability agenda and embeds it in the core business of the organisation. It contributes to the modernisation of the corporation to shift from 'business as usual', which perceives sustainability as an externality, to a systems view with sustainability embedded in the business model design. Although the main change agents leading the current landscape of Corporate Purpose – regulatory, business and leadership perspectives – are related, overlapping and interconnected, they do not have a common theoretical ground and in some cases seem to be disconnected and

lack compatibility. Therefore, we recommend that future works and current efforts in Corporate Purpose perspectives interact to build from what is already known and progress the Corporate Purpose agenda collaboratively.

We contributed to the sustainability and strategic management fields by mapping the current efforts to activate Corporate Purpose and provide a synthesised perspective to inform future research. While there is mounting interest and evidence of businesses having an intention greater than profit and the drivers of this, how corporations put their purposeful intentions into practice is less well documented and researched. There is a tremendous opportunity for researchers, thought leaders and business practitioners to further contribute to the sustainable development and strategic management fields through codifying how to design an effective Corporate Purpose and purpose-led strategy and how to effectively implement that purpose in practice to realise both goals of the corporation and society at large.

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Chapter 4
An Overview of Sustainable Finance: Linkages with the Sustainable Development Goals

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Abstract The purpose of this chapter is to bring together current literature on sustainable finance in order to inform our model on the topic. In this section, we explore the scholastic understanding of sustainable finance as well as how the concept of sustainable investing fits into the framework of the UN Sustainable Development Goals (SDGs). This chapter is divided into four sections: introduction, a review of sustainable finance and a snapshot of numbers, a review of sustainable finance in relation to the SDGs, theoretical models and framework for sustainable finance, and, finally, a portion dedicated to presenting the insufficiencies in current data, methodologies, and metrics.

Keywords Sustainable finance · Blended values theory · UN SDGs · SRI · Socially responsible investing · Green finance · Metrics

4.1 Introduction

Sustainable finance gained traction during the 1970s and 1980s, when a small cohort of international summits and conferences featured debut discussions on sustainable development. For the purpose of this chapter, we use the following definition for sustainable finance: "Sustainable finance deals with institutional policies, or systems of analysis, where all financial decisions aim at a long term integrated approach to optimise a firm's social, environmental and financial mission statement" (Soppe 2009, 2011). Sustainable finance is any financial service that considers

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Table 4.1 Categories of sustainable finance: definitions from BNP Paribas (Sustainable finance: What's it all about? (n.d.). BNP Paribas. Retrieved March 1, 2020, from https://group.bnpparibas/en/news/sustainable-finance-about)

Type	Description
Socially responsible investing (SRI)	Involves the systematic integration of environmental, social, and governance (ESG) criteria into decisions on financial management and investment In 2016, SRI reached a total balance of 22.89 trillion dollars. Compared to 2014, this was a 25% increase
Green finance	All financial transactions that advance energy transition and work against climate change The market for green finance is predicted to exceed a value of 100 billion dollars per year by 2020 Green bonds: Bonds that are issued with the goal of financing environmental initiatives
Social finance	The social finance sector funds projects that do not fit into classical financing circuits. For example: Businesses tied to employment (28% of capital), social and housing (31%), international solidarity (5%), and the environment (36%) This sector is more popular in Europe
Social business	Social business refers to businesses that are not only lucrative but also advance social factors: Combating exclusion, protecting the environment, or promoting development and solidarity Comes in three forms: Microfinance Impact investing Social impact bonds (SIBs)

environmental, social, and governance factors in creating and working towards the long-term goal of sustainability. Table 4.1 presents selected categories of sustainable finance.

Different SDGs can mean different things for businesses and investors. A global survey by PwC in 2015 observed that companies tend to prioritize their engagement with SDGs according to their growth strategy, recourse, expertise, and other key factor SDGs that are considered high impact and high opportunity (like those in quadrant 1), such as decent work and economic growth (no. 8), climate action (no. 13), or industry, innovation, and infrastructure (no. 9). However, SDGs with low impact and low opportunity (those in quadrant 3), such as no poverty (no. 1), life below water (no. 14), and peace and justice strong institutions (no. 16), are considered low priorities to these major players (i.e. businesses and investors). This means that there is a critical role for governments and international development agencies must play, namely, being agents that bring about a better understanding of how lower-priority SDGs, in the corporate context, in fact align with businesses' goals and operations as well (Fig. 4.1).

By the late 1990s, the UN and OECD had begun to solidify working terminologies and frameworks for global sustainable development, and the two institutions were arguably successful in sparking an international dialogue about corporate

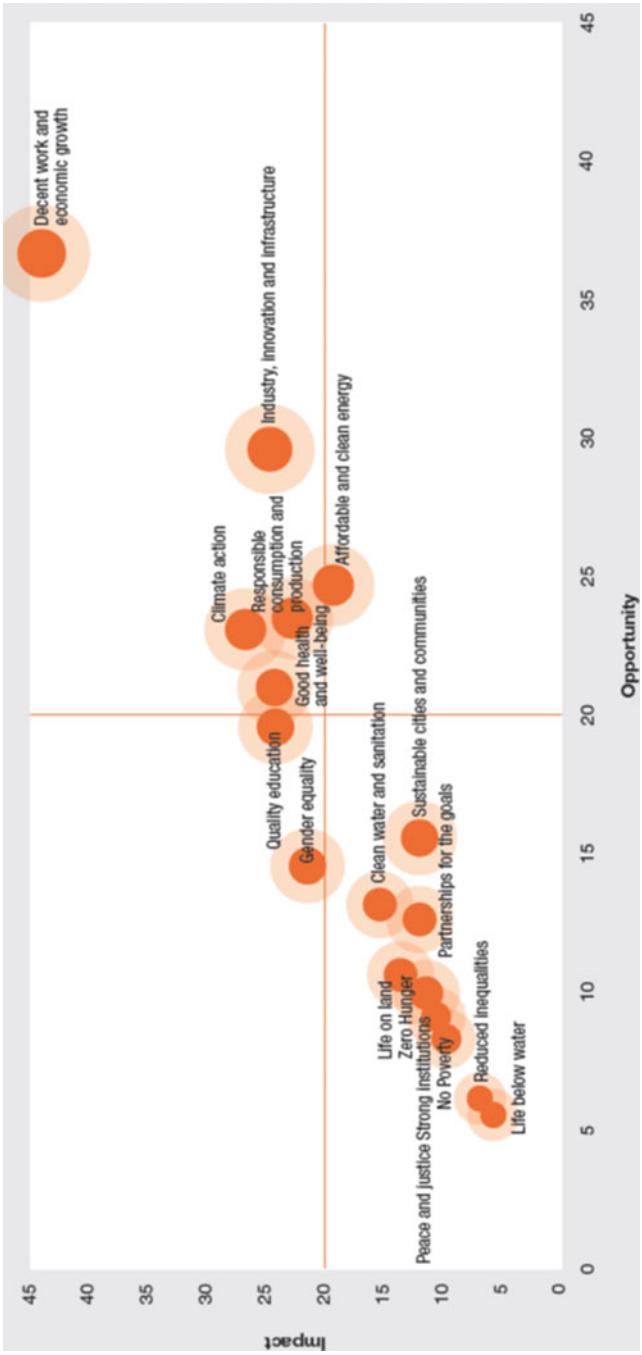

Fig. 4.1 Based on Abe and Franco (2017)

human rights abuses in the developing world. However, multilateral institutions' influence within the private sector remains limited by the lack of real governing power these institutions hold. These organizations have served to draw attention to sustainability, but the growth of sustainable finance and corporate social responsibility has been comparably slow. Notwithstanding the clear impediments to the growth and standardization of sustainable finance, the sector has accelerated markedly over the last decade as looming global crises such as climate change have continued to attract public attention (Lauesen 2017).

By region and/or country, there has been an overall positive compound annual growth rate (CAGR) in sustainable investment from 2014 to 2018. The five most active regions in sustainable finance have been Europe (6% CAGR), the United States (16%), Canada (21%), Australia and New Zealand (50% and 16%, respectively), and Japan (308%). As of 2018, Europe manages the largest share of assets with almost half of the total sustainable investing assets globally at 46%. The United States manages 39% of total sustainable investing assets, while Japan manages 7% and Canada 6%. Figure one displays a snapshot of global growth in sustainable assets by country (expressed in billions of USD):

From 2017 to 2019, global sustainable investments rose by 34% to $30.7 trillion.[1] As the USSIF reports, "Sustainable, responsible and impact investing (SRI) in the United States continues to expand at a healthy pace. Total US-domiciled assets under management (AUM) using SRI strategies grew from $8.7 trillion at the start of 2016 to $12.0 trillion at the start of 2018, a 38 percent increase. This represents 26 percent—or 1 in 4 dollars—of the total US assets under professional management" USSIF (2018). This number is substantial, but it comes with a major caveat: present definitions of sustainable finance vary significantly. The fraction represented in this statistic primarily captures the finance sector's movement towards negative screening, which, in short, is the active choice *not* to invest in certain ventures. This allows for significant ambiguity within the sustainable finance sector. Consider Blackrock, an investment fund praised as being at the forefront of major sustainable investments. Blackrock is the world's largest asset manager, and it offers many seemingly sustainable investment options to its clients. Yet according to a recently published Sierra Club Report (World Resources Institute 2019), ten of the green products Blackrock contains in its portfolios hold an estimated $423 million in fossil fuels and another $29 million in projects linked to deforestation in South America. This dichotomy is aptly displayed in a recent graphic produced by WRI and RAN World Resources Institute (2019):

This growth may appear encouraging, but sustainable finance is a slow-moving trend that requires significantly more attention and action from all stakeholders to flourish. Relative to the finance sector as a whole, sustainable finance accounts for only a small fraction of capital, debt, and assets. Despite 85% of investors reporting

[1] Emily Chasan. (2019, April 1). *Global Sustainable Investments Rise 34 Percent to $30.7 Trillion—Bloomberg*. https://www.bloomberg.com/news/articles/2019-04-01/global-sustainable-investments-rise-34-percent-to-30-7-trillion

an interest in investing in sustainable businesses and 95% of millennials expressing an interest in sustainable investment, the sector itself is ambiguous and only recently gaining traction (Stanley 2016). The GRI estimates that around 7500 publicly traded corporate entities release yearly sustainability reports.[2] Though this number may appear high, it represents a small percentage of the overall 630,000 (Fuhrmann n.d.) publicly listed companies globally. These numbers do not include the millions of privately held corporate entities that exist around the world, many of which are less inclined to publicly report their sustainability data.

4.2 Sustainable Finance Within the Framework of the Sustainable Development Goals (SDGs)

"The SDGs [United Nations Sustainable Development goals] are a series of 17 goals and indicators that all United Nations member states will use as a framework for formulating their inclusive and sustainable development agendas and policies over the next 15 years (2016-2030)" Abe and Franco (2017). The SDGs are a means of providing businesses, and those who regulate and interact with them, with a concrete list of issues that must be addressed. The potential ESG impact a given business may produce by aligning itself with a given SDG varies, as does the respective economic opportunity associated with each SDG. Each of these goals is equally important for companies as they become more and more incorporated into the decisions of investors. The investment world must adjust to incorporate SDGs in the same way that the business world has: changing to include SDGs in core decision-making practices. Investors must also recognize that the growing demand for sustainability in the business world presents new opportunities, new kinds of risk, and a chance for moral investment to flourish.

The United Nations has provided recommendations for how businesses can engage or participate in SDG realization including Abe and Franco (2017):

1. Developing an understanding of SDGs themselves and internalizing the critical role they play in society.
2. Defining priorities for socially responsible business (SRB) activities.
3. Setting goals for SRB activities.
4. Integrating SRB activities in business operations.

[2] Carr, G. (n.d.). Global Reporting Initiative. CSR Matters. http://csrmatters.net/glossary/global-reporting-initiative-gri/

4.3 Theoretical Models and Framework for Sustainable Finance

Given the nascency of sustainable investment's emergence within the global private sector, it is evident that the terminology and frameworks with which stakeholders describe sustainability are also only now emerging. Three main heuristical shifts, largely agreed upon by pundits in the sustainability field, must occur at a widespread, uniformly adopted, and industry-specific level in order to propel private-sector involvement:

1. The incorporation of sustainability into traditional finance models in order to produce a more general theory of finance.
2. A movement towards "blended values" decision-making by all stakeholders, versus the traditional neoliberal assumption of self-interest within markets.
3. A more robust analysis of financial risk and return that incorporates all stakeholders and accounts for ESG externalities.

A simpler shorthand for these three heuristic shifts is the following:

1. Traditional finance model + sustainable and behavioural finance → general finance model.
2. Self-interest + altruism → blended values model.
3. Shareholders + all individuals and entities impacted by a given investment → stakeholders.

Below we define each three of these heuristic concepts in more detail:

4.3.1 General Finance Model (Fullwiler)

Traditional finance is focussed solely on financial and empirical values: it looks at risks and returns but does not look at impact (Fullwiler 2015). Impact, in this case, can be defined as the consequences that a financial decision may have on environmental, social, and governance (ESG) aspects of society. Sustainable finance, on the other hand, includes impact as its third factor. This can be illustrated in the different efficient frontiers of the two types of finance. The two-dimensional frontier of traditional finance illustrates the relationship between the two factors that traditional finance is concerned with: financial risk and financial returns. Figure 4.2 shows the three-dimensional graph adds one impact to the z-axis, illustrating the relationship between financial risks, financial returns, and impact.

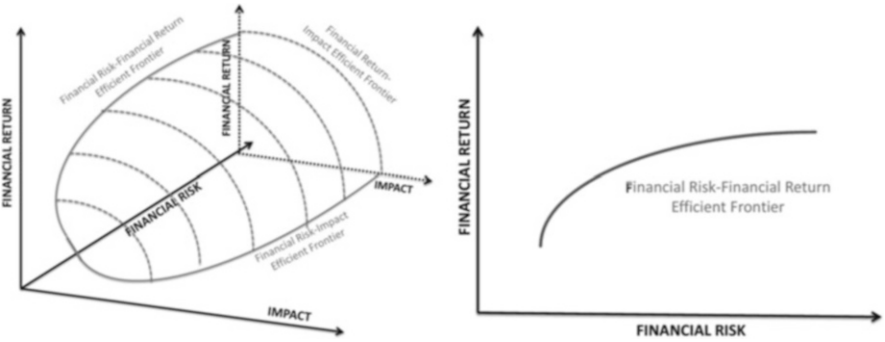

Fig. 4.2 Relationship between financial risks, financial returns, and impact

4.3.2 Blended Values Theory (Emerson)

The "blended" values theory is the principle that entities are motivated not only by self-interest but also by altruism. This theory was pioneered by impact investing expert Jed Emerson and "recognizes that no company or organization is purely 'good' or 'bad' but rather generates a 'blend' of social, environmental, and financial returns, which can be both positive or negative".[3] Because markets operate on the blended values system that sees the interplay between altruism and self-interest, companies and investors are better served when making decisions with the same blended values model.

4.3.3 Shareholders vs Stakeholders

Unlike the two models above, this dichotomy between shareholders and stakeholders is not a model but rather two definitions. We highlight this to show that ESG externalities are impactful to stakeholders.

Both shareholders and stakeholders have vested interests in the company or organization. However, a shareholder's interests are usually based on the financial performance of a company, as shareholders own the shares of a company. Shareholders are the most influential group in the company and can make decisions on the management of a company. A stakeholder, on the other hand, is anyone who has a stake in the company and how it is run. A shareholder is a stakeholder. However, stakeholders are a more general category that encompasses any interest groups or individuals who have vested interests in the actions of the companies.

[3] Ibid.

4.4 Present Models for Sustainable Investment

There are several ways in which investors may choose to approach sustainable finance: negative or exclusionary screening, positive/best-in-class screening, norms-based screening, ESG integration, sustainability-themed investing, impact/community investing, and corporation engagement and shareholder action (see GSIA definitions of these approaches below). Sustainable investment encompasses the following activities and strategies:[4]

"NEGATIVE/EXCLUSIONARY SCREENING: the exclusion from a fund or portfolio of certain sectors, companies or practices based on specific ESG criteria.

POSITIVE/BEST-IN-CLASS SCREENING: investment in sectors, companies or projects selected for positive ESG performance relative to industry peers.

NORMS-BASED SCREENING: screening of investments against minimum standards of business practice based on international norms, such as those issued by the OECD, ILO, UN and UNICEF.

ESG INTEGRATION: the systematic and explicit inclusion by investment managers of environmental, social and governance factors into financial analysis.

SUSTAINABILITY THEMED INVESTING: investment in themes or assets specifically related to sustainability (for example clean energy, green technology or sustainable agriculture.

IMPACT/COMMUNITY INVESTING: targeted investments aimed at solving social or environmental problems, and including community investing, where capital is specifically directed to traditionally underserved individuals or communities, as well as financing that is provided to businesses with a clear social or environmental purpose.

CORPORATE ENGAGEMENT AND SHAREHOLDER ACTION: the use of shareholder power to influence corporate behavior, including through direct corporate engagement (i.e., communicating with senior management and/or boards of companies), filing or co-filing shareholder proposals, and proxy voting that is guided by comprehensive ESG guidelines".

The distribution of the use of these various forms of sustainable investment is not at all even. In 2018, negative/exclusionary screening (USD 19.8 trillion), ESG integration (USD 17.5 trillion), and corporate/shareholder action (USD 9.8 trillion) accounted for the overwhelming majority of "sustainable investments". This is in part because these forms of investment, especially in the United States, do not require investors to significantly alter their practices or portfolios as compared to more impact-intensive sustainable investments such as social impact bonds. By region, negative screening was most popular in Europe, and ESG was the predominant strategy in the United States, Canada, and Australia and New Zealand, while corporate engagement and shareholder action was most widely used in Japan. Impact and community investment are not popular in highly capitalist societies, as shown in Fig. 4.3.

[4] "GSIA". Accessed February 19, 2020. http://www.gsi-alliance.org/

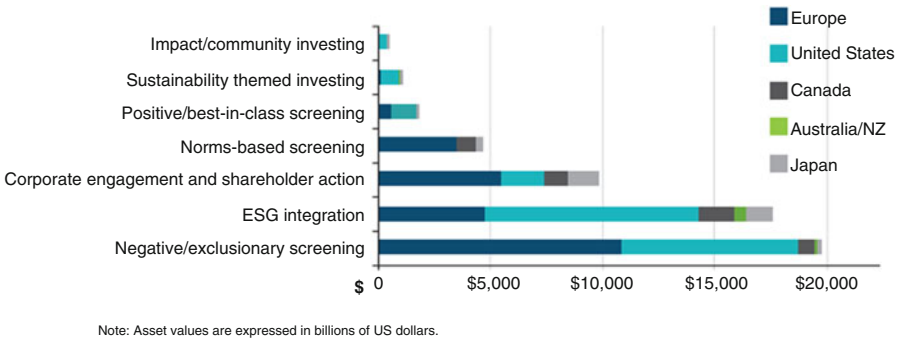

Fig. 4.3 Sustainable investing assets by strategy and region

4.5 Insufficiencies in Data, Metrics, and Methodology

Much of the grey area in sustainable finance is due to the great variability in standards, metrics, benchmarks, reporting, and commitments across global markets. This lack of uniformity makes it difficult for stakeholders to compare the sustainability of businesses and investments side by side, and this issue produces many of the obstacles in the growth of sustainable finance itself. It is crucial that sustainability benchmarks and definitions within the finance world are widespread, uniformly adopted, and industry-specific, because all stakeholders involved cannot easily compare the relative sustainability of investments or business decisions if information is variable and limited.

One key example of this variability is the proliferation of sustainability indexes over the last two decades. In 1993, only 10 reputable sustainability indexes existed, and they were rarely used by companies or investors to produce benchmarks. In 2016, more than 500 sustainability indexes were used, with a noticeable, albeit modest, increase in overall use (Nelson 2018). As noted previously, there is also little pressure for companies, especially in certain industries, to produce sustainability reports. Globally, only a fraction of publicly traded companies do so, and their reports are often unhelpful to investors due to their significant variation.

As Nelson (2018) posits, "The current diversity and inconsistency of data requests and analytical approaches are creating challenges for both companies and their investors". As a result, 82% of investors are by and large not comfortable with the adequacy or consistency of the reported company data they receive. This percentage incidentally overlaps with the 85% of investors who have expressed interest in sustainable investments. Even if the desire to invest is there, investors cannot responsibly put money towards something that is so variably measured. For this reason, Nelson (2018) and an array of other scholars in the field have suggested that, "Collective action to develop and spread common standards, goals, and metrics will enable companies, investors, regulators, customers, and other stakeholders to more effectively benchmark business performance on sustainability".[5]

[5] Ibid.

4.6 Conclusion

Sustainable finance is an emerging trend and, like all nascent industries, needs to be bolstered and supported by all players involved. This necessitates a shift from sustainable finance as a pioneering concept to a mainstream one: there must be an understanding of the difference between a traditional finance model and a sustainable finance model, the blended values theory that correctly points to the "blend" of altruism and self-interest present in the thinking and mindset of investors, businesses, and consumers alike, and finally, the difference between shareholders and stakeholders. Further, there is a dearth of common standards, goals, data, and metrics regarding sustainable finance that must be addressed.

Improving regulatory frameworks both at the voluntary, private-sector level and through binding legislative action will also be essential in aligning the finance sector with the SDGs. Collective action by stakeholders can have a powerful impact in shaping and developing sustainable finance standards and practices. The lack of consensus within both the sustainable finance sector and the finance sector at large with regard to sustainability benchmarks, metrics, and standards curbs the global realization of the UN's Sustainable Development Goals. Sustainability will remain a word without a concrete definition within finance until, as Nelson affirms, there is a consistency in data, standards, goals, and metrics.

Another impediment towards the success of sustainable finance in helping realize the SDGs lies within issues on scholarly literature. Academia should be tailoring their efforts towards an audience of investors, businesses both big and small, and, most importantly, the common person. The way in which literature on sustainable finance is currently written is accessible primarily to academics. Using academic jargon that is difficult to consume in confusing sentence structures makes their writing—writing that needs to be applied—inaccessible to the business leaders.

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Chapter 5
The Role of Corporate Social Responsibility in Sustainable Mining: Exploring Mining Impacts of the Kansanshi Mine in Zambia

Peter Mhone, Isabel B. Franco, and Summer Lamont

Abstract Mining activities may bring about technology which promotes rural-urban connections, employment opportunities for the host community and improvements in education facilities, among others. The aim of the study was to assess the socio-economic impacts of mining on people's livelihoods in communities surrounding the Kansanshi mine and the role of corporate social responsibility (CSR) in mitigating the effects. The objectives were to establish how mining activities impact (socially and economically) on people's livelihoods, to examine the (CSR) strategies used by the mining firm to improve local people's welfare and to establish the extent to which CSR strategies are contributing towards the improvement of people's livelihoods. The results of the study revealed that the Kansanshi mine, through its CSR initiatives, has built and renovated some schools, clinics, the main district hospital and some township roads. Despite this, health and educational facilities were far apart resulting in pregnant women and school going children walking long distances to access these services. Some roads were in very bad condition rendering them impassable during the rainy season. As a result of this, the communities surrounding the mine felt neglected by both the mine and the government. As a result of this, there is need for a law which can distinctively stipulate the roles of the government and those of the investor in community project implementations. Additionally, governments need not abandon social provisioning to mining companies but, rather, pursue a programme of being partners with mining companies. This can be done by involving mining companies and host communities so as to establish responsibilities, costs and benefits and also to sign tripartite (the

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investor, the government and the host community) community development agreements.

Keywords Mining · Corporate social responsibility · Socio-economic impacts · Local communities

5.1 Introduction

5.1.1 Sustainability in the Mining Sector

In the mining sector, sustainability is of great importance because there is need for not only the current generation to benefit from the mineral resources but also the future generations. Corporate social responsibility (CSR) is one way in which this can be done in that some of the infrastructure which can be put up can be of benefit to communities long after mining activities have ceased. CSR, to some extent, helps to address some of the socio-economic impacts (Bakos and Dumitras 2017; Kivinen 2017; Wilson 2019) of mining such as displacements of people, demographic changes and disruption of income generating activities such as agricultural undertakings. It is for this reason that the evolution of CSR and how the strategy has helped in addressing the socio-economic impacts of mining were considered in this section. Although CSR is not well defined, there are services such as skills training, housing and other amenities (Mutale and Franco 2019) which a mining firm needs to provide to the host community. Additionally, stakeholder partnerships are equally important in the reduction of poverty in communities where there are mining activities.

Our Common Future report (also known as the Brundtland Report) holds a key statement of sustainable development, which defined it as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (Franco and Ali 2017; Mebratu 1998).

The fact that mineral resources are non-renewable has rendered the concept of sustainable development to be debatable within the mining sector (Ololade and Annegarn 2013). Despite this, be it in the mining sector or any other sector, according to Parkin et al. (2003), there are common grounds on which development can be practiced as shown in Fig. 5.1. Any kind of development needs to have a balance of the three aspects, which are the environment, economy and society at large. As the extraction of the natural resources takes place in order to improve the livelihoods of people in a certain locality, there is need to conserve the natural environment. A situation can be said to be sustainable if the next generation inherits from its predecessors at least as much capital as they themselves inherited (Purvis 2019; Steiner et al. 2018). Among many other things to be sustained are natural resources and human life. Additionally, mining companies have also stated that sustainable development principles are taken into consideration in their operations.

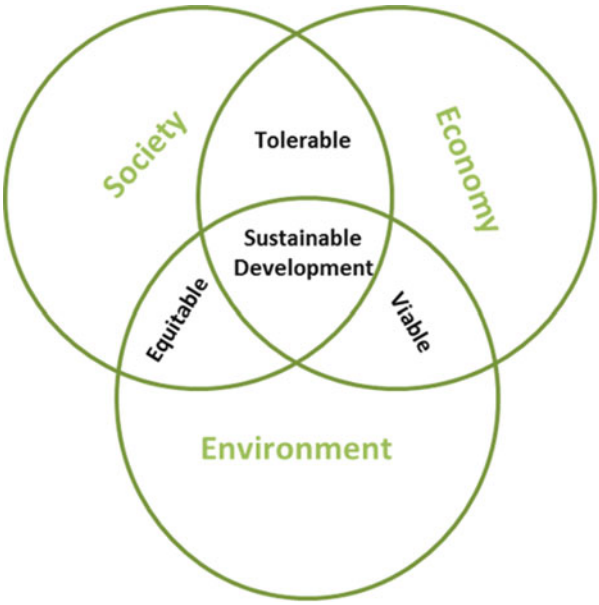

Fig. 5.1 The concept of sustainable development (Parkin et al. 2003)

There is now a burgeoning literature that examines sustainable development in the context of minerals and mining, most of which is concerned with sustainability at global and national scales (Franco and Ali 2017; Franco et al. 2018). What is often challenging to ascertain, however, from these numerous perspectives on sustainable mineral extraction, minerals and metals recycling, environmental management and social performance is how sustainable development applies to mining companies themselves and what steps a mine must take in order to improve the sustainability of operations (Yirenkyi 2008). Since mining processes have the potential to impact a diverse group of environmental entities (Menton et al. 2020) and are of interest to a wide range of stakeholder groups, there is ample opportunity for the industry to operate more sustainably (Shields 2004; Maf et al. 2014). Specifically, with improved planning, implementation of sound environmental management tools and cleaner technologies, extended social responsibility to stakeholder groups, the formation of sustainability partnerships (Bond 2014; Caron et al. 2016) and improved training, a mine can improve performance in both the environmental and socioeconomic arenas and thus contribute enormously to sustainable development at the local level (Yakovleva et al. 2017).

5.1.2 Impacts of Mining on Communities

Although there is notable growth of scholarly literature on mining impacts on communities in Africa and beyond, there is limited focus on the micro-level social

dynamics that arise when mining expands into rural communities (Mnwana 2015). The environmental impacts of natural resource exploitation such as loss of biodiversity, water shortage and pollution and the production of large quantities of waste have been discussed extensively (Kitula 2006; Case et al. 2010; Mensah et al. 2015; Damigos et al. 2016; Northey et al. 2016; Schoenberger 2016; Chimonyo and Mupfumi 2017). Al et al. (2016) argue that air emissions, discharges of liquid effluents and large volumes of solid waste are responsible for the most important negative environmental impacts of the mining and minerals industry. However, the discussion on the sector's environmental performance (Park et al. 2020; Pineirochousa and Vizca 2017) should not only pay attention to direct, site-specific impacts but also take into account cumulative impacts and indirect effects that pose environmental (Wozniak and Pactwa 2017) and social challenges in the state and beyond (Black and Mckinnish 2004).

Mining project-related impacts can include the displacement of a whole community to a new location, posing high risks for the livelihoods, health and social ties of its members (Yirenkyi 2008). It also generates stress, insecurity and feelings of inequality both within the most directly affected community and others in the broader area, notably as a result of resettlement and uneven compensation (Conde and Le 2017). As a result of this, some analysts have observed that despite the discourse around social sustainability, mining policy and governance prioritize economic aspects, giving environmental and social considerations a lower priority (Tiainen 2016).

A key sustainability strategy adopted by mining companies to manage social impacts is programmes to support community development in order for them to have a sustainable future (Holfelder 2019). These are embedded in broader governance mechanisms (Franco 2014). Social impacts refer to a multifaceted group of matters, influencing the everyday lives of people (Tiainen 2012). This may include health and education programmes or support of organizations such as schools, clubs and societies. Moomen et al. (2016) state that as relocations of communities are carried out, there is need to have a foresight of mine expansion; hence, communities need to be beyond a 2 km buffer. The mining industry tends to follow the World Bank Group's social safeguards for involuntary resettlement, which emphasize that resettled communities should at least be as well off as before in terms of local production systems and income opportunities (Conde and Le 2017).

5.1.3 Corporate Social Responsibility (CSR)

Corporate social responsibility (CSR) initiatives are concerned with the policies and processes of participation and engagement with local communities and with practices aimed at maximizing local economic development (Raufflet et al. 2014; Lin et al. 2015; Litmanen et al. 2016; Adonteng-Kissi and Adonteng-Kissi 2017). The results for the CSR practices related to community relations are rather mixed (Hilson 2012). Some companies use CSR primarily to project a suitable image and ensure

'business as usual' (Hamann and Kapelus 2004), while others use it as a strategy to improve local development outcomes (Narula et al. 2017; Frederiksen 2019). Govindan et al. (2014) outline five drivers of CSR which are considered by most companies in the mining sector: (1) the participation or involvement of communities; (2) access to information; (3) the protection of cultural heritage; (4) economic development assistance; and (5) the health and quality of community life. Another aspect is environmental management which relates to policies, commitments and mechanisms for following up on greenhouse gas (GHG) emissions, water use, the protection of the environment and biodiversity (Garvin et al. 2009; Te Liew et al. 2014; Burchart-Korol et al. 2016). The large majority of companies integrate environmental management practices and activity impact reductions as part of their CSR initiatives (Tan et al. 2017). Wilson (2015) notes that with the exceptions of establishments such as Kimbadu, implementation of CSR initiatives facilitates minimal and, at times, unsustainable, community development. It has been argued that such 'developmental' outcomes are primarily due to asymmetrical power relations between transnational mining companies (TNMCs) and the mining communities in which these companies engage in predefined development projects that are, in many instances, at variance with community needs.

Since the mid-1980s, countries around the world have adopted community development requirements into their mining laws to ensure that mining translates into real, positive social and economic gains for mining-affected communities, thereby redressing the inequitable distribution of mining's costs and benefits (Imbun 2013; Dupuy 2014). Providing access to knowledge is another practice undertaken by the majority of the companies (Wirth et al. 2016). Mining companies promote education and the dissemination of information to the general public and local government through their programmes (Jenkins and Yakovleva, 2006) such as sustainability reports based on the Global Reporting Initiative (GRI) Framework (Fonseca et al., 2012). They often organize activities to raise awareness about aspects in the communication of companies' CSR practices related to labour laws and employee relations (Viveros 2017).

5.2 Methodology

The research methodology applied in this study was a mixed method approach – that is, both quantitative and qualitative. The mixed method approach enabled the researchers to conduct observations, undertake interviews, review public documents and carry out audiovisual recordings. The total number of samples which were done was 196. This was as a result of reaching a point of saturation, that is, the repetition of information which had already been obtained. Of the 196 samples, 93 were from Kapijimpanga ward while 103 from Kamalamba ward. This was arrived at after considering the initial total number of households in each ward.

The researchers conducted field research around Kansanshi mine, interacted with community members – households surrounding the mine took field notes on the

behaviour and activities of individuals within the host community. Face-to-face interviews were conducted with participants, and some participants were interviewed by telephone. These interview guides were used with the intention to elicit more views and opinions from the participants. This method enabled the researcher have control over the line of questioning and the participants provided historical information which enabled the researchers to probe further, as appropriate.

During the process of research, public documents (newspapers, minutes of meetings, official reports) were collected. The relevant documents which addressed the objectives of the study were read thoroughly and analysed. These documents helped to provide a comparison with what was on the ground, and they were useful in the sense that the 'participants' had given attention to compile them, and they were a useful resources for reference purposes during the time of data analysis. Additionally, photographs, audio recordings and short video clips were made. This approach provided an opportunity for participants to directly share the reality because it captured the 'situations' as they were on the ground at the time when the research was being conducted.

The filled in interview guides were all read through taking note of the words and phrases which were frequently used. Likewise, the recorded audiovisual was transcribed taking note of the frequently used words and phrases. The collected documents were consulted to verify and triangulate what came out of the interviews, recorded audiovisuals and the photographs.

The generated data was then grouped into themes such as employment and income generation which enabled the researchers to elaborate what was on the ground under each theme. Thereafter, a comparison was made with what is stated in the literature from other similar studies. The findings from most of these studies confirmed what came out in this study. Pie charts, bar graphs, tables and images have been used to display the data. Pie charts have been used to present the community's source of livelihoods while bar graphs for what the local community considered that they need. Additionally, tables have been used to display direct responses from the respondents. Images are another method which has been used to show some of the projects the Kansanshi mine has carried out in the local community.

5.3 Discussion

5.3.1 Displacements of People

Kabwela, Muzabula and New Israel communities were 'created' as a result of displacements. According to the views from the affected communities, those who reside in these three communities were previously living right in the current 'heart' of the mine. In 2005, 42 households were displaced from the Kansanshi mine site to New Israel, and most (not all) households were persuaded to move and were compensated between K700 and K1, 500 (rebased). From community views, it has been stated that mining development and exploration has had some costs and

benefits, but the costs outweigh the benefits in that what was given to them after relocation was little compared to what they had before relocation. Before relocations, the people in these communities were able to plough their fertile fields, sell their merchandise and take their children to school. At the time these communities were relocated, a number of promises were made to them concerning compensation and what the mine was going to do for them in their 'new' communities. One community member in Kabwela stated:

> They promised to build houses for us, connect electricity and give us some money, but to this day, nothing has been done.

During the construction of the tailings dam in the eastern part of the mine, for example, some families were compensated, while others were given fields in other locations. Unfortunately, they were given fields where the soils are unfertile. Field observations revealed that most crops – especially maize – do not grow to maturity anymore if chemical fertilizers are not applied. The displaced communities expected perpetual assistance from the mine in terms of farming inputs as noted by some residents:

> During the first two to three years, we were assisted with farming inputs (seed and fertilizers) and the assistance did not continue beyond that.

A Kansanshi member of staff who participated in this study noted that the assistance with farming inputs was to help the people who were relocated settle down. He further added that the assistance was not for as long as the mine operated. The mine envisaged that during those 3 years, the people were going to use the resources given to them and grow their businesses and no longer depend upon the mine to provide them with farming inputs – self-sufficient. The member of staff pointed out that:

> Communities need to reach a sustainable level. We couldn't continue 'breastfeeding' them beyond that time.

This view by the Kansanshi member of staff contradicts with Cernea (2003) who states that once inhabitants of a certain locality have been moved for the reason of setting up a public-sector project, there is need for continual help and empowering them. They need to be assisted with aspects such as farming inputs and until they are deemed to have fully settled and self-reliant. After being relocated, a community might take a longer period of time to reach a 'self-sustainable level' than what would have been focussed by those who displaced them.

Further, some of these fields are a distant (about 5 kms) from where the owners reside, making it difficult for them to access them. Additionally, they were also promised boreholes in their 'new' fields, but the promise did not come to fruition as one respondent noted:

> Those given fields were promised boreholes but to this day, nothing has been done.

In the south-west part of the mine (Muzabula), 23 families were asked to choose where they wanted to go, and they chose chief Mulonga's area. Upon relocation, they were supported with bricks for their houses, roofing sheets, five protected wells, two boreholes, a school, staff house, clinic and a bicycle for each household.

In the New Israel area, complaints were mainly on scarce and costly public transportation, following the relocation of the community a distance of 40 km north of its previous location. Residents in particular were critical of the fact that since moving to the new site, the high bus transport cost to Solwezi had consumed a substantial share of the resettlement allowance provided by Kansanshi. The road leading to Solwezi Central Business District (CBD) too is in a bad state as stated by a respondent:

> The road from Mushitala to New Israel is very bad and it takes us a lot of time to travel.

Despite this, the mine has built a school, a house for the school headmaster, a clinic and another house for the clinical personnel. The company states that these are some of Kansanshi mine's CSR initiatives which have helped to improve the community's quality of life in New Israel. Children have access to education within their community, the headmaster is motivated to live within the vicinity of the school, healthcare is within reach and the medical personnel also lives in the community unlike a situation where due to lack or poor accommodation, the medical staff might be living a distance from the health facility.

5.3.2 Employment and Income Generation

Respondents from Kimasala, Mushitala and Kabwela communities noted that they work or knew of colleagues and/or relatives who work at the mine as field officers (under conservation farming), miners, environmentalists and drivers as stated by a respondent:

> I work for Kansanshi mine under conservation farming. Through this, I am able to support my family.

The Kansanshi staff stated that they don't have any casual workers apart from those they had engaged at construction stages. This sentiment was also acknowledged by some of the members in the communities of interest. Some of those who no longer worked for the mine are into farming activities and charcoal production and selling of the same.

In Kabwela, Mushitala, Kimasala and Muzabula communities, 54% of the respondents are involved in farming in addition to other economic activities they do like charcoal 'burning' and selling and gardening, among others. Of those interviewed, Fig. 5.2 shows that 40% are involved in farming, 12% in charcoal burning and 8% as part-time workers in other people's houses, while another 8% run their own small businesses. Further, 5% work for Kansanshi mine, and 27% are involved in other income-generating activities such as welding and as maids and cleaners in the shopping malls, among others. It needs to be noted that 40% of those who were interviewed are involved in farming in addition to being involved in other income-generating activities.

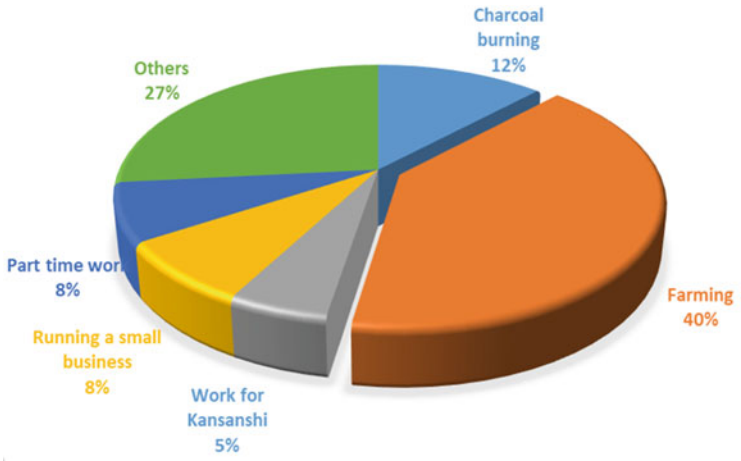

Fig. 5.2 Respondents' sources of livelihoods

Mixed responses were expressed in the communities with regard to employment, in so far as the impact of the company is concerned. Positive impacts in the form of some new job opportunities were identified, but community representatives felt these were largely limited. In all the communities, employment was highlighted as the main concern, with corruption, in-migration and lack of necessary skills to gain employment at the mine being noted as major barriers. The vast majority of skilled labour working for the company is sourced from outside the Northwestern Province – mostly from the Copperbelt Province, and if locals do succeed in getting the low-skilled jobs that seem to be available, such as cleaners and manual labourers, they are often paid low salaries working for contractors. They claim that their wages range between K1500 and K3000. It was also noted that there were remuneration disparities among workers despite them doing the same work. One would be remunerated K2500 while another is remunerated K4500 despite both doing the same work and even working together in the same section. This was as a result of people being engaged by different contractors. It was felt that there is need for a policy which can address the issue of 'equal pay for equal work at the mine'.

Those respondents who had a member of their household working at Kansanshi had something positive to say. For example, some noted that they manage to take their children to school and helped their relatives to start businesses from their wages.

5.3.3 Local Economic Spillovers

The study established that the Kansanshi mine, in addition to paying taxes and royalties and contributing to the Zambian economy, also developed a Local Business

Development Plan (LBDP) in 2011. Under this programme, they contract local suppliers and hold workshops with the North West Chamber of Commerce (NWCC) to assisting the attendees in meeting the mine's procurement and contract requirements. In the process, the company also trains NWCC members on the Zambian labour law, equator principals and the mine's safety standards. A total number of 108 participants attended workshops as at the end of the year 2010. The company has also built capacity among the micro, small and medium enterprises in the province through local business development workshops which have had about 1, 797 participants. These have been equipped with knowledge in areas such as writing of business plans, managing money, business choices and customer relations. A number of those who have attended these workshops were happy about their experience, and one of them stated:

> The course taught me to set aside some of my profits and use the remaining money for my home needs. This has really helped me as I have been able to build up a small capital amount.

Following the establishment of mining activities in Solwezi, there have been a number of other indirect benefits for the people such as installation of communication towers, makeshift grocery 'shops' and shopping malls, among others.

With the increase in the number of people coming to work in the mine, the demand for goods such as food and services (transport, accommodation) has also increased. As a result of this, those who are into agriculture have a 'ready' market for their produce. A non-governmental organization (NGO) representative stated:

> A marketeer knows that his or her merchandise are going to be sold. Malls have also come into the district – Foreign Direct Investment (FDI). People now have disposable income, not like those days.

In Kabwela, there is now a network tower which was not there before the mine was set up.

Apart from Mulenga community, the rest of the communities did not report having any serious problems as far as connectivity is concerned. They are able to communicate with their loved ones. It was also noted that MTN had a wide coverage in most of these communities.

Additionally, there is also a demand for accommodation due to the influx of people. This has led to more accommodation facilities being built which has led to some people earning a source of living from the same.

Even though people are constructing houses and generating an income, the influx of people had resulted in accommodation becoming quite expensive, plus it had increased pressure on infrastructure such as schools.

The local authority acknowledged the revenue it receives from the mine although they did not state the actual amount. Just like the local community, they also stated that the presence of the mine had a positive economic impact on the locals. Small- and medium-sized business enterprises, as well as farmers, were benefiting due to the population increase which has in turn broaden their market. Residents of Mushitala and Zambia compound talked of mineworkers being able to acquire assets such as houses, vehicles and farm lands. Considering most of the miners' low wages, those

acquiring such assets are those with qualifications such as degrees and are involved in skilled labour like accounts, geologists and metallurgists, among others. A grocery store owner (a respondent) noted:

> The majority of our customers work for the mine.

5.3.4 Conservation Farming

One CSR strategy being implemented by the Kansanshi mine is conservation farming. The Kansanshi mine initiated conservation farming in 2010. Funded by First Quantum through their non-profit Kansanshi Foundation and developed in partnership with Zambia's Ministry of Agriculture and Cooperatives, the conservation farming programme teaches community members how to grow their crops sustainably, averaging four times the yield of traditional cultivation methods. Under this programme, Kansanshi were providing the local community farmers with fertilizers, village chickens, pigs and goats in addition to training them in better farming methods. The local people have appreciated this initiative evidenced by those who have been trained and employed as field officers and the improvements in yields for those who have embraced the initiative. The FQML 2012 CSR report affirms that this initiative has contributed to an average fourfold increase in maize crop yields. A senior Kansanshi employee stated:

> We have trained more than 30 000 farmers in conservation farming.

The aim of this initiative was to enable farmers be self-sufficient from their initial subsistence kind of farming they were practicing. The company uses simple farming methods which are easily being understood by the community members. According to a representative from the conservation farming team, this programme is being seen as a model for sustainable agriculture in Zambia due to the improvements in yields for those who are using it. A respondent who works for Kansanshi mine noted that:

> Participants have learned to apply the simple techniques of conservation farming as they feed their families, earn extra income and gain newfound pride.

Through respondents, the study established that some of the target populace are those who grew up with limited education, coupled with few prospects for employment. Those who have benefited from this initiative have a positive view of it as noted by a respondent:

> For the first time, my daughter and son appreciated me as a providing father when the conservation farming initiative begun.

This initiative was widely appreciated by the communities in that they felt considered and thought of by the mine. For those who were displaced from their initial locations, this initiative helped them have improved harvests in that they were provided with fertilizers. The downside of it is that the programme ran for only

3 years to the disappointment of the communities especially those in Kabwela. They expected it to be a continual assistance as long as the mine operated. One resident stated:

> We need fertilizer, our yields are very bad. Without fertilizer, our maize crops only reach one meter.

The views of most Kabwela residents on their agricultural outputs were negative. To them, the mine has made them be worse than they were before. These people's predominant activity was agriculture in the fertile soils where they were before being relocated 'upstream'. To make matters worse, they have not benefited in terms of employment. This has greatly contributed to engaging themselves in charcoal burning which in the long run may lead to deforestation. From field observations, almost every 20–30 min, someone would be seen ferrying charcoal for sale along the road which connects Kabwela and Mushitala leading to the Solwezi Central Business District. This was also noticed along the road from Muzabula to Kimasala.

5.3.5 Health and Sanitation

The Kansanshi mine has undertaken a number of relevant initiatives and projects in communities surrounding the mine. The company has undertaken edutainment Health Road Shows since April 2009 with a view of sensitising communities on HIV/AIDS and other ailments such as malaria, cholera and sexually transmitted diseases. Door-to-door health checks are another initiative which the company has carried out with a team which includes peer educators, community nurses and nurse counsellors. These people who are carrying out this initiative have been trained by the Kansanshi mine. Some of the services under this initiative are voluntary counselling and testing, malaria tests and blood sugar tests. Those who need further assistance are referred to the Solwezi General Hospital. The mine has also sponsored equipment for Mary Begg clinic to support the delivery of health-related courses.

On the spot checks in the field revealed that the Kansanshi mine has drilled a number of water wells in order for communities to have access to clean water. They have also spearheaded an anti-malaria water purification campaign and a malaria prevention programme. They have also provided and facilitated the distribution of bed nets for every bed space especially for families who wear relocated to pave way for mine construction, renovated the high cost section at the Solwezi General Hospital.

There were mixed community views regarding healthcare. In Kabwela and Mulenga communities, for instance, the clinics were understaffed – each only had one health attendant and was not operating on a daily basis. For this reason, Kabwela community members have to walk a 5-kilometre distance to Mushitala to seek medical services. For Kimasala, according to a respondent who works at the clinic, the clinic had 18 health personnel, who were overwhelmed because on daily basis, especially on busy days, they have to attend to more than 200 patients. Some of the

most common illnesses being attended to in Kimasala are respiratory tract infections (RTI), malaria and diarrhoea. There was also a plea to expand the clinic block so that each department could have its own room and professional development of the health attendants in order to improve service delivery. Muzabula community has no clinic. The nearest health centres are Kimasala and Mashimpi. Apart from Mulenga community, the rest of the communities are sharing the boundary with the Kansanshi mine.

Kansanshi mine conducts regular environmental monitoring to measure ambient air, dust and noise levels on and in close proximity to the mine. Additionally, the company also gives high priority to water management issues given that the mine's location is upstream of Solwezi town. This has helped in dealing with any toxins which could have adverse effects on the environment and on people's health.

5.3.6 Education

First Quantum's corporate social responsibility initiatives take many forms, but the vital thread connecting all of them is education. When sustainability efforts provide opportunities to acquire new knowledge and skills, people gain the power to shape their own futures. FQML has undertaken a number of initiatives in this sector. First Quantum's support for public education is particularly important in Zambia, where literacy rates are among the lowest in Africa. The aspect of having low literacy rates is also elaborated in a Central Statistical Office (CSO) (2013) report which states that the Northwestern Province had an overall literacy rate of 63%. The adult literacy rate (i.e. for ages 15+) was just over 50%, while the figure for Solwezi was still lower at 43%. The company has operated a scholarship programme since 2006 to enable students to attend degree courses mainly in mining-related disciplines at Universities in Zambia, South Africa and Mauritania. A respondent who deals with CSR matters stated that as of 2012, the company had spent about US$ 319,950 in Zambia on the scholarship programme. A young metallurgist on the scholarship programme noted:

> My experience here has expanded my outlook. I have learned about different cultures and ways of doing business. The First Quantum Way allows for a flexible approach to the complexity of the mining process and I have decided to adopt 'Bolder, Smarter, Driven' as my personal credo.

FQML has also built a classroom block in Kabwela and helped complete a teacher's house in Kyafukuma. The teacher's house in Kyafukuma was started by the local community after they noticed that teachers lacked accommodation. It was during the building process that the community ran out of materials to complete the said house that the mine came in and assisted. This has contributed having teachers stay within the community unlike in the past when they used to shun the area due to lack of accommodation.

5.3.7 The Needs of the Community Around the Kansanshi Mine

Despite the fact that the company claimed to have built and renovated schools, clinics, accommodation for teachers and health personnel, some communities noted that there is more which the mine needs to do for them. When the respondents were asked what their priorities were in their communities, road network, educational and health facilities stood out while aspects such as electricity were the least. Figure 5.3 shows what the community needs are.

5.4 Conclusions

5.4.1 The Impact of Mining Activities on Communities

Mining activities had offered employment opportunities to the host communities and other economic 'spillovers' for income generation. Some of the economic spillovers were the increase of small businesses such as makeshift groceries, the establishment of shopping malls which have offered employment to the local people in addition to bringing goods and services to the people and the boom in the construction sector due to the high demand of accommodation facilities. The high demand of accommodation facilities is as a result of an influx of people into the area thereby having a strain on the available infrastructure. The study illustrated that the Kansanshi mine

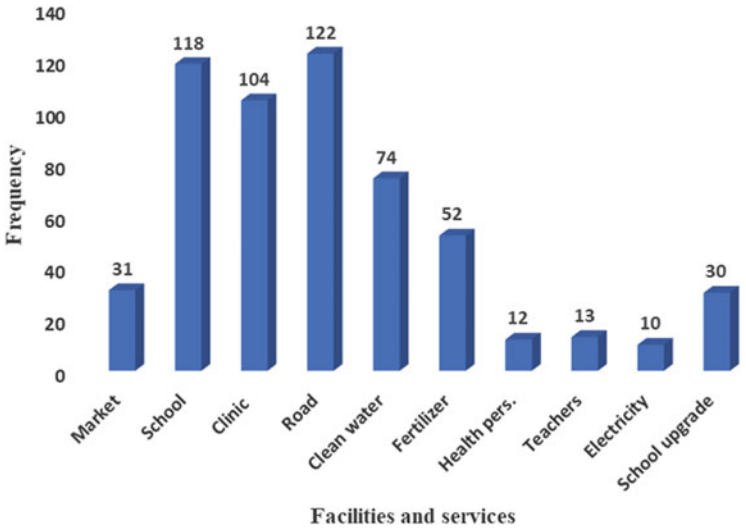

Fig. 5.3 Current local community needs

was engaging local suppliers of goods and services in addition to paying taxes to the government.

