Afghanistan Human Development Report 2020

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MINERALS EXTRACTION IN AFGHANISTAN

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Pitfalls and Promise
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Foreword

Despite the huge challenges and decades of protracted conflict, Afghanistan has made a great deal of progress since 2002. Supported by international community, the country has come a long way. It has adapted one of the most democratic constitutions in the region, built government institutions and major infrastructure, and held several presidential and parliamentary elections.

However, the progress has not been without setbacks, and the country still faces major challenges. Security has deteriorated, corruption and weak institutions have been major obstacles for development of the country. Majority of citizens live in or below poverty line. The country is languishing at the bottom of international ranking by the human development index and the prospects for better life for Afghans look dim.

Faced with the decline in international assistance, much hope is placed on advancing economic development through tapping into the mineral riches of Afghanistan. The development of mineral deposits, oil and gas fields can provide much-needed funding for the development of the country.

However, the experiences of many resource-rich countries, even under the best circumstances, show that a 'resource curse' can afflict the country's economy, its political and governance institutions and can exacerbate pre-existing conflicts.

This report explores how can the extractive industry be used to advance human development in Afghanistan.

Based on extensive field work and analysis, it provides rich insights into the present situation of Afghanistan's extractive industry, how it interacts with various dimensions of human development, employment and investment opportunities in the extractive industry value chains, and its fiscal revenue potential. It also offers ways forward through which the government, the public and other stakeholders in Afghanistan can come together, build peace, improve governance and thereby utilize Afghanistan's natural resources to improve people's lives.

In Afghanistan, there is an urgent need to improve governance, tackle corruption and put an end to illegal extraction and trade of minerals. Large-scale mineral, oil and gas projects can be instrumental for financing development, but it will require stability and enhanced government capacity to get its due share from these projects and use them well for human development.

The report ends on a positive note - that over time the extractive industry can drive economic growth, create jobs, raise incomes, bring benefits to local communities and boost economic development. But a lot of work remains to unlock the benefits of Afghanistan's mineral wealth for human development.

Abdallah Al Dardari
Resident Representative
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Acronyms

AEITI	Afghanistan Extractive Industries Transparency Initiative
AFs	Afghanis, the national currency
AGS	Afghanistan Geological Survey
AISA	Afghanistan Investment Support Agency
ALCS	Afghanistan Living Conditions Survey
ANSFs	Afghan National Security Forces
A-SDGs	Afghanistan Sustainable Development Goals
CDC	Community Development Councils
CIRDI	Canadian International Resources and Development Institute
CNPC	China National Petroleum Company
CSO	Central Statistics Organization, Afghanistan
EBRD	European Bank for Reconstruction and Development
EITI	Extractive Industries Transparency Initiative
EIU	The Economist Intelligence Unit
ESAB	Environmental and Social Advisory Board
ESIA	Environmental and social impact assessment
FAO	Food and Agriculture Organization
FPIC	Free, prior and informed consent
GDI	Gender Development Index
GDP	Gross Domestic Product
GII	Gender Inequality Index
GNI	Gross National Income
HDI	Human Development Index
ICMM	International Council on Mining and Metals
IFC	International Finance Corporation, part of the World Bank Group
IFPRI	International Food Policy Research Institute
IGF	Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development
IHDI	Inequality-adjusted Human Development Index
IMF	International Monetary Fund
ISIS	Islamic State of Iraq and Syria
IS-K	Islamic State of Khorasan, also goes under the name ISKP, or Islamic State of Khorasan Province
ITC	International Trade Centre
IUCN	International Union for Conservation of Nature
LLC	Limited liability company
MoF	Ministry of Finance
MoMP	Ministry of Mining and Petroleum
MoPH	Ministry of Public Health
MPI	Multidimensional Poverty Index
NEPA	National Environmental Protection Agency
NHDR	National Human Development Report
NRGI	Natural Resource Governance Institute
NRVA	National Risk and Vulnerability Assessment
NSIA	National Statistics and Information Authority, previously Central Statistics Organization
ODA	Overseas development assistance
PMs	Particle matters
SDGs	Sustainable Development Goals
SME	Small- and Medium-sized Enterprise
UNAMA	United Nations Assistance Mission in Afghanistan
UNCTAD	United Nations Conference on Trade and Development
UNEP	United Nations Environment Programme, now UN Environment
UNFPA	United Nations Population Fund
UNDP	United Nations Development Programme
UN-HABITAT	United Nations Human Settlement Programme
UNOCHA	United Nations Office for the Coordination of Humanitarian Affairs
USGS	United States Geological Survey

Glossary

Terms specific to Afghanistan

Commander	In Afghanistan, refers to a former Jihadi who continue to manage armed men outside of the state system.
Insurgent	In Afghanistan, the term refers to the Taliban and other non-state armed groups.
Non-state actors	In Afghanistan, the term refers to the Taliban and other non-state armed groups.
Kuchis	Nomadic and semi-nomadic ethnic groups in Afghanistan.
Masoul	A person in charge.
Shura	A traditional consultative council. The term 'shura' is also used in Afghanistan to denote a formal local council, Community Development Council (CDC).

Terms related to the extractive industry

Extractive industry	Refers to the industry doing exploration and extraction of minerals, oil and gas.
Deposit	Natural concentration of minerals in the earth.
Reserve	Reserves consist of proven and probable reserves – an economically mineable part of a mineral deposit.
Resource	In a technical sense, refers to mineral resources identified during exploration. Resources do not take into account economic considerations – losses of minerals during mining. They include measured, indicated and inferred resources. In a general sense, resources mean all minerals and hydrocarbons in the ground.
Ore	Naturally occurring solid body from which valuable mineral can be separated.
Mine	A mine is an excavation from which a mineral is taken. More broadly, it constitutes structures and facilities constructed to extract mineral from a deposit.
Mining	The process of extracting minerals from the earth. In this publication, is also used to refer both to extraction of minerals and production of oil and gas.
Mineral	Technically, refers to naturally occurring inorganic solid. In this publication, the term 'mineral' has also been used in a broader sense, referring to both minerals and hydrocarbons.
Hydrocarbon	Technically, refers to organic compound of hydrogen and carbon. In this publication, refers to oil and gas.
Company 'take'	A share of profits before tax that goes to the investor company, in this case, extractive company.
Government 'take'	A share of profits before tax that goes to the host government, in the form of taxes, royalties, fees, charges and, in case the government owns a stake in the company, also dividends.

Executive Summary

Afghanistan has been afflicted by decades of conflict, but recent moves towards peace could create the opportunity for a new era of human development. The Government is committed to the 2030 Agenda and the Sustainable Development Goals. But how will the necessary investment be financed? An enticing option is to capitalize on the country's extensive mineral wealth. This will be complex and difficult, but not impossible. This report assesses the country's current state of human development, and the potential contribution – and risks – of the extractive industry.

Afghanistan's economy has yet to recover from over four decades of conflict and thus remains among the world's poorest nations, with a gross national income in 2017 of just $560 per capita. Between 2007 and 2011, GDP per capita increased by 63 per cent but subsequently it declined by 5 per cent as a result of the withdrawal of international military forces – with a sharp fall in associated international aid, and rising levels of conflict and political instability. This has resulted in low and uncertain incomes. A quarter of the labour force is unemployed, and more than half the population lives below the poverty line.

The usual measure of poverty refers to low incomes. But people can be deprived in many other ways, in health in particular, and education. A broader measure of poverty that incorporates such factors is the multidimensional poverty index. By this measure, around 52 per cent of the population live in multidimensional poverty – though the score varies widely from less than 15 per cent in Kabul to more than 85 per cent in Badghis province.

Afghanistan has been one of the world's largest recipients of official development assistance, but ODA has fallen from a peak of $ 6.9 billion in 2011 to $ 3.8 billion in 2017. As a proportion of gross national income, aid fell from 50 per cent in 2009 to 19 per cent in 2016. Nevertheless, nearly two-thirds of the budget is funded through international donor support.

Health and education levels are low but rising

Health outcomes have been improving. Between 1990 and 2017, life expectancy at birth went up from 50 to 65 years, while infant mortality declined from 120 to 45 deaths per 1,000 live births. Gains for women and children have been particularly strong since 2003. Essential health services have been resilient even in insecure areas. Even so, access to healthcare is still low: over the period 2000-2015, only 59 per cent of women received antenatal care from a skilled provider for their most recent birth.

Around one-third of the population is regularly food insecure – a problem exacerbated by the 2018 drought which affected more than two-thirds of the population. The drought caused serious issues particularly for female-headed households some of whom had to resort to emergency coping strategies including begging.

Education standards are also low, but slowly improving. Between 2005 and 2016-17, adult literacy rose from 24 to 35 per cent. At the

secondary school level in 2017, net enrolment was 62 per cent among males, though only 36 per cent among females. Education standards are poor partly because of the lack of investment in infrastructure, and inadequate schools: about 41 per cent of schools have no buildings, and many lack boundary walls, water, and toilets.

Housing standards are also low. More than 80 per cent of people live in dwellings that are constructed with non-durable materials and 44 per cent live in overcrowded conditions. Recent years have seen improvements in household water supplies and sanitation – though here too access remains low. Only around 36 per cent of the population use safely managed drinking water and 41 per cent use safely managed sanitation services.

Women have made some gains. Between 2000 and 2015, female life expectancy rose from 57 to 65 years, but there are still large gender disparities and women have limited opportunities. The female labour participation rate at 19 per cent is among the lowest in the world, since many families do not allow women to work outside the home.

Afghanistan is still plagued by violent conflict

Afghanistan has suffered from four decades of uninterrupted war and incessant violence. According to the United Nations Assistance Mission in Afghanistan (UNAMA), close to 11,000 civilians were injured or killed in 2018 as a result of the armed conflict - the highest number of civilian casualties on record representing a five per cent increase over 2017, and an 11 per cent increase in civilian deaths as compared to 2017. Also, the number of casualties by anti-government actors, mostly from suicide and complex attacks deliberately targeting civilians, rose to 4,125 civilian casualties (1,404 deaths and 2,721 injured) in 2018 – an increase by 48 per cent as compared to 2017.

Escalating violence, loss of livelihoods and

A mountainside on a peaceful morning in Faizabad city, Badakhshan province © UNDP Afghanistan / Omer Sadaat.

limited access to basic services are forcing large numbers of people to migrate. Between 2007 and 2015, 200,000 to 300,000 Afghans migrated each year. Large scale internal displacement combined with a massive return of refugees following the defeat of the Taliban government in 2001 has put enormous pressure on public services.

Clearly, achieving higher levels of human development will depend on ending the conflict and sustaining peace by stepping up investment in living standards. Some of the finance could come from tapping the rich potential of Afghanistan's extractive industry. However, the State can succeed only if there is strong political commitment to managing and regulating the extractive industry, while expanding livelihood and other opportunities.

A wealth of minerals

Afghanistan is richly endowed with mineral and hydrocarbon resources. These include base and precious metals, precious and semi-precious stones, rare earths elements, mineral rocks and industrial minerals, and energy resources. At present these contribute little to the economy or the society. This is mainly because largely they remain in the ground, but also because most of the mining is informal and illegal. If the country is to unlock the potential of its mineral wealth, the government and other stakeholders will need to strengthen the management of resources and ensure peace and security.

Large-scaled projects are stalled

There are prospective large-scale minerals and hydrocarbons deposits, though the development of most of them is largely stalled.One large project is the mining of the Mes Aynak copper deposit, the other is for the Hajigak iron ore deposit. Mes Aynak area is overlaid by a vast complex of archaeological sites of tremendous historical and cultural value. Conservation of archaeological findings appears to have played a role in delay of the Aynak mine development. Insurgent attacks on the mining camp, along with changed market conditions for copper may also have played a role in the delay. The contract for the Hajigak iron ore deposit remains unconcluded – hampered by conflict and insecurity, weak governance and poor infrastructure. Afghanistan also produces gas and coal through state-owned enterprises, but oil production has been limited.

Afghanistan has a long history of smaller-scale extraction and mineral processing

Mining has been carried out since ancient times: gemstones have been extracted for at least 6,500 years and it continues to date. Much of the artisanal and small-scale mining operates without formal contracts (licenses). Nevertheless, the legal framework provides for artisanal, small- and large-scale mining. Afghanistan has over 160 small- and medium-scale mines (as of November 2018), as well as mineral processing factories and artisanal workshops.

Mineral resources do not automatically translate into government revenues

In 2010 the US Task Force for Business and Stability Operations estimated the monetary value of Afghanistan's mineral resources at nearly $1 trillion. This is an enormous sum compared with the economy of Afghanistan, but it is necessary to moderate expectations. One trillion dollars' worth of minerals under the ground does not translate into one trillion dollars flowing into the economy, still less into the treasury of the government. This is some distance from what the mining companies

could actually extract and sell, and even further from what the government could expect in revenue. The government and stakeholders in Afghanistan have high expectations for the potential fiscal revenues and other development benefits to be brought by Mes Aynak and other large mining, oil and gas projects. However, unrealistic expectations can falsely raise the stakes and aggravate the competition for mineral-rich territories, or for the control of the State.

To harness the benefits of resource extraction – through fiscal revenues – the Government of Afghanistan needs to tax the extractive industry, manage these revenues and invest them in human development. This requires forming more realistic expectations and reducing uncertainty about future fiscal revenues, set taxes and royalties in a way that balances the need to maximize fiscal revenues for the State with the need to attract investors, and reduce leakage of fiscal revenues through illegal mining and smuggling.

To reduce uncertainty about future fiscal revenues, it is necessary to conduct more mineral and hydrocarbon exploration, and carry out financial analysis to estimate fiscal revenues from large-scale extractive projects. Such independent financial analysis (fiscal model) is also needed for the government to get a fair share from extractive projects, while at the same time keeping taxes and royalties at a level that attracts investors. This calls for, among other things, greater transparency and mandatory disclosure of mineral and financial information by extractive companies, including feasibility studies. Improving tracking of mineral production and trade through an integrated system of records, and taking measures to reduce the 'leakage' of fiscal revenues from illegal mining and smuggling will be necessary to improve fiscal revenue generation from existing mining.

Limited government revenues from the extractive industry

Afghanistan's current fiscal revenues from mineral resources are small. In recent years, they accounted for less than 2 per cent of total government revenues – around $42 million annually. This is partly because the large-scale projects have yet to take off while most other mining is informal and/or illegal and outside the fiscal regime.

To estimate actual scale of informal output, researchers for this report analysed official data and existing studies, and also carried out field observations – visiting mine and quarry sites, villages serving as mining hubs, mining workers' camping areas, storage sites for minerals, and transportation routes, mineral processing factories and workshops, markets and border crossing points.

This report's estimates of production are significantly larger than the official figures – twice as high for talc and coal, for example, and much more for precious and semi-precious stones and other minerals. There are also data discrepancies, for instance, in the records of trade minerals from Afghanistan to Pakistan as recorded by both governments, which indicate considerable amount of smuggling, even of bulk minerals which are harder to conceal.

These discrepancies indicate that the Government of Afghanistan is losing a significant amount of fiscal revenues it could have collected from mining. This report's estimates suggest that in 2017 the government could have collected over $123 million from minerals in royalties and export duties alone.

Overarching development benefits should be assessed

It is also is necessary to consider benefits and risks from these projects in an integrated way – taking into account not only fiscal

revenues, but also broader economic, social and environmental impacts. To help gauge expectations from Mes Aynak more realistically, this report provides comparable information on the economic, social and environmental impacts of two other large copper mines in the region: Sepon mine in Lao PDR and Oyu Tolgoi mine in Mongolia.

Employment opportunities

An important benefit of a well-managed extractive industry should be an increase in employment. Again, it is important to be realistic. Afghanistan has a large labour force and the extractive industry will, at best, provide only a small proportion of employment. Many workers will lack the skills to take full advantage of employment opportunities. Nevertheless, as large-scale extractive projects start, they can generate tens of thousands of well-paid jobs in the extractive sector and the rest of the economy.

Mining under fire

Afghanistan minerals extraction is poorly regulated, often illegal, and in many parts of the country is controlled by political elites, and by insurgents. Since the 1980s, many mines have also come to be controlled by networks of former jihadis who, after the defeat of the Taliban, have at different times acquired positions of influence within the government. These networks often operate with impunity – openly and audaciously smuggling mineral resources out of the country. More recently, with the decline in international aid, and the reduced demand for new buildings, many well-connected construction companies have moved into the mining sector.

Mining has been financing conflict

The control of minerals extraction by insurgent groups has also meant that they have been financing and fuelling conflict, while undermining the legitimacy of the State and further spreading corruption and violence. The group with the most extensive reach is the Taliban, but since 2015, other groups under the name of Islamic State of Khorasan (IS-K) have joined the competition for minerals.

For the Taliban, the extractive industry is the second-largest revenue stream after narcotics. It collects taxes and 'protection money' from miners. More recently, the IS-K started tapping the mining sector when financial support waned from the central ISIS. In the talc-rich Nangarhar province, not far from Kabul, there is active contestation between the Government, the Taliban and the IS-K for control over talc mining areas.

For a mining company, the benefits of paying taxes to the government are limited, while the risks of not paying taxes to insurgents are enormous. IS-K in particular is known for brutal sanctions for non-compliance.

In addition to these groups, local militias, warlords, and occasionally security forces, are also levying taxes on minerals or are involved in illegal mineral extraction – directly or through associates and family members.

A large proportion of mining activity in Afghanistan is illegal

Much of the mining in Afghanistan is artisanal, or informal and has not come under state laws and regulations. Then there are small and medium-scale enterprises in insurgent-controlled areas who do not have government contracts. Even in government-controlled areas, some formal sector companies are also operating illegally since they are carrying

Workers mining talc in Sherzad district, Nangarhar province. They are not using any safety and personal protection equipment while working. Talc from Nangarhar is of exceptional quality, but talc mining is fraught with problems © Afghanite Company.

out mining operations though they only have contracts for exploration.

In fact, for many businesses, it is difficult to remain legal with valid government contracts since contracts are often issued for a few months, so many companies continue to operate after their contracts expire. Some mining companies with government contracts also engage in 'mineral laundering' – that is, buying minerals that were extracted illegally and selling them as legally mined.

Illegal mining may be lucrative, but often not very efficient. Mineral extraction by smaller operations is mostly a matter of trial and error, and generally employs rock blasting for extracting minerals such as lapis, onyx, marble, dimension stones and talc. This is wasteful; blasting can destroy 80 to 90 per cent of the mineral, significantly reducing the value of the material. Use of explosives also generates vibration, gases, dangerous fly rock and severe dust that damage the environment and endanger workers.

Much of the minerals output is smuggled out of the country. Smuggling is relatively easy for high-value-per-weight minerals such as gold, and precious and semiprecious stones – referred to as 'lootable' minerals – which are simple to hide and are often produced in remote areas. However in areas controlled by insurgents, lucrative large-scale mining sites operate on an industrial scale then openly transport bulk minerals on large trucks along major roads and across the border to Pakistan.

Governance of extraction is weakened by extensive corruption

Even where mining companies operate legally, there can be corruption in the issue of contracts. For example, bidding for contracts can be manipulated to give an edge to chosen

companies owned by politicians or their close relatives. Officials can also take advantage of their discretion to determine the length of the contract.

Such corruption will deter many companies from seeking contracts since they never know whether their taxes go to the government or into the pocket of the official, or whether another official might not turn up at the next opportunity to charge a further tax or fine.

Mining is difficult and dangerous

Workers in most mines are underpaid, have no job security and work in exploitation conditions. And mines, legal or illegal, rarely conform to occupational health and safety norms, with conditions in legal mines being only marginally better than in illegal ones. For example, in talc and onyx mines, many workers face serious long-term risks of lung diseases due to prolonged exposure to toxic gases from explosives and dust, and few take any health and safety precautions. In the process of mining, they use explosives and heavy-duty machinery, but receive no training in safety. Unsurprisingly, there are numerous injuries and deaths at work – which leave households without income earners. Children and teenagers may then start to work in mines in order to take breadwinning responsibility for their families after the deaths of their fathers. While there are mechanisms for one-time compensation for injury or death of workers, long-term health effects are ignored.

Mining affects women

Women have been excluded from working in the mines, though they can be employed as cooks or auxiliary service providers or in processing workshops. At home, women and girls continue to have a heavy burden of household chores, such as fetching water, and may be significantly affected by reduction of water availability due to mining.

For women, the most catastrophic impact of mining is a loss of a husband or other male breadwinner to illness, injury or death from working in mines.

Women are also affected by migration of men for mining. When men leave to work in mines, women who find it difficult to leave the home alone may lose access to healthcare. At the same time, the influx of men to villages near mines combined with the improved roads and bridges, has made villages less secure for women and children.

Minerals extraction can be accompanied by violations of human rights

There have been documented cases of human rights violations by mining companies which are protected by networks of power brokers. These abuses can be triggered by the failure of mining operations to bring benefits to local communities; subsequent protests by communities over displacement or lack of jobs can be met with coercion, intimidation, or even murder to silence the aggrieved. In most cases, the government has not investigated and punished the perpetrators.

Learning from global experiences

The extractive industry can promote economic growth and accelerate human development. But often it does not. Many countries whose economies have been dominated by minerals extraction have seen increased levels of conflict and have suffered from the 'resource curse'. Some resource-rich countries have made progress, but not as rapidly as other less well-endowed economies. In recent decades, only a few countries have turned their resource wealth into sustained improvements in human development. Afghanistan has much to learn from the missteps in other resource-rich countries.

Haybat lake in Band-e Amir National Park located in the Bamyan Province of central Afghanistan © UNDP Afghanistan / Omer Sadaat.

The resource curse

The poor experience of many resource-rich countries has been described as the 'resource curse'. Rapid increases in fiscal revenue, economic growth and private profits can weaken governance. Collusion between political and business elites reduces accountability, and leads to an increase in corruption. This degrades the quality of public planning and investment and tends to increase public debt.

Extractive industry-led growth can also afflict the economy with the 'Dutch disease'. This phenomenon happens when a rapid growth in resource-based industries displaces other tradable goods industries – mainly manufacturing. The capital-intensive nature and low employment generation of the extractive industry leads to higher inequality.

Then there are impacts for the environment - water, land and air. In deserts or semi-desert environments, the main damage is from storms of toxic dust and over-extraction of water: mining uses large amounts of water and this may reduce water available for agriculture. In mountainous areas, the most severe environmental impacts include landslides, failures of waste storage piles, spilling of tailings, and pollution of water. Major environmental impacts are caused not only by the extraction process, but also by transportation of the resources, the placement of waste, and the location of workshops and worker housing.

Mining projects also displace the original occupants or users of the land, resulting in relocation or displacement of local communities. Displacement has serious adverse effects on people's health, livelihoods and social cohesion.

Violence and conflict

Countries have experienced an increase in violence and conflict arising from mineral extraction. Resource-related conflict is more likely in areas that have underlying structural and contextual factors which on their own

could lead to conflict – especially poverty, inequality and oppression, the impact of natural disasters, or the inability or unwillingness of the government to reach out to rural and far-flung areas.

Natural resource exploitation can become a driver of conflict, which can start when rebel groups use violence to claim the resource, and continue as the proceeds of resource extraction finance ongoing conflict. Natural resource exploitation can also trigger conflict, for example, as an armed response from a mining company to a community protest, an accident due to trucking of minerals through a village, a sudden clampdown on artisanal and small-scale miners, forceful relocation of communities, or a tailings pond spill into a river. Any of these events can spark off violent clashes leading to loss of property and lives.

As underscored by the 2030 Agenda for Sustainable Development: "Sustainable development cannot be realized without peace and security; and peace and security will be at risk without sustainable development." The extent to which this can be achieved will depend upon Afghanistan's ability to restore peace, promote social cohesion, and strengthen governance by bringing the mining sector under its oversight and control.

Making minerals work for people

Resource extraction could drive the economy of Afghanistan for many years to come. It is important therefore, to look beyond short-term economic and fiscal benefits, and take into account longer-term economic, social and environmental impacts.

The ultimate objective of mineral extraction should be sustainable human development and improvements in people's well-being. But for this to happen, Afghanistan needs to prepare now by improving resource governance. Rather than waiting for the expected large-scale projects to bring in revenues, the government should ensure that its extractive industry contributes more to human development more broadly. Many factors are outside of Afghanistan's control, but the government and stakeholders can focus on those factors that they can influence – especially by building peace and strengthening governance, while also making and implementing strategies tailored for large-scale extractive projects and for small- and medium-scale mining.

Afghanistan's economy is currently not capable of generating investments to explore and exploit its large-scale mineral and hydrocarbon deposits. For this, it will need to attract large investments from overseas. In dealing with large investors, the government should strike a balance between making the tax regime attractive for investors while ensuring a fair share for Afghanistan. By taxing the extractive sector and using the proceeds to finance human development, the government can strengthen fiscal linkages from the sector to the overall economy. It should also use the extractive industry to increase employment and business development opportunities for Afghanistan's people and businesses – developing backward linkages from large-scale extractive industry projects to the rest of the economy. Finally, it should develop spatial or infrastructure linkages, by facilitating extractive industry investments in infrastructure that benefit the wider society. It should also achieve high standards for resettlement, compensating communities, and addressing grievances. As large-scale projects take off, it will need to deal with the 'resource curse' effects on the economy, politics and institutions.

At present Afghanistan's mineral sector is dominated by small- and medium-scale mining. For these operations the government should aim to promote responsible mining while discouraging illegitimate or illegal mining. In parallel, it should tackle corruption, while identifying and limiting 'leakages' of taxes and other fiscal revenues. The government should also help small- and medium-scale mining businesses to improve their health, safety, and environmental management, for example, by establishing practical rules and providing extension services and training for improving working conditions and mitigating environmental impacts. It should also develop mineral processing and mineral value chains.

This will require actions on three fronts.

- Preventing loss of fiscal revenues – by reducing corruption, increasing transparency and improving the knowledge and understanding of resources. More efforts will be needed to integrate government records, track and tax mineral movements, improve contract procedures, simplify taxes, improve transparency of revenues from mineral extraction and require investors to disclose technical and financial information. For large extractive projects, it will be important to set the 'right' fiscal regime – one that attracts investors, but also gives the government a fair share or 'take' that it can use to finance human development.
- Protecting people and the environment – from negative social and environmental impacts. The government should protect human rights, ensure compensation of displaced communities, progressively guarantee the rights of workers, make workplaces more women-friendly, ensure improved health and safety standards and provide mining extension services. It should also require meaningful environmental and social impact assessments and impact management plans that are suitable for different scales of resource extraction, ensure protection of the environment, and strengthen environmental management capacities of companies.
- Promoting a legitimate and responsible extractive industry - The government should invest in extension services, upgrade value chains, reduce the costs of doing business and adopt certification schemes to incentivize responsible companies. It should also develop and implement a strategy for skills development and the employment of Afghans in the extractive sector, and support value addition - mineral processing.

An engine of growth and human development

Afghanistan is one of the world's poorest countries – held back by decades of conflict. When peace comes, there will be greater opportunities for investing in human development. This will mean taking full advantage of the country's natural resources while making a determined and concerted effort to reform policies and institutions. This requires a new perspective: the extractive industry of Afghanistan should serve the country's people, rather than the other way around.

Chapter 1

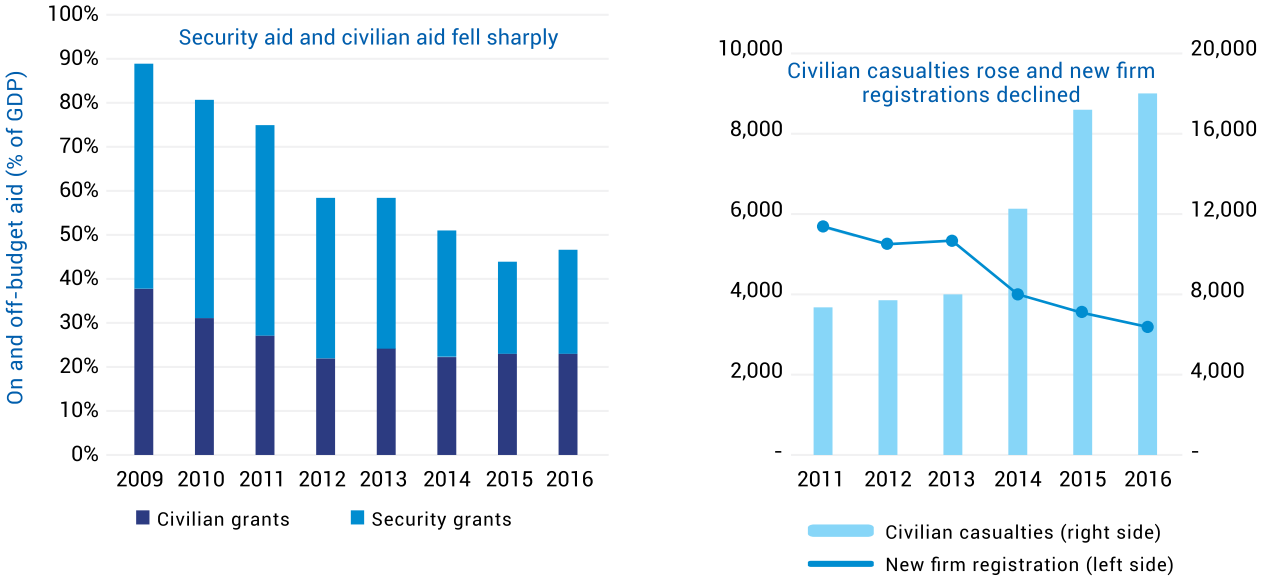
The state of human development

Afghanistan has been afflicted by decades of conflict. Recent moves towards peace should create the opportunity for a new era of human development. The Government is committed to the 2030 Agenda and the Sustainable Development Goals. This report looks at the potential of the extractive industry for accelerating human development and reducing poverty, starting in this chapter with an assessment of the current state of human development.