The study has highlighted the fact that locals, believing themselves to be the victims, had a natural tendency to expect tangible projects and services from mine developers. This feeling was particularly intense among host communities given what they had lost out such as farm lands during displacements could not be measured in monetary terms. Additionally, communities became dissatisfied when the mining company did not implement promises such as connecting them to the national grid within the specified timeline.

5.4.2 *Kansanshi Mine: Corporate Social Responsibility (CSR) Strategies*

The Kansanshi mine – through its CSR strategies such as conservation farming, building and renovation of educational and health facilities, provision of safe and clean water, educational sponsorships, promotion of village banking and maintenance and improvement of the road network – has had a direct socio-economic impact in the host communities. New Israel and Kabwela communities had been provided with a school and a clinic each. These initiatives resulted in the reduction of the distance community members were taking to access educational and health services. For New Israel, they also built for them a house for the headmaster – likewise in Kyafukuma – and another one for the clinical personnel. As a result of this, a headmaster and clinical personnel would live within the community, hence readily available to attend to the needs of the community. In Muzabula and Kabwela, Kansanshi mine drilled boreholes so as to provide clean water for the people. Before that, people – mostly women – would walk long distances in search of water leaving them with less time to attend to other tasks.

5.4.3 *The Prominent Needs of the Communities Surrounding the Kansanshi Mine*

In Kansanshi mine, despite having done that which has been stated in 5.2 above, there are still prominent needs in the host communities. To start with, as evidenced by the respondents and observed by the researcher, the road network was in a deplorable state. This resulted in taking as much time on the road from places like New Israel, Kabwela, Muzabula, Mulenga and Kyafukuma communities to the Central Business District. Additionally, fares were higher than normal due to the wear and tire of vehicles. During the rainy season (when the study was carried out), transport providers even doubled the fares for some destinations like Kyafukuma and Mulenga. This impacted negatively on commuters as they ferried their agricultural

produce like vegetables to the market and those who would commute on a daily basis for work.

After the road network, educational and health facilities came out prominently in second and third, respectively. Despite having built and or renovated some facilities, there are some services which these facilities were not able to provide. For example, most educational facilities would only cater up to Grade 7; hence, when children reached Grade 8, they were moving long distances to schools which would accommodate them. As a result of this, some pupils – especially the girls – would drop out of school. The long distance to school would, in some cases, contribute to teenage pregnancies and eventually cause a girl child to drop out of school. Similarly, most clinics would refer patients to the Solwezi General Hospital (SGH) for medical attention. Considering the distances from places such as New Israel, Kabwela, Mulenga and Kyafukuma to SGH, coupled with the deplorable road network, some patients would be reluctant to travel all the way.

5.4.4 Recommendations

The fact that corporate social responsibility is not well defined, there is need for clearly stated legal frameworks which should give clear guidelines on what mining companies ought to do for local communities apart from job creation. Additionally, upon paying taxes, mining companies take it that the government needs to provide services such as health and educational facilities to communities. On the other hand, the government expects the mining companies to do the same. For this reason, there is need for a law which can distinctively stipulate the roles of the government and those of the investor in community project implementations. Further, governments need not abandon social provisioning to mining companies, but rather, as findings in this study indicate, they should pursue programmes of being partners with the mining companies. This can be done by involving the mining companies and the local communities so as to establish responsibilities, costs and benefits and also to sign tripartite community development agreements.

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Chapter 6
Zambia's Mining Industry: A Closer Look at the Corporate Approaches to Sustainable Development of Konkola and Mopani Copper Mines

Inonge Mutale, Isabel B. Franco, and Summer Lamont

Abstract Transnational Corporations (TNCs) are considered to be one of the most important actors in the global economy and now occupy a position that is more influential than ever before. In their pursuit to make profits, most TNCs have ended up expanding their business to developing countries. Developing countries have increasingly ended up providing a "haven" for TNCs, with incentives such as reduced regulation of corporate activity, lower tax rates and reduced restrictions on labour and environmental protection in exchange for access to foreign direct investment (FDI).

There are over 65,000 TNCs operating in developing countries, accounting for approximately two-thirds of international trade. It is argued that TNCs, through FDI, are able to open up entrepreneurial opportunities, provide cleaner technology and better management practices as well as create employment opportunities. It is therefore contended by some developmental international organisations that TNCs are better suited to foster sustainable development in resource-rich but poverty-stricken developing countries.

Mining is the world's fifth largest industry and by its nature one of the most environmentally destructive activities. In Zambia, mining is the largest sector of the economy accounting for close to 80% of the country's export earnings. The efficacy of the mining industry in contributing to economic growth and sustainable development forms part of the debate about the role of business in development. It is therefore important to understand the corporate approaches employed by various mining TNCs in fostering sustainable development.

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Keywords Mining · Sustainable development · Transnational corporations · Foreign direct investment (FDI)

6.1 Introduction

Transnational Corporations (TNCs) are considered to be one of the most important actors in the global economy and now occupy a position that is more influential than ever before. In their pursuit to make profits, most corporations have ended up expanding their business to the developing world. Developing countries have increasingly ended up providing a "haven" for TNCs with incentives such as reduced regulation of corporate activity, lower tax rates and reduced restrictions on labour and environmental protection in exchange for access to FDI. TNCs tend to seek economic efficiency and economies of scale. As such, TNCs migrate from those countries which have strict regulations for business to countries with more permissive legislation.

With these incentives to engage in international trade, it is perhaps not surprising that there are over 65,000 TNCs, accounting for approximately two-thirds of international trade. Madeley (2003) notes that most FDI is dominated by TNCs. Developing countries have tried to attract FDI with the belief that their economies will be positively impacted. Frequently, governments in developing countries lack access to the necessary capital to invest in industry, for example, in developing the manufacturing or mining industries. To address this, governments in developing countries have historically been amenable to meeting the regulatory demands of TNCs. The absence of domestic capital increases the reliance on capital from TNCs with the goal of increasing productivity and accelerating growth and development.

Neoliberal economists believe that FDI opens up entrepreneurial opportunities and provides cleaner technology and better management practices. Additionally, FDI creates technology spillovers, assists human capital formation, contributes to international trade integration, helps create a more competitive business environment and enhances enterprise development. As a result, this contributes to economic growth and poverty alleviation in developing countries (OECD 2002). The position of many international development organisations has therefore been that TNCs are better suited to foster sustainable development as FDI has both economic and non-economic benefits. According to the OECD (2002), FDI may help improve environmental and social conditions in the host country, for example, by transferring "cleaner" technologies and leading to more socially responsible corporate policies. TNCs have been associated with cleaner and lower levels of energy in Mexico, Venezuela and Cote d'Ivoire. As such, the need for TNCs to participate in fostering sustainable development is an idea that has gained prominence in recent years.

The need for corporations to participate in fostering sustainable development stems from the growing public concern that private corporations should not only be concerned with meeting the needs of shareholders but also operate as good corporate citizens and socially responsible organisations (Rondinelli 2007). This criticism has

most often been targeted at corporations with large environmental and social footprints for their poor human rights, labour and environmental records. In response to this, corporations have taken up various approaches to help foster sustainable development in both developed and developing countries. Rondinelli (2007), however, notes that these initiatives are more important in developing countries due to hazardous environmental conditions, social conditions and non-existent or poorly implemented regulatory protections. Furthermore, the Sustainable Development Goals (SDGs) represent a comprehensive plan of action at the international level for equitable, socially inclusive and environmentally sustainable economic development that is based on the premise that sustainable development should not only be participatory and inclusive but also non-discriminatory, so that "there is no one left behind". It is believed that TNCs have a role to play in implementing SDGs as they relate to development (Kolk et al. 2017).

Informed by this context, this research will seek to address the following objectives: (1) to assess the contribution of mining to the development of Zambia; (2) to assess the approach that mining TNCs are taking in pursuing the Sustainable Development Goals; and (3) to evaluate the extent to which these approaches are in line with the expectations of international development agencies. This chapter begins with a review of the literature on transnational corporations and the mining industry and then looks at the role of mining in achieving the Sustainable Development Goals and the contribution of mining to the Zambian economy. This is followed by a section on the methodology before discussing the final results. The chapter finishes with recommendations for corporations in the mining industry in Zambia.

6.2 Transnational Corporations and Mining

Mining is the world's fifth largest industry and by nature one of the most environmentally destructive. The industry has come under increased scrutiny in recent years, particularly as TNCs have increasingly moved to the global south where the opportunities for resource exploitation are larger and the mining industry is less regulated. According to Madeley (2003), since the beginning of the 1990s, 70 countries, including 31 in Africa, now have TNC-controlled mines. However, there is still considerable debate about the role of business in development and the efficacy of the mining industry in contributing to economic growth and sustainable development (Whellams 2007).

Mainstream economists and policy makers presume that mining offers developing countries a way in which they can achieve sustained economic growth (Davis and Tilton 2005). The importance given to the mining industry is best captured by the International Council on Mining and Metals (ICMM) in the following statement: "Insofar as production and income generation are critical forces in poverty reduction, mining has an increasingly significant role to play" (ICCM 2012: 4). The argument for the positive impact of mining in developing countries likely stems from success

stories like Canada, the United States and Australia (Whellams 2007). Interesting counterarguments to this claim are those made by Power (2002) who argues that this "reasoning by historical analogy" is overly simplistic and should not be used as grounds for the promotion of mining in developing countries. He explains that equal to the role that mining played in the economic development in the three countries, there also existed "unique conditions" that facilitated development. Some of the "unique conditions" included high levels of institutional capital, large internal national markets and scarce labour. Power (2002) further argues that the dynamics of the world economy have changed. For instance, there has been a "disintegration" of the mining industry and the local manufacturing industry due to cheaper transportation costs and the advent of large transnational mining companies. This means that minerals do not get beneficiated in developing countries as they can easily get shipped for value addition in developed countries. This in the process hinders knowledge and technology transfer and investment in host countries' economies. Other than this, Power (2002) concludes that large mines in developing countries are now owned and operated by TNCs, meaning that much of the wealth derived from mineral extraction is often repatriated rather than invested locally.

Contrary to what is being advertised by economists, the reality according to Power (2002) is that mining has not supported sustained economic development in developing nations over the last several decades. In the same vein, Madeley (2003) notes that mining in developing countries has instead been associated with creating havoc on the lives and culture of people who live in the area of the mine. For instance, about 100 million people (mostly in developing countries) have been removed from land they lived and farmed during the last hundred years. The nature of mining is, according to Davis and Tilton (2005), one that puts local communities most at risk of environmental and social ills, while the benefits flow largely to the central government and those outside the country. Another example is the case of Cajamarca, home to Yanacocha, the world's most profitable gold mine, located in Peru's third poorest region, with 74.2% of the population living in poverty. According to Whellams 2007), "... in most cases the boom in mining investment in the 1990s was accompanied by a gradual increase in [the] level of extreme poverty in regions where mining projects were developed". This statement is perhaps what best captures what is currently occurring in most mining regions, especially in developing countries. In an effort to address the condition of resource-rich but poverty-stricken countries, corporate approaches to sustainable development position TNCs as actors with an active role in addressing issues in developing countries.

6.3 The Role of Mining in Achieving Sustainable Development

The mining and minerals industry has come under tremendous pressure to improve areas impacted by its operations including social, developmental and environmental impacts. There is a growing expectation that companies conform to higher standards of behaviour achieving outcomes outside just profits for stakeholders (Mining and Minerals and Sustainable Development (MMSD) 2002). Concerns about the industry have centred around the fact that mining is inconsistent with sustainable development, it offers no lasting benefits to communities or countries, there's often exploitation of the poor and it has a large environmental footprint among other considerations (Chevalier 2010).

Despite the many numerous negative impacts, mining also involves benefits that go beyond just taxes and mineral royalties. It offers opportunities for direct and indirect employment and social and physical infrastructure (Chevalier 2010). Through their direct operations, mining companies can generate profits, employment and economic growth in developing countries. Furthermore, by creating partnerships with government and civil society, they can ensure the benefits of mining extend beyond the lifespan of the mine, so that the mining industry has a positive impact on the natural environment, climate change and social capital (United Nations Development Programme (UNDP) 2021). Sustainable development in the mining sector would therefore entail transforming natural resources to other transferable assets while creating sustainable benefits that address social needs and protect the environment (Chevalier 2010).

Sustainable development is most often defined as a general worldview, according to which, people should strive to fulfil their needs in a manner that doesn't endanger the ability of future generations to fulfil their needs. Sustainable development in this sense means protecting the richness of the world's resources by using resources in a way that doesn't exhaust them but leaves equal opportunity for future generations to benefit from them as well. The sustainable development concept therefore has a value dimension, stating that no population has the right to exploit the world's resources for the satisfaction of its needs much less its wants and ambitions. This, however, can only be achieved through the integration and acknowledgement of economic, environmental and social concerns throughout the decision-making process (Emas 2015). In the same vein, Dubinski (2013) states that the implementation of sustainable development means the integration of activities that ensures economic growth and the protection of natural resources and the environment while meeting varying stakeholder needs. It is for these reasons that mining companies are being looked at as potential leaders in achieving the SDGs (UNDP 2021).

The SDGs are a set of 17 goals which have 169 targets and 230 indicators and run for a period of 15 years from 2015 to 2030 (UNDP). The SDGs are all-inclusive, covering different core issues such as energy, water, employment, poverty alleviation, environmental protection and health. According to the UNDP, the argument for having mining companies commit to the SDGs is to benefit from improved

relationships with governments and communities and to have better access to financial resources. It is believed that those that fail to engage meaningfully with the SDGs will put their operations at risk in the short and long term. Indeed, the value of a "social license to operate" is increasingly recognised within the mining industry. Unmitigated negative social impacts have the potential to result in negative publicity and increased litigation and reputational damage and can delay, prevent or close down mining operations in existing and prospective areas as a result of community concerns.

In relation to Zambia, the government considers the 2030 Agenda for Sustainable Development a national agenda. This is aligned with the developmental challenges that the country is facing and is currently trying to address. In addition, the SDGs have been mainstreamed into the seventh National Development Plan-Zambia's current development plan of action with75% of the SDGs' applicable targets being fully aligned with the national plan and 11% being partially aligned. Sustainable development is at the centre of all economic and social policies that the country develops (Ministry of National Development Planning 2020).

This chapter will examine two case studies of mining companies addressing SDGs in Zambia. These cases involve corporate approaches aimed at addressing SDG 3 Health and Wellbeing and SDG 4 Education. SDG 3 focusses on ensuring healthy lives and promoting well-being for all, at all ages. This is achieved by providing access to health facilities and services, such as maternal and reproductive care so as to reduce maternal and infant mortality. SDG 3also aims to end epidemics of AIDS, tuberculosis, malaria and other water-borne and communicable diseases. It is the hope of member states to achieve universal health coverage in areas such as financial risk protection, access to quality essential healthcare services and access to safe, effective, quality and affordable essential medicines and vaccines for all by 2030. SDG 4 focusses on ensuring inclusive and equitable quality education and promotes lifelong learning opportunities for all. It also focusses on early childhood development, care and pre-primary education so that children are ready for primary education. SDG 4 further seeks for both women and men to have access to affordable and quality technical, vocational and tertiary education, including university. The goal generally seeks to address issues of educational quality to improve literacy and numeracy (UN, 2017). The contributions of mining towards education and health could help governments in developing countries to achieve this goal.

6.4 Sustainable Development Guiding Standards for Mining Companies

International development organisations such as the International Council on Mining and Metals (ICMM), International Organization for Standardization (ISO) and World Bank have developed guidelines which could be adopted by corporations to help foster sustainable development in their countries of operation. For instance,

ICMM brings together 23 mining and metal companies with a mandate to promote sustainable policies and practices in mining and mineral production. The organisation does this through ten principles under the Sustainable Development Framework (SDF) which participant countries and companies must strive to fulfil. Some of the principles proposed include the obligation for mining companies to contribute to the social, economic and institutional development of the communities in which they operate, the integration of sustainable development considerations into the corporate decision-making process and implementation of effective and transparent engagement with stakeholders (ICCM 2003).

The International Organization for Standardization (ISO) was developed in 2010 (ISO 2010). ISO developed the ISO 26000 Standards which provide guidelines for businesses that want to operate in a way that is socially responsible. The guidelines attempt to harmonise the socially responsible behaviour of enterprises at the international level. The standards address seven core areas of social responsibility which include organisational governance, environment, fair operating practices and community involvement and development among others (Mulenga 2017).

The World Bank also has a set of guidelines called the Equator Principles (EPs). The principles are a risk management framework adopted by financial institutions for determining, assessing and managing environmental and social risk in projects. The guidelines are modelled on sustainable development policies and focus on the management of environmental and social concerns. Companies that fail to comply with the EPs do not get project funding or corporate loans. The principles also promote engagement with different stakeholders impacted by a particular project (International Finance Corporation (IFC) 2021).

6.5 The Contribution of Mining to the Zambian Economy

The mining industry has been the economic backbone of Zambia since the opening of the first commercial mine in the early 1900s (Mining in Zambia 2020). The industry accounts for over 70% of the country's total export earnings and 12% of gross domestic product (GDP) (IMF 2017; Zambia Extractive Industries Transparency Initiative Stephens, 2018). The country is richly endowed with a vast amount of mineral resources such as copper, cobalt, gold, nickel, lead, silver, uranium, zinc and numerous precious and semi-precious stones. Mining activities are predominantly found on the Copperbelt and Northwestern Provinces, although minerals are dotted all over the country (Mwaanga et al. 2019). Despite its mineral endowment, the mining sector has been dominated by copper extraction which has dwarfed the exploitation of other mineral resources such as gold and gemstones and industrial minerals (Banda 2016).

It is undeniable that mining brings a lot of benefits to the country such as direct employment, increased government revenues and GDP, local infrastructure and linkages to other sectors of the economy. For instance, the social investment of only four companies was in excess of US $70 million in 2012. This is equivalent to

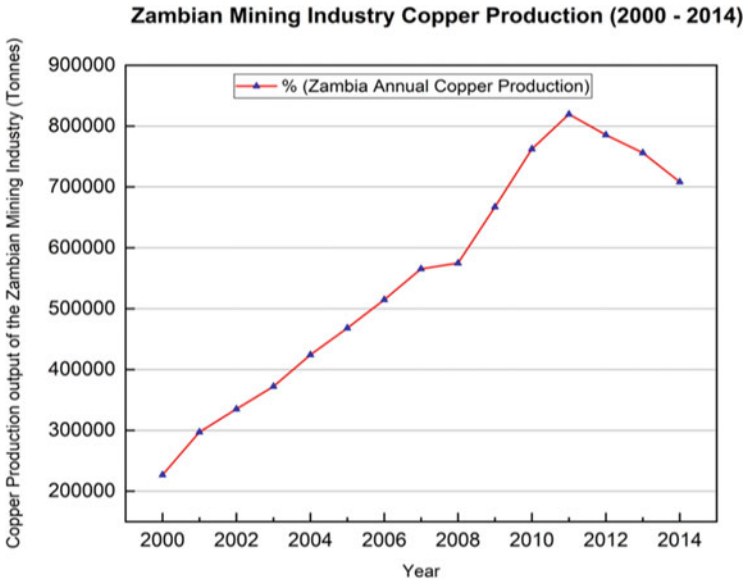

Fig. 6.1 Zambian mining industry copper production from 2000 to 2014 (source of data: IMF World Economic Outlook WEO Database, 2017)

0.3% of Zambia's 2012 GDP which was about US $ 24.94 billion (Chibuye 2016). Most of the social spending was targeted towards health with 43% allocated to the health sector. Other sectors such as infrastructure and education received 24% and 14%, respectively. The rest of the economy received the remaining 19% of the social investment funds (Central Statistics Office (CSO) 2012).

Zambia has experienced increased copper production owing to massive investments in the mining industry (Fig. 6.1). Some of the factors triggering these investments can be attributed to the macroeconomic policy framework adopted under the heavily indebted poor countries (HIPC) initiative (Cheelo 2008). Additionally, the increased world base metal prices experienced in 2001, influenced by demand for oil and metals in countries like China, Brazil, India and other emerging markets, played a significant role in increasing the copper output from Zambia at the time. This meant that the country not only sold its copper at high prices but also had increased production. Copper production output increased from 226,804.84 t in 2000 to 468,148.38 t in 2005, signifying output growth of 241,344.00 t in a period of 5 years. These macroeconomic gains were interrupted by the 2008 economic crisis and the temporary fall in copper prices. For 2007 and 2008, the production output was maintained at almost 565,550.37 t and 574,900.97 t, respectively. The year 2011 recorded the highest copper production output, with 819,574.32 t due to large new investments both in the Copperbelt Province and Northwestern Province. Demand for commodities had reduced by the end of 2011; this led to a drop in production output to 785,641.86 t in 2012 which continued dropping through 2013 and 2014 to

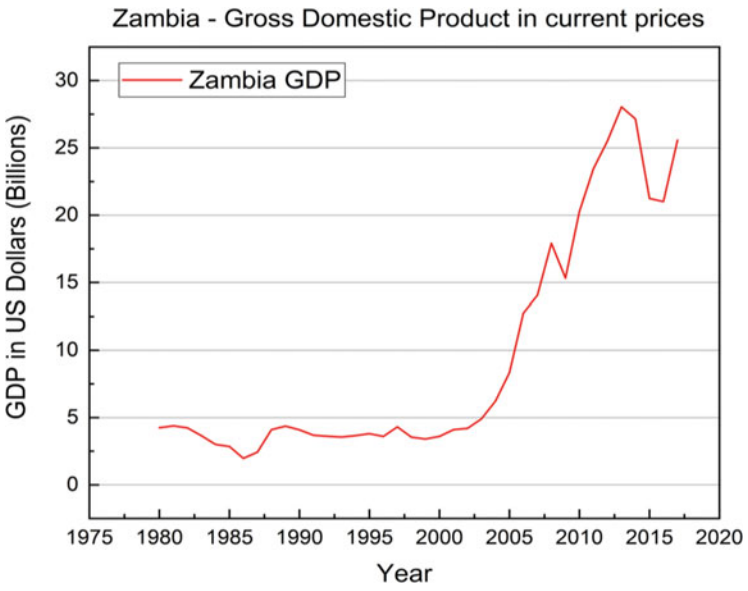

Fig. 6.2 Gross domestic product in current prices (source of data: IMF World Economic Outlook WEO Database 2017)

708,258.3 t. The 2014 copper production output was the lowest recorded in a period of 5 years (Fig. 6.2).

The economy of Zambia has therefore experienced substantial growth since 2000, for example, when the country produced 226,804.84 t in 2000, the GDP was US$3.6 billion, while in 2005 when it produced 468,148.38 t, the GDP was US$8.33billion. This shows GDP growth of US$ 4.73 billion against copper output growth of 241,344.00 t in a period of 5 years. The argument is that the positive performance of the economy is directly related to increased investments in the mining sector. Figure 6.2 shows that the increase in copper production has had a direct bearing on Zambia's GDP.

Due to the significance of the sector, the government has continued to promote investment in the sector. However, there has been concern about whether there are trickle-down positive effects on the local communities hosting these mining companies. The negative effects are many, including environmental degradation, human rights abuses, pollution and general underdevelopment of local communities. This state of affairs has put a strain on the relationship between the mining companies and other stakeholders such as the local communities themselves (Mulenga 2017). It is against this backdrop that the chapter will analyse the corporate approaches of two major mines on the Copperbelt in relation to their contribution towards community development.

6.6 Methodology

Objective 1: Information has been collected from government publications and international organisations through a desk review in order to assess the contribution of mining to the development of Zambia. Information was collected from different websites such as the Ministry of Finance and National Planning, Ministry of National Development Planning, Central Statistics Office and the International Monetary Fund, among others.

Objectives 2 and 3: This chapter used a thorough desk review to assess the approach that mining TNCs are taking in contributing towards sustainable development goals. An evaluation of the extent to which these approaches are in line with developmental strategies developed by international organisations such as the International Council on Mining and Metals (ICMM), the World Bank and International Organization for Standardization (ISO) was done using a comparative analysis approach.

6.7 Discussion

This section discusses the findings of this research chapter and is divided into two parts. The first part provides information on the approaches of Konkola and Mopani Copper Mines towards health and education in the local communities where they operate. The second part highlights how these approaches fit into the expectations of international development organisations and international standards.

6.7.1 Konkola Copper Mine (KCM)

Konkola Copper Mine is located on the Copperbelt, Zambia, and is the largest copper mining company in Zambia. It is owned by Vedanta Resources after acquiring it in 2004 from Anglo American Corporation. The mine runs an open pit and underground mines at Nchanga and Konkola. Konkola Copper Mines (KCM) seeks to give back to the community by ensuring that the impact of its investment goes beyond taxes. Konkola has been engaging in community impact prior to privatisation. Some of their initiatives include the development of hospitals, schools, sustainable livelihoods and other social programmes. KCM has spent over US$ 150 million on community development activities (Mulenga 2017).

6.7.1.1 Health

Social spending by Konkola Copper Mine towards health focusses on its employees and the wider community. The mine is in charge of operating two hospitals and eight clinics that were inherited prior to Vedanta's acquisition of the mine. Free medical services are provided to more than 63,000 people annually from across Zambia, including KCM employees and their families. KCM further provides subsidised healthcare to the general public. KCM supports a number of health initiatives such as:

1. Operating an eye screening programme: this initiative was carried out between 2008 and 2012; the initiative provided 15,000 reading glasses to school children and elderly people and conducted 171 cataract eye operations.
2. In 2008, the mine helped with providing artificial limbs to 176 amputees across Zambia.
3. In 2012, KCM established Zambia's first private sector programme delivering permanent access vascular surgery for haemodialysis treatment for patients suffering from kidney disease.
4. The mine has been actively supporting anti-malaria programmes involving an integrated vector management approach through indoor residual spraying (IRS) of over 40,000 households per year since 2004. The programme has moved to providing mosquito nets to households.
5. In 2007, KCM launched its workplace HIV/AIDS policy to mitigate effects of HIV/AIDS among employees. The initiative has since been extended to communities around KCM operation areas.

6.7.1.2 Education

Konkola Copper Mine inherited two primary schools in 2005 when it took over the mine from ZCCM. The primary schools had a total capacity of 650 pupils; these have now been expanded into secondary schools through investment infrastructure and teaching staff. The schools now have 2000 students. The mine also provides Scholastic Excellence Award scholarships for the top 15 to 20 students to study full degree programmes.

The mine has other investments in education which include the following:

1. A computer literacy programme that has been running since 2010. KCM has provided 410 computers to government-run schools. This project has impacted up to 7000 students. The project has since been adopted by the government as a national policy (Mulenga, 2017).
2. KCM runs Nampundwe Primary School near Lusaka, which has been converted into a high school and an examination centre. This was achieved through the construction of 10 classroom blocks as well as two science laboratories which doubled the enrolment to 1700 in 2013.

3. Konkola Copper Mine supported the government through the construction of classrooms in Chingola. Nine classrooms were constructed in three government-run schools, helping more space for students.
4. Konkola Mine invests in school hygiene infrastructure in order to improve hygiene as well as enhance school attendance. So far KCM has installed boreholes in ten government-run schools, as well as toilet facilities for each school.
5. KCM has run a scholarship programme since 2007 which has so far awarded 302 students with scholarships to study in a number of fields, including medicine, mining and business courses in the United Kingdom, Australia, India, Namibia, Kenya and Zambia. This programme covers employees and their dependents.
6. KCM is in charge of Kitwe Trades School which is one of the largest vocational training centres in Africa; the school provides artisans with skills that are critical for the mining sector and trains an average of 200 students annually (Chibuye, 2016).
7. The mine supports early childhood development programmes through education. In line with this, KCM invested in building day care centres in Chililabombwe and Chingola which cater for 320 children of local marketeers. The centre provides these children with meals, uniforms and education.

6.7.2 Mopani Copper Mine (MCM)

Mopani Copper Mine PLC is an integrated copper and cobalt producer located on the Copperbelt. The company is owned by Carlisa Investments Corporation (90%) and Zambia Consolidated Copper Mines Investment Holdings (ZCCM-IH) (10%). Carlisa Investments Corporation is jointly owned by Glencore Plc (81%) and First Quantum Minerals Ltd. (19%). Effective shareholding in Mopani by Glencore and FQM is therefore 73.1% and 16.9%, respectively (Chibuye 2016). Mopani is now owned solely by the Zambian government as of January 2021 (NS Energy 2021). Mopani is located in Kitwe and Mufulira. The mining company comprises an underground mine, a smelter, concentrator, refinery and associated engineering and support facilities and covers a mining licence area of 19,101 ha (Mopani Copper Mine).

Mopani Mine like KCM has been implementing corporate initiatives to better the lives of local communities since 2000. The company has invested over US$200 million in various community projects under its corporate social programmes since it began (Phiri 2014). Mopani spends about K85 billion per annum on its social spending (Gurská and Válová 2013). Some of this spending is towards health and education.

6.7.2.1 Health

In order to improve the health and well-being of its employees, their families and the community at large, Mopani has invested in the following:

1. Mopani Copper Mines has invested in the renovation of Kankoyo Government Clinic to improve the health status of the people in the community at a cost of K 116, 000 in 2012 (Nguvulu and Kaonga 2015).
2. *Running of* an ISO-certified hospital in Wusakile Hospitals.
3. *Supporting* 14,000 people on HIV/AIDS care and antiretroviral therapy and has provided free VCT services to over 45,000 since 2003.
4. *Protecting* over 30,000 households from malaria annually through IRS (Gurská and Válová 2013).

6.7.2.2 Education

The mine has invested in education to improve the literacy levels of its employees and the people in communities by:

1. Constructing a classroom block at Muleya Winter School and Mufulira Rehabilitation of Ablution Block at Kakoyo Basic School in 2012, costing K40, 000 and K42, 000, respectively (Nguvulu and Kaonga 2015).
2. The mine established the Mufulira Central Trades College (MCTC) in 2014 which is accredited by TEVETA. Mopani also sponsors its employees to attend other trade institutions (Mulenga 2017). The employees such as mine captains and riggers are trained to upgrade their skills to meet modern technological needs (Mulenga 2017). The mine spends over K1.2 billion on staff training and development annually (Gurská and Válová 2013).
3. The company sponsors school leavers to attend their trade school.
4. The mining company also manages Trust Schools both at primary and secondary level in Mufulira and Kitwe. It is currently running two primary and two secondary schools at each site (Nguvulu and Kaonga 2015).

6.8 Corporate Approaches in Relation to International Standards

It is clear from the two case studies that now more than ever companies are looking to contribute to sustainable community development, albeit with different motivations. The belief that there exists a win-win solution for a company that looks not only after the needs of its shareholders but also that of its stakeholders has gained prominence. The call to embrace responsible business by international development bodies has caused many corporations to embark on such practices.

International standards place emphasis on the need for an organisation to act in a socially acceptable manner in terms of stakeholder engagement and environmental protection, among other factors. The standards or principles do however lack proper mechanisms for ensuring that organisations act in a socially acceptable manner. Secondly, they are merely guidelines which an organisation can choose to adopt and don't provide explicit requirements for implementation. In relation to the standards, it can be said that the approach of Konkola and Mopani Copper Mines meet international standards. The challenge, however, is with measuring the extent of the impacts in relation to achieving the Sustainable Development Goals.

6.9 Conclusions

The corporate approach of Konkola and Mopani Mine is that of random haphazard donations to enhance community development and contribute towards achieving the Sustainable Development Goals. The companies have no guiding framework to help with their social investments but do it as the need arises. As such, while the mining companies may contribute towards the SDGs, this contribution might not be consistent, thus failing to achieve the set objective for which the donation was intended. In order to have a meaningful contribution towards the SDGs, mining companies should consider the following:

1. Establishing a corporate governance structure – this will help with mainstreaming regulations, rules and policies that increase transparency between firms and their stakeholders (Abe and Franco 2018), thus increasing the impact of the social initiatives implemented. Corporate governance provides the structure through which company objectives are set, attained and monitored. It should comprise elements of legislation, regulation, self-regulatory arrangements, voluntary commitments and business practices that are tailored to the specific circumstances, history and tradition of the host country.
2. Increase investment in capacity-building – philanthropic contributions are less likely to cause long-term sustainable development compared to investments in social development projects that are tailored to improve the capacity of community members. In as much as haphazard contributions seem to cause some developmental impact, this is usually short-lived. In order to ensure that host communities benefit on a long-term basis through social investments, companies should ensure that they invest money in projects that enhance capacity-building and are aligned with the local development plans of the government. In this way, host communities are guaranteed a way of being self-sufficient even after the mine closes.

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Chapter 7
Legislating Corporate Sustainable Development Agreements as a Corporate Social Responsibility Response for Mining Communities in Zambia: A Case Study of Kabwe Lead-Zinc Mine, Zambia

Ruth Hachitapika Chibbabbuka, Jewtte Masinja, and Isabel B. Franco

Abstract The mining legacy in Zambia has seen the rise and fall of towns and cities built around the mines which flourish when the mine is in its operational phase but perish once the mine closes. Sustainable development initiatives through corporate social responsibility frameworks have been formulated for community development requirements in mining laws for resource-rich countries to implement in their countries. A research study was established to investigate the effects of the closure of Kabwe lead-zinc in Zambia, on the local community in the context of sustainable development, and examine the laws and policies that affect the mining sector in the country. This was to ascertain the impact that these have on communities adjacent to mining operations, across the mine life cycle, and propose what legal reforms can be enacted to actualize the concept of sustainable development through corporate social responsibility initiatives in the mining communities. A mixed research approach was adopted using both the quantitative and qualitative methods. Purposive and snowballing sampling techniques were used to select respondents. A total of 100 questionnaires were administered and the study received a response rate of 79%. Closed and open questionnaires, focus group discussions and interview guides were used to collect data from respondents. The study revealed that due to lack of laws on the sustainable development of the mining community at the time of the closure of the mine in Kabwe, economic activities dwindled and most former mine workers have ended up being engaged in other activities, mostly agriculture, to earn

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a living. The study also revealed the need to have laws in place to regulate the mine closure in terms of benefits but revealed a general lack of understanding on the concept of sustainable development amongst the local community. The study recommended the need for developing an advocacy strategy on the concept of sustainable development, as well as detailed examination of the enforcement mechanism and laws related to sustainable development in mining from which appropriate regulatory amendments can be promulgated and enforced.

Keywords Legal reforms · Sustainable development · Advocacy · Ombudsman

7.1 Introduction

The research presented in this chapter aimed to explore the effects of the closure of the Kabwe lead-zinc mine on the community in the context of sustainable development. Likewise, it examined the laws and policies that affect the mining sector in Zambia so as to ascertain the impact these have on communities adjacent to mining operations throughout the mine life cycle. This chapter also proposes that legal reforms be enacted to concretize the concept of sustainable development in the mining communities.

It is a harsh truth that communities around mines in Zambia sink into a state of abject poverty once the mine closes, as all opportunities of economic and socio activity disappear with the mine closure. This scenario has replicated itself in various communities in the mining towns of Zambia and in particular in Kabwe where a lead-zinc mine once operated. This chapter focusses on the Kabwe experience. Although the law in Zambia adequately provides for the planning of a mine from exploration right through the operational phase and eventual closure of the mine, what seems to be clearly lacking is the planning for the sustainable development of the community economically and socially, after the closure of the mine, and then ensuring that these laws are enforced. The benefits that accrue to a community where a mine operates are apparent, as during its lifetime jobs are created, and business opportunities arise in terms of supplies and services to the mines. However, once the mine closes, all these opportunities disappear and leave the members of the community in a dire situation, as this case study of the Kabwe lead-zinc mine will show.

This chapter shows that the economic, social and environmental decline of the community in Kabwe is mainly attributable to the lack of a socio-economic closure plan at the time of mine closure. This may also be due to scarce transdisciplinary and participatory projects that involve academia, the private sector and government organisations. Research findings show that a nuanced attentive approach needs to be paid to sustainability science in the African region (Gasparatos et al. 2017). Scarce attention has been devoted to the achievement of environmental issues with the exception of a few isolated projects. Evidence also shows that despite current attempts to contribute to the achievement of sustainable development, work needs to

be done to meet regional sustainability needs that remain unaddressed (Franco et al. 2018a, b).

Further and more specifically, it is attributable to the lack of a legal framework that was not only regulated but enforced to guide the mine and the community on the measures that needed to be put in place to ensure that the sustainable development of the mineral resources was attained economically, socially as well as environmentally, beyond the life of the mine. It is proposed that legal reforms can address this gap, so as to provide for practical guidance and implementation measures that can contribute towards sustainable development. Such measures could include the legislation of corporate social responsibility in a harmonized legal framework, as well as the creation of a complaint and investigative body such as an Ombudsman, in relation to the mining sector that will hold mining companies accountable to set goals and targets, as agreed with the community, for areas of prioritization in terms of sustainable development. A harmonized legal framework could provide for cohesion across the ministries and authorities that regulate mining. Coordination in the manner in which investors in the mining sector carry out corporate social responsibility activities would also be structured, in line with government policy, on attaining sustainable development in the mining sector and beyond.

This chapter is divided into four sections as follows. After this introduction, Sect. 7.2 examines the socio-economic impacts of the Kabwe lead-zinc mine. This examination is presented through an outline of the research design and methodology employed for the given context of the case study. This section is wrapped up by the literature review. Section 7.4 is dedicated to a discussion of the findings obtained from the research and culminates into recommendations. Ultimately Sect. 7.5 renders a conclusion that legal reforms are necessary in the current dispensation.

7.2 Research Design and Methodology

The methodology for the research questions was a single, descriptive and analytical case study of the Kabwe lead-zinc mine. A mixed method research approach was adopted using both the quantitative and qualitative methods. Purposive and snowballing techniques were used to select respondents. A total of 100 questionnaires were administered to former miners, and a response rate of 79% was achieved. Closed and open questionnaires, focus group discussions and interview guides were used to collect data from respondents in a focus group discussion and key informants whom included three officers from the local council in Kabwe; two doctors from Kabwe General Hospital and Kabwe Mine Hospital, respectively; a Church leader from the United Church of Zambia; a teacher from a secondary school in Kabwe; an officer from Kabwe Chamber of Commerce; an officer from Kabwe Farmers Association; a Chief Engineer from the Ministry of Mines and Resource Development; and a Chief Draftsman at the Ministry of Justice. Apart from books, a total of 65 papers were read, and 36 databases were consulted for the literature review.

7.3 Literature Review

Mining has been the mainstay of the economy in Zambia for several decades now. For many African countries, Zambia included, mining has contributed to significant economic gains in terms of contribution to the gross domestic product (GDP) (Frederiksen 2010; Zambia Extractive Industries Transparency Initiative 2019). Despite accounting for 75% of all export earnings (Ministry of Mines and Mineral Development 2016), and contributing to 26% of the government revenues, the communities around the mines do not seem to have received socio-economic development which is sustainable beyond the lifespan of the mining activities (Frederiksen 2018). It has been acknowledged that resource extraction and production in many parts of Africa have not fostered corresponding economic, social and environmental development and growth for citizens (Kumah 2005). It is starkly evident therefore that there remains a significant gap between the quality of life of the community whilst the mine is operating and after mining operations cease. Overcoming the age old conflict of the development of resources and the distribution of impacts and benefits is crucial in socio-political and social-economic terms. The World Bank Extractive Industries Review concluded that extractive industry investments only foster sustainable development if strong safeguards for environmental, social and human rights aspects, amongst other conditions, are in place (Farrell et al. 2011). Sustainable development requires net and equitable benefits and the building of social capacity for the affected communities that continue throughout and beyond the closure of a mine (Jenkins and Obara 2008).

Adam and Simpasa (2010) argue that the central economic challenge facing Zambia at the time of independence and the central challenge now and in the future 'is to find the right model for the efficient exploitation of its natural resource endowment and the equitable distribution of the rents arising from this exploitation' (Adam and Simpasa 2010). Frederiksen (2018, p. 165) also argues that 'Zambia's attempts to develop through natural resource extraction have been repeatedly thwarted by economic mismanagement and countervailing global prices'. Initially various policies such as the Africanisation policy during the colonial era and the Zambianisation policy implemented after Zambia attained independence in 1964 were put in place to ensure that the communities within which the mines operated were developed and that the members of the communities benefitted from the revenues earned from the mines (Mususa 2012). These benefits included housing, access to health facilities, educational facilities as well as recreational facilities. The collapse in copper prices, however, rendered these policies untenable, and in the case of the Kabwe lead-zinc mine, heavy financial losses forced the state to run Zambia Consolidated Copper Mines (ZCCM) company to shut down operations. The economy of Zambia experienced a devastating downturn during the 1970s and a steady decline with per capita income falling, almost 5% annually from 1974 through the 1990s (Ministry of Mines and Mineral Development 2016). The heavy national debt burden in the 1990s led to structural adjustments being imposed on the country by financial backers, and as Zambia underwent a change in government in 1991, it was

subsequently influenced by its lenders, in particular the World Bank, to dismantle and privatize its mines (Counter Balance 2010). Privatization proved to have a scarring effect on the communities around the mines. Most of the infrastructure and roads fell into a state of disrepair, and facilities that were previously free such as health, education and recreation all became fee paying (Fraser and Lungu 2006).

The relevant legislative framework at the time, in the form of the Investment Act, Chapter 385 of the Laws of Zambia, favoured investors as opposed to the communities within which the investment was located. The Investment Act provided investors with general and special incentives such as tax holidays for periods up to 5 years, acquisition of self-employment or resident permits for investments in excess of USD250,000, acquisition of land and provision of essential services. Fraser and Lungu (2006) state that during the period between 1991 and 2004, the labour force in the mining sector was cut down from 56,582 to 19,900 workers during the privatization process. Development Agreements (DAs) were also entered into between the government and the private companies, which bought the mines, and it was subsequently revealed that in these DAs the mining consortiums were granted generous exemptions and privileges in relation to taxes, the environment and social issues for up to 20 years (Counter Balance 2010). The result was that legacy issues were put in place through the DAs, as the mining companies would be exempted de facto from any relevant laws that parliament might pass during that period and from any other amendment to the national legal framework (Counter Balance 2010).

Diverse studies on the effects of mine closure, in the communities within which they operate, have been conducted and suggestions made to alleviate the plight of the members. For instance, Limpitlaw and Smithen advocate that sustainable development of the communities around the mines should be made a priority during the mine closure process (Limpitlaw 2005). Another school of thought emphasizes the need for corporate social responsibility plans to be implemented through designs that focus on social, environmental and economic needs of present and future generations where consultation between the investor, local communities and government takes place in a transparent manner (Kumah 2005). Louit et al. advocates for Community Development Agreements to be tied in with the mining companies' investment agreements to ensure enforceability of corporate social responsibility (Loutit et al. 2016). Companies that have an extractive industry have also been encouraged to codify laws that will allow for the domestication of the legislative framework on sustainable development (Dupuy 2014). Bastida and Bustos in citing paragraph 228 of *The Future We Want* emphasize that the role of law and policies in facilitating the economic and social contributions of mining and establishing safeguards is to reduce environmental and social impacts, conserve biodiversity and ecosystems well beyond mine closure (Bastida and Bustos 2017). However it is apparent that Zambia has not codified adequate laws in terms of regulatory and enforcement mechanisms to ensure that sustainable development of the communities is achieved through corporate social responsibility initiatives whilst the mines are in operation, and such development continues to be sustained even after the lifespan of the mine. This observation will be demonstrated by way of an analysis of the existing legal framework and more particularly the regulation and enforcement process of the same

through the key informants at the Ministry of Mines and Minerals Development in the research presented in this chapter.

The chapter will also show the effect of the lacuna in the law with regard to corporate social responsibility initiatives in terms of community development by way of a case study of the Kabwe lead-zinc mine which was operational in Zambia from 1902 to 1994 when it was closed. The chapter illustrates the need to fill this gap through legal reforms.

7.4 Discussion

7.4.1 Sustainable Development Gaps in Zambia's Mining Regime

The study established that before the closure of the mines, the mining community was doing well with regard to economic performance as there were a lot of employment opportunities and social amenities were accessed with ease. In relation to the laws and policies that affect the mining sector in Zambia and particularly the communities in which they operate, it revealed that there were no known corporate social responsibility initiatives at the time in place to guide the effects of the Kabwe mine closure. However, laws and policies in Zambia now do exist that guide the mine operations from 'cradle to grave'. Furthermore, it was also revealed that the effects of the mining closure ranged from former mine employees together with their children opting to go to the rural areas to take up farming as such the number of pupils were reduced in some schools and mine hospital standards reduced as good facilities vanished from the hospital. Unemployment reached its highest level in Kabwe and business opportunities in Kabwe dwindled.

7.4.2 Unsustainable Closure of Kabwe Lead-Zinc Mine

When the Kabwe lead-zinc mine closed, many miners were left with houses and their retirement packages. However, this in and of itself was not enough to ensure that the community would continue to develop in a sustainable manner as in fact the opposite happened. This was the scenario that played itself out in the Copperbelt and other mining towns in Zambia as Mususa explains that most miners were retrenched in 2003 and they received a house and some cash representing their terminal benefits with little or no prospects of employment (Mususa 2010). As there were no closure plans in place for the Kabwe lead-zinc mine, a lot of legacy issues arose in terms of the environment, economy and health and safety of the community which the government and various stakeholders are still grappling with to date. A study of the abandonment of a uranium mine in Ciudanovita, Romania, revealed that there

were no procedures in place regarding the security and long-term health of the population nor were there any plans to decrease the adverse economic impact on the community in Ciudanovita (Laurentiu et al. 2016). Segerstedt and Abrahamsson argue that one often-mentioned aim is that after mining activities have ceased, there should be as few footprints as possible in nature and the landscape and in the life of the people living in the area (Segerstedt and Abrahamsson 2019). None of the respondents who answered the questionnaire were in management. The absence of those who were in management is attributed to the fact that they left Kabwe once the operations at the mines began to slow down and eventually cease as there was no closure plan in place. Further the survey suggests that employees in the management cadre were moved away from Kabwe to other operational ZCCM sites. This partly explains the glaring lack of community development activities post-closure of the mine. Consequently, there are negative legacies of social, economic and environmental issues which the government of Zambia is still grappling to solve to this day (2019).

The findings also revealed that 78% of the former miners had not found alternative employment, as at the day of the survey. The respondents indicated that before the closure of the mine, their incomes were adequate, to meet normal household expenses, and they were all able to attain a normal income from either formal employment or other business enterprises such as farming, restaurant businesses, marketeers, guest houses and shops. As at the day of survey, however, none of the respondents raise income from other ventures. This state of affairs is contrary to what Strongman's position is as he advocates that the expected sustainable development that a mine is to attain in a community would include establishing and implementing an effective engagement process; improving people's well-being; assuring the integrity of the environment; improving the local economy through economically viable projects; ensuring acceptable impacts on traditional and non-market community activities; establishing effective institutional arrangements and governance; and achieving a positive net result in the long term with appropriate metrics and periodic reassessments (Strongman 2002).

Successful examples of sustainable development of mining communities post closure have been recorded in the following countries as narrated by Strongman (2002) below:

> Here there were three examples – two from Canada and one from the United States of successful mine closure – where communities have achieved "life after mine closure". First is the Elliott Lake uranium mining operation in Canada, where about 2,000 company housing units have been successfully converted into a successful retirement community. Next is the Island Copper Mine in British Colombia, Canada where there are new wood processing and aquaculture operations. Third, is the Ridgeway gold mine in South Carolina., where the mine introduced a bonus payment system so that it could retain the key workers needed to complete the closure. The Washington DC conference also included two examples of mines where a comprehensive mine closure approach is presently being implemented – these are the Kelian gold mine in Indonesia where the local Rio Tinto foundation will continue to assist the community after mine closure and the Misima gold mine in Papua New

Guinea where the mining company has actively supported the community to set up its own mine closure planning task force and to plan for the future after the mine closes.

These findings reveal that the closure of the Kabwe lead-zinc mine had a negative effect on the community as the benefits that were generated from the mine did not go towards the sustainable development of the community.

Due to the numerous negative effects that unplanned mine closures have had particularly on the communities around the mines, the mining industry has acknowledged that mining companies need to plan for mine closure in the same manner as they apply for an entire operation of the mine. Cheng advocates that planning for the closure of a mining operation should be carried out as part of the due diligence and feasibility process (Cheng and Nehring 2016). Ensuring the best outcome for the community is one of the many challenges confronting a mining company and its management team as they attempt to optimize shareholder value and stakeholder engagement without leaving any sector out is imperative (Laurence 2005). Equally gaining the trust of the local community and ensuring that a mine closure plan is approved by a variety of stakeholders are essential in addressing sustainability of mining communities (Dagvadorj et al. 2018).

The findings also revealed that there is also a general lack of awareness of what sustainable development means. This can be attributed to the fact that the concept of sustainable development had not yet been adopted in the mining sector in Zambia at the time. It is as such imperative that advocacy and sensitization is done in the communities adjacent to mining operations through advocacy programmes in collaboration with mining companies, government and non-governmental organizations. Additionally the education system in the country should include the concept of sustainable development so as to have a holistic approach to the dissemination of this vital information to the general citizenry.

According to Fig. 7.1, the findings revealed that 62 (78%) of the respondents had not found employment and 17 (22%) had found employment after mine closure. Nine (53%) were in private companies, five (29%) were in government and three (18%) were in parastatals. This could be attributed to the fact that there was a lack of employment opportunities in Kabwe considering that the mines were the major employer by then. The age of the respondents is another factor as most of them are elderly which could imply that the zeal to look for new employment opportunities is no longer there.

Furthermore, one focus group discussion was held with six former employees of the lead-zinc mine in Kabwe. The focus group discussion revealed that the community adjacent to the mine enjoyed life before the closure of Kabwe lead-zinc as every month some essential commodities such as mealie meal and cooking oil were given to them by the mining company through its super market and within the mining residential area. This information was verified by an officer from the Kabwe Chamber of Commerce who was also a key informant in this research. The officer from the Kabwe Chamber of Commerce stated that every miner was entitled to a bag of mealie meal and a five litre container of cooking oil every month. In addition to

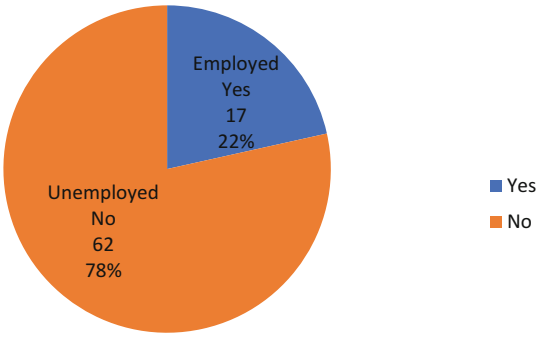

Fig. 7.1 Shows the above-mentioned respondents' responses on their current formal employment status

that, the mining community also received gardening equipment to keep the surrounding environment clean. One female participant aged 64 years stated:

> When the mine was in operation we lived a very good life. Essential goods like mealie meal, cooking oil to mention a few were attained every month end from the mine shop within the community.
>
> Water was given free of charge and the recreation centres for adults and the children were in full operation. There was no boring moment in those days.

Another female participant added that:

> Health facilities were well equipped with all the essential drugs and services and they were provided free of charge and the Mine school had very good facilities and they were free of charge to the mine community.

In relation to the effects of the closure of the mine on their lives, the participants revealed that they stopped receiving all the essential commodities that they were previously privy to; additionally the mine hospital started running short of drugs and all essential services ceased. One female participant had this to say:

> We started experiencing hardships like never before. We had to buy all the commodities now. School fees were introduced in schools for our children.
>
> Most of our colleagues started going to the villages to take up farming as a livelihood.