Afghanistan has yet to recover from over four decades of conflict and thus remains among the world's poorest nations, with a gross national income in 2017 of $560 per capita.[1] Between 2007 and 2011, GDP per capita increased by 63 per cent, but subsequently it declined by 5 per cent as a result of the withdrawal of international military forces, with a sharp fall in associated international aid, both security and civilian, as well as rising levels of conflict and political instability (Figure 1-1).[2, 3] The economic downturn has been magnified by a reduction in investor confidence and consumer demand.[4]

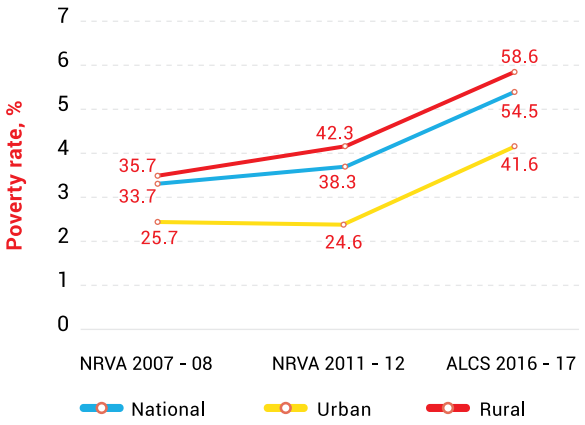
This has resulted in low and uncertain incomes, adding to the insecurity faced by millions of families. Between 2007-08 and 2016-17, the poverty rate – the percentage of Afghans with incomes below the poverty line - rose from 34 to 55 per cent (Figure 1-2), with increases in almost every region (Figure 1-3). In 2016-17, almost 13 million rural Afghans lived below the poverty line.[5]

Figure 1-1. Declining aid levels, rising casualties, and sinking investor confidence



Source: Chaudhuri, S., 2018

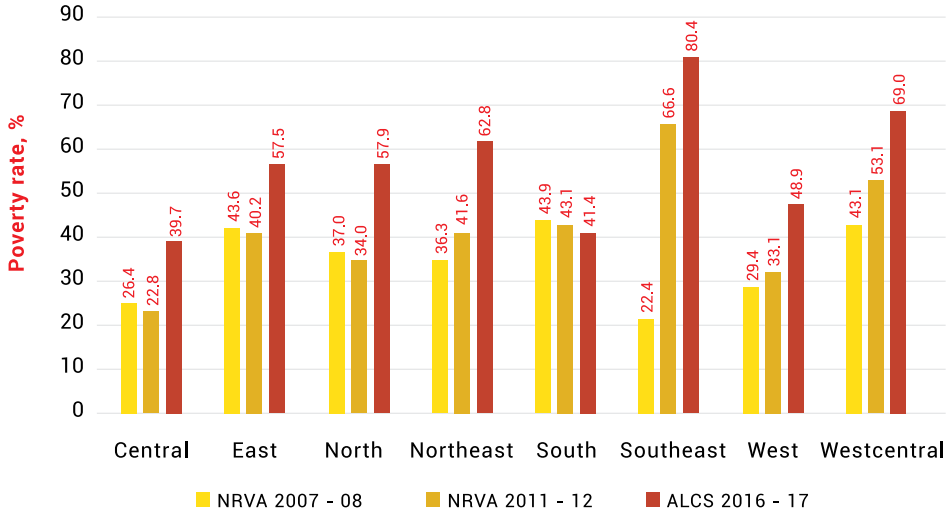
Figure 1-2. Poverty rate, by survey year and residence



** Rural includes the Kuchi population*
Note: NRVA = National Risk and Vulnerability Assessment; ALCS = Afghanistan Living Conditions Survey
Source: Central Statistics Organization, 2018

The poorest families are typically the largest. For households with one to five members, around one-third live below the poverty line; with eight members or more, the proportion rises to roughly 60 per cent.[6] The poorest households also generally have low levels of education, and the head of the household is likely to be in vulnerable employment – either self-employed, working on his or her own-account, as a day labourer, or as an unpaid family worker.

Figure 1-3. Poverty rates by region



Note: NRVA = National Risk and Vulnerability Assessment; ALCS = Afghanistan Living Conditions Survey
Source: Central Statistics Organization, 2018

High unemployment

Unemployment is high. Around 24 per cent of the labour force is unemployed, with the highest rate for young females at 47 per cent. In addition, there is extensive underemployment averaging 18 per cent of the workforce for males and 41 per cent for females (Table 1-1). Only 13 per cent of the working population of Afghanistan can be considered to have decent employment. Around 80 per cent of all jobs are classified as insecure, vulnerable employment, with poor working conditions.[7]

Around three-quarters of the population live in rural areas which are largely dependent on agriculture. The country does have agricultural potential, but productivity and incomes are constrained by a lack of access to finance and weak rural entrepreneurship. Afghanistan is also hampered by population growth which is steadily fragmenting land holdings and

jeopardising the livelihoods of many farming households. Between 2007-08 and 2016-17, the average irrigated land holding fell from 6.7 jeribs (1.3 ha) to 4.9 jeribs (1.0 ha). Farm yields are also limited in some regions by harsh climatic and geographical conditions, especially drought.[8]

Table 1-1. Unemployment and under-employment, 2016-17, percentage of labour force

Employment indicators	Male	Female	Urban	Rural
Percentage of population not gainfully employed	34	55	35	41
Underemployment rate, as percentage of the employed	20	24	12	23
Underemployment rate, as percentage of the labour force	16	14	9	17
Unemployment rate	18	41	27	24
Youth unemployment rate	24	47	39	30
Youth unemployment as percentage of total unemployment	45	46	48	45

Source: *Central Statistics Organization, 2018*

Inadequate access to health care

Afghanistan's health outcomes have been improving, but still remain poor. Between 1990 and 2018, life expectancy at birth went up from 50 to 65 years, while under-five mortality declined from 177 to 62 deaths per 1,000 live births, and infant mortality declined from 120 to 48 deaths per 1,000 live births. Gains for women and children have been particularly strong since 2003. Between 2003 and 2018, the number of children dying before their fifth birthday fell by half, while childhood stunting fell by two per cent per year.[9]

Essential health services have been resilient and often have improved even in insecure areas which have recorded increases in drug availability, provider knowledge, patient counselling, and functioning equipment.[10] Even so, access to healthcare remains low.[11] Over the period 2000-2015, only 59 per cent of women received antenatal care from a skilled provider for their most recent birth, and only 53 per cent of births were protected against neonatal tetanus. Less than half of births take place in a health facility and around three-quarters of women in poor households give birth to babies at home. Less than half of children age 12-23 months were fully vaccinated. Written records or mothers' reports of birth weight were available for only 14 per cent of live births in the 5 years before the survey – of whom 17 per cent had a low birth weight. Only 43 per cent of infants under age six months are exclusively breastfed and only 16 per cent of children age 6-23 months meet the minimum acceptable diet standards with respect to infant and young child feeding practices. This contributes to high levels of malnutrition – wasting is 10 per cent, stunting is 41 per cent and proportion of underweight children is 25 per cent.[12]

A more general problem for many children is that their births have not been registered with the government. In 2015, only 42 per cent of children under age five had their births registered. Unregistered children can be denied access to basic social services including education and health care. Often belonging to poor and socially disadvantaged communities, such children are at greater risk of being trafficked, or forced into early marriage or child labour. And in later life, an unregistered adult may struggle to obtain a passport, get a formal job or open a bank account.

Food insecurity and malnutrition

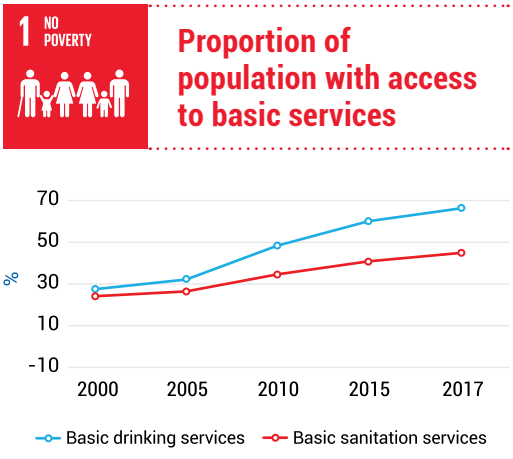
Child nutrition is affected by overall food insecurity for households. According to the World Food Programme, 9.3 million people (one-third of the population) are food insecure. Of these, 3.4 million are severely food insecure and another 5.9 million are moderately food insecure and unable to sustainably cope with shocks such as natural disasters or conflict. Many have been resorting to selling land or turning to friends or family for help.

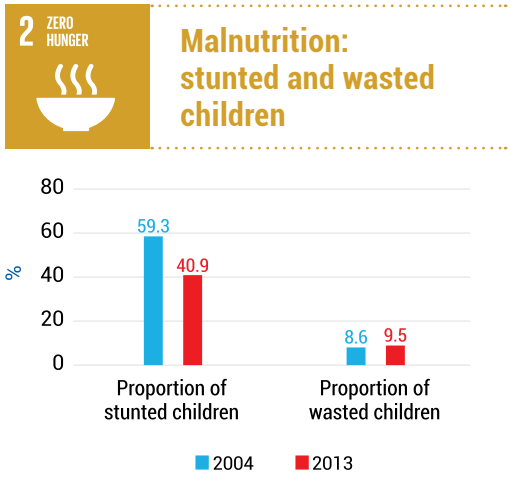
The situation has been exacerbated by the 2018 drought which has affected more than two-thirds of the population. This has cut incomes by half, caused serious health issues and prompted negative coping mechanisms.[13]

The level of food insecurity also has a gender dimension, since female-headed households are almost 50 per cent more likely to be severely food insecure than other households. As a result, women are twice as likely to use emergency coping strategies such as begging.[14,15] Food utilization is also generally poor as a result of inadequate access to proper water and sanitation services and inappropriate young child feeding practices.

Box 1-1. Selected Sustainable Development Goal indicators in Afghanistan

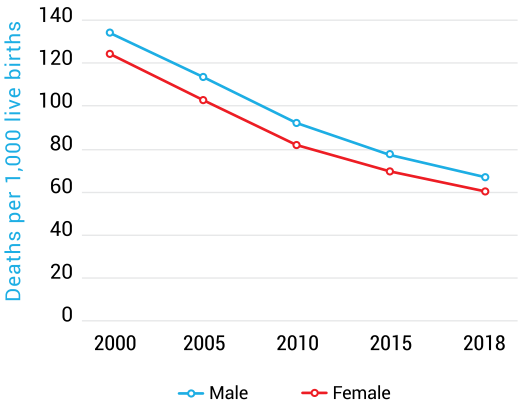
Afghanistan has made significant progress along many SDGs since 2000. Access to basic services and infrastructure has been rising steadily, while key education and health indicators are improving. Nevertheless, there is a long way to go. Moreover, some indicators are either stagnant or worsening, such as violence against women, number of victims of intentional homicide, the proportion of population living in urban slums, or the extent of water bodies. The graphs here show the snapshots or trends in selected SDG indicators.





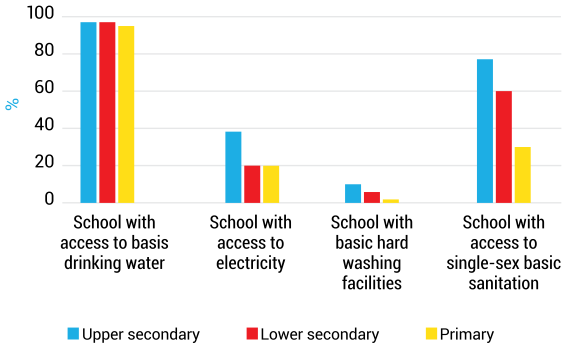
3 GOOD HEALTH AND WELL-BEING

Mortality rate of children under age 5, by sex



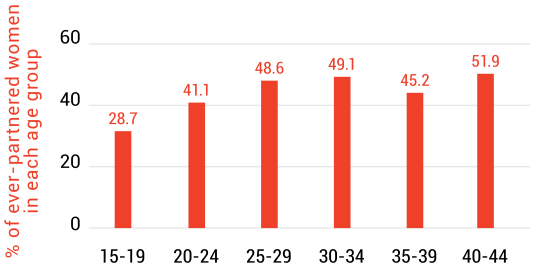
4 QUALITY EDUCATION

Quality of school facilities



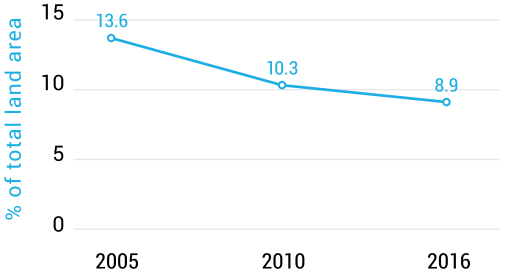
5 GENDER EQUALITY

Proportion of women subjected to physical or sexual violence, by age



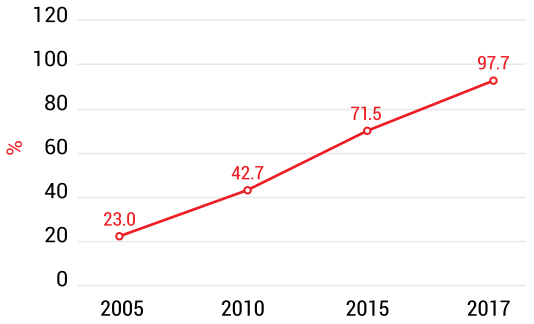
6 CLEAN WATER AND SANITATION

Permanent water body extent



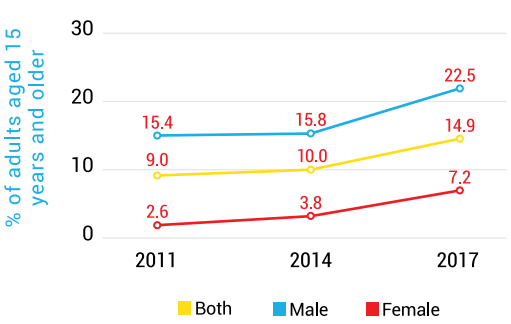
7 AFFORDABLE AND CLEAN ENERGY

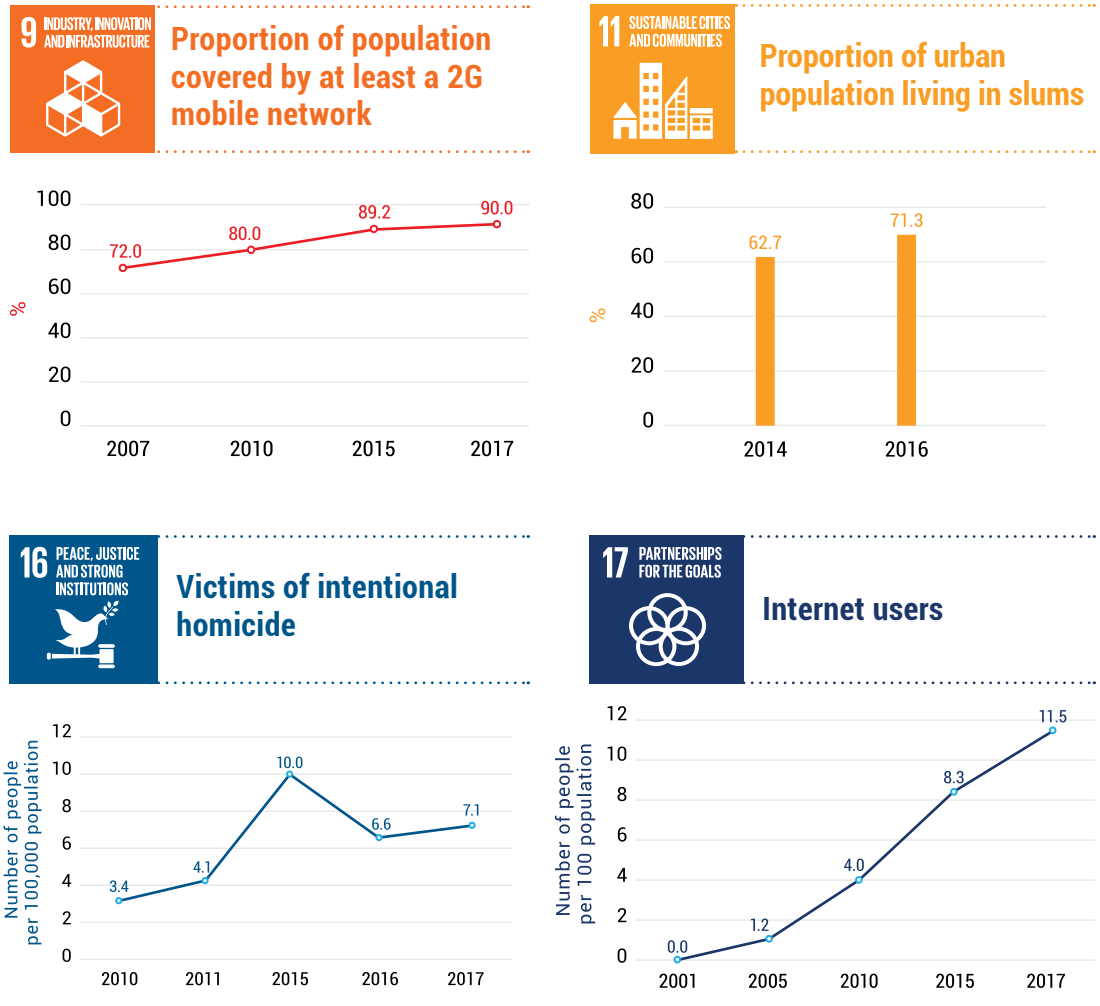
Proportion of population with access to electricity



8 DECENT WORK AND ECONOMIC GROWTH

Proportion of adults with an account at a financial institution or mobile-money-service provider





Source: UNDESA UN Statistics Division, n.d.

Low levels of education and literacy

Education standards are low, but slowly improving. They are still markedly lower for females than males. Between 2005 and 2016-17, adult literacy rose from 24 to 35 per cent, with youth literacy rising from 31 to 54 per cent. Of the estimated 9.7 million illiterate people of 15 years and over, 61 per cent are women and 39 per cent are men. Literacy tends to be highest in the east and lowest in the southern – mostly Pashtun – belt.[16]

There is no data for net enrolment in primary education, though gross enrolment is above 100 per cent. At the secondary level in 2017, net enrolment was 62 per cent among males but only 36 per cent among females. In 2018, the gross enrolment ratio in tertiary education was around 15 per cent among males but only five per cent among females.[17]

Education levels are low partly because of low spending on infrastructure, and inadequate schools. About 41 per cent of schools have no buildings, and many lack boundary walls,

water, and toilets – which particularly affects girls. Girls also suffer from social discrimination against female education. Schools also lack supplies and teachers, notably women teachers; many parents will not accept their daughters being taught by a man, especially as they become adolescents. Moreover, the quality of teaching is often low.[18]

Children can be kept away from school as a result of poverty or the need to work. Another obstacle for girls is child marriage: one-third of girls marry before the age of 18 and once engaged or married, many are compelled to drop out of school.[19]

Poor housing and infrastructure

Housing conditions remain poor. More than 80 per cent of people live in dwellings that are constructed with non-durable materials and 44 per cent live in conditions of overcrowding – with more than three persons per room. Almost three-quarters of urban dwellers live in slums or inadequate housing.

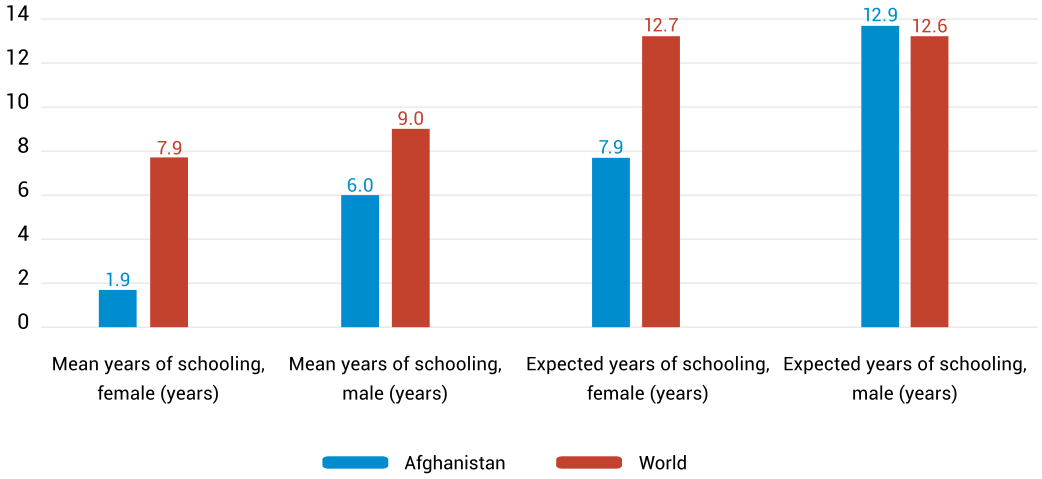
Recent years have seen improvements in access to clean water and adequate sanitation – though levels still remain low. Only around 36 per cent of the population use safely managed drinking water and only 41 per cent use safely managed sanitation services.

Almost everyone has access to electricity which is available for 98 per cent of the population. This is partly because of the rapid distribution of solar panels: between 2007-08 and 2016-17, the proportion of households with solar panels rose from 22 to 59 per cent.[20]

Road infrastructure has also improved in recent years. In 2016-17, 63 per cent of the rural population, including Kuchi, lived within two kilometres of an all-season road.[21]

A small village in the vicinity of lapis mines in Sar-e-Sang, Badakhsan province. Miners' housing doubles as living quarters and storage for lapis © Afghanite Company.

Figure 1-4. Expected and mean years of schooling, 2018



Source: *UNDP, n.d.*

Gender inequality

Women have made gains over the past 18 years. Between 2000 and 2018, female life expectancy rose from 57 to 66 years, but there are still large gender disparities and women have limited opportunities.[22] Maternal mortality rates are seven times higher than the global average.

In terms of education, female expected years of schooling increased from 0.6 years in 2000 to 7.9 years in 2018. However, the figure for mean years of schooling has been virtually stagnant, only increasing by 1.1 years since 2000.[23] Nevertheless, there are achievements with respect to increasing female education enrolment. For instance, while the share of females in all students enrolled in tertiary education is still low, the number of women enrolled in tertiary education increased by 70 percent between 2014 and 2018.[24]

Women also experience discrimination in the labour force. The female labour participation rate at 19 per cent is among the lowest in the world, since many families do not allow women to work outside the home. Many women who would otherwise be willing and able to work are not in the labour force and consequently are not counted in the unemployment rate. Only four per cent of managerial positions are occupied by women.[25] Table 1-2 presents selected gender parity indices in education and the labour market.

Table 1-2. Selected gender parity indices

Indicators	Gender parity index
Adult literacy rate	0.4
Youth literacy rate	0.6
Gross primary attendance ratio	0.7
Gross secondary attendance ratio	0.5
Gross tertiary attendance ratio	0.4
Labour force participation rate	0.3
Unemployment rate	1.6
Youth unemployment rate	1.5
Share of youth not in education, employment or training	1.8

Note: The gender parity index is calculated as the ratio between the values of a specific indicator for girls/women and boys/men. An index value ranges between 0 and 2. A value of 1 indicates exact gender equity and the further from 1 the parity index lies, the greater the gender disparity.

Source: Central Statistics Organization, 2018

Water shortages

Water supplies in Afghanistan are being threatened by a number of factors including melting of glaciers, and poor management of water resources leading to depletion of aquifers. Of particular concern is the erosion and pollution of soil as well as the depletion of water resources caused by mining and degradation of natural resources.

The Afghanistan Living Conditions Survey 2016-17 asked male and female household representatives, as well as Shura (Community Development Council) representatives about the most urgent needs that the government should address in their community. The biggest concern was drinking water, though this was more of a problem in rural than in urban areas, and particularly among the nomadic Kuchi.[26] The responses are unsurprising given that Afghanistan is one of the world's most water-stressed countries. Conflict and political issues have led to the neglect and even destruction of water-supply infrastructure. Future access to natural water is likely to be reduced by climate change and glacial retraction. Close to 85 per cent of Afghanistan's water is used by agriculture, so water shortages will seriously erode the livelihoods of farmers and add to political and social tensions. Rural residents remain extremely vulnerable to the impacts of drought, floods and other natural disasters, and desertification.

Multidimensional poverty

The usual measure of poverty refers to low incomes. However, people can be deprived in many other ways. A broader measure of poverty that incorporates such factors is the multidimensional poverty index (MPI). The Afghanistan MPI comprises 18 indicators across five dimensions: education, health, living standards, work, and shocks. People who experience deprivation in two or more of these dimensions fall into the category of multidimensionally poor.[27]

About 52 per cent of people in Afghanistan experience multidimensional poverty - living in deprivation in terms of education, health, living standards, work, and/or experiencing shocks.

Over half (52 per cent) of Afghanistan's people are multidimensionally poor. The urban multidimensional poverty rate is 18 per cent, whereas the rural rate is 61 per cent. Close to 89 per cent of the Kuchi population live in multidimensional poverty. The level of multidimensional poverty ranges from a low of 15 per cent in Kabul to a high of 86 per cent in Badghis province.[28]

The proportion of people who are multidimensionally poor is higher in Badghis largely because of poor access to social services, as reflected in differences in some of the components of the MPI indicated in Table 1-3.

An analysis of multidimensional poverty among children and other age groups reveals the following: [29]

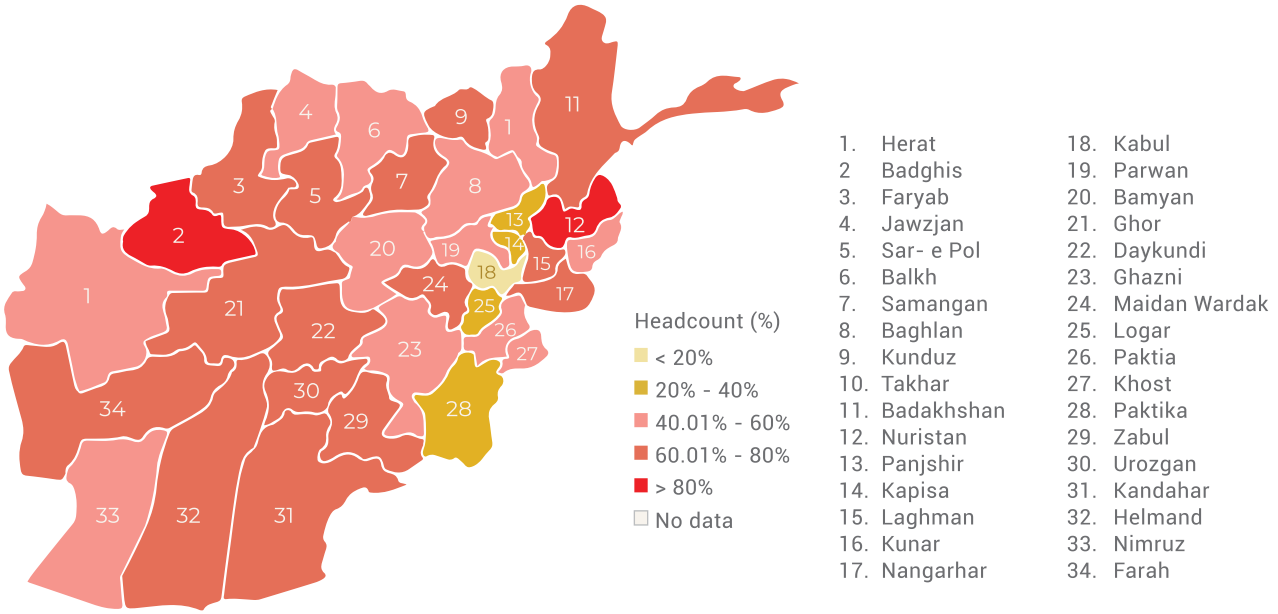
- More than half of children aged 0-17 live in multidimensional poverty.
- Multidimensional poverty is highest among children aged 0–9.
- The MPI is higher for children aged 0-17 compared to all the other age groups irrespective of the area they live in. The MPI goes up to 0.35 for children living in rural areas, while it is 0.11 for children in urban areas.

Table 1-3. Kabul and Badghis: Selected human development indicators

Indicators	Year	Afghanistan - national	Kabul	Badghis
Proportion of population that is multidimensionally poor (%)	2016-17	51.7	14.7	85.5
Under-five mortality rate	2015	55	36	67
Births attended by skilled attendant (%)	2016-17	53	88	11
Adult literacy rate (%)	2016-17	35	54	18
Youth literacy rate (%)	2016-17	54	74	25
Percentage of households using solid fuels	2016-17	74	11	95
Access to improved drinking water (%)	2016-17	64	97	28
Access to improved sanitation (%)	2016-17	42	50	18
Population practicing open defecation (%)	2016-17	14	1	19
Mobile cellular sets per 100 population	2016-17	21	35	12

Source: Central Statistics Organization, 2018; National Statistics and Information Authority (NSIA), 2019.

Figure 1-5. Multidimensional poverty index headcount ratio by province



Notes: k = 40%; k indicates the multidimensional poverty cut-off rate. This means, for example, that in Kabul, 23 percent of people experience deprivations in at least 40 per cent of the dimensions of multidimensional poverty – health, education, living standards, work and shocks.

Source: National Statistics and Information Authority (NSIA), 2019.

- In urban areas, more than 21 per cent of children aged 0–17 are multidimensionally poor as against 65 per cent of children in rural areas.

Increasing vulnerability of young people

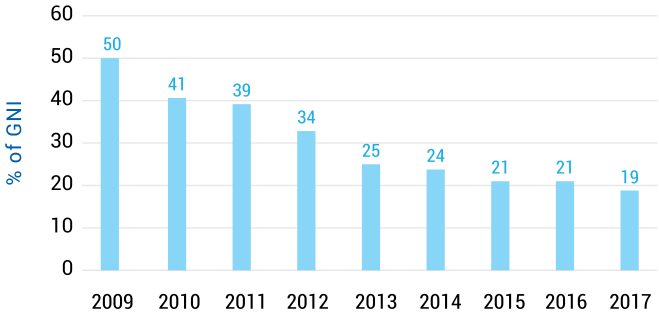
Around 64 per cent of Afghans are under age 25.[30] Young men in particular face extreme mental stress because in Afghanistan's patriarchal society they are expected to earn

and support the family – at a time of great insecurity when there are few jobs available. In mining areas, young men resort to jobs in illegal mines, many of which are owned by powerful warlords. Young men are also reported to have become the object of contest among the State and insurgents to join the armed forces. Meanwhile many young women in rural areas are not allowed either to go to school or to work outside the home.

Dependence on foreign aid

Afghanistan is one of the world's largest recipients of official development assistance (ODA), though there was a fall from a peak of $6.9 billion in 2011 to $3.8 billion in 2017.[31] As a consequence, per capita net ODA fell from $231 in 2011 to $107 in 2017. As a proportion of gross national income, it fell from 50 per cent in 2009 to 19 per cent in 2016 (Figure 1-6). Nevertheless, Afghanistan still depends heavily on donors. In the completed budget for March 2017-February 2018, nearly two-thirds of expenditures was funded through international donor support.[32]

Figure 1-6. Net official development assistance



Source: *World Bank, n.d.*

An acute humanitarian crisis

Fighting between anti-governmental and government forces has driven thousands of families from their homes. More than one million Afghans are internally displaced. The United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA) estimates that in the 106 most conflict-affected districts there are 17 million people, of whom 6.3 million have acute humanitarian needs (Figure 1-7).[33]

The main drivers of the humanitarian crisis – in addition to shrinking basic services – are armed conflict, forced displacement, and natural disasters.