Another female participant stated that:

> Effects of lead started being felt especially by the children who started getting sick as a result of waste disposals. Furthermore, recreation facilities became non-functional as there was no support to manage them.

Responses from the key informants revealed that before the closure of the mine, mine workers were doing well economically as there were a lot of employment opportunities within the mine and the support service sectors like the education and health sectors. There were also a lot of good facilities for social amenities, recreation and entertainment such as play grounds, mine shops, mine schools and mine hospitals. Additionally the church could undertake any project without challenges

as the people were more than ready to participate. However, all this changed when the mine closed.

All this information gathered from the focus discussion group was verified by six key informants who were interviewed on different dates, and they comprised a Chief Engineer at the Ministry of Mines who previously worked for ZCCM, a medical doctor from Kabwe General Hospital, a medical doctor from Kabwe Mine Hospital, and three Council Officers from Kabwe Municipal Council. They in summary stated that before the closure of the mines, mineworkers were doing very well economically as there were a lot of employment opportunities; a lot of good facilities for social amenities, recreation and entertainment such as play grounds, mine shops, mine schools and mine hospitals; and the church could undertake any project without challenges as the people were more than ready to participate. However all this changed when the mine closed.

In explaining the effects of the closure of the mine, the key informants who were 11 in total. The composition of these key informants was as follows: 3 officers from the Kabwe Municipal Council, 1 medical doctor from Kabwe General Hospital, 1 church leader from United Church of Zambia, 1 teacher from a secondary school, 1 medical doctor from Kabwe Mine Hospital, 1 officer from Kabwe Chamber of Commerce and 1 officer from Kabwe Farmers Association, a Chief Engineer at the Ministry of Mines and Resource Development and a Chief Draftsman at the Ministry of Justice.

The key informants were selected using purposive sampling. This method was used to enable the researcher to sample only the people who were relevant in providing information for this study. They stated that:

> Some parents together with their children opted to go to the rural areas to take up farming as there were no employment opportunities in Kabwe as such the number of pupils were reduced in some schools.
>
> There was a reduction of turn over from the sales by the farmers as most people could not afford to buy most commodities from the markets because a lot of people in Kabwe had lost jobs.
>
> The hospital standards went down because the mine which was the sponsor of the mine hospital had closed down. Most of the special facilities such as essential drugs and services being provided for the mine workers free of charge ceased. There was an increase in the number of cases being diagnosed in patients.
>
> Church projects stalled as some members (former miners) went to other towns such as the Copperbelt to look for work. In short membership reduced and church finances crumbled.

Most of the former miners no longer reside around the mines. Only about 10% of them reside in mining residential areas as was discovered in a census conducted by the Kabwe Municipal Council in assessing the effects of lead contamination for a Zambia Mining and Environmental Remediation Improvement Project under the World Bank.

These claims are confirmed by a recent report generated by the Department of Development Planning at the Kabwe Municipal Council for the transformation of

Kabwe into a city spanning the period 2016 to 2021. In that report the Kabwe Municipal Council noted the following:

> The population growth rate of Kabwe has been on the decline from below 7% between 1969 and 1980 to 0.5% between 1990 to date. Factors responsible for this downward trend include general poor economic performance in the district which has resulted in people moving from the town to other towns and cities and rural areas. Kabwe district's situation was exacerbated by the closure of the basic supporting industries which further slowed down the population growth. The closure of the Kabwe mine, Zambia Railways, the Mulungushi Textiles and other supporting industries led to a significant economic decline in the district. Kabwe had a number of manufacturing industries including the Zambia-China Mulungushi Textiles plant established with Chinese investment in the 1980s, but after suffering such large loses at the beginning of 2007, the plant was closed to date (Kabwe Muncipal Council 2019).

It is evident that the closure of the Kabwe lead-zinc mine had far-reaching negative effects not only on the former mine workers but also on the entire community in Kabwe.

The lack of mine closure plan incorporating sustainable development of the mining community negatively impacted not only the members of the community but also the development of the entire town of Kabwe. As such it is imperative to ensure that an upward trajectory in terms of development is not only attained but also sustained so as to avoid a downward trajectory and causing an entire urban area to change its character from that of a town to a village (Mususa 2012).

7.4.3 Gaps in the Legal and Regulatory Regime in Mining

All the respondents from the questionnaire survey indicated that they were not aware of any corporate social responsibility laws in place to guide the closure of operating mines. However, 17 respondents representing 22% felt that environmental laws could have improved the impact of the mine closure. On the other hand, 62 respondents representing 78% indicated that they had no idea on what laws could have improved the impact of the mine closure.

According to Fig. 7.2, the focus group discussion revealed that the participants were not aware of any laws or corporate social responsibility initiatives that were meant to guide the closure of the mine as one 64-year-old participant stated that:

> We were not told of any policy or law that guided the closure of the mine. What we heard was that the mine is closing.

Three council officers were interviewed as key informants and revealed that there were supposed to have been laws and policies in place to guide the closure of the mine and disposal of waste, since the lead waste was still affecting the health of the local community especially the children in Kabwe. An officer from the Kabwe Chamber of Commerce stated that:

> Laws that were going to protect the environment were very important during the closure of the mine but unfortunately there was nothing in place and that a deliberate policy was supposed to be put in place to help the former miners start businesses of their own.

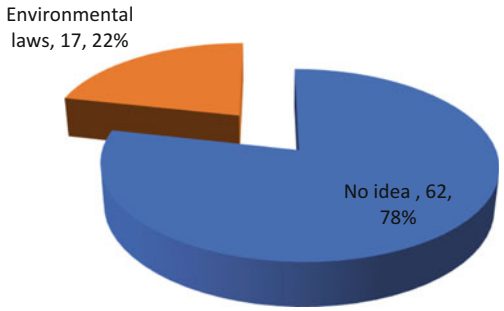

Fig. 7.2 Respondents' responses as to what laws could have improved the impact of the mine closure

The situation that was pertaining at the time the Kabwe lead-zinc mine was in operation until its closure in 1994, in respect of the law that was in place, was the Mines and Minerals Act of 1976, Chapter 329 of the Laws of Zambia (1976). This particular Act repealed the pre-colonial legislation. Ndulo states that prior to independence, mineral rights were held as private property by a few companies and did not develop these mineral resources as such the 1976 Act was enacted to remedy this situation and encourage the development of Zambia's mineral resources (Ndulo 1986). The said 1976 Act provided under Sections 54 and 55 that a mining company was obligated to develop the minerals in accordance with accepted mining standards that stipulate avoidance of wasteful mining and metallurgical practices in accordance with a 'program of development and mining operations'. Ndulo (1986) however notes that the 1976 Act did not provide a standard for determining when the mining right holder had breached these obligations. This observation is in tandem with the occurrence at the Kabwe lead-zinc mine as the law at the time did not adequately provide for a rigorous standard to determine whether any breaches were in existence particularly at the time of the closure of the mine. Consequently there was virtually no measurement of the compliance of the mine to the existing legal framework.

The lack of a rigorous enforcement procedure led to the repeal of the 1976 Act and subsequent enactment of the The Mines and Minerals 1995 Act (1995) which is referred to by a key informant from the Ministry of Mines below. According to this key informant from the Ministry of Mines and Minerals Development, he stated as follows:

> At the time the Kabwe lead-zinc mine was closed, the mining Act that was in place did not address environmental or CSR issues. The 1995 Act under section 75 provided for Environmental Impact Assessments (EIA) to be done before a mining right could be granted. The EIA process was controlled by the Environmental Council of Zambia (ECZ) created in 1990 by the Environmental Protection and Pollution Control Act (EPPCA), Chapter 204 of the Laws of Zambia. The 1995 Act also provided for payment of royalties by the mining companies to the government of Zambia. The 1995 Act was repealed and replaced by the The Mines and Minerals Development 2008 Act (2008) which additionally provided that part of the royalties paid from the mining industry should be retained in the community and this process would be done by the Ministry of Mines in consultation with the mining companies. That however the payment of royalties as framed in the 2008 Act was removed in the current Mines and Minerals Development Act of 2015 (2015) and as such there was nothing to safeguard the community.

The key respondent from the Ministry of Justice stated as follows:

> Section 4 (d) and (f) of the 2015 of the 2015 Act indicates that the development of local communities in the area surrounding the mines should be based on the community needs, health and safety. Although there is no legislation for Community Development Agreements (CDA) the law was sufficient in terms of providing for sustainable development and that what was lacking was the enforcement mechanism for the same.

Echoing the view that sustainable development in the mining sector now relates to the corporate social responsibility of the mining company towards the community that it operates in, Olaleye defined Corporate Social Responsibility (CSR) as:

> ... the decision-making and implementation process that guides all company activities in protecting and promoting international human rights, labour and environmental standards and compliance with legal requirements within its operations and in its relations to the societies and communities in which in it operates (Olaleye 2010).

However, it has been acknowledged that corporate social responsibility is voluntary as companies are not obliged to plough some of their profits into their communities and it is seen as more of a moral obligation than a legal one. To overcome this challenge, some scholars have discussed the aspect of CSR being legislated on and being made part of the mining laws, and in many contexts, a number of countries have adopted this approach to tie mining companies to commitments made to local communities (O′ Faircheallaigh 2017). Dupuy (2014) advocates that the new public regulation approach in adopting community development requirements via legislation so as to address the mining's impact on communities goes beyond mitigating the negative effect of mining on the local communities (such as through compensation arrangements and environmental laws) to requiring governments to ensure that mining translates into real, positive social and economic gains for the mining communities. Zambia is not amongst the countries that has effected community development requirements either by law or agreement. Rather the converse has been obtained as the type of Development Agreements entered into between Zambia and the mining companies in fact more favourable to the mining companies than the communities within which the mines operated.

That being said, however, other scholars have argued that incorporating CSR in mining legislation in and of itself is not enough but that what is required is for Community Development Agreements to be entered into between the mine, government and local community before a mine begins its operations. A Community Development Agreement (CDA) according to Otto is narrowly defined as a legally binding contract between the holder of an authorization granting the rights to extract minerals and a community (or communities) that will be affected by the exercise of those rights that addresses matters concerning community development (Otto 2017). Malunga argues that a CDA is a means of reducing risks in mining business through managing mining community expectations and contributing to development of activities without taking over government obligations (Malunga 2016). Otto additionally states that relying on companies to voluntarily assist in community development is risky as not all companies are good corporate citizens and not all are competent to know how much assistance to offer, and so for this and other reasons, a

good number of governments are now mandating the use of CDAs or other community development tools in their mining legislation (Otto 2017).

In instances where countries have taken a mandatory approach to CDAs, studies have shown however that even where CSR is legislated and CDAs are provided for, the enforcement of the same is lacking as some companies do not adhere to these regulations. In examining the effect of legislated CSR in Nigeria's Mines and Minerals Act 2007, Akinsulore (2016) contends that although the Act obligates mining companies to enter into CDAs with the communities within which they intend to operate, there is still a lack of prioritisation of CSR towards these communities by the mining companies. This is due to the fact that the communities are ignorant of the existence of this law and the requirement to enforce it (Akinsulore 2016). Stretching the argument that mere regulation of CSR is not enough to realise actualization on the ground, Loutit et al. (2016) advocate that CDAs can be enforced through the tying of the companies' investment agreement with the said CDAs as a breach of the CDA would be an automatic breach of the investment agreement with the country within which it has been granted a licence to operate. In consolidating this argument further, Loutit et al. (2016) propose that laws should also be enacted that deem conditions in CDAs to be conditions of mining authorisations meaning that if the terms of the CDA are not met, then the licence to operate will be cancelled. Otto (2017) argues however that if the CDA legislation is robust, it can provide a clear roadmap for mandatory processes, approvals, monitoring and enforcement, all of which are lacking in an unregulated approach to mine-assisted community development.

The preceding discourse reveals that the legislating of CSR is left up to a country as it is not mandatory, but that should a country decide to do so, legislating CSR and providing for CDAs in and of itself is not enough and what is required is a mechanism to ensure that effective monitoring and enforcement of the regulations of the mines in terms of CSR is realized. It is proposed that an Ombudsman be created to fulfil this role. It is also apparent that the members of the local communities also need to be made sensitized as to what these CDAs mean for them as a community and the need for sustainable development to be actualized through the said CDAs.

7.4.4 Addressing Sustainability Gaps in Mine Closure in Zambia

Changes That Are Required to Enhance Zambia's Laws with Corporate Social Responsibility Initiatives.

In terms of legislating CSR initiatives through CDAs, there are proponents and opponents for this proposition. Early studies show that countries like Ghana that provided for CSR initiatives through CDAs, expressed concern through various stakeholders that mandating CDAs for the mining sector in Ghana could amongst

other things result in; the government abdicating its responsibility for local and regional development and service provision; a feeling of entitlement from stakeholders; and mining companies being obligated to fulfil roles that were the remit of government (Sarkar et al. 2010). However a study in Papua New Guinea revealed that the development of mandatory CDAs through the law provided some successes in addressing the unrest at Bougainville mine as a result of the best practices being institutionalized within the mining law resulting in the mining companies being compelled to follow the laid-down procedures. Stakeholders cited the concept of the Development Forum which is provided for in the Papua New Guinea Mining Act of 1992 as an example of best practice regarding engagement and participation and raising performance throughout the sector (Strongman 2002). Additionally, Otto argues that when compared to approaches that rely entirely on voluntary actions by companies/projects, statutorily mandated CDAs greatly reduce the risk that sustainable community development will not take place (Otto 2017).

Although arguments for non-legislation of CSR initiatives through CDAs have been propounded due to various experiences and views from stakeholders, it is proposed that the current Mines and Minerals Development Act of Zambia also be amended so as to provide for CSR initiatives to be codified in CDAs. The Nigerian Minerals and Mines Act of 2007 obligates mining companies and the communities within which they are to operate to enter into CDAs (Akinsulore 2016). These CDAs are to be entered into prior to the commencement of the operations of the mine and coerce a mining company to transfer social and economic benefits to the community within which it is to operate (Louit et al. 2016).

CDAs according to Loutit et al. (2016) are increasingly becoming more common and present local communities with an opportunity to participate in self- determined development. This is based on the premise that the communities will be well informed of the investor project that is to take place in their community and will be engaged not only by the mining company but also by government and other relevant stakeholders to ensure that the members of the community are fully conversant of the impact of the proposed project and can give their input in terms of decision-making as far as development of their community is concerned (Loutit et al. 2016). Loutit et al. (2016) emphasise that in order to make these CDAs enforceable, governments can enact laws that deem conditions in a Community Company Agreement to be conditions of mining authorisations. This in essence means that a breach in the conditions of a CDA can result in the revocation of a company's license to conduct mining activities in a particular community.

Other countries however have adopted alternative documents to the CDA. One respondent asserted that in the Democratic Republic of Congo, Memorandum of Understanding documents are entered into between the mines and the communities within in which they are to operate, which document outlines the responsibility of the mines with regard to the community.

It is apparent that an enforcement mechanism needs to be provided for in the laws in addition to the CSR initiatives spelt out in the CDAs. It is proposed that a type of Ombudsman system be set up in the Ministry of Mines and Mineral Development under the Mines Safety Department. The Ministry of Mines and Minerals

Development is responsible for policy frameworks and guidance in the mineral sector in Zambia and currently operates through the following departments: the Department of Planning and Information, the Department of Mine Safety, the Department of Energy, the Department of Geological Survey and the Department of Human Resources and Administration. The Mines Safety Department (MSD) is responsible for monitoring and enforcing compliance to regulations on the conservation and protection of the environment and protection of human health and safety during prospecting, exploration and mining operations in the sector. It is the delegated authorizing agency for issues arising from mining licenses (The Mines and Minerals Development Act 2015).

The 'Ombudsman' is a Swedish word that means representative or agent of the people (Financial Ombudsman 2008). An Ombudsman primarily deals with complaints. They help settle disputes when the consumer has already complained to a business or organization but is not happy with the way the complaint has been dealt with (Financial Ombudsman 2008). This system was adopted in Australia in the year 2000 through Oxfam International by the creation of a Mining Ombudsman. The Mining Ombudsman in Australia was set up to:

- Assist women and men from local and indigenous communities whose human rights are threatened by the operations of Australian-based mining companies.
- Assist women and men from communities that are or might be affected by a mining operation to understand their rights under international law.
- Help ensure that the Australian mining industry operates in such a way that the rights of women and men from local communities affected by mining are better protected.
- Demonstrate the need for an official complaints mechanism within Australia.
- Demonstrate the need for enforceable transparent and binding extraterritorial controls that would require Australian mining companies to adhere to universal human rights standards wherever they operate (Oxfam International 2004).

The process for the complaint system is that the Ombudsman receives the complaint and investigates it by conducting extensive interviews with the local community men, women and youth, civil society organizations, government and company officials. After the investigation process, the Mining Ombudsman produces a report and sends the same to all stakeholders for comment and action and undertakes on-site evaluations every 18 months to 2 years (Oxfam International 2004).

Unlike the Mining Ombudsman in Australia that acts more of an umpire between the parties to ensure that companies treat local communities in a fair and equitable manner, it is proposed that the Mining Ombudsman in Zambia through set Sustainable Development Goals and targets agreed in a Community Development Agreement monitors and regulates the implementation of the same not only through the complaint mechanism but also as part of a regulatory and enforcement mechanism process. This suggestion and the practical implementation of the same will require further study.

7.5 Conclusion and Recommendations

At the government level, there is need to amend the Mines and Minerals Development Act to include provisions on Community Development Agreements to be entered into between the relevant stakeholders, these being the mines and the communities within which they operate. Additionally there should also be included in the said Act the introduction of an Ombudsman in the mining sector, which will be both a complaint mechanism and an enforcement one. The Ombudsman system should be adopted to ensure that sustainable development and CSR initiatives are enforced by way of developing set targets for the mining companies to achieve, in consultation with the local communities and stakeholders, which targets will be monitored by the said Ombudsman. The Ombudsman can be an officer in the Mines Safety Department at the Ministry of Mines and Mineral Resource Development which is the department responsible for regulation of the mining sector. Additionally the government, through the Ministry of Education, can include sustainable development in the school curriculum so as to enable Zambian's have a change of mindset, from a young age, in order to understand what sustainable development means. The concept should run from primary level all the way to tertiary level.

At the corporate level and non-governmental organization level, advocacy and campaigns for an awareness of what sustainable development means and how it can be attained in communities surrounding mining operations need to be implemented. Additionally, advocacy also needs to be carried out on the need for legal reforms that will provide for inclusion of sustainable measures through corporate social responsibility initiatives in the laws and policies that affect the mining sector.

The sustainability of former mining communities is dependent on sustainable development plans and enforcement mechanisms being in place during the mining life cycle. The case study of the state of the former mining community of Kabwe lead-zinc mine brings this to the fore. Attainment of the sustainability of former mining communities can only be achieved through laws that clearly spell out steps to be taken to ensure that sustainable development is achieved after the closure of the mines. Promulgation of laws in Zambia by way of legal reforms that clearly guide on the achievement of sustainable development through corporate social responsibility initiatives and in particular CDAs pre through to post closure of a mine, as well as the provision of an enforcement mechanism, enshrined in the legal framework to oversee the same can address the current lacuna in our mining laws.

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Chapter 8
A Corporate Roadmap to Sustainable Resource Governance in Africa: Insights from the Mining and Oil Industries in Angola

Isabel B. Franco and Peter Mhone

Abstract This chapter presents a roadmap towards the implementation of a corporate approach to sustainable resource development. The piece argues that such an approach cannot be undertaken by a government or other institution in isolation but must be addressed as a pervasive concern which every stakeholder and institution in the African extractive industry needs to engage with. With a particular focus on Angola, this piece makes an important contribution while defining the roadmap for corporations operating in African resource-based economies. Angola has undergone major transformations in this area over the past years. Yet, there are capacity-building gaps, particularly at the government level, which need to be addressed in order to assist corporations in meeting the requirements of sustainable resource development.

Keywords Sustainability · Mining · Oil · Angola · Resources · Africa · Governance · Policy

8.1 Introduction

Angola is rapidly undergoing a transformation towards sustainable and responsible resource development. In this context, it is important that stakeholders plan for sustainable mining and socio-environmental sustainability across the country. Planning for the extractive industry involves three phases, namely, exploration, mining development, and closure. The life of a mine can vary from 10 to 20 years or more

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depending on the available resource stocks. For example, one of the largest active projects in Angola began operations in 1998 and has a mine life of approximately 40 years. Actions proposed in the roadmap presented here should be carried out from the exploration stage and be maintained in the long term, until the closure of mining activities. These stages of the mine life must also be carried out and monitored in accordance with the international and national legislation and in alignment with the African Mining Vision, a continental policy for sustainable resource development.

Based on rigorous research, policy, and capacity analyses, this study contributes to defining and consolidating the African roadmap and agenda for the extractive industry. This chapter is pivotal in identifying capacity-building opportunities to assist Angola in aligning with international mandates on sustainable resource development. Analyses established that the existing legal, institutional, policy, and regulatory frameworks need to be enhanced. In doing so, stakeholders' capacity needs to be built in the transition from artisanal mining towards informal mining. This issue is also the first challenge to be tackled in the proposed roadmap. In addition, stakeholders' capacity needs to be developed in order to foster research and development and more efficient geological information systems. Actions also need to be undertaken to promote economic diversification, social and environmental sustainability, and human capital capacity-building. The roadmap concludes by recommending ways of improving existing taxation, investment, and governance schemes. Recommendations are essential for stakeholders and corporations in Angola willing to pursue sustainable resource development.

Therefore, this chapter seeks to trace the roadmap for Angola over the next years ahead. The roadmap identifies key policies, actions, and stakeholders for each one of the eight components that comprise the African Mining Vision. In addition, this chapter recommends the time frame for the implementation of the proposed policies, programs, and actions. This chapter is based on substantial policy analysis grounded on available public policies at the local, domestic, and international levels of governance.

8.2 Methodology

A qualitative methodological strategy was applied to develop the research that supported this policy analysis. Data was collected from government public policy reports, corporate financial reports, and other secondary data available to public and meaningful to achieve the objectives of this research. These data were collected from well-known and reliable sources at all levels of governance.

8.2.1 Methods and Techniques

Extractive industry-based research has been mainly undertaken in the frame of qualitative approaches. Applying a qualitative approach to address social issues facilitates greater knowledge about the participating communities and stakeholders. In addition, it allowed us to test assumptions regarding the study as it dealt with diverse and multiple sets of data requiring the application of the case study method. The case studies allowed for detailed and comprehensive information to be collected about a more focused issue. The collected data came from different groups of interests, namely, private companies, governments, and civil society and individual actors. These actors often have biased opinions which require the use of data triangulation in such a case study. A combination of several qualitative methods and techniques has been applied to undertake this study. Using case studies as the basic methodological approach, the analysis applied a literature review, document analysis (policy analysis), stakeholder analysis, face-to-face semi-structured interviews, and focus groups.

8.3 Discussion

8.3.1 Global Governance

Transnational capital mobility has had an impact on corporate investment in mining in African countries. This process has increased the competition over natural resources, particularly between global and local actors (Held and McGrew 2007). It has also involved key stakeholders (government, the extractive industry, and civil society) that play a key role in natural resource development, local communities, and the environment, a situation that is resulting in scenarios where multinationals and mining companies play a key role in local sustainable development. Therefore, this chapter explores current global regulations that have implications for the livelihoods of local communities and the environment in resource locations. Thus, this study recommends an alignment of the extractive industry (multinational and national companies) with the international standards presented in Table 8.1.

Decision-making processes led by multinational and global regulators on sustainable resource development are increasing tensions at the local level. Angolan communities often feel they are not being adequately consulted or compensated for the loss of livelihood options and the impact on the environment (Buitrago-Franco 2014): Angola has important reserves of oil and diamonds. However, the poor have no money to educate (their) children. Global agencies aware of this situation are encouraging companies to become more accountable to local communities. In response and in alignment with international standards, companies should develop stronger accountability mechanisms such as social responsibility agendas, sustainability reporting, and other accountability processes and mechanisms.

Table 8.1 International standards and global governance in the mining sector

Level of influence	Voluntary regulatory frameworks	Description
Global level	International council on mining and metals (ICMM) sustainable development principles	The ICMM is an international organization that assists the mining sector to achieve a more efficient and sustainable performance (ICMM 2003). The council's members are encouraged to implement the ten principles contained in the ICMM's sustainability framework
	United Nations global compact	The United Nations global compact supports companies to: Do business responsibly by aligning their strategies and operations with the ten principles on human rights, labor, environment, and anti-corruption Take strategic actions to advance broader societal goals such as the United Nations Sustainable Development Goals, with an emphasis on collaboration and innovation (UN Global Compact 2013)
	Responsible Jewellery council (RJC) standards guidance	The RJC is an initiative that develops a certification system that commits its members in the mining sector to adhere to responsible corporate practices (RJC 2011)
	International finance corporation (IFC) performance standards on social and environmental sustainability	IFC is a legally independent World Bank department which finances private sector initiatives to promote sustainable economic growth in developing countries to enhance local livelihoods (IFC 2006). The corporation has designed the Performance Standards on Social and Environmental Sustainability in order to make its clients aware of their roles and responsibilities when executing projects
	International Organization for Standardization (ISO)	This standard guidance about social responsibility advises the private sector to design corporate social responsibility (CSR) agendas with a view of improving local livelihoods (ISO 2010)
Regional level	Extractive Industries Transparency Initiative (EITI)	The Extractive Industries Transparency Initiative (EITI) is a global initiative whose aim is to promote open and accountable management of natural resources. It seeks to strengthen government and company systems, inform public debate, and enhance trust. It is supported by a coalition of governments, companies, and civil society working together in each implementing country

(continued)

Table 8.1 (continued)

Level of influence	Voluntary regulatory frameworks	Description
	Prospectors and developers Association of Canada (PDAC) principles and guidance E3 plus	The framework guides responsible exploration to mitigate the adverse impacts derived from this stage in the life of a mine (PDAC 2014)
	Organisation for economic cooperation and development (OECD) guidelines for multinational enterprises	These guidelines have been developed to respond to corporate governance issues and to assist the corporate sector in performing responsible business practices (OECD 2008). The guidelines' objectives include, but are not limited to, as follows: to assure correspondence between corporate performance and government policies, to strengthen confidence between enterprises and society, and to support sustainable development
Local level	Global and domestic mining and oil companies operating in Angola	Sustainability reports, websites, other accountability mechanisms of mining, and exploration companies operating in Angola

8.3.2 Regional Governance: African Mining Vision

Africa is a continent with large reserves of natural resources. With large reserves of gold, phosphate, diamonds, platinum, and aluminum, among others, the continent does not have the capacity to further develop the industry and benefit from sustainable resource extraction. The advancement of the extractive industry cannot take place unless stronger multi-stakeholder collaboration and effective policy implementation take place. In this context, the African Mining Vision makes an important contribution while defining the roadmap for African countries in the light of eight components (Vision 2015), as shown in Table 8.2:

The African Mining Vision comprises these eight components. Evidence showed that stakeholders (governments, companies, and civil society organizations, universities, and communities) should design and implement actions within a time frame to guarantee the alignment of these components. Benefits, existing limitations, and results derived from the alignment of each component should also be considered to trace the roadmap for the Angolan case.

Table 8.2 Africa mining vision

Component	Description
1. Geological information systems.	National cross-mapping to identify reserves of minerals and metals
2. Social and environmental affairs.	Forging sustainable livelihoods and protecting the environment
3. Taxation and investment.	Ensure that mining revenues are allocated to further develop the regions, communities, and the environment in a sustainable manner
4. Artisanal and small-scale mining.	Foster the transformation of artisanal mining into small-scale mining
5. Human capacity development.	Build human capacity in mining and non-industries
6. Governance.	Foster the alignment of the existing national legislation with international practices and principles of social responsibility and sustainability in mining
7. Research and development.	Development of research centers
8. Economic diversification.	Foster the economic diversification of resource regions. This action should involve actions to further protect the economic sectors relevant for the local economy such as agriculture and tourism

8.4 National Governance: Extractive Industry in Angola

Angola is an African country located in West Africa that has experienced an escalating resource boom over the last decades. It is the current country representative of the Kimberley Process and is also known as a leading exporter of diamonds (Ministry of Mines and Geology of Angola, N.D). Mining, along with oil exports, represented nearly US $ 1.600 in 2014. Angola has a mining potential that comprises around 35 to 45 minerals and metals. At the present time, there are exploration and mining projects of petroleum, diamonds, phosphates, gold, iron, copper, ornamental rocks, and minerals for construction (Ministry of Mines and Geology of Angola, N. D).

Mining developments are undertaken by both domestic and international companies from America, Brazil, Italy, and South Africa, among others. The current boom is vital for the national economic development (Ministry of Mines and Geology of Angola n.d.), and so the Angolan government has embarked on a number of key strategies to drive this boom. A stronger governance environment is one of such strategies (Ministry of Mines and Geology of Angola n.d.). In the last decade, the government has set the guidelines for sustainable resource development with the implementation of stronger governance arrangements. Table 8.3 shows the existing governance environment and the regulatory framework for the extractive industry in Angola since 1994 to date.

The Mining Code is the baseline of the current governance environment and has been regarded as a key element to foster sustainable resource development across the country (Ministry of Mines and Geology of Angola 2011). The Mining Code shows

Table 8.3 National governance

Legislation	Description
National Constitution	The constitution establishes the general guidelines for key sectors for the national economy, such as the extractive industry
2013–2017 National Development Plan	This policy addresses three major challenges that need to be overcome to achieve the goals of sustainable resource development (Ministry of Mines and Geology of Angola n.d.): • Guarantee the infrastructure, logistics, energy, and water supply for resource development. • Guarantee the infrastructure for geology labs. • Identify and build the capacity of potential human capital for the extractive industry.
2015 Multisectoral Commission, Mining Development Clusters - Decree No. 60/15 of 16 June, 2015	The National Development Plan resulted in the development of the mining development clusters which drive economic diversification The lead commission responsible for their implementation is the secretary of state. It is also responsible for proposing and approving all matters concerned to cluster development and comprises the following institutions: • Ministry of Planning and Territory Development. • Ministry of Economy. • Ministry of Energy and Water. • Ministry of Transport. • Ministry of Urbanism and Habitat. • Ministry of Industry. • Ministry of Environment. • Ministry of Agriculture. • Ministry of Information Technology and Telecommunication. • Secretary of state for mines and the secretary for the presidential affairs.
2014 Creation of the geological information database (BADAGEO)	It is a platform for storing geological information resulting from the implementation of the National Geology Plan (PLANAGEO)
2014 Commission responsible for collecting geological and mining data of Angola (CRIGMA)	Commission to recover the scattered geological information in Angola and overseas
2014 Natural resources information system of Angola (SIRMA)	The system provides detail information on mineral resources in Angola
2014 Integrated licensing and mining system (SILCAM)	Streamlines processes from resource identification to extinction
2014 Regulatory Agency for Gold Trade	It has a regulatory role to market and trade gold (ARMO) (2015)
2014 National Directorate of environment and safety	Responsible for promoting environmental and occupational health and safety in the industry

(continued)

Table 8.3 (continued)

Legislation	Description
2014 Constitution of the National Agro-mineral Company	It is considered a key organization for the development of the agro-industry and the economy
2011 Mining code	The recent mining code is the strategic document for the rational, responsible, and sustainable resource development
2009 National Geology Plan (PLANAGEO)	This plan seeks to conduct the geological survey to determine available reserves of natural resources
1994–2001 Other provisions associated with the sector	Decree no. 532001 Decree no. 522001 Law on privatizations Law 16/1994 Regulation of Industrial Licensing Law Amendment Act of Privatization Industrial Activities Act Industrial property law Organic statute of the Ministry of Industry Organic statute of the Ministry of Geology and Mines The mining law Resolution 4/1998 Resolution 3/1998

that there is a need, more than ever, to plan for sustainable regions, communities, and the environment. Such planning should last beyond mine and oil cycles. This will help the environment and communities cope with potential adverse impacts of mining and assist stakeholders in collaborating effectively towards sustainable resource development (Buitrago Franco 2014).

Another key factor to be considered has to do with multi-stakeholder collaboration among public and private actors and stakeholders. Although the partnerships and communication between government and private sector are outstanding, the evidence shows that there are opportunities to forge partnerships between the private sector and civil society. The participation of civil society organizations such as non-governmental organizations (NGOs) has favored decision-making processes and an adequate implementation of actions to promote a more sustainable and responsible industry.

8.5 Angola: A Corporate Roadmap to Sustainable Resource Development

A roadmap is here presented in order to align the Angolan legislation with the African Mining Vision. This roadmap was traced by stakeholders (government, private sector, and civil society) who also defined the priority areas for the proposed alignment.

The national government should first foster the transformation of artisanal mining into small-scale mining (SSM). Social, environmental, and regulatory constraints associated with this activity are compromising the sustainability of communities, the environment, and the extractive industry itself. This is a medium-term action that requires the integration of artisanal miners into a formalized economy, enabling them to enhance their livelihoods in a responsible manner or explore other employment and entrepreneurship opportunities in a more structured extractive industry. Resource countries with long history of artisanal mining have forged partnerships among business, universities, and governments to develop research projects to provide sustainable solutions towards SSM and create alternative livelihoods options for artisanal miners and their families (Buitrago Franco 2014).

It is also pivotal to promote multi-stakeholder collaboration to support research efforts in extractives and resource regions. This second component of the roadmap should begin in the exploration stage and last until the closure of mining projects. Furthermore, research should be conducted in key areas for sustainable resource development, such as mineral processing, land rehabilitation and water management, sustainable livelihoods and community relations, safety and occupational health, and geology.

By 2008, Angola still held geological records that dated colonial times. Despite active mining projects in place, the country did not have a mapping of existing minerals and metals. The lack of geological information systems compromised the potential for sustainable resource development in the long term. In 2008 the government began the first phase of the implementation of the National Plan of Geology referred to as PLANAGEO. This plan resulted in the development of surveys for physical and geological mapping. Evidence showed that it is necessary that the second part of PLANAGEO strengthens the partnerships with organizations responsible for promoting and protecting agricultural, natural, and cultural heritage areas. Such partnerships will assure the sustainable economic diversification of resource regions.

Sustainable resource development has the potential to foster other sectors of the national economy such as agriculture and tourism services. That is why the country must embark immediately on planning for economic sustainability in resource regions. The implementation of the Mining Development Clusters (MDCs) should be the basis for economic diversification. This is a long-term action and should take place throughout the three stages of the extractive cycle. The MDCs aim to diversify the mining sector. However, the MDCs should foster other key economic sectors

such as agriculture, tourism, and other industries instrumental in fostering regional sustainability.

In order to ensure responsible resource development, stakeholders must commit to design and implement actions intended to promote social and environmental sustainability. This is a long-term action and should take place throughout the life of a mine. The government should further enhance the existing governance framework that encourages companies to invest 5% on land and landscape rehabilitation (Ministry of Mines and Geology of Angola 2011). Social sustainability should also target the enhancement of human capital development in five key areas: education, job creation, entrepreneurship, internships, and infrastructure for education. Revenues and investment in social and environmental responsibility agendas should be supported by a stronger, more transparent and participatory taxation system aimed at having a positive impact on Angola's communities and the environment.

For the Angolan government, it is essential to maintain strict surveillance on mining impacts in communities. Thus, a more equitable revenue allocation should take place. The creation of a multisectoral body involving local, national government, and civil society representatives is highly recommended. This regulatory body should also be aligned with the Extractive Industries Transparency Initiative (EITI). Further, a portion of royalties and mining revenues should also be invested in the development of human capacities.

8.6 Capacity-Building Gaps and Policy Alignment with the African Mining Vision

Government and community capacity-building are core areas to be addressed in order to foster sustainable resource development (Buitrago Franco 2014). Capacity-building is an approach to development that assists communities and governments in achieving social and economic developmental standards (ISO 2010). Likewise, the International Council on Mining and Metals (ICMM) states that capacity-building initiatives create lasting value to communities, the environment, and the industry.

This section is based on a SWOT analysis – a tool applied to assess internal and external environments and help stakeholders in identifying existing institutional gaps at the government level in relation to the eight components of the African Mining Vision. This analysis is also based on individual interviews and focus groups as relevant secondary data.

8.6.1 Artisanal and Small-Scale Mining

According to the National Constitution, the Angolan government and external stakeholders should ensure sustainable livelihood options across the country

(Republic on Angola 2010). Very often, artisanal mining is the only livelihood option for local communities, particularly in the context of resource regions. However, this activity generates social and environmental risks that compromise the well-being of local communities. Article 167 of the Angolan Mining Code defines the principles of action and responsibilities of this activity as follows:

1. Small-scale mining shall be deemed as such when salaried labor is not employed and when it exclusively utilizes artisanal methods and resources, without the involvement of mechanized resources or industrial mining technology.
2. The materials and equipment utilized in small-scale mining shall be, namely, hoes, pickaxes, shovels, machetes, colanders or sieves, basins, buckets, gloves, brushes, scales, helmets, and boots.

Artisanal mining has been mainly carried out in gold and diamond extraction and more recently in other minerals and metals. However, there is a contradiction in relation to the benefits derived from this activity. Those who have more resources can take advantage of natural resource extraction, whereas those who lack the technological and human resources cannot make use of them. This situation has jeopardized the livelihoods of artisanal miners and their families.

In order to cope with these challenges, stakeholders should create actions to further develop small-scale mining (SSM). This transformation can be strengthened with a cooperative-based approach or administrative contracts and the creation of small and medium enterprises – an approach that protects the rights of mining communities. Under this approach, the role of the government is to ensure that investors subscribe their employees in the social security system. In so doing, the government protects the workers and ensures that their work is duly rewarded with decent working conditions and safety precautions. The roadmap for this component is presented below.

8.6.2 Research and Development

The mining industry has the potential to promote research and development. As stated in the first chapter, the mining sector did not develop as the oil sector did due to the war. This also compromised the research and education sectors. Representatives of the higher education sector claim that "there was no research in the past." In 2010, Angola had only one university, and they have since increased the number to eight public universities and ten private institutions. Out of these, three offer programs in geology. The proliferation of higher education institutions in recent years has fostered key research streams for the extractive industry. The research streams are complemented with the offer of Master's and Doctor of Philosophy (PhD) programs, such as the recent approved PhD in Geology.

The Ministry of Higher Education is the institution that leads the research component in the country. In order to strengthen the research sector, the Ministry has developed it in articulation with the National Plan for Human Capital Capacity-

Building. The Ministry has also created partnerships with public and private universities in the country and abroad and has strengthened collaboration with private organizations. Angola has a greater potential than its natural resources. It is human capital which is needed to conduct quality research in issues associated with mining.

8.6.3 Geological Information Systems

The National Geology Plan (PLANAGEO) has enabled the geological mapping across the country. The government has invested nearly U$ 465 million to implement the PLANAGEO. The first results were published in 2017. However, to date, results show that future mining projects will have a life span of between 10 and 20 years. There are few cases in which deposits go beyond 40 years. In order to enhance the geological information system, the government has partnered with other actors in two ways: On the one hand, the government has become the institutional support to other organizations interested in obtaining geological information. On the other hand, they have partnered with companies to speed up the availability of geological information. These partnerships involve a fee of 10% to be paid to the government. Available information assists investors in reducing future costs and risks. These partnerships seek to remove barriers to guarantee the success of the industry.

It is envisaged that existing geological information systems will be strengthened in coordination with the Ministry of Territorial Development and the Ministry of Environment and Agriculture so that the existing geological system does not threaten the environmental sustainability of the Angolan territory in the near future. Furthermore, PLANAGEO should also aim to protect the livelihoods of communities dependent on other sectors, such as agriculture. Likewise, PLANAGEO must articulate – what it seeks to achieve – to the Mining Development Clusters which seek to foster economic diversification in resource regions.

8.6.4 Economic Diversification

In 2015, the fall in oil prices prompted the national government to create mechanisms for economic diversification. In this context, the government had proposed the Mining Development Clusters (MDCs), a policy document that promotes the economic diversification of the mining sector. Therefore, this component is strictly based on the conceptual basis of the MDCs. The origin of the MDCs is supported in the notion of Economic Development Cluster adopted in the decade of the 1980s (Ministry of Mines and Geology of Angola n.d.). The concept of *cluster* is based on sectoral development strategies agreed on by government representatives from different countries. The cluster has a special focus on industrial development, national companies, and key industries for the national economy (Ministry of

Mines and Geology of Angola n.d.). This policy is led by a multisectoral committee coordinated by the Secretary of State for Mines.

Economic diversification is not a reactive process. Instead it is a planned activity from the exploration to closure of mining activities (Buitrago and Chatterji 2013). Except for existing diamond mining projects, most projects are in the exploration stage, and therefore mining impacts on local economies are difficult to measure. The component of economic diversification is instrumental in fostering regional sustainability and so should meet the following two conditions: (a) diversification of the mining sector, with respect to other minerals and metals, and (b) diversification of local and national economies, particularly through the advancement of other industries and the value chain of the extractive industries such as transportation, services, agriculture, and tourism industries.

Regarding the first condition for economic diversification, Angola has large reserves of minerals and metals to supply its domestic demand and diversify the mining sector. For example, the Angolan territory has reserves of quartz. However, the country is forced to import optic fiber. Another example is the import of iron girders, despite large metal reserves in the country. Aluminum is another case in point and can be further used to create hardware elements. In this context, economic diversification within the mining industry has the potential for creating jobs and economic competitiveness in the mining and oil regions.

Nevertheless, economic diversification should not only advance towards the diversification of the mining sector itself. But it should foster other key industries for the national economy. In the past, Angola was the third largest exporter of coffee. At the present time, there are many opportunities to keep cultivating the potential of other sectors such as agriculture partnership within the extractive industry. Another example is Saurimo province where a diamond mining project is located. Another example documented in the MDPs is the use of eucalyptus for energy supply for extractive projects. However, it is important to clarify that these projects should not be reactive or isolated initiatives. Instead, they should aim to be aligned with national, provincial, and local development plans, so they can remain in the long term, despite mine closures.

8.6.5 Social and Environmental Affairs

Social and environmental sustainability is pivotal to guarantee the success of the extractive industry in Angola. On the one hand, socio-environmental sustainability is a long-term process to be implemented at early stages of the life of the mine. Therefore, it is stakeholders' responsibility to support the long-term development of work opportunities within and outside the extractive industry. In this context, it is stakeholders' moral obligation to come up with strategies to protect and enhance alternative livelihood options different from the early stages of the mine life cycle (Rakodi and Lloyd-Jones 2002).

Corporate representatives at mine sites state that "(they) are hiring locals to support current projects" and fostering regional sustainability. However, informal interviews with employees in the oil industry show that their senior and technical staff come from Brazil, Portugal, America, Italy, and France. According to the World Bank, the unemployment rate in Angola was 6.8% in 2013 (World Bank 2015) – a high percentage if compared to other neighboring countries such as Ghana and Uganda, whose current rates are 4.6% and 3.8%, respectively. Likewise, casual conversations with local community members confirmed that due to lack of employment opportunities, vulnerable groups (mostly women and young people) are more often obliged to find alternative self-employment opportunities in a substantial informal economy. However, government representatives stated that there are consultation processes in place that take into account youth and female expectations regarding their involvement in the industry.

Driven by strong spirit of entrepreneurship, locals more often start up a business to forge a livelihood with dignity. Becoming self-sustainable reinforces their desire for a high level of economic independence and points to the need to provide better employment opportunities for entrepreneurship at the community level. This will not only strengthen the community's capacity to respond to potential mining impacts but also assist them in the creation of job opportunities locally. More than ever, there is a need to protect livelihood options, as casual employment will not be sustainable in the long term.

The lack of job opportunities and entrepreneurship at the community level needs to be addressed in consultation with processes and through the development of corporate social responsibility agendas. Thus, the government and the industry should create strategic alliances with the most vulnerable, particularly women and young people. Employment and entrepreneurship opportunities should be regulated by the mining code, since at the moment it restricts to the protection of tangible and intangible assets and the protection of sacred territories and workforce development (Ministry of Geology and Mines of Angola 2011). In order to strengthen social sustainability, the existing mining code should be more specific and include a stronger component of human capital development for resource regions. This component should include key initiatives, as follows:

(a) Generation of employment opportunities within the extractive industry.
(b) Entrepreneurship programs that strengthen the value chain in the industry and other relevant industries for the local economy.
(c) Strengthening existing education programs at the local, provincial, and national levels of governance.
(d) Providing internship opportunities for young people and women in the extractive industry.
(e) Providing infrastructure for primary, secondary, technical, vocational, and work-related education.

It is imperative that all parties incorporate these aspects as part of their policy agendas (government plans and corporate social responsibility agendas) from exploration to mine closure. This will ensure regional sustainability (Buitrago and

Chatterji 2013). Likewise, the mining code should reinforce the abovementioned human capital component. This will create an added value for all parties but mostly for communities.

Regarding environmental sustainability, there are three aspects that need to be taken into account: first, the reinforcement of the environmental impact assessments. Mining rights holders should account each semester for the progress of these plans. Second, mining projects have to include closure and post-closure plans, so that the landscape and biodiversity remains a key component during the closure of mining activities. Finally, companies in partnership with civil society organizations and universities are called to allocate resources on environmental programs through corporate social responsibility agendas.

8.6.6 Taxation and Investment

Stakeholders will benefit if three conditions are met: tax benefits, tax exemptions linked to sustainability and social responsibility, and alignment with the Extractive Industries Transparency Initiative. The extractive industry is a sector that requires intensive capital investment, and therefore it is stakeholders' responsibility to create the conditions to ensure the management of mining revenues and investment. Research findings show that existing taxation systems are complex for investors, especially for locals. This situation is not only generating distrust by investors but is also compromising the productivity of the sector itself. In a comparative study that include several African countries, namely, Botswana, Ghana, Namibia, Tanzania, Zambia, and Angola, it was shown that there are critical factors that need to be taken into account to create a favorable investment environment, namely, geology policy, profitability of mining operations, policy stability, ability to anticipate future tax obligations, lack of clear policies, and lack of continuity and stability of the taxation system in the long term.

For example, one of the existing limitations is the consumption tax which varies between 10% and 30%, depending on the nature of the good or service (Council of Ministers 1999). In the case of the mining industry, this obligation is particularly high. Following the Mining Development Clusters policy, economic diversification is pivotal to advance towards regional sustainability. However, high taxation obligations compromise such diversification. The consumption tax is high if compared to other countries such as Botswana and Namibia with 15% (Datos Macro 2015) and 19% of consumption tax, respectively. Adjustments to existing taxation systems will not only attract foreign investment but will also encourage the creation of small and medium enterprises and potential suppliers for the industry.

Secondly, tax incentives should be linked to the development of corporate social responsibility agendas and environmental programs (Ministry of Geology and Mines 2011). Furthermore, such agendas must respond to existing development plans and involve the active participation of stakeholders, particularly communities.

Thirdly, the management of oil and mining revenues should be aligned with participatory and international governance mechanisms. Stakeholders will benefit significantly from a potential alignment with the Extractive Industries Transparency Initiative (EITI 2009) and the creation of a participatory and regulatory body to foster equitable revenue management. This body should consist of one representative at the national government (National Directorate of Environment and Safety), a representative at the local governance level, and a representative of civil society. This participatory and regulatory body should also be aligned with the Extractive Industries Transparency Initiative. In Colombia, for example, this system brought meaningful benefits for all parties (Buitrago Franco 2014).

8.6.7 Human Capital Development

Human capital development depends on two factors: location and access to human capital and services. The mining code regulates the development of relevant human capital for the industry as well as the provision of adequate services for the development of the sector: "When planning for mining, the executive power must provide for effective measures for sustainable economic development and for the protection of the rights and legitimate interests of local communities, as well as the development of national human resources" (Ministry of Geology and Mines 2011).

Resource regions are very often located in remote areas, preventing the industry from accessing skilled human capital. The lack of skilled human capital is reflected in the proliferation of foreign exploration companies (Italian and American). In order to meet the demand of human resources, the Ministry of Higher Education has implemented the National Plan for Human Capital Capacity-Building. This Plan seeks to close the gap between the lack of human capital and lack of employment opportunities in the country. This policy not only aims to provide education opportunities in areas related to the extractive industry but also covers other key industries for the national economy.

The National Plan for Human Capital Capacity-Building set the Agenda 2020. The plan has already contributed to identify human resources for the industry and has managed to identify the existing shortfalls for the development of human capital. Since this is a medium-term vision, the Ministry of Higher Education requires the collaboration of other institutions to conduct and plan this aspect, namely, Ministry of Higher Education, Ministry of Education, Ministry of Labour and Social Security, Ministry of Territorial Administration, and Ministry of Economy.

The plan has created alliances among these parties. A case in point is the partnership between the Ministry of Geology and Mines and the Ministry of Higher Education for the identification of human capital towards the implementation of PLANAGEO. Partnerships between public actors have produced satisfactory results. In the first half of 2015, for example, a meeting of geoscience specialists and experts in the field resulted in the creation of a database available for companies interested in

recruiting human capital. However, there is a need to keep strengthening these partnerships to increase the impact of the PLANAGEO.

In addition, human capital development requires the commitment of the industry in the development of corporate social responsibility with a strong component on human capital development (Buitrago Franco 2014). Some existing mining projects hire more Angolan workers than foreigners. However, mining operations are often carried out by Asian staff while senior positions are occupied by Russian, Brazilian, and Cuban personnel. In this context, investment in human capital is a requirement and a factor that compromises the productivity of the industry.

The mining code regulates the development of qualified human capital and emphasizes on knowledge transfer initiatives. For those cases in which professionals and foreign experts are required due to lack of local human resources, there is a time frame to train and replace foreign workforce. This legal framework also involves the participation of companies and other stakeholders. The success of this policy depends largely on stronger multi-stakeholder collaboration.

8.6.8 Governance

Angola has a strong governance system that comprises a plethora of policies, institutions, and processes. This component was considered by interviewees of lower priority over the first seven components of the AMV. In this regard, more attention needs to be paid to multi-stakeholder collaboration, international governance, and accreditation systems. In the Angolan context, the government is the institutional support for the approval of mining rights and the regulatory body over the three stages of the extractive activity. However, the study showed that there is an institutional gap to further promote negotiation practices among stakeholders. Therefore, there is a need to strengthen partnerships. One of the few examples of multi-stakeholder collaboration is the Anerrocha case. This is one of the most predominant associations in the mining for construction materials. The case of Anerrocha has shown that stakeholders can further collaborate in the establishment and enforcement of rules for the sustainable development of the mining industry. This case shows that national organizations can build successful partnerships with foreign companies delivering positive results for both parties. One of the outcomes of the Anerrocha case was the enactment of the national regulation for trade and transport for the civil construction sector. This regulation came in effect after a national workshop convened by all parties involved.

Multi-stakeholder collaboration is also required to enhance the government's capacity to ensure the alignment of the extractive activity with good governance practices such as the UN Global Compact, ICMM, EITI, GRI, PDAC, OECD, and ISO 26000, among others. In addition, the government in partnership with other stakeholders is required to begin the accreditation systems for other minerals and metals like gold. Future accreditation processes can borrow good practices from the exiting Kimberley Process.

8.7 Conclusions

The Africa Mining Vision is a regional policy that makes a call to all parties in the extractive industry to align with global and regional frameworks intended to contribute to sustainable resource development. Therefore, this chapter not only does trace a corporate roadmap to sustainable resource development but also assists stakeholders in identifying existing capacity-building gaps at the government level that might compromise the alignment with the eight challenges posed by the African Mining Vision (AMV).

Angola is a country with large reserves of natural resources that despite existing constraints and war-related transformations has been able to overcome key challenges in the extractive industry in the recent years. However, the country still lacks capacity to respond to global demands. In this context, the AMV aims to guide African countries to respond to global transformations. Thus, this study presented in this chapter aligns the Angolan governance environment with the AMV. The alignment was conducted in three steps: (a) a review of the local, national, and regional governance systems, (b) analysis of the institutional capacity in the government to respond to existing challenges in the extractive industry, and (c) a roadmap to trace the Angolan vision in the coming years.

The policy analysis established that the current governance system is strong. However, there is need to develop institutional capacity in the following priority areas: the government should address existing artisanal mining issues, and institutional capacity should be further developed to assist the government in the transition towards small-scale mining (SSM). Likewise, government capacity needs to be built to foster research and development and more efficient geological information systems. Actions also need to be developed to foster economic diversification, social and environmental sustainability, human capital capacity-building, and taxation and investment. Less attention should be focused on the development of governance mechanisms, as Angola holds a strong governance system that comprises a plethora of policies, institutions, and programs. However, capacity-building initiatives in this area should aim at aligning existing governance frameworks with international standards.

A capability analysis was also undertaken to determine the Angolan vision in alignment with the eight components of the AMV. Findings showed that artisanal mining is an issue that must be addressed urgently since it is one of the major challenges facing the industry and stakeholders at all levels of governance. The roadmap proposes the transformation of artisanal mining into small-scale mining (SSM) and capacity-building for artisanal miners to take part in a more structured industry and a diversified economy. In addition, artisanal miners should be given the opportunity to upskill and practice this livelihood or explore other employment opportunities in the industry. This will reduce the environmental and social risks tremendously, particularly in resource regions. The rational, responsible, and sustainable use of natural resources has the potential to promote economic sustainability in resource regions.

In addition, it is important to further develop partnerships among governments, business, and universities towards the development of research projects that provide sustainable solutions to the industry and the regions within which a company operates. Research should involve key areas such as mineral processing, land rehabilitation and water treatment, social sustainability, occupational health, and geological information. The later research stream began in 2008 with the National Geology Plan (PLANAGEO).

The PLANAGEO is the roadmap for the geological information system. Existing geological information dates the colonial era and is being updated after the implementation of the PLANAGEO in 2008. It is advisable to implement the PLANAGEO in articulation with the National Plan for Human Capital Capacity-Building. Actions undertaken in this component have the potential to overcome existing mapping limitations. The second stage of PLANAGEO should also be carried out in partnership with the Ministry of Agriculture, Environment and the Commission for the implementation of the Mining Development Clusters (MDCs).

The MDCs are the basis of the economic diversification – the third component in the roadmap. This process requires the coordination with other sub-sectors (gold, diamonds, other minerals, and metals) and key industries such as the agriculture, services, tourism, and transport. Economic diversification should also be accompanied by actions intended to foster social and environmental sustainability such as forging sustainable livelihoods with a main focus on human capital development and the implementation of environmental plans for mine site closure. Actions should be long term and take place throughout the life of a mine and in alignment with corporate social responsibility agendas as well as equitable resource allocation derived from resource development.

Impacted communities and regions should benefit from a more equitable resource allocation coming from royalties and taxes imposed on the industry. This is a medium-term initiative and should involve all stakeholders. In this regard, the Angolan government should embark on the creation of mechanisms and participatory systems for equitable distribution of mining revenues. These efforts must be aligned with governance systems such as the Extractive Industries Transparency Initiative (EITI) and should also focus on investment in human capital development.

The National Plan for Human Capital Capacity-Building is the national policy aimed to respond to existing human capital demands. Capacity-building in this regard should address two key areas: capacity-building in mining and capacity-building in key sectors relevant to the national economy such as the transport, services, construction, agriculture, and tourism. Likewise, human capital development must be linked to the development of research conducted in partnership among universities, the industry, and the government. This policy is part of a strong governance system. However, it still requires institutional enhancement to manage and implement the plethora of plans, programs, and projects that support other components of the AMV.

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Chapter 9
Study of Conflicts for Water in the Sustainable Livelihoods Framework: The Role of the Mining Industry in Cajamarca, Colombia: A Case Study

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Abstract In recent years, there has been an increase in socio-environmental conflicts in the mining industry. The conflicts over water (CA) are the most booming in the mining sector. One of the most controversial mining projects in Colombia in the last decade is the La Colosa mining project due to the water conflict generated by the project between the Cajamarca community (Tolima) and the mining company AngloGold Ashanti. This research provides a greater understanding of the case study conflict and introduces the 2030 Agenda for Sustainable Development Goals (SDGs), and, in turn, provides information on the influence of CAs on the scope of these objectives. This research contributes to the literature by highlighting that conflict in the Cajamarca area results from the broader socioeconomic impacts of mining operation rather than water as a resource.

Keywords Mining · Social sustainability · Sustainable development goals · Conflict · Water · Sustainable livelihoods · Colombia

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9.1 Introduction

The case study of this research, undertaken in the municipality of Cajamarca, Tolima, in the western center of Colombia, a Latin American country that since the beginning of 2000 has experienced a boom in the mining sector due to rising mineral prices coupled with policies that promote foreign direct investment in the mining sector (Helwege 2015). However, the increase in mining projects has not only generated economic impacts related to mining incomes but has also led to a boom in socio-environmental conflicts in the sector due to impacts on project-influenced communities. Water conflicts are the most intensified in the mining sector by the implications of resources on the livelihoods of communities, being not only a problem generated by the scarcity of the resource but is of a political, economic, environmental, and cultural nature (Martin and Justo 2015).

For the mining industry, water is integral to mineral benefit processes and hydrometallurgical extraction of metals and some industrial minerals. For example, Bayer process in aluminum extraction, cyanation of gold minerals, cement production, coal washing, refining of clays for the ceramic industry, reporting that the overall consumption of water in mining does not exceed 3–5% and from this usually recovers 80% or more as operational technology progresses (SME 2011).

On the other hand, of the conflicts between communities and mining in Colombia, where 72 socio-environmental conflicts happened in the territory in the last decade, 57% correspond to conflicts generated by mining activity, and, of the total of these problems, 47% relate to the affectation of the water resource (Pérez Rincón 2014). However, the sector for 2012 demanded 641 million m3, equivalent to 1.8% of the country's total demand, and, in 2018, experienced a 4% increase in demand for 2012, with the agricultural sector having the largest demand of the resource with 16.760 million m3 (Pérez Rincón 2014).

In the case of the Cajamarca region, a conflict has arisen around the La Colosa mining project. The project began its exploration phase in 2006 but only until 2011 when it became public began the campaign's opposition to the project in municipalities such as Ibagué, Piedras, and Cajamarca (Tolima) (Dietz 2018). Some of the arguments against the project are concerns about changes in the economic and social dynamics of the areas where mining operation occurs and the impacts on the quality and quantity of water from the Bermellon River basin and the larger Coello River basin (Sanchez 2014). Dutch NGO Pax Christi notes that the project will require between 631 and 946 million m3 of water for the mining operation to process 20–35 million valuable ore (IKV Pax Christi 2009). On the other hand, at the media level, the conflict took on the great boom, but the impacts are mainly directed toward the water sources in the mining project and how these would affect the surrounding communities.

As part of the problem generated by La Colosa, two movements focused on banning mining activities in these municipalities; these were held in Piedras and Cajamarca in 2013 and 2017, respectively, in which communities voted against mining activities in their territory. Following the consultation carried out in 2017, the

mining company suspended the activities of the mining project, and to date, these have not resumed; it is essential to note that the mining project is still part of the feasibility phase.

The objective of this research is to propose the implementation of the sustainable livelihood framework in line with the Sustainable Development Goals (SDGs) of the 2030 agenda to examine the impact of the conflict on water through the case study of the La Colosa project in Cajamarca, Tolima, focused on characterizing conflict over water and identifying priority SDGs for communities. The implementation of the sustainable livelihoods approach as a conceptual framework of this research allows to know the dynamics of the study communities and establish the relationships between the different components of the framework (structures, processes, conflict over water, and priority SDGs) to the livelihoods of communities.

9.2 Methodology

The study applies the sustainable livelihood framework created by the British Department for International Development (DFID) as the core framework to guide the research method. This methodology is a qualitative, case study-based analysis of the La Colosa mining project. The sustainable livelihoods (VMS) approach is a concept first introduced in the Brundtland Commission in 1987 to link socioeconomic and ecological considerations; this concept was expanded on Agenda 21 and advocated the livelihood logo as a broad objective in poverty eradication (Krantz 2001).

The first contribution made to the concept of a half-life was made in 1992 by Chambers and Conway (1991). Subsequently, the Institute of Development Studies at the University of Sussex (IDS) presents a modification of the concept of Chambers and Conway (1991), defining that a "means of life comprises capacities, assets (including social assets, physical assets and natural resources) and activities required for a living environment. A livelihood is sustainable when it can cope and recover from tensions and impacts, maintain or improve its capabilities and assets without undermining the resource base" (Krantz 2001).

In 1997, the British government reaffirmed support for the objectives of international development on poverty elimination. In this way, the government engaged DFID in supporting policies and actions that promote sustainable livelihoods, promoting the sustainable livelihood approach framework (Ashley and Carney 1999). Livelihoods are defined as sustainable when they:

- Are resistant to external stresses and shocks.
- Do not depend on any external aid (or if they depend, the aid itself must be sustainable from an economic and institutional point of view).
- Maintain long-term resource productivity.
- Do not adversely affect the livelihoods of others or compromise open livelihood choices for others.

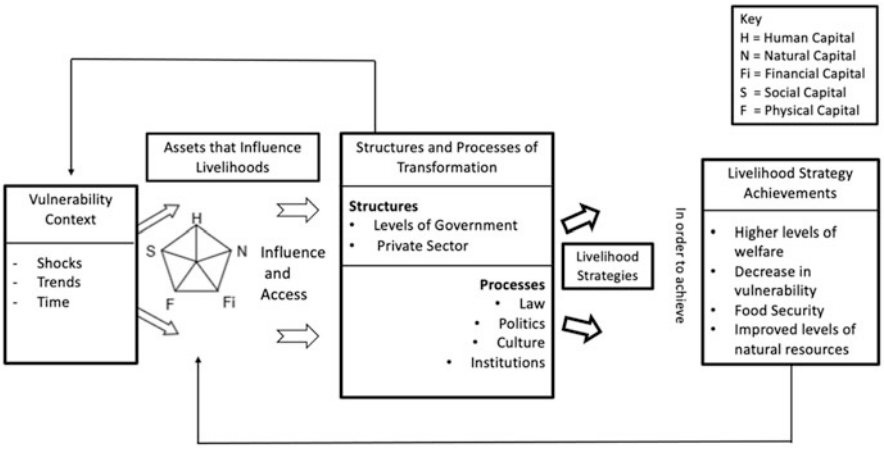


Fig. 9.1 Sustainable livelihood framework. Source: (DFID 1999)

Finally, the DFID, supported by IDS research, develops MMVS, becoming a tool to understand the livelihoods of populations, especially those with the greatest vulnerability (DFID 1999). Figure 9.1 presents the framework raised by the DFID.

MMVS comprises four components: vulnerability context, community assets, transformation structures, and processes and livelihood strategies. Identifying each and the relationship between them generates strategies in the field of livelihoods that reflect the achievements or results, which contribute to the improvement of communities making these means sustainable.

Vulnerability Context: The context of vulnerability frames the external environment in which peoples persist (DFID 1999); this component consists of trends, shocks, and temporalities, and the importance of this underlies the fact that they can directly destroy assets, influence livelihood strategies, and in many cases impede access to assets, especially in the most disadvantaged populations.

Community Assets: Livelihood theory focuses on people. To achieve a precise and realistic understanding of people's strengths (assets or capital endowments) and their struggle to turn them into positive livelihood achievements (DFID 1999), these assets presented in the pentagon constitute the scope of each capital. The central point refers to the zero access of capital by communities and the extreme in each capital the full access thereof.

Transformation Structures and Processes: Structures and transformation processes are the institutions, organizations, policies, and legislations that shape livelihoods operating at all levels, in all areas, from the most private to the public (DFID 1999). These effectively determine access to different types of capital, livelihood strategies, decision-making bodies, and sources of influence and determine the exchange between capital and the achievements of different livelihood strategies (DFID 1999).

Livelihood Strategies: These are the different activities or decisions that peoples make to achieve achievements in the field of livelihoods.

9.3 Sustainable Livelihood Framework

Based on the sustainable livelihood framework created by DFID, this study proposes an innovative approach, with the introduction of the 2030 Agenda Sustainable Development Goals as a component of the case study framework. The 2030 Agenda is the successor framework for the Millennium Development Goals (period 2000–2015); these SDGs are a global action plan that involves arduous collaboration between governments, nongovernmental organizations, the private sector, and communities to achieve equitable, socially inclusive, and environmentally sustainable economic development. This agenda agreed on the 17 Sustainable Development Goals (SDGs) and 169 integrated and indivisible sub-goals or related global targets, which entered into force on 1 January 2016 and until 2030 (UN 2015).

In multilateral organizations such as the UN and OECD, these objectives have managed to be included in the public policies of different countries from the local to the national level so that all people and especially the most vulnerable achieve the proposed goals and objectives (CCSI; UNDP; SDSN; WEFORUM 2016), (Colciencias 2017).

In this regard, DFID MMVS is an approach for sustainable development analysis of communities. This framework is currently measured using the targets set by SDGs proposed by the United Nations (UN). Thus, acknowledging the SGDs is an essential factor of measurement for this research.

Considering the above, a replacement of community capital is proposed by the 2030 Agenda SDGs; this component will focus on identifying priority objectives for case study communities through primary information raising. However, through the conceptual review of the Sustainable Development Goals, there is a substitution that identifies that access and support for various capitals must be accessed and supported to achieve each one.

The conflict over water is framed using the vulnerability context. In this way, the framework of sustainable livelihoods is a tool to study this type of problem, with which the relationships and limitations that may exist between the different components of the framework can also integrated; this means the relationship that the CA has to achieve the SDGs and the relationship between policies, regulations, and institutions in context and in the same way how it influences the scope of priority SDGs for study communities.

9.4 Discussion

This section shows the results of surveys deployed for primary information surveying. The survey comprised of the components of the MMVS applied to the case of the study. Each component focuses on the characterization of the conflict, identifying and analyzing the conflict's structures and processes, and finally identifying the priority SDGs for the affected communities of the La Colosa mining project.

A total of 40 people were surveyed, belonging to the following groups:

- Government entities
- Nongovernmental organizations
- Private organizations
- Community (people from the municipal head and green areas, among them the direct influence of the mining project)

It is noteworthy that the survey was implemented 1 year after the widespread movement held in the municipality of Cajamarca. Of the total number of people surveyed, more than 50% were men; the age range of 50% of respondents ranges from 30 to over 50. Regarding resident well-being in the survey, those residing in Cajamarca are classified by under 5 years and more than 5 years (more than 50% of respondents), using the above to verify that they were involved in the period in which the conflict developed.

9.4.1 Impact on Water Use and Quality by AngloGold Ashanti

During the survey conducted, 32 people considered that no impacts occurred during the exploratory phase of AGA. This group of people surveyed expressed that there were impacts on water sources on the La Luisa, La Paloma, and El Diamante (areas of direct influence of the La Colosa project) due to the construction of the line tunnel, generating a decrease in resource on the Bermellon, Anaime, and Coello rivers.

On the contrary, the population notes that the impacts of the mining project were socioeconomic as an investment in public infrastructure for schools and sports coliseum and improvement of the living conditions of workers. However, during the company's operation, there was no evidence of support for local labor and trade, and they employed more external staff and did not adequately socialize the project.

Finally, the population that pointed out that the company's exploration operations affected the quality and quantity of the water resource argue that this occurred in La Paloma, La Luisa, and El Diamante indicating that they used mercury in their work.

9.4.2 Public and Private Investments for Conflict Resolution and Sustainable Water Conservation and Use

In this respect, they noted that during the time that AGA operated in the municipality, private and public investments are made to conservation and sustainable water resource use. These investments correspond to programs for the conservation and sustainable use of private water by AGA and by NGOs such as Water Seeds in association with Usocoello and Cortolima. The people who pointed out that there was no investment in conflict resolution and sustainable water use expressed that the

programs implemented were ineffective and are not sustainable over time and that this support did not occur due to corruption.

9.4.3 Suspension and Resumption of AGA Mining Activities

At this point in the survey, 24 people considered that the suspension of AGA activities did not impact access and water quality. Most people explain that the impacts generated after the suspension of AGA operations relate to the unemployment that has led people to leave the municipality in search of labor opportunities in other areas of the country, reducing the investment of productive projects. This group of people relates that the people who previously worked with the mining company have been complex in their hiring in agricultural activities, as they require conditions of occupational risks and social security payment, aspects that small entrepreneurs in the agricultural sector express that the sector is not profitable to cover these obligations.

These interviewees express that if there were changes in water sources after the suspension of AGA operations, it would be the improved water pH with records through Cosajuca and Water Seeds (these NGOs did not provide measurements). They also argue that there is improvement in the amount of water on the project's vicinity. However, the people interviewed as residents of this area expressed that the area still does not provide drinking water, sewerage service, and good water quality even before the mining project started.

Concerning the resumption of mining activities by AGA, more than 50% of the groups interviewed (26 people) would admit these activities provided has led the company to operate in a responsible way to the environment, mainly with water sources and the proper management and investment of mining royalties for development generation in the municipality, increased recruitment of local labor, training of quality suppliers, and leverage programs of other economic sectors such as tourism and agriculture.

Also, they call for explicit socialization of the project concerning the impacts to be generated during the exploitation, both negative and positive, since during the time that the mining company was in exploration operations, there was much misinformation by private entities and NGOs, even considering that the problem was a political issue and that the root cause was water, when in fact the real issues were more socioeconomic.

Those who do not support AGA's activities in Cajamarca are concerned with the prioritization of food production and prioritization of the agricultural vocation of the municipality. Finally, they concluded that they do not admit AGA because of their background in environmental and social management of their projects worldwide, as they declare that AGA cannot guarantee that it will not impact water sources when it starts the exploitation stage and that the municipality needs more agricultural policies than mining.

9.4.4 Structures and Processes of SLF for the Case Study

Within the structures of this framework, the stakeholders are identified by the groups surveyed in the case study. These actors are classified at both the private and public levels, influencing the context of vulnerability. Table 9.1 looks at 15 stakeholders identified as the most relevant in the conflict in Cajamarca. This analysis comprises three groups: local, departmental or regional, and national actors.

Processes: After identifying and characterizing the relevant actors of the selected conflict, the structures that operate or interact for both the vulnerability context and how they influence communities to achieve the SDGs were determined. In the context of the conflict, each actor associates a policy, international agreements, social and cultural norms, and even relationship of power as listed in Tables 9.2, 9.3, and 9.4.

The international legislation and agreements/initiatives presented in the tables above were identified through second-rate information, taking into account those that relate directly to the water conflict of the case study. The processes include a set of initiatives and standards at the international level; in particular, this group of processes is associated with productive activities and especially mining, which would lead to the thought that these agreements apply only to the mining company (AGA). However, of the six agreements/initiatives/standards, they are agreements to be implemented by companies and governments such as the United Nations (UN) Global Compact and the OECD Due Diligence Guide.

Being the member country of the UN and the Organization for Economic Cooperation and Development (OECD), the government of Colombia must ensure the creation of strategies at the national level focused on human rights, labor standards, and environment and anti-corruption aspects aimed at achieving the 2030 SDGs. The conflict-affected and high-risk areas for the minerals' supply chain show that Colombia must demonstrate in each link (mining producer, marketer) the mining industry from any classification of activity. Currently, ore extraction is not allowed under any of the worst practices set out in Annex II to the OECD Due Diligence Guide, such as child labor, forced labor, serious human rights violations, and direct or indirect support to armed groups (Alliance for Responsible Mineria 2018).

On the other hand, we find processes related to national regulations, this column specifies those processes related to mining activity in the municipality of Cajamarca, and regulations were vital in developing the conflict. However, these laws and decrees are fundamental because they determine a power relationship between actors.

Table 9.5 shows Colombia's National Development Plan for the current period of government (2018–2022) and followed the Mining Sector Development Plan. The latter fuels the development of mining environmental legislation and, in turn, must contribute to achieving the objectives and goals proposed in the National Development Plan.

Table 9.1 Actors identified in the water conflict

Level	Structures	Role	Responsibility
Local	Aga	Private company of an international nature mining owner and sole investor of the La Colosa mining project (AGA 2019)	Make sustainable use of the mineral resources of the mining project to be developed. Comply with the current regulations for large-scale mining in Colombia. Design and execute community-approved mining operations, and such operations must be inclusive with the conception of the territory. Develop corporate social responsibility programs in the region, aimed at the contribution of sustainable community development
	Consortium of the line	Private construction company of the tunnel of the line and section of the double carriageway Calarcá-Cajamarca	Make use of natural resources in a responsible manner during the implementation of public duties
	Apraca	Association of agro-ecological producers in the Anaime River basin	Safeguard your work activity in order to avoid a change of vocation. Encourage and seek support from national and international agencies for the verification of conflict by the development of activity. Ask the company and government entities for information about the implications of their project development activity
	Mayor of Cajamarca	Exercise as first authority at the municipal level	Promote the defense of the primary rights of the community. Ensure that state institutions carry out proper control of mining activities in the municipality. Promote multisectoral collaboration for sustainability. Ensure the Well-being and improvement of the quality of life of the local population
	Cosajuca	Defending human rights with a focus on defending the territory	Safeguard the agricultural vocation of the municipality and conservation of the natural resources to support state agencies and internments for the defense of human rights and respect for the territory
	Ecotierra	Agroforestry project developer (Ecotierra 2019)	Safeguard the agricultural vocation of the municipality

(continued)

Table 9.1 (continued)

Level	Structures	Role	Responsibility
			and conservation of the natural resources of the strategic alliances for development of agroforestry projects, guaranteeing locality of life of small producers and conservation of forest resources
	Water seeds	Encouraging conservation agriculture (Water Seeds 2019)	Safeguard the agricultural vocation of the municipality. Protect, restore, and conserve natural resources, strengthening training processes in conservation agriculture, sustainable forest harvesting, environmental education, support for marketing clean products, improvement of food sovereignty and organizational strengthening in afro-descendant, indigenous, and peasant communities
Regional	Usocoello	Irrigation district located in the central area, bring water irrigation to the municipalities of Espinal, Guamo, Flanders, and San Luis (Usocoello 2019)	Preserve the Cajamarca watershed, for users of the Coello River and Caucana, in order to irrigate the center of Tolima for the production basically of rice, cotton, sorghum, corn, peanuts, tobacco, ornamental plants, permanent fruit trees, and fish
	Cortolima	Conduct environmental control of the department's productive activities	Ensure and exercise control for the sustainable use of natural resources, carried out by all industrial activities in the Department of Tolima in compliance with environmental standards Promote the care and preservation of natural resources
	Mayor of Ibagué	Execute the local Ibagué authority	Safeguard basic rights to water and avoid a detriment of public health. Request state entities for the evaluation of the mining project Seek support from national and international agencies for the approval of the project Management of popular consultation in the municipality of

(continued)

Table 9.1 (continued)

Level	Structures	Role	Responsibility
			Ibagué, with the support of civil organizations
	Mayor of stones, Tolima	Execute the local authority of Piedras, Tolima	Safeguard the agricultural vocation and conservation of the natural resources of the municipality of Piedras Request state entities for the evaluation of the mining project Request popular consultation with a focus on the prohibition of mining activities within the jurisdiction of the municipality
	Tolima University	Higher education	Promote and teach good practices in industry through the academy Promote the sustainable use of natural resources Secure the cultural and economic dynamics of the region Promote the conservation of natural resources
	Environmental Committee in Defense of life	Delivering higher education and promoting sustainability-focused research (Red-Decs 2019)	Defend the water resources and the territory of polluting extractive projects Manage strategic alliances for mobilization
National	Ministry of Mines and Energy	Leading public policy promoter and implementer for the mine and energy sector	Generate sustainable policies for the sustainable use of mining resources
	Ministry of Environment and development	Main promoter or executor of public policies aimed at the conservation and environmentally sustainable use of natural resources	Defend water resources and the territory from polluting extractive projects and manage strategic alliances

Table 9.2 International agreements and initiatives

International agreements or initiatives	Sustainable aspects of international agreements/standards or initiatives
International council on mining and metals (ICMM)	Voluntary principles of security and human rights (PV): The objective of PV is to get companies to carry out their operations representing human rights and fundamental freedoms. Composed of four modules: Stakeholder participation, risk assessment, public safety providers, and private security providers. For the case study, apply modules 1 and 2
Extractive industries transparency initiative (EITI)	Global standard that promotes open and responsible management of oil, gas, and mining resources

Table 9.3 International agreements and initiatives

International agreements or initiatives	Sustainable aspects of international agreements/standards or initiatives
United Nations global compact	It is an initiative that promotes the commitment of the private sector, public sector, and civil society to align its strategies and operations with ten universally accepted principles in four thematic areas: Human rights, labor standards, environment and anti-corruption, as well as contribute to the achievement of the sustainable development goals (SDGs)
Global reporting initiative (GRI)	The GRI standard is a tool that helps businesses and governments understand and communicate their impact on critical sustainability issues such as climate change, human rights, governance, and the social Well-being of communities of influence
World gold council	The conflict-free gold standard provides a mechanism by which gold producers can assess extraction and ensure that their gold has been extracted in a way that does not cause, support, or favor illegitimate armed conflicts, nor does it contribute to serious human rights abuses or violations of international humanitarian law
Due diligence guidance for responsible supply chains of minerals from conflict-affected or high-risk areas	It is a collaborative government and multilateral initiative on responsible management of mineral supply chains from conflict-affected areas. Annex II to the guide

Table 9.4 Processes related to national legislation

Colombian national legislation	Conflict aspects
Law 685 of 2001	Encourage technical exploration and exploitation of state-owned and privately owned mining resources: Article 5, Article 14, Article 19, Article 34, Article 45, Article 70, 78, 84, 85 and others governing mining activities
Decree 1076 of 2015	Law 1076 of 2015 Capitale 3 Environmental License Art. 2.2.2.3.1.3 Participation of Communities. Chapter 3 Section 5. Environmental Impact Study Art. 2.2.2.3.5.1. Chapter 1, Section 18 Conservation of natural resources in rural properties Art. 2.2.1.1.18.1 Water protection and use. Chapter 2, Water Use and Use Section, section 2.5 and 6. See Annex 1
Law 134 of 1994	Statutory law on People's participation mechanisms regulates popular legislative and regulatory initiative; the referendum; the popular consultation, of the national order, departmental, district, municipal, and local; revocation of the mandate; plebiscite and open lobby. Chapter V Articles 50 and 57
Law 1757 of 2015	Promote, protect, and guarantee modalities of the right to participate in political, administrative, economic, social, and cultural life and also to control political power. Articles 5, 9, 10
Unification judgment 095-2018	Judgment by which the constitutional court rules on popular consultations conducted around the mining industry

Table 9.5 Processes related to national policies

Policies	Points of conflict
National Development Plan 2018–2022	It is the plan that sets the objectives of the current government in Colombia, through programs and investment in the different sectors of the country (Congress of Colombia 2019)
National Mining Development Plan 2025	Promote the mining industry as a sector that progressively strengthens its legal certainty, sustainability, and reputation in the territories. Promote and position the mining industry as a sector that contributes to the economic and social development of the territory. Promote the inclusion of good practices in global strategic issues within mining activity. Consolidate mining as a regulated, responsible, and competitive business activity that contributes to its national and international projection (Ministry of Mines and Energy 2008)
National Policy for the Integral Management of Water Resources (2010–2022)	This policy sets out the objectives, strategies, goals, indicators, and lines of action for the management of this water resource in Colombia. It focuses on improving water quality, consolidating and strengthening governance for the integral management of the water resource, conserving the ecosystems and hydrological processes on which the supply of water for the country depends, and characterizing and optimizing the demand of the resource in the country (Ministry of Environment 2010)

The institutions and culture of the community are significant components identified in the study. These institutions are nothing more than practices, customs, or norms as activities are carried out and are directly related to culture. For the case study, a widespread agricultural vocation is identified in Cajamarca, where forms of informal procurement (verbally) are identified, which is a group of the economy that in many cases does not comply with labor regulations, agricultural activity is also recognized as a subsistence work, and the work of the countryside is part of the culture of the Cajamarcunos.

9.4.5 Priority Sustainable Development Goals for Communities Adjacent to the Mining Project

Based on the objectives of this research and as explained in the methodology, semi-structured interviews were able to identify priority SDGs for the group of respondents. Figure 9.2 presents the results of the surveys concerning the SDGs.

In Graph 9.1, out of 17 objectives, 5 were selected by 40% of respondents identified. In addition to identifying the objectives that were a priority for them in their communities, each person also expressed the key points by which they chose each one.

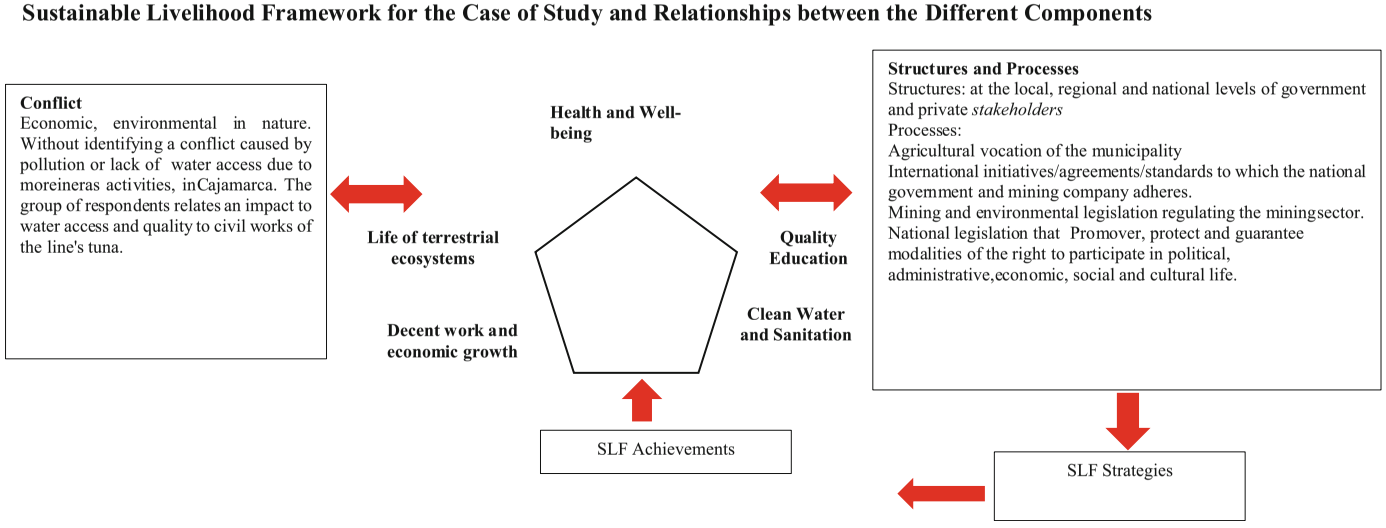
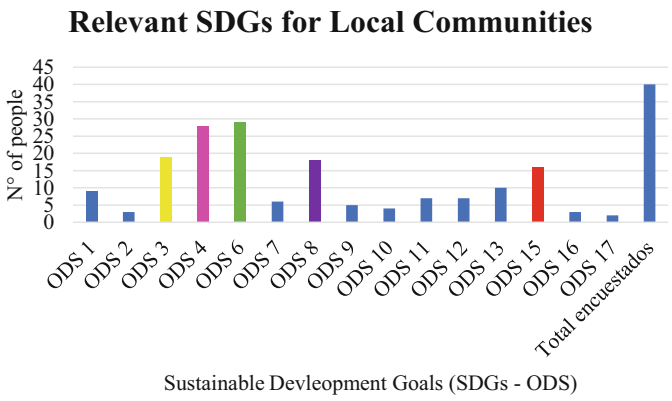


Fig. 9.2 Sustainable livelihood framework for conflict in Cajamarca, Tolima



Graph 9.1 Priority SDGs for communities

*"Governments must ensure better health services and infrastructure at the municipal head andin the green areas where*there are many cases of no points of *care."*
"When people have better health conditions, you have a greater opportunity for development."
"Quality education accessible to all people, for a population with training and obtaining greater opportunities for the improvement of quality of life, through access to employment with fair conditions in safety and remuneration. Citizens with quality education have solid critesto defend their ideals and face conflicts and thus there is no misinformation and manipulation by internal and external actors."
"Municipality with lacks in drinking water and sewage, overcoming this you have n citizens with better health conditions. Water is a fundamental resource for life."
*"There is no awareness among the inhabitants about*the sustainable use of water and the pro-technology of water *sources."*
"Few and current sources of employment do not offer decent and well-paid conditions. Decent employment guarantees better living conditions."
*"Strengthening the agricultural sector in the municipalit y*with affordable i*ncomes and technologies".*
"Protecting ecosystems, there is too much deforestation."
"Ecosystems are fundamental to the existence of living beings depend on them by the human being economically, culturally and socially. In addition, theprotection ofecosystems for future generations should be curly."
"The protection of ecosystems, guaranteeing man the use of natural resources that in turn are the generators of productive activities such as *mining, agriculture ,livestock".*

Of the main arguments, the relationship of capital with each of the arguments associated with strengthening a type of capital is recognized for the selection of each objective, as shown in Table 9.6.

Finally, the relationships that store internally and externally each of the components of the framework are illustrated.

Table 9.6 Relationship of prioritized SDGs with community assets

SDGs	Assets associated with community prioritized points
SDG 3 and SDG 4	Strengthen access to human capital Implementation of more infrastructure in health. Improving health service and providing quality education, this can be achieved through policies and legislation that facilitate access to quality health and education services
SDG 6	Strengthen access to physical capital Infrastructure to ensure drinking water or sewerage for communities
SDG 8	Strengthening access to physical capital Support access to production goods in this case technology and inputs for the agricultural sector Support for human capital Decent employment generation is required; it can be achieved through policies to promote good work practices in different economic activities
SDG 15	Support for natural capital Through policies, regulations, and investment in ecosystem conservation and reforestation plans

9.4.5.1 Relationships Between the Vulnerability Context and the SDP Pentagon

- The impact on water sources exposed by the groups surveyed related to the construction of the line tunnel exercises a relationship that limits access to clean water (SDG 6).
- The high competition between the different users of the Cajamarca watershed, such as Usocoello, agricultural sector of Cajamarca, and AngloGold Ashanti, also limits access to clean water from communities (SDGs 6).
- During AGA's operations, trade dynamization was experienced and investment in the promotion and creation of productive projects increased, generating economic growth in the municipality (SDG 8).
- Following the suspension of mining operations, groups of respondents expressed an increase in unemployment in the municipality, which impacts economic growth (SDG 8). It also led to a decrease in investment in infrastructure for health and education, limiting the scope of SDGs 3 and 4.
- During the characterization of the conflict, it was identified that agricultural activities in Cajamarca and in general in the region are not competitive, so the income of the sector is not sufficient to guarantee a profitability to farmers, farmers, etc., thus leading the sector not to offer jobs with fair working conditions (salary and safe conditions); in addition an unproductive sector is not able to make social contributions as remuneration for the use of resources. This limits the scope of decent work and economic growth (SDG 8).
- In contrast to the above ratio, and putting the agricultural sector at a disadvantage on the market for the not fair price of its products, the mining sector, on the other hand, experiences high foreign investment and fair mineral prices, which means that this sector made considerable contributions in royalties and made investments in infrastructure and support for productive projects in communities. In this

way it turns mining into a dynamizer of the local economy, therefore, generator of economic growth (SDG 8).
- The use of mineral resources through AGA's operations can in the future generate deforestation and in turn displacement of fauna in the region, which affects terrestrial ecosystems (SDG 15) and, therefore, affects access to other natural resources necessary for other economic sectors and domestic activities in Cajamarca (SDGs 8 and SDGs 6).

9.4.5.2 Relationship Between Processes and Structures

- Subsoil ownership and nonrenewable resources rest with the Colombian state and local authorities, who are responsible for determining land uses, generating a conflict situation in populations such as Cajamarca, which have an agricultural vocation related entirely to land use and currently experience open pit mining operations that require the use of nonrenewable land and subsoil resources, creating a power relationship between government company and communities.
- Mining and environmental regulations also exercise a control relationship, as they determine the correct way to execute mining activities accountably, without violating human rights and environmental protection.
- Citizen regulations can enable power in communities, so that a mining activity observing territorial and environmental dynamics can be configured together with government companies and institutions; however, until now the mechanisms of citizen participation in Colombia do not give the right to populations to prohibit mining activities in the territories.
- International standards/initiatives or agreements encourage companies such as AGA and government institutions to create spaces for community participation in projects.

9.4.5.3 Relationship Between Structures/Processes and Vulnerability Context

- Discontent in communities over the poor socialization of the mining project leads to the realization that mining and environmental regulations were not effectively applied in the event of the participation of communities (public hearings), thus generating the imposition of projects that lead to conflicts between company, community, and government.
- Within the conflict, international standards/agreements or initiatives can act as mediating mechanisms in socio-environmental conflicts, when they are implemented transparently. Even the application of these standards or initiatives from the beginning of mining projects can avoid conflict.
- The (informal) culture and institutions in a community can be a major trigger with mining extractive projects, especially when communities see their culture and practices threatened by mining activities. In the case of the conflict in Cajamarca,

the inhabitants saw the threatened agricultural vocation and informal work practices around it, being an uncompetitive sector that does not offer optimal working conditions, in contrast to the high generation of employment generated by mining activity in the municipality.

9.4.5.4 Relationship Between Structure/Processes and the SDP Pentagon

- State entities such as the Ministry of Mines and the Ministry of the Environment are directly responsible in conjunction with mining companies for ensuring the life of terrestrial ecosystems. This occurs when responsible use of resources is carried out, less impacting the environment and implementing real environmental management plans that comprise all the components of the affected ecosystems. In this way, access in quantity and quality of the water resource for the populations adjacent to the mining project must also be ensured (SDGs 6 and 15).
- AGA/agricultural sector and other sectors of Cajamarca must offer minimum to fair wages and safe working conditions to their employees (SDG 8).
- The national government must ensure the creation, promotion, and implementation of policies that guarantee competitiveness in the economic sectors – so that they generate income that is profitable enough, which leads to the gain of the owners – and the offer of decent employment that in turn generates economic growth not only to provide jobs but also to leverage other productive activities that diversify the local economy. The situation occurs between the agricultural and mining sectors in Cajamarca (SDG 8).
- Government from the national to the local nature must provide transparent management and investment of taxes and royalties from the different economic sectors, which are developed in the municipality, in order to provide the necessary support in education infrastructure and quality health and education services for communities. In addition, the government must manage strategic alliances with the private sector for joint social investment, to improve education and health infrastructure (SDGs 3 and 4).

9.4.6 Sustainable Livelihood Strategies

Strengthening spaces for the participation of extractive projects: Transparent socialization of the La Colosa mining project in Cajamarca and another municipality that is indirectly affected by the project is key.

Strengthening the agricultural sector: Generation, promotion, and implementation of government policies aimed at local, regional, and national competitiveness of the sector, in order to make this a profitable activity, and thus offer decent jobs and generate sustainable economic growth.

Diversification of the local economy: Through the support of productive projects based on the capacities of communities such as the training of quality local suppliers for mining activity and other economic sectors.

Formation of strategic alliances: Joint work between the private sector and local, departmental, and national government, in addition to general public policies according to the social, economic, and environmental needs of populations with mining influence; these policies are of an important nature. It is therefore proposed to develop the following policies:

- Policies to promote and implement an economic solidarity, i.e., support for family and school education from childhood.
- Policies to promote and financially support small businesses in sectors other than mining.
- Accountability policies in the Department of Tolima, in order to keep control of the distribution and investment of mining income in mineral resource use areas.
- Policy to improve the physical infrastructure of basic community services such as health, education, drinking water, and sewerage.

9.5 Conclusions and Recommendations

- More than 50% of the groups interviewed do not consider AGA as a relevant player of the impacts in terms of quality and quantity of the water resource, during their exploration activities; however, they argue that the impacts of the mining company were of an economic nature in the municipality, associated with traditional livelihoods. Therefore the conflict presented in the region was mostly due to the changes generated on the agricultural sector, linking mining activity as a sector that displaces or minimizes the agricultural vocation of the municipality, given the labor guarantees offered by mining in contrast to the labor informality of the agricultural sector today.
- The population addressed considers that the greatest impact on water sources, in relation to the quality and quantity of the resource, has been generated by the construction works of the line tunnel and not by mining activities.
- The conflict in Cajamarca must be addressed from various points (economic, social, political, and environmental), although for the population they do not see any impact of mining in the watershed. It is clear that competition for the water resource in the area is high by different sectors, obeying economic and political dynamics without having the different local users.
- On the other hand, the conflict did not have the necessary intervention by the different government actors, and the problem took on a media and political tint, which prevented us from showing the real impacts of the mining project (positive and negative) and the historical conflict over water through the watershed of the municipality.

- Priority SDGs for communities are as follows: Objectives, (3) Health and Wellness, (4) Quality Education, (6) Clean Water and Sanitation, (8) Decent Work and Economic Growth, and (15) Life of Terrestrial Ecosystems.
- From the results of information-raising in relation to the SDGs, a direct relationship can be established between these objectives and the capital of the communities, as presented in the previous sections.
- The implementation of the Sustainable Livelihoods Framework with the introduction of the SDGs is a very useful approach to monitoring the fulfilment of these objectives. Even this can be applied and can analyze the different themes in the context of vulnerability of a population.

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Chapter 10
Sustainable Communities in Resource Regions: Exploring the Case of the Mining Industry Resettlement in Colombia

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Abstract In recent times, the world has experienced major challenges in achieving the Sustainable Development Goals (hereinafter SDGs). In the Colombian case, academics, educators, and practitioners in this area have embarked on activities aimed at integrating the SDGs into the industrial sector, particularly those sectors that involve the sustainability of mining regions and those where natural resources are extracted (Cano et al. 2019). A recurring problem in theory and practice is the limited applicability of existing methodologies for the study of issues that comprise the sustainable development of mining regions (Buitrago-Franco 2014). In this context, this chapter presents the implementation of the Sustainable Livelihoods Framework (SL), as a methodological tool used in sustainability science for the study of issues related to sustainable development and applied to the case of a mining operation in La Guajira, Colombia, and its relationship with communities impacted by resettlement processes. This chapter therefore explores the connections with the components that make up the Sustainable Livelihood Framework. This chapter also explores the use of both approaches as analytical frameworks to examine the impact of the mining industry on the sustainability of communities adjacent to mining projects, particularly during resettlement processes.

Keywords Resources · Sustainable livelihoods · Community · Resettlement · Colombia

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10.1 Introduction

The findings presented in this chapter contribute to the science of sustainability and sustainable development while helping to solve the paradox between limited knowledge about the methodological tools available for the location and scope of the SDG and the need to address problems associated with the sustainability of vulnerable communities, specifically those impacted by the excessive resource development.

10.1.1 The Sustainable Livelihoods Framework

The Sustainable Livelihoods Framework (SL) is an applied tool for studying cases associated with poverty reduction and sustainable development processes. The framework is principled and guides the implementation of the SL for the analysis and implementation of development projects. The framework is grounded on the following principles: people-centered, responsive and participatory, multi-level, collaboratively driven, sustainable, and dynamic (Carney 2003). Designed by the UK's International Department for Sustainable Development, the SL explores solutions and opportunities for the sustainability of vulnerable communities adjacent to mining operations: "To be considered sustainable, a mining community needs to adhere to the principles of ecological sustainability, economic vitality and social equity. These principles apply over a long period of time, covering mine life and post-mining closure" (Buitrago-Franco 2014). The framework comprises several components: context, governance relationships, community capital, and/or active and sustainability strategies. According to the literature, the framework also allows recommendations to be generated to achieve a sustainability model to the case of study, to which it is applied.

The principles on which the SL are based when applied to mining contexts allow, among other outcomes, the harmonization of relations between actors and the integral and sustainable development of communities, establishing governance relations that ensure the application of national and international standards to govern the behavior of interactors and stakeholders.

Industries such as mining have a significant impact on communities, particularly those involved in voluntary or involuntary resettlements, processes that in turn generate socio-spatial transformations. In the case of the Cerrejón project in La Guajira, there are large implications for the indigenous communities adjacent to the project. Research findings show that essential to the resettlement process is the agreements between stakeholders for relocation purposes. Resettlement is an activity that generates an impact on sustainable community development, generating adverse cultural, economic, and psychological consequences, among others. At the time of this study, Cerrejón's social responsibility reports show a record of 25 resettled families (Cerrejón Ltda n.d.).

This chapter aims to analyze the context in which the community is immersed, present the governance processes associated with the resettlements carried out by the company Cerrejón in the department of Guajira, Colombia, and explore the connections to and impact of resource extraction on the economic livelihoods of the Roche community, a vulnerable population adjacent to the Cerrejón mine. The analysis of these components also allows recommendations to be generated for stakeholders, contributing to the sustainability model for communities impacted in the region.

10.2 Context

According to the Sustainable Livelihoods Framework (SL), the context in which communities are immersed is one of the essential components in identifying the factors and impacts of resettlement processes in communities, in this case those adjacent to the Cerrejón mine. For the purposes of the study presented here, an exploration of the resettlement processes was carried out, in the local and international contexts.

10.2.1 Local Context

Colombia is a country that has particular geographical and climatic characteristics that, in mining regions, can become threats to vulnerable communities: flooding, volcanic eruptions, seismic activity, and landslides. These factors have greater implications when other problems arise, such as the absence of a territorial policy, developing high levels of threat and vulnerability. In addition to this is the internal armed conflict and the incidence of mining energy projects. These factors are the main causes of various forms of resettlement in the country, such as:

- Resettlement for development projects that include a physical concept of the modernization of the city (public works or infrastructure; environmental or public space recovery).
- Natural disaster resettlement or high risk: contemplated for cases where housing was developed on flooded or unstable land and the risk of slippage determines the need for a resettlement. Additionally, the circumstances of natural disasters determine if it is necessary to advance the reconstruction and resettlement of a significant number of inhabitants (Morales and Molina 2003).
- Resettlement as a result of violence and forced displacement.

The Cerrejón mine located in the department of La Guajira between the municipalities of Albania, Barrancas, and Hatonuevo is one of the most high impact open-pit coal projects in the world. The project has carried out two resettlement processes in recent years, with implications for the Tabaco and Roche communities. Starting in 1983 when the mine began its operations, the constant expansion of the project

generated the forced displacement of Wayuu and Afro-Colombian indigenous communities in the region. The resettlement of Tabaco-Hatonuevo village dates back to 1997, when, in the face of community resistance, the company started applying pressure through various means. The inhabitants of Hatonuevo were isolated through the purchase of neighboring farms and closures of the roads, including the main road connecting them with Albania, their primary commercial center, where construction of an artificial lagoon was undertaken. The case analysis shows that the inhabitants were surrounded by members of private security, which increased fear in the community. The vigilantes imposed restrictions that prevented night hunting, a traditional practice, and entry into their working grounds. At this time, they received an order from the municipal government that arranged the cut of basic services such as water and electricity. Teachers were also removed from their positions, the health center dismantled, and the telecommunications office (Telecom) closed, and part of the Catholic Church was unilaterally destroyed which was built with resources from the same community (Reexistencias 2011). Finally, on August 9, 2001, the eviction of the Tabaco community took place. Although expropriation was traumatic for the community, the state justified themselves with the argument that displacement was valid as the Afro-descendant territory had been declared a wasteland and therefore owned by the nation in 1999. However, faced with these facts, the Supreme Court of Justice ruled on May 7, 2002, in favor of the community requiring the reconstruction of the social fabric and the resettlement of the village. The process took place some time later in the La Cruz district, administrative jurisdiction of the same municipality; however, there was no title recognizing that the land belonged to the inhabitants of the community. Land recognition was only carried out until the beginning of 2013 (Buitrago-Franco 2014).

10.2.1.1 The Roche Community

The Roche community, the focus of this study, "is located on the right bank – downstream – of the Rancheria River, between the river and the first elevations of the Perijá highland in the southern part of the municipality of Barrancas to which it belongs administratively" (Cerrejón Ltda n.d.). The resettlement of this population was presented by Cerrejón as a successful case that exceeded the rates of unmet basic needs that previously characterized the population. However, according to an investigation by Indepaz, resettlement was more of a company-led process than a joint work between community and business. The resettlement process in San Roche coincides with the growth of coal production in La Guajira in 1990, when a growth of 13.070Kt was reported. Evidence shows that 25 years later, a production of 33.703Kt was reported representing a growth of 258% (UPME 2013). Clearly, to achieve growth of this size requires an expansion of the company's operations into neighboring towns. Under normal conditions, the company's production targets are set at 40,000Kt per year. These targets have prompted the company to engage further in resettlement processes, with the aim of expanding operations in the department of La Guajira.

The process of relocating the Roche began in 2003, and to date the company reports that 23 of the 25 families were relocated. The two outstanding families, despite receiving multiple proposals, have rejected settlement. Faced with this situation, the company has advanced expropriation processes (Cerrejón Ltda n.d.). Evidence shows that the families of Old Roche were evicted by ESMAD (Mobile Riot Squad) on February 24, 2016. During the event, the judge of Barrancas attended, stating that she was commissioner for the execution of a sentence that favored Cerrejón. The company called for eviction, and there were clashes with the community ending in the families being expropriated. On April 11, 2016, the Administrative Dispute Tribunal of La Guajira ordered Cerrejón to set up work and socialization tables with the active presence of the community within 1 month (The Herald 2016). One of the requirements is the transfer of the remains that rest in the cemetery, currently converted into Cerrejón territory for mining extraction.

10.2.2 Governance

According to the Sustainable Livelihoods Framework (SL), in order to examine the roles and responsibilities of the stakeholders in the resettlement process caused by the expansion of Cerrejón operations, it is necessary to examine the parties involved, policies, and governance processes of both parties. Therefore, this section undertakes a brief policy and stakeholder analyses and explores the perceptions of the actors involved.

10.2.2.1 Policy Analysis

In order to understand the governance environment in which communities are immersed, it becomes necessary to examine the international standards that apply to each of the cases. This will allow us to perform a comparative analysis and propose an appropriate and contextualized application of the SL to the study of both communities.

The legal framework in Colombia lacks sufficient regulations to govern issues such as resettlement. However, Law 685 of 2001 states that as mining is an activity of public utility and social interest, the expropriation of property that is required for the building and installation of infrastructure and assembly of the mining project may be requested, particularly for the realization of mineral extraction during the period of extraction (Congress of the Republic of Colombia 2001). At the international level, the IDB (Inter-American Development Bank) has created governance frameworks related to this area. These frameworks suggest the importance of the development and implementation of a Resettlement Action Plan, as a result of technical, social, and legal management that allows "to collect information from the property census and cadastral surveying, study of titles or state of ownership or possession of the premises, and of the socio-economic diagnosis, which allows the

establishment of affected social units, types of affectations, and adequate compensation measures" (MinVivienda 2013). These policies proposed by the IDB are the same as those recommended by other organizations such as the World Bank and ADB (Asian Development Bank). Historically, the issue of resettlement has shown positive developments in the application of international standards for conflict resolution. On the Cerrejón S.A. website, there are aspects of their social responsibility policy relating to meeting the demands of the communities under study.