Armed conflict – According to the United Nations Assistance Mission in Afghanistan (UNAMA),[34] close to 11,000 civilians were injured or killed in 2018 as a result of the armed conflict - the highest number of civilian casualties on record representing a five per cent increase over 2017, and an 11 per cent increase in civilian deaths as compared to 2017.[35] Among the dead were 927 children, the highest recorded number of boys and girls killed in the conflict during a single year so far. Also, there was a spike in the number of casualties by anti-government actors, mostly from suicide and complex attacks deliberately targeting civilians, that rose to 4,125 civilian casualties (1,404 deaths and 2,721 injured) in 2018 – the highest recorded so far and an increase by 48 per cent as compared to 2017.

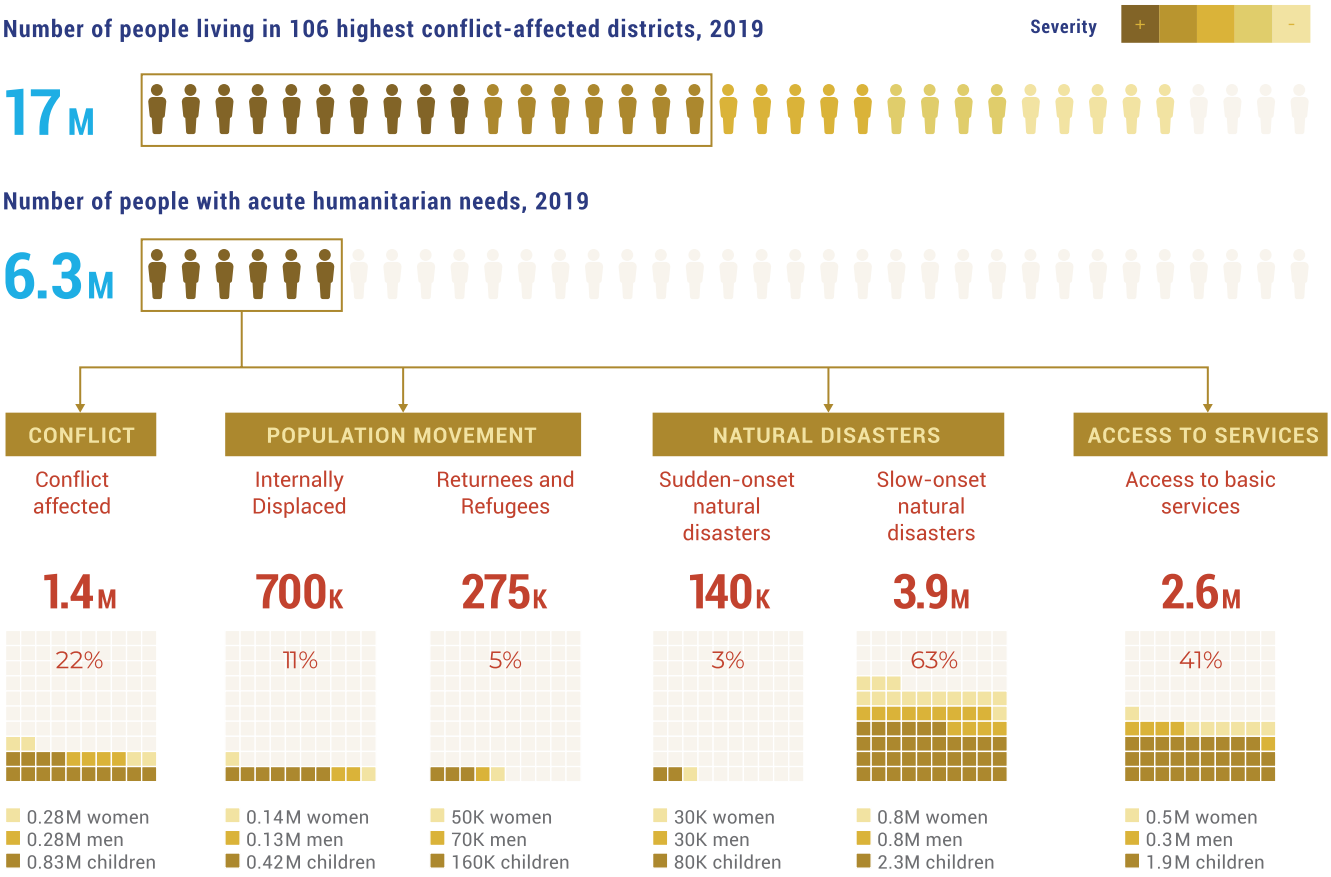
Forced displacement – Escalating violence, loss of livelihoods and limited access to basic services are forcing large numbers of people to migrate. Between 2007 and 2015, 200,000 to 300,000 Afghans migrated each year.[36] After the fall of the Taliban in 2001, six million Afghans returned. In 2016 alone, over 700,000 Afghans returned from Pakistan and Iran. Migration between the three countries is not new but the pace of return is causing major problems especially in cities such as Kabul and Jalalabad. This large-scale internal displacement and massive return have put added pressure on the delivery of public

services and increased competition for scarce economic opportunities, not only for the displaced, but also for the population at large.

Natural disasters – In 2018, drought affected more than two-thirds of Afghanistan, devastating agriculture and leaving some four million people in need of life-saving assistance. The drought unleashed a host of problems on already impoverished communities, reducing incomes by half, undermining people's health, and forcing them to sell property, borrow money or cope in other harmful ways. An additional 150,000 people were estimated to be in need of humanitarian assistance due to other, sudden-onset disasters, including avalanches, landslides and flash floods.

Water resources in Afghanistan are threatened by melting of glaciers and poor management. In 2018, drought affected more than two-thirds of Afghanistan, devastating agriculture and leaving 4 million people in need of humanitarian assistance.

Figure 1-7. Afghanistan's humanitarian crisis

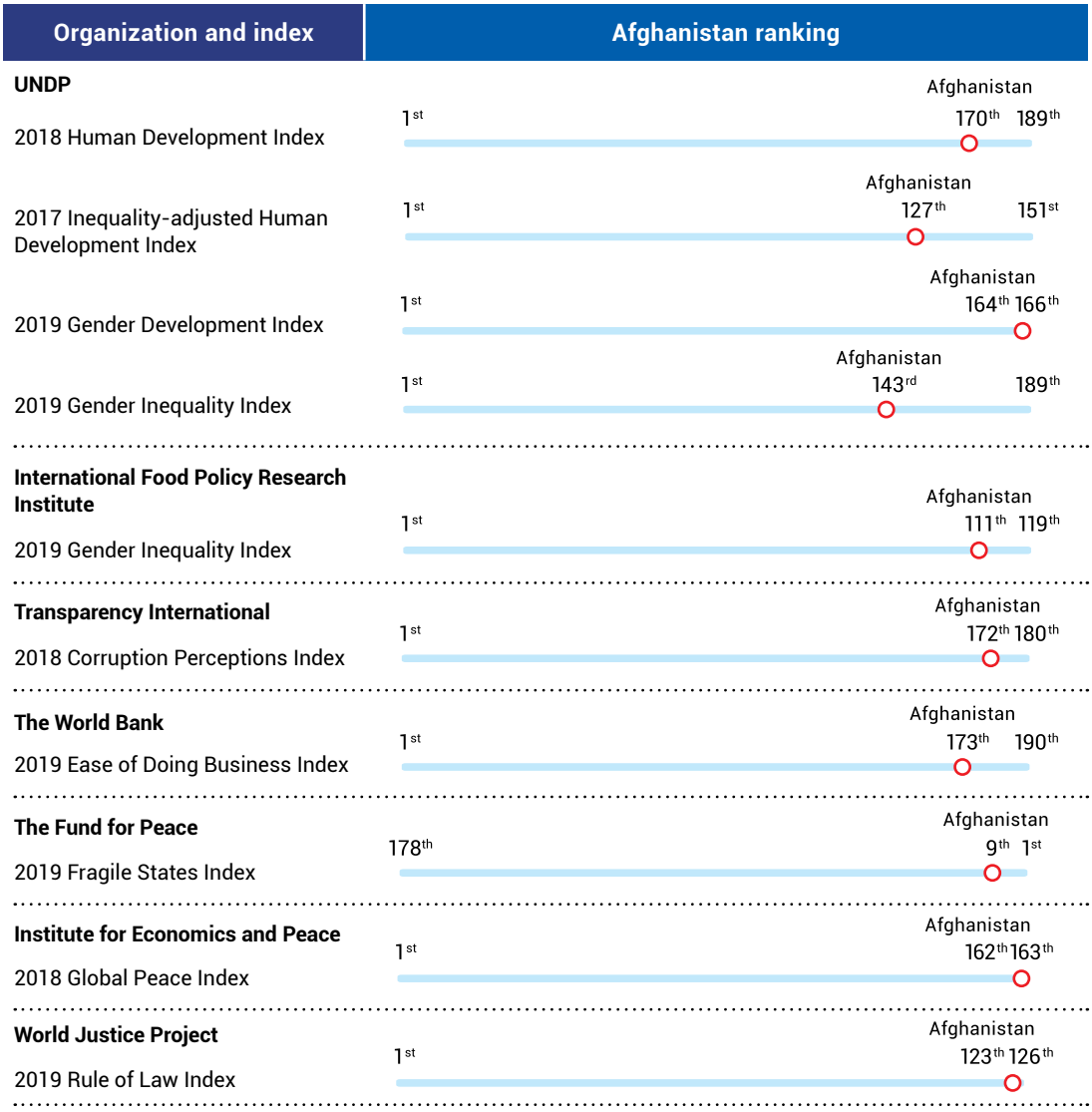


Source: UNOCHA, 2019

Box 1-2. Afghanistan's rankings

Afghanistan has low rankings on social and economic indices produced by international organizations.

Figure 1-8. Afghanistan's rankings globally



The peace priority

Clearly, achieving higher levels of human development will depend on ending the conflict and sustaining peace and on stepping up investments in enhancing living standards.

Some of the finance could come from tapping the rich potential of Afghanistan's extractive industry. But the State can succeed only if there is strong political commitment to build sufficient capacity to manage and regulate the extractive industry, while expanding livelihood and other opportunities.

The chapters that follow explore the potential as well as the challenges that Afghanistan will face in harnessing the extractive industry for human development.

[1] World Bank, n.d.

[2] Central Statistics Organization, 2018.

[3] Chaudhuri, S., 2018.

[4] As above.

[5] Central Statistics Organization, 2018.

[6] As above.

[7] The Afghanistan Living Conditions Survey 2016-17 defines (i) Underemployed as persons working hours of work that are insufficient in relation to an alternative employment situation in which the person is willing and available to engage (time-related underemployment). The Afghanistan national time-criterion is working less than 40 hours; and (ii) Unemployed as all persons aged 14 and over who during the reference period of one week were: a. without any work or working less than eight hours, and b. seeking work. The unemployed include persons not working who are not seeking work because of being discouraged in finding any (the 'relaxed unemployment' definition).

[8] Central Statistics Organization, 2018.

[9] World Bank, n.d.

[10] World Bank, 2019a.

[11] Central Statistics Organization, 2017.

[12] As above.

[13] UNOCHA, 2018.

[14] World Food Programme (WFP), 2015.

[15] Food and Agriculture Organization (FAO), 2015.

[16] Central Statistics Organization, 2018.

[17] UNESCO, 2019.

[18] Human Rights Watch, 2017a.

[19] Human Rights Watch, 2017b.

[20] Central Statistics Organization, 2018.

[21] Central Statistics Organization, 2018.

[22] UNDP, n.d.

[23] Same as above.

[24] UNESCO, n.d.

[25] Central Statistics Organization, 2018.

[26] As above.

[27] The poverty cut-off, or k-value of multidimensional poverty was set at 40 per cent, which is equivalent to being deprived in two or more dimensions of multidimensional poverty. National Statistics and Information Authority (NSIA), 2019.

[28] National Statistics and Information Authority (NSIA), 2019. Previously, known as the Central Statistics Organization.

[29] Same as above.

[30] UNFPA, n.d.

[31] World Bank, n.d.

[32] Oxfam and Swedish Committee for Afghanistan, 2018.

[33] UNOCHA, 2019.

[34] United Nations Assistance Mission in Afghanistan (UNAMA), 2019.

[35] UNAMA, 2018.

[36] UNOCHA, 2015.

Chapter 2

A wealth of minerals

Afghanistan is richly endowed with mineral and hydrocarbon resources. At present, these contribute little to the economy or the society. This is mainly because they remain in the ground or are unexplored, but also because most of the current mining and trade is informal and illegal. The formal extractive industry is nascent. If the country is to unlock the potential of its mineral wealth the Government and other stakeholders will need to ensure peace and security, improve governance and gain greater capacities to manage mineral resources.

Afghanistan has extensive mineral and hydrocarbon resources. The first systematic geological explorations of mineral deposits were initiated by the government in the 1960s and 1970s with technical and financial assistance from the Soviet Union. Detailed geological maps and reports listed more than 1,400 mineral outcroppings, along with about 70 commercially viable deposits. Since 2002, the government has received substantial technical assistance from the US and UK geological agencies and in 2009-2011, funded by the US, the government carried out a major mineral assessment, systematizing prior geological surveys and conducting new fieldwork in 24 areas of interest.[1]

These surveys indicate rich and diverse mineral and hydrocarbon resources:

Metals – Ferrous and non-ferrous metals found in Afghanistan include copper, lead, iron, chromium, and zinc. One hundred occurrences of ferrous metals have been recorded, as well as 112 sites with gold in the north-eastern and central-eastern parts of the country.[2] Chromite deposits are being mined in several provinces surrounding Kabul, such as Nangarhar, Kapisa, Parwan, Logar, Maidan-Wardak, and further to the north-east, in Badakhshan and Panjshir. The largest explored deposits of metals are the Aynak copper deposit and the Hajigak iron ore deposit. Aynak is estimated to contain 240 million tonnes of copper ore with a grade of 2.3 per cent.[3] Hajigak is reported to contain 1,700 million tonnes of iron ore with an average grade of 61 per cent, though the reserve estimate for the most explored area is 85 million tonnes.[4]

Rare earths – Afghanistan also has many rare earth elements, such as lithium, strontium, barium, beryllium, niobium, and tantalum, with wide-ranging applications for manufacturing mobile phones, laptops, electric vehicles, batteries, precision tools, optics, medical equipment, satellites, aircraft, missiles, tools and pipelines in the oil industry.[5]

Precious and semi-precious stones – Several provinces have precious stones such as emeralds and rubies, as well as semi-precious stones including spinal, sapphire, tourmaline, aquamarine, kunzite, topaz, turquoise, afghanite, garnets, fluorite, amethyst, and varieties of quartz and lapis lazuli.

Mineral rocks and industrial minerals – Marble, onyx, alabaster and granite are quarried around the country, especially in the south and west.[6] There are 66 different deposits of marble and granite.[7] Mineral hunters have also discovered highly prized blue, maroon, white, orange and green onyx (travertine).[8] Talc is mined in the eastern part of Afghanistan where there is naturally occurring talc (steatite) of exceptionally high quality.[9]

Energy resources – These include natural gas, petroleum, uranium and coal. Five major sedimentary basins have petroleum potential: the Amu Darya basin and the Afghan-Tajik basin in the north, the Tirpul basin in Herat province in the west, the Helmand basin in the south, and the Katawaz basin in the south-east. Of these, the Amu Darya and Afghan-Tajik basins have been the most explored. The most recent assessment in the 2000s by the U.S. Geological Survey together with the Afghanistan Geological Survey identified a potential for 0.2 billion tonnes of crude oil, 0.4 trillion cubic metres of natural gas, and 0.8 billion tonnes of natural gas liquids.[10] In addition, there is a large number of coal deposits.

Large-scale extractive projects

Some mineral and hydrocarbon deposits are poised for large-scale commercial development. These include the Mes Aynak copper deposit, the Hajigak iron ore deposit, and selected oil blocks in the Amu Darya basin. However, new projects are largely stalled.

Mes Aynak – This is a large copper deposit in Logar province near Kabul. In 2008 a consortium of two Chinese companies made an initial investment agreement with the Government of Afghanistan.[11] But its development has been delayed. One reason is that a vast complex of archaeological sites of tremendous historical and cultural value overlays the deposits. The conservation of the archaeological findings should be considered in plans for Aynak mine development, and the conservation works appear to have played a role in the delay of the mine development. However, other factors may have also played out in the delay, such as insurgent attacks on the mining camp and lower prices of copper on international markets.

Hajigak – A contract for development of the Hajigak iron ore deposit in Bamiyan province remains unconcluded – hampered by conflict and insecurity, weak governance and poor infrastructure. In addition, the lower prices of minerals and fuels on international markets may have reduced investor interest.

Amu Darya oil and gas – In 2012, the China National Petroleum Company won a contract for oil extraction from three blocks in the Amu Darya Basin.[12] But the volume of oil production has been limited – as of 2015, reported at 0.37 million barrels.[13]

Existing large-scale extractive projects are mostly limited to those run by state-owned enterprises established in the 1970s with Soviet assistance: the Afghan Gas Enterprise and the Northern Coal Enterprise. Despite reduced capacity, Afghan Gas Enterprise is a large producer – it produces around 147 million cubic metres of natural gas annually from the Amu Darya basin,[14,15] primarily supplying gas to another state-owned enterprise, the Kod-e-Barq fertilizer company, and Shebergan city.[16]

Small-and medium-scale mining

Other mining activities in Afghanistan range from small-scale, artisanal mining to medium-scale mining. As of November 2018, there were 161 small-scale and six medium-scale mines with active contracts (licenses), and additional 660 mines with expired or cancelled contracts.[17] However, there is much more mining carried out without official contracts.

In Afghanistan, small-scale mining has been carried out since ancient times. Gemstones have been extracted for at least 6,500 years. Lapis lazuli, for example, has been mined in the Hindu Kush since the Neolithic period, for transporting along the ancient trade routes to Mesopotamia, Ur, Egypt and India (Box 2-1).

Box 2-1. Afghanistan's lapis lazuli in history

Lapis lazuli from Afghanistan is one of the best-known minerals in the history of art and architecture.[18] Although lapis exists in other parts of the world, lapis from Afghanistan is considered to be of the finest quality. Currently, of the seven lapis lazuli deposits that have been mined historically in Afghanistan, only one is mined – Sar-e-Sang in the remote reaches of the Hindu Kush mountains in Badakhshan.

The unique fingerprint of Afghan lapis has been found in thousands of artefacts in archaeological sites in the cradles of the ancient world. They included those in the Bronze-Age Harrapan civilization, Mesopotamia, ancient Egypt and China. There are also artefacts dated to later civilisations and empires: Greece, the empires of Persia and Alexander the Great, the Roman Empire, the Byzantine Empire, the Muslim realm, the Hindu realm, the medieval city-states of the Renaissance (Venice, Genoa, Florence, Amsterdam, Ghent), and the British Empire and the Russian Empire. Technological advances have allowed collectors to trace the origins of these artefacts to lapis lazuli from Badakhshan in Afghanistan, rather than lapis from other locations. Some of the most famous works of art were made with Afghan lapis – the crown of king Tutankhamun in Egypt, the inlay work of the Taj Mahal in India, and the paint of the ceiling of the Sistine Chapel in the Vatican. Renaissance painters such as Leonardo da Vinci and Michelangelo used paint made from lapis. More recently, magnificent new mosques in Mecca and Abu Dhabi have inlay work made with lapis from Afghanistan.

Sources: See, for instance, Grayson, R., 2017

There is also evidence of silver mining in Panjshir in 1100-1165 AD, for sale to the Arab world and Europe.[19]

The legal framework in Afghanistan provides for artisanal mining, but in practice, the State has limited capacity to register and regulate it. Thus, artisanal mining is undertaken without formal contracts (licenses). Illegal extraction of gold, for example, is reported in Badakhshan, Takhar, Ghazni and Maidan-Wardak provinces.[20] There are reportedly 15 sites of illegal extraction of emeralds in Panjshir province.

However, there is also a variety of legally operating small- and medium-scale mines and mineral processing enterprises. For instance, about 60 marble quarries and 14 talc mining or integrated talc mining-processing companies operate in Afghanistan.[21] Value chain studies commissioned by MoMP with EU funding, focusing on specific subsectors, identify a significant growth market potential, but also large barriers for enterprises at every step of the value chains.[22]

Mineral processing

Despite the exceptional quality of many Afghan minerals, Afghanistan's mineral processing businesses struggle to compete with those in Pakistan, China and Iran. There are, however, a number of mineral-processing factories – for example, of onyx and talc – that have been established in the past 10 years following the boom in these minerals. There are also around

3,000 'jewellery villages' with small artisanal workshops that employ about 70,000 people, most of them women.[23]

These mineral processing factories and workshops face many problems. Without reliable access to energy and with poor quality roads, the cost of doing business in Afghanistan is significantly higher than in Pakistan. Processing industries are hampered by the poor quality and the perception that they use 'conflict minerals'. There are also technological issues: China now has more-efficient mineral processing factories and is manufacturing artificial blocks of marble and onyx, so that Afghan businesses are finding it even harder to do processing. Afghan businesses also face high insecurity and may be paying double or even triple taxes.

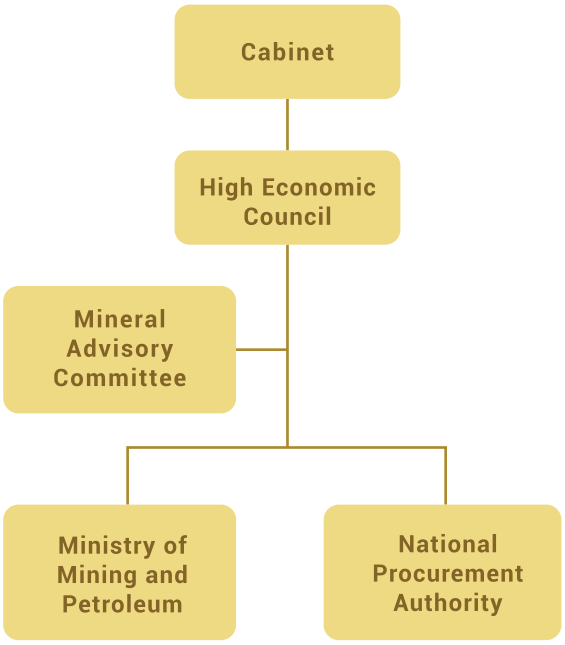
Regulation of the extractive sector

In Afghanistan, the extractive sector is governed by two key documents: the Mining Roadmap 2017 and the Minerals Law 2018.

The Mining Roadmap 2017 sets out a strategy for improving the performance of Afghanistan's minerals and hydrocarbon sector. The strategy prioritizes mineral activities in the mineral sub-sectors and areas of interest and is thus primarily geared towards large-scale extraction. It defines the strategy and measures for improving the performance of Afghanistan's minerals and hydrocarbons sector across five key areas: (1) prioritizing mineral interventions, starting with construction materials, then industrial metals, then precious metals, and lastly, bulk mineral in 24 'areas of interest'; (2) implementing institutional reform at the Ministry of Mining and Petroleum; (3) reforming the tendering process; (4) ensuring service delivery for communities, and (5) ensuring that mining revenues contribute to macro-fiscal sustainability. It also identifies areas for strengthening the legal framework.

The Minerals Law was initially adopted in 2009, and subsequently revised in 2014 and 2018. The 2018 revision reflects recommendations in the Mining Road map and sets out the procedures for bidding, surface rights, royalties, and compensation and also addresses environmental and social protection. For minerals, it provides five classes of contracts (licenses): reconnaissance, exploration, exploitation, small-scale mining and artisanal mining. It also includes provisions regarding corruption, transparency, and non-involvement of State persons in mining.

Figure 2-1. Decision-making institutions in the extractive industry



Source: Based on Afghanistan, Minerals Law of 7 June 2018.

The 2018 Minerals Law clarifies the roles and responsibilities of the Cabinet and the High Economic Council established under the Cabinet. The Council addresses these areas: decisions concerning lower bodies of extractive sector governance; determination of mining areas, contracts and licenses; model contracts;

exports of minerals; and dispute resolution (Figure 2-1). The law also established the Minerals Advisory Committee composed of five independent experts, replacing the Inter-ministerial Committee under the previous law. The law also designates involvement of the National Procurement Agency in the process of bidding for mining contracts. The recent revision of the royalty rates in the Minerals Law abolishes the previous bidding-based system of royalties which had encouraged corruption and collusion between politicians and officials to get mining licenses.[24]

The government has started drafting regulations under the 2018 Minerals Law and has begun issuing new contracts. Civil society organizations and others consider that effective implementation will depend on ending corruption, strengthening government capacity, and ensuring that the industry complies with international standards.[25]

The main policymaking and regulatory institution for the extractive industry is the Ministry of Mining and Petroleum (MoMP).[26] The Ministry's long-term goals are to establish effective governance of natural resources, provide jobs, and grow the economy, while encouraging private investment in the minerals and hydrocarbon sectors. It also aims to improve the government's capacity and revenues.

MoMP has several sub-agencies. These include the Afghanistan Geological Survey, the Afghanistan Petroleum Authority, and the General Directorate of Oil and Gas Survey. Other institutions relevant to the extractive industry include: the Ministry of Finance; the Ministry of Commerce and Industry; the National Environmental Protection Agency and the Environmental and Social Advisory Board; the Afghanistan Independent Land Authority; and the Afghanistan Investment Support Agency. However, these ministries and agencies have not previously coordinated very effectively, and even less so now that the 2018 Minerals Law has removed the role of the Inter-ministerial Committee. Key coordination problems between government agencies included those between MoMP and NEPA, as well as coordination between central and subnational government authorities.[27]

In 2018, the government adopted the Artisanal and Small-scale Mining Formalization Strategy and formed the Coordination Directorate of Mines Protection Committee to curb illegal mining.

Expectations from large-scale extractive projects

In 2010, the Task Force for Business and Stability Operations of the US Department of Defense estimated the monetary value of Afghanistan's mineral resources at nearly $1 trillion[28] – a figure that made headlines in Afghanistan and the international media.[29] The Ministry of Mining and Petroleum suggested the value should be nearer $3 trillion.[30] These are enormous sums when compared with the size of Afghanistan's economy or the government's fiscal revenues. However, $1 trillion worth of minerals under the ground does not translate into $1 trillion flowing to the economy or the treasury of the Government of Afghanistan.

US$1 trillion worth of minerals under the ground does not translate into $1 trillion flowing to the economy or the treasury of the Afghanistan Government. Unrealistic expectations can falsely raise the stakes and aggravate contestation for mineral-rich territories or the control of the State.

The government and stakeholders in Afghanistan have high expectations about fiscal revenues and other potential development benefits to be brought by Mes Aynak and other large mining, oil and gas projects. However, unrealistic expectations can falsely raise the stakes and aggravate contestation for mineral-rich territories or the control of the State. False expectations can also worsen security at the local level, as in the absence of large benefits, local residents can take violent action against mining, oil and gas projects.

The above estimates appear to be the result of simply applying current market prices to the 'gross in-place value' of total mineral resources.[31] This is some distance from what the mining companies could actually extract and sell, and even further from what the government could expect in revenue (See Box 2-2).

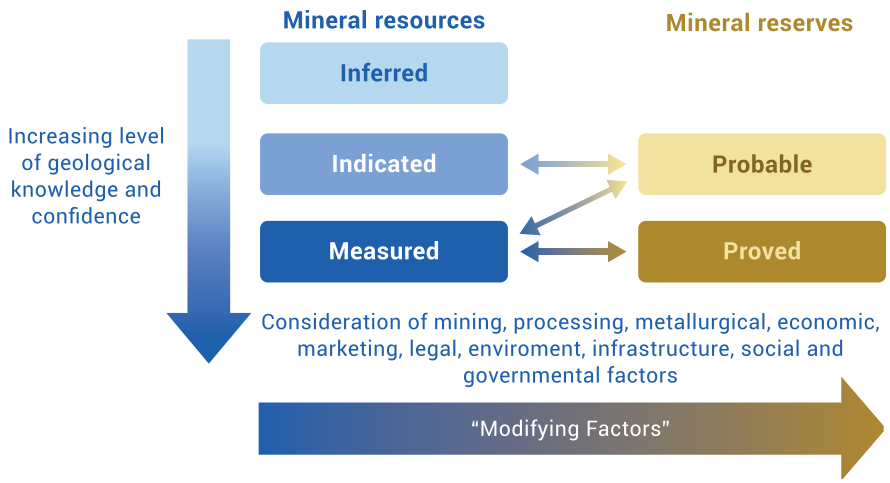
Overall, the extractive industry in Afghanistan and particularly the development of large-scale projects should produce a number of benefits. The extractive industry in Afghanistan and

Box 2-2. From mineral resource in the ground to the government treasury

There is a large difference between the value of the mineral resource in the ground and the fiscal revenue that it can ultimately bring.

This can be appreciated by considering the international classification of mineral resources into resources and reserves (Figure 2-2).[32] A resource is a concentration of minerals for which there is a reasonable prospect of economic extraction. Mineral resources do not take into account losses during the mining process, they are the amount of minerals that are located underground. Reserves – the economically mineable part of mineral resources after accounting for losses of minerals during mining - are further classified into probable and proven.[33] Generally, it is the amount of reserves that companies use for making feasibility studies and raising finance. Therefore, estimations of prospective mineral production and, consequently, prospective fiscal revenues from mining, should be based on the value of mineral reserves.

Figure 2-2. International classification of mineral resources



(Continued on page 34 ›››)

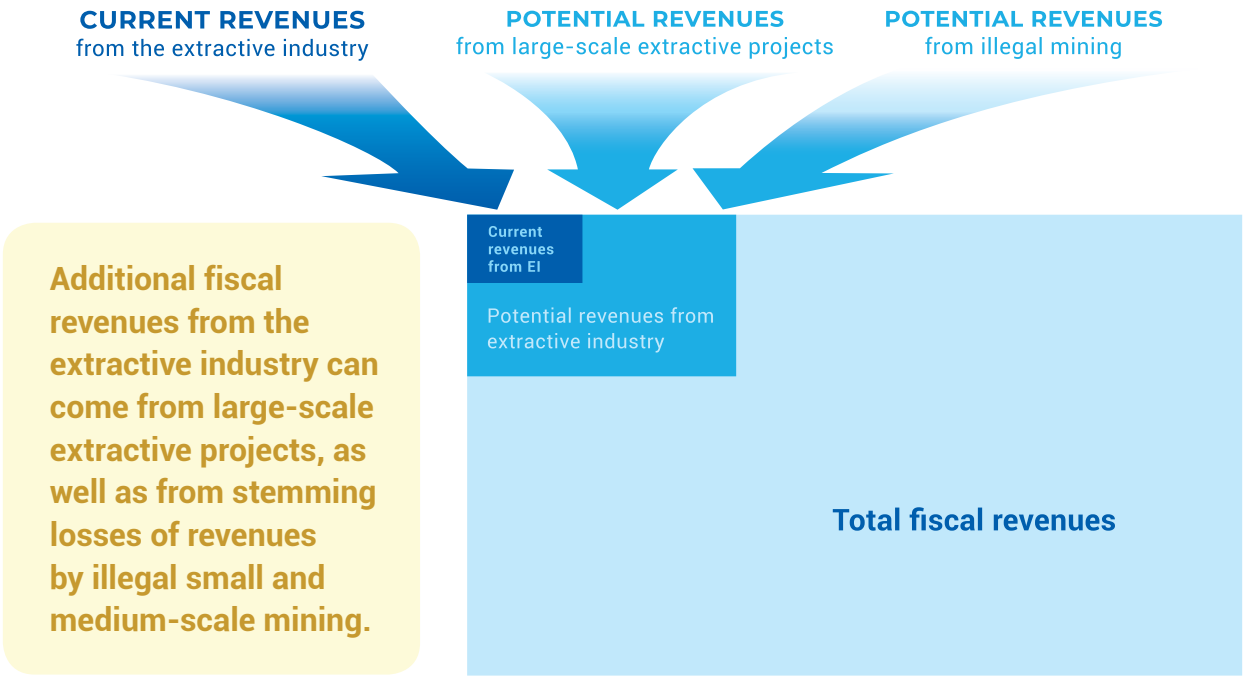
particularly the development of large-scale projects should produce a number of benefits. These should include higher fiscal revenues, development of infrastructure, increased opportunities for local businesses, job creation and a stimulus to local development. However, there are also potential costs, including greater environmental damage, displacement of communities, and the danger that the benefits are not equitably shared with communities – which would aggravate conflict and insecurity. Overall, while Afghanistan needs investments and the fiscal revenues from large extractive projects, the country also has to assess the benefits and risks from these projects in an integrated fashion – considering not only the fiscal revenues, but also broader economic, social and environmental impacts.

Some indication of what can be expected from Mes Aynak can be gleaned from the experience of two large-scale projects in other countries in the region: the Sepon copper mine in Lao PDR, where production started in 2002, and the Oyu Tolgoi copper mine in Mongolia, which started producing in 2013 (Box 2-2). Like Mes Aynak, these are among Asia's largest mineral deposits. They too were high-stakes projects for the governments of Lao PDR and Mongolia and have provided their single most important sources of government revenues.[34] A detailed comparison is shown in Annex 3.

Government revenue from the extractive industry

The most tangible and significant benefit of the extractive industry is fiscal revenues. Fiscal revenues currently collected from the sector are negligible, but can be increased substantially, although will still likely constitute a small fraction of overall fiscal revenues in the years to come. Additional fiscal revenues from the extractive industry can come from large-scale extractive projects, as well as from stemming losses of revenues by illegal small- and medium-scale mining (Figure 2-3). To ensure that these prospective revenues from the extractive industry are realized, some preconditions should be met.

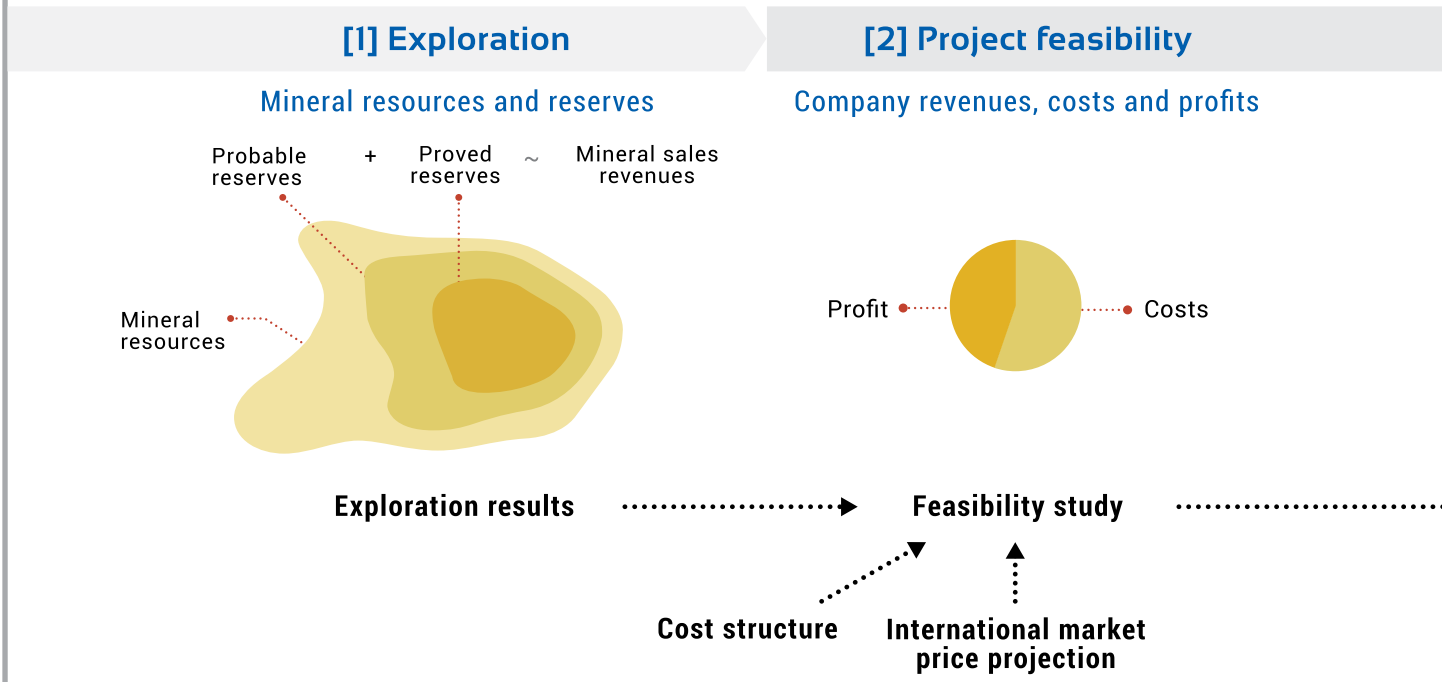
Figure 2-3. Current and potential revenues from the extractive industry



Note: Sizes of figures are hypothetical

››› Box 2-2 (continued from page 32)

Figure 2-4. From mineral resources to fiscal revenues



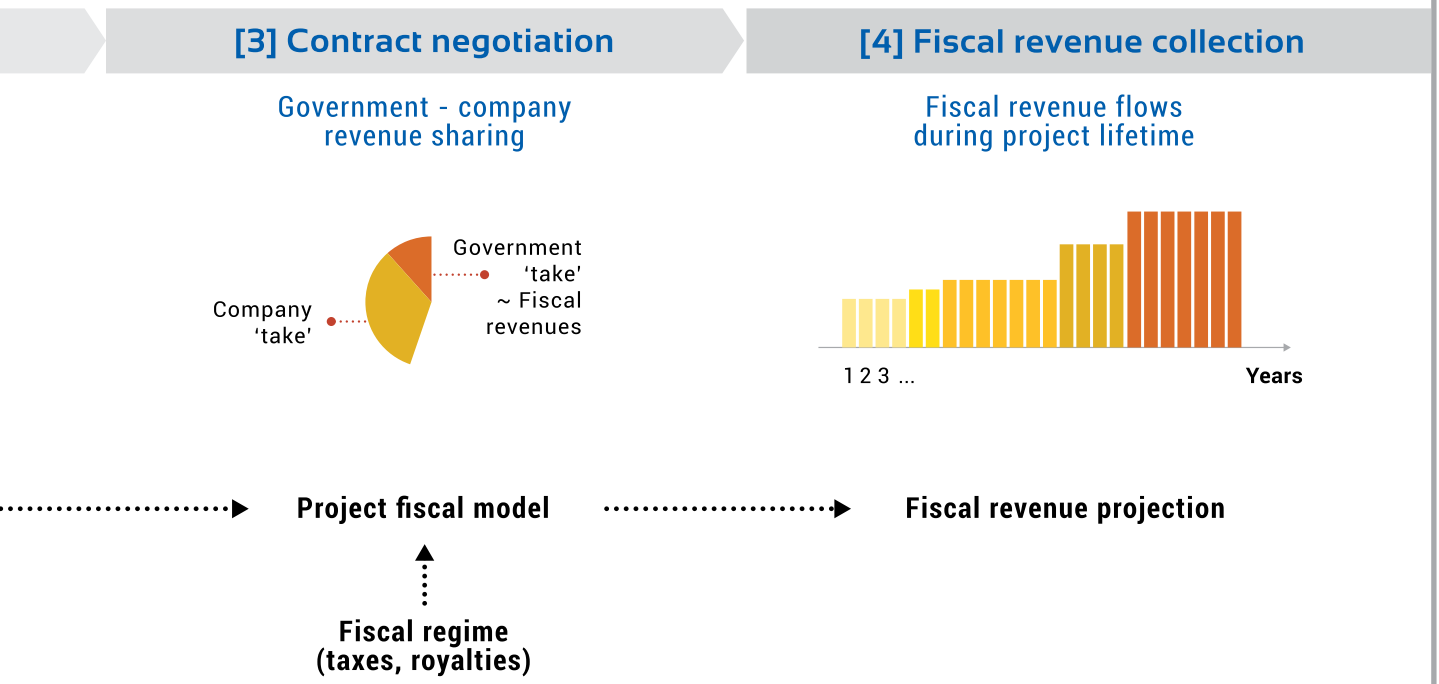
The chain from mineral resources to fiscal revenues is illustrated in Figure 2-4. At the **exploration stage (1),** mineral resources in the ground, as well as mineral reserves are estimated. Within the reserves, it is more realistic to consider proven reserves. These estimates will depend on international prices at which minerals can be sold. A seemingly small fall in the price of the mineral can reduce the revenues – and thus the value of a large mineral deposit – by hundreds of millions of dollars.

At the stage of **project feasibility** studies **(2)**, companies estimate project revenues, costs and profits. A large share of the revenues earned from the sales of minerals will be absorbed by the cost of capital and by operating costs such as equipment, energy and transportation. In most cases investors also need to borrow, incurring interest costs. These capital, operational and financing costs are deducted from revenues to estimate profits.

In many less-developed countries, a project-specific fiscal regime (tax and royalty) scheme is set up for large-scale extractive projects through **contract negotiations (3)**. A government typically gets only a share of the company's total revenues or pre-tax profits – in the form of taxes, royalties and various fees, called the government 'take'. The remainder of the profit goes to the company and is called the company 'take'.

Large-scale mining, oil and gas deposits are mined over decades. Thus, the **fiscal revenues (4)** to the government are also spread over many years. Revenues in a single year will thus be a fraction of total fiscal revenues and can be estimated by doing fiscal revenue projections. Due to the high capital costs invested in the project in the beginning, investors and lenders typically try to recover their investments and loans early in the project, which means taxable profits tend to be smaller in the early years.

Consequently, fiscal revenues received by a government from a mega-mining, oil or gas project are usually only a small fraction of the estimated in-ground reserves, especially in the early years.



An illustration with figures from Oyu Tolgoi mine in Mongolia shows the scale of the difference between mineral resources in the ground and fiscal revenues received (Figure 2-5). A simplistic estimation of the value of in-ground mineral reserves and resources of Oyu Tolgoi (as of 2015) would have been about $279-359 billion, of which company revenues over the life of the mine are estimated to be $90 billion. Government revenues over the life of the mine have been estimated at $11 billion. However, the actual fiscal revenue received by the Government of Mongolia over 11 years from 2006 to 2016 was $1 billion – averaging $95 million a year.[35]

Figure 2-5. Oyu Tolgoi copper mine in Mongolia: Mineral resources and prospective fiscal revenues during the life of the mine

Notes:

Mineral resources and reserves value estimated based on measured, inferred and indicated copper and gold resources, and proved and probable reserves of Oyu Tolgoi from Rio Tinto, 2015, pp.218 and 222; and using 2015 forward prices and 2016 futures prices, from Open Oil, 2016, pp.15-16.

Gross sales revenues, costs, company 'take' and government 'take' show projections taken from OreWin, 2014, Tables 22.5 and 22.9, figures for the lifetime of the project. The government 'take' is calculated as the sum of royalty, government fees and charges and income tax. The company 'take' is calculated as gross sales revenues less capital and operating costs and the government 'take'.

Sources: Rio Tinto, various years; OreWin, 2014; Open Oil, 2016.

First, it will be important to attract foreign investment, since Afghanistan's economy cannot yet generate financial resources on the scale required to develop the country's large-scale mineral and hydrocarbon deposits. Taxation policy will therefore be a balancing act. On the one hand, the government should ensure a fair share of the revenues for Afghanistan – to compensate for the negative impacts of extraction and to enable greater investment in development. On the other hand, the tax regime also has to be sufficiently attractive to investors, taking into account that they will be taking extra risks in an environment of conflict and instability.

Second, "leakages' of taxes and other fiscal revenues through illegal mining should be minimized by identifying sources of these leakages and taking actions to close them. Currently, much of the small- and medium-scale mining[36] in Afghanistan is informal and/or illegal, with tax-like payments going to insurgents and corrupt officials.

Raising certainty about future fiscal revenues

With greater certainty and more realistic expectations, the Government of Afghanistan will be better able to manage and invest its fiscal revenues. The government can reduce uncertainty by facilitating more extensive mineral and hydrocarbon exploration. After mineral reserves are proven, independent financial analysis (fiscal model) should be undertaken for each large-scale extractive project to estimate the fiscal revenues to accrue to the government with greater certainty.

A primary consideration for the government is to ask how much of the proceeds from extractive projects goes to the government – in the form of royalties, taxes, fees and in some cases, dividends (collectively referred to as the 'government take') and how much goes to the company (the 'company take'). In countries with limited or no experience of hosting large extractive projects, governments may either get too little or try to get too much. Both situations are undesirable. Too little government 'take' will reduce opportunities to invest in human development and the government may subsequently be tempted to renegotiate the contract and the embedded fiscal regime, which could destabilize the project. But if the government tries to take too much, the project may not find investors, or agreed investments might not be realized – as investors wait for more favourable market conditions.

Getting it right requires a number of preconditions. The first is detailed explorations of the country's mineral, oil and gas deposits. Currently, none of the large mineral deposits in Afghanistan have had reserves estimated consistent with current international standards.

The second is that feasibility studies of large-scale extractive projects should be disclosed to the government. These estimates also need to be constantly updated. Even small changes in mineral prices, or estimates of reserves can have a big impact, translating into differences in the proceeds accrued to the government of millions or even billions of dollars.

The third is conducting an independent financial analysis (fiscal model, discussed above) for large-scale projects to improve the prospects of the government getting its fair 'take' while finding investors for a mineral or hydrocarbon project. The information on mineral reserves, prices of minerals and costs of the project which feeds into such analysis should be transparent and verifiable – disclosed by investors in accordance with international standards. This will help the government to negotiate the tax regime with large investors.

Another key consideration is about sharing of proceeds from the extractive industry between

the central and subnational governments. Currently, the Minerals Law provides for 5 per cent of fiscal revenues from large-scale mining and 8 per cent of revenues from small-scale mining generated from a province to be allocated back to this province for "economic, social and environmental development purposes".[37] Further issues should be considered in putting in place such natural resource revenue-sharing mechanisms, such as ensuring that subnational governments use these funds to meet their expenditure obligations, ensuring transparency in allocation and use of such revenues, incorporate flexibility or other measures to address issues of volatility of mining revenues, and addressing problems of equity between provinces and districts over time.[38]

Limited contribution by the extractive industry

The Constitution of Afghanistan states that natural resources belong to the State.[39] However, the State currently gets little benefit. Many of Afghanistan's large-scale mineral deposits remain unexplored, while most of those that have been explored are not being mined, notably the Mes Aynak copper deposit and Hajigak iron ore deposit, along with the oil and gas blocks in the Amu Darya basin and the Afghan-Tajik basin. Currently, mining is done primarily by Afghan companies and individuals on a small or medium scale with investments of the order of $50,000 to $1-2 million.[40] Overall, it is estimated that the marble and granite mining industry has made about $70 million in investment,[41] while the talc mining and processing industry has made about $30 million in investment in the sector.[42] Much of the mining is done informally and illegally, although the extent of illegality depends on the subsector.

Overall, Afghanistan's mineral wealth makes little contribution to the official economy. Fuels, ores, metals, precious stones and non-monetary gold comprise around 20 per cent of exports,[43] and the total export itself only accounts for about 2.9 per cent of GDP.

According to publicly available data, fiscal revenues from the extractive industry in recent years have accounted for less than 5 per cent of total government revenue (excluding foreign grants), and in most years, for less than 2 per cent (Table 2-1).[44]

These figures are from the Afghanistan Extractive Industries Transparency Initiative (AEITI). While this only covers the large companies, it probably captures most extractive sector revenues. AEITI provides the only publicly available, reliable source of information – though in January 2019, the global EITI board suspended Afghanistan on grounds of unsatisfactory progress in implementing the EITI standards.

Fiscal revenues from the extractive industry in recent years were less than 5 per cent of total government revenue, and in most years, less than 2 per cent.

Talc mining is conducted non-professionally, without any considerations for mine stability and efficiency of operations © Afghanite Company.

Table 2-1. Government receipts from the extractive industry

Revenue sources, in millions of Afghanis, unless indicated otherwise	2012/13 (FY 1392)	2013/14 (FY 1393)	2014/15 (FY 1394)	2015/16 (FY 1395)	2016/17 (FY 1396)	2017/18 (FY 1397)
Ministry of Finance – revenue	117.5	280.2	157.7	122.1	580	620
Ministry of Finance – customs	9.1	4.8	1.4	5.2	-	-
Ministry of Finance – state-owned enterprises	1,247.7	383.1	804.6	2,099.5	290	620
Ministry of Mining and Petroleum	2,567.4	581.3	856.8	583.2	990	2,030
Total	3,941.7	1,249.4	1,820.5	2,810.0	1,880	3,280
Total, in $ million	77	23	32	46	28	48
Total fiscal revenues excluding grants	80,661	109,382	100,102	122,195	169,472	173,500
Share of revenues from the extractive industry, %	4.9%	1.1%	1.8%	2.3%	1.1%	1.9%

Notes: Figures of revenues from the extractive industry in 2012/13 are for March-December only. AFS/ USD exchange rates used are from ADB, IMF and AEITI in various years.

Sources: AEITI, 2012a; AEITI, 2012b; AEITI, 2014; AEITI, 2016; AEITI, 2017, AEITI, 2019; MoF, 2019; UNDP, 2018c.

Hidden production and trade

Much of the mining in Afghanistan is informal and/or illegal and escapes government records. To estimate the scale of this hidden output, researchers for this report analysed official data and existing studies, and also carried out two sets of field observations, visiting mine and quarry sites, villages serving as mining hubs, mining workers' camping areas, storage sites for minerals, and transportation routes, mineral processing factories and workshops, markets and border crossing points. Full details of the research are in Annex 4.

The researchers used various methods of estimation, depending on the product. Some of the data, as in the case of precious and semi-precious stones, was provided by market traders. For marble and onyx, the estimate was based on the output of legally licensed quarrying operations. For coal and talc exports, the estimates were based on counting the trucks crossing the border to Pakistan. For domestically consumed coal, the estimates were based on data on housing and estimates of coal usage for heating.

These estimates are reported in Table 2-2,[45] along with the latest available estimates by the U.S. Geological Survey (USGS), and export figures from the Central Statistics Organization. This report's estimates of production are significantly larger than official figures for exports, but of a similar order of magnitude with USGS estimates – for example, for precious and semi-precious stones and marble.

More detailed estimates of production of gemstones are shown in Figure 2-6 and Figure 2-7.[46]

Production levels that are higher than exports are expected in countries with significant manufacturing sectors that use minerals as raw materials. But this is not the case in Afghanistan; except for coal, which is used domestically, minerals are predominantly

Table 2-2. Production and exports of selected minerals

Minerals	Production, 2017 (a), metric tonnes *Source:* This report's estimates (b)	Exports, 2017/2018, metric tonnes *Source:* Central Statistics Organization	Production, annual average 2011-2015, metric tonnes *Source:* USGS
Precious and semi-precious stones, gold	4,537	-	4,850
Coal (c) Of which: Exports Domestic use	2,200,000 1,200,000 1,000,000	1,014,113	566,200
Talc	1,000,000	408,936 (d)	-
Marble	60,830	4,698	66,340
Onyx	4,325	-	-
Alabaster	145,250	-	-

Notes:

(a) This report's estimates are based on field work conducted during 2017, for selected minerals. They do not represent comprehensive national estimates, however, they likely capture a large proportion of mineral production of the selected minerals, since the estimates were done based on observations from the most active mining areas and most used border crossing points. These estimates should not be treated as precise figures, as they are sensitive to underlying assumptions.

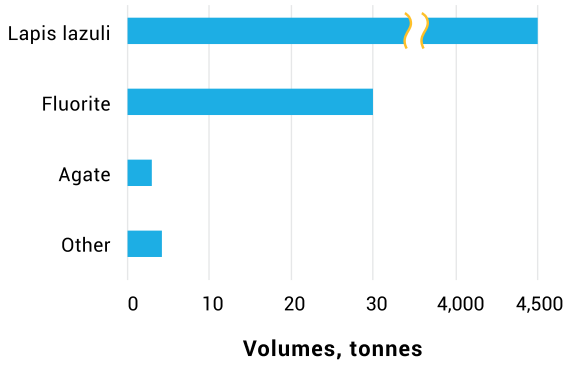
(b) Given large variations from year to year due to market conditions and regulatory changes, 2017 should not be taken as a representative year for mineral production or exports.

(c) For minerals other than coal, production should closely approximate exports. For coal, due to large amount of domestic consumption, production should exceed exports substantially.

(d) According to Afghanistan Central Statistics Organization's production data, this figure appears under 'stone' and is given a HS code of granite. However, this is likely to have been placed in this category due to misclassification, because the Afghanistan's Customs Office figure for talc exports to all countries closely approximates this figure, while exports of granite are nil.

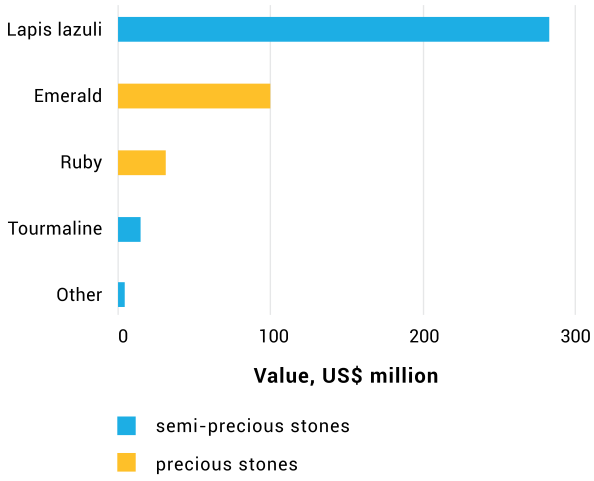
Sources: For more detailed explanation and sources of this report's estimates, see Annex 4

Figure 2-6. Production of selected precious and semi-precious stones, estimated production volume in 2017



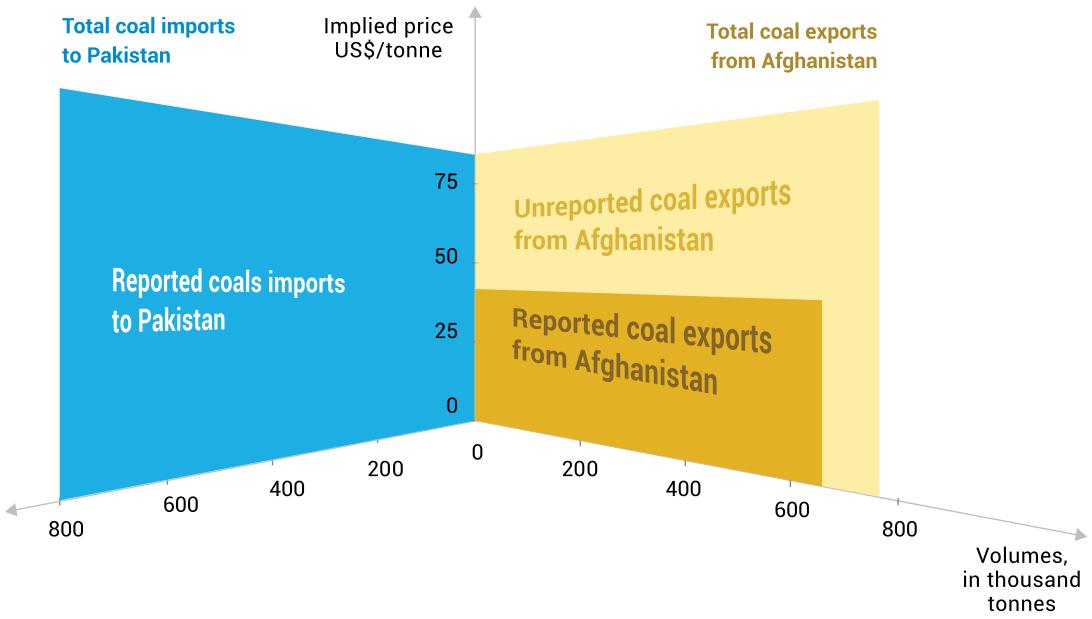
Source: Estimates based on field observations and interviews. For detailed description and sources, see Annex 4.

Figure 2-7. Production of selected precious and semi-precious stones, estimated production value in 2017



Source: Estimates based on field observations and interviews. For detailed description and sources, see Annex 4.

Figure 2-8. Coal exports from Afghanistan to Pakistan, annual average, 2015-2018



Sources: Estimates based on Central Statistics Organization, n.d (Afghanistan) and Pakistan Bureau of Statistics, n.d.

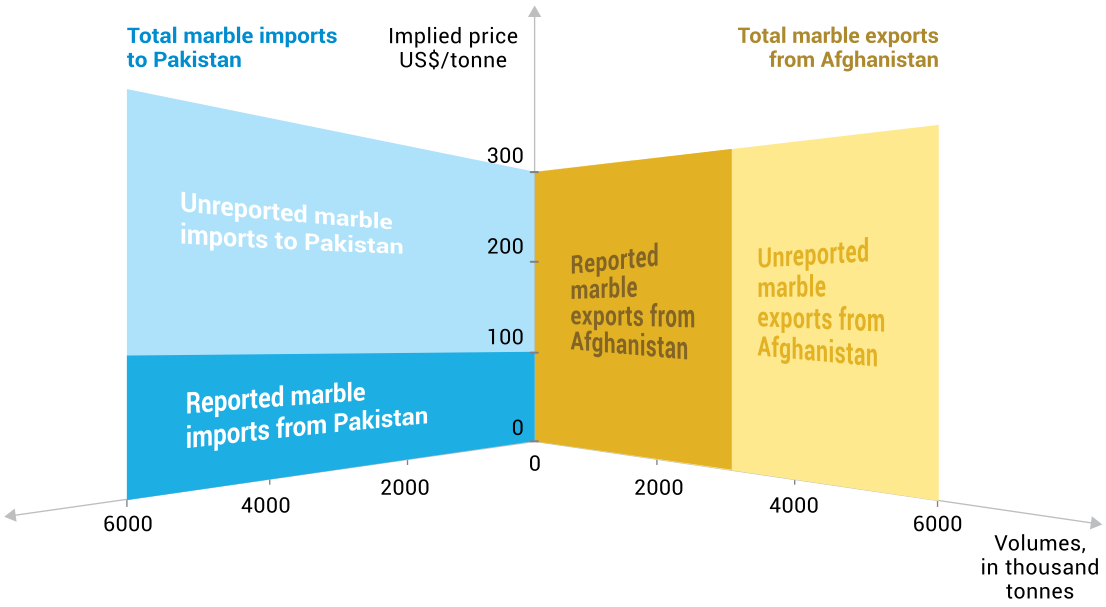
exported, so figures for production and exports should be similar. Instead, production figures are larger that export figures in Afghanistan, which suggests a high level of illegal mining and smuggling – as can be observed for gemstones and semi-precious stones, marble, onyx, alabaster and talc.

Possible reasons can include differences in export tariff rates for some minerals. For instance, export tariff rates are 30 per cent for mineral rocks such as marble, onyx and alabaster, as opposed to 5 per cent for talc, 5 per cent for most gemstones and semi-precious stones, and 2.5 per cent for coal.[47] These differentials may encourage smuggling of some minerals under the cover of others that carry lower tariffs.

Smuggling high-value, small bulk minerals such as precious and semi-precious stones is easier, as they can easily be undervalued. Take the case of lapis lazuli. The price rises exponentially for the nine different grades of lapis from $1 per kg to $1,000 per kg. The value of lapis – for export statistics (and export tax) purposes appears to be grossly underreported. The implied price of lapis lazuli exports – calculated based on the reported export value and volume – was $12.9 per kg in 2016.[48] However, the average price of rough, unpolished lapis on the market in Kabul is close to $100 per kg.[49]

Further evidence of underreporting of mineral output can be derived from Afghanistan and Pakistan's trade data on those minerals for which comparable data is available (Figure 2-8 and Figure 2-9). According to Afghanistan statistics, Afghanistan exported $30 million worth of coal annually on average in 2015-2018 to Pakistan. According to Pakistan statistics, however, Pakistan imported $68 million worth of coal from Afghanistan per year, on average in 2015-2018.[50] In other words, the value of coal from Afghanistan to Pakistan suddenly doubles once it crosses the border. A closer examination shows that while the reported volumes of coal do not differ significantly, the reported price can be very different. According to Afghanistan statistics, the export price of coal was, on average, $42 per tonne in 2015-2018. In contrast, according to Pakistan statistics, the

Figure 2-9. Marble exports from Afghanistan to Pakistan, annual average, 2015-2018



Sources: Estimates based on Central Statistics Organization, n.d (Afghanistan) and Pakistan Bureau of Statistics, n.d.

import price of coal was, on average, $87 per tonne in the same period – much closer to the market price of coal.[51] These differences are shown in Figure 2-8, showing the value of coal, with the horizontal axis showing the volume and the vertical showing the implied price. The light yellow area represents the unreported and untaxed value of coal – the loss to the Government of Afghanistan.

Similarly, for marble. According to Afghanistan statistics, on average, 3,900 tonnes of marble were exported annually to Pakistan between 2015 and 2018. In contrast, according to Pakistan statistics, Pakistan imported, on average, 7,700 tonnes of marble annually over the same period. However, the Afghanistan side records marble at a much higher price –$304 per tonne, whereas the Pakistan side records it at $103 per tonne. In this case, the Afghanistan customs price is closer to the market price. In other words, about 22 per cent of the value of marble disappears once it crosses the border. In Figure 2-9, it can be seen that both Afghanistan and Pakistan customs lose from marble trade. The light yellow area on the right side represents the untaxed exports from the Afghanistan customs side, while the light blue area on the top left represents the untaxed exports of marble from the Pakistan customs side.