10.2.2.2 Stakeholder Analysis

In order to study this variable, an analysis of actors was carried out, and their level of involvement, interests in qualitative terms, and aspects of conflict and collaboration were evaluated, as shown in Table 10.1. Findings show that conflict relationships between actors are more prevalent than collaborative ones. It is noted that most actors have a high interest in the issue of resettlement, but this contrasts with findings that show that the power or influence of each stakeholder is different and is measured in the potential of each actor to take action freely. These relationships between the various actors have been governed by rules, laws, and/or decrees, particularly those mentioned in the immediately previous section.

10.2.2.3 Community Assets

Every community, including those in a state of vulnerability and those impacted by resource development, has assets that enable them to forge sustainable livelihoods. The SL explores five forms of assets: physical, natural, social, human, and financial (Department of International Development 1999). Analyzing this component allows us to gain an accurate and realistic understanding of the strengths and assets of communities and explore their opportunities to convert these assets to more sustainable livelihoods (Department of International Development 1999).

In the present case, community assets were explored as constituent components of the SL, and impact measurement indicators were proposed for the resettlement of the Roche community (Buitrago-Franco 2014). Table 10.2 shows the indicators that promote capacity building in the affected population, particularly in identified assets. The indicators were generated according to each type of capital.

Evidence shows that seven permanent jobs have been created and ten seasonal jobs in agricultural crops, thus contributing to the community's financial assets. Gross revenue of 170 million COP and community-generated gross sales of COP 302 million were also generated in 2012. At the end of 2012, 21 people received support for technical, technological, and university studies. So far, 20 productive projects have been launched. A health post and educational center were installed for the community, strengthening its human assets. Also, the aqueduct and sewerage service for water treatment was installed in the Roche community. Evidence shows

Table 10.1 Governance processes

Stakeholder	Perceptions
Cerrejón	The resettlement of the Roche community is necessary due to the impact of dust generated by the present and future activities of Cerrejón. It is also located within the mining concession area of Cerrejón in Barrancas, La Guajira, Colombia. In 2012, 17 of the 25 families moved to the new site as a result of the first negotiations. In the same year, the company began the expropriation process against the remaining eight families. In the same year, the company started the expropriation process against the remaining eight families, but in 2013 an agreement was signed with all the families impacted to leave Roche (Cerrejón Ltda n.d.). Between January and March 2014, six of the eight families moved to the new site, but two families remained in the original location due to a disagreement with the land determined for livestock. The land, the farm La Sorpresa, comprising 175 hectares, was bought by Cerrejón after two heads of family evaluated several land alternatives. The company built infrastructure, tended to animals that were incorporated into the field, and carried out an exploration in search of groundwater sources, which did not generate positive results. Cerrejón presented various proposals to provide water to the property and subsequently seek expansion into other properties. Land offers were reviewed taking into account water availability and the capacity to host livestock. These offers were discussed in 22 meetings over 18 months. Despite Cerrejón's efforts to fulfill their commitments, the two families remained at the former Roche settlement and have refused to accept any of the offers submitted by the company. The offer constitutes the following components: - Purchase of the plot and existing improvements to the property at an additional replacement value and compensation of 150%. - Payment for any damages caused (damages for the pain and suffering that could be caused by selling the property and moving to a new site). - Payment for the costs of dismantling homes, clearing the property and improvements to be delivered. - Cerrejón pays all transaction costs. - Housing, urban infrastructure, cemetery, and 1 hectare of land per family on a common land. - Seed capital for the family to implement productive projects and a development support plan. - Drinking water supply and wastewater treatment system. - Psychosocial support for adaptation to the new environment. - Advice on the identification of productive projects, development of business plans, and implementation. - Access to technical or university education within 10 years and support for cost of living. - Economic support for the elderly for 10 years after relocation. - Delivery of rural land in response to the impact caused to those who currently use the original land for livestock.
Local government	The mayor's office, representing the local government, has an important role to play in this scenario. This has manifested itself mainly in aiding professionals, including architects to design new houses for the inhabitants of Roche and social workers who represent the mayor's office as part of the resettlement process (Mayor of Barrancas n.d.). The

(continued)

Table 10.1 (continued)

Stakeholder	Perceptions
	only information concerning the contribution that the municipality has made to the Roche community can be found published on the official website of the municipality of Barrancas, where a comprehensive endowment is issued for the educational institutions within which José Agustín Sol Headquarters in Roche is located (Mayor of Barrancas 2015)
Community	The community's view is different from that of the company; they claim that in 1997 the community consisted of 180 families, but due to the resettlement processes, only 25 people remained. The remaining community was in a position of total helplessness and extreme vulnerability to abuse of power (Roche Ancestral Community Council 2016)
Nongovernmental organizations	In 2013, Indepaz, with the purpose of analyzing the situation of the Roche community, divided them into three parts, namely, the Roche living in the "new Roche" (resettled population); Roche living in "old Roche" (not resettled); and those who sold their lots to the company before the company implemented a resettlement policy. Similarly, the following indicators received by the organization relate to the quality of life and sustainability of the communities involved: ▪ Determined effects on the affected population. ▪ Legal framework. ▪ Assistance for resettlement. ▪ Consultation and participation. ▪ Complaint resolution. ▪ Monitoring and evaluation. - Education. - Health. - Housing. - Community organization. - Participation of the community. - Autonomy of the community. - Social integration. - Institutional action in affected communities. - Trust in the institutions that participate in resettlement processes

that the plant is managed by the communities it serves through the Asoawinka User Association (Cerrejón Ltd 2012).

An analysis of the situation also shows that there have been challenges in the implementation of productive projects related to providing physical capital, mainly with regard to the provision of irrigation systems for agriculture. According to the company, this has been caused by droughts, which have also created difficulties in the implementation of agricultural projects that require irrigation systems (Cerrejón Ltd 2012).

Table 10.2 Community assets and indicators

Assets	Indicators
Human capital	- Training. Number of trained people per year. - Educational level. Adult literacy before and after. - Work experience number of people with 1 or more years of experience before and after. - Health. Number of health centers before and after. - Employment. Employment rate before and after.
Social capital	- Population growth. Annual population growth rate. - Citizen participation. Number of community-formed nongovernmental organizations.
Natural capital	- Extraction levels. Extraction rate of the quarry with influence on the population of Roche.
Physical capital	- Aqueduct services. Percentage of population without aqueduct service before and after. - Energy services. Percentage of population without energy service before and after.
Financial capital	- Productive projects. Number of productive projects. - Revenue of productive projects. Revenue from productive projects

10.3 Conclusions

The involuntary resettlement process that has impacted the Roche community in the Department of La Guajira, caused by the expansion of mining operations in Cerrejón, has resulted in the displacement of the surrounding communities and social destabilization, generating impacts on family dynamics, especially in families with whom a resettlement agreement was not reached. In this context, the following recommendations are made:

- Cerrejón must carry out a thorough study of the sociocultural characteristics of each community, in order to ensure the social and economic sustainability of its inhabitants.
- The community must be a participant in all activities that are part of the resettlement process, with the aim of improving their living conditions, so that they are the protagonists in their own development and forging more sustainable communities.
- The municipal Mayor of Barrancas and the national government must work closely with the communities on a permanent basis, in addition to ensuring their rights. This ensures that the multinational fully complies with what is proposed and contributes to the economic integration of the resettled population within the municipality of Barrancas in its urban area.
- The University of La Guajira, as the only higher education center in the department, should play a more participatory role in the training of communities and in the development of social and community projects that lead to the sustainability of the communities adjacent to Cerrejón.

Another aspect to consider is the establishment of families with their homeland, which creates difficulties for their adaptation. In addition, it was identified that the restoration of economic or income-generating activities also poses a challenge for a large group of families, so it should be emphasized that resettlement projects should be provided with psychosocial support that generates positive change in the communities and results in the proper management of financial resources. Otherwise, it can increase the vulnerability of the communities, compromising the sustainability of communities, in the Department of La Guajira, Colombia.

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Chapter 11
Mining and Sustainable Development in Colombia

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Abstract This chapter addresses mining and sustainable development in Colombia. It is intended to be used as a tool to serve governing bodies, business, and other interested stakeholders. This manuscript also forms part of the global sustainability dialogue and tackles key issues associated with the sustainable development agenda. This includes assessing the responsibilities of various interest groups and the core issues in the mining industry, specifically within the context of Colombia.

Keywords Sustainability · Mining · Colombia · Livelihoods · Community · Governance · Stakeholders

11.1 Introduction

In the last decade, there has been a significant increase in both the volume and value of primary goods production, particularly in the mining and hydrocarbons sector, which has positively and significantly affected the country's gross domestic product (GDP) (Fedesarrollo 2012). The mining sector represents an average of 2.2% of Colombia's GDP, increasing from $9.5 trillion in 2010 to $10.6 trillion in 2015, with a foreign investment of approximately USD $2272 million per year for the period 2010–2014 (Ministry of Mines and Energy 2016).

In light of this, the mining sector in Colombia should be considered one of the main economic engines, since it does contribute not only to employment creation but to investments in infrastructure, public utilities, and social and environmental management (Ministry of Mines and Energy 2016).

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However, there is disagreement over mining's benefits with political, economic, environmental, and social critiques of the industry as a result of mishandled mining practices. These practices have led to negative social impacts, since many informal mining activities allow child labor; make use of unskilled labor; generate poor quality jobs with low levels of industrial, social, and health security for miners; and are usually developed in remote and deprived areas. Furthermore, they generate conflict between large mining industries due to concession contracts awarding. Regarding political and economic impacts, a minimum working capital and scarce financial resources for investment have been seen to result in an improper handling of inputs and royalties.

Undoubtedly, the flow of resources from mining is increasing, and projections show that the growing trend will continue, with international mining markets showing dynamism. This situation could be exploited by Colombia, given its geographical location and its geological potential (FEDESARROLLO 2012); it is estimated that US$250 billion will be invested in mining projects in Latin America between now and 2020 (CEPAL 2018). Thus, the mining sector is gaining importance in public policy, due to the high revenues generated by its operations and the social and environmental impact of the sector's activities, hence the importance of seeking solutions, methodologies, and sustainable alternatives to meeting the challenge of turning mineral wealth into an opportunity for development while considering how investing in resource extraction of nonrenewable assets can be undertaken without affecting renewable resources for future generations.

This chapter is a tool to serve governmental bodies, businesses, and other interested stakeholders in the mining sector in Colombia, with the goal of improving sustainability practices and social license. In the context of Colombia, this chapter tackles many key issues associated with the sustainable development agenda within the global corporate sustainability dialogue. This chapter will outline the key stakeholders and their responsibilities using the La Colosa mine as a case study.

11.2 Problem and Significance

The increase in the price of primary resources, economic stability, and mining policies have induced an increase in foreign capital investment associated with mineral extraction. Considering the need for renewable resources, it is important for institutions and environmental NGOs to align with the motto to "preserve the environment for future generations" (De la Hoz and Orozco 2015). For this reason, the locus of diversity in discussions around the world must address the potential negative impacts to the environment. These negative impacts have motivated a rejection by some groups of mining projects with potentially large economic, social, and environmental impacts for Colombia (De la Hoz and Orozco 2015).

Despite the fact that the La Colosa mining project finds itself in the initial phase of mining exploration, it has been openly rejected by the Piedras community in Cajamarca without in-depth analysis of the various impacts that may have been

produced by the project (De la Hoz and Orozco 2015). This lack of approval is based on the predicted impact caused to reservoirs in the region, given that the community believes that this could generate a shortage of water. However, according to scientific studies, 60% of the water used in production by the company will be recycled, and the water will be returned to the natural cycle in equal or better condition than at the beginning of the cycle. Furthermore, according to company plans, the company is obliged to limit water level reduction in the Coello River to 1.5% at the point it reaches Ibagué (Cortolima 2014).

The mining project involved three key characteristics:

1. Effective stakeholder relationships with other affected actors (the population of Cajamarca, Piedras Blancas of Ibagué, national and local government, state entities, and NGOs).
2. Creation of linkages to other parts of the economy (farming, construction, transportation, and communication).
3. Creation of public-private partnerships to counteract the shortcoming of support from influential communities (e.g., Committee of Environmental Enterprise and Social Responsibility (CORSAE)); which is integrated by public and private entities, as well as people in the community of Cajamarca. These partnerships would have involved working in arranged groups, which present scientific thematic analysis relating to environmental, social, and economic problems and impacts. They would diagnose key problems in order to establish projects integral to addressing the broader sustainable development scheme of the community.

11.3 Case Study

The AngloGold Ashanti (AGA) company, listed on the London Stock Exchange, is the third largest gold producer in the world and one of the largest mining companies operating in Colombia. Enriched during the Apartheid era in South Africa, they were awarded the Greenpeace Public Eye Award for being the most irresponsible company in the world, due to their deplorable actions in terms of human rights and aggressions to the environment in Ghana, a country where the company has been operating for many years. AGA has also been accused of having links with paramilitary activities in areas of Colombia, in particular the south of Bolívar and Cauca, as well as in the Democratic Republic of the Congo, with additional abuses of private security forces in Ghana, Africa (Colombian Solidarity Campaign 2011). Table 11.1 shows a description of the environmental and human rights record presented by NGOs.

Table 11.1 Reports submitted by NGG on the environment and human rights

NGO	Location	Reported situation
Human rights watch	Democratic Republic of Congo (DRC)/ Mongbwalu	AngloGold Ashanti provided logistical and financial support to the FNI group (a group operating outside the law), responsible for some of the worst atrocities in the war in DRC. In correspondence with Human Rights Watch, AngloGold Ashanti stated that there is no "work or relationship with the FNI" but said they had made certain payments in the past to FNI, including one in January 2005 that was made in "protest and coercion." AngloGold Ashanti also said that any contact with the leaders of the FNI is inevitable
Colombian solidarity campaign	Mali	Increased health problems in the population such as HIV, high incidence of lung disease, abortions, and violations of workers' rights (War on Want 2007)
War or want	Ghana	In the Obuasi and Iduapriem mines, activities have resulted in heavy pollution of rivers affecting drinking water, fishing, and irrigation. Brutality by the company's private security against the inhabitants, forced displacement, conditions of poverty with only 20% of the Obuasi population having access to drinking water (War on Want 2007)

11.4 Discussion

This chapter aims to comprehensively address problems with the use of water in conflict with national, departmental, and local stakeholders. It outlines the global conflict over water resources in mining and contextualizes the conflict for the La Colosa mining project. Additionally, it presents the aspects of governance and the policies framed by the problems faced by the La Colosa mining project. Finally, it proposes strategies and sustainable means for potential solutions to the problem. This chapter examines the context, governance, and community assets in the case study area.

11.5 Context

11.5.1 Global Context

On a global level, the extractive industry has been involved in various social-environmental conflicts, with the use of water reservoirs being at the center of controversy. This problem has provoked the participation of different actors in

preventing the development of mining projects concerned with the impact on water quality. Some cases on a global scale include Finland, Peru, Chile, and various indigenous communities.

In Finland more than 50% of reported issues from 2006 to 2012 have been about water, characterized as issues on both the local and national level. This has resulted in a revolt against mining activity, causing operations to cease, evident in the case of the Talvivaara mine. Maintaining water quality and the social license are the most notable difficulties faced by the mining sector in Finland. Additionally, 162 conflicts related to natural resources were reported in 2012, of which 2 resulted in protests. The principal objective of these protests was the high consumption of water in the mining sector.

Mining project Tía María of the company Southern Copper in Peru is the third case documented by Jimenez and Molina (2015) in their article, "Indigenous Peoples and Industry Water Users: Mapping the Conflicts Worldwide," which reported that out of 384 events mapped, 31% were associated with metal mining and a total of 185 corresponding conflicts related to the impact of the quality and quantity of water, hydro-social scene or traditional uses, and the water cycle. Equally, it was noted that half of these events happened in Latin America and the Caribbean. It was determined that the mining sector was one of the most likely to have negative social-environmental impacts due to its impact on the quality and availability of water.

Finally, in the case of Chile, in 2000, Barrick Gold's multinational mining project, "Pascua-Lama" located between Chile and Argentina, presented their first environmental impact study (EIS). While the study did not express plans to operate in any glaciers, there was opposition within the community of Alto del Carmen of the Huasco Valley community. The key arguments of the opposition were the reduction in the volume of water flow from the rivers due to the impact on the glaciers, water contamination, cultural impact, and the incompatibility of mining activity with the traditional agriculture of the Huasco Valley communities.

11.5.2 Local Context

The city council of Cajamarca is located in the higher altitude region of the central mountain range, in the department of Tolima at 43.7 km from Ibagué. The council comprises a 520 km^2 extension, being mostly rural, with an altitude of 1814 m above sea level, average temperature of 18 °C, and a population of 19,789 inhabitants (Gobernación del Tolima 2013). The region is characterized by the agricultural production of beans, coffee, rice, and fruits, among other crops (Gobernación del Tolima 2013). Table 11.2 shows projects undertaken by the mining company operating in Cajamarca at the time of the study.

Moreover, the territory has hydric potential that has not been fully taken advantage of; among these are the rivers Anaime, Toche, and Bermellón and the Capotal and Cucuana Falls, which are tributaries of the Coello river and their irrigation district (Gobernación del Tolima 2013).

Table 11.2 Taken from Planeta Paz (2012); AngloGold Ashanti (2015)

Opposition position	Studies undertaken by the mining company
The mining project would be set up in a protected environmental zone that is in fact a primary water source in which 161 streams of water would be threatened. Water is a common good and the destruction of their births would affect not only the inhabitants of Cajamarca but the entire region and country	By the time the Coello River reaches Ibagué, the percentage of flow reduction is estimated at less than 1.5%. This is fully mitigable and compensable; it is part of the commitment and obligation of the company in its environmental management plan. Crops and other water uses in Ibagué and the Tolima plan will not be affected at all
The operation of "La Colosa" will consume a lot of water (nine million cubic meters per year) equivalent to the minimum consumption of 400,000 people; the resulting water shortage will ruin us	A minimum water intake of 4 lt/s is used for the scanning stage and is recirculated, using rainwater. For the production stage, use will be made of rainwater from which 60% will be recirculated Given that the water flow of the Coello river is 38.8 m^3/s and the average use of the La Colosa project is 0.5 m3/s, only 1.3% will be used
Cajamarca and Tolima are important food pantries for the region and the country; the implementation of the project will change the productive vocation of the region and permanently destroy thousands of agricultural jobs in exchange for only 500 jobs generated over 15 years; impoverished work, without social security as is typical of transnational corporations	Considering that the size of the basin is 184,257 ha, the project will only require an area of 2000 ha, or 1.1%, and it will compensate for 16,000 ha or a ratio of 1:8. In addition, voluntary programs will be implemented on topics such as water protection or reforestation, with community participation. Considering that mining is compatible with agriculture, tourism, and livestock, in Cajamarca-Tolima we will work with ranchers and producers of beans and avocados
More than four million kilos of poisonous cyanide will be used each year, and the toxic waste generated will contaminate the rivers of the area (Bermellón, Cuello, and even the Magdalena River) and the soil with heavy metals such as arsenic, cobalt, mercury, etc., which can continue to pollute for more than 100 years. We reject the idea of drinking water with cyanide	The world's annual cyanide production is 1.4 million tons; 94% of cyanide is used in plastics, cosmetics, fuels, and food industries and only 6% in mining It is present in everyday life: Table salt, almonds, fruit seeds, makeup, plastic Mining uses alkaline cyanide, easily neutralized with water and in air. In 2 or 3 days, it disappears, including from a pond, thanks to the heat from the sunlight and the cooling in the night

The Tolima department has not engaged in much mining activity besides alluvial mining in the Ataco River and gold mining in the district of Libano (Gobernación del Tolima 2013). The La Colosa mining project was initiated in 2007 by the company AngloGold Ashanti (AGA), undertaking their exploration phase until 2010 and finding reservoirs estimated to contain up to 12.6 million ounces of desirable minerals (AngloGold Ashanti 2015) (Breu et al. 2012) (see Appendix 1). Currently, the La Colosa project is in the pre-implementation stages of processing their environmental license (AngloGold Ashanti 2015). It should also be noted that for the time period between 2011 and 2012, financing and social contributions have

been given by the company to the various economic sectors in the community of Cajamarca (De la Hoz and Orozco 2015).

Despite this and the fact the company seeks to address community concerns in their own studies, the project has been at the center of controversy due to its use of water, specifically in regard to hydric basins within the region, which some argue have been taken advantage of and have been a potential generator of contamination and water shortages in the region.

11.6 Governance

11.6.1 Policies

In the conflict over water, the relevant principles and standards at the global and local levels of governance and related to sustainability are the following.

11.6.2 Local Level of Governance

- Law 1076 of 2015.

The sole regulatory decree in the environmental sector involving prior consultation mechanisms.

Chapter 3 Environmental License Art. 2.2.2.3.1.3 Participation of the Communities.

Chapter 3 Section 5. Environmental Impact Study Art. 2.2.2.3.5.1.

Chapter 1, Section 18 Conservation of natural resources in rural property Art. 2.2.1.1.18.1 Protection and use of water.

Chapter 2, Section Use and Use of Waters, Sections 2.5 and 6.

11.6.3 Global Level of Governance

Performance Standard 1: Performance Standard 1 establishes the importance of (i) an integrated evaluation to identify the environmental, social, and environmental impacts, risks, and opportunities of the projects; (ii) effective community participation, based on the dissemination of project information and consultation with local communities on issues that directly affect them; and (iii) management by the client of environmental and social performance throughout the course of the project (International Finance Corporation (IFC) 2012).

Performance Standard 3 and 6: Define objectives and requirements to prevent and minimize risks and impacts for workers, affected communities, and the

environment and to compensate them in cases where residual impacts persist (International Finance Corporation (IFC) 2012).

- OECD Guidelines for Multinational Companies.

Principles applicable to the case to solve the problem (OCDE 2011):

Principle 1: Contribute to economic, social, and environmental progress to achieve sustainable development.

Principle 3: Encourage the generation of local capabilities through close cooperation with the local community, including the interests of employers, and at the same time developing the company's activities in the internal and external markets in a manner compatible with the need for commercial practices.

Principle 7: Develop and implement self-disciplinary practices and effective management systems that promote a relationship of mutual trust between companies and the communities in which they carry out their activity.

- The OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected or High-Risk Areas.

Due to the fact that the La Colosa mining project is immersed in an area of conflict, the due diligence guide should be taken into account as a principle/standard for responsible supply chains of minerals in conflict-affected or high-risk areas, established by the OECD. It recognizes that due diligence in conflict-affected and high-risk areas presents practical challenges given the nature and scope of appropriate due diligence as they will depend on individual circumstances and may be affected by factors such as the size of the company, the location of the activities, the situation in a certain country, and the sector and the nature of the products or services involved.

In this case study, the following steps must be applied:

Step 1: Establish robust business management systems, in order to achieve appropriate structures for effective due diligence. The following should be taken into account:

- Section I

1. Adopt and commit to a supply chain policy to identify and manage the risks of gold potentially coming from conflict-affected and high-risk areas.
2. Structure internal management systems to support the due diligence of supply chains.

   (a) Assign authority and responsibility to the managerial staff with adequate competency in supervision.
   (b) Guarantee resources for monitoring tasks.
   (c) Guarantee open communication channels between the structures of the organization and provide appropriate training.
   (d) Ensure internal accountability regarding the implementation of the due diligence process of the supply chain.

Establish a system of transparency, information gathering, and control over the gold supply chain; maintain internal inventory and documentation of transaction history.

3. Strengthen the interaction of companies with suppliers: promote long-term relationships, communicate expectations of due diligence, and promote support for capacity building to improve their performance.
4. Establish at the corporate and/or mining level a mechanism for receiving complaints: implement risk recognition mechanisms that allow interested parties to express their concerns.

- Sect. II. Specific Recommendations.

1. For medium- and large-scale mining companies and for artisanal and small-scale mining companies:

   (a) Assign a unique reference number to all inputs and products, by bar, ingot, and/or gold batch accepted and produced, and place and/or record that reference number on all products in such a way that their alteration becomes evident.
   (b) Coordinate and support the physical security practices used by other upstream companies, promptly reporting any indication of alteration to shipments and allowing only authorized personnel to open and access shipments.
   (c) Preliminarily inspect all shipments to confirm compliance with the data provided by the supplier on gold grades, such as alluvial gold, gold doré, recyclable unprocessed gold, or molten recyclable gold. Verify the information regarding the weight and quality supplied by the gold producer and/or the sender, and keep a record at the enterprise level of such verification. Report as soon as possible any inconsistencies between the initial inspection of a shipment and the information provided by the sender to the internal security personnel and those responsible for the due diligence of the company, without taking any other action until the inconsistency is resolved.
   (d) Physically isolate and keep safe any shipment for which there is an unresolved inconsistency.
   (e) Seek to deal directly with the legitimate producers of artisanal and small-scale mining or with their representatives when possible to exclude the gold offered by those people who take advantage of them.

Step 2: Identify and evaluate risks within the supply chain.

In order to identify and assess the risks in the circumstances of the extraction, consolidation, transportation, trade, and export of gold from conflict-affected and high-risk areas, the following should be done:

- Sect. I.

1. Determine if gold producers engage in mining or gold transport activities in conflict-affected or high-risk areas (“operations with alarm signals”).

2. Prepare a map of the specific circumstances of the operations with alarm signals from the producer of gold and other sources of gold, which are in progress and which have been planned.
3. Evaluate the risks in the supply chain.

Step 3: Design and implement a strategy to respond to identified risks.

Step 4: Conduct independent third-party audits of the refiner's due diligence practices.

Step 5: Report annually on the due diligence of the supply chain.

- UN: Guiding Principles of the Organization of the United Nations on Business and Human Rights.

Principle 12: (a) Businesses should prevent their own activities from causing or contributing to negative consequences on human rights and dealing with those consequences when they occur. (b) Try to prevent or mitigate the negative consequences on human rights directly related to operations, products, or services provided by their commercial relationships, even when they have not contributed to generate them (UN 2011).

ICMM: 10 Principles of Sustainable Development, Voluntary Principles on Security and Human Rights.

Voluntary Principles on Security and Human Rights (ICMM 2000), Module of Interaction with Relevant Social Actors, and Risk Assessment Module.

10 principles for sustainable resource development (ICMM 2003):

Principle 1: Meet or go beyond the requirements required by the laws and regulations of the host country.

Principle 2: Implement good practices and innovations to improve social, environmental, and economic performance while increasing the value for the owner or shareholder.

Principle 3: Respect human rights and the interests, cultures, customs and values of employees and communities affected by our activities.

Principle 4: Address the identification, evaluation, and management of all significant social, health and safety, environmental, and economic impacts associated with our activities in consultation with interested and affected parties. Ensure regular review and update of risk management systems. Inform the potentially affected parties of any significant risk caused by the operations, as well as the measures that will be taken to effectively manage said risks.

Principle 5: Pursue continual improvement in the health and safety performance with the ultimate goal of zero harm.

Principle 6: Seek the continuous improvement of environmental performance.

Principle 7: Contribute to the conservation of biodiversity and integrated approaches to land-use planning.

Principle 8: Facilitate and stimulate the design, use, reuse, recycling, and responsible disposal of products.

Principle 9: Get involved from the earliest possible stage with the parties likely to be affected to discuss and respond to issues and conflicts related to the management of social impacts.

Principle 10: Implement stakeholder's information, communication, and participation mechanisms that are effective, transparent, and independently verifiable.

- World Gold Council Conflict-Free Gold Standards.

Conflict assessment, company evaluation, and evaluation of raw material and external sources of gold.

- Global Reporting Initiative (GRI).

The reporting organization must identify its stakeholders and describe in memory how it has responded to their expectations and reasonable interests (Global Reporting 2011).

Report indicators and material aspects sufficient enough to reflect significant social, economic, and environmental impacts and to allow interest groups to evaluate the performance of the reporting organization during the period covered by the report (Global Reporting 2011).

11.7 Governance Processes: Stakeholders Relations

Table 11.3 shows the stakeholders and their roles and responsibilities in the governance environment at the time of the project.

11.8 Community Assets

Given the conflict over water use and that the normative indicators for community assets have been established during the phase of exploration, further steps are required to create a model that promotes sustainable livelihoods and provides an alternative solution to the conflict. Below the proposed community assets, indicators are presented and indicators for natural capital are positioned within the IDEAM framework to address these issues.

11.8.1 Human Capital

- Formation of "Responsible Mining for the Environment Capacity Centers" – building human capacity.
- Implementation of sustainable water in agriculture: education programs for families in the community.

Table 11.3 Stakeholder relations

Level	Stakeholder	Role	Responsibility
		Private company Investor Mediator (AngloGold Ashanti 2015) (AngloGold Ashanti 2014a)	Ensure the sustainable development of mining activities from different fields Support community entrepreneurship for the diversification of the local economy Design and develop joint work plans with different stakeholders to ensure inclusion in decision-making that positively influences their livelihoods Conduct community awareness campaigns for the diversification of the economy Comply with the current regulations to which they are subject to Respond to concerns regarding planning and activities
	Rice farming sector	Active actor in opposition to the project (Corporación Grupo Semillas 2011) (EL Nuevo Día 2013)	Safeguard their work in the rice sector To encourage and seek support from national and international organizations in recognizing the conflict resulting from the mine Ask the company and government entities for information about the implications of the project
	Population of Cajamarca	Active actor in the dialogue initiator of the project (AngloGold Ashanti 2014b) (AngloGold Ashanti 2014c)	To participate actively in the development of policies to improve their quality of life Propose undertakings with a view to diversify the local economy Audit government entities in order to ensure compliance with the operating and control standards set out in PTO and L. A. Request information from the company and government entities about the implications of their activity for the development of the project

(continued)

Table 11.3 (continued)

Level	Stakeholder	Role	Responsibility
	Population of Piedras Blancas	Active actor in the dialogue Opposition to the project (Troncoso 2014) (Urbano 2013) (Guarnizo 2014)	Safeguard the biodiversity and cultural roots of the territory Defend the Opia River as it crosses the aqueduct, which contributes to the development of fishing activity, recreation, and tourism with its more than 200 natural pools rich in freshwater oysters and with small beaches where the population undertake *el paseo de olla* (a traditional pastime in Colombia)
	Local government of Piedras Blancas	Exercise local authority Opposition to the project (Guarnizo 2014)	To defend the fundamental rights of the community Induce state authorities to monitor and control the development of the mine To seek support from national and international organizations in recognizing the conflict resulting from the mine
	Cortolima (autonomous region association in Tolima)	Exercise local environmental authority (Cortolima 2014)	Monitor compliance with environmental regulation Promote practices that protect and care for the environment
	Local government of Cajamarca	Exercise local authority Promote the project (Observatorio social y ambiental ecostierra 2010)	To promote the defense of the fundamental rights of the community Induce state authorities to monitor and control the development of the activity Promote multisectoral collaboration for sustainability To ensure the Well-being and improvement in the quality of life of the local population
	Colombia solidarity campaign (London mining network)	Active actor in the dialogue Opposition to the mine (Colombian Solidarity Campaing 2011) (Colombian Solidarity Campaing 2013)	Promote environmental care Raise awareness of the region's rich biodiversity Avoid the potential negative impacts of activity development on the environment
Departmental	Population of Ibagué	Active actor in the dialogue Opposition to the mine (Rojas 2011) (Morris 2015)	Safeguard their basic rights to water use and avoid detriment to public health as result of deteriorating water quality Solicit the government and

(continued)

Table 11.3 (continued)

Level	Stakeholder	Role	Responsibility
			state entities to reconsider the approval of the project Incentivize and seek support from national and international agencies in recognizing the conflict resulting from the mine
	Departmental government	Exercise departmental authority Mediator (Parra 2015)	Create awareness of responsible and sustainable business practices Promote multisectoral collaboration for sustainability Encourage direct investment for the diversification of the local economy Ensure the Well-being and improvement of the quality of life of the local population
	Local government of Ibagué	Exercise local authority Opposition to the project (Silva 2016)	Defend the fundamental rights of the community Induce state authorities to monitor and control the development of the activity Encourage and seek support from national and international organizations in recognizing the conflict resulting from the development of the mine
National	National government	Exercise national authority Mediator Formulate public policy ANLA mediator – Conserve environment ANM mediator – Manage natural resources State control and surveillance Ejecutar la autoridad (Contraloría y Procuraduría) (Silva Numa 2016)	Create awareness of responsible and sustainable business practices Promote multisectoral collaboration for sustainability Encourage direct investment in various regional sectors Promote and control the preservation of the environment Grant environmental license Manage and regulate mineral resources with the greatest efficiency, effectiveness, and transparency through promotion, monitoring, and control of mining exploration and exploitation, in order to maximize the sector's contribution to the integral and sustainable development of the country Controller's office: To strengthen the control and surveillance over fiscal management, with a preventive

(continued)

Table 11.3 (continued)

Level	Stakeholder	Role	Responsibility
			approach, within the framework of the constitution and the law, in order to guarantee efficient and effective management of public resources, with the participation of citizens, for the achievement of the purposes of the state Office of the prosecutor: To monitor compliance with the constitution, laws, judicial decisions, and administrative acts, to promote and protect human rights, to defend the public interest, and to monitor the official conduct of those who perform public functions

11.8.2 Social Capital

- Management of sustainable consumption of water: instigating workshops with government, community representatives, and managers from the Department of Industry.
- Formation of associations for the use of sustainable natural resources.
- Community workshops focusing on the use of water in the agriculture and mining sector with a percentage of the community population.

11.8.3 Natural Capital

- Indicator of the use of water (UoW): water consumption in mining operations and supporting activities.
- Indicator of water quality (IWQ): availability of oxygen, organic material, solids, minerals, acid, and other elements, as well as key characteristics of the water plan (e.g., the water temperature).

11.8.4 Physical Capital

- Infrastructure that provides water to communities: addressing conditions of compliance with health and security standards.

According to the Water Indicators System (IDEAM 2014), the following indicators can be taken into account:

- Water Quality Index (ICA).

The ICA is a number (between 0 and 1) that indicates the water quality of a body of water, in terms of human welfare independent of its use. This number is an aggregation of the physical, chemical, and, in some cases, microbiological conditions of the body of water, which gives an indicator of contamination problems (IDEAM 2014).

It takes into account a range of environmental factors through simple variables that allow the analysis of the main origins of the contamination: available oxygen, organic matter, solids, mineralization, and acidity, among others, and key characteristics of the water column such as temperature (IDEAM 2014).

11.8.5 Financial Capital

Sustainable management capacity for water resources: economic inversions in quality assurance programs for water and the population's water supply.

11.9 Conclusions

Some of the conclusions and recommendations derived from the study were as follows:

Economic diversification – with the formation of linking products for community capacity, in order to develop other economic activities, such as:

- Organizations of mining suppliers at both small and large scale.
- Organizations and application of SMEs for service, agriculture, fisheries, tourism, and other activities.

Organization and capacity building for sustainable mining:

- Creation of personal zones of influence within and close to mining operations that use natural resources responsibly.
- Capacity building within educational institutions like SENA and universities'.

Organization for strategic alliances, such as:

Working in conjunction with private companies and local government, departmental and national, in order to develop public policies in accordance with social, economic, and environmental needs.

Policies supported by the mining industry and broader public discourse which include:

- Policies for the protection and rational use of natural resources.
- Policies to promote and implement economic solidarity in line with education and scholarship for childhood education.
- Policies that promote finance for SMEs in different mining sectors.
- Policies that promote the formation and application of financing for sustainable mining in small-scale government departments (e.g., Tolima) with the foundations that accompany small-scale mining.
- Policies that surrender accounts to the department of Tolima in order to gain control over the distribution and inversion of rent prices in mining zones for the use of mineral resources.

Best policies regarding the development of physical infrastructure for basic services within the community.

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Chapter 12
Sustainable Forest Management: Community Forestry's Contribution to Build Climate-Resilient Communities in Nepal

Jyoti Sedhain, Isabel B. Franco, and Summer Lamont

Abstract Community forestry user groups (CFUGs) in Nepal, created multiple livelihood options for the local community while building financial and technical local capacity to cope with climate change impacts. The research reported in this study explored the multiple roles played by community members on different activities aimed to minimize climate vulnerability and building climate-resilient communities equipped with adaptation and mitigation coping mechanisms. This study aims to explore the impacts of climate change on forest and livelihoods while discussing on existing adaptations and mitigations methods on climate change. The methodological approach of this research involved the use of social-ecological production landscapes (SEPLS) resilience indicators applied to measure climate resilience through activities conducted by CFUGs. Additional data were collected through participatory rural appraisal (PRA) tools, household survey, field survey with key informants, focused group discussion, systematic literature review, policy, and document analysis. The research was undertaken at four (4) CFUGs in Chitwan district of Nepal selected due to their economic and management status, infrastructural development, and management committee composition. Findings showed that climate change had negative impacts on forest resources, water resources, agricultural crops and people's daily life through drought, higher temperature, changing crop characteristics, etc. Activities such as control in wildlife hunting, forest fire, encroachment, and control grazing help to increase biodiversity inside the forest. CFUGs had attracted funding, i.e., revolving fund or subsidy, to enhance livelihood of poor and pro-poor households. Applied research was conducted to explore the

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connections between forest and climate change policy and opportunities to integrate the international development agenda into sustainable forest management.

Keywords Community forestry user groups · Climate change · Resilience · Climate adaptation and mitigation measures · Livelihood · Sustainable forest management

12.1 Introduction

Climate change is one of the most critical global environmental challenges of today's world. Forest and climate change are inherently linked with each other, as forest plays a vital role in reducing the emission of greenhouse gas (GHG) by storing carbon dioxide (CO2) (FAO 2006). Deforestation and degradation contribute to 18–20% greenhouse gas (GHG) emissions annually (IPCC 2007). At the same time, climate change has negative impacts on natural resource-based livelihoods of communities primarily dependent on climate-sensitive natural resources (IISD 2003; Paavola and Adger 2002; Smit et al. 2007). Therefore, forest restoration and conservation management can make a remarkable transformation in climate change mitigations (Thompson et al. 2009). Forest management is the most cost-effective mitigation options for climate change through afforestation and sustainable forest management (IPCC 2014). Research shows that climate change resilience through forest management includes maintaining healthy forest ecosystem; restoring degraded forests; and conserving, enhancing, and using biodiversity. Whereas community forestry is widely reported as improving forest management, social cohesion, and rural incomes (Antinori and Rausser 2008; Chhetri et al. 2013), it is an important form of forest stewardship for over a half billion people in developing countries (Poffenberger 2006; Agrawal 2007). Community-based forest can foster strategies to maintain a healthy forest ecosystem, restore degraded forests, and conserve and manage biodiversity (FAO 2011). Deforestation and forest degradation are the major causes for carbon emission, reporting more than 10% of total anthropogenic greenhouse gas (GHG) emissions globally (49 $\pm$ 4.5 Gt CO2e/yr) (Intergovernmental Panel on Climate Change (IPCC) 2014; UN-REDD Programme 2016). Climate change impacts also have implications for local contexts, such as Nepal, a country located in South Asia.

With a great climate variety, Nepal is a landlocked mountainous country with an area of 147,181 sq. km and an altitude ranging from 70 m to 8848 m above sea level (NPC 2011). The country offers varied biodiversity and climate. Nepal is categorized as a least developed country with 21.6% of the population living below poverty of $1.25 per day. Evidence shows that developing countries are more vulnerable to climate change since high populations depend on agriculture and have low adaptive capacity to cope with climate change and variabilities (Lybbert and Sumner 2012; UNCTAD 2016) which is defined as an adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities (IPCC 2001). Nepal, being a signatory to

United Nations Framework Convention on Climate Change (UNFCCC), prepared a National Adaptation Programme of Action (NAPA) and conducted a rapid vulnerability assessment to implement adaptation activities (MOE 2010). National authorities also completed a pilot implementation of adaptation at the local level. Moreover, Nepal has submitted its first Nationally Determined Contribution (NDC) to comply with the Paris Agreement. Moreover, community forest in Nepal has an opportunity for carbon financing under the Reducing Emissions from Deforestation and Degradation (REDD) mechanism (Pokharel and Byrne 2009).

12.2 Literature Review

Resilience was simply defined as the capacity to deal with change and continue to transform. This chapter focuses on climate resilience (defined as the capacity for a socio-ecological system to absorb stresses and maintain function in the face of external stresses imposed upon it by climate change impacts (Folke 2006). It also discusses climate change impacts on human communities and forest resources. The study mainly emphasized the localized climate adaptation and mitigation measures adopted by community forestry user groups, whereas the Intergovernmental Panel on Climate Change defined adaptation as adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities (IPCC 2001). Similarly, mitigation is defined as an anthropogenic intervention to reduce the sources or enhance the sinks of greenhouse gases (IPCC 2001).

12.2.1 Climate Change and Forest Management

Evidence shows that terrestrial surface temperatures will increase 2.6–4.8 °C by the end of this century (IPCC 2014), and increasing temperature could have a significant impact on global carbon (C) cycles (Koven et al. 2017; Crowther et al. 2016). According to the Intergovernmental Panel on Climate Change (IPCC) fourth assessment report, there is a variation of climate change trends and impacts according to the country and region (IPCC 2007). This has resulted in ocean acidification and freshwater scarcity, shift and extinction of various species, coastal erosion, and coral reef bleach, degrades human health and increases mortality, damages infrastructures, declines agricultural productivity, and increases food insecurity ultimately affecting the livelihood of the people negatively (IPCC 2014). Climate change is a global phenomenon; however, the impacts are varying locally (Piya et al. 2016) according to socioeconomic and environmental conditions (Deressa et al. 2008). This can have a severe impact on the economic and human welfare of people from developing and least developed countries (Bernier and Schoene 2009). Changing global warming patterns gradually affect agriculture and forestry. Moreover, climate change has

negative impacts on natural resource-based livelihoods as there are high chances of risk, particularly in locations where communities are primarily depending on climate-sensitive natural resources (IISD 2003; Paavola and Adger 2002; Smit et al. 2007).

Climate change impacts on forestry through high temperature, changed rainfall pattern, long drought season, forest fire, infected disease, invasive species, etc. (Sharma et al. 2004). These problems may affect the viability of reforestation (Kragt et al. 2017) because it is likely to affect the vegetation growth. In addition to this, climate plays a major role in the distribution and composition of forests (Engelbrecht et al. 2007). Forests and climate change are innately linked to each other, where forest plays a vital role in both carbon emission and carbon storage (FAO 2006). However, the fifth assessment report of IPCC clearly identifies that forestry is one of the key sectors responsible for greenhouse gas (GHG) emissions (Victor et al. 2014). According to the IPCC, forest and land use contributed to 12–17% of global GHG emissions (IPCC 2007). Degradation and deforestation can contribute to major carbon emission, but plantation can remove a large amount of carbon dioxide from the air within a very short period (FAO 2006). Additionally, forest provides better livelihood options for local poor communities who live in the surrounding forest especially in developing countries (Wunder 2001; Sunderlin et al. 2005). Community participation in planning and decision-making forum is one of the best ways to make integrated plan to cope with climate change impacts in the communities with proper management of natural resources (Cooke and Kothari 2001). The concept of integrated approach includes forest management, community health, wild flora and fauna, land use planning, and water resource management (Lawrence et al. 1997; Pinkerton 1998; Wainwright and Wehrmeyer 1998; Allen et al. 2001; Peattie 2001). Community-based adaption strategy is more effective than the individuals because it follows a bottom-up planning approach. UNFCCC has also funding for community-based adaptations plan and programs. Indonesia's community-based disaster risk reduction strategy can be taken for an example to implement food security and livelihood program (UNFCCC 2007).

12.2.2 Forest-Based Climate Resilience

The concept of forest-based community resilience itself emerged as a notion that involved local communities, particularly those dependent on natural resources for their livelihood (Folke et al. 2002). There is an agreement that enhancing resilience requires nature and social relationships because the integrated relationship between nature and community members is crucial to access participation in the decision-making process (Adger et al. 2003). Evidence shows that social resilience is an ability to buffer disturbance and an ability for self-organization through learning and adaptation (Carpenter et al. 2001; Trosper 2002). Forests are considered a major

reservoir of terrestrial biodiversity containing 50% of the global terrestrial biomass carbon stock (FAO 2000; IPCC 2007). Forest deforestation and degradation produce 18–20% carbon emissions (IPCC 2007). Appropriate forest management and restoration activities make a significant influence on climate change adaptation and mitigation (CBD 2009). Amazon forest can be taken as an example for the level of forest influencing on regional climate (Betts et al. 2008, Phillips et al. 2009). Forest resilience can be important mechanism to mitigate and adapt to climate change (Wilson and Agnew 1992; Ayres and Lomardero 2000; Bonan et al. 2003; Euskirchen et al. 2009; Phillips et al. 2009). Local communities get involved in the forest with diverse activities, such as sustainable forest management, livelihood improvement, water resource management, disaster risk reduction (DRR), and diverse agriculture systems for ecosystem management which are key to reduce climate vulnerability and increase climate resilience on the environment and local communities (IUCN 2013). Many resilience experts agree that in practice there is no difference between an ecosystem and community-based adaptations. Thus, integrating these approaches (i.e., community- and ecosystem-based approach) has numerous advantages such as vulnerability assessment with socioeconomic complexities, identifies and validates traditional and indigenous knowledge, and incorporates ecosystem services in community-led adaptation strategies. Locals involved in community forestry contribute to diverse forest activities and to increasing climate resilience on the environment and human communities (IUCN 2013).

In the Nepalese context, community forestry contributes to enhance social capital and livelihood opportunities while providing a platform for collective action, resilience, and support for community members during adverse situations (Pandey et al. 2016). This is a symbiotic approach to adaptation including community-based natural resource management (Girot et al. 2012).

12.2.2.1 Climate Change Impacts and Community Forestry User Groups

Forest is responsible for sinks to the major emitter of the greenhouse gas (FAO 2006). In developing countries, people depend on the forest for fodder, building materials, food, medicine, raw materials for industries, etc. (Subedi 2006). Community forestry evolved toward the late 1970s to address the issues of deforestation and adverse ecological effects of top-down management of forest resources with involvement of local communities (FAO 1978; World Bank 1978). The initial concept of community forestry was sustainable use of resources and aimed to fulfill the urgent needs. Nowadays, this notion is gradually moving toward community development and social safety and majorly to combat poverty (Mahanty et al. 2006). Now community forestry is practiced all over the world for environment conservation in context-specific forms to engage local communities (Brosius et al. 2005; Glasmeier and Farrigan 2005) and is practiced broadly on different aspects such as forest ownership, responsibility, and management authority (Edmunds and Wollenberg 2003; Ribot et al. 2006). Research indicates that community forest

practices bring lots of positive environmental and forest changes in Nepal (Schweik et al. 1997; Jackson and Kearsley 1998; Gautam et al. 2002; Schweik et al. 2003; Adhikari et al. 2007; Kanel and Dahal 2008; Tachibana and Adhikari 2009). According to the Food Agriculture Organization (FAO 2011), community forestry is an important form of forest management for developing countries as a means of response to centralized forest ownership, promoting sustainable forestry management (Schusser 2013; Maryudi et al. 2012; Casse and Milhoj 2011; Sunderlin 2006).

In community forestry management system, people involved in diverse forest activities contribute to increasing climate resilience on the environment and human communities (IUCN 2013). Basically, community forestry contributes in soil and water conservation, restoration and conservation of forest resources, sustainable use of natural forests, and reduction of the effects of forest fires and grazing with enhanced capacity of local communities (Branney and Yadav 1998; Gautam et al. 2002; Pokharel 2008). Various studies confirmed that community-based forest management in Nepal effectively enhances biomass carbon and thus could be a good contributor to REDD+ program in the future (Bhattarai et al. 2012; Gurung et al. 2015; Pandey et al. 2014, 2016).

Nepal has 40.3% of forest cover storing 1054.97 million tons (176.95 t/ha) of carbon (DFRS 2015). Community forestry user groups (CFUGs) manage 32% and protected areas cover 17% of total forest areas which are reserves of carbon pool (DOF 2017). Community forestry user groups (CFUGs) are one of the major institutions that implement local level climate adaptations and mitigations program in Nepal. The effectiveness and efficiency of Nepal's CFM in managing forest resources is better than the government (Neupane and Shrestha 2012). CFUGs adopt both social and natural system of adaptation and mitigation measures in independent ways to cope with climate change impacts at the community level (BK 2010), focusing on both conservation and restoration of forest and livelihood improvements with poverty reduction of local communities (Dev and Adhikari 2007). As a result, biodiversity of the resources has been increasing in the community forest. On the other hand, local communities who rely on natural resources for livelihood are being sustained by multiple livelihood options with increasing fund of the CFUGs (Bene et al. 2009). CFUGs are including Community Adaptation Plan of Action (CAPA) as regular activities and process in their forest operational plan (BK. N. 2010), and they are implementing an adaptation plan based on activities planned in CAPA.

12.3 Study Area and Methods

12.3.1 Study Sites

The study was carried out at Chitwan district (see Fig. 12.1), a location with vulnerability index between 0.061 and 0.786 for climate change vulnerability (NAPA 2011). The district is well known for huge forest cover with high-value

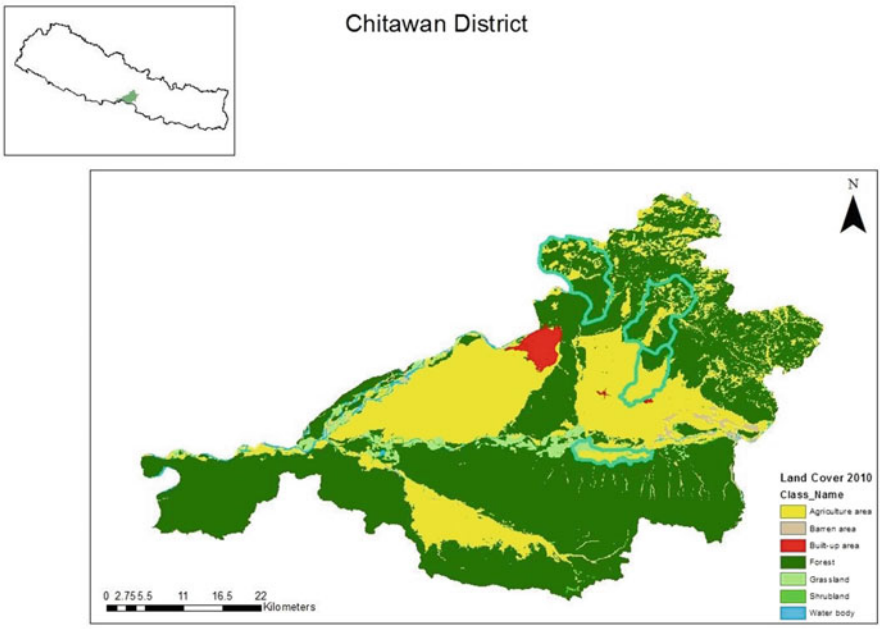

Fig. 12.1 Chitwan district

timber species and good practices of community forest management systems. The District Forest Office (DFO) has implemented different activities under government funds such as gender equity and sustainable forest management; community-based climate change adaptation plan that targets poor communities, women, and disadvantaged groups; and scientific forest management system in CFUGs. According to the District Forest Office (DFO) of Chitwan, there are 89 CFUGs registered in Chitwan district (fiscal year report 2074/75). Out of total 89 CFUGs, 4 CFUGs were selected for study sites as a representative based on active and passive status of forest management, financial condition of CFUGs, availability of forest resources, and infrastructure developed in the communities.

12.3.1.1 Kankali Community Forestry User Group

Kankali CFUG is located at Chainpur-4, Khairahani, Chitwan, and covers 749.1 ha of the total area with 2098 household users. Kankali CFUG is very famous in the district because of its infrastructure, forest management activities, and the highest annual income for a CFUG. Kankali CFUG is implementing scientific forest management system with the support of the district forest office. However, the CFUG is facing deforestation, urbanization, climate change, and forest fire which are major challenges for forest management.

12.3.1.2 Chaturmukhi Community Forestry User Group

Chaturmukhi CFUG is located at Jutpani-9, Chitwan, which covers 308.5 ha of total area; among these 110.8 ha is declared as community-based protected forest area. CFUG is composed of 350 households. CFUG deals with human wildlife issues because of huge crop damages and human loss. It has also faced challenges such as increasing population, drought, and urbanization.

12.3.1.3 Ranikhola Community Forestry User Group

Ranikhola CFUG is located at Dahakhani-8, Chitwan, and covers 199.6 ha of the total area composed of 162 households. Drinking water and irrigation are the major problems found in the community. Ranikhola CFUG is one of the prioritized CFUGs for the implementation of Hariyo ban program (Care Nepal, FECOFUN) funded by USAID. The program was mainly focusing on awareness raising on climate change, livelihood improvement activities, and skill development training for CFUG users.

12.3.1.4 Chelibeti Community Forestry User Group

Chelibeti CFUG is the only women-led CFUG in the district which is located at Kalika municipality-8, Chitwan, which covers 55.4 ha of total area with 171 households. This was a one and only women-led CFUG in the district. Illegal felling, forest fire, and the increasing population are major challenges for the community. Increasing invasive species in the forest is also a major challenge for forest management.

12.3.2 Methodology

About 13 percent of the 380 households out of the total 2781 were chosen by using simple random sampled for the purpose of the study. Both primary and secondary data were collected through mixed method approach, whereas quantitative data were collected through group discussion, household survey, and key informant survey that measures attitudes, and the information is analyzed using statistical procedures and hypothesis testing. Qualitative data collection was conducted with direct observation and open-ended interviews with various people. With the mixed methods approach, there is a likelihood of triangulation to examine the same situation. IBM Statistical Package for the Social Sciences (SPSS) and Likert scale were used to analyze social data. Secondary data were collected through a systematic literature review to collect secondary information regarding best practices of community forest management, climate change impacts on forest, and forest dependent on

communities. Household survey is used to assess the climate change impacts on community forestry resources and their livelihoods. Key informant interview was conducted through old-age people, local leader, VDCs' chairperson, schoolteachers, entrepreneurs, FECOFUN staff, staff from Hariyo ban program, and ex-service holders and other key persons. Pair ranking tools were used through focus group discussions (FGDs). Direct field observation was conducted at the same time as a field survey. Rainwater harvesting system and conservation pond for water resource management, biogas plant, forest management activities, vegetable farming, banana farming, check dam, plantation areas, and research demo plots were visited and took lots of photos with information.

All the data collected from literature and fields show that CFUGs maintained balancing and integrated relationship between social, environmental, and economic components at the local level. In conclusion, integration of traditional indigenous knowledge with new skills and innovation is found as a key factor to community forestry in the way of sustainable resource management for a sustainable resilient community.

12.4 Application and Analysis of Results

12.4.1 Climate Change Impacts

12.4.1.1 Impacts on Communities and Livelihoods at HHs Level

More than half (nearly 65%) out of the total respondents agree that they had heard about the notion of "climate change" as a "Jalabayu Paribartan" by mass media, i.e., radio, newspaper, Internet, television, and FM.

They (78%) experienced climate change impacts on their community and own livelihood. Drought, landslides, higher temperature, shorter and longer rainy season, and other types of climate change impacts seemed to be major challenges in the study sites, which directly impacts agricultural activities by changing crop characteristics, producing less yield from agricultural crops. In contrast, pairwise ranking with FGDs was conducted with local communities on climate change impacts, i.e., climate change impacts on the community livelihoods and forest resources. Different CFUGs obtained different results with a different list of prioritizations.

All three communities ranked drought the highest impact of global warming which is also the cause of lower yields from the farms, forest fires, high temperatures, and different pests and diseases in crops and humans as shown in Table 12.1. However, Chelibeti had slightly different results than other communities due to financial status, their access to the information and knowledge, and lack of awareness regarding climate change sensitization. Landslides became last in ranking with the lowest impact of climate change for study sites of CFUGs. Increased number of mosquitoes was the major cause of disease, dengue, and malaria which were previously eradicated but had now re-emerged. Even though the rate of dengue

Table 12.1 Pairwise ranking table for climate change impacts on community livelihood

Rank	Chaturmukhi	Ranikhola	Kankali	Chelibeti
1	Drought	Drought	Drought	Extreme heat
2	Less yield from field	Landslides	Less yield from field	Drought
3	Change in crop characteristics	Extreme heat	Change in crop characteristics	Less yield from field
4	Extreme heat	Change in crop characteristics	Change in crop characteristics	Others (mosquitos)
5	Longer/shorter rainy season	Less yield from field	Extreme heat	Pest and disease
6	Pest and disease	Longer/shorter rainy season	Pest and disease	Change in crop characteristics
7	Others (mosquitos)	Pest and disease	Others (mosquitos)	Longer/shorter rainy season
8	Landslides	Others (mosquitos)	Landslides	Landslides

and malaria was quite low compared to overall district data, the problem remained that it was still prevalent in the communities. Out of total, 42% of the communities started to adopt different coping and adaptation measures to minimize climate impacts on their livelihood through small business, poultry, grocery shop, etc. According to the local communities, their land is not as arable as it used to be, and it was more profitable to sell soil rather than the cultivation of the agricultural crops.

12.4.1.2 Impacts on Forest Resources

According to the pairwise ranking, Chelibeti CFUG ranked decline in forest resources, Ranikhola CFUG ranked invasive species, Kankali CFUG ranked extreme heat, and Chaturmukhi CFUG ranked invasive species as the number 1 impact of global warming, although forest areas of all the communities increased compared to previous conditions. Invasive species became the number 1 impact on CF through overall analysis with the highest score, which directly impacts the regeneration of local and indigenous species such as *Bombax* spp., *Shorea* spp., and *Dalbergia* spp. Decline in forest resources and regeneration scored the second highest. But Chelibeti CFUG had slightly different results because they didn't apply any coping measures to tackle the extreme heat and forest fires.

12.4.2 Climate Adaptation and Mitigation Measures

12.4.2.1 Adaptations and Mitigation Measures Adopted by Local Communities for their Livelihoods at HHs Level

During the household survey, respondents are conscious about tree planting (46.8%) and proper use and management of water resources (69.8%) at household level because of water scarcity in their daily life. Some households resorted to rainwater harvesting techniques (30%) for irrigation, and waste management technique (44%) showed remarkable contributions toward minimizing the climate vulnerability of local communities. Communities were substituting plastic plates with the use of leaves for plates, at the festivals, parties, and other cultural ceremonies.

Thus, challenges still exist to implementing adaptation and mitigation plan and activities in the field. According to questionnaire survey, out of the total, 60% respondents mentioned lack of manpower, 54% lack of technical skills, 52% lack of money, and 44% lack of information were the major challenges for climate adaptation and mitigations. But challenges were different according to the financial status of CFUGs, access to information and technology, composition of community, and available resources and skills at community level. For example, field survey data shows that majority of respondents from Chelibeti CFUG had lack of information, lack of money, and lack of technical skills. At the same time, most of respondents from Chaturmukhi, Ranikhola, and Kankali CFUGs mentioned lack of technical skills and manpower and lack of money as major challenges for them to implement adaptation and mitigation measures.

12.4.3 Adaptation and Mitigation Measures Adopted by CFUGs

CF are adopting different adaptation and mitigation measures based on their economic status, forest condition, and knowledge level. CFUGs adopted different types of adaptation and mitigation measures such as plantation, water conservation, community adaptation plans, income-generating activities, etc.

The list of some mitigation and adaptation measures are found in tables given below.

Mitigation measures such as solar, agroforestry system, and improved cooking stove were also adopted by three CFUGs as shown in Table 12.2. Most of the mitigation measures were found based on forest management activities, whereas adaptation measures are leading toward livelihood improvement activities. Economic status, infrastructure, and coordination and collaboration with the district forest office and other related organizations were the major factors which directly influenced the adaptation and mitigation measures adopted by community forestry user groups. Adaptation measures were more focused on forest conservation,

Table 12.2 List of adaptation and mitigation measures by community forestry

Mitigation measures adopted by CFUGs				
Mitigation measures	Ranikhola CFUG	Kankali CFUG	Chelibeti CFUG	Chaturmukhi CFUG
Improved cooking stove (ICS)	√		√	√
Solar installation	√	√		√
Biogas	√	√	√	√
Leasehold forestry program inside the CFUG		√		
Scientific forest management system		√		
A master plan for eco-tourism		√		
Protected forest managed inside the community forestry				√
Plantation, reforestation	√	√	√	√
Agroforestry program	√	√		√
Fire line	√	√	√	√
Exotic species		√		√
Bamboo plantation		√		
Adaptation measures adopted by community				
Home garden	√			
Improved yard program (Hariyo ban program)	√			
Check dam	√			
Climate change sensitization program	√			
Community adaptation plan of action (CAPA)	√	√		√
Skill development training for single women	√			
Revolving fund	√	√		
Off-season vegetable farming	√	√	√	√
Goat farming	√	√	√	√
Turmeric	√			
Banana farming				√
Poultry	√			√
Research demo plot		√	√	
Strengthening of traditional forest-based occupation and skills	√			
Picnic spot and zoo		√		
Ecotourism; boating, swimming pool, and view of tower inside the CF		√		√
REDD+ pilot project		√		
Saw mill		√		
Skill development training for community users, i.e., tailoring, driving, electrician, computer operation	√	√		√
Wire fencing				√
Conservation pond	√			√

capacity building, and livelihood improvement aimed at reducing poverty of local communities with reducing climate vulnerability of the local community, whereas vegetable farming, poultry, and goat farming were the most common adaptation measures in all CFUG. Mitigation measures were directly impacting on carbon emissions and making long-term positive effects on community and forest management. Communities had adopted different adaptation and mitigation measures which were contingent on financial resources, local context, technical assistantship, local knowledge and skills, and as per need of the local communities.

12.4.3.1 Climate Resilience Indicators

Socio-ecological production landscapes and seascapes (SEPLS) resilience indicators were used to the assessment of community resilience. The indicators are more realistic and practical to engage communities for adaptive management of the landscapes in their surroundings (UNU 2014). In the context of Nepal, CFUGs are working as an element for SEPLS to contribute to sustainable resource management while maintaining biodiversity in a mosaic landscape approach including local communities. The basic concept of this framework is if all indicators scored 5, then it will be considered as a resilient community. All measurements were based on observations, community perceptions, and personal experiences of the local communities.

Most indicators were moving upward toward sustainability except indicator question numbers 5, 6, 11, and 19 which represented local food consumed, local varieties of crops and local breeds conserved, customary rights over land and resources, and innovative use of local biodiversity based on Fig. 12.2. According to the respondents, local variety of crops and local variety of livestock were replaced by the hybrid ones. The overall result shows satisfactory outcomes of resilience indicators.

- Landscape diversity and ecosystem protection: Different practices of forest management found inside the CFUGs in the study sites. According to Table 12.2 (adaptation and mitigation measures), protected forest, leasehold forest, and scientific forest management and agroforestry system were found in practice. All these management practices promote multiple uses of land and resources with participatory conservation mechanisms. In study sites, landscape diversity directly contributed to better community livelihoods and better conservation mechanism which strengthen the harmonious relationship between local communities and natural resources. In addition to this, maintained social cohesion is another key aspect to maintain landscape diversity.
- Biodiversity (including agricultural biodiversity): Conservation practices for local agricultural products and breeds were low with the downward trend, but sustainable management of CFUG was progressing in an upward trend at the same time; the status of consumption of local foods and products was unchanged. In comparison to other indicators, biodiversity found poor condition, but study

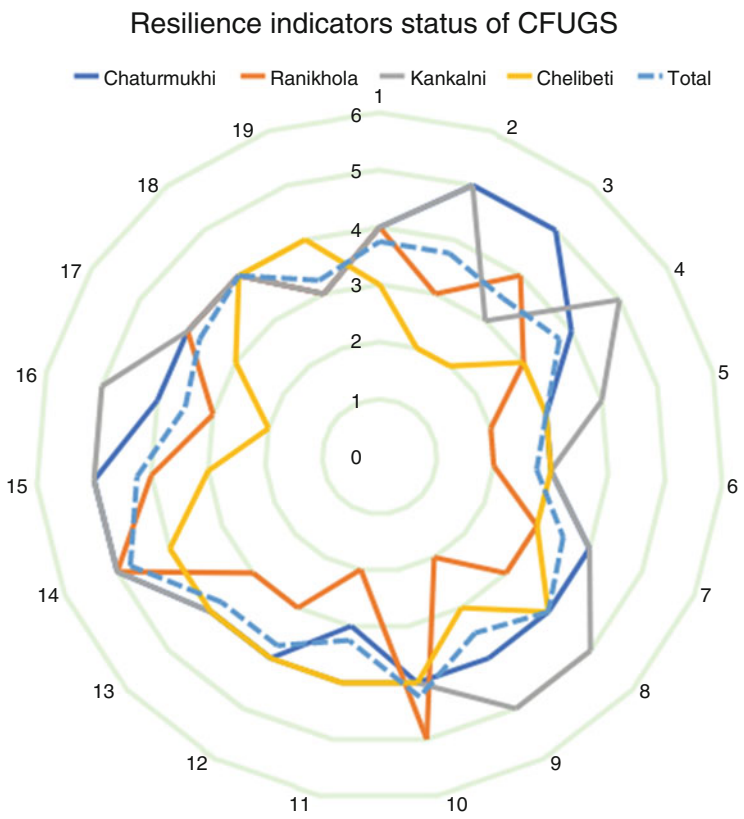

Fig. 12.2 Radar graph of resilience indicator of CFUGs

sites found improving and moving forward to maintain biodiversity. Activities such as probation in wildlife hunting, forest fire, encroachment, and grazing control help to increase biodiversity inside the forest. Now to cope with climate change impacts, CFUGs promote planting of multipurpose tree species as well as drought-resistant and fast-growing species in CF and home gardens which also help to improve soil quality. Communities are fascinated with cash crops and forest trees as opposed to traditional paddy cultivation.

- Knowledge and innovation: During the field survey, CFUGs practice and adopt new technique of forest management system, such as scientific forest management (i.e., technical management of forest resources in scientific way), and applied activities to strengthen the existing and indigenous forest management system. They were also conducting various induction workshops, capacity building training, and awareness campaign for information dissemination about climate change impacts, technical forest management, and exposure visit to other neighbor CFUGs to exchange experiences and innovative ideas. Indigenous

groups were given priority for indigenous knowledge integration in forest management.

- Governance and social equity: One of the major aims of CFUG is deliberation and women, poor, disadvantaged, and marginalized groups' representation at planning, decision-making, and benefit sharing forum. CFUGs followed the democratic process either in choosing executive committee members or planning. Women are also getting the position for a leadership role. Data evidence shows 50% of women participation on the executive committee of CFUGs at study sites. CFUGs coordinate and collaborate with different stakeholders for sustainable management of natural resources. CFUG is also considered as a local level institution for forestry sector strengthening all pillars of good governance.
- Livelihood and well-being: CFUGs have conducted lots of livelihood improvement activities to improve community livelihood standards. CFUGs conducted well-being ranking of households at community households classified as 'ka', 'kha', 'ga', and 'gha' where 'ga' and 'gha' class represented poor and pro-poor households of the community. Based on well-being ranking, activities such as vegetable farming, poultry, skills development training, and other income-generating activities were conducted for poor and pro-poor households as per household's need. Field data shows that poor, disadvantaged, and marginalized groups are important for all phases of active forest management, and their involvement directly affects their well-being supporting to reduce poverty at local level.

12.5 Conclusion

In this research the societal dimension of sustainable natural resource management was explored. Adaptation and mitigation measures were used as the ability of CFUGs to cope with climate change impacts. District forest offices provided technical support to CFUGs to implement scientific forest management and silvicultural activities such as thinning and pruning. Mosaic landscape approach is applied to maintain forest and agricultural diversity. Home garden, agroforestry system, and leasehold forestry system inside the CF promoted the conservation of biodiversity. Kankali CFUG's innovative idea to make picnic spot and recreational park inside the CF was promoting ecotourism which uplift community livelihood standards.

This research found that CFUGs are moving toward climate resiliency and sustainability through strengthening all essential components such as innovation and knowledge, landscape diversity, biodiversity (including agroforestry), gender equity and social inclusion, livelihood, and people well-being. Activities such as agroforestry system, leasehold forestry system, and home garden contributing in a mosaic landscape maintain ecosystem services and balance a harmonious relationship with forest, and forest depended on communities. Sensitization of the fire line in the CFUGs is found to be remarkable in the study sites. CFUGs support to the increased forest area, and on the other hand, deforestation, encroachment, illegal

felling, and hunting were also decreasing in number according to the respondents. CFUGs adopted landscape diversity for restoration and conservation of forest resources. Sectors such as agriculture, education, health, food security, poverty reduction, and gender equity and social inclusion were getting direct and indirect benefits from CFUGs. Livelihood improvement activities, scientific forest management, agroforestry, a scholarship program for poor students, revolving fund, women and disadvantaged groups' representation at decision-making forum, and many more activities indicated that CFUG is moving toward sustainable, inclusive, and resilient community building.

CFUG's major step toward climate change impacts is to include CAPA as a major part of their forest operational plan. At the same time, implementation of CAPA became a challenge for CFUGs due to the lack of funding, lack of skilled manpower, and lack of proper knowledge and information. Beyond the climate change issue, communities had list of challenges for CF management such as migration, urbanization, illegal felling, encroachment, deforestation, etc., although the research focused on positive highlights of CFUGs to seeking out a way forward to building a climate-resilient community through forest management in sustainable way. At this point, CFUGs in the study sites were not involved only in forest restoration and conservation but also in contributing to poverty reduction, women empowerment, institutionalized good governance at the local level, community livelihood improvements, provision of green job opportunities, and social cohesion among the diversified community.

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Chapter 13
Ensuring Sustainable Post-Pandemic Tourism in Nepal: The Role of Corporate Agencies

Anuska Joshi, Isabel B. Franco, and Ross Thorley

Abstract Nepal is one of the world's top tourist destinations, with millions of people visiting each year. Tourism contributes nearly 8% to Nepal's GDP, making it one of the largest economic sectors. The global COVID-19 pandemic has severely impacted this industry due to the suspension of foreign tourist arrivals. This has resulted in widespread unemployment in many Nepalese tourism industries including trekking, aviation, mountaineering, and hospitality, resulting in a loss of over 10,000 jobs. Nepal was set to launch a nationwide *Visit Nepal 2020* campaign with aspirations of attracting two million tourists, but which was later cancelled due to the pandemic. This impact on tourism is only one of the many sectors that is being hit hard by the pandemic, which has caused a major setback to the economy of the country.

For this tourism-dependent country, a strong mechanism is required to recover and sustain this industry. The actions taken by authorities, airlines, hospitality businesses, hoteliers, trekking agencies, and mountaineering agencies will determine how Nepal recovers and what pathway it takes to repair its tourism industry.

Keywords Sustainability · Tourism · COVID-19 · Nepal · Community · Policy

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13.1 Introduction

The tourism industry is the third largest export sector of the global economy, accounting for 7% of global trade (UNWTO 2020a). The sector supports millions of jobs across the world and is a vital component for the economy of many developing and developed nations. According to the World Economic Forum, the pandemic could set the global tourism industry back 20 years with trillions of dollars in losses and millions of jobs at risk (World Economic Forum, 2020). Projections show that the export revenue from tourism will fall from $1.2 trillion to $910 billion in 2020, and global GDP will decline by 1.5% to 2.8% (UNWTO 2020b). Since the declaration of COVID-19 as a pandemic by WHO on March 12th, outbreaks have spread rapidly with a steep rise in the number of infected cases. This has resulted in many countries closing their borders to prevent further exacerbation of the situation. Many national and international events have been cancelled, including the 2020 Tokyo Olympics. With so many direct and indirect sectors associated with tourism, such as aviation, transport, service industries, food, and agricultural production industries, as many as 100 million direct tourism jobs are at risk, with small businesses being more exposed to financial instability (UNWTO 2020c). Some of the most vulnerable workers are women, youth, and informal workers who make up about 54% of the tourism workforce (UNWTO 2020d). According to UNWTO, 90% of countries have closed World Heritage Sites, and 90% of museums closed of which 13% may never reopen (UNWTO 2020e). China, the first country that was initially affected by COVID-19 closed 70,000 theatres and most of its airlines (Folinas & Metaxas, 2020); in Rome and Italy, 90% and 80% hotel and travel agency bookings were cancelled, respectively.

All over the world, restaurant sales have dropped precipitously compared to the same period in 2019. This has created a ripple effect impacting related industries such as farming, food production, liquor production, shipping, and fishing (Bloom, 2020). According to the UNWTO World Tourism Barometer, international tourist arrivals declined by 72% between January and October in 2020 due to the virus spread, restrictions on travel, and low traveler confidence. Nepal's dependence on tourism is significant with 1.05 million jobs dependent on the sector (Prasai, 2019). Before the pandemic, the number of tourists visiting Nepal had been increasing. According to Khadka, the number of tourists was −1.96% in January 2020, −1.00% in February 2020 which then plummeted to −73.26% in March (Khadka, et al., 2020). The drop in tourist numbers escalated with the lockdown due to the government-imposed lockdown on 23rd of March 2020, suspending all international and national flights and halting all tourism services including hotels and adventure bookings, resulting in loss of income and unemployment for millions of people. This has affected 1254 registered hotels, 29 international airlines flying to Nepal, 20 domestic airlines, and 2649 registered trekking agencies, according to Nepal Tourism Statistics 2019 (Ministry of Culture, Tourism and Civil Aviation, 2020). Not only did the pandemic cause a loss of jobs and loss of economy for the tourism

sector, it also saw sociocultural tensions rise as racism grew along with the spread of COVID-19 (Jamal & Budke, 2020).

According to a global survey conducted by UNWTO among its panel of tourist experts, the majority did not see a return to pre-pandemic 2019 tourism levels before 2023 (UNWTO 2020b). In the case of Nepal, the tourism industry is highly dependent on tourist inflow from India, China, the USA, the UK, and Sri Lanka, with Indian tourists accounting for the largest share with 21.23% of total tourists arrivals. Similarly, China accounts for 14.16%, the USA 7.79%, the UK 5.11%, Sri Lanka 4.6%, Thailand 2.4%. Australia 3.26%, Germany 3.06%, Myanmar 3.03%, and France 2.56%. Out of these, China, Thailand, Sri Lanka, and Myanmar are the only countries recording an early recovery from the impact of COVID-19 (Khanal, 2020). The return to pre-pandemic tourist inflow will be dependent on safety and precautionary measures taken by governments and tourism corporations. Furthermore, it is projected that leisure travel will restart first, as most people travel to visit their family and relatives (UNWTO 2020c).

13.1.1 Importance of Sustainable Tourism Post-Pandemic

The future of tourism needs to prioritize safety, with proper social distancing from source to destination and sanitized services, along with any necessary restrictions. A strong medical emergency service is required to be in place during travel, as well as in destinations, with robust infrastructure in place for testing, identifying risks, and monitoring outbreaks.

As tourism needs to restart post-pandemic, it can be an opportunity to incorporate social and environmental along with economic contributions the sector can provide. A policy brief by the United Nations World Tourism Organization highlights the role of tourism in advancing the sustainable development goals in conjunction with environmental and cultural goals. The brief also mentions the urgency of mitigating the impacts on people's livelihood, especially in women, youth, and informal workers (UNWTO 2020c).

The One Planet Vision for a Responsible Recovery of the Tourism Sector was designed to build on the UNWTO Global Guidelines to Restart Tourism, to build back stronger and more sustainable tourism sector. According to UNWTO Secretary-General Zurab Pololikashvili: "Sustainability must no longer be a niche part of tourism but must be the new norm for every part of our sector. This is one of the central elements of our Global Guidelines to Restart Tourism. It is in our hands to transform tourism and that emerging from COVID-19 becomes a turning point for sustainability" (UNWTO 2020d). The vision has been developed in alignment with achieving the Sustainable Development Goals (SDGs) and the objectives of Paris Agreement, with the six lines of action to guide the responsible tourism recovery being public health, social inclusion, biodiversity conservation, climate action, circular economy, and governance and finance.

About 7% of overall world tourism relates to wildlife (UNWTO 2020e). Since the beginning of the pandemic, large amounts of funding have been cut from biodiversity conservation, and many people who lost their jobs reverted back to illegal hunting and poaching. Nature tourism has enabled communities around the world to conserve their natural environment and culture while receiving an income for their livelihood. This shows that sustainable tourism provides an alternative to wildlife exploitation to get revenue from, by making use of the natural biodiversity to attract tourists.

UNWTO has put forward five priority areas for transforming tourism that include mitigating socioeconomic impacts on livelihoods, building resilience of communities, advancing innovation and digital transformation of tourism, fostering sustainability, and coordinating and partnering to restart and transform the tourist sector toward achieving SDGs (UNWTO 2020d). The tourism industry incorporates many different sectors from aviation, transportation, hoteliers, and trekking agencies to food processing. As such there are many sectors that need work to recover but that also need to take responsibility in ensuring that their activities align with the joint objective of the tourism sector to contribute toward sustainable development and environmental conservation along with community upliftment. While tourism has now been halted because of the pandemic, its combined emission from its sub-sectors including transport, goods, food, beverage, agriculture, accommodation, construction, mining, and hospitality accounted for about 4.3 billion metric tons of carbon emission in 2018 (Lenzen et al. 2018).

The pandemic has highlighted the importance of balance between the economy, environment, and society and has also shown how disrupting one leads to a ripple effect to others. According to the One Planet Responsible Tourism Program, the tourism sector can support conservation efforts by capturing the value of ecosystem services. This is achieved by supporting monitoring mechanisms, sustaining conservation, fighting illegal wildlife trade, and sustainable tourism being a nature-based solution by mitigating environmental impacts of tourism activities (UNWTO 2020e).

During a webinar on "Transforming Tourism for a resilient and sustainable post-pandemic world" conducted by UNEP in collaboration with OECD and UNECE as a side event of the 26th meeting of the UNECE Committee on Environmental Policy (CEP), expert speakers from various organizations highlighted the importance of policy coherence, public/private partnerships, and innovation through digital transformation, along with collaboration and coordination among destinations, businesses, local communities, visitors, policy makers, and investors (One Planet Network 2020). According to Dr. Anna Spenceley, chair of the IUCN tourism and protected areas specialist group, despite efforts to mainstream sustainable tourism, the sector has still been a contributor to global crisis and therefore requires collective collaboration to transform tourism practices. Assistant Director-General for Culture of UNESCO also called for ensuring that cultural tourism is geared toward sustainability and resilience while continuing to contribute toward the sustainable development goal.

While the businesses in the tourism sector try to go back to business-as-usual scenario, and to bounce back from its economic losses, the pandemic has been considered to be an opportunity to reflect on lessons learned, transforming and reforming tourism along the way toward more sustainable trajectory (Higgins-Desbiolles 2020).

13.2 Methodology

To understand the impact of the pandemic on tourism in Nepal, both primary and secondary sources were referred to. This study is perception based, with discussion with numerous tourism stakeholders, including trekking and travel agencies, hoteliers, local authorities, tourism boards, and ministries. As this study was highly based on the perception of the relevant stakeholders, the framework applied was the social constructivism approach with interpretive framework, whereby research participants were asked semi-open and open-ended questions. Moreover, a literature review was completed to obtain secondary data in relation to the impacts of the pandemic on tourism, the response of the tourism sector, and discussions of post-pandemic tourism operations.

An open and semi-open questionnaire was prepared for a key informant interview. The selection of stakeholders was based on their area of operations in order to incorporate a wider spectrum of tourism in Nepal, in relation to location as well as type.

The necessary ethical approval was acquired to adhere to the accepted ethical standard in research. A consent form was created to ensure people were aware of the aim and objective of the research and the premises under which the data obtained will be used. The respondents were briefed beforehand about the aims, objectives, and use of their responses.

13.3 Discussion

13.3.1 Impact of COVID-19 on Tourism in Nepal

According to the International Civil Aviation Organization (ICAO), there was a 52% reduction in seats offered by airlines in 2020. This has seen a reduction of 2851 million potential passengers and has resulted in approximately $391 billion in lost revenue. This substantial economic loss has been reflected in Nepal with the Airline Operators Association of Nepal (AOAN) estimating a loss of around 10.62 billion NRS for domestic airlines (Mahat 2021). Buddha Air, which is one of the oldest private airline companies in the country, suffered the largest loss of approximately Rs.3.60 billion (30,100,000 USD), followed by Shree Airlines with a loss of Rs. 2 billion (17,200,000 USD), and Yeti airlines and Tara Air with a loss of

Rs. 1.5 billion (12,900,000 USD) each (Mahat 2021). According to Mr. Abdullah Tuncer Kececi, General Manager of Turkish Airlines, visitor restrictions and standards have varied between countries, and COVID-19 had completely halted flights other than repatriation flights for 2 months. In June, flights resumed with some restrictions, bringing their service back to 205 destinations. However, Mr. Kececi emphasizes that right now the focus should still be on improving safety protocols together with restarting services rather than focusing wholly on getting more visitors. According to AOAN, the helicopter industry in Nepal has lost approximately Rs 800 million (6,890,000 USD) between March and December 2020, with the total foreign exchange revenue loss for the two tourist seasons in 2020.

The World Trade Organization states that the cancellation of spring mountaineering expeditions has resulted in a loss of around 13,000 tourism jobs (World Trade Organization 2020). Different strategies to prevent the COVID-19 spread, such as social distancing, stay at home orders, and travel restrictions, have resulted in the closure of many hospitality and retail businesses. This has impacted all levels of the industry from big hotel corporations to small-scale tea-shops and stall eateries. *Mr. Sajan Shakya, General Secretary of Hotel Association of Nepal (HAN), stated that the pandemic turned out to have an unprecedented long-term impact on the tourism sector and hotel industry across the country*. While previously there were millions of tourists visiting annually, the number has remained staggeringly low. According to Mr. Shakya, some hotels have started gaining about 40% occupancy, but this is not sufficient to profit from it, and Mr. Shakya does not see the situation improving any time soon in 2021. He stated that "while domestic tourists are slowly travelling away from the Kathmandu valley, mobility of tourists incoming to Kathmandu is still negligible," impacting the hundreds of hotels in the valley.

To Himalayan Friends Trekking, which has been operating mountain tourism for decades in Nepal, the pandemic has completely halted their service. According to the CEO, Mr. Phuri Kitar Sherpa, the pandemic not only caused loss after the halting of tourism flow, but it caused further loss because usually travel and hotel industries, especially in far-flung places, prepare beforehand the necessary logistics before peak tourist seasons. When the pandemic hit in March, many businesses that prepared food supplies and equipment suffered significantly greater losses. Also, according to Mr. Sherpa, "while bigger trekking agencies might have surpluses to recover, retain their livelihood or bounce back, smaller hoteliers, tea shops, and smaller enterprises were even more negatively affected." According to the World Bank forecasts, 31.2% of Nepalis are considered to be at risk of falling into extreme poverty from the impact of COVID-19 on the tourism industry. The situation will be exacerbated by remittance fall and job losses in the informal sector, along with an increase in the cost of essential commodities (Sah et al. 2020).

COVID-19 has shown a huge impact on ecotourism across the world. Evidence shows that many conservation regions across the world are heavily dependent on ecotourism (Greenfield and Muiruri 2020). While the halt in tourism and economic production has shown some benefits to the natural environment through the reduction of carbon (International Energy Agency), and less pressure on natural systems, economic consequences of the COVID-19 lockdown have also raised instances of

poaching and illegal deforestation in ecotourism-dependent communities (Spalding et al. 2020). According to Dr. Bhagawan Raj Dahal, deputy country manager of ZSL Nepal, the pandemic has also caused a serious impediment to wildlife tourism and conservation. Wildlife tourism is the second largest tourism sector after mountaineering in Nepal. According to Dr. Dahal, tourists visit Nepal to see the mega species of fauna including the tiger, leopard, elephant, and one-horned rhinos, and the pandemic has impacted the source countries, Europe, the USA, China, and others where the tourists come from. Not only international but also domestic tourism has also been halted. And this has not only impacted large commercial hotels and resorts but also homestays. In the case of wildlife tourism and conservation, the homestay has become an alternative livelihood development mechanism for communities living in buffer zones, which has incentivised conservation efforts. When the pandemic halted this livelihood source, people reverted back to extracting resources and even illegal forest trade. The pandemic provided poachers with the conditions for illegal trading due the reduction of surveillance and policing.

13.3.2 Response to COVID-19 by Corporates

The Nepal Preparedness and Response Plan (NPRP) was prepared with actions and key response activities to be undertaken by Nepal for tackling the COVID-19 pandemic (United Nations Nepal 2020). The plan consisted of two interventions, namely, preparedness with investment in Nepal's health systems and effective response to handle increasing cases and impact across industries (United Nations Nepal 2020). Various organizations across the country made their plans for short-term responses as well as long-term strategies for economic and service revival. Airlines have been severely impacted, with long duration of suspension. When the pandemic began, airlines halted all their services, except repatriation flights. As countries began lifting travel restrictions, airlines have tried bringing back efficient and safe services to their passengers. For airline corporations in Nepal, it has become a priority to keep the cash flow coming instead of aiming for profits at the moment and also emphasizing that national passengers get affordable travel available to them (Mahat 2021). However, while the initial response has been to halt the flights for safety measures, and restart with national travelers, airlines state that without international tourists, it is difficult to achieve profits any time soon, as in case of Nepal, like in many other countries, price for same destination is higher for international tourists than domestic (Mahat 2021). Mr. Abdulla from Turkish Airlines emphasizes that for many people, economic loss has been more impactful than the disease itself, especially in Nepal, where many people have reached the point of starvation. Therefore, it is important to maintain businesses while taking necessary safety precautions. And for a country like Nepal, Mr. Abdulla believes in return of tourist numbers, as people are waiting to travel again.

The Lukla municipality and local authorities showed a very efficient and immediate response when the lockdown was imposed. The authorities set rules for

allowing tourists stranded in the area to live for free in the hotels, and the municipality paid the hotels for accommodation and food. Similarly, all tiers of government provided relief packages to aid marginalized and ultra-poor families. A circular was issued to all local governments by the Ministry of Federal Affairs and General Administration to provide necessary relief materials to families and groups in need of special protection (Dhruba 2020). In response, municipalities focused on rice, lentils, and cooking oil being the fundamental needs of daily wage laborers and started setting up grain banks to collect grains. The Tulsipur Municipality of Dang established grain banks to collect grain and distribute it through a one-door policy, where they requested individuals, agencies, and private corporate sectors to contribute (Dhruba 2020). The example was also followed by other local governments. While the role of the private sector has been crucial in the response to emergencies, studies also show that the private sector has not been adequately responsive in managing the situation in Nepal (Dhruba 2020). While associations of small and medium enterprises, the Federation of Nepalese Chamber of Commerce and Industries chapters, work actively in all districts, they could have been better organized during emergency to managing immediate response mechanisms (Dhruba 2020).

The ability of corporates in providing for their locality has also been exemplified by travel agencies like Himalayan Friends Trekking. According to the CEO of Himalayan Friends Trekking, after the pandemic caused lockdown in Nepal and elsewhere, their company completely returned all the booking money back to the payers without any charges and also supported their visitors who were already in Nepal. He also mentioned that there is again slow entry of tourists for mountaineering and hiking in November onward and projected to pick up in March onward. Similarly, chairman from Sagarmatha National Park and Buffer Zone stated that their immediate response was to instill the guidance of the government of Nepal with regard to health and safety protocols, including PCR testing, quarantining, and making use of social distancing mechanisms, before allowing trekking or mountaineering. Their long-term strategies are centered on reviving tourism with health and safety protocols, the economic loss that the Everest region endured. Similarly, the Secretary General of HAN mentioned that the hotels have tried to support their staff during the pandemic. The salary of individuals working from home had to be reduced considerably, but even so they tried to circulate support through the many member hotels in HAN. The Secretary General believes that for Nepal to restart tourism, the priority should be attracting tourists from neighboring countries by opening the border. This would provide vital support to hotels facing financial losses and accumulation of debt. Moreover, trekking in reduced numbers in remote locations can be executed safely while complying with COVID-19 safety protocols.

Furthermore, Dr. Dahal from ZSL mentioned that some of the homestays in the buffer zones had already begun to get good revenues of around 1700 to 1800 Lakh Nepali rupees (15 USD) annually, which was then halted as travel restrictions were put in place for national and international tourists. In order to prevent reverting back to the illegal wildlife trade, ZSL put forward livelihood improvement programs such as goat farming and seed money through cooperatives to give the people an alternative income source. He also mentioned that they are starting to profile and

advertise these community homestays using social media and other digital platforms in order to attract tourist returns.

13.3.3 Future Endeavors for Post-pandemic Sustainable Tourism

Tourism transportation alone is estimated to produce approximately 75% of all emissions in the tourism sector, contributing 5% to man-made emissions globally and other parts of the tourism sector, including hotels, food production, waste management, and service sector which also contribute heavily to emission and pollution (UNWTO 2020a). Similarly, nine industries within tourism, including transport, goods, food and beverage, agriculture, services, accommodation, construction, mining, and hospitality, accounted for nearly 4.3 billion metric tons of carbon emitted per year (Lenzen et al. 2018).

Key policy priorities given by the OECD for building back tourism includes restoring traveler confidence, supporting the adaptation of tourism businesses, promoting domestic tourism, supporting a safe return of international tourism providing clear information to travelers and businesses, limiting uncertainty (to the extent possible), evolving response measures to maintain capacity in the sector and address gaps in supports, strengthening cooperation within and between countries, and building more resilient, sustainable tourism (OECD 2020). Vanuatu has become the first South Pacific country to base its sustainable tourism policy on the Global Sustainable Tourism Council (GSTC) criteria for sustainable destinations, with the following goals: to develop and manage a sustainable and responsible tourism industry; for the visitors to connect with Vanuatu's environment, culture, and its people; to develop sustainable and responsible tourism products and services, supported and marketed to attract responsible, high-value tourism, a tourism that enhances, conserves, and protects the environmental and cultural resources of Vanuatu; and sustainable and responsible tourism bringing improved income and well-being for Vanuatu and its people (IISD 2021).

Dr. Dahal from ZSL highlighted that the prospect of wildlife tourism will always be there for countries like Nepal, which is home to fauna and wildlife diversity. However, Dr. Dahal states that it is important to consider the capacity of tourists that Nepal can handle without impacting the wildlife. There are already instances where noise pollution persists near wildlife due to increased touristic activities. Instead of restarting tourism with solely monetary purpose, tourism should now consider regulating number of tourists according to the capacity to monitor its impact, with some critical places of wildlife abode even barred from visits. Tourism flow should be regulated, without a risk of wildlife collapse. The CEETO (Central Europe Eco-Tourism: tools for nature protection) project also formulated guidelines to support policy makers at international, national, and regional level for shaping tourism planning and management within and around protected areas, with an

objective to facilitate the integration of nature conservation, sustainability criteria, and principles for environmental and socioeconomic benefits into design process of these plans (EUROPARC Federation 2020).

Mr. Phuri Kitar Sherpa (HFT), who has been in mountain tourism for decades, has always advocated for better agricultural practices in his region, Lukla. After the pandemic he claims that it has kind of proven how having agriculture could allow people to rely on a livelihood when such kind of emergencies happen. He also states that agricultural tourism could be a way forward, with farming being an arena in tourism that has not been much explored in the mountains. Same sentiment is also held by Mr. Abdulla from Turkish Airlines, who believes that farming in scenic mountains and countryside could be a very relaxing form of tourism for people trying to escape from their busy lives.

Mr. Shakya from HAN shed light on the pressing issue in Nepal, where many hoteliers and tourism organizations start their businesses without proper research, blindly following the mass. He believes that an important lesson given by the pandemic is the need to research one's business potential before starting and allocating certain funds for emergencies. The pandemic showed that businesses with stronger profit margins and larger customer bases could mitigate the impacts of tourism decline for themselves and their staff, whereas smaller hotel groups and businesses suffered significantly worse. Shakya calls on the government to support the tourism sector through providing incentives and promotions in order to stimulate tourism in Nepal.

As Mr. Abdulla points out that airlines have an important logistical role in trading goods and services, as well as the eventual distribution of vaccines. He states that as "tourism resumes, Nepal should work on enforcing clear safety protocols, as its potential for nature and adventure tourism prevails." Nepal has a well-established avenue for post-pandemic tourism due to its abundance of nature-based tourism. The increasing number of tourist arrivals toward the end of 2020 clearly shows that people are willing to travel provided that strict guidelines and protocols are in place. As Mr. Abdulla highlights, it is about moving tourism business forward, while also being sensitive to conservation issues, and investing not only on mobility of people but also on a more efficient and environmentally friendly aviation technologies.

The pandemic has shown the interconnectedness of various sectors and stakeholders, including private enterprises, public health, conservation agencies, protected area visitors, communities, and government and nongovernmental organization, whose collaboration is of the utmost priority for building sustainable tourism economies, with healthy ecosystems, resilient livelihoods, and thriving businesses (UNWTO 2020c). The World Economic Forum's recent "Rebuilding Travel and Tourism" panel found potential solutions for reshaping travel based on the intersection of consumer consciousness, technology acceleration, and destination management (Soshkin and Fenton 2020). This becomes increasingly possible as travelers become more impact-conscious, focus on experiential traveling with priority to crowd-free nature and outdoor activities, and accelerated tourism services digitalization that allows for tracking flow and impacts (Soshkin and Fenton 2020).

13.4 Conclusions

The pandemic has caused particularly adverse ramifications for Nepal which was preparing for an ambitious tourist target of over two million visitors with the campaign "Visit Nepal 2020." With millions of jobs dependent on tourism, the pandemic has severely impacted tourism businesses, threatening the livelihood of millions of people. The pandemic has also limited the mobility of people, hampering a range of normal and periodic vacations and tours and restricting people from meeting their loved ones. As such, the impact of pandemic on tourism has had vast implications on the economy and community livelihoods.

When the pandemic halted the economic activities across the globe, the world saw a drastic drop in carbon emissions, as well as increased biodiversity vitality when the pressure on the ecosystems subsided. However, the sudden decline in tourism was met with an increase in people reverting back to illegal hunting and poaching for livelihood when their income sources were stopped.

While the pandemic has hit the world for over a year now, the sector is still heavily under losses, with only a slow increase in travels from null, as travel restrictions are lifted across the world. There are millions to recover, for corporations inside the tourism industry, including airlines, hoteliers, food and beverage companies, small-scale shops, and hotels, to name a few. Travel is also still perceived to be a risk and might continue for a still longer time, until vaccinations, medications, and safety protocols are in place. Moreover, tourism has also shown a proven resilience in past crises, when upon increase in safety measures, tourism resumed in disaster-, epidemic-, or civil war-hit places.

When the pandemic posed a threat to public health, it resulted in the downfall of the economic and conservation sectors, showing that the three pillars of sustainable development, environment, economy, and society, go hand in hand. As shown by experts, it is essential for the private sector to collaborate with government agencies to recover from the impact of pandemic and ensure sustainable post-pandemic tourism in Nepal.

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Chapter 14
Adaptation Strategies Adopted by Indigenous Community for Sustainable Livelihood in Response to the Changing Climate: The Role of the Local Authorities and the Corporate Sector in a Case Study of Sherpa Community from Lukla, Nepal

Anuska Joshi and Riyanti Djalante

Abstract Nepal's vulnerability to climate change is high, due to its geographical conditions, which is further exacerbated by its low human development index. Under this context, indigenous people are especially vulnerable due to their close dependence on natural resources and their often weak socioeconomic condition. One such highly vulnerability community in the Himalayan region of Nepal is the Sherpa community who have long been the face of mountaineering guides and have established their livelihood around the harsh topography of the mountain. These mountain communities are at risk of melting glaciers and changing monsoons, which impact their agricultural and tourism activities that they are dependent on.

The adaptation strategies adopted by the indigenous community is very important in building their resilience against increasing impact of climate change and depends on their perception of climatic changes. In the case of Sherpa people in Lukla, this perception study shows that their awareness about present climate change scenario is almost null, and therefore they do not perceive potential threat in the future as well. This differs drastically from literatures and reports that point to the increasing climate change threat in the Himalayan regions. Therefore, the role of local authorities and corporate sectors is strong in bringing climate change sensitization program in the area and to work for robust adaptation strategies.

Keywords Climate change · Impacts · Adaptation · Sustainable livelihood · Nepal · Indigenous community · Sherpa · SDGs

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14.1 Introduction

14.1.1 Climate Change and Indigenous People

The human-induced warming has already increased to reach approximately 1 °C above pre-industrial levels at the rate of approximately 0.2 °C per decade (Allen et al. 2018). This increase in temperature has already resulted in widespread impacts on natural and human systems, as each decade has been successively warmer since the 1850s (Pachauri and Meyer 2014). As the temperature is projected to rise continuously throughout the twenty-first century, the impacts and persistence of climate related hazards will also continue to increase, as well as exacerbate the already existing ones. These risks are unequally divided and pose higher risk to vulnerable communities and places (Pachauri and Meyer 2014).

As the climate-related risks are unequally divided, one of the most vulnerable communities having greater risk of these hazards are the indigenous communities, as their natural resource-dependent livelihood and associated traditional knowledge will be challenged by the changing climate (Adger et al. 2014). Indigenous people are regarded to be vulnerable to the changing climate due to their close dependence on natural resources and also because they are often times socioeconomically marginalized. The indigenous people have a deep spiritual, cultural, social, and economic connection with their territories, resources, and lands, and these are said to be a basis for their "identity and existence itself" (The United Nations Permanent Forum on Indigenous Issues 2019). Due to this close dependence of their livelihood with natural environment resources, indigenous people are often among the first to confront the direct consequences of climate change. This exacerbates the difficulties relating to loss of resources and land, unemployment, economic marginalization, and discrimination that the indigenous people are already facing (United Nations Department of Economic and Social Affairs 2019). Indigenous people also constitute populations that are poorest of the poor and are threatened by social, economic, and environmental vulnerability (International Labor Office 2017). Indigenous people constitute an estimated 5 percent of the total world's population, and in such a less percentage constitute nearly 15 percent of the world's poor (International Labor Office 2017). Indigenous people and their livelihood are evidence to the human-ecosystem relation being reciprocal, where the ecosystem provides services to the community and the community in turn works for the conservation of the ecosystem while also utilizing it (Comberti et al. 2015). As they are so close to the ecosystem, they are active drivers for ecosystem management, making adaptation strategies adopted by them help in enabling ecosystem resilience too (United Nations Department of Economic and Social Affairs 2008).

The impacts of climate change on indigenous communities has been documented by various studies. The Himalayas glacial melts are affecting millions of indigenous rural people dependent on the seasonal flow of water; in the Africa's Kalahari Desert, indigenous people are forced to depend on the governmental support for survival against rising temperatures, dune expansion, and loss of vegetation due to increased

wind speeds (United Nations Department of Economic and Social Affairs 2019). These hazards and impacts associated with climate change will continue to threaten human security and will be an important factor contributing to insecurity by undermining livelihood, compromising culture and identity, and increasing the instances of migration that people would rather avoid (Adger et al. 2014).

However, indigenous people are also a major resource of adapting to climate change by utilizing the knowledge that they have as a result of their long history of adapting to changing and highly variable ecological and social conditions (Adger et al. 2014). As their knowledge of ecosystem is intensive, they are crucial to help enhance resilience of ecosystems. Oftentimes, the indigenous communities have creative techniques to react to the climate change after interpreting it drawing from the knowledge they have (United Nations Department of Economic and Social Affairs 2008). As the 80% of remaining biodiversity lies with indigenous lands, it is also an indicator that the indigenous community plays a major role in environmental protection along with their adaptation to the changing climate (the United Nations Permanent Forum on Indigenous Issues 2019).

Indigenous peoples' representatives have been pushing for engagement on climate agreements and action following the adoption of Kyoto Protocol in 1997 and were given support for their involvement by the United Nations Framework Convention on Climate Change (UNFCCC) by 2004 (Etchart 2017). The Indigenous Peoples' Center for Documentation, Research and Information (DOCIP) stated that indigenous people have been making link between climate change and the rights of indigenous peoples for several decades, "taking center stage in its promotion" (DOCIP (Indigenous Peoples' Centre for Documentation, Research and Information) 2015). The indigenous people also presented themselves as key players for the achievement of Sustainable Development Goals 13, 14, and 15, at the UNPFII conference 2017 (UNPFII 2017).

14.1.2 Corporate Role toward Climate Change Adaptation Fostering Sustainable Livelihood

Adaptation has been defined by IPCC as an adjustment in the natural or human systems, which is a response to actual or expected climatic stimuli or their effects, which would moderate harm or exploit its beneficial opportunities (IPCC 2001). As the temperature of the earth is projected to increase by over 2 degree, the necessity of robust adaptation measures also increases (DiGregorio et al. 2017). The longer the delay in responding to the changing climate, the higher is the risk of social, environmental, economic, and technological challenges (Climate Change 2014: Synthesis report 2014).

As such, action for adaptation should be priority from sectors across the world, and corporate sectors can play an integral role toward it. Corporate sectors across the globe will also undoubtedly be affected by the changing climate, including impact to

their supply chain, disruption to transportation, and higher insurance premiums for doing business in certain parts of the world, as well as sectors from tourism to logistics, including impact on human resources (Alibašić 2018). However, they may also be quick to adjust and seek solutions to the long-term problems, as these tie closely with opportunities and challenges for the global economy. This also ties with the fact that large corporations have been sources of greenhouse emission and therefore have responsibility for mitigation as well as an obligation for repairing the consequences.

In most developing countries, especially the ones with indigenous community, climate change is reported to exacerbate multidimensional poverty. The indigenous community and household will be highly impacted by not only the climatic hazards but also inequalities arising out of institutional adaptations due to the lack of assets flexibility and also disadvantages associated with marginalization (Olsson et al. 2014). These impacts of climate change have been raising issues of climate justice, as the contribution of the indigenous people to greenhouse emission is very low (United Nations Department of Economic and Social Affairs 2008). When it comes to adaptation by indigenous people, the strategies that they are adopting might not be sufficient to manage the rapid climatic changes that are projected (Wittrock and Wheaton 2011), even though they have portrayed a high ability to withstand and adapt to variable environmental conditions (Tyler et al. 2007). Therefore, the role of corporations is high, in bringing expertise and knowledge to support adaptation in line with building disaster preparedness, sensitization in climate change issues, and enhancing food and water security, for overall increase in climate change resilience.