The discrepancy in the case of talc exports is even greater – with the value reported by Pakistan statistics being 11 times greater than the value reported by Afghanistan statistics (not shown by graph).[52] The discrepancies arise from underreporting of both price and volume. Such discrepancies are also confirmed by other studies and evidence. For instance, based on data reported by the Afghanistan Customs Office, the average implied price for talc was only $26.5 per tonne in 2018 whereas the average price in Afghanistan markets was $60 per tonne.[53] In Peshawar, Pakistan, talc was bought by traders at $130 per tonne and sold at $170-$200 per tonne.[54]

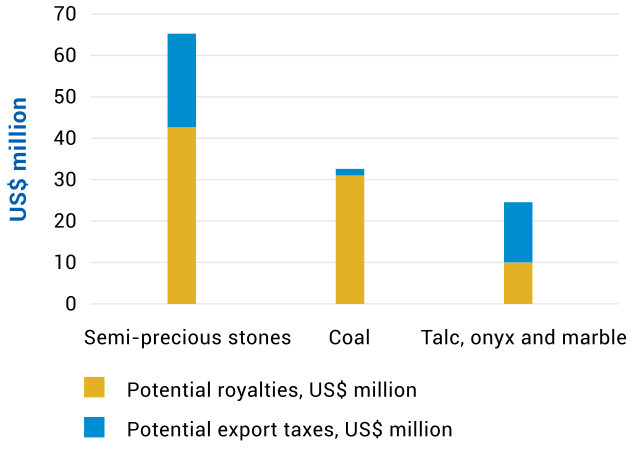
The discrepancies between estimated actual production and officially reported production, and between exports of minerals by Afghanistan and Pakistan highlight a major loss of government revenue. For example,

The Government of Afghanistan could have collected at least $123 million more from minerals in royalties and export duties per year if illegal mineral production and trade was taxed.

the government earned $48 million from the extractive industry in 2017/18, and $42 million annually on average over the period 2012-2018.[55] However, our estimates for 2017 suggest that the government could have earned over $123 million in royalties and export duties alone, not taking into account income taxes and other fees.[56] Around half of this would have come from precious and semi-precious metals and gold (Figure 2-10).

A starting point to reducing leakages of revenues from mining is developing an integrated system of records to better identify where these leakages are occurring (see Annex 6). A host of other measures to reduce corruption and loss of businesses to the illegal sector is also needed.

Figure 2-10. Potential fiscal revenues from selected minerals, estimate for 2017



Source: Estimates based on field observations and interviews. For detailed explanation and sources, see Annex 5.

Employment

Beyond government revenues, another benefit of the extractive industry is an increase in employment. For example, lapis mines attract men from all over the country. During the recent peak, nearly 10,000 people from nearby villages, and migrants from different parts of Afghanistan, were employed in the lapis mines.[57]

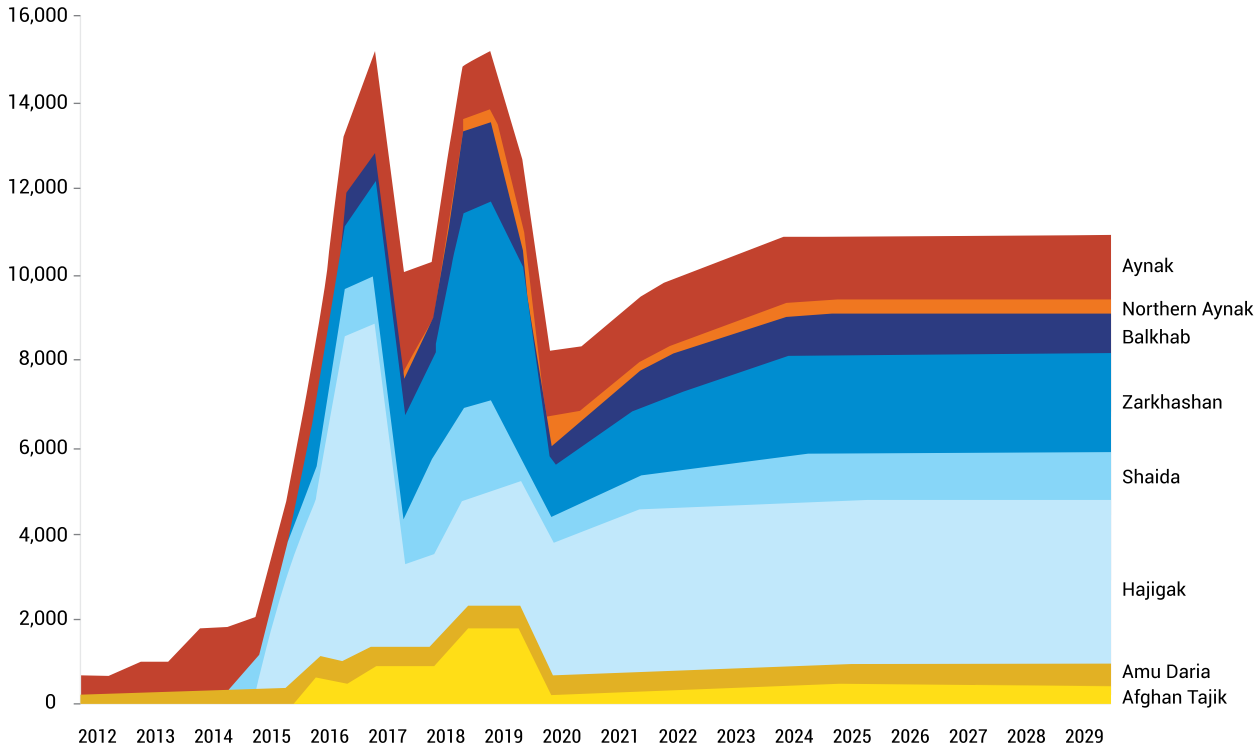
Currently, there are about 12,000 people employed in Afghanistan's formal mining and quarrying sector, which constitutes about nine per cent of formal sector employment.[58]

The extractive industry is capital-intensive rather than labour-intensive. In 2012, the World Bank made an estimate for projected employment at nine large mining projects in Afghanistan (See Figure 2-11).[59] This was on the assumption that all prospective large-scale projects would start producing from 2017 or 2018. Although this did not happen, this estimate does still indicate the order of magnitude of job creation by the large-scale extractive industry. Nevertheless, the number of jobs was expected to not exceed 16,000 at the peak.

To put this into perspective, the country's labour force is 8.5 million, of which 24 per cent, or two million people, are unemployed.[60] Thus, even with all the large projects underway, these projects will not make much of a dent in unemployment. Moreover, many jobs are temporary. In a typical large mining, oil or gas project, jobs peak during the project development stage, then decline and finally stabilize at a lower level. This pattern is illustrated in Figure 2-11.

In addition, potential jobs will be reduced by automation. The mining industry worldwide is undergoing a rapid transformation and

Figure 2-11. Projected employment at prospective large-scale extractive industry projects



Source: World Bank, 2012.

there are estimates that a typical mine which introduced automated technologies would require 30 to 75 per cent fewer jobs than a mine doing business-as-usual.[61] Thus, while the need for high-skill operators of remote machinery will increase, the need for low-skill workers will decline.

Nevertheless, minerals extraction can also create jobs indirectly in spin-off sectors and subcontracted companies. These jobs should also provide decent employment and good salaries. In a well-managed and regulated extractive industry, wage levels are typically high, on a par with manufacturing or high-skilled service sectors, and significantly higher than for subsistence agriculture. Adding the indirect jobs from large extractive projects should bring the total employment boost to over 45,000. So, realizing all planned extractive projects can double or triple the number of people employed in this industry in

Workers in small workshops in the Chicken Street of Kabul, doing preliminary cutting and polishing of lapis lazuli © Afghanite Company.

Afghanistan – thousands of potentially well-paid and decent jobs that will help boost the economy and raise people's incomes.

Even if all the large extractive projects are underway, they will not make much of a dent in unemployment in Afghanistan, with about 2 million unemployed people. Nevertheless, they can potentially create some tens of thousands of better paid jobs, directly or indirectly.

To expand local employment opportunities, it will be necessary to design conducive policies to facilitate employment of Afghans in the extractive industry, build partnerships between the Government and extractive companies, and implement joint programmes for training and employment.

Afghanistan thus has a large endowment of mineral and hydrocarbon resources. But at present, these resources are poorly managed and underexploited, not least because investors are wary of insecurity and instability. The next chapter looks at some of the obstacles to current and future development of the extractive industry.

Box 2-3. Lessons from large-scale mines in Lao PDR and Mongolia

Mes Aynak could become a world-class mine. Afghanistan can benefit from experiences of similar large copper mining projects in Asia – Sepon in Lao PDR and Oyu Tolgoi in Mongolia.

Mes Aynak could become a world-class copper mine, if the early exploration results pointing to a large volume of high-grade mineral ore are proven. Afghanistan can benefit from the experience of similar large mining projects in other countries, gauging the potential benefits and impacts. Two mining projects comparable with the prospective Aynak mine have been reviewed: the Sepon copper mine in Lao People's Democratic Republic which operated between 2003 and 2015; and the Oyu Tolgoi copper mine in Mongolia developed in the 2000s.[62] They are among Asia's largest copper mines and have been high-stakes projects for the respective countries. Both have provided major sources of revenue for the respective governments.[63]

Table 2-3 shows the comparison of the three mines, along with recommendations for Aynak. More details and sources are shown in Annex 3.

Table 2-3. Sepon, Oyu Tolgoi and Mes Aynak mines

	Sepon, Lao PDR	Oyu Tolgoi, Mongolia	Mes Aynak, Afghanistan
Mining company ownership and management	Ownership changed hands several times, making it difficult to track investments, revenues to the company and to the government, and social development investments from the company.	The main operator has been a publicly listed multinational company, Rio Tinto, which means that its reports are more easily traced.	The MCC-JCL Aynak Minerals company is owned by two Chinese companies – one state-owned, the other private. The government should ensure reporting of exploration results – mineral reserves and resources.
Fiscal revenues	$1.3 billion over 13 years – on average, $102 million per year.	$1 billion over 11 years – on average, $95 million per year.	Potentially recoverable copper reserves of Aynak are twice the amount of proven reserves of Oyu Tolgoi, which is currently Asia's largest copper deposit, so potentially it can generate similar amounts of fiscal revenue, or more. To ensure that due revenues from Aynak are received by the government in the future, its reserves should be reported and verified, feasibility studies are shared with the government, financial analysis (fiscal model) is conducted, and AEITI should be strengthened.
Infrastructure	Built an airfield and a road; power was supplied from an existing hydropower station.	Built an airfield and a road; the mine currently relies on power imported from China.	The investor has agreed to construct a power station and a railroad. The Government should assess how realistic are these commitments.
Resettlement and compensation	13,000 people in 27 villages affected.	89 herder households (around 400 people) affected, although the number of affected households may rise as the project expands. Compensation largely followed international standards, but subsequent complaints prompted an investigation that identified a number of problems with the process.	393 households in seven villages affected. The resettlement and compensation process has been taking place since the contract was signed, 'in accordance with World Bank resettlement guidelines'.[64] However, research conducted by civil society in 2013 found that communities were dissatisfied with the process of resettlement and compensation and their lack of economic benefits.[65] As the mining construction work advances, it is likely to affect more people. Especially since it will likely become the first large-scale mining operation in Afghanistan, it must have a clean human rights and resettlement record.
Environmental impacts	Seepage of tailings into water, biodiversity hotspots and elephant habitats. An acidic water spill was reported in 2009.	Reduced access to pasture and mobility of livestock, reduction of water availability with diversion of an underground river and loss of a spring; seepage of tailings into underground water. Civil society organizations describe the ESIA as deeply 'flawed', 'incomplete and retroactive'.	The ESIA has not been made public. Major concerns of affected communities related to the environment included lowering of the water table; and contamination of water by the mine. Impact of Aynak mine on water availability can become a serious issue, potentially affecting Kabul. The ESIA should be done rigorously, covering both environmental and social impacts, and should be reviewed by experts, for which international assistance would be needed.
Local development	Cleared 80,000 pieces of unexploded ordnances, built schools and clinics and made various investments via village funds.	Paid $42.2 million in voluntary payments, of which $15 million toward community projects. Made an agreement to transfer annually $5 million to the province.	As per the contract, obligated to build schools and clinics, religious places, market/ shopping area. The government must establish clear metrics on local development investments and monitor how these commitments are implemented.
Employment	Employed about 5,400 people during the construction phase and about 1,800 people during the operation phase. By 2012, Lao nationals accounted for 90 per cent of jobs.	Employed about 18,000 people during open-pit mine construction and about 2,500 people during its operations. Around 95 per cent of all jobs and around one-third of executive-level jobs are filled by Mongolians.	About 4,500 people are expected to be needed, thereafter 2,100-4,100 people. Together with indirect jobs, expected 10,000-45,000 jobs for at least 18 years. The current delay of the mine can be used to prepare the workforce. The government and development partners should invest in training for semi-skilled and high-skilled occupations.
Local procurement	About 27 per cent of procurement spending went to national companies – though it is not clear how 'national companies' are defined.	About 51-69 per cent of spending went to goods and services by national companies, though 'national companies' are not clearly defined	The government should require plans for local procurement and spending.

Sources: See Annex 3.

[1] USGS, 2011.

[2] McCready, P., 2006.

[3] Taylor, C., S.G. Peters and D.M. Sutphin, 2011.

[4] Renaud, K. et al, 2011.

[5] Afghanistan Geological Survey (AGS), 2017.

[6] Ministry of Mines and Petroleum (MoMP), 2014.

[7] Rassin A., 2012.

[8] Interviews with miners who showed samples of different color onyx (September-October 2016).

[9] UNDP, 2018b.

[10] Klett, T. et al, 2005.

[11] Government of Afghanistan and MCC-Jiangxi Copper Consortium, 2008. The Aynak contract specifies that before mine construction, additional exploration was to be conducted and a bankable feasibility study was to be prepared and submitted to GOIRA.

[12] EIU, 2012.

[13] AEITI, 2017.

[14] Ministry of Mines and Petroleum (MoMP), 2017.

[15] AEITI, 2017

[16] MoMP, 2017.

[17] MoMP, n.d.-c. For the purpose of this report, the medium-size contracts include those under "Large and medium projects" heading, excluding Aynak copper, Afghan-Tajik and Amu Darya hydrocarbon project contracts.

[18] For the purposes of this report, lapis lazuli has been considered to be a mineral even though technically it is not a mineral, but an aggregate of three main minerals: lazurite, afghanite and pyrite.

[19] Thomalsky, J., 2014.

[20] Interview with a gold miner in Ghazni (15 January 2017).

[21] MoMP, n.d.-d. and MoMP, n.d.-e.

[22] As above.

[23] UNDP, 2018b.

[24] Royalty rates now differ for various types of minerals, but are uniform for the same types, in line with international practice.

[25] Global Witness, 2018a.

[26] The key functions of the ministry are licensing, inspection, producing geo-data, setting and collecting royalties.

[27] Noorani, J. and L.D. Brouckere, 2016.

[28] Task Force for Business and Stability Operations (TFBSO), 2011.

[29] BBC, 2014; Mining.com, 2013, Live Science, 2014.

[30] Bloomberg, 2011; Pajhwok Afghan News, 2010.

[31] The detailed information on how the $1 trillion figure was estimated was not publicly available.

[32] Micon International LLC, 2016.

[33] For accessible explanation, see Micon International LLC, 2016.

[34] The projects are at different stages of execution. Mongolia's Oyu Tolgoi is expanding - its open-pit mine started producing recently, in 2013, and its underground mine is being constructed, while the Lao PDR's Sepon mine is nearing its depletion.

[35] EITI, 2018b.

[36] What is classified as large-scale mining by MoMP is distinguished in this report into medium-scale and large-scale. Medium-scale mining does take place in Afghanistan currently and implies mining with investments of about $50,000 to a few million dollars. While large-scale mining (as well as oil and gas) implies projects with investments in the order of hundreds of millions of dollars or more. In large-scale mining, there is currently no ongoing extraction project in Afghanistan.

[37] Government of Islamic Republic of Afghanistan, 2018. Article 50.

[38] Bauer, A. et al, 2016.

[39] Islamic Republic of Afghanistan, 2004.

[40] UNDP, 2018b.

[41] MoMP, n.d.-d.

[42] MoMP, n.d.-e.

[43] UNCTAD, 2019.

[44] Most countries do not publish resource revenues separately when reporting the overall fiscal revenues. But increasingly, countries where mining, oil and gas are significant industries are making such breakdown information available. For more guidance on reporting fiscal revenues from resource sectors is available from IMF, 2014.

[45] It should be noted that these estimates are highly sensitive to their underlying assumptions, and may therefore be subject to significant margins of error.

[46] As above.

[47] Ministry of Finance (MOF), 2014.

[48] Calculated based on Afghanistan Customs Department, 2016, and applying the exchange rate of US$1 = 67.9 Afghanis

[49] UNDP, 2018b.

[50] Afghanistan uses March-to-March fiscal year, while Pakistan uses July-to-June fiscal year. Therefore, data covers the period March 2015-March 2018 for Afghanistan, and July 2015-June 2018 for Pakistan.

[51] Analysis made using data for talc and coal from Afghanistan Central Statistics Organization, various years, and Pakistan Bureau of Statistics, various years.

[52] As above.

[53] Calculated based on data from Afghanistan Customs Department, 2018, and applying the exchange rate of US$1 = 73.03 Afghanis.

[54] Global Witness, 2018b.

[55] These are the latest publicly available figures on extractive revenues from AEITI reports, various years.

[56] A significant amount of mining in Afghanistan is not captured in production and trade statistics. However, even estimates of mining that are available in government data are subject to potentially a large margin of error. Subsequently, potential fiscal revenue estimates based on them are also subject to error. Further, even if mineral activities are all fully captured in official data, it is unrealistic to expect that all these activities can be taxed. Nevertheless, the figure of potential fiscal revenues from the extractive industry illustrates “what could have been collected", as opposed to revenues currently collected.

[57] By 2017, this number is estimated to be declined to about 5,000 people.

[58] Calculated based on data from Central Statistics Organization, 2018..

[59] World Bank, 2012.

[60] Central Statistics Organization, 2018.

[61] Cosbey, A. et al, 2017.

[62] For detailed comparison, see Annex 2.

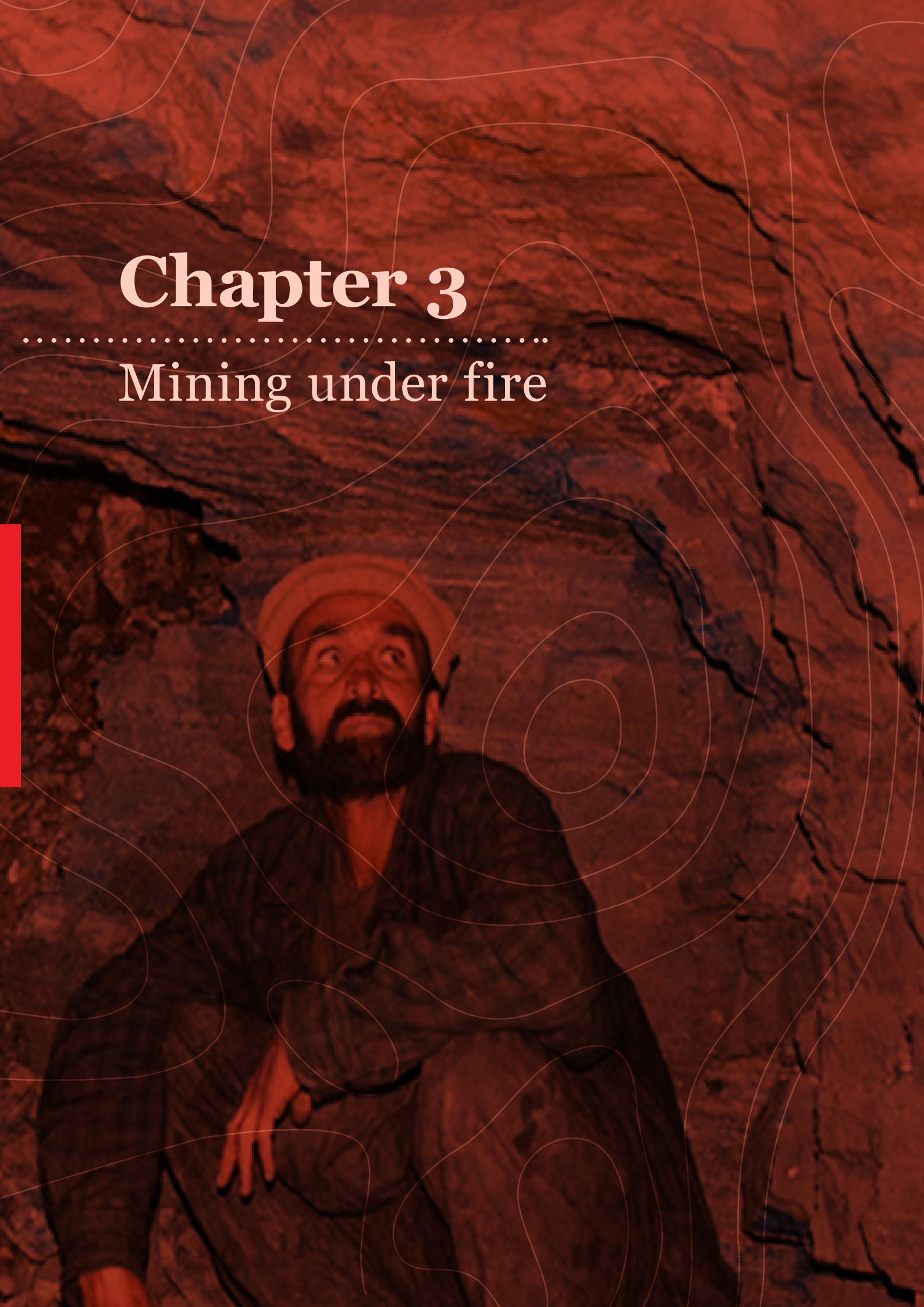
[63] The projects are at different stages of execution. Mongolia's Oyu Tolgoi is expanding - its open-pit mine started producing recently, in 2013, and its underground mine is being constructed, while the *Lao People's Democratic Republic*'s Sepon mine is nearing its depletion.

[64] Government of Afghanistan and MCC-Jiangxi Copper Consortium, 2008. Paragraph 23.

[65] Integrity Watch Afghanistan, 2013.

Chapter 3

Mining under fire



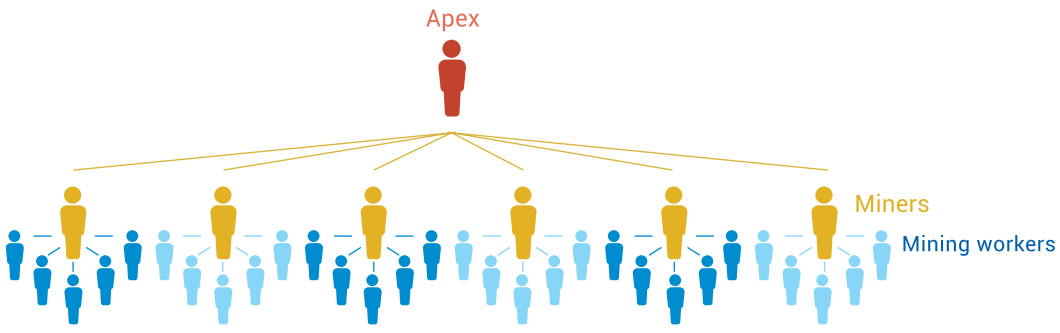
In Afghanistan, mineral extraction is poorly regulated, often illegal, and in many parts of the country is controlled by political elites, or by insurgents who can tax the miners to raise funds that further fuel conflict. The weak regulatory environment also opens up spaces for corruption. Meanwhile, local communities can be caught in the crossfire and suffer human rights abuses.

In many parts of Afghanistan, minerals extraction is controlled by political elites and by insurgents. During the resistance movement in the 1980s against the Soviet Union, in Badakhshan and the Panjshir Valley, for example, one of the seven large mujahideen parties leading the resistance, took control of mines, using the revenues to finance the war. These networks often operate with impunity – openly and audaciously smuggling mineral resources out of the country.[1] Since the 1980s, many mines have been run by networks of former jihadis who, after the defeat of the Taliban, have at different times acquired positions of influence within the government.[2]

In this regard, ownership and exploitation of mines has shifted from institutions to individuals who are using mining revenues to maintain or expand their power base. More recently, with the decline in international aid, and the reduced demand for new buildings, many well-connected construction companies have now moved into the mining sector.

Lapis mines in Badakhshan, for example, are under the control of a former district police chief and commander together with his close relatives and aides, who constitute the top of the structure: the 'apex'.[3] The 'apex' rents out mines (mine shafts or tunnels) or issues permits for opening new mine tunnels to 'miners' who constitute the middle tier of the structure. 'Miners' are owner-operators and are equivalent to mining company owners in the formal sector. In return for security of tenure and physical safety, these 'miners' pay taxes to the 'apex'. The third tier consists of mining workers who are hired by 'miners'. Finally, there are local communities in nearby villages that serve as the base for logistics, supplies and organization of transportation of minerals. The 'apex' may make investments in providing security, building mosques in local villages, and building roads, which may benefit local communities.[4]

Figure 3-1. Organization of informal mining of lapis lazuli



Minerals fuelling conflict

The control of minerals extraction by insurgent groups means that mineral resources have been financing and fuelling conflict, undermining the legitimacy of the State, and spreading violence to larger parts of the country.[5] The group with the most extensive reach is the Taliban, but since 2015, other groups have emerged under the flag of the Islamic State of Iraq and Syria (ISIS), and organized as the Islamic State of Khorasan (IS-K),[6] joining the contest for minerals.

For the Taliban, the extractive industry is deemed to be the second-largest revenue stream after narcotics.[7] In areas of its influence, it collects taxes and 'protection money' from miners. For instance, it is reported that talc mining companies in Sherzad district of Nangarhar province pay $12 per tonne of talc to the Taliban, in addition to paying $10 per tonne to the government.[8] Similarly, field investigations in southern Helmand showed that most companies hold permits from, and pay taxes to both the Taliban and the Government, while some hold permits and pay taxes only to the Taliban.[9] In other instances, traders reportedly pay the Taliban $6.7 per tonne[10] which in Nangarhar province in 2017 would have yielded $8 million.

The IS-K started tapping the mining sector as financial support waned from the central ISIS. It has now a source of revenue from taxing miners, and is capturing and liquidating stockpiles of talc, chromite and marble.[11] The IS-K has established its presence in Achin district of Nangarhar province, which is rich in talc, and there is currently active contestation between the Taliban and IS-K for control.[12] Other groups of IS-K have reportedly started extracting nephrite and jasper from Goshta district of Nangarhar province.[13] The IS-K was also reported to operate some talc mines in Nangarhar with their own machinery and trucks.[14] The IS-K has been attacked both by government forces and the Taliban and has been dislodged from some bases. However, IS-K recently recaptured Mirkekhil area of Sherzad province which contains among the world's best talc, and invited talc miners to continue operating mines and pay the same amount of tax as they used to pay to the Taliban.[15] Moreover, while the Taliban collect taxes from their constituencies – and are largely not concerned whether the latter pay taxes to other groups, the IS-K punishes miners who pay taxes to others.

The control of minerals extraction by insurgent groups means that mineral resources have been financing and fuelling conflict, undermining the legitimacy of the State, and spreading violence to larger parts of the country.

Previously, insurgent groups got most of their revenue in regions remote from the seat of government.[16] However, this seems to be changing as even areas close to Kabul are contested by IS-K and the Taliban.

From the perspective of a mining company or a prospective taxpayer, the benefits of paying taxes to the government are limited, while the risks of not paying taxes to insurgents are enormous. Particularly the IS-K are known for brutal sanctions for non-compliance. It is reported, for instance, that in Nangarhar, the IS-K has assassinated ten mining operators for violating its rules.[17]

The Taliban do at least provide security in the areas they control and protect their 'taxpayers.'

Indeed, ordinary Afghans and mining companies believe that the Taliban are better able to provide security and ensure 'law and order', albeit according to their own rules. Onyx mining companies have reported better security from contracts issued by the Taliban than from the Government.[18] A representative of one mining company said that they paid one tax to the Taliban and another to the Government; both entities protect mining companies, as well as resolve any disputes with communities.[19]

Even high-ranking officials involved in the extractive industry are not exempt from taxes levied by the Taliban. For instance, a mining company in Kunar Province, behind which is a member of parliament, allegedly pays 15 per cent tax to the Taliban, 15 per cent to the Tehrik-e-Taliban of Pakistan, and another 15 per cent tax to the IS-K.[20]

In addition to these groups, local militias, warlords, and occasionally security forces are also reported to be levying taxes on minerals or be involved in illegal mineral extraction – directly or through associates and family members.[21]

Minerals have become integral to conflict in Afghanistan – a magnet for conflict and a source of financing conflict. Ordinary Afghans are heavily affected by the contestation over mineral resources between the government, the Taliban, the IS-K, local insurgents and criminal networks.

Illegal mining

A large proportion of mining activities in Afghanistan is illegal, with different shades of illegality.

Much of the mining is artisanal or informal, which has been conducted for centuries or decades and has not come under state laws or regulations. Then there are small and medium-scale enterprises in insurgent-controlled areas which do not have government contracts. According to MoMP, there are more than 350 illegal coal mining sites in various districts of Afghanistan.[22]

Some formal sector companies in government-controlled areas are also operating illegally since they are carrying out mining operations though they only have exploration contracts. A study conducted among five mines across the country showed that mines either operated under an exploration contract, or mined in areas adjacent to the areas to which the mining contract applied.[23]

In fact, for many businesses, it is difficult to remain legal with valid government contracts. Many contracts are issued for very short periods – perhaps only a few months, while at the same time, issuance of contracts takes four months, although renewals might be quicker. Of 821 small mining contracts, about 15 per cent were issued for periods ranging from one to eight months, another 56 per cent were issued for one or two years, and the remaining 29 per cent were issued for longer than two years.[24] Because most contracts are for short durations and take a long time to renew, a business may enter alternating states of legality and illegality, since businesses are unlikely to stop operations once started. Many will also continue to operate after their contracts have been revoked, entering a permanent state of illegality. There are also instances of mining companies engaging in 'mineral laundering' – that is, legally operating companies buying minerals that were extracted illegally and selling them as legally mined.[25]

According to MoMP, the government has started review of present mining contracts, led by a technical committee, which would identify the problems and cases for each contract and make the recommendation to NPC. By December 2019, about 25 contracts have been evaluated.

Although illegal mining may be lucrative, it is not very efficient. Mining operators lose out by mining illegally. For example, extraction conducted without exploration becomes mostly a matter of trial and error. This is not a problem for miners in areas that have abundant mineral resources close to the surface, but as the mineral gets depleted, extraction without exploration means wasted resources. Illegal extraction also tends to be inefficient and destructive. Small-scale mining operators are unable to invest in the appropriate equipment, and commonly use blasting. This destroys 80 to 90 per cent of lapis lazuli and onyx, for example.[26] Blasting significantly reduces the value of the material and the revenues earned by mining enterprises, as it creates cracks in the rock and prevents companies from producing larger blocks of minerals that fetch higher prices. By substituting explosives with better, less wasteful practices, mining enterprises can significantly increase their revenues. Blasting also generates vibration, gases, dangerous fly rock and severe dust that damage the environment and jeopardize workers' health and safety. Illegal mines also generally have poor site planning and waste management. Companies operating legally, on the other hand, are more likely to employ engineers and other educated professionals and use better mining methods.[27] Illegality also affects the ability of businesses to grow and can lead to 'herd behaviour', driving down mineral prices (Box 3-1).

Mining operators lose out by mining illegally – illegal mining is wasteful.

Box 3-1. The dangers of over-extraction

Maximization of short-term gains by unregulated miners can jeopardize their returns in the long run. In the absence of effective regulations, miners are likely to over-extract and over-exploit the mines in order to maximize short-term profits – with little regard to the depletion of the mineral in the future. At the same time, the resulting overproduction can flood the market and depress prices of a mineral, especially when one country is a large producer of this mineral.

This might have happened with lapis lazuli, since the bulk of the world's supplies of lapis come from the Sar-e-Sang area in Afghanistan. Lapis mining expanded significantly in Sar-e-Sang area after the recapture of power by the local commander in 2014. Consequently, in 2014-2015, it is estimated that between 5,000 and 7,500 tonnes of lapis lazuli were exported out of Badakhshan.[28] The rapid increase in the volume of mined lapis is believed to have contributed significantly to the build-up of stockpiles of lapis in Kabul, as well as in cities in Pakistan and China, contributing to the sharp fall in prices of lapis from an average of $100 per kg in 2014 to $30 per kg by 2017.[29, 30] This reportedly led to a substantial decrease in the incomes of insurgents, mining enterprises and mining workers.

Trucks move in convoys for official process and clearance of exports. Each day, hundreds of trucks carrying talc cross the Torkham border from Afghanistan to Pakistan © Afghanite Company

Smuggling

Smuggling is relatively simple for high-value-per-weight minerals such as gold, and precious and semi-precious stones. These are referred to as 'lootable' minerals being easy to hide and located in geographically dispersed and remote areas.[31] However, smuggling in Afghanistan is no longer confined to lootable minerals. In areas controlled by insurgents, bulk minerals are smuggled on an industrial scale – including onyx, talc, coal, jade, nephrites and chromite. Illegal mining happens openly, and minerals are then transported on large trucks along major roads and across the Afghanistan border.[32] In Afghanistan, minerals like marble, which are normally mined through industrial-scale operations by the formal sector, are often mined illegally. For example, onyx is mined on an industrial scale in Helmand province close to the porous border with Pakistan and then almost all of it is sent to Pakistan.

Some of the extraction and smuggling is done by Pakistan traders facilitated by the Taliban. In Helmand, the Taliban collects mining royalties, and charges traders for storage of onyx close to the Pakistan border prior to its export. The Taliban has weighbridges to check the weights of trucks, charges transport fees for safe passage to Karachi and, more recently, has introduced a ban on blasting in onyx mines.[33]

Similarly, in Khost province, some Pakistani traders are involved in illegal extraction of chromite. The Taliban has established checkpoints on major transportation routes to the province and charges a tax per chromite truck. The currency exchanged for these transactions is Pakistani rupees and these companies get Taliban permission prior to entering Afghanistan.[34] The Haqqani network protects and taxes smuggling groups and operates its own smuggling enterprises.[35]

Corruption

Even where mining companies operate legally, under contracts, there is evidence of corruption in the process of contracting. In-depth case

studies of five mines conducted in 2015 highlight multiple irregularities and violations in bidding processes for mining contracts and subsequent contract enforcement.[36] Preparation of bidding documents for contracts was manipulated to give an edge to chosen companies who were also given undue benefits. The process of contract issuance was also influenced by politicians. In all five instances, the contracts benefited politicians or their close relatives and the stipulated royalty payments were not collected. Contracts have also been repeatedly amended or cancelled, again to the advantage of the mining companies.

Analysis of the small mines' contracts database showed that there is a large variation in the duration of contracts and in the royalties imposed, indicating that officials have discretion in making contracts – with corresponding opportunities for corruption. For instance, the duration of contracts for alabaster ranges from one to ten years, for various industrial minerals from one to 12 years, and for construction materials from one month to ten years.[37] Such arbitrariness encourages abuse of power. And renewal can take a long time which may be accelerated by paying 'speed money' to officials.

Corruption will deter many companies from seeking contracts since they never know whether the taxes paid go to the government or into the pocket of the official, or whether another official might not turn up at the next opportunity, to tax or fine.

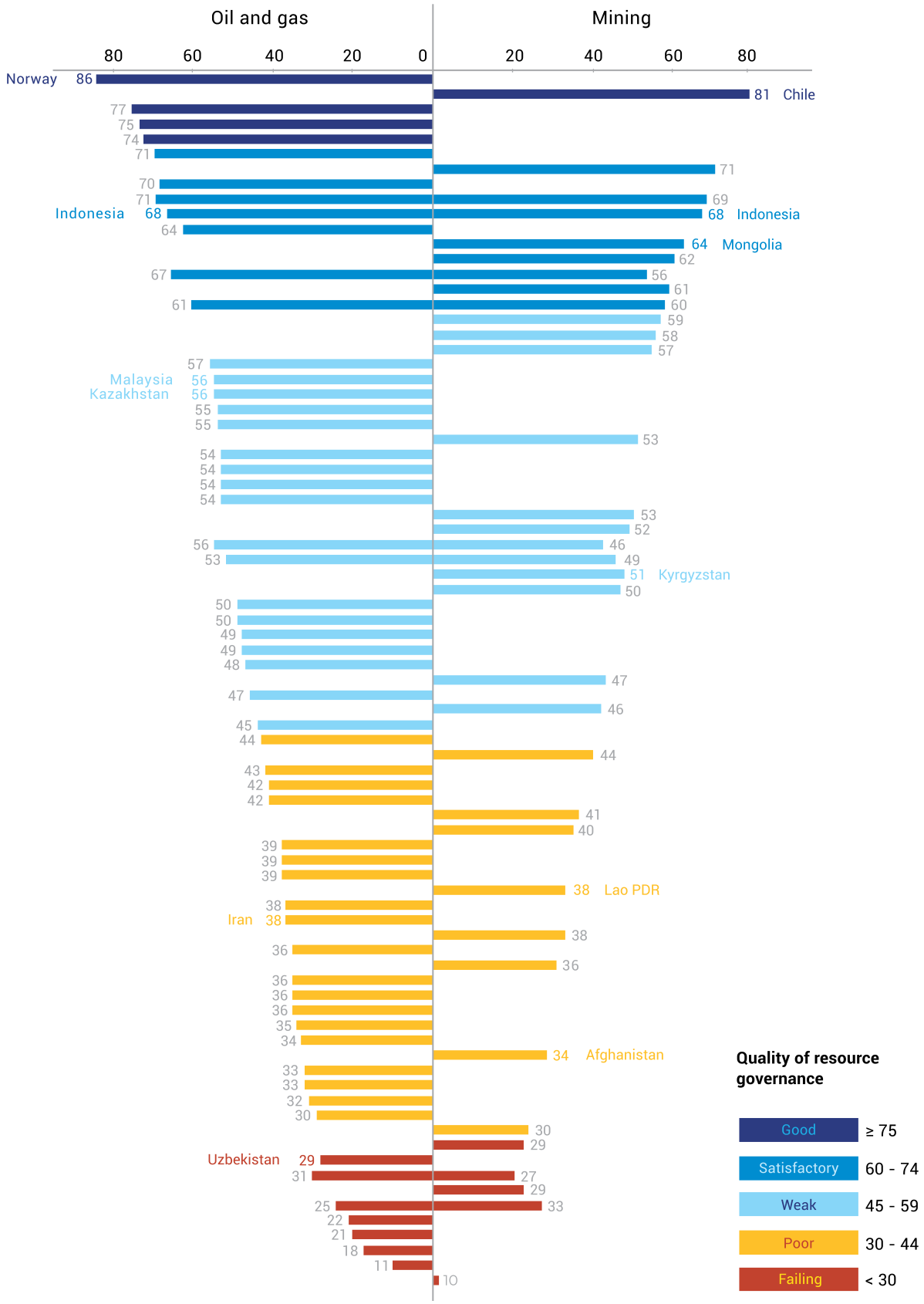
Although government and elected officials are prohibited by law from engaging in mining activities, several high-ranking state officials are directly or indirectly involved in the extractive industry.[38, 39] They typically circumvent the law by putting forward their proxies – family members or associates. However, there is evidence of entrenchment of powerful political elites - in Kabul and in the provinces - in the mining sector.[40] These arrangements enable politicians and their networks to benefit from mining, usually at the expense of the State.[41] Politicians can wield considerable influence over the relevant ministries and agencies of the government.

Various government institutions, including the security forces, have been penetrated by networks of people involved in illegal mining and trade of minerals. State officials at the heart of these networks are reportedly involved directly or indirectly in both legitimate and illegal extraction of minerals – and operate with audacious visibility.

While well-connected businesses violate rules and regulations with impunity, the not-so-well-connected businesses have to pay bribes to escape various fines that officials can impose, many of which, according to the mining operators, are arbitrary and unjustified.

Corruption, and the generally weak and inefficient administration of the mining sector, are reflected in Afghanistan's low ranking in the 2017 Resource Governance Index which assesses how resource-rich countries govern their oil, gas and mineral wealth.[42] Afghanistan achieved a score of only 34 out of 100 points, which ranked it 71st among 89 countries (Figure 3-2). The country's poor ranking was driven largely by low scores for governance, the extent of political conflict and insurgencies, corruption and breakdown in the rule of law; Afghanistan scored especially low on the 'enabling environment' component. Afghanistan also ranks low on the World Bank's 'Ease of Doing Business' Index – 173th out of 190 countries, though on the positive side, in 2019 Afghanistan became one of the ten countries in that index to show the most improvement.[43]

Figure 3-2. Resource Governance Index, country scores and rankings



Source: Based on data from Natural Resource Governance Institute, 2017

On the positive side, the Government of Afghanistan has been making concrete steps to improve transparency and curb corruption. Toward this end, the development of the Mining Cadaster Administration System (MCAS) and Non-Tax Revenue System (NTRS) are underway.

Poor working conditions

Workers in most mines are underpaid, have no job security, and are working in exploitation conditions. Generally, they are paid based on their individual production and, in isolated cases, may also get a share in the overall mine output.[44] Working conditions in lapis mines, for instance, are particularly harsh. Most workers are daily labourers working for 12 or more hours a day. In onyx and talc mines mining is typically conducted by registered companies through a government-issued mining contract, a Taliban-issued contract, or both. Working conditions here are better, but not significantly.[45]

In talc mines, unskilled workers are reported to work eight to ten hours a day, six days a week, and get paid 9,300-12,000 Afghanis ($127-164) per month.[46] In addition, some mining companies provide food and accommodation. In the case of skilled workers and workers in supervisory positions, the pay levels are noticeably higher – about 16,000-30,000 Afghanis in Afghanis in talc and onyx mines ($218-410). On the positive side, there has been at least one case where workers in a talc company have organized together to demand a rise in wages and were able to secure the raise.

Workers in most mines are underpaid, have no job security, and are working in exploitation conditions. Mines - legal or illegal – have poor occupational health and safety standards.

Local mine workers using their cramped living quarters near lapis mines for sorting and storing the products. After a dramatic drop in the lapis price due to its oversupply, workers have accumulated stockpiles of lapis © Afghanite Company.

A few traditional communities engaged in informal small-scale mining, however, tend to be more egalitarian. For example, in Khost province, some mines are divided between different tribes. The mines have a masoul (manager), treasurers and people who monitor extraction. The tribal elders ensure that monetary proceedings are divided equally among all the households.

Health and safety risks

Mines, legal or illegal, rarely conform to occupational health and safety norms. Yet, working in mines is one of the most hazardous occupations.

In lapis mining, apart from fine dust, mine workers are exposed to ultraviolet light - they spend long hours trekking up to the mines and descending slowly down the slopes and there is no shelter from the sun other than inside the mines. Also, as lapis mines are located at high altitudes and remote areas where motorized vehicles cannot reach, mine workers manually haul loads of about 100 kg down the steep hills several times a day.[47]

Onyx and talc are extracted with heavy-duty machinery. The presence of machinery combined with the absence of health and safety training, workers' inexperience, and very lax safety standards means that there are many accidents.

Unsurprisingly, there are numerous injuries and deaths at work.[48] Artisanal 'miners' (in the case of lapis) and mining companies (in onyx and talc) generally make one-time payments towards the cost of treatment or funerals, for which an established rate in talc mines appears to be the equivalent of $750 to $1,500. Community elders appear to play a significant role in negotiating and delivering the aid to the families of deceased workers. However, such assistance is usually one-off and subsequently the family's living conditions can rapidly deteriorate. There are reports that, after the deaths of their fathers, children and teenagers start working in mines in order to take breadwinning responsibility for their families.[49] This is also a factor that motivates women to have more children, preferably boys, as an 'insurance' against the possible loss of a breadwinner.

Mine workers also have a long-term risk of lung diseases due to prolonged exposure to toxic gases and dust.[50] Workers in some mines are given rudimentary face masks which do little to protect them. Other workers use their scarves as masks. Whereas sudden and visible accidents trigger a payout to the victims' families, long-term mining-related illnesses such as lung diseases are ignored. When researchers asked workers about insurance that could cover long-term illnesses – or some financial protection in case of injury or death, they could not believe that something like this was even possible.

The impact on women

Women have been excluded from employment in the mining sector. In rural Afghanistan strict social codes require women to work primarily at home. However, women are sometimes employed as cooks and auxiliary service providers. Women are also employed in and operate processing workshops, where minerals are polished and made into crafts and jewellery. Mineral processing is an industry where there are opportunities for a further increase in women's employment.

For women in Afghanistan, loss of a male breadwinner to mine accidents or mining-related illness is catastrophic.

For women the most catastrophic impact of mining is a loss of a husband or other male breadwinner. In these cases, women are often

A third-grade schoolgirl in Panjshir is studying her textbook. She and other girls in her community now go to school using the bridge built by UNDP Afghanistan's livelihoods programme © UNDP Afghanistan / Omer Sadaat

expected to remarry their deceased husbands' brothers, which may provide at least some protection. Nationally, about 8.2 per cent of women live in polygamous households (husband with more than one wife) – many of them due to the loss of the first husband.[51]

Women continue to have a heavy burden of household chores. For example, women and girls are overwhelmingly responsible for fetching water for household needs. However, if mining reduces water availability in water-scarce region, it will have significant impacts on women. Resettled communities in the Aynak mine area report that water tables have become lower making it more difficult to collect water, and the communities perceive this as being due to drilling by the company.[52]

Women are also affected by migration of men for mining. When men leave, women who have limited mobility may not be able to travel to get healthcare for themselves and their children. At the same time, the influx of men to villages near lapis and talc mines combined with the improved roads and bridges from the villages to the mine, has made the villages less secure for women and children.

Human rights violations

There have been several documented cases of human rights violations by mining companies that are protected by networks of power brokers. Corrupt contracting processes and the failure of subsequent mining operations to benefit local communities can be followed by protests by local communities over displacement or lack of jobs. This can lead to appeasement, coercion, intimidation, or even killing to silence the aggrieved. In most cases, the government has failed to investigate and punish the perpetrators.

For example, a gold-mining company at Qara Zakhan mine in Doshi district of Baghlan province, has been allegedly implicated in a series of breaches of human rights of community members, including a gang rape, seizure of land and property without compensation, and opening fire on community members who were demanding better security for women and girls – in addition to various manipulations and breaches of the mining contract. These violations were then allegedly suppressed through proxies and loyalists to the company in positions of power.[53, 54]

Another company mining the Kohi Safi chromite mine straddling two districts in Parwan province, has been implicated in seeding a bloody conflict between two villages in which, since 2014, 17 people have died and four have been injured. As a result, one of the villages brought in insurgents to repel the company from the area.[55]

At the same time, local people come under fire as a result of struggles between insurgent groups. For instance, in 2014, the takeover of lapis lazuli mines by the former commander of Jamaat-i-Islami led to many casualties.[56] In December 2017, close to 60,000 people fled following the capture by IS-K of key talc mining districts in Nangarhar province.[57] Active contestation over poppy farming and talc mining territories between the Taliban and the IS-K has been reported in Nangarhar. Recently in-fighting within local warlords' groups as recently reported in the lapis mines in Sar-e-Sang, Badakhshan province has led to renewed violence.

Decades of conflict in Afghanistan have made it difficult to carry out many kinds of business. Mining, which often takes place in remote and lawless areas, has been particularly affected. However, even more peaceful countries have often found difficult to make mining work well for human development – what has been termed the 'resource curse'. This is the subject of the next chapter.

[1] Byrd, W.A. and J. Noorani, 2017.

[2] As above.

[3] The role of 'apex' can be also performed by local political or insurgent groups' leaders.

[4] UNDP, 2018b.

[5] Byrd, W.A. and J. Noorani, 2017.

[6] IS-K also goes by the name Islamic State of Khorasan Province (ISKP)

[7] Byrd, W.A. and J. Noorani, 2017.

[8] Noorani, J., 2015.

[9] UNDP, 2018b.

[10] Interview with members of Talc Association, Jalalabad city (10 April 2018).

[11] Giustozzi, A., 2018.

[12] Global Witness, 2018b.

[13] Byrd, W.A. and J. Noorani, 2017.

[14] Global Witness, 2018b.

[15] Interview with an investigative journalist based in Nangarhar (20 April 2019).

[16] Byrd, W.A. and J. Noorani, 2017.

[17] Giustozzi, A., 2018.

[18] UNDP, 2018b.

[19] Interview with a mining company in Nangarhar (4 May 2019).

[20] Byrd, W.A. and J. Noorani, 2017.

[21] Interviews with civil society activists, Kabul (June 2017).

[22] List of illegal mining sites published by MoMP in 2013. Cited in Byrd, W.A. and J. Noorani, 2017.

[23] Noorani, J., 2015.

[24] Calculation based on the data from Ministry of Mines and Petroleum (MoMP), n.d.-c.

[25] Integrity Watch Afghanistan, 2015.

[26] UNDP, 2018b.

[27] UNDP, 2018b.

[28] Global Witness, 2018c.

[29] Global Witness, 2018c. This is an approximate price estimate for average quality lapis. In reality, lapis prices vary widely, from a little over $1 to $1.000 per kg, depending on its quality (grade).

[30] UNDP, 2018b.

[31] Snyder, R., 2006.

[32] Byrd, W.A. and J. Noorani, 2017.

[33] Blasting to extract onyx damages the quality of onyx, creating cracks, which subsequently break blocks of onyx during the transportation and handling. This problem is present with other kinds of marbles, lapis, etc. Instead, miners have the option of using industrial saws which preserve the quality and, consequently, the value of onyx.

[34] Interview with a civil society activist, Kabul (6 June 2017).

[35] Peters, G., 2012.

[36] The mines were Ghori Cement (cement, coal, and cement raw materials), Nuraba and Samti (gold), Qara Zaghan (gold), Kohi Safi (chromite), and Western Garmak (coal). Integrity Watch Afghanistan, 2015.

[37] Calculation based on the data from Ministry of Mines and Petroleum (MoMP), n.d.-c.

[38] Noorani, J. 2015.

[39] Byrd, W.A. and J. Noorani, 2017.

[40] Noorani, J., 2015.

[41] Byrd, W.A. and J. Noorani, 2017.

[42] The Revenue Governance Index (RGI) is made up of three components: value realization from the extractive sector, revenue management; and the enabling environment. The scores of the first two components are from questionnaires completed by independent researchers, while the third component aggregates data from over 20 international organizations. The assessment covers the period 2015-2016. See RGI Methodology Available from https://resourcegovernanceindex.org/about/methodology. Accessed on May 13, 2019.

[43] World Bank, 2019b.

[44] UNDP, 2018b.

[45] As above.

[46] In Nangarhar and Helmand, where interviews were carried out, the Pakistani rupee is the predominant means of exchange, at least in mining-related transactions.

[47] UNDP, 2018b.

[48] As above.

[49] As above.

[50] Exposure to particulate matter 10, 2.5 and 1 micrometres in diameter. Fine particles (PM2.5 and below) are particularly harmful to lungs. Mine workers with prolonged exposure to this have high risk of lung diseases, including wheezing, coughing, and chronic (long-term) industrial lung diseases, notably emphysema and chronic bronchitis.

[51] It is not known how prevalent are the deaths of men due to mining; the general insecurity and insurgency are probably responsible to a much greater extent. Figures from Central Statistics Organization, 2018.

[52] Integrity Watch Afghanistan, 2014.

[53] Interview with residents of Qara Zaghan, Delawar (27 April 2013).

[54] Integrity Watch Afghanistan, 2015.

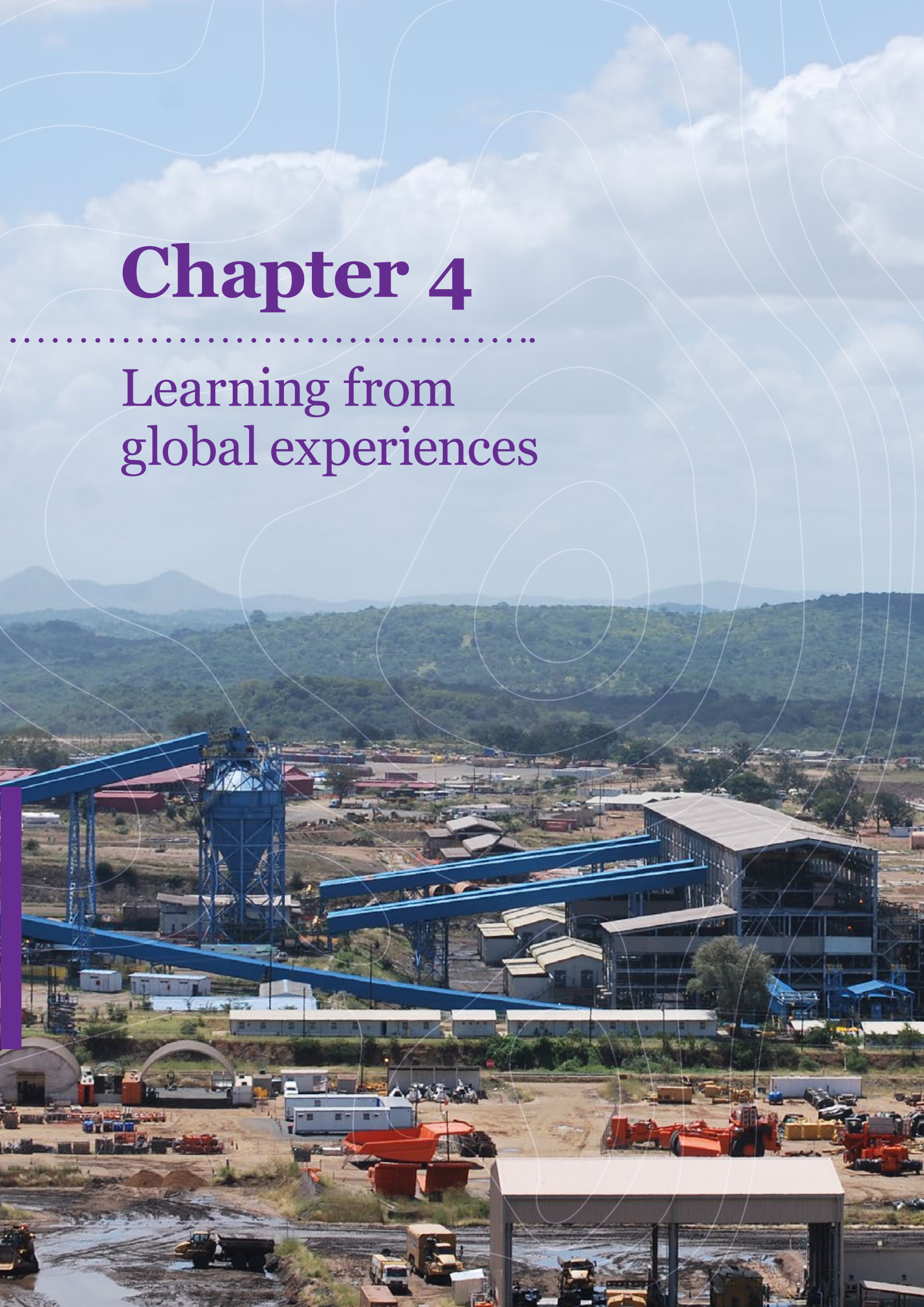
[55] As above.

[56] Global Witness, 2018c.

[57] Global Witness, 2018b.

Chapter 4

Learning from global experiences



The extractive industry can promote economic growth and accelerate human development. But not automatically. Many countries whose economies have been dominated by minerals extraction have seen an increase in conflict and have suffered from the 'resource curse'. Often a few people have gained while many more have suffered from displacement or other negative effects. Afghanistan has much to learn from the missteps in other resource-rich countries.

Sustainable human development is a process of expanding the substantive freedoms of people today while making reasonable efforts to avoid seriously compromising freedoms of future generations.[1] Protecting the most disadvantaged groups is also a central concern of human development and the 2030 Agenda for Sustainable Development, expressed through its principle of "leaving no one behind".

Sustainable human development is firmly grounded in the principles of equity – both intra-generational and inter-generational. Intra-generational equity requires that the environment and resources, including basic natural resources, be managed judiciously to expand opportunities for the most disadvantaged. It is equally important to ensure inter-generational equity. The present generation should use institutions and resources effectively to safeguard the interests and rights of future generations. The well-being of tomorrow's generation will depend upon efforts to reduce pollution, limit the emission of greenhouse gases, prevent the destruction of forests and natural habitats, and avert premature depletion of exhaustible resources.

These principles of sustainable human development – intra- and inter-generational equity – can be compromised if the extractive sector is poorly managed. In the process of resource extraction, people and communities facing multiple deprivations can face the additional brunt of environmental degradation,[2] while the financial benefits of resource extraction accrue to few, worsening intra-generational inequality. Environmental degradation and depletion of non-renewable resources as a result of resource extraction can deprive future generations. Moreover, especially in countries with pre-existing conflict, the extractive sector can exacerbate conflicts.

At the same time, a responsible and well-regulated extractive sector can benefit human development in a number of ways. It can boost government revenues that can be invested in public services, and also generate export earnings. It can also create jobs, increase demand for local enterprises, help develop infrastructure such as roads and energy, benefitting communities living in the vicinity.[3] The extractive industry can also make social investments in local communities.

Learning from experiences from other resource-rich countries is important to avoid the pitfalls and enhance the benefits from the extractive sector.

Experiences of resource-rich countries

In some countries, growth, economic diversification and food security have been negatively affected by minerals extraction. In Nigeria in the 1970s and Yemen in the 1990s, large-scale oil extraction was accompanied by declines in their manufacturing and agriculture. Yemen has turned from being self-sufficient in food production to a country dependent on food imports.[4] There are many examples of oil-rich

countries such as Algeria, Angola, Colombia, Nigeria, Sudan and Iraq that have had civil wars.[5]

Other resource-rich countries have made more progress, but even so not as rapidly as other less well-endowed economies. Botswana, Indonesia, Malaysia and Thailand, for example, have had sustained high growth and investment for decades using their resource sectors but have not developed as rapidly as the East Asian 'tiger' economies such as Republic of Korea, Singapore which have achieved high standards of living despite having few exportable natural resources.[6]

In recent decades, only a few countries have turned their resource wealth into sustained improvements in human development or growth in incomes. These include Botswana, Chile and the United Arab Emirates. Botswana since the mid-1980s following diamond discoveries, and rising international prices, has made consistently high investments in health and education, as a result of which health and education indicators have improved substantially.[7] Chile, between 1980 and 1998, reduced its reliance on exports of copper, diversifying into wood and pulp, fisheries and fruit.[8] United Arab Emirates, in anticipation of its oil depletion, has also made big advances in health and education, and development of non-oil sectors.[9]

The resource curse

The poor experience of many resource-rich countries has been described as the 'resource curse'. There are various explanations for this, involving political and economic factors, often intermeshed.

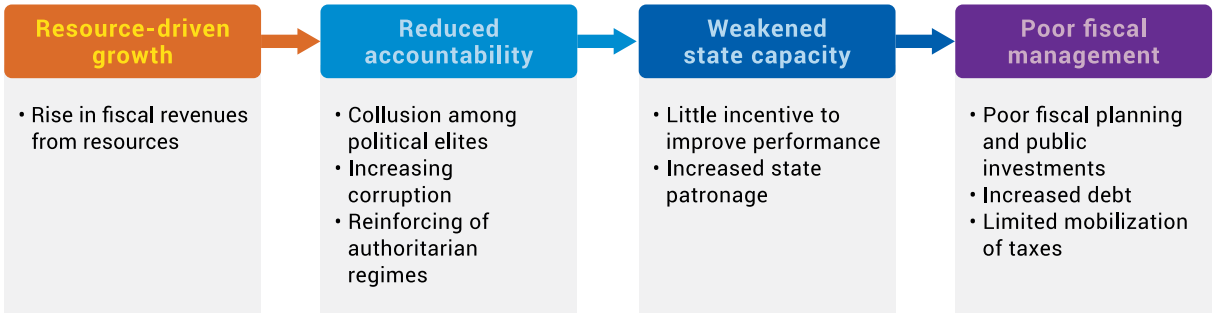
The political dimensions

Rapid increases in fiscal revenue, economic growth and private profits can weaken governance (Figure 4-1). Collusion between political and business elites leads to reduced accountability and an increase in corruption.[10, 11, 12, 13] This also tends to weaken state institutions, which find it increasingly difficult to manage fiscal revenues.[14, 15] These difficulties are further compounded by the volatility of resource revenues and the siphoning off of large amounts of revenues by corrupt officials.

Weak state capacity and inept institutions further undermine the ability of the State to tax its citizens. Often the profits are diverted to tax havens.[16] It also reduces the quality of public planning and investment and, despite higher revenues, tends to increase public debt.[17, 18] The decline in public revenues can then reduce public investment in human and physical capital.

In the end, because of reduced growth and fiscal revenues resulting from either a slump in mineral, oil and gas prices or depletion of resources, the

Figure 4-1. The resource curse: Adverse political economy effects of resource dependence



country ends up with high debt and an eroded tax base. During a resource boom, states with weak institutions, may also suffer from a 'voracity effect' in which powerful groups compete for the windfall which further dampens economic growth.[19, 20]

The economic dimensions

Extractive industry-led growth can afflict the economy with the 'Dutch disease'. This phenomenon happens when a rapid growth in resource-based industries displaces other exportable goods-industries (mainly manufacturing).[21]

If a country, for instance, discovers substantial amounts of oil, gas or minerals, it will begin to export these commodities causing a sharp increase in GDP. This in turn raises tax revenues, improves the current account, and creates employment opportunities. Most resource-rich developing countries benefited from the 2001-2013 commodities super-cycle.[22]

However, resource-led growth can also lead to the appreciation of the currency, growth of real wages, and increase in imports; all of these can undermine export-oriented non-resource sectors and make them uncompetitive on international markets, thus affecting the ability of the country to diversify the economy away from resource extraction.