Climate change is said to cause new poor between now and 2100 both in developed and developing countries, jeopardizing sustainable development, with majority of severe impacts projected for rural regions in Southeast Asia and Sub-Saharan Africa (Olsson et al. 2014). As such, it is important to understand how adapting to climate change would help in sustaining the livelihood of the people. On one hand adaptation strategies to climate change help in ensuring sustainable livelihood by minimizing the impact of climate change on the livelihood assets of the community, and on the other hand, sustainable livelihood also helps in reducing the vulnerability of the community to the changing climate. Oftentimes, communities with good access to goods and services are better equipped to leverage their action against climate change. The poor are often the most vulnerable group to the impacts of climate change, and as most of their reliance is usually on environmental service for livelihood, the most effective adaptation approach would be in ecosystem management that would ensure the natural services and support the ecosystem that provides to the people (IUCN 2004). As shown by a study done in a herder group in Tibetan Plateaus, level of climate risks has an effect on the type and level of adaptation strategies adopted by the herders, but the herders with stronger institutional arrangement, social support, better financial assets, and access to products and services are better equipped in leveling up their adaptation options and strategies (Wang et al. 2016). These institutional structures, policies, and legislations have a strong influence in reducing or worsening the impact of climate change in vulnerable people by determining the way any structure or individual operates and

also regulating access to markets, assets, culture, and even power relations in society (Institution for Rural Development FAO 2006).

Climate change mainstreaming is an iterative process that aims in integrating climate change adaptation into the decision- and policy making at all the levels of governance, national, sectoral, and subnational, and in the case of Nepal, Nepal endorsed national Climate Change Policy and National Framework on Local Adaptation Plan of Action (LAPA) in 2011 to implement the priorities of climate change adaptation laid out by National Adaptation Programme of Action (NAPA) (Regmi and Bhandari 2013). This was done to integrate adaptation into the development processes of the country in response to country-specific climate change evidence. Climate change adaptation and sustainable livelihood are identified as a two-way causality because adaptive capacity influences development and vice versa (Wright et al. 2012). As various reports point out, adaptation and coping to climate change are what communities have been doing since the livelihood began, by coping with the climatic variability to ensure their survival by ensuring their agriculture and other income-generating activities. As the changing climate increases these variability and change in local climatic pattern, it is a question of how the community elevates these strategies to fight with the increasing impact of climate change in the future (IUCN 2004). While it is still under debate about what role adaptation plays in any countries response to the changing climate, it has been increasingly pointed out that it should be done symmetric to development agendas to ensure that the policy and activities of the country align with minimizing risk of climate change and amplifying livelihood opportunities to the people (IUCN 2004). While doing so, there are many government agencies, NGOs, academic institutions, and other companies that play a key role in cross-sectoral integration and coordination of climate change adaptation activities (Ayers et al. 2011).

14.2 Literature Review

14.2.1 Adaptation of Indigenous People to Climate Change for Sustainable Livelihood

There has been many research in identifying the concept of adaptation and development, their synergies, and social-ecological complexities affecting development and adaptation (Agrawal and Lemos 2015). There has also been incorporation of climate change adaptation into broader development policies, projects, and policies with increasing urgency (Lemos et al. 2007). People and household face myriad challenges which are oftentimes exacerbated by the changing climate (Berrang-Ford et al. 2011). Often people live in very close association with the nature and climate surrounding them; adapting to the climate change and variability has been an iterative process. Management decisions are usually built by the community to work with the climatic condition of the place. Now the question is if the adaptation

strategies adopted are sufficient enough to address the wider and faster impacts and uncertainty regarding climate change (Levine et al. 2011). Sometimes there have been cases when projects aiming for facilitating climate change adaptation have proven to be deficient and sometimes even leading to more marginalization of vulnerable communities (Nelson et al. n.d.). To address the underlying societal inequities which are seen to fuel vulnerability of climate change, adaptive development was also proposed to take into account variety of climate-related risks faced by household and systems and make appropriate policies and programs accordingly (Basett and Fogelman 2013).

Adaptation strategies has often been linked to securing livelihood assets and services. Oftentimes adaptation helps farmers in improving productivity, for example, in Morogoro of Tanzania, farmers reported increase in productivity after introduction of draft animals and management changes, after which they expected improvement of such practices contributing significantly to climate change adaptation (Below et al. 2012). However, adaptation here has also been affected by social standing, education, and economic, social, and financial assets of the households (Below et al. 2012). Similarly, locals from Morogoro in Tanzania have also faced similar constraints from income and social assets to altering their livelihood strategies and enhancing adaptive capacity in their region (Paavola 2008).

Similarly, a study in the Tibetan herder groups also show how changing climate causes changes in livelihood activities for adaptation. As the changing climate along with anthropogenic activities caused degradation of pasture lands, the local herder group has resorted to lesser herding migration and now also does rotational grazing to protect the pasture land. Similarly, as the condition of the pasture land worsens, they have been working to improve their storage facilities (Wang et al. 2016). Now instead of taking their sheep herd and migrating around, the people are building more permanent houses for settlement and relying on growing and storing forages for the herd (Wang et al. 2016). Notably, there has also been reported increase of invasive species Chromolaena odorata in Bansar, remote village in Lamjung district of Nepal, due to which locals reported loss of traditional herbs and pastoral land, and the locals also had to give up their goats and cows due to lack of grass and fodder (Joshi et al. 2019). There have been projects on adaptation and sustainable livelihoods in India, which aimed at improving adaptive capacity of rural farm-based livelihood to cope with climate variability and change. This was done with focus on the provision of services, planning, and implementation of adaption to climate change in order to support risk assessment planning, along with community-led risk assessment and participatory planning of climate adaptation interventions (The World Bank 2019).

There has been another interesting observation of climate change adaptation and sustainable livelihood by research in fishery in rural household of Chilika Lagoon in India. The author points out that the impacts of climate change are not only on occupational activities but on multidimensional aspect of rural livelihood, and this again has a say on their capacity to adapt to the changes (Iwasaki et al. 2009). According to the research, increase of fish, dominance of fish marketing by fish merchants, and access to fishing group affect fishermen's capacity to adapt. The changing climate has an impact on all the stages of fishery, and these vulnerabilities

have also shown its socioeconomic impact by triggering dropout from school to enter fishing industry. The point of the author here is that climate change does not act independently in impacting livelihood but closely related with other processes to impact the community and development processes and that access to livelihood assets influences their ability to adapt (Iwasaki et al. 2009).

While Nepal has progressive INDC targeted to achieving climate resilience, studies show that Nepal still lacks comprehensive analysis of how government institutions, organizations, and businesses respond to the climate crisis (Tankha et al. 2017), thereby making it a need for a country like Nepal, while trying to adapt to the climate issue, to also take leadership in monitoring and evaluating their developmental progress (Szabo et al. 2016). The needs of people also vary as shown in the study by the author that households that had more resources favored technological solutions, whereas households with poorer economic conditions prioritized social standing and decision-making power (Nagoda 2015). As the discourse of subsequent adaptation and development evolves, climate change adaptation needs to be looked from other disciplines "particularly developmental studies" (Tschakert et al. 2016). Nepal has recently received its first Green Climate Fund for its project in Churia, whose objective is to enhance the resilience of vulnerable communities along with the ecosystems by adopting climate-resilient land-use practices (Green Climate Fund 2020). In parts of Ganges plains in Bangladesh, researches have shown recurrent bouts of droughts. The households have reported adopting coping strategies such as traditionally managed pond excavation, moisture conservation, and retention of rainwater. But they have also relied on government-supported practice whereby the government provided tubewell-facilitated irrigation and mini-ponds for supplemental irrigation (Institution for Rural Development, FAO 2006), which shows how traditionally equipped local people are dependent on governmental support in providing more technically sound adaptation strategies.

14.2.2 Role of Local Authorities and Corporates in Climate Change Adaptation in Nepal

Nepal's share of GHGs is only 0.027%; however, it is very highly vulnerable to the impacts of climate change (Government of Nepal Ministry of Population and Environment 2016). Nepal's vulnerability is high and increasing, now placed fourth after placing 24th in Climate Vulnerability Index in 2017 (Eckstein et al. 2018), while it has very low adaptive capacity, placed at 128th position in Resilience Index (FM Global 2019). Poor communities mostly depend upon natural resources for their subsistence livelihoods and usually have limited adaptive capacity making them further vulnerable to climate and other changes (ICIMOD 2010). Nepal has therefore been claimed to be one of the most vulnerable countries because of its high dependency on natural resource for livelihood, high poverty, fragile physiography, as well as low adaptive capacity (Oxfam 2009).

In the case of Nepal, the government of Nepal has modified its Climate Change Policy in 2019 to keep up with the changing context, with the new policy being centered on increasing resilience of climate change in livelihood and the ecosystem (Government of Nepal 2019); it has become important for the government of Nepal to mainstream climate change adaptation into its overall development process while also increasing institutional capacity, financial resources, technology, and knowledge to address the problems of climate change (Government of Nepal 2019).

The changing environmental conditions along with socioeconomic factors continue affecting vulnerability at local level, which require a changing innovative and adaptable interventions that will keep up with the changing context, therefore, making it necessary to have new and modified vulnerability-reducing measures with an understanding of what is to come in the future. This means it is important for decision-makers to identity how social and environmental changes impact poor livelihood and be able to provide improved access to information as well as capacity building for them. Changes induced by climate have a strong influence on resource flow, which is important to be understood for providing locally relevant adaptation strategies (IUCN 2004).

In this, local authorities and national and local corporations can have a major role to play in terms of mainstreaming climate change into different sectors, for a more effective adaptation strategies from each sector. For instance, an effective adaptation to climate change would require sensitization as well as adaptation projects and also depend on availability of required resources. A study conducted in communities in the Himalayas showed that the households near district headquarters were equipped with better facilities and infrastructure than the households farther away from the district headquarters. The report stated that the households near the district headquarters with better facilities and better access to resources were in more advantageous position than the households that lacked them. The study also found out that the households near headquarters were shifting to modern practices for adaptation, while the latter were more reliant on traditional practices. As the facilities and infrastructure differed between the two and depended on their livelihood situations, the report points out on the responsibility lying on the government in providing support to the ones who lacked these facilities (Pandey et al. 2017). The Local Government Operation Act (LGOA) of Nepal 2017 also recognized that "local people and local bodies are the most appropriate points of entry to meet the climate change adaptation needs at the local level" (Nepal, Mainstreaming Climate Change Adaptation into Sectoral Policies in Nepal: A Review, 2019).

There is a role to be played by the local authorities, as well as educational, agricultural, and tourism sectors, along with other agencies to better formulate and implement adaptation strategies based on each of their specialization. In the case of Nepal, Nepal developed the Pilot Program for Climate Resilience, under which there is a Strategic Program for Climate Resilience (SPCR) which has four key areas of intervention, including building climate change-resilient communities through private sector participation. This is a program under the Climate Investment Funds (CIF) (Climate Investment Funds 2018). Under this, one of the projects is in promoting climate-resilient agricultural practice which has the involvement of

various private companies, agribusiness firms, commercial banks, research councils, district development offices, and government agencies for building capacity of farmers with innovative adaptive practices and technologies, along with climate change sensitization (Climate Investment Funds 2018). Similarly, with large proportion of income in Nepal dependent on tourism, the tourism industry also faces the impacts of climate change and also highlights the importance of robust adaptation strategies for minimizing its contribution to climate change and has emergency responses available during climatic disaster events (Bhandari 2014). With the realization of importance of climate change awareness for effective adaptation, the Curriculum Development Center (CDC) along with other agencies has updated the curriculum of schools and universities in Nepal, incorporating information about climate change along with sustainable development (Ministry of Science, Technology and Environment 2017).

For a robust adaptation in place to foster sustainable development, there are many enabling factors: communications for information flow; transportation to function even during extreme events; finance that enables banking, credit, and insurance services; economic diversification that gives livelihood options; education that enables understanding of risks and strategies; organizations that voice concerns of diverse public, private, and civil society; scientific study to proactively identify hazards, risks, and solutions; and platforms to implement these solutions (Moench and Dixit 2004) and as such call for the need of contributions from various sectors and agencies.

14.3 Methodology

As this study was highly based on the perception of the indigenous people living in Lukla, and that of developmental and governmental agencies, discussions were done with the community people. This was done in order to allow the research participants to fully describe their perceptions and their experiences. The analysis of the threat of climate change impacts, adaptation measures, and linkage to sustainable livelihood was done based on their description and perception, which were dependent on their view of their environment and community and the changes taking place. This interpretation helped in gaining significant amount of information regarding the phenomenon (Cresswell 2013), which in this study was about impacts of climate change and the actions they were taking to adapt to these changes.

The necessary ethical approval was acquired to adhere to the accepted ethical standard required in the research. A consent form was created to make people aware of the aim and objective of the research and also the premises under which the data obtained will be used. The respondents were briefed beforehand about the aims, objectives, and use of their responses obtained. For the key informant interview, the interviewees were briefed about the data usage, and their signature of consent was obtained at the end of the questionnaire. Similarly, during the focused group discussion, briefing about data usage was done to the participants before the

interview, and a separate attendance sheet was created to get their signature, to signify their attendance as well. While taking photographs, permission were obtained beforehand.

14.3.1 Data Collection

For this research, primary and secondary data were collected for the study.

14.3.1.1 Primary Data Collection

Survey: Household questionnaire as well as focused group interview survey was done in the study area to get information about climate change trend and adaptation strategies of community people to the impacts of climate change. The survey was done in the household level, with focused groups as well as key informants, to get to wider number of respondents (Cresswell 2013). Convenience sampling along with snowball sampling was done, as the guide from the indigenous group determined the route to be taken and people to interact. Also, respondents went on increasing with the recommendation of the locals. The sample size was decided to be 25 households for around 50 households in the study area. While there is no definitive ideal sample size for qualitative research, the sample size was decided upon attainment of saturation (Glacer and Strauss 1967), as well as barriers regarding time, resources, as well as language.

Focused group discussions were done with community people, local leaders group, women group, and local high school. Similarly the key informants interviews were done with private trekking agencies, Office of the Investment Board, National Adaptation Programme of Action of Nepal, Food and Agricultural Organization of the United Nations, Nepal Mountaineering Association, and Tourism Board. This selection was done on the basis of the information gained from household and community survey that showed that agriculture and tourism were the major economic activities of the people.

Field observation was crucial in the study to observe firsthand the existing condition of the place, the population dynamic, as well as socioeconomic condition. Important observations were mapped and recorded to parallel with the responses from the community people. The same community person who helped in guiding the interviews helped in the field observations too.

14.3.1.2 Secondary Data Collection

Rigorous literature review was conducted for identifying literatures relating to the subject area. The climatic data could not be obtained from the Department of Hydrology and Meteorology, and therefore, secondary climatic trends from reports

and journal articles were referred to for the study. Data published from the Central Bureau of Statistics (CBS) along with previous studies was used to get the relevant data on the socioeconomic condition of the community. However, some of the information was also obtained from the community people, as the specific location details could not be obtained from the CBS. Required maps, land use, and other relevant data were obtained from official relevant sources.

14.3.1.3 Data Processing, Analyses, and Interpretation

There are various ways to do a qualitative analysis; one of the approaches to do the qualitative analysis includes the three main stages procedure, namely, reduction of the text, followed by the exploration of the text, and then the integration of the exploration (Attride-Stirling, 2001). For this research thesis, the qualitative analysis was done based on the preliminary stages of the research which included selection of research paradigm, participants, semi-structured questionnaires, transcription, and literature review (Akinyode & Khan, 2018). First the data was logged, notes and anecdotes were collected, the data was coded, and thematic areas were identified (Akinyode & Khan, 2018). Data was analyzed qualitatively with the help of Excel. The social data was categorized and coded and database was maintained in MS Excel. Content analysis was done by categorizing and tabulating the data. The data from the interviews were categorized on the basis of impacts, adaptation, and perception. Coding was done manually to represent theme or idea. These themes were identified based on repetition of information and from the respondents and also based on the graphs derived from Excel. Due to the small number of sample size, this was done manually without the use of any software.

14.4 Study Area

Nepal is a small country with an area of about 800 kilometers along the Himalayan axis by 150 to 200 kilometers across with an area of 147,181 square kilometers. It is a landlocked country bordered by India on three sides and China's Tibet Autonomous Region to the north. Home to some of the highest peaks in the world, the entire territory of Nepal is considered in the Hindu Kush Himalayan Region (Wester et al. 2019a).

Lukla is a small town in the Khumbu Pasanglhamu rural municipality of Everest region of Nepal. It is situated at 2860 meters elevation and is regarded as the entry point of visitors heading to Mount Everest. Lukla is a small airstrip with many lodges and shops, and Chaurikharka lies about half an hour walk downhill from Lukla. The Everest Region lies in between 86°31′–86°58′ east longitude and 27°47′–28°71′ north latitude. The Everest region further is classified into three subregions, namely, Khumbu in the north, Pharak in the middle, and Solu in the north. Lukla lies in the Khumbu of the Everest region. This Khumbu region is located in northeast

Nepal, at 2860 N and 86,420 E, and is approximately 140 Km from the capital of the country, which is Kathmandu.

Lukla is also within the Dudh Koshi valley, where the Dudh Koshi River is located, one of the many river systems of Nepal originating from the Himalayas and flowing through the west of Lukla (see Figs. 14.1, 14.2, and 14.3).

Out of Khumbu's total residents, which is about 3500, 90% are Sherpa, while the remaining 10% of are from Rai, Tamang, Brahmin, Dalit, or Chettri communities (Sherpa and Bajracharya 2009). All the respondents to this particular research are from the Sherpa community. Most of the livelihood in the entire Khumbu Pasanglhamu municipality is based on agriculture, pastoralism, and tourism (Sherpa and Bajracharya 2009). Previously there was high dominance of agro-pastoral system that was dependent and varied based on elevation and seasonally determined cropping and grazing patterns (Stevens 1993). Even the settlement is not always permanent in the entirety of the Khumbu Municipality, where they are dependent and defined by bioclimatic locations. The mid-elevation settlements are permanently occupied, also referred to as "Yul," which usually have 80–170 households. High-elevation summer places are called "Yersa," and low-elevation winter place are called "Gunsa" (Mcdowell et al. 2013). In this, Lukla is a permanent small town, which consists of year-long stay; however, mostly during winter, and during less tourism inflow season, some people migrate toward Kathmandu and other places. This seasonal migration toward Kathmandu has been reported in earlier studies too, where people traveled to Kathmandu and brought income directly or through remittance to relatives living in Khumbu (Stevens 1993).

14.5 Results and Discussion

14.5.1 Lack of Climate Change Awareness in Lukla

The household survey and focused group discussion with the community members of Lukla show a very interesting case of people who are perceiving changes in the climate, without having knowledge or even hearing about the ongoing climate change and associated crisis. Out of the 23 households in Lukla that were interviewed, respondents from only 3 households reported to have heard of climate change. But, when they were asked if the climate of the area was different than that of 25 years ago, the response was uniform: that they do see the changes in the climate of the place. The changes perceived have been the reduced snowfall in the area with more rocks visible in the mountains, as well as increase in temperature and rainfall.

The Department of Hydrology and Meteorology lacked the meteorological data from the meteorological station in Lukla. There are various reports that point to this lack of meteorological data being a barrier for efficient climate change analysis and that the localized effects in regard to the changing climate on Khumbu region remains yet to be well understood (Sharma et al. 2009). However the perception of the people regarding these changes does correlate with the reports and other

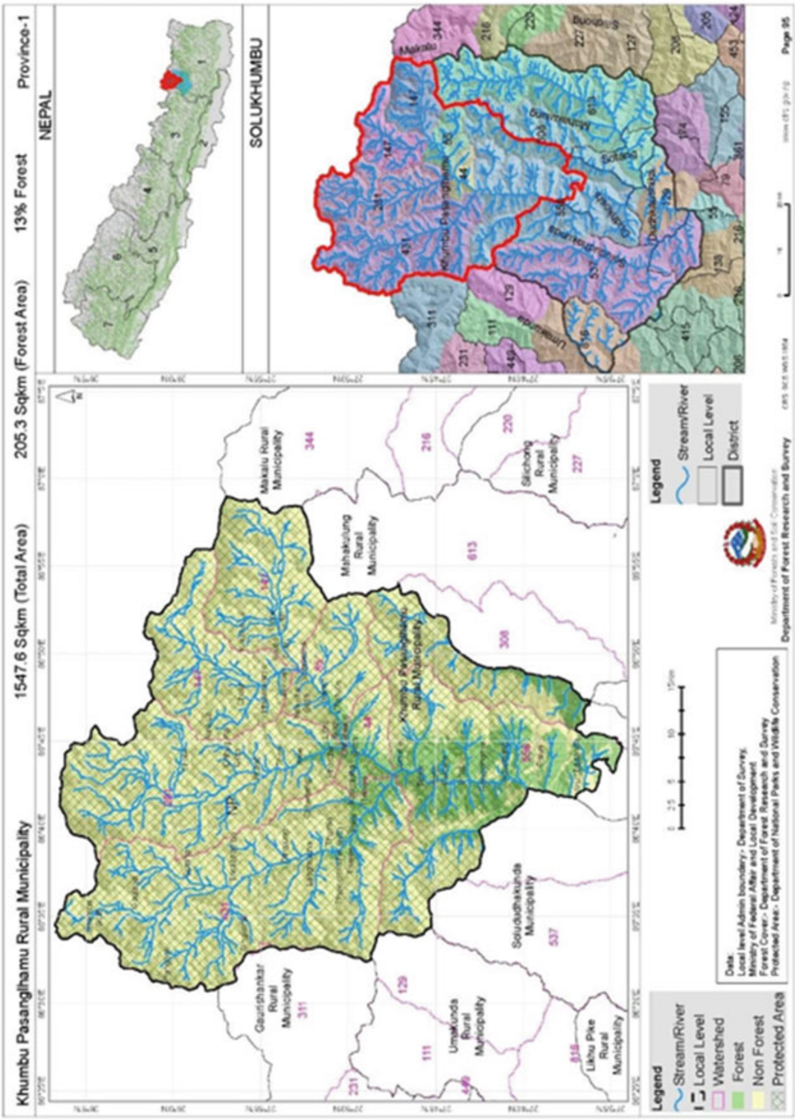

Fig. 14.1 Local resources map of Khumbu Pasanglhamu municipality of Nepal

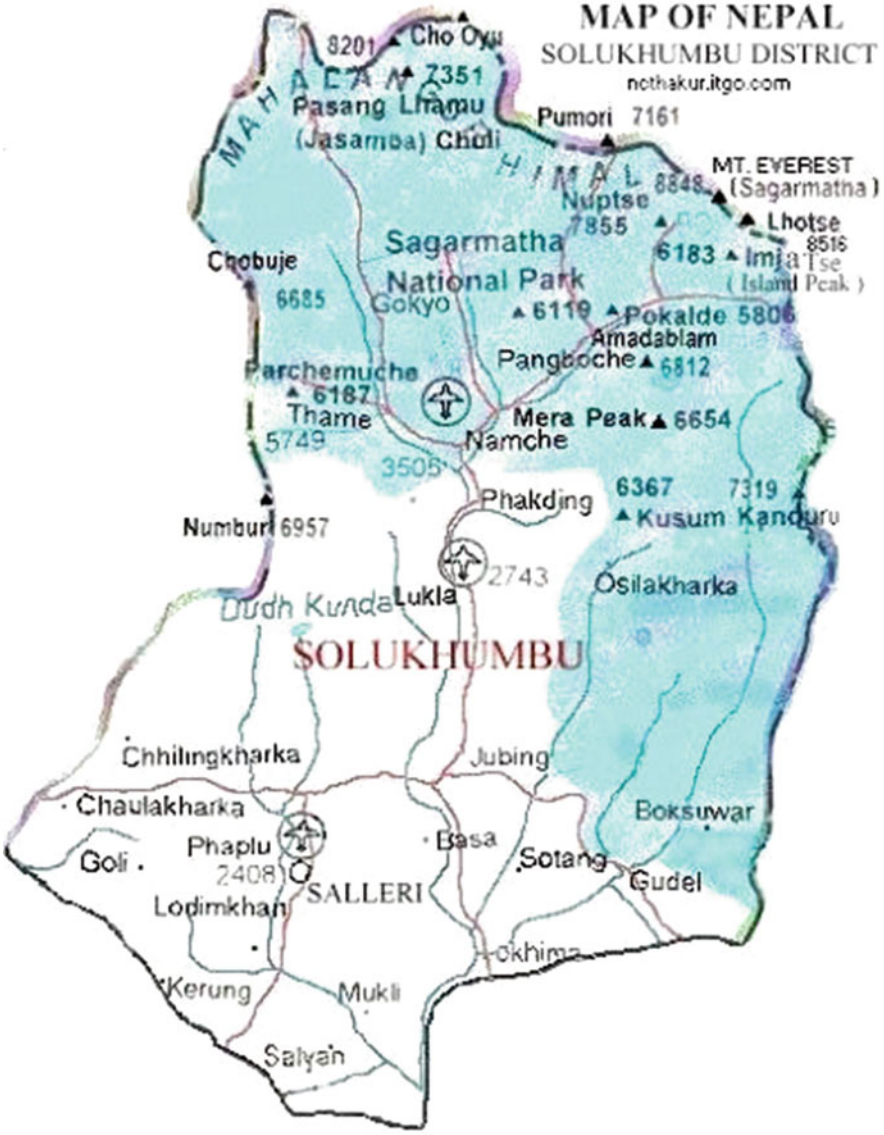

Fig. 14.2 Map of Everest region (Solukhumbu Region) of Nepal

literature reviews regarding the same. There was a rise of mean annual temperature of 0.057 °C a − 1 across the Himalayas between 1971 and 1994 (Shrestha et al. 1999). There has also been reported trends of decreasing total precipitation, which also showed change in precipitation phase, with lesser precipitation falling as snow in the northwestern Himalayas between 1996 and 2005 (Bhutiyana et al. 2010).

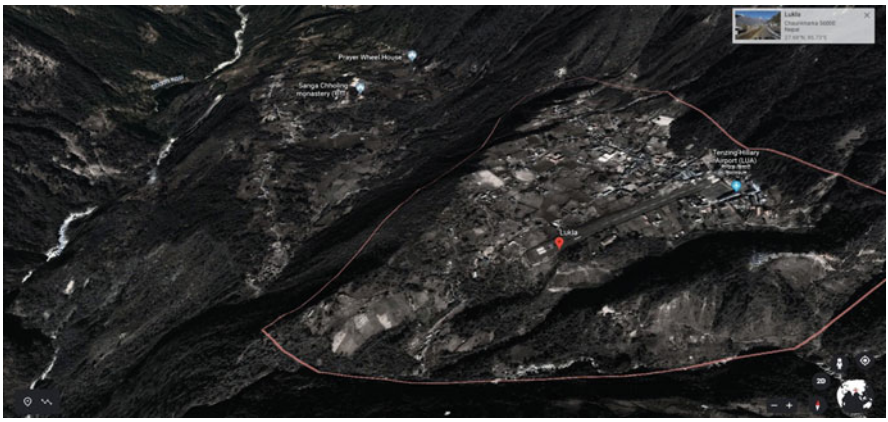

Fig. 14.3 Satellite image of Lukla

As people are unaware about climatic changes, it is alarming but obvious that they do not believe the impacts of climate change will increase in the future. They believe that weather fluctuations are natural without imminent threats or that being under God's grace, they would be safe. However, reports point otherwise: that the climate change impacts on the mountain community are projected to keep increasing. Not only the local communities but also the entire countries in many places of the world dependent of mountain for water are in a risk of decreasing water availability in the future, because of climate changing leading to extinction of permanently cyrospheric areas (Barnett et al. 2005; Viviroli et al. 2007; Bolch et al. 2011; Kääb et al. 2012; Soncini, et al. 2016). As the temperature of the world increases, the impacts are projected to hit the Hindu Kush Himalayan region including Nepal, and as the global temperature rise by 2 °C continues to disrupt climate system and biodiversity, it would also cause resulting warmer days, changing rainfall patterns, extremes, high altitude ecosystem destruction in Asia along with glacial melt and forest degradation, and shifting of tree line with biodiversity loss (Dahal et al. 2009). Also the IPCC also states that by 2050, 25% of the global mountain glaciers would disappear (IPCC 2014).

14.5.2 Need of Concrete Plans for Future Adaptation Options in the Region

The perception of people to climate change is very important in determining the steps they are willing to take to cope in the short term and adapt to the changes in the long term (Deressa, Hassan, & Rangler). The vulnerability of the mountain areas to climate change however remains of high concern, as in the high altitudes of Hindu Kush Himalayan region, and in Nepal, data from 1980 to 2015 showed that the

floods, landslides, and epidemics were the major causes of disaster-related human loss (Carpenter and Grunewald 2016). The perception of Lukla Sherpa people regarding the changes in climate is alarming without being aware about the future scenario they are going to face; the adaptation strategies adapted by them would not be sufficient.

14.5.2.1 Role of the Local Authorities

Climate Change Policy of Nepal has also recently been updated in 2019 after its first declaration in 2011, in order to keep up with the increasing climate change debate in national and international area and to incorporate the element of resilient livelihood for the vulnerable communities of Nepal. As Nepal also shifted to federal republic state, the new policy gives emphasis to incorporating climate change programs in all the levels of the government. The local municipality can draw from these strategies and start building capability in their tourism and agriculture sector in relation to climate change.

The municipal office of the Khumbu Pasanglhamu municipality is also now being constructed near the study area, which can be advantageous for the local residents to take their concern to. As such, it can play an important role in mobilizing necessary resources and training relating to adaptation to the local community. Once the municipal office is built, it would also pave road to build agricultural center. The municipal office can play a role in building project relating to climate-resilient agriculture.

According to the local leaders, there has not been any program specifically focused on climate change in the area and no formal adaptation strategies adopted. Some of the afforestation programs and water management programs that they have conducted could have some relation to help adapt from climate change; however they stated that the main purpose was not directly related to adapting to climate change but more toward protecting the ecosystem and ensuring their services to the people. However they do emphasize the necessity of incorporating climate change issues, including sensitization and adaptation measures in future plans. The local authorities can also play a major role in creating database on climate and sociocultural aspect of the study area. It was very difficult to get data on decades of climate or even about sociocultural data of the study area. According to the Department of Hydrology and Meteorology, there is only a couple years data of rainfall from the meteorological station in the airport of Lukla and none on temperature. Therefore, an overall general picture had to be drawn on climatic changes through literature review of past works. It is recommended to have a good database of the study area, which would also be available readily for research purpose, as well as to showcase the sociocultural aspects of Lukla.

14.5.2.2 Role of Tourism Sector

The instances of GLOFs, avalanches, and snow storms are also projected to increase in the future with the changing climate. This in turn is claimed to be further exacerbated by the topographically difficult and inaccessible areas of the mountain (Neupane & Chettri, 2009). The key informant interviewees also shared similar concerns, claiming that due to inaccessibility of the mountain areas, it might be difficult to formulate and implement many adaptation strategies, especially technological ones, in tourism sector in the mountain.

Mr. Phuri Kitar Sherpa, who has been in tourism business for three decades, claims that there are many threats to tourism in the future. He notices changes in the snow amount in the trekking routes and also the increasing temperature. He claims to notice visible changes around Mera Peak, which now has very less amount of snow, and believes that mountaineering in the future will be very risky with the increasing temperature, as it is now reducing the density of the snow. He mentioned that with the reduction in the density of the snow, there will be more accidents, as during mountaineering, the climbers have to dig their equipment in the snow. He also believes that the Khumbu icefall will continue to be more dangerous in the future. However, among all the other respondents in household survey, only couple respondents shared similar sentiment. They stated that they noticed the decrease in use of snow ladders in some places. While they previously had to use three snow ladders in a particular place in the mountains during their expeditions, now they have to use only one, due to the decreasing snow. The other respondents however say that they have not given it much consideration and do not feel the huge changes.

However, many news and reports show that the changes are much more rapid. Adrian Ballinger, an Ambassador from Protect Our Winters, mentioned in one of the news coverage that he has noticed big changes in glacial recession in his past 12 years in Nepal Everest region and is wary about how much less stable the Khumbu Icefall has become. Soon after the 2014 avalanche in Everest, he moved to the north side of the mountain, to avoid the unpredictable and even more unstable Khumbu Icefall.

As Lukla is highly focused and dependent on tourism, it is important for them to understand how the tourism industry might change in the future and what repercussion climate change has to mountain tourism. The impacts of climate change, like increasing avalanches and icefalls, are serious concerns to immediate and long-term safety of the people. Therefore, similar trainings and knowledge are important to be disseminated to the people, so that they can equip their capabilities better. There is also a need to incorporate more robust emergency responses, long-term tourism strategies for people dependent on changing mountain tourism, and a capability to adapt to the changes. The Tourism Board, Ministry of Culture, and Tourism and Civil Aviation, along with private tourism agencies, have a strong role to play for paving the way.

14.5.2.3 Role of Agriculture Sector

The Hindu-Kush Himalayan Region assessment done by ICIMOD shows that the increasing temperature trend of the Himalayan region will continue even if global warming would remain to 1.5 °C and that the warming in the region will likely remain 0.3 °C higher (Wester et al. 2019b). This large warming is projected to trigger multitude of impacts, biophysical and socioeconomic, including increased glacial melting resulting in less predictable water availability and biodiversity loss which impacts the livelihoods of the people (Wester et al. 2019b). The KII with the agriculture experts from FAO also highlighted this fact of changing water availability and increasing risks of climate change on agriculture. According to them, it is more difficult for taking adaptation programs to higher elevations, because of the difficulty in topography.

Nepal government has now made it mandatory for each municipality to have an agricultural support center in each municipality, but according to the household respondents, the center is yet to reach Lukla. As the people are already welcoming newer farming practices like tunnel farming, centers like those could help the farmers in addressing the concerns relating to agriculture, increasing pests, or climate-resilient farming. Similarly, collaboration between local authorities, agricultural experts, microfinances, and adaptation experts could pave a way for facilitating a better long-term agricultural improvement in the region by bettering agricultural produces, market, and finance.

14.5.2.4 Role of Education Sector

It has been stated that adaptive capacity can be increased by investing in information and knowledge (Lemos et al. 2007). However, while the mountainous region has been discussed to be highly vulnerable, there has been no sensitization and awareness program in this region. There has been no specific vulnerability study in Lukla region, but the National Adaptation Programme of Action of Nepal conducted a vulnerability mapping that showed that Everest region is one of the most vulnerable districts in Nepal. However, there has been no program relating to this in the vicinity of Lukla, which is also the first stop to higher elevations. This shows that research studies and discussions have been taking place in national and international arenas but the people facing these threats are not aware about it.

The participants of interviews also mentioned that they don't know about these issues because they could not learn it from anyone. Some of the respondents also mentioned that there was similar program in a village near them but it never reached Lukla. The complaint intoned in the said response denotes that they would be more than willing to have programs that could help them know more. The monk from the village who knew about climate change attended the program that was conducted in another village and also referred the same to be conducted in their village. The lack of understanding about climate change has also been shown in another research

whereby despite providing explanation of the term and concept of climate change, many participants could not comprehend the meaning (Banstola et al. 2013). In earlier similar research in another indigenous community of Nepal, the Chepang, the authors showed that the curriculum plays vital role in perceiving climate change and acting on it and showed that the students of the area did not have curriculum regarding the same (Piya et al. 2012). They also recommended and urged the need of curriculum regarding climate change in the Nepalese education. However, in Lukla, a mountainous region, marginalized and inaccessible by road, the curriculum has included issues of climate change as well as sustainable development.

During a focused group discussion with the high school students of a local school in Lukla, they were highly aware about the cause behind climate change being global greenhouse gas emissions. This shows how good curriculum regarding climate change helps in imparting knowledge about the issue. Most of the older respondents did not know about climate change in the area, but all the students from the high school were highly aware about the fact.

Deploying sensitization programs in the region will enable stronger communication between the youngsters and the residents in being apt about climate change issues and building their confidence on robust adaptation. Along with bringing awareness programs to Sherpa here, the education sector also has the role to incorporate the traditional knowledge of Sherpa for adaptation. Traditional and local knowledge has increasingly been recognized as an effective adaptation strategies. The Ministry of Science, Technology and Environment, in its report about traditional knowledge, stated that in the Khumbu region, Sherpa communities' forest management was integrated with formal regulatory framework of National Park management, which helped in achieving sustainable use of natural and agricultural resources (Ministry of Science, Technology and Environment, 2015).

14.6 Conclusion

The research study on the Sherpa people in Lukla has shed light on how indigenous groups who have been discussed to be vulnerable to the impacts of climate change by literatures and conferences across the world are themselves unaware about the phenomenon and how this leads to them being impassive of any future threats in the region. As such, the role of local authorities and corporations is quite strong in bringing sensitization and adaptation programs in the region. As studies and experiences show, areas with closer proximity to local governmental offices get better facilities and ability to bring adaptation programs. Lukla can now make use of the new municipal office in bringing stronger sensitization relating to climate change in the region.

During household survey and focused group discussions, many individuals shared that they were very shy to interact with the author, as they believed that they do not know anything about climate change and feel lacking in terms of their intelligence. Similarly, the few minority of people who did hear about climate

change also shared that they were disappointed in learning about this ongoing crisis from tourists who came from other countries rather than from their own locality or national experts. This has shed light on how important it is to have awareness raising programs in the region, not only to make people know about climate change but also to build their confidence in the issue which is close to them. Education sector, NGOs, INGOs, or other educational agencies can play an important role in bringing training programs to this region and its people, who are more than willing to learn and know about this issue. The local school of this region has been very effective in imparting the knowledge of climate change to the students, which has even made them motivated to work accordingly to save their tourism option in the future. It is important to fuel this motivation of the students by involving them in discussions and allowing them to impart this knowledge to their community as well.

Apart from sensitization, Lukla is also an open arena for any agricultural and tourism adaptation strategies, as it is dependent on these two sectors for economy but unaware that changing climate might be hampering it. There is a possibility of introducing climate smart technologies other than tunnel farming and introducing concept of insuring their agricultural products, as well as ways to reduce pests that many households faced. The recent pandemic also completely halted tourism for nearly a year in the region. Agricultural produces can help this community to be better resilient when one of their income sources collapses.

In regard to tourism sector, there is a huge role to be played by the tourism board and local authorities along with trekking and tour agencies. There were only a handful tourism industries who took changing climate into consideration, which is not a good scenario for a tourism-dependent mountainous country. While Nepal has introduced better emergency response schemes, trekkers' tracking devices, it seems these information are yet to reach many communities, as the respondents to this research were not aware about such necessities. Changing climate is said to increase disasters and change mountain tourism scenario, and while such discussions are ongoing in national and international levels, such information and training programs should reach tourism-dependent community of Lukla.

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Chapter 15
CSR Disclosure through the Principles of UN Global Compact in the Manufacturing Industry in Bangladesh: Evidence from Emerging Markets

Sohel Mehedi, Shajahan Mondol, and Isabel B. Franco

Abstract The chapter aims to examine the extent and determinants of corporate social responsibility (CSR) disclosure with the stance of both legitimacy and stakeholder theory. The study used annual reports of 100 sample manufacturing corporations selected based on the market capitalization method. The extent of CSR disclosure was evaluated through the ten principles of the United Nations Global Compact. Ordinary least square regression was conducted to analyze data. The study findings indicate that only 11% of sample corporations disclose more than eight principles through the lens of both legitimacy and stakeholder theory. The study also finds that board size, corporate size, and operating risk management have a significant, positive association with CSR disclosure. Findings are only based on manufacturing corporations and the principles of the United Nations Global Compact, so the generalization of findings on financial corporations and comparison with other voluntary standards should not be prudent. Findings also support policymakers and industry practitioners to develop a methodological guideline along with improving the instruments of social value system for enhancing CSR disclosure. The study empirically tested the positions of both legitimacy and stakeholder theory for CSR disclosure in the emerging economies like Bangladesh for which the findings provide new insight into the literature. In addition, the findings regarding the role of independent directors and operating risk management for CSR disclosure in the emerging economies will keep a significant appeal to policymakers.

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Keywords Board size · Independent director · Corporate profitability · Corporate size · Operating risk management · United Nations Global Compact

15.1 Introduction

Corporations should have certain responsibilities to the society which must extend beyond the corporate economic and legal obligations (Carroll 1979). Corporate behavior should grasp social norms, values, and expectations that would ensure corporate social performance (Sethi 1975). Corporate social responsibility (CSR) is an instrument which protects the organizational interests at large and stakeholders' interest as well (Hossain and Alam 2016). The voluntary reporting shows corporate accountability toward social performance including corporate community development, environmental protection, employees' satisfaction, and anti-corruption (Cragg 2002). The proactive role of corporations toward CSR is more important as it keeps positive effects in enhancing financial performance by creating reputation, trust, commitment, and good image in the society (Jones and Wicks 1999).

The purpose of CSR is to reduce legitimacy crisis and gain more competitive advantages over their counterparts (Fombrun and Gardberg 2000). Besides, CSR reporting can be considered a participative social process where communication has a central role (Golob et al. 2013); consequently, information asymmetry is reduced and relationship between stakeholders and corporations can be improved (Cormier et al. 2010). According to legitimacy theory, corporations respect society interests by taking into account social contract between corporations and society to gain legitimacy. On the other hand, stakeholder theory underlines that stakeholder generates normative pressures on corporations to disclose more social information in the annual reports. For instance, many corporations worldwide have been affiliated with various voluntary organizations and adopted their standards for voluntary disclosure practices (Janney et al. 2009).

The United Nations Global Compact (UNGC) is the world's largest voluntary corporate citizenship initiative which is widely used to evaluate corporate accountability toward human rights, labor, environment, and anti-corruption issues (Balachandran et al. 2011). It is a non-binding principle-based compact, which inspires businesses worldwide to take social and environment-friendly policies in their strategic and operating activities and to report on their implementations to stakeholders. UNGC as a corporate social responsibility (CSR) mechanism aims to ensure that corporations would respect their principal stakeholders' interests and build a decent society by minimizing the negative impacts of their businesses (Lenssen et al. 2010). An earlier study is conducted by Janney et al. (2009) using a sample of 175 global firms in which they investigated market reactions to firms joining the UN Global Compact and found that failing to prepare the annual communication on progress reports generates a negative market reaction.

The primary objective of the global compact was to support the achievement of millennium development goals; now it has become the pursuit and progress toward

achieving sustainable development goals within 2030. Achieving SDGs in the emerging market requires ensuring the sustainable operations and contributions of the corporate sector. Therefore, the principles of the United Nations Global Compact are more impending in the emerging market to measure and ensure corporate accountability toward social issues (Andrews 2019). There is no doubt that worldwide, CSR has received policymaker's attention to a great extent, and it has considered as corporate ethical liability or philanthropic behaviors or to some extent state imposes rules and regulations on corporations to contribute to social and environmental issues (Visser 2006; Cormier et al. 2010).

It is certainly sure that corporations from developed countries demonstrate more accountability about social responsibilities, while corporate social performance is very scanty in the emerging market like Bangladesh (Muttakin et al. 2015). Prior studies indicated that corporations in emerging market are ignoring various social issues; they ultimately ignore the three pillars of sustainable businesses, society, environment, and economics, in their decision-making process (Deva 2006). It has proven that there are still missing social harmony between corporations and stakeholders. The positive role of powerful stakeholders to explore CSR is identified by Frynas and Yamahaki (2019) and Wuttichindanon (2017), while they argue that the powerful stakeholders could influence the organizational factors to explore CSR in emerging market.

Large corporations indicate that the more powerful stakeholders are involved in the corporate functions; consequently corporations perceive higher pressures to engage in CSR activities (Theodoulidis et al. 2017). An earlier study by Liu and Anbumozhi (2009) explores CSR with stakeholder theory and documents that corporate characteristics including corporate profitability are among the common factors which appear to drive the corporate environmental performance and pollution control costs. The similar line of study by Wuttichindanon (2017) reveals that stakeholder theory to explore CSR is more suitable to consider the stakeholders' demand in the emerging market. Their study findings indicate that government ownership has a positive significant association with CSR reporting; the contribution of corporate profitability and age is insignificant with CSR disclosure.

A study conducted by Nurhayati et al. (2016) on CSR disclosure in emerging market through the lens of legitimacy theory reveals that most firms disclose information relating to labor practices and decent work. Their study also documents that with the positivity of legitimacy theory, corporate size and audit committee size have positive significant association with corporate social and environmental reporting, while board independence has not been found significant. Besides, Liao et al. (2015) point that board diversity, independent directors, and environmental committee have positive association with greenhouse gas disclosure. On the other hand, Chijoke-Mgbame et al. (2019) reveal that CSR is beyond the corporate duties of shareholders' resource maximization and has no effect on board size in CSR reporting. Their study also documents that the relation between independent director and CSR reporting is significant.

In the previous literature, mixed results are found with both legitimacy and stakeholder theory lens. Therefore, it is up to now a dilemma to explore CSR in

emerging market. Besides, little attention has been given to explore CSR through the UN Global Compact. In addition, (I) textile industries in emerging market like Bangladesh are more pressured by the foreign buyer association to give emphasis on environment-friendly operations and labor issues and be more accountable to stakeholders; besides, (II) all corporations are accountable to grasp social value system of the given context. So, it is more relevant to enhance the knowledge base in the social reporting literature emphasizing the integration of the concepts of social contract and the influence of powerful stakeholders to explore CSR in the emerging market like Bangladesh. In order to make clarity, the study objectives are following:

1. To investigate the level of CSR disclosure through the UN Global Compact in the emerging market with the stance of legitimacy theory and stakeholder theory.
2. To investigate the relationship between organizational factors such as board size, independent director, corporate size, corporate profitability, operating risk management, and level of CSR disclosure with the stance of legitimacy theory and stakeholder theory.

The remainder of this research is structured as follows. The following sections address the regulatory and institutional framework (Sect. 15.2); theoretical framework (Sect. 15.3), literature review and hypothesis development (Sect. 15.4), research method (Sect. 15.5), the result of the empirical analysis (15.6). The last section outlines conclusion.

15.2 Regulatory and Institutional Framework

In Bangladesh, specific legislation regarding the guidelines and practices of corporate social responsibility (CSR) reporting is absent. But policymakers' attention in this regard has intensified to a great extent after the collapse of the garments factory building "Rana Plaza" in 2013. The Companies Act 1994 addressed that corporations have to publish annual report on the basis of financial performance, which is basically indirect initiative to present corporate strategies, but there are no direct provisions toward corporate social performance. The Bangladesh Labour Act 2006 has been amended in 2014 where labor rights including trade union and collective bargaining agent are privileged. Besides, National Board of Revenue (NBR) issued statutory regulatory order (SRO) by which any corporation will get 10 percent tax exemption on government-approved CSR activities, but the contributed amount will not be more than 20 percent of gross income of the corporation or BDT 8 crore whichever is lower (Muttakin et al. 2015).

It is exemplary to note that to enjoy tax exemption facilities on CSR activities, corporations have to pay salary-allowance of their employee-staffs regularly, must have waste treatment plant when they produce goods, and must comply with all regulations of Bangladesh Labour Act 2006 (The Daily Star 2014). The recommended area of CSR includes donation to natural disaster-affected people, education and educational institutions, medical treatment and hospitals, museums,

and preserving the memory of independence war and the father of the nation. In addition, guidelines of green banking practices given by Bangladesh Bank and Bangladesh Garments Manufacturers Association's initiatives toward efficient and sustainable use of resources generate normative pressures on corporations to conduct environment-friendly operations and engage in social issues (Mehedi et al. 2017). Moreover, various environmentalist groups, climate change journalist forums, NGOs, media, and buyer association are frequently asking corporations to be more accountable to community, environment, and labor issues.

15.3 Theoretical Framework

The present study utilizes two theoretical arguments which have significant dominion to explore CSR in the emerging market like Bangladesh. The first theoretical argument is legitimacy theory, while the second argument is stakeholder theory. The reasons of proposing two theories simultaneously are as follows: First, the characteristics of the study context underline that corporations disclose social information in the annual report on the basis of social contract between corporations and society. Second, it is definitely true that corporations are also pressurized by the influence of the powerful stakeholders in several ways in the emerging market. Henceforth, synthesizing the coherent approaches of these two theories with organizational factors is more crucial to discuss CSR in the emerging market.

15.3.1 Legitimacy Theory

Legitimacy theory accentuates that corporations have a social contract with society (Deegan 2002); hence, they should respect the society interest and contribute to the social well-being. When corporations deny the society interest or avoid stakeholders' demand into their decision-making process and organizational activities, they fall in a legitimacy crisis which would ultimately make their survivability and existence in the society vulnerable. Dowling and Pfeffer (1975) documented that corporations always seek organizational legitimacy and adjust their value system with the value system of the larger social system. On the other hand, corporate manager is responsible for finding out the gap between the value systems, takes into account stakeholders' demand, and discloses more voluntary information in the annual report to reduce the gap between entity's value system and larger social system (Deegan et al. 2002).

Suchman (1995) argued that the mechanism of legitimacy theory supports corporations in implementing and developing voluntary social disclosure in order to fulfill their social contract. The intangible legitimacy resources is important for shaping the corporate vision, recognizing the corporate objectives, and formalizing corporate core values consistent with the society interest (Mobus 2005). It suggests

how corporations achieve their survivability by mitigating threats and challenges associated with the continuous pressures from the stakeholders (Gray 2009), while Deegan (2002) pointed that corporations' survival will be threatened if society perceives that corporations have breached its social contract. Therefore, corporations are motivated to disclose more social information in the annual reports to improve the perception of the society by engaging in socially desirable ends (Shocker and Sethi 1973; Mathew 1993).

15.3.2 Stakeholder Theory

Stakeholder theory focuses the influence of powerful stakeholders in which corporations are pressurized to conduct their activities in accordance with the stakeholders' expectations. The term "stakeholder" is defined by Freeman (1984) as any group or individual who can influence corporations or can be affected by the achievement of the corporate objectives. It is really true that today, diverse groups of stakeholder include creditors, employees, customers, suppliers, public interest groups, and governmental bodies who show various levels of interest on corporate activities. CSR is the continuing commitment of business to behave ethically to meet the demand of the powerful stakeholders (Brown and Forster 2013). Stakeholder theory provides an appropriate basis to explain CSR as its proposition underlines the mass stakeholders' interest on corporations under the concentration of the powerful stakeholders (Ullmann 1985).

Furthermore, manager is responsible for considering and addressing the conflicts of stakeholders before planning corporate strategy (Sturdivant 1979). Chakravarthy (1986) documented that cooperation with multiple stakeholders is necessary, and well-adapted firms always feel such type of relationship for achieving their profitable operations. The role of stakeholders other than investors is an important issue, and their demands should be considered in the decision-making process to resources maximization and value creation (Cornell and Shapiro 1987). Besides, Barton et al. (1989) argue that stakeholder theory is a more viable approach to predicting and explaining corporate behavior toward social obligations.

15.4 Literature Review and Hypothesis Development

Chiu and Wang (2015) explore CSR in the developing economy context with the approach of stakeholder theory. Their study suggested that strategic posture, economic resources, media, and corporate size are those that have positive association with CSR disclosure quality. On the other hand, Haji (2013) provides strong argument about legitimacy theory to discuss CSR in the emerging market, while they argued that director ownership, government ownership, and corporate size have positive significant association with CSR disclosure. In addition, Kilic et al. (2015)

conducted a similar line of study by proposing legitimacy theory and stakeholder theory and found that ownership diffusion, board composition, board diversity, and corporate size have significant positive association with CSR disclosure.

However, previous studies document that board size, independent director, return on equity, return on assets, corporate sales, operating risk, corporate size, corporate profitability, and awards (Haniffa and Cooke 2005; Rahman et al. 2011; Parguel et al. 2011; Rupley et al. 2012; Golob et al. 2013; Anas et al. 2015) have significant roles with the proposition of stakeholder theory and legitimacy theory in exploring CSR and voluntary disclosure practices. The current study employs board size, independent directors, corporate profitability, corporate size, and operating risk management through the lens of legitimacy theory and stakeholder theory to rationalize the CSR disclosure practices. The fundamental causes behind selecting these independent variables are:

1. The corporate ability to take strategic decisions for CSR disclosure in the emerging economies.
2. The corporate mobility to the execution of strategic decision toward CSR disclosure.

15.4.1 Board Size

Board size is one of the most important mechanisms of corporate governance. Corporations are directed, monitored, and controlled by the effective functions of the board of directors (Fallah and Mojarrad 2019). The board plays a fundamental role in determining the responsible behavior of an organization and its accountability to different interest groups (Rupley et al. 2012). More members in the board represent the sound governance in the management of corporate functions (Gillan 2006). Large board size indicates more knowledgeable and experienced people, resulting in better coordination and communication (Abeysekera 2010) taking effective and fruitful decisions for achieving the corporate objectives (Giannarakis 2014). More members on the board is also underlying that communicative board can take the best measures for ensuring supervision and control mechanism on management activities and lead to more CSR disclosure (Akhtaruddin et al. 2009; Majumder et al. 2017). Thus the study proposes the following hypothesis:

H1: There is a positive association between board size and corporate CSR disclosure.

15.4.2 Independent Director

The higher portion of independent directors on the board of directors is exposed to open an avenue for social issues in the top of the decision-making process (Hendry

and Kiel 2004). The board independence ensures the board effectiveness by taking prospective decisions considering the stakeholders' demand (Goodstein et al. 1994; Franks et al. 2001). Independent directors are more reliable to stakeholders as they are outsiders, so they have more possibilities to give emphasis on stakeholders' satisfaction rather than stakeholders' wealth maximization (Mehedi et al. 2020). Besides, they are highly educated and experienced; consequently they can understand the pulse of the society and attempt to maintain the social contract between corporations and society (Patelli and Prencipe 2007). Their role in the decision-making process is to motivate the board for pursuing the society interest aimed at organizational value creation to stakeholders (Haniffa and Cooke 2005). Thus the study proposes the following hypothesis:

H2: There is a positive association between independent directors and corporate CSR disclosure.

15.4.3 Profitability

Profitable corporations are able to contribute to social issues and enhance corporate reputation in the society (Werther and Chandler 2005; Husted and Allen 2007). Profitability enhances financial and technical capacity of the corporations to respond in emerging issues. From corporate philanthropic role to respect social contract, corporations need finances in which profitable corporations can contribute to such activities with full swing. Moreover, corporations rely on surplus financial resources for maintaining their corporate citizenship and socially responsible behavior. The higher levels of profitability enhance corporate ability to disclose the higher levels of CSR information in the annual reports (Harjoto and Jo 2011). A better economic performance is, therefore, more likely to lead to a profit that extends an opportunity for corporations to invest in CSR activities which lead to more CSR disclosure (Amato and Amato 2007; Cambell 2007). Thus the study proposes the following hypothesis:

H3: There is a positive association between profitability and corporate CSR disclosure.

15.4.4 Corporate Size

Larger corporations usually face various pressures from media, NGOs, and regulators toward social issues so that they show socially visible behavior and take such issues in their disclosure decisions into considerations (Ali et al. 2017). They are more resourceful, as a result of which they can identically implement the decisions related to the stakeholders' demand on CSR issues (Giannarakis 2014). They are more diversified and have multiple product lines, and their economic functions underline the engagement with various parties (Chan et al. 2014); consequently

they face more pressures from various groups of stakeholders to produce more voluntary information in the annual reports (Dyduch and Krasodomska 2017). Prior studies documented that corporate size has a positive significant association with CSR disclosure (Ali et al. 2017; Giannarakis 2014; Rahman et al. 2011; Khan 2010; Siregar and Bachtiar 2010). Thus the study proposes the following hypothesis:

H4: There is a positive association between corporate size and corporate CSR disclosure.

15.4.5 Operating Risk Management

Risk management by corporations minimizes perceived threats, offers possible opportunities, and enhances corporate value in the society (Krause and Tse 2016). Operating risks include financial risk, litigation risk, and sustainability and compliance risk linked with finance, health and safety, community, and environmental areas (Hossain and Farooque 2019) which expose to threats in corporate management and operating functions, as a result of which corporations fall in a reputational crisis. Hence, optimally measuring and addressing the perceived operating risks are key in reducing corporate legitimacy crisis. Moreover, stakeholders can be better informed regarding the business operations because risk disclosure enhances corporate accountability and reduces information asymmetry (Nahar et al. 2016). Musallam (2018) documented that the disclosure of risk management in the corporate annual reports has positive, significant association with CSR disclosure. Thus the study proposes the following hypothesis:

H4: There is a positive association between operating risk management and corporate CSR disclosure.

15.5 Research Method

15.5.1 Sample Selection

The study population was manufacturing corporations listed on the Dhaka Stock Exchange Limited, out of which the study selected 100 sample corporations based on the market capitalization method (Belal et al., 2010). The study utilized secondary data collected from the annual reports of sample corporations as of 2014. The sample corporations represent almost 50% of the study population and almost 72% of total market capitalization. Industry-wise distribution of sample corporations includes ceramics (5), cement (7), food and allied (17), fuel and power (6), engineering (7), pharmaceuticals and chemicals (28), paper and printing (3), jute (3), tannery industries (5), textile (12), information technology (1), and miscellaneous (6) (Table 15.1).

The study sample size is more appropriate for inferential statistics to conclude proposed hypotheses as it is suggested by VanVoorhis and Morgan (2007) that for

Table 15.1 Sample description (industry-wise distribution)

Industry sector	No. of corporations
Ceramics	5
Cement	7
Food and allied	17
Fuel and power	6
Engineering	7
Pharmaceuticals and chemicals	28
Paper and printing	3
Jute	3
Tannery industries	5
Textile	12
Information technology (IT)	1
Miscellaneous	6
Total	100

regression analysis, a minimum of ten participants are required for one predictor variable (Anas et al. 2015). The current study used five predictor variables (board size, independent director, profitability, corporate size, and operating risk management) so that 100 sample corporations meet the requirement; therefore, it is sufficient to conduct inferential statistics. The data related to these variables were collected from the various sections of the annual reports.

The study used five control variables in the regression model; these were industry dummies: foods and allied, fuel and power, engineering, pharmaceuticals and chemicals, and textile. Previous studies took various proxies for industry dummy such as high-profile and low-profile industries and stock exchange listing classification to determine the industry impacts on the regression model into consideration (Anas et al. 2015). The present study used the top five sectors (based on listing number of corporations) of manufacturing industries as control variables in the model. They were more representative of market share, and even their accumulated representation among the sample corporations was 70 percent. The variable acronyms and their definition and measurements were depicted in Table 15.2.

15.5.2 Content Analysis

The corporate social responsibility disclosure (CSRD) was used as the dependent variable in the study model. The extent of CSRD by corporations was investigated through the principles of UN Global Compact or UNGC (Appendix A), whereas information related to human rights, labor, environment, and anti-corruption were collected through the content analysis of the annual reports of sample corporations. The study used disclosure index to transform qualitative characteristics of data into quantitative, while a corporation was assigned 1 if an item included in the UN Global Compact's ten principles was disclosed and 0 if it was not disclosed in the annual

Table 15.2 Explanatory and control variables

Variable acronym	Definition	Measurement
BS	Board size	Number of members on the board
ID	Independent director	Proportion of independent directors
PTA	Profitability	Ratio of net profit/shareholder equity
SZ	Corporate size	Natural logarithm of total sales
ORM	Operating risk management	1 if firm discloses operating risks in its annual report, otherwise 0
INDFA	Industry dummy: Foods and allied	1 if firm is a foods and allied company, otherwise 0
INDFP	Industry dummy: Fuel and power	1 if firm is a fuel and power company, otherwise 0
INDEN	Industry dummy: Engineering	1 if firm is an engineering company, otherwise 0
INDPC	Industry dummy: Pharmaceuticals and chemicals	1 if firm is a pharmaceuticals and chemicals company, otherwise 0
INDTE	Industry dummy: Textile	1 if firm is a textile industry, otherwise 0

report (Muttakin et al. 2015). Alshbili et al. (2019) suggested that the considerations of the number of sentences, pages, pictures, and paragraphs for determining the extent of CSRD are more subjective in nature. The current study investigates exact items of the principles of UN Global Compact and also takes meaning of the sentences consistent with the principles into consideration for CSR disclosure scoring for a particular corporation.

It is important to note that reliability and consistency are the key consideration in the case of using content analysis so that the researchers separately coded annual reports according to the stock exchange listing classification of sample corporations to enhance the reliability of the study. Moreover, scores of two independent coders were cross checked, and finally score is computed for a particular corporation to ensure the reliability of scoring. Following the similar line of study by Nurunnabi (2016), the extent of CSRD for a particular corporation is calculated by the given unweighted disclosure index method:

$$CSRDj = \frac{\sum_{i=1}^{m} di}{m} \tag{15.1}$$

where CSRDj = CSR disclosure score of the corporation j for the year 2014; di = 1, if ith item is disclosed by the corporation j, otherwise 0; and m = number of items expected for jth corporation, while m ≤ 10, so that $0 \leq CSRDj \leq 1$.

15.5.3 Model Specification

The study examined CSR disclosure through the argument of both social contract between corporations and society and the influence of powerful stakeholders in developing economy context. As the study considered only annual reports of 2014, it conducted an ordinary least square (OLS) regression to test the relationship between organizational factors and CSRD. For measuring the validity of the model, multicollinearity based on the correlation matrix and the variance inflation factors were tested (Nurunnabi 2016). The regression model is as follows:

$CSRD = \beta_0 + \beta_1\, BS + \beta_2\, ID + \beta_3\, PTA + \beta_4\, CS + \beta_5\, ORM + \beta_6\, INDFA + \beta_7\, INDPC + \beta_8\, INDTE + \in$.

where.

CSRD = corporate social responsibility disclosure score/index.

BS = number of members on the board.

ID = proportion of independent directors on the board.

PTA = ratio of net profit/shareholder equity (proxy for profitability).

CS = natural logarithm of total sales (proxy for corporate size).

ORM = dummy variable equals 1 if firm discloses operating risks in its annual report, otherwise 0.

INDFA = dummy variable equals 1 if firm is a food and allied company, otherwise 0.

INDPC = dummy variable equals 1 if firm is a pharmaceutical and chemical company, otherwise 0.

INDTE = dummy variable equals 1 if firm is a textile industry, otherwise 0.

$\in$ = error term.

15.6 Result of the Empirical Analysis

15.6.1 Descriptive Statistics

Table 15.3 represents descriptive statistics of continuous variables in which board size (BS) shows minimum board member is 4 and maximum is 12 with average almost 8 members among the sample corporations. Of note the average number of independent directors on the board of directors is almost 26 percent, and it is more

Table 15.3 Descriptive statistics: explanatory variables

	n	Missing (n)	Minimum	Maximum	Mean	Std. deviation
BS	100	0	4.0000	12.00	7.2700	1.86869
ID	100	0	0.0900	0.7500	0.26250	0.10275
PTA	100	0	0.0020	0.3500	0.1441	0.25007
SZ	100	0	7.0200	10.500	8.9318	0.77835
ORM	100	0	0.0000	1.000	0.7600	0.42992

Table 15.4 Disclosure practice based on four themes of global compact

	N	Minimum	Maximum	Mean	Std. deviation
Human rights	100	1.000	2.000	1.860000	0.3487
Labor	100	0.0000	4.000	1.960000	0.9735
Environment	100	1.000	3.000	2.790000	0.4776
Anti-corruption	100	0.0000	1.000	0.330000	0.4725

Table 15.5 Level of CSR disclosure index for n = 100

	CSR disclosure index	
Level of CSR disclosure	Frequency	%
Not disclosed	0	0
Not more than 3	1	1
Exactly 4	2	2
Exactly 5	13	13
Six but not more than 7	47	47
Exactly 8	26	26
More than 8	11	11
Total	100	100

than the minimum requirement (1/5) of the Bangladesh Securities and Exchange Commission. The profitability among the sample corporations is varied to the great extent as earning capacity range is between minimum 2 percent and maximum 35 percent. It indicates that resources utilization and maximization capacity are uneven among the sample corporations.

Corporate size is measured by the natural logarithm of total sales volume due to reduced violation of normality assumption, and it is found that average value of corporate size is 8.93 with standard deviation of 0.77 which indicates that less significant variances existed among the sample. On the other hand, operating risk is measured as dummy variable equals 1 when firm discloses operating risk management in the annual report, otherwise 0. The mean score of operating risk management indicates that 76 percent among the sample corporations disclose such information in the annual report.

Disclosure practice by sample corporations based on four themes of NU global compact is presented on Table 15.4. The UN Global Compact consists of ten principles under the main themes of human rights (2), labor (4), environment (3), and anti-corruption (1). It is seen from this table that the minimum score of human rights is 1, while maximum is 2 indicating that all corporations disclose one issue out of two of human rights issues. The minimum value of labor and anti-corruption indicates that some corporations do not disclose any information related to the labor and anti-corruption. The average value of environment underlines that the sample corporations comparatively disclose more environmental issues rather than labor issues. Besides, comparatively higher value of standard deviation of labor issues specify that disclosure level related to labor issues is significantly varied among the sample corporations.

Table 15.5 shows the level of corporate CSR disclosure index for sample corporations. It is important to note that all sample corporations disclose any one of the principles of the global compact. Only 3% of corporations disclose not more than four items, while exactly five items are disclosed by 13% of corporations. Out of ten principles, the highest numbers of corporations (47%) disclose six but not more than seven items. The exact eight items are disclosed by 26% of corporations, while 11% of corporations disclose more than eight out of ten principles. However, it is more worthy and noticeable that 84% of sample corporations disclose more than 50% of the UN Global Compact principles.

15.6.2 Correlation Matrix and Robustness Check

In ordinary least square regression analysis, multicollinearity problem among the variables is a great concern. Table 15.6 shows the correlation matrix among all variables. The study has conducted Pearson coefficient correlation and found that multicollinearity problem is absent among the variables as the level of correlation among them should not be more than 0.80 or 0.90 (Said et al. 2009), while in the present study, the ranges of correlation among the variables are between 0.001 and 0.375 which indicates that it is within the acceptable range.

In addition, the study has performed further test such as variance inflation factor (VIF) for collinearity diagnostics and found that VIF and tolerance level (VIF should be less than 10 and tolerance level should be more than 0.10) are within the acceptable range (Table 15.7). The relationship of CSRD score (dependent variable) with control variables of the study indicates that industry dummies food and allied and pharmaceuticals and chemicals have positive correlation with CSRD score, while industry dummies fuel and power, engineering, and textile are negatively correlated with CSRD score. On the other hand, board size, independent directors, corporate size, and operating risk management are positively correlated with CSRD score when the correlation of profitability is negative with CSRD score.

15.6.3 Regression Result

The study conducts a multiple regression analysis in order to assess the influence of control and explanatory variables on CSR disclosure. In Table 15.7, the model demonstrates that R square = 0.538 and adjusted R square = 0.289 indicating that 28.90 percent level of CSR disclosure is explained by the study proposed model. Besides, Durbin-Watson value of the model is 1.786 which is above the standard of 1.50 indicating that the level of autocorrelation is within the acceptable limit and f-statistic is also significant, so the model is valid and significant as well. From Table VII, it is seen that control variables which include industry dummies food and allied and pharmaceuticals and chemicals have positive, significant association with

Table 15.6 Correlation matrix

	CSRD	BS	ID	PTA	SZ	ORM	INDFA	INDFP	INDEN	INDPC	INDTE
CSRD	1.00										
BS	0.044	1.00									
ID	0.048	−0.375**	1.00								
PTA	−0.003	0.109	−0.057	1.00							
SZ	0.183	0.032	−0.145	−0.001	1.00						
ORM	0.162	−0.132	0.238*	0.215*	−0.115	1.00					
INDFA	0.083	−0.209*	0.218*	0.134	−0.084	0.254*	1.00				
INDFP	−0.081	0.280**	−0.208*	−0.028	0.052	−0.250**	−0.114	1.00			
INDEN	−0.219*	0.023	−0.183	−0.146	0.136	−0.305**	−0.124	−0.069	1		
INDPC	0.115	0.089	0.041	−0.050	0.191	0.350**	−0.282**	−0.158	−0.171	1.00	
INDTE	−0.027	0.095	−0.075	−0.130	0.078	−0.257**	−0.167	−0.093	−0.101	−0.230*	1.00

Note(s): Correlation is significant at the 0.05* and 0.01** levels (two-tailed)

Table 15.7 Result of the multivariate regression analysis

Variables	Expected sign of coefficient	Model				
		Std. beta	t-value	p-value	VIF	Tolerance
Control variable						
INDFA		0.235	3.466	0.001***	1.341	0.746
INDFP		−0.107	−0.809	0.421	1.839	0.766
INDEN		−0.115	−1.451	0.150	1.433	0.784
INDPC		0.182	1.778	0.088*	1.507	0.664
INDTE		−0.067	−1.025	0.308	1.789	0.559
Model variable						
BS	+	0.187	1.854	0.083*	1.229	0.813
ID	+	0.008	0.066	0.947	1.284	0.779
PTA	+	−0.048	−0.442	0.660	1.112	0.899
SZ	+	0.226	2.683	0.006***	1.107	0.903
ORM	+	0.215	2.235	0.032**	1.089	0.818
R square			0.538			
Adjusted R square			0.289			
F-statistic			5.413			
Prob. (F-statistic)			0.000			
Durbin-Watson			1.786			

Notes: *p < 0.10 **p < 0.05; ***P < 0.01

CSR disclosure. On the other hand, fuel and power, engineering, and textile industries have negative association with CSR disclosure. Besides, explanatory variables such as board size, corporate size, and operating risk management have significant, positive association with CSR disclosure, and the relationship between independent directors and CSR disclosure is positive but not significant. It is important to note that the study has found negative relationship between corporate profitability and CSR disclosure.

15.7 Conclusion

The present study findings indicate that corporations are driven by the social contract and the influence of the powerful stakeholders to disclose information relating to the ten principles of the UN Global Compact in the annual reports. Among the sample corporations, textile industries in Bangladesh are more pressured by the foreign buyer association to emphasize environmental and labor issues and be more accountable to stakeholders. Besides, all corporations are accountable to grasp social value system of the given context (Mehedi and Jalaludin 2020). Through the lens of both

legitimacy and stakeholder theories, the study has found that 11% of sample corporations disclose more than eight principles given by the UN Global Compact. It is important to note that in achieving sustainable development goals within 2030, corporations should be more responsible for social issues including human rights, labor, environment, and anti-corruption.

The study has found that industry characteristics such as food and allied and pharmaceuticals and chemicals have positive, significant roles in enhancing CSR disclosure. It is underlying that these categories of industries are more responsive toward the social contract and demand of the powerful stakeholders for human rights, labor, environment, and anti-corruption issues. It is a grave concern that fuel and power, engineering, and textile industries have negative roles in CSR disclosure, so the study emphasizes policymakers' attention and suggests that only pressure from buyer association and inherent contract is not sufficient to motivate such industries; rather the pressures by government and its wings are necessary to improve the social value system to change corporate behavior.

Besides, the study findings outline that board size, corporate size, and operating risk management have positive, significant role in enhancing CSR disclosure, while the association between independent director and CSR disclosure is positive, but their role is insignificant. The study findings are similar to the previous studies (Haniffa and Cooke 2005; Khan 2010; Tagesson et al. 2009; Rahman et al. 2011; Giannarakis 2014; Musallam 2018). Prior studies document that large corporations are more accountable to stakeholders, as they have more capacity to absorb extra costs for CSR disclosure; therefore, they can effortlessly handle the obligations by the view of social contract and the expectation of the powerful stakeholders aimed at upholding corporate reputation in the society (Rahman et al. 2011).

The larger board has more resourceful directors; consequently it is capable of generating the innovative ideas and views and strategizing the propositions of both legitimacy and stakeholder theories toward the multidimensional issues which lead to more CSR disclosure in the annual reports (Giannarakis 2014). The role of independent director is positive to the CSR disclosure, but not significant. The study emphasizes policymakers' attention to increase the proportion of independent directors on the board. Moreover, the policymakers should give more emphasis on "why they are called independent directors" and the meaning and role of independent directors in the corporate management. Corporate operating risk disclosure underlines the level of corporate threats and opportunities, resulting in corporations' attempt to produce more CSR information to maintain good relations with the society and the powerful stakeholders to minimize such threats and to have the best take off of their opportunities (Nahar et al. 2016; Musallam 2018).

The study has found negative association between corporate profitability and CSR disclosure. It might be the cause of more corporate profit-seeking operations by avoiding the requirements of the moral considerations underscored by the social contract. And even corporations may give emphasis on the demand of powerful stakeholders for economic issues rather than social issues. The study suggests the Ministry of Commerce (Bangladesh) and professional institutions such as Institute of Chartered Accountants of Bangladesh and Institute of Cost and Management

Accountants of Bangladesh to provide methodological guidelines for presenting the CSR information in the annual reports. It is high time to ensure corporate accountability for achieving SDGs within 2030; therefore, a standard checklist framework for CSR disclosure along with costs is expected in the corporate practice.

The empirical findings contribute to the social reporting literature in addition to the application of the integration of both legitimacy and stakeholder theories in the emerging economies. The study would be beneficial to the policymakers, industry practitioners, NGOs, and other forums for growing the rational view as to how corporations can improve their CSR practice and reporting behavior. This study has also limitation as like the other studies. The researchers' personal judgments could not be avoided though the study has used the well-recognized principles of the United Nations Global Compact. The study is only based on 1-year data of 100 sample corporations, so longitudinal study should be conducted by further researchers to identify the trend of CSR disclosure. The further researchers are also suggested to conduct study based on Global Reporting Initiative (GRI), Eco-Management and Audit Scheme (EMAS), Ceres Principles, etc. aimed at perceiving the level of corporate accountability toward social and environmental issues.

The United Nations Global Compact's Ten Principles

Human rights	*Principle 1*	Businesses should support and respect the protection of internationally proclaimed human rights
	Principle 2	Make sure that they are not complicit in human rights abuses
Labor	*Principle 3*	Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining
	Principle 4	The elimination of all forms of forced and compulsory labor
	Principle 5	The effective abolition of child labor
	Principle 6	The elimination of discrimination in respect of employment and occupation
Environment	*Principle 7*	Businesses should support a precautionary approach to environmental challenges
	Principle 8	Undertake initiatives to promote greater environmental responsibility
	Principle 9	Encourage the development and diffusion of environmentally friendly technologies
Anti-corruption	*Principle 10*	Businesses should work against corruption in all its forms, including extortion and bribery

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Chapter 16
The Role of Managerial Efficiency, Human Capital, and Research and Development in Corporate Environmental Disclosure in the Manufacturing Industry: Insights from Bangladesh

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Abstract The chapter aims to examine the level of corporate environmental disclosures (CED) and the influence of managerial efficiency, human capital, and research and development (R&D) to the increased level of CED through the multilevel theoretical framework. Following market capitalization method, the study takes 100 sample manufacturing corporations listed into consideration and finally utilizes 96 annual reports in the year 2017. The study conducts an ordinary least square regression analysis to reach the conclusions for the proposed hypotheses. The study explores CED with the view of the agent efficiency, organizational power, and resources in terms of organizational capacity. The study findings indicate that human capital and R&D have positive, significant association with CED. The role of managerial efficiency is also positive in growing CED. Researchers' personal decisions are utilized in the content analysis and data collection from the annual reports in addition to one firm-year observation. Policy-makers' attention and industry practitioners' rationality are tensed how eco-management practice is incorporated in the business operations. In addition, the study attracts policy-makers' vision on how corporations can invest more in R&D. The study attempts to explore CED with the multilevel theoretical framework in which operationalization capacities of different levels of resources are highlighted as the pivotal players in achieving organizational environment-friendly operations and disclosures.

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16.1 Introduction

Corporations are now more accountable to conduct environment-friendly operations focusing sustainable use of natural resources and energy conservation, safe technologies, and green product and services to reduce the negative impacts of their activities on environment and society (Cucciella et al. 2012). Corporate accountability underlines corporations to disclose reliable information relating to their initiatives toward eco-efficiency and sufficiency to satisfy the stakeholders (Raufflet et al. 2014; Litt et al. 2014). As stakeholders' satisfaction posits business legitimacy in which corporations are expected to gain legitimacy by reducing information asymmetry, consequently they would enjoy more benefits from the society over their entrants (Zaini et al. 2018).

Prior studies document that corporate environmental concern is mostly related with the green product innovation, design and developments, sustainable production processes, and supply chain management (Noci and Verganti 1999; Hicks et al. 2000). The reason behind the argument is that green product development and processes minimally generate harm on the environment as they optimize the use of resources and minimize the emissions. Corporate eco-efficiency underlines the efficient use of environment-friendly tools including safe technologies in the micro-level, i.e., corporate operational function (Baumann et al. 2002). There is no doubt that corporate environmental performance is the outcome of holistic approaches where new technologies, skilled manpower, forward-looking management systems, and managerial commitment are very much needed to catch the benefits of sustainable use of resources (Abbas 2020).

Besides, it is very common practice decorated by many researchers where eco-friendly supply chain management from production to consumption is emphasized to settle down the corporate environmental sustainability by the reductions in emissions, waste, and the consumption of toxic materials (Green et al. 2012). Prior researchers argue that managerial efficiency has magnificent role in achieving corporate environmental performance (Duarte 2010). Because of the fact that the operating functions of businesses are integrated process including product design to production process to marketing and dealings with supplier and customers, managers perform on the whole processes (Marsillac and Roh 2014). They are responsible for routine decisions and formulation and implementation of policies (Duarte 2010); their role is more impressive for integrating green innovation and eco-management, accounting to achieve corporate eco-efficiency (Schaltegger and Synnestvedt 2002).

A study by Cho and Lee (2017) reveals that managerial efficiency is positively associated with CSR performance. They also argued that efficient managers give more emphasis on product-related CSR because of achieving better financial

performance. Besides, a study by Severo et al. (2015) reveals that cleaner production practices improve corporate environmental sustainability and financial performance by contributing to increased production capacity and aspects of health and safety issues. Moreover, agency theory postulates that managers are agents and responsible for the whole organizational activities; their duty underlines to build good relationship with stakeholders to maximize shareholders' wealth (Afza et al. 2015). Managers, as their role in the organizations, are expected to contribute to bring environmental sustainability in the corporate functions in increasing corporate financial performance and to disseminate the required information to stakeholders toward green innovation and how this innovation interacts with public policies (Baumann et al. 2002).

In addition, human capital as a potential resource has of course pivotal role in achieving eco-process innovation in the corporate functions. Because board members and employees of the organizations are the souls of corporate life, they are engaged in decision-making, executing the policies including production, logistic supply, and goods to customers and consumers; therefore, their cognitive engagements in concentrating efficient use of resources and minimizing social and environmental costs keep a phenomenal importance. Their activities also surround the market, so they are more gifted to understand the perceptions of stakeholders which support to design environment-friendly business strategy, implementation, and communication to stakeholders (Jamali et al. 2015). Also, human capital is the source of relational power linking corporations to various environment-friendly networks to meet corporate uncertainty and supporting the eco-management practices which enhance more voluntary disclosure and uphold corporate reputation (Raffo et al. 2016).

Corporate research and development (R&D) is really practical for the development of green products and services, eco-friendly production processes, and management practices. A study by Costa-Campi et al. (2017) documents that environmental R&D and innovation are among the critical factors for reducing corporate emissions. The function of R&D is to market analysis linked with stakeholders' demand for financial and non-financial issues, develop innovative strategies, and suggest to such policy implications. Therefore, the integration between corporate R&D and business strategy stimulates corporate innovation performance, resulting in well environmental sustainability and better disclosure (Prajogo and Sohal 2006). The functions of R&D assimilate sustainable principles with business strategies, boost up voluntary disclosure, extend competitive advantage in the market, and ultimately bring long-term prosperity for the corporations.

Previous studies diagnose several organizational factors that influence corporations to voluntarily disclose social and environmental information in the annual reports such as corporate governance (Sun et al. 2010; Rao et al. 2012; Chithambo and Tauringana 2017; Fernandes et al. 2019), ownership structures (Ghazali 2007; Rashid and Lodh 2008; Qadan and Suwaidan 2019), and corporate characteristics (Muttakin et al. 2015; Qiu et al. 2016 Ahmadi and Bouri 2017; Chandok and Singh 2017; Fiandrino et al. 2019). Still very little studies highlight the role of managerial efficiency, human capital, and R&D to the increased level of corporate

environmental disclosures through the multi-level theoretical frameworks. The present study offers the triple Ps (policy, power, and production) under the purview of managerial efficiency, human capital, and R&D to improve corporate environmental sustainability and disclosure practices. The grounds of the triple Ps are:

1. Policy which underlines that corporations should have the eco-friendly policy and implication that would minimize the use of resources and the environmental hazards.
2. Power which underlines the course of actions; it also indicates that corporations should have resources that will generate power to corporations to take and mobilize actions.
3. Production underlines output of the policy and actions (power), i.e., corporate environmental sustainability leads to consequently more environmental information in the annual report.

The role of managerial efficiency, human capital, and R&D is linked with the triple Ps as (I) manager is responsible for supporting the policy formulation and implications, (II) human capital is the soul of taking decisions and course of actions, and (III) R&D takes initiatives to find out the way of discovering green innovation strategies and suggests policy implications for better outputs. Therefore, their role, integrating multilevel theoretical frameworks, would also keep a great importance in the social reporting literature for which the study has drawn the following objectives:

1. To investigate the level of corporate environmental disclosure through the multilevel theoretical frameworks.
2. To investigate the role of managerial efficiency, human capital, and R&D to the increased level of corporate environmental disclosure through the multilevel theoretical frameworks, i.e., agency theory, resource dependency theory, and resource-based view (RBV).

The remainder of this research is structured as follows. The following sections address the theoretical framework and hypothesis development (sect. 2). The third section focuses on the research method. The result of empirical analysis is presented in the fourth section. The last section outlines the conclusion.

16.2 Literature Review

The study proposes multilevel theoretical frameworks, i.e., agency theory, resource dependency theory, and resource-based view, to explore corporate environmental disclosure, when managerial efficiency, human capital, and R&D play focal role in the corporations to integrate sustainability principles with business strategies; the result is the better disclosure practices. The bid of agency theory is to focus the relationship between the principal (owner) and the agent (manager). In the managerial perspectives, the agency theory ideas on risk, outcome uncertainty, incentives,

and information systems are novel contributions to organizational thinking (Eisenhardt 1989, p. 58).

It is of essence that a manager is responsible for achieving the objectives and finally the success of the business. Therefore, their role is to minimize all sorts of risks and business uncertainties which are raised from stakeholders' demand and communicate such information with stakeholders to reduce information asymmetry (Calvo and Calvo 2018). The growth of corporation is expected by the principal, but when managers show opportunistic behavior for gaining their own interest, by avoiding the interests of multilevel stakeholders, corporations fall in a legitimacy crisis. In such a case, agency theory suggests that efficient managers demonstrate their role to reduce the conflicts between corporations and stakeholders through the respect of stakeholders' demands and dissemination of more information in the annual reports (Sun et al. 2010).

On the other hand, the grounds of resource dependency theory posit organizational power to meet the uncertainty in which internal and external resources generate power to organization (Raffo et al. 2016). In the organizational outlooks, resource dependency theory entails organization's ability to acquire resources (Golob and Bartlett 2007, p. 2) and make active choices to achieve objectives (Hessels and Terjesen 2010, p. 206).

Generally organizations seek resources that would be capable of reducing business uncertainty and supporting to achieve organizational objectives. Organizational ability to acquire and access potential resources keeps significant role in strategizing objectives to gain survivability in the society. Human capital in the organizations as a resource participates in the decision-making process, prepares organizational strategies and policies, and competently performs the functions considering both individual and society interests (Yeager et al. 2015). Human resources are a basis of power for which organizations show their dependency on and acquire such resources from the external environment to meet externalities and achieve their objectives (Mwai et al. 2014). Of note, the ignition of resource-based view postulates that the resource-based theory of strategy looks at the link between the resources and capabilities available to an organization and their impact on strategic options (Matlay et al. 2005, p. 275).

The organization sets out resources to sustain its position in the society; therefore, capabilities of the resources are more important to make impact on the choice of business strategies to overcome the prevailing threats (Gallego-Alvarez et al. 2011). Resources might be tangible (physical) or intangible which include goodwill, reputation, brand image, technologies, knowledge, experiences and skills, product design, and system design (Branco and Rodrigues 2006). R&D is the avenue available to organizations as it might generate intangible assets through the development of product design, brand image, processes, and way of eco-management practices from production to distribution which meets the existing intimidations and upholds corporate image in the society. Considering the mentioned arguments based on the appeals of the theories, the study develops the following relationships with corporate environmental disclosure practices.

16.2.1 Managerial Efficiency

Managerial efficiency demonstrates effective leadership in the organizations which connects diversity to work effectiveness (Choi and Rainey 2010) and emphasizes better coordination and cooperation of the organizational hierarchy from top to bottom level resulting in better performance. It is evident that efficient managers have led to management innovation (Walker et al. 2011) which restructures organizational processes and adopts eco-management practices and consequently more environmental disclosure. Besides, managerial efficiency has improved decision-making, superior strategies, higher understanding, and better implementation which increase organizational performance (Wooldridge and Floyd 1990). In addition, managerial framework which linked with inspiration, integration, and innovation would enhance corporate total responsibility management for corporate economic, social, and environmental performance to stakeholders' satisfaction (Waddock et al. 2002). Thus, the study has proposed the following hypothesis:

H1. There is a positive association between managerial efficiency and corporate environmental disclosure.

16.2.2 Human Capital

Human capital outlines of course the source of power which energizes the corporations, as it's the volume of knowledge, skills, innovation, and experiences that supports organization to achieve productive output (Pasban and Nojedeh 2016). Therefore, it is considered as an asset that contributes to take effective decisions, alter strategic choice to relevance, and quickly implement strategic decisions by enhancing worker's efficiency (De Vos and Dries 2013). In the long run, by executing policy to environmental sustainability, human capital supports to reduce legitimacy crisis and constructs the better prospect for the corporation (Nkundabanyanga et al. 2014). Human capital indicates the level of expertise which helps corporations dealing with the demand for environment-friendly innovation strategies from production to distribution. More human capital refers to more knowledge, skill, and experiences that assist to productively conduct the functions following sustainability principles. Prior study has found that human capital has significant influence in corporate environmental reporting (Said et al. 2013). Thus, the study has proposed the following hypothesis:

H2. There is a positive association between human capital and corporate environmental disclosure.

16.2.3 Research and Development (R&D)

Research and development (R&D) has now become an important platform to design new product, systems, and processes which would results in the enhancement of corporate performance and creation of business value (Germeraad 2001). R&D plays a major role in making significant strategic decisions and giving guidelines to managerial personnel to think rationally for community interests linked with product and services (Ivarsson and Alvstam 2017). It performs on the innovation-productivity chain in which new applications and strategies are integrated to produce eco-friendly products and services to receive competitive advantage in the market (Conte and Vivarelli 2014). It composes bridging role of transferring knowledge among the several departments of the corporations (Harzing et al. 2016) resulting in increasing corporate ability to sustain eco-management practices. R&D enables corporations to adopt innovative technologies which restructure the manufacturing process and consequently improve the efficient use of resources and reduce corporate contamination (Chakrabarty and Wang 2012) which would result in increased corporate environmental reporting. Thus, the study has proposed the following hypothesis:

H3. There is a positive association between research and development and corporate environmental disclosure.

16.3 Methodology

16.3.1 Sample

The study, as the population, utilized manufacturing corporations listed on the Dhaka Stock Exchange Limited. These corporations are selected because they are more accountable to use resources efficiently as their operations extremely contaminate the environment. The study selected large size of 100 sample manufacturing corporations through the market capitalization method. Large corporations are expected to produce more voluntary information, because they are having more stakeholders' demand due to their large volume of economic activities and resources.

Previous empirical studies also widely used market capitalization method to select large corporations as the study sample. The study is based on secondary data collected from the annual reports of sample manufacturing corporations. However, the study collected 100 annual reports in the year 2017 but only finally able to utilize 96 annual reports because of inappropriate collection of relevant data from four annual reports of sample corporations (Giannarakis et al. 2014). The utilized annual reports of the sample corporations are included by 11 industries such as cement (4), ceramics (3), food and allied (10), tannery (4), jute (1), paper and printing (2), textile (27), information technology (5); pharmaceuticals and chemicals (17); engineering (20), and miscellaneous (3).

16.3.2 Dependent Variables

The extent of corporate environmental disclosure (CED) is the dependent variable, where it indicates corporate performance regarding environmental issues. Prior studies developed a checklist framework to measure the extent of CED considering the past literature, study context, experts' opinion, and authors' cognitive view regarding the subject matter. But the present study utilized the well-acknowledged ten principles (see Appendix A) of the Coalition for Environmentally Responsible Economies (CERES) to score the CED (Smith 1995). These CERES principles as the code of environmental conduct are more prevalent to measure corporate environmental concern for which these were used worldwide by corporations for their commitment to improve environmental performance and disclose such information to stakeholders (Nash and Ehrenfeld 1996; Johnson and Macy 2001; Abraham and Nguyen 2003; Davarzani et al. 2016).

The study used unweighted disclosure index to score CED, as it evaluated each principle equally by 0 or 1; if corporation disclosed particular principle, it was awarded by 1 or otherwise 0. However, the study takes not only exact principles but also the meaning of the sentences aligned with the principles into consideration for quantification. The researchers checked all annual reports twice to score CED, and consequently the validity of CED score is improved to the degree. Besides, Cronbach's coefficient alpha value of all ten principles is 0.65 indicating that reliability and internal consistency are quite dependable and accepted for further suggestions. Finally total CED score of the particular corporation is calculated through the following:

$$\text{CEDj} = \text{i} = 1\text{mdim} \quad \text{(I)}.$$

where CEDj = environmental disclosure score for the j corporation in 2017; di = 1, when corporation j discloses any principle, otherwise 0; and m = number of principles expected for the jth corporation, while $m \leq 10$, so that $0 \leq \text{CEDj} \leq 10$.

16.3.3 Independent Variables

In this study, managerial efficiency, human capital, and research and development were used as independent variables in the regression model. Following a study by Feroz et al. (2005), the current study measured managerial efficiency by the return on equity (ROE) with the DuPont analysis in which ROE encompasses sales, net income, total assets, and common equity that underlines how efficiently management uses corporate resources, so it has become the most common practice of measuring managerial efficiency of a corporation. The equation of ROE with the DuPont analysis is as follows:

$$\text{ROE} = (\text{NIS})(\text{SA})(\text{AE}) \quad \text{(II)}.$$

where.

profit margin = net income (NI)/sales(S).

asset utilization = sales(S)/ total assets(A).

equity multiplier = total assets(A)/common equity(E).

The role of human resources in the corporations is not only a part of taking initiatives for environmental policy but also engaging in the implementation of such policy to achieve the objectives of organizational legitimacy (Shen and Benson 2016). In the present study, human capital refers to the log value of number of board of directors and employees in the corporations because more members on the board and more employees underlie more knowledge, tactics, strategies, skills, and experiences, which are the bases of constituting more human capital that scores more ability and commitment of the corporations to ensure eco-management practices (Lim et al. 2010). On the other hand, research and development (R&D) is measured through its functions in the corporations. Efficient and productive R&D processes are prerequisite for the balanced resource allocation (Hu et al. 2014) and product and process innovation concentrating market analysis and stakeholders' satisfaction (Rosenkranz 2003).

Considering the prior studies, the study took the following six items as function of R&D into consideration, and binary method (0 or 1) was followed, when particular item disclosed by corporation was awarded by 1, otherwise 0 (Nguyen and Nguyen 2015). The score to R&D is calculated as follows:

$R\&D = \Sigma$ (I) + (II) + (III) + (IV) + (V) + (VI) (III).

where.

(I)	=	field survey for stakeholders' satisfaction
(II)	=	Sought out the global demand pattern
(III)	=	Market analysis for product innovation
(IV)	=	Fixed annual budget for research
(V)	=	Research-based policy suggestion and implication
(VI)	=	Environment-friendly product design, operations, and innovative strategies

16.3.4 Control Variables

The current study employed firm size and firm age as control variables in the study model in addition to the dependent and independent variables. The reasons for selecting the firm size are as follows: (I) large firms have high volume of resources and economic activities, hence more possibility to demonstrate higher managerial efficiency; (II) they can hire more potential human resources which constitute higher human capital; and (III) they can invest more in research and development (Gallego-Alvarez et al. 2011). On the other hand, firms with more listing age indicate that they are more market oriented and have higher firm value and dealing with more stakeholders (Pan et al. 2018). Besides, both large firms and higher listing age are under more public scrutinizes. The study measured firm size by the log value of total

assets, while firm listing age was measured with the number of years listed on the Dhaka Stock Exchange Limited (Crisostomo et al. 2011; Pan et al. 2018).

16.3.5 Model Projection

In this study, ordinary least square regression was conducted to conclude the study proposed hypotheses in which CED is the mark of corporate environmental disclosure performance, while managerial efficiency, human capital, and research and development demonstrate their role as independent variables in the model. In addition, firm size and firm age both play the role of control variables. However, the study developed two models, whereas model (1) indicates the relationship between CED and control variables, and model (2) indicates the relationship between CED and all independent and control variables. Model (1) and (2) can be empirically projected by the following equations:

CED = α + 1 Firm size +2 Firm age (IV) for model (I) and.

CED = α + 1 Firm size +2 Firm age + 3 Managerial efficiency +4 Human capital +5 Research & Development (V) for model (II).

16.4 Discussion

16.4.1 Descriptive and Inferential Statistics

Table 16.1 represents the environmental disclosure by industry profile in which required disclosure items (RDI) were determined by multiplying with disclosure items (10) and number of corporations of each industry category. And disclosed items (DI) by each industry category were identified with what they actually

Table 16.1 Environmental disclosure by industry profile

Industry profile	RDI	DI	Percentage
Cement	40	20	50
Ceramics	30	17	57
Food and allied	100	50	50
Tannery	40	20	50
Jute	10	5	50
Paper and printing	20	10	50
Textile	270	165	61
IT sector	50	18	36
Pharmaceuticals and chemicals	170	99	58
Engineering	200	87	43
Miscellaneous	30	16	53
Total/average	960	507	53

Table 16.2 Descriptive statistics and correlation matrix

Variables	Mean	SD	1	2	3	4	5	6
1.CED	0.528	0.335	1					
2. Firm size	12.66	4.285	0.485**	1				
3. Firm age	10.75	5.164	0.548**	−0.329*	1			
4. Managerial efficiency	0.112	0.065	−0.029	0.137	0.055	1		
5. Human capital	3.254	0.412	0.309*	0.417*	−0.171	0.004	1	
6. Research and development	2.960	0.815	0.156	−0.367	−0.259*	0.103*	0.036	1
Note: Pearson coefficient correlation is significant at the 0.05* and 0.01** levels (two-tailed)								

Table 16.3 Results of the regression analysis

Variables	Model I Std. beta	Model II Std. beta	VIF	Tolerance
Control variable				
Firm size	0.442***	0.481***	0.561	1.820
Firm age	−0.336***	−0.340***	0.734	1.520
Model variable				
Managerial efficiency		0.084	0.822	1.182
Human capital		0.201**	0.748	1.245
Research and development		0.380***	0.653	1.516
Adjusted R square	0.392	0.645		
F-value	33.60**	24.20**		
Durbin-Watson		1.68		

Note: *** $p < 0.01$; ** $p < 0.05$

disclosed out of RDI. In Table 16.1, it was shown that textile industry discloses highest number of its RDI followed by pharmaceuticals and chemicals, ceramics, and so on. However, it is found that IT sector discloses lowest number of their RDI among the industry categories. Out of 960 RDI of sample manufacturing corporations, they disclose 507 items which is 53 per cent of total RDI. Table 16.2 shows the mean value and standard deviation (SD) of models' variables. Table 16.2 also reports the correlation among the models' variables; however, it is found that the relationship between the variables is not more than 0.548 indicating that there are no problems of multicollinearity (Pan et al. 2018). Besides, from Table 16.3, variance inflation factors (VIF) [less than 10] and tolerance level [more than 0.10) also give the signal of no multicollinearity among the variables.

16.4.2 Regression Analysis

Ordinary least square regression is conducted in which model I indicates the regression analysis between control variables and corporate environmental disclosure (CED) and model II shows the results of regression analysis of all variables. From model I, it is found that control variables such as firm size and firm age explain the 39.2 level of CED [adjusted R square = 0.392]. The adjusted R square value of model II is 0.645 indicating that all variables explain 64.5 percent level of CED. Besides, F statistics and Durbin-Watson value underline that the adequate ability to elucidate the variance and level of autocorrelation is within the limit respectively. With the std. beta value from model II, it is found that firm size has positive and firm age has negative significant association with CED (when $p < 0.01$). Among the explanatory variables, human capital and research and development have positive significant association with CED (when $p < 0.01$ or 0.05), but although the relationship between managerial efficiency and CED is positive, it is not significant. Therefore, hypotheses H1, H2, and H3 are accepted.

16.5 Conclusion

Corporate legitimacy crisis has become a significant concern not only to the firms of developed economies but also its wave that has also reached to the developing and underdeveloped countries. Economic activities with more profit thriving operations push corporations into legitimacy crisis. Therefore, stakeholders' demand is increasing for corporate accountability toward social issues. Community development, workplace safety and security, environmental pollution control, and climate change response have become a bundle of corporate social responsibility in the recent years. For corporate accountability to environmental issues, eco-friendly policies and actions are necessitated which would ensure environment-friendly operations into corporate internal and intermediary activities. Therefore, ability of the corporations regarding resources, efficient execution, characterization, and conceptualization of eco-management practices should also be taken into consideration before synthesizing corporate behavior with eco-friendly product and process development and sustainable use of resources.

Previous studies explore CSR mostly with the various common phenomenon such as corporation should have uphold the implicit terms and conditions of social contract or of acknowledging stakeholder demand or of sustaining rules and regulations provided by the government or its wings regarding environmental issues (Mehedi and Jalaludin 2020). In addition, corporate environmental obligation is also accounted through the bargaining substance between principal and agent with the lens of agency theory. But the role of performers and resources is the foremost challenge, so how much corporations are able to respond in environmental issues depends on an integrated approach that grasps corporate behavior in which the

significant role is played by the managerial efficiency, human capital, and research and development. Therefore, corporations need to hold more potential resources and mobilize resources efficiently for gaining legitimacy and receiving competitive advantage in the market.

Theoretical Implications.

The current study explores corporate environmental disclosure through the multilevel theoretical framework which will bring new insight in the social reporting literature. The study findings indicate that managerial efficiency, human capital, and research and development are the potential indicators for the increased level of corporate environmental disclosures. The relationship between principal and agent is customized by the efficient performance of the managers, for which corporations are going on the right tract, capable of reducing legitimacy crisis by competently executing eco-management practices in the business operations. However, in line with social reporting literature, human capital is a part and parcel of the corporation, as it picks corporate resource dependency for innovating state of the art which underlines new thoughts, innovations in the decision-making for environment-friendly operations, and source of power for the execution of environment-friendly operations from production to distribution.

In addition, the discernment of resource-based view pushes corporations to enhance their capacity in terms of resources which will build brand image in the market to gain more competitive advantage. For confirming corporate environmental accountability, environment-friendly product design, development of eco-friendly production processes, technology-based waste management systems, and sustainable supply chain management are indispensable in which corporate research and development can enhance corporate capacity by innovating and integrating all aspects related to the environment-friendly product design and operations resulting in the increased level of environmental disclosure practices. Besides, the findings also add value in the literature by the implication of firm size which controls the relationship in which large firms can hire efficient and experience managers, acquire more human capital, and invest more in research and development.

Practical Implications, Limitations, and Future Research Direction.

The study emphasizes policy-makers' attention toward guidelines on how corporations formulate a strategic policy related to eco-management practices in the corporate functions and how corporations develop their human resources with the knowledge of sustainable use of resources. In addition, the study will shape a new avenue for research and development and attract policy-makers' vision to circulate the normative or regulative obligations to invest in research and development for ensuring environment-friendly business operations. Besides, industry practitioners can grow their view to acquire, adopt, and adapt the issues of eco-management practices in the businesses to reduce legitimacy crisis. The study is not over the limitation; researchers' personal decisions are utilized in the content analysis and data collection from the annual reports in addition to the one firm-year observation. The future researchers should conduct a study considering more than one firm-year observations. In addition, they should employ an assumption which would confirm

corporate eagerness rather than perceived pressures to achieve survivability in the society.

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Chapter 17
Conclusions

Isabel B. Franco

Abstract This book explored emerging corporate approaches to sustainable development and sustainability solutions for communities and the environment. This manuscript contributes to the literature by building knowledge regarding the role of the private sector and corporate-led initiatives in the design and application of approaches to foster inclusive, sustainable development. The research focused largely on corporate sustainability within the context of the developing world. However, further research is needed to explore the potential contribution of developed countries in helping developing countries overcome sustainability challenges through corporate approaches that plan for sustainable development. Similarly, empirical research needs to be undertaken on the role of industry in developing sustainable solutions for locals in vulnerable locations.

Keywords Sustainable development · Corporate sustainability · United Nations · International development · Climate diplomacy · Corporations

Corporate sustainability and sustainable development are pivotal conceptual frameworks for meeting corporate goals and delivering positive socioeconomic outcomes for communities, moving toward overall sustainability. There is a general agreement in the literature about industry-induced effects on locals residing adjacent to disruptive operations. However, scant attention has been paid to the role of industry on local, sustainable development. This book argues for a better distribution of the benefits traditionally accruing to large corporations in developing countries, to create lasting value for communities and the environment. While this book examined the impacts of business operations and opportunities for planning for sustainable development across various contexts in the developing world, similar literature outside of this geographical scope remains underexplored.

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A nuanced exploration of stronger interlinkages between social and environmental matters is needed to fill existing gaps in this field. Evidence shows that a lack of interconnectedness between these two areas is hampering the role of the industry in fostering sustainable development (Franco et al. 2018).

Overall it is important that issues that cut across various areas of sustainability science, namely, social, environmental, and economic, are taken seriously to establish corporate sustainability agendas aimed to tackle pressing issues in the cases concerned. This will not only contribute to build knowledge on current scholarly debates on this field but may also assist corporations and their stakeholders in moving forward toward more relevant corporate policies in the countries they operate.

Similarly, attention needs to be paid to examining the contribution of other economic sectors and organizations apart from those explored in this book in forging economically and environmentally sustainable local communities. The application of corporate approaches to other areas relevant to local sustainable development will be pivotal in planning for both corporate and overall sustainability (UNDP 1997; World Bank 2015; United Nations Global Compact 2013).

In planning for sustainable development, the role of small and large business projects in providing solutions and opportunities for local people and the environment deserves major attention. Stakeholders frequently engage in corporate sustainability approaches to deliver sustainable solutions to community members. However, the actual implications of large- and small-scale business on local sustainable development have largely been ignored, leaving a gap for further research on opportunities for existing stakeholder engagement approaches between corporations and local communities. The increase in both formal and informal business operations in developing countries has resulted in critical social and environmental challenges including social conflict, loss of livelihood options, pollution, and public health issues. An examination of the current relationship between industry, local communities, and the environment is central to understanding the nature of corporate sustainability partnerships. This analysis would allow greater understanding of which parties benefit from these partnerships (notably if the benefits are distributed equitably) and measure their capacity to confront sustainability challenges. Further research is warranted to better understand the challenges and opportunities arising from the growing interactions between both parties, so as to build knowledge and raise awareness of potential untapped synergies in developing countries.

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