Due to the increased wealth, and spending on services, there is likely to be higher demand for service sector workers. This could boost real wages, making it difficult to retain workers in other sectors. Due to a higher exchange rate and higher wages, manufacturing becomes uncompetitive and output will fall, as will investment, leading to slower growth. As a result, manufacturing industries see a substantial fall in demand and the economy could shift from manufacturing towards the primary sector.[23]

Sectors, such as manufacturing that begin to lag behind other countries will find it difficult to catch up later.

Together, these factors reduce the competitiveness of non-resource export-oriented sectors such as manufacturing, while temporarily boosting the service sector. The economy becomes more dependent on the resource sector. Subsequently, when the boom subsides or the resources are depleted, the economy declines.

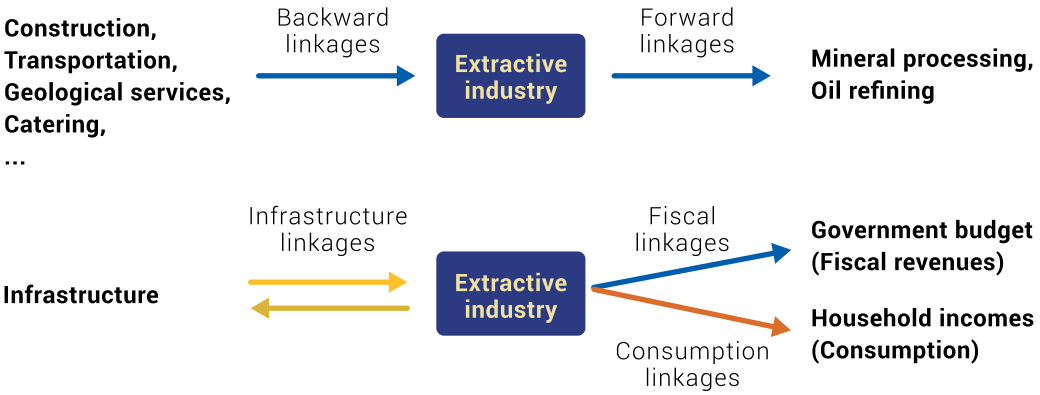
Another negative economic effect of resource-led growth is through low employment and high earnings of capital owners. The capital-intensive nature and low employment generation of the extractive industry leads to higher inequality. Often, the discovery of raw materials benefits a small percentage of the population.[24, 25] While workers gain from rising real wages in the mining and service sectors, most of the gains from resource extraction accrue to owners of capital. Thus, the benefits are not equally distributed within society, so wealth becomes increasingly concentrated in the hands of a small number of people. Weak diversification, capital intensity and poor sectoral linkages can reduce demand for labour and the entry of women into the workforce. Benefits in terms of jobs, technology and profits tend to accrue to more developed countries from where the investors come, rather than to the local economy.

Further, the resource extraction sector can operate as an 'enclave', with few linkages to the rest of the economy, doing little to provide jobs or help diversification (On linkages, see Box 4-1).[26] The enclave sector imports most inputs, including equipment, capital and workers; so subsequently most of the gains from resource extraction accrue to suppliers, capital owners and workers from abroad.

Box 4-1. Linkages between the extractive industry and the economy

For the extractive industry to have a positive economic impact on the rest of the economy, its linkages with the economy need to be strengthened. There are various types of linkages.

Figure 4-2. Linkages between the extractive industry and the economy



Forward linkages – These involve processing mineral commodities or oil to produce finished goods instead of exporting them in their raw state. This retains more wealth in the country, and adds to employment, industrialization and economic diversification. These linkages tend to be more significant in small-scale mining operations – for precious and semi-precious stones, for example, and for gold, and dimension stones such as marble and onyx, as well as talc.

Backward linkages – These linkages connect local suppliers of goods and services to extractive companies and promote the establishment of other local industries. These linkages tend to be more important for large-scale mining, and for oil and gas industries. Large extractive companies can buy geological services, construction services, mine management services, uniforms and personal protective equipment for mining workers, catering services, transportation and security services.

Fiscal linkages – Fiscal revenues from taxes and royalties on hydrocarbon and mineral production can be used to promote industrial development in non-commodity sectors and invest in human development.

Spatial, or infrastructure linkages – These linkages comprise essential infrastructure built to facilitate resource extraction – such as electricity generation, roads, rail or ports - which can benefit other economic sectors and improve the functioning of local markets.

Consumption linkages – Demand created by extractive industry workers, combined with spending by companies on goods produced locally, will contribute to growth of other sectors, employment and incomes in these sectors.

Horizontal linkages – Skills and capabilities acquired in the extractive sector can be used to develop other industrial activities or sectors. Together with a business-friendly environment this can foster the development of small and medium-sized enterprises and contribute to industrialization and job creation.

Source: UNCTAD, 2017.

Environmental degradation

Mineral and hydrocarbon extraction projects affect water, land (soil) and air of surrounding areas. In arid or semi-desert environments, the main impacts are related to the use of water in the process of extraction and spreading toxic dust by dust storms. In mountainous areas, the most severe environmental impacts can include landslides, failures of waste storage piles, spilling of tailings, and pollution of water. Mining uses large amounts of water and this may reduce water available for agriculture or other sources of livelihood communities.

Particularly in forested and other valued vegetation areas, mining can significantly affect the environment by removing of forest or vegetation cover, loss of ecosystems and habitats, scarring of landscapes, acid mine drainage. Major environmental impacts are caused not only by the extraction process per se, but also by transportation of the resources, the placement of waste, and the location of workshops and worker housing.

Violence and conflict

Countries have experienced an increase in violence and conflict arising out of mineral extraction. According to a UNEP report, natural resources have played a role in at least 40 per cent of all intra-state conflicts.[27] For instance, in fragile countries with recent histories of political violence, studies show that discovering giant oilfields increases the incidence of internal armed conflict by five to eight percentage points.[28] In Afghanistan, with pre-existing conflict, the risk of mineral extraction fuelling the flames of conflict is real.

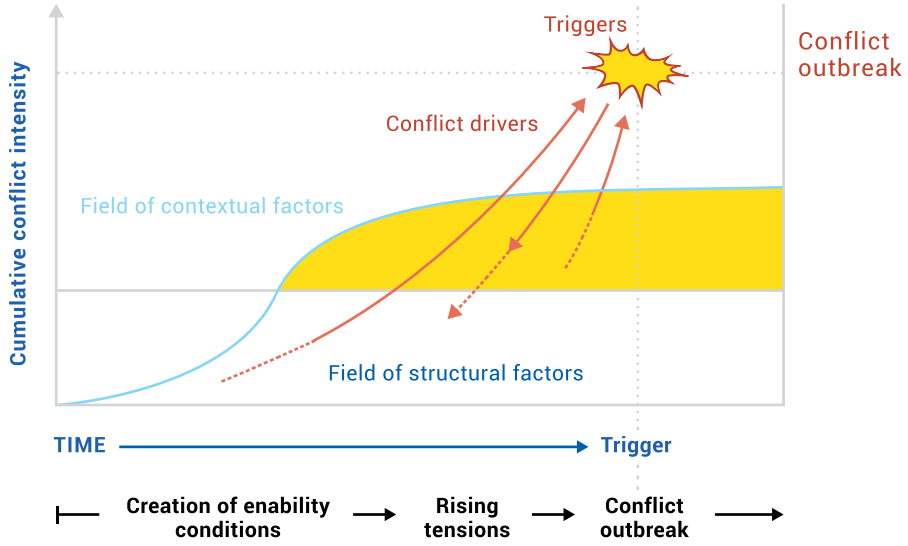
Conflict dynamics are shaped, initially, by structural and contextual factors that create an enabling environment for conflict. Within such environment, resource extraction can become a driver or trigger of conflict [29] (Figure 4-3).

First, longer-term structural and contextual factors underlie conflict – such as poverty, inequality, oppression and marginalization, especially along ethnic, religious or linguistic divides. Other contextual factors include weak governance, corruption and lack of transparency of governments, as well as inability or unwillingness of the government to develop rural and far-flung areas.

Second, natural resource exploitation can become a driver of conflict, creating short-to-medium-term conditions for conflict. The drivers of conflict can be 'greed or grievance' concerning natural resources.[30] When 'greed' drives conflict, rebel groups instigate or sustain an existing conflict, claiming the resource or a bigger share of the proceeds from its exploitation. Similarly, 'grievances' can drive conflict when local communities and groups residing in areas rich with natural resources hold a grudge against the government or large resource companies. In reality, both these drivers of natural resource-related conflict – greed and grievance - often co-exist and the parties to the conflict may hold different views on whether the local community or group is motivated by grievance or greed.

In a scenario of 'greed' driving conflict, natural resources can be sought to finance conflict. Exploitation of natural resources can provide finance to rebel groups in the resource-rich territory to start conflict, or to sustain pre-existing conflict. Nor do conflicts have to happen after the start of mining. The mere prospect of natural resource exploitation can also drive conflict, even if production has not started and money has not started to flow. For instance, rebel groups and governments can get financing from outside parties on the promise of repaying them with resources in the future – and use this financing to start or extend wars and conflicts.[31] Violent conflict can also be instigated by rebel groups to gain territory with rich natural resources.

Figure 4-3. Factors of resource-related conflicts



Source: Adapted from CIRDI, 2018.

In scenarios of 'grievances' driving conflict, groups settled in areas with natural resources may be excluded from benefits from resource exploitation or consultation, displaced or forcefully relocated, or may be affected by environmental impacts or face economic insecurity, as discussed below.

- **Exclusion** – For example, when ethnic groups excluded from the political leadership in the country and when natural resources are found in areas where they live, group leaders are likely to demand a share of the proceeds from extraction.[32] The ethnic group can use violence to push for independence or autonomy to secure control of the natural resource wealth.
- **Displacement and forced relocation** – Conflicts involving mining companies have often revolved around forced relocation or displacement of local communities from their lands. People displaced by mining, oil and gas projects may join armed groups. Additionally, displacement has serious adverse effects on people's health, livelihoods and social cohesion – creating conflict.
- **Lack of community engagement** – Poor or absent consultation or engagement with local communities about resource extraction projects in their areas can become a driver of conflict. This is further compounded by poorly implemented resettlement, significant environmental impacts, and lack of jobs or other economic opportunities. Lack of transparent and reliable information about extractive projects can fuel expectations and if they are not realized, they could lead to conflict.
- **Environmental impacts** – For instance, mining uses large amounts of water and this may reduce availability for agriculture or other livelihood sources, thus displacing local communities indirectly, rendering them unable to live in the area. Oil spills may affect the soil and water on which communities depend.

- **Economic insecurity and unfair benefit-sharing** – Lack of economic opportunities and economic insecurity can escalate conflict. Conflicts can arise from the absence of jobs, particularly if expectations are high. In addition, growing inequalities between those who have benefited and those who have been negatively impacted by mining can fuel conflict.

Third, short-term conditions or events related to natural resource exploitation can become tipping point or triggers, transforming otherwise latent tensions into open conflict, or escalating existing conflict. Conflict can flare up, for example, as a result of an armed response from a mining company to a community protest, an accident due to trucking of minerals through a village, a sudden clampdown on artisanal and small-scale miners, forceful relocation of communities, or a tailings pond spill into a river. Any of these events can spark off violent clashes.

Afghanistan has the opportunity to benefit from its natural resources by ending conflict and improving its resource governance.

Afghanistan has the opportunity to benefit from its natural resources by focusing on ending conflict and improving its resource governance. As underscored by the 2030 Agenda: "Sustainable development cannot be realized without peace and security; and peace and security will be at risk without sustainable development." The extent to which this can be achieved will depend upon the government's ability to restore peace, promote social cohesion, and bring the mining sector under its oversight and control. The next chapter will consider the practical steps that need to be taken.

[1] UNDP, 2011.
[2] As above.
[3] UNDP and UNEP, 2018.
[4] Hailu, D. et al, 2011.
[5] Ross, M., 2012.
[6] van der Ploeg, F., 2010.
[7] Hailu, D., et al, 2011.
[8] Perez-Aleman, P., 2005.
[9] van der Ploeg, F., 2010.
[10] di John, J., 2011.
[11] Auty, R., 2007.
[12] Ross, M., 2011.
[13] Mavrotas, G., S. M. Murshed and S. Torres, 2012.
[14] van der Ploeg, F. 2010.
[15] di John, J., 2011.
[16] Ross, M., 2015.
[17] Davis, G.A., 2009.
[18] Hailu, D. and J. Weeks, 2012.
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[21] Corden, W. and J. Neary, 1982.
[22] Humphreys, M., J.D. Sachs, and J.E. Stiglitz, 2007.
[23] Corden, W. and Neary, J., 1982.
[24] Ross, M., 2001.
[25] Stijns, J., 2005.
[26] UNCTAD, 2017.
[27] Quoted in UCDP/PRIO, 2008.
[28] Lei, Y.H. and G. Michaels, 2011.
[29] Andrews, T. et al., 2018.
[30] Collier, P. and A. Hoeffler, 2004.
[31] Ross, M., 2004.
[32] Asal, V. et al, 2015.

Chapter 5

Making minerals work for people

Afghanistan is one of the world's poorest countries – held back by decades of conflict. With prospects for peace, there will be greater opportunities for investing in human development. This will require taking full advantage of the country's mineral resources. But it will require a determined and concerted effort to reform the country's policies and institutions governing these resources.

The ultimate objective of minerals extraction in Afghanistan should be sustainable human development and improvements in people's well-being. So far, the discourse in Afghanistan has focused mainly on developing large-scale projects to generate fiscal resources for advancing human development. But this is not the whole story. Equally important is using those revenues well, investing in human development, and expanding opportunities for all – especially the young, women, the poor and the disadvantaged. The extractive industry must also provide decent jobs, support social cohesion, foster good governance, and limit damage to the environment.

The extractive industry can, over time, drive future economic growth, create jobs and increase incomes. It can also make supporting investments in transport and other infrastructure, improve trade and the balance-of-payments, boost domestic fiscal revenues, and contribute to reducing Afghanistan's dependence on overseas development assistance. And if managed properly, the benefits from mineral extraction can accrue not just to industry and government, but also to local communities. By becoming a driver of economic growth and diversification, the extractive sector can help reduce poverty. But much needs to be done to unlock Afghanistan's mineral wealth and use this to benefit its people.

The peace dividend

The government and stakeholders in Afghanistan should make every effort to build peace and promote social cohesion. This will mean tackling power relations and confronting the social groups or institutions responsible for exclusion. The government already has an established tradition of working with civil society organizations in delivering essential public services to the most difficult to reach parts of the country.

Now the time is right for stakeholders in government, civil society, and the corporate sector with development partners to come together to strengthen social cohesion and develop a common vision. They should promote dialogue, encourage participation and solicit engagement of groups from different backgrounds. Special efforts should be made to bring women into the peace-building processes and talks. Such actions will help build people's trust in the institutions of governance – and restore their faith in the State especially as it becomes much more responsive, accountable to, and protective of its citizens.

Peace and stability are needed for human development in their own right. They are also needed to attract foreign investment. To explore and exploit its large-scale mineral, oil and gas deposits, Afghanistan needs to attract foreign investment, as its economy is currently not capable of mustering investments at the scale needed. Such investment should also be conducive for social cohesion and reducing conflict. Peace and stability are important preconditions for attracting large investments,

and for implementing extractive projects, but peace should also be a consequence of such investment. Peace and stability would also help small- and medium-scale operations, reducing their costs of doing business and enabling them to raise their sights beyond short-term profit-making.

Strategies for better governance of the extractive industry

Resource extraction could drive the economy of Afghanistan for many years to come. It is important therefore, to take a perspective beyond short-term economic and fiscal benefits, one that also considers the longer-term economic, social and environmental impacts.

There are many uncertainties with the extractive industry that are outside of Afghanistan's control. The international market prices for minerals depend on economic growth in the larger economies. There is also a considerable uncertainty about available mineral resources. However, the Afghanistan government and stakeholders can act upon those factors that they can influence. The immediate priority is to achieve peace, improve social cohesion and substantially strengthen governance.

The government should formulate strategies tailored for large-scale extractive projects and small- and medium-scale mining. For implementation of these strategies, significant improvement in coordination and collaboration within the government – across ministries, agencies and levels of government – will be necessary.

In dealing with large investors, the government should strike a balance between making the fiscal environment attractive to them and ensuring that it takes a fair share for Afghanistan – since fiscal revenues will likely be the most tangible benefit of such large investments. It should also use the extractive industry to enhance employment and business development opportunities for Afghan people and businesses and facilitate investments in infrastructure by the extractive industry that benefit people. Resettlement and compensation of communities and the process of addressing grievances should be carried out to a high standard. As large-scale projects take off, it will need to deal with the 'resource curse' effects on the economy, politics and institutions.

With regard to small- and medium-scale mining, the government's strategy should be to promote responsible mining while discouraging illegitimate or illegal mining. The government should tackle corruption, and introduce checks and balances to identify and limit 'leakages' of taxes and other fiscal revenues. The government should consider providing extension services and introduce practical rules for small- and medium-scale mining businesses to improve their health, safety, and environmental management standards. It should also develop mineral processing and mineral value chains – developing forward linkages to the economy. The government has commissioned several value chain studies covering talc, marble, granite sectors, providing valuable recommendations for developing value chains and promote investment in these sectors.[1]

Specific recommendations

Harnessing the benefits of the extractive industry for human development will require actions on three broad fronts:

- Preventing loss of fiscal revenues
- Protecting people and the environment
- Promoting a legitimate and responsible extractive industry

Preventing loss of fiscal revenues

Most mining enterprises see the government as a corrupt and distant entity whose only functions are to issue contracts and levy taxes – while offering little in return. And even these functions are not performed efficiently. The government needs therefore to streamline the mining contracting procedures and lower the cost of doing business for taxpaying companies.

It is also important to eliminate small-scale, daily corruption and harassment which undermines the government's reputation and harms state-building. This will mean listening more to citizens particularly through civil society organizations and taking systematic steps to root out corruption.

This will require efforts at increasing transparency, empowering civil society and the media, holding officials accountable, and making inroads into reducing illegal business and trade. In fighting corruption, a carrot-and-stick approach can be used that punishes corrupt behaviour, leading to a loss of face and social status, while also offering incentives to government officials for honesty. More specifically with regard to governance of the extractive industry, the following measures can help reduce corruption:

Integrate government records – The government has been taking steps to develop the Mining Cadaster Administration System (MCAS) and Non-Tax Revenue System (NTRS). To help identify sources of leakage of fiscal revenues, the government can integrate separate databases covering the extractive industry, which would enable checks and balances between relevant government institutions: the MoMP and the Afghanistan Geological Survey, the Ministry of Finance, the Customs Office, and the Central Statistics Organization, as well as the Afghanistan Extractive industry' Transparency Initiative (AEITI). Data on mining contracts, production and trade of minerals, and on fiscal revenues should be cross-checked, analysed, reconciled and verified. In addition, import data from Afghanistan's major trading partners (Pakistan, Iran, UAE) should be cross-checked with Afghanistan's export data. By identifying areas where most losses of fiscal revenues are occurring, such a system can help bring informal and illegal mining under the government ambit, helping to stem the leakage of revenues.

Track and tax mineral movements – The government should strengthen its capacity for recording movements of minerals at major border crossing points. It should also consider the feasibility of collecting taxes from trucks carrying minerals at major transport routes for domestic trade. In addition, it should boost expertise for valuing precious and semi-precious stones at the major border points through which gemstones are exported.

Improve contracting procedures – Mining contracts should be issued transparently, through open and fair bidding processes that are understandable and clearly communicated. The Ministry of Mines and Petroleum should harmonize the duration of small contracts to minimize discretion – and corruption. It should also regularly update the list and the database of licenses and contracts, and digitize mining contracts, making this information publicly and consistently available and in local languages. In addition, the government should consider modifying the provisions for small-scale mining to give preferences for local communities and allow reasonably long contracts.

Simplify taxes – To improve compliance and revenue collection, royalty and export taxes should be simple and understandable, with no unnecessary differences in duty rates, and clearly communicated to the public. The government should also negotiate with neighbouring countries, particularly Iran and Pakistan, to prevent sudden and arbitrary increases in transit and import taxes. At the same time, the government should enhance security to protect legal taxpayers from extortion – which could start with a comprehensive review of payments that legitimate extractive sector companies currently have to make by way of formal taxes, bribes to government officials, and 'protection' money to the Taliban and other insurgent groups.

Empower communities – Communities should be able to demand responsible mining conduct. Information in foreign languages, aggregated information without context, thick reports and unrealistic claims tend to confuse communities, raise unreasonable expectations, create divisions, brew conflict, or simply not be used. Instead, the government can help with awareness raising and education programmes about responsible mining through Community Development Councils (CDCs) and Cluster CDCs, as well as District Councils. These should include relevant information on resource extraction projects – such as investment contracts, beneficial owners of mining companies, taxes and royalties paid to the central and subnational governments and local councils, and social investments by these companies.

Governments seeking to manage the extractive industry are operating in a very complex environment with volatile international prices and uncertainties in mineral and hydrocarbon estimates of reserves and the amounts extracted. To better navigate these uncertainties and get the most out of its mineral wealth, the Government of Afghanistan needs to invest significantly in its knowledge and capacities and awareness of its resource base, as well as the international markets, and potential investors. For this purpose, the government can address the following issues:

Strengthen transparency standards – The government should expand the coverage of companies by AEITI reconciliation reports, and start to implement more advanced EITI standards such as disclosure of ultimate beneficial owners of companies getting extractive industry contracts. It should ensure that a detailed breakdown of fiscal revenues from the extractive industry is reported systematically by MoF. The role of civil society institutions in AEITI needs to be strengthened.

Require company disclosures – Ensure that large mining, oil and gas companies adhere to international standards of disclosure and transparency, so that crucial financial and technical information can be verified and analysed by independent experts. Large investors – even if not publicly listed - should adhere to international stock market-like rules on disclosure of mineral reserves and resources; of feasibility studies; of investment and other related contracts; and of disclosure to EITI.[2] Greater transparency and disclosure practices would enable the government and independent institutions to conduct verification and would benefit Afghanistan.

Establish a research and advisory unit – Staffed with specialists such as economists, lawyers, engineers and geologists, such a unit should conduct proactive research and assessment of large resource projects, the market of key minerals and hydrocarbons, and Afghanistan's resource base. The government should then be able to formulate formulate policies that are based on greater awareness and knowledge about markets, investors and its resources.

Analyse international markets – Policy formulation should be based on comprehensive understanding and analysis of markets and prices – including final destinations for Afghanistan's minerals, oil and gas - as well as future prospects. Particular attention should be paid to Pakistan, Iran and China, which are major destinations, transit countries, and value-adding countries.

Enrich geological data –The public geological data at the Afghanistan Geological Survey should be continually enriched with data collected through exploration conducted with public and private investment. Afghanistan Geological Survey should also establish a clear system of sharing detailed geological data with prospective investors. Public information should make a clear distinction between mineral resources known with greater and lesser degrees of certainty.

Protecting people and the environment

Governing the extractive industry for sustainable human development means protecting the rights of workers and communities and protecting the environment. This requires significant improvement in coordination and collaboration between MoMP, NEPA, local governments and other relevant ministries and government agencies.

Many of the social conflicts triggered by resource extraction can be avoided by ensuring sufficient consultation and community engagement, providing accurate information on mining impacts, managing expectations, addressing environmental concerns, ensuring equitable distribution of social and economic benefits, and ensuring peaceful resolution of disputes over land use. Mitigating the social and environmental impacts of mining will also improve the reputation of the extractive sector at large, generating greater social acceptance of large-scale extractive projects in the future.

Protect human rights – Afghanistan should adapt for its extractive industry the UN Guiding Principles on Business and Human Rights with the objective to 'protect, respect and remedy' and based on the principles of 'free, prior and informed consent' (FPIC). This should progressively apply to extractive companies and their subcontracted companies, such as security and transportation service providers. The aim is to protect the rights of people, which should include access to judicial and non-judicial services and also traditional mechanisms of addressing grievances. Companies should consult with communities prior to and during resource extraction – ensuring spaces for women to have their say. Civil society organization should also be free to promote awareness about human rights and investigate and document violations. Training programmes for business and government should cover human rights and the roles of duty bearers. The government should investigate human rights abuses flagged by civil society and hold perpetrators to account.

Compensate displaced communities – The government should develop a legal framework and standards on resettlement and compensation based on best international standards and practices, recognizing and compensating communities who have been displaced physically or economically. Beneficiaries should include nomadic Kuchi communities and migrated and returnee communities. The framework should cover traditional systems of land compensation, and address cases of inadequate or highly unequal compensation. Affected communities should have access to legal aid and support from civil society groups who can help document problems and address grievances.

Guarantee the rights of workers – Companies should progressively introduce written contracts with workers which could be based

on a model contract. The government can help publicize wage rates and spearhead the concept and practice of minimum wages, while also empowering workers for collective bargaining to negotiate decent working conditions. Workers should also have health, disability and life insurance and be signed up to a civil register. This should also apply to workers in subcontracted services such as transportation, security, construction and catering, as well as in mineral processing workshops.

Make workspaces women-friendly – This would apply especially to mineral processing workshops, through sensitizing communities and employees regarding gender-sensitive employment and business conduct, and promoting culturally appropriate, women-friendly workspaces.

Ensure health and safety standards – Enterprises can do a lot to improve safety in mines and quarries, often without significant costs. This should include safe handling or elimination of explosives, monitoring dust and radiation, giving protective gear and safety training to workers, improving mine site planning, and introducing devices for workers to get in and out of mines and to haul heavy loads. For older mines, it will be important to identify those at high risk of collapse. Risk assessment will also be needed in waste or gangue storage areas, in mine workers' accommodation and in transportation. Mandating high standards immediately would, however, not be practical and possibly a source of corruption and dissatisfaction for businesses. So, the government with the help of development partners should provide guidance, complementary training, and providing

The Green Afghanistan Association, a local NGO supported by UNDP and the Global Environment Facility's Small Grants Programme, has provided recycling bins and awareness programmes to keep the streets clean and disease-free in Zargaran township, Bamyan province © UNDP Afghanistan / Robert Few

incentives to 'model mines' that have good health, safety and environmental standards. Such guidance and training could be done through provision of mining extension services.

Improve environmental and social impact assessments (ESIAs) – For this purpose, the government will need to strengthen the capacities of, and collaboration between, the relevant ministries. Informal and small-scale mines should have ESIAs appropriate for the local conditions and they should have simpler and more practical tools commensurate with their capacities. These can include 'clean and green' books with checklists of actions to be taken to mitigate environmental impacts – tools which can become more sophisticated over time. The government should also provide extension services to provide knowledge and skills on better and more environmentally sound methods and technologies.

Improve environmental regulations and their enforcement – Regulations and capacity building should be commensurate to different scales and types of mining and local geographic-climatic conditions – as in deserts and high mountainous areas, considering issues such as water scarcity and risks of landslides. The government can also consider a ban on blasting of talc, dimension stones, and precious and semi-precious stones – as the Taliban have recently done for onyx. This would not only improve safety and minimize environmental impacts but would also reduce wastage and increase the value of mined material, while improving the supply of material to mineral processing workshops.

Strengthen environmental management capacities – The government and development partners should strengthen environmental impact mitigation. The government can also consider providing incentives to mining enterprises which meet the standards by involving them in capacity-building and credit programmes. The central government should work closely with local governments and communities to spread the message about the importance of environmental stewardship in mining – not only for the sake of environmental protection, but also for reducing costs, saving lives, improving safety, and increasing the value of mined products, as well as for longer-term benefits in terms of safeguarding the natural environment for their livelihoods and for natural amenities.

Allocate financial resources for impact mitigation and mining extension services – The government could allocate a share of fiscal revenues from the extractive industry towards mitigating the damage it does to the environment. This can be used for monitoring environmental impacts, capacity building, and for enforcing regulations. It can also allocate a share to mining extension services for small and middle-sized mining companies to improve their health, safety and environmental management.

Protect nature – The government with civil society, should define and record protected areas – critical habitats and areas of great natural beauty and cultural heritage, and enforce these as no-go zones for the extractive industry. Urgent action should be taken to protect, for example, the travertine lakes and canyons straddling Ghor and Sar-e-Pool provinces – areas which are at risk from artisanal and illegal mining. The government should consider adopting the International Union for Conservation of Nature (IUCN) protected area categories system.

Make use of international frameworks, principles and standards – These include mining policy frameworks such as the one by the Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development (IGF)[3] and environmental and social management frameworks developed by several organizations such as the IUCN [4], the IFC [5], as well as national governments and stakeholders – such as Australia.[6]

Promoting a legitimate and responsible extractive industry

If Afghanistan is to attract large foreign investment it will need to improve the business environment, while ensuring a fair 'government take'. For small- and medium-scale mining, the government should adopt an enabling approach, promoting legitimate and responsible business practices while at the same time tackling illegal mining. It should also aim to expand mineral value-chains and processing especially for gemstones and dimension stones. The government will also need to promote decent jobs in the extractive industry, while investing in training and skills development.

With respect to promoting responsible mineral extraction and processing it will be important to:

Balance the returns to the government and investors – Investors should be able to earn reasonable profits, while the government should also have a fair 'take'. For this purpose, for large-scale extractive projects the government should develop financial/fiscal models that help the government to set or negotiate taxes and royalties that are attractive for investors, while providing a fair share of benefits to Afghanistan. This should be combined with measures for transparency and disclosure of information.

Provide extension services – Given the dearth of knowledge and experience in the extractive sector, the government, in partnership with development partners and the private sector, should provide a broad range of extension programmes. These would cover many issues prioritized above such as improved mining methods and technologies, health, safety, environmental management, conducting exploration and using geological information, and promoting human rights and gender-sensitive business practices. It would be useful to identify model mines and quarries that are legitimate and responsible.

Upgrade value chains – The government and development partners can promote private or joint public-private ventures to upgrade value chains and build capacities of stakeholders especially for processing gemstones, precious metals and dimension stones. Measures should also include improving the business practices of traders, truckers, and handlers of minerals. This will entail building managerial and technical skills, facilitating access to financing and equipment, facilitating access to markets, and developing gender-equitable and ethical workplaces.

Adopt certification schemes – The government should adopt internationally accepted certification schemes or develop Afghanistan-specific schemes to incentivize responsible businesses and facilitate better access to international markets for them. These would certify that minerals are conflict-free and are being mined and traded in a way that meets human rights and environmental standards. For this purpose, it can draw on experiences from the Kimberley initiative, the International Conference of the Great Lakes Region Protocol, and other conflict-free certification schemes.

Reduce the cost of doing business – The government should improve the business environment and reduce the cost of doing business. This will mean reducing corruption, rationalizing taxes, simplifying and harmonizing contracts and permits, providing security and extending essential public services such as roads and energy to mining companies and local communities. It will also require negotiating lower taxes on processed goods made in Afghanistan with neighbouring and destination countries – particularly Iran.

With respect to improving employment in the extractives industry:

Develop an employment strategy – The government should develop a targeted strategy for extractive sector employment based on projected labour demand from large-scale mining, oil and gas projects. It should also encourage companies to make human resource plans focusing particularly on the recruitment of Afghans from local communities. The strategy should include training people in professions and trades required by the extractive industry. This also requires sustained investment in primary and secondary education over many years. It should also envisage collaboration with the private sector in recruitment, job placement, post-placement career progression and retention.

Provide skills training – The government and large extractive companies should work together to develop people's skills and capacities for high- and semi-skilled occupations. This would mean strengthening Kabul Polytechnic University and similar institutions and linking them more closely with the practical needs of mining companies. In addition to developing technical, engineering and geological fields, investments will also be needed in other disciplines such as economics, law, environmental studies, business administration, social conflict management, and legal studies. The government should also strengthen vocational training institutions and establish new mining schools to build skills in relevant areas such as: equipment operation; health and safety; environmentally friendly mining practices; stone cutting, polishing and gemmology; and traditional and modern design technologies.

Training programmes should promote employment of women and persons with disabilities – often victims of conflict. This includes establishing quotas, creating training spaces and workspaces that accommodate women and people with disabilities, and implementing targeted training programmes.

Promote inclusion and local development – Communities in areas with the extractive industry should be given much greater opportunities to benefit from resource development projects. This requires integrated local development, use of the fiscal revenue allocations from mining revenues to provinces and districts for improving public services, and maximizing employment opportunities for local residents to gain decent employment in extractive projects.

Require employment of Afghans – Investor-state contracts for large-scale extractive projects should stipulate the employment of Afghan workers and require companies to have detailed human resource projections and plans.

The extractive sector, if governed well, can become an engine of growth for the economy and provide a source of finance of human development. But this will require several preconditions. It will mean restoring peace and reducing insecurity, strengthening the institutions of governance and investing in enhancing people's capabilities. At the same time, urgent actions should be taken to advance the 2030 Agenda and achieve the Sustainable Development Goals particularly in health, education, water supplies and disaster preparedness, making special efforts to empower youth, girls and women. Future fiscal revenues from the extractive industry can then be used for investing in sustainable human development.

[1] MoMP, n.d.-d and MoMP, n.d.-e.

[2] Even if these companies are not publicly listed, they can be requested to adhere to standards closely approximating these rules on reserve and financial disclosure.

[3] IGF, 2013.

[4] Martin, Boer and Slobodian, 2016.

[5] IFC, 2012.

[6] Australia, Department of Industry Innovation and Science, 2011.

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Annexes

Annex 1. The map of Afghanistan

Annex 2. Statistical tables

Table A2-1. Afghanistan Human Development Index trends, 2000 – 2018

Year	Human Development Index (HDI)	Life expectancy at birth (years)	Expected years of schooling (years)	Mean years of schooling (years)	GNI per capita (2011 PPP $)	Life expectancy index	Education index	Income index
	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8
2000	0.345	55.8	5.9	2.2	817	0.551	0.235	0.317
2001	0.347	56.3	6.2	2.2	738	0.559	0.247	0.302
2002	0.378	56.8	6.5	2.3	1,159	0.566	0.259	0.370
2003	0.387	57.3	6.8	2.4	1,176	0.573	0.271	0.372
2004	0.400	57.8	7.9	2.5	1,126	0.581	0.302	0.366
2005	0.410	58.3	8.1	2.6	1,198	0.589	0.312	0.375
2006	0.419	58.8	8.4	2.7	1,244	0.597	0.324	0.381
2007	0.431	59.4	8.7	2.9	1,361	0.606	0.336	0.394
2008	0.436	59.9	8.8	3.0	1,358	0.614	0.342	0.394
2009	0.447	60.5	8.9	3.1	1,498	0.623	0.352	0.409
2010	0.464	61.0	9.5	3.2	1,675	0.631	0.372	0.426
2011	0.465	61.6	9.5	3.3	1,625	0.639	0.374	0.421
2012	0.479	62.1	10.0	3.4	1,776	0.647	0.390	0.435
2013	0.485	62.5	10.2	3.5	1,814	0.654	0.398	0.438
2014	0.488	63.0	10.3	3.5	1,796	0.661	0.403	0.436
2015	0.490	63.4	10.2	3.6	1,783	0.667	0.405	0.435
2016	0.491	63.8	10.3	3.6	1,766	0.673	0.406	0.434
2017	0.493	64.1	10.1	3.8	1,767	0.679	0.408	0.434
2018	0.496	64.5	10.1	3.9	1,746	0.684	0.413	0.432

DEFINITIONS:

Human Development Index (HDI): A composite index measuring average achievement in three basic dimensions of human development—a long and healthy life, knowledge and a decent standard of living. See Technical note 1 of the global Human Development Report 2019 at http://hdr.undp.org/sites/default/files/hdr2019_technical_notes.pdf for details on how the HDI is calculated.

Life expectancy at birth: Number of years a newborn infant could expect to live if prevailing patterns of age-specific mortality rates at the time of birth stay the same throughout the infant's life.

Expected years of schooling: Number of years of schooling that a child of school entrance age can expect to receive if prevailing patterns of age-specific enrolment rates persist throughout the child's life.

Mean years of schooling: Average number of years of education received by people ages 25 and older, converted from education attainment levels using official durations of each level.

Gross national income (GNI) per capita: Aggregate income of an economy generated by its production and its ownership of factors of production, less the incomes paid for the use of factors of production owned by the rest of the world, converted to international dollars using PPP rates, divided by midyear population.

DATA SOURCES:

Column 1: Calculated on the basis of data in columns 6-8.

Columns 2: UNDP/Human Development Report data (2000-2018) from UNDESA.

Columns 3: UNDP/Human Development Report data (2000-2018) from Barro and Lee.

Columns 4: UNDP/Human Development Report data (2000-2018) from UNESCO Institute for Statistics.

Columns 5: UNDP/Human Development Report data (2000-2018) from World Bank Development Indicator database.

Column 6: Calculated on the basis of data in column 2

Column 7: Calculated on the basis of data in column 3 and 4

Column 8: Calculated on the basis of data in column 5

Table A2-2. Afghanistan Inequality-adjusted Human Development Index (IHDI)

Year	Inequality-adjusted HDI (IHDI)	Overall loss in HDI due to inequality (%)	Coefficient of human inequality	Inequality in life expectancy (%)	Inequality-adjusted life expectancy index	Inequality in education (%)	Inequality-adjusted education index	Inequality in income (%)	Inequality-adjusted income index
	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8	Column 9
2013	0.334	31.4	30.0	34.3	0.43	45.0	0.219	10.8	0.395
2014	0.337	31.4	30.0	34.3	0.434	44.8	0.224	10.8	0.393
2015	0.336	31.9	30.4	35.7	0.428	44.8	0.226	10.8	0.391
2016	0.348	29.6	28.2	28.4	0.481	45.4	0.224	10.8	0.391
2017	0.350	29.6	28.2	28.4	0.485	45.4	0.227	10.8	0.391
2018	0.496	..	..	28.3	0.491	45.4	0.225	..	..

DEFINITIONS:

Inequality-adjusted HDI (IHDI): HDI value adjusted for inequalities in the three basic dimensions of human development. See Technical note 2 of the global Human Development Report 2019 at http://hdr.undp.org/sites/default/files/hdr2019_technical_notes.pdf for details on how the IHDI is calculated.

Overall loss: Percentage difference between the IHDI value and the HDI value.

Coefficient of human inequality: Average inequality in three basic dimensions of human development.

Inequality in life expectancy: Inequality in distribution of expected length of life based on data from life tables estimated using the Atkinson inequality index.

Inequality-adjusted life expectancy index: HDI life expectancy index value adjusted for inequality in distribution of expected length of life based on data from life tables.

Inequality in education: Inequality in distribution of years of schooling based on data from household surveys estimated using the Atkinson inequality index.

Inequality-adjusted education index: HDI education index value adjusted for inequality in distribution of years of schooling based on data from household surveys.

Inequality in income: Inequality in income distribution based on data from household surveys estimated using the Atkinson inequality index.

Inequality-adjusted income index: HDI income index value adjusted for inequality in income distribution based on data from household surveys.

DATA SOURCES:

Column 1: Calculated as the geometric mean of the values in inequality-adjusted life expectancy index, inequality-adjusted education index and inequality adjusted income index (columns 5, 7, 9).

Column 2: Calculated based on data in columns 1 of this table and column 1 of Table A2-1.

Column 3: Calculated as the arithmetic mean of the values in inequality in life expectancy, inequality in education and inequality in income (columns 4, 6, 8).

Column 4: Calculated based on abridged life tables from UNDESA

Column 5: Calculated based on inequality in life expectancy (column 4) and the HDI life expectancy index

Column 6: Updated by UNDP Human Development Report Office based on UNESCO Institute for Statistics (2019).

Column 7: Calculated based on inequality in education (column 6) and the HDI education index.

Column 8: Calculated based on World Bank's International Income Distribution Database

Column 9: Calculated based on inequality in income (column 8) and the HDI income index.

Table A2-3. Afghanistan Gender Development Index (GDI) and its components

Year	Gender Development Index (GDI)	Human Development Index (HDI)		Life expectancy at birth, (years)		Expected years of schooling, (years)		Mean years of schooling, (years)		Estimated GNI per capita, (2011 PPP $)	
		Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
	Column 1	Column 2	Column 3	Column 4	Column 5	Column 8	Column 9	Column 6	Column 7	Column 10	Column 11
2010	0.690	0.369	0.535	62.5	59.7	7.2	11.6	1.2	5.1	963	2,353
2011	0.699	0.374	0.535	63.0	60.2	7.4	11.4	1.2	5.3	944	2,275
2012	0.704	0.384	0.545	63.5	60.7	7.5	11.6	1.3	5.4	1,044	2,472
2013	0.707	0.390	0.551	64.0	61.1	7.6	11.8	1.4	5.5	1,082	2,509
2014	0.710	0.394	0.555	64.5	61.6	7.7	12.0	1.5	5.6	1,088	2,466
2015	0.712	0.399	0.560	64.9	62.0	7.8	12.2	1.6	5.8	1,096	2,432
2016	0.714	0.401	0.562	65.3	62.3	7.9	12.5	1.6	5.8	1,099	2,396
2017	0.719	0.408	0.567	65.7	62.7	8.0	12.7	1.8	5.9	1,112	2,386
2018	0.723	0.411	0.568	66.0	63.0	7.9	12.5	1.9	6.0	1,102	2,355

DEFINITIONS:

Gender Development Index (GDI): Ratio of female to male HDI values. See Technical note 3 of the global Human Development Report 2019 at http://hdr.undp.org/sites/default/files/hdr2019_technical_notes.pdf for details on how the Gender Development Index is calculated.

Human Development Index (HDI): A composite index measuring average achievement in three basic dimensions of human development—a long and healthy life, knowledge and a decent standard of living.

Life expectancy at birth: Number of years a newborn infant could expect to live if prevailing patterns of age-specific mortality rates at the time of birth stay the same throughout the infant's life.

Expected years of schooling: Number of years of schooling that a child of school entrance age can expect to receive if prevailing patterns of age-specific enrolment rates persist throughout the child's life.

Mean years of schooling: Average number of years of education received by people ages 25 and older, converted from education attainment levels using official durations of each level.

Estimated gross national income per capita: Derived from the ratio of female to male wages, female and male shares of economically active population and gross national income (in 2011 purchasing power parity terms).

DATA SOURCES:

Column 1: Calculated on the basis of data in columns 2-3.

Column 2-3: Calculation of female and male HDI values based on data from UNDESA, Barro and Lee, UNESCO and World Bank.

Column 4-5: UNDP/Human Development Report data (2010-2019) from UNDESA.

Column 6-7: Updated by UNDP Human Development Report Office from UNESCO Institute for Statistics (2019).

Column 8-9: UNDP/Human Development Report data (2010-2019) from Barro and Lee.

Column 10 and 11: Calculated on the basis of data from World Bank Development Indicator database.

Table A2-4. Afghanistan Gender Inequality Index (GII) and its components

Year	Gender Inequality Index (GII)	Maternal mortality ratio (deaths per 100,000 live births)	Adolescent birth rate (births per 1,000 women ages 15-19)	Share of seats in parliament (% held by women)	Population with at least some secondary education, (% ages 25 and older)		Labor force participation rate (% ages 15 and older)	
					Female	Male	Female	Male
	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8
2010	0.665	584	133.1	27.6	5.9	29.8	42.7	82.7
2011	0.654	536	126.6	27.6	6.6	31.2	43.3	82.6
2012	0.644	496	120.2	27.6	7.3	32.6	44.1	82.5
2013	0.633	459	113.7	27.6	8.0	34.0	45.0	82.4
2014	0.623	425	107.3	27.6	8.8	35.4	46.0	82.3
2015	0.614	396	100.8	27.4	8.8	35.4	47.0	82.3
2016	0.605	396	90.2	27.4	9.5	36.8	47.8	82.2
2017	0.590	396	79.6	27.4	11.4	36.9	48.5	82.2
2018	0.575	396	69.0	27.4	13.2	36.9	48.7	82.1

DEFINITIONS:

Gender Inequality Index: A composite measure reflecting inequality in achievement between women and men in three dimensions: reproductive health, empowerment and the labor market. See Technical note 4 of the global Human Development Report at http://hdr.undp.org/sites/default/files/hdr2019_technical_notes.pdf for details on how the Gender Inequality Index is calculated.

Maternal mortality ratio: Number of deaths due to pregnancy-related causes per 100,000 live births.

Adolescent birth rate: Number of births to women ages 15–19 per 1,000 women ages 15–19.

Share of seats in parliament: Proportion of seats held by women in the national parliament expressed as a percentage of total seats. For countries with a bicameral legislative system, the share of seats is calculated based on both houses.

Population with at least some secondary education: Percentage of the population ages 25 and older that has reached (but not necessarily completed) a secondary level of education.

Labor force participation rate: Proportion of the working-age population (ages 15 and older) that engages in the labor market, either by working or actively looking for work, expressed as a percentage of the working-age population.

DATA SOURCES:

Column 1: Calculated on the basis of data in columns 2-8.

Column 2: UN Maternal Mortality Estimation Group (2017).

Column 3: Updated by Human Development Report Office based on UNDESA (2019).

Column 4: IPU (2019)

Column 5 and 6: Updated by Human Development Report Office based on UNESCO Institute for Statistics.

Column 7 and 8: ILO (2019).

Table A2-5. Afghanistan Multidimensional Poverty Index, its headcount and intensity by provinces, 2016-2017

The results of Afghanistan multidimensional poverty index (A-MPI) show that 51.7% of Afghans live in multidimensional poverty. On average, the intensity of multidimensional poverty is 52.5%, which means that, on average, Afghans are deprived in 52.5% of the 18 weighted indicators that form the A-MPI. The A-MPI, estimated as the product of the percentage of poor people and the average intensity of poverty, is 0.272.

Province	Population share (%)	MPI value	MPI confidence interval (95%)		Headcount ratio (%)	Intensity (%)
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
Afghanistan - national	100.0	0.272	0.264	0.280	51.7	52.5
Kabul	16.0	0.071	0.056	0.085	14.7	48
Kapisa	1.6	0.119	0.074	0.164	24.7	48
Parwan	2.4	0.217	0.171	0.263	42.4	51.1
Maidan Wardak	2.2	0.337	0.303	0.370	67.1	50.2
Logar	1.7	0.140	0.084	0.197	30.4	46.1
Nangarhar	5.8	0.349	0.305	0.393	66.3	52.7
Laghman	1.7	0.341	0.286	0.396	62.7	54.4
Panjshir	0.5	0.117	0.090	0.143	25.0	46.8
Baghlan	3.2	0.291	0.253	0.329	58.0	50.2
Bamyan	1.6	0.309	0.271	0.346	59.3	52.1
Ghazni	4.4	0.305	0.255	0.354	58.7	51.9
Paktika	1.5	0.140	0.102	0.179	29.7	47.1
Paktia	1.9	0.235	0.203	0.266	48.3	48.5
Khost	2.2	0.252	0.210	0.294	51.6	48.8
Kunar	1.6	0.302	0.263	0.342	57.0	53.1
Nuristan	0.5	0.476	0.387	0.565	80.2	59.3
Badakhshan	3.4	0.348	0.307	0.389	64.9	53.7
Takhar	3.4	0.259	0.221	0.296	51.9	49.8
Kunduz	3.8	0.430	0.392	0.469	77.3	55.6
Samangan	1.3	0.409	0.364	0.455	72.7	56.3
Balkh	4.8	0.237	0.192	0.282	45.0	52.6
Sar-e-Pol	2.0	0.324	0.283	0.364	61.3	52.8
Ghor	2.6	0.365	0.319	0.412	70.1	52.1
Daykundi	1.6	0.348	0.309	0.388	67.4	51.7
Urozgan	1.3	0.378	0.322	0.434	71.2	53.1
Zabul	1.2	0.416	0.375	0.457	76.9	54.1
Kandahar	4.4	0.342	0.303	0.380	66.7	51.3
Jawzjan	1.9	0.207	0.166	0.247	43.0	48.1
Faryab	3.9	0.388	0.337	0.438	68.3	56.2
Helmand	3.3	0.376	0.340	0.411	73.9	50.8
Badghis	2.4	0.504	0.470	0.537	85.5	58.9
Herat	7.1	0.316	0.274	0.358	57.6	54.8
Farah	2.1	0.367	0.318	0.416	66.7	55.0
Nimruz	0.7	0.237	0.186	0.288	47.5	49.9

DEFINITIONS:

Population share: The percentage value of population in each province with respect to total country population.

Multidimensional Poverty Index (MPI) value: A measure identifying multiple deprivations at the household level in education, health and standard of living. The National Statistics and Information Authority (NSIA) formerly known Central Statistic Organization (CSO)) estimated the multidimensional Poverty index using 18 indicators and five dimensions (education, health, living standard, work and shock) from Afghanistan Living Condition Survey (ALCS) 2016-17.

MPI confidence interval: The range of values whereas the true value of MPI lies within 95% confidence interval limits.

Headcount ratio: The headcount ratio is the proportion of the population who are multidimensionally poor.

Intensity: The intensity of poverty reflects the proportion of the weighted indicators in which, on average, multidimensionally poor people are deprived.

DATA SOURCES:

National Statistics and Information Authority (2019). Afghanistan Multidimensional Poverty Index 2016–2017. Government of Islamic Republic of Afghanistan, NSIA, Kabul.

Annex 3. Lessons from large-scale mines in Lao PDR and Mongolia

To provide a realistic gauge of expected potential benefits from Aynak, a comparative analysis of three mines was done using information on comparable large-scale copper mines in Lao PDR and Mongolia, alongside information on Aynak copper deposit. This analysis relies primarily on the respective companies' annual reports, company-commissioned studies, company websites, government reports, studies by the International Council on Mining and Metals, civil society organizations, independent experts' studies, and various media reports. Fiscal revenue data from these mining projects was obtained from EITI summary tables for Afghanistan and Mongolia. Table A3-1 shows a summary of key characteristics of these mines, its benefits and impacts. It also provides recommendations for Aynak.

Table A3-1. Detailed comparison of Sepon, Oyu Tolgoi and Mes Aynak mines and their impacts

	Sepon copper-gold mine, Lao PDR	Oyu Tolgoi copper-gold mine, Mongolia	Aynak copper deposit, Afghanistan
Location	Vilabouly district, Savannakhet province, southern Lao PDR; about 40 kilometres north of the town of Sepon (Xepon), close to the border with Viet Nam.	Khanbogd soum, Umnugobi province in the Gobi Desert in southern Mongolia; about 600 km south of Ulaanbaatar and 100 kilometres north of Mongolia's border with China.	Logar province, 40 km southeast of Kabul.
Timeline	Exploration conducted in the 1990s by Rio Tinto. Production started in 2002. By now, the gold deposit is exhausted, and the copper deposit is nearing exhaustion.[1]	Prospecting done in the 1970s by the Soviet Union. Exploration started in 1997 by BHP Billiton. Investment contract signed in 2009. Production started in 2013 from an open pit mine. Currently, the mine is being expanded with construction of an underground mine.	Prospecting done in the 1970s and 80s by the Soviet Union. Contract awarded in 2008.[2] Rescue and salvage of most important archaeological findings from the site are being carried out. In 2010-2012, exploration and construction work on the mine were suspended. The project is currently in advanced exploration phase.
Significance for the country	The first major private mine in Lao PDR.	The first major mine in Mongolia since the transition to the market economy.	The best-explored large-scale deposit in Afghanistan.
Mining company ownership and management	90 per cent share was held by MMG Sepon partly owned by China Minmetals (a state-owned enterprise), but recently sold to Chifeng Jilong Gold Mining Co. Ltd. 10 per cent is held by the Government of Lao PDR.[3]	International companies, of which one-third by Rio Tinto. The remaining 34 per cent share is held by the government of Mongolia.[4] Rio Tinto also manages the mining project.	MCC-JCL Aynak Minerals is co-owned by China Metallurgical Group Corporation (MCC) - a State-Owned Enterprise, and Jiangxi Copper Co Ltd. Neither appears to be publicly listed and thus they may not adhere to stock-exchange reporting standards. Therefore, the government should ensure detailed reporting of exploration results – mineral reserves and resources.

	Sepon copper-gold mine, Lao PDR	Oyu Tolgoi copper-gold mine, Mongolia	Aynak copper deposit, Afghanistan
Estimated mineral reserves	Proved reserves in 2006, early in the project: copper 15.5 million tonnes (2.5 per cent grade, or 387 thousand tonnes recoverable copper), gold 48.8 million tonnes (3.06 per cent grade, or 1,493,000 tonnes of recoverable gold)[5]	Proved reserves in 2012, early in the project: copper 426 million tonnes (0.54% grade, or 2,300 thousand tonnes recoverable copper), gold 426 million tonnes (0.42% grade or 1,789,000 tonnes of recoverable gold).[6] Thus, Oyu Tolgoi deposit has a lower grade of copper and gold, but its body is significantly larger than the Sepon deposit.	Resources - 240 million tonnes (2.3% grade or 5,520,000 tonnes of potentially recoverable copper).[7] If the actual quantity and grade confirmed through exploration is close to these figures, Aynak can become the largest copper mine in Asia or even globally. Potential cobalt resources have also been identified in Mes Aynak. However, these figures are uncertain, as they are based on prospecting and early exploration; they will need to be confirmed through advanced exploration.
Investment	In 2003-2009, $232 million was reinvested into the company by the investors.[8] It is not possible to determine the total amount of investment, because the mine ownership has changed several times (from Rio Tinto to Oxiana to Oz Minerals - Australian companies, then to China Minmetals group – MMG, and recently to Chifeng Jilong Gold Mining)	Over the life of a mine, total investment of $14.6 billion is needed, of which $11.8 billion has been invested.	
Production	On average in 2012-2017, sold annually 82.8 thousand tonnes of copper content, 37 thousand ounces of gold content and 40.6 thousand ounces of silver content.[10]	On average in 2012-2017, produced annually 157.2 thousand tonnes of copper content, 362.7 thousand ounces of gold content and 999.8 thousand ounces of silver content.[11]	Production not started
Value addition	Produces 99.99 per cent copper cathode.[12]	Produces 25 per cent copper concentrate.[13]	-

	Sepon copper-gold mine, Lao PDR	Oyu Tolgoi copper-gold mine, Mongolia	Aynak copper deposit, Afghanistan
Fiscal revenues	$1.3 billion over 13 years 2003-2015; on average $101.7 million per year.[14] However, neither of these figures are available from audited financial statements; Lao PDR is also not a member of EITI. Therefore, these figures could not be verified.	$1 billion over 11 years 2006-2016, on average $95 million per year.[15]	So far, $185.7 million in 2008-2015, of which the majority is the signature bonus.[16] The amount of potentially recoverable copper reserves of Aynak is twice the amount of proven reserves of Oyu Tolgoi, which is currently Asia's largest copper deposit. Therefore, Mes Aynak can potentially generate similar or larger amounts of fiscal revenues. To ensure that, it is necessary that proven and probable reserves and resources of Mes Aynak are regularly reported and verified. The government should also get access to updated feasibility studies of Aynak, and get independent international assistance for financial analysis (fiscal model) to estimate a reasonable sharing of proceeds from the mine – the 'government take' and the 'company take'. AEITI should be strengthened to ensure that fiscal revenues are verified and reported to the public.
Infrastructure	Power is supplied from a hydropower station in Lao PDR. The company built an airfield and a road.[17]	Power currently imported from China. The company built an airport, and a 100 km road to the Chinese border. [18]	A power station and a railway to be constructed, as per the contract, but the investor may no longer be committed to these significant investments. The government should conduct an independent financial analysis (fiscal model) to see if it is realistic to expect such investments and whether the operating conditions have changed that would justify the company dropping prior commitments.

	Sepon copper-gold mine, Lao PDR	Oyu Tolgoi copper-gold mine, Mongolia	Aynak copper deposit, Afghanistan
Resettlement and compensation	13,000 people affected in 27 villages of at least five sub-ethnic groups, of which 7,000 people in 13 villages were determined by the company to have been directly affected. The number of people affected has grown significantly as the mining project expanded in scope. Initially, payment of compensation was allegedly not done in a transparent manner and settlement amounts differed, creating friction within communities. Subsequently, a more systematic process was adopted, with compensation rates set by the government based on the land size and type, as well as payment for 10 years of lost income from the land.[19]	89 herder households affected (about 400 people); potentially more, based on recent ruling by International Finance Corporation Ombudsman. Compensation included: new dwellings, cash compensation, educational expenses, buying livestock, skills training, employment in the mine.[20] However, the number of affected households may rise as the project expands.	393 households in seven villages affected including traditionally nomadic tribes and people who have migrated out of the area due to war. Compensation included: new dwelling, plots of land, cash compensation, employment in the mine, skills training. Resettlement and compensation carried out since the contract was signed, in accordance to World Bank Guidelines.[21,22,23] The Ministry of Mining and Petroleum reported in 2011 that considerable work had been done to resettle the communities. However, a study by a civil society organization identified multiple problems: delays which resulted in incomplete coverage of families by compensation, intimidation and bribes by government officials. The study also revealed that some of the attacks on the Aynak mine compound were carried out by disgruntled people in the communities. The grievance mechanism was not working.[24] As the first large-scale mining operation in Afghanistan, it is vital that it has a clean human rights and resettlement record. Failure to conduct resettlement and compensation properly carries the risk of violent conflict – which allegedly has already happened, and affect the prospects of other large-scale mines in Afghanistan. As the mine is developed, it will affect more people, so it is crucial to manage resettlement and recognize not only physical, but also indirect, economic displacement of communities, empowering civil society organizations that represent them.

	Sepon copper-gold mine, Lao PDR	Oyu Tolgoi copper-gold mine, Mongolia	Aynak copper deposit, Afghanistan
Environmental impacts	Main impacts: seepage of tailings into water; affecting areas of biodiversity hotspots and elephant habitats.[25] In addition, an acidic water spill was reported in 2009.[26]	Main impacts: reduced access to pasture and mobility of livestock due to the mine, related infrastructure and increased traffic in the area; actual and future reduction of water availability due to its use by the mine; diversion of an underground river and loss of a spring; seepage of tailings into underground water.[27] Civil society organizations have been critical of the Environmental and Social Impact Assessment of Oyu Tolgoi mine, assessing it as deeply 'flawed', 'incomplete and retroactive'.[28] The inadequate quality of ESIA continues to plague the reputation of the project.	A key issue is that the ESIA was not made public. Major concerns of affected communities related to the environment included lowering of the water table; and contamination of water by the mine.[29] Impact on water availability into the long term can become a serious issue, since large-scale mines use huge amounts of water, and Mes Aynak is located only 40 km from Kabul, so this mine can impact on water availability in Kabul and other heavily populated areas for decades into the future. ESIAs should be rigorous, with clear baselines, and cover not just technical issues but the implications for people. They should also be made public and reviewed by experts, for which international assistance would be needed. Otherwise, the project is likely to be plagued with future problems with communities and the costs of clean-up.
Local development	Cleared 80,000 pieces of mines (unexploded ordnances). Built schools and clinics. Implemented programmes in training, local business development, culture and archaeology, village banking. Set up several funds.[30]	Paid $42.2 million as voluntary payments in 2006-2016, of which estimated $15 million towards community projects.[31, 32] Built schools and clinics. Built water supply and waste management facility.[33, 34] Made community development agreement to transfer annually $5 million to the province. [35]	As per the contract, obligated to build schools and clinics, religious places, market/ shopping area.[36] There is no standardized reporting, so companies tend to report in the best possible light, or not at all. Moreover, figures are seldom verified. The Government must establish clear metrics on local development investments and monitor how these commitments are implemented. Local communities around Aynak have had high expectations, fuelled by government officials' speeches. The government should also avoid forming unrealistic expectations among local communities to prevent potential conflicts.

	Sepon copper-gold mine, Lao PDR	Oyu Tolgoi copper-gold mine, Mongolia	Aynak copper deposit, Afghanistan
Employment	During the mine construction phase, about 5,400 people were employed (including 1,800 people employed directly).[37] On average per year, about 2,100 people were employed directly, and over 2,300 indirectly.[38] Lao PDR nationals accounted for about 90 per cent of jobs, increasing to 96 per cent by 2012. Implemented a programme to promote Lao employees to lower- and mid-level management positions.[39]	During the open-pit mine construction, peak employment was about 18,000 people of whom 85 to 90 per cent were Mongolian (both directly and indirectly), as reported by the company. Thereafter, employment is on average 2,500 people.[40] During the underground mine construction, employment expected to rise to about 6,000 people.[41] Overall, about 95 per cent of jobs are filled by Mongolians, and 14 to 36 per cent of executive level jobs filled by Mongolians.	According to a World Bank study, 4,500 people will be needed to work directly within the first five years; 2,100 people in years six to 12; and about 4,100 people in the years 13 to 30. Total number of direct and indirect jobs[42] is expected to range from just under 10,000 to over 45,000 for at least 18 years.[43] The current delay can be used to prepare the workforce. The government and development partners should invest in training for semi-skilled and high-skilled occupations. The company should have clear plans for the employment of Afghans. Partnerships with universities and vocational training centres should be pursued to train people.
Local procurement	On average till 2010, about 27 per cent of procurement spending went to goods and services provided by national companies[44] (figures since 2010 are not disclosed; unclear how 'national companies' are defined)	In 2015-2017, about 51 to 69 per cent of procurement spending goes to goods and services by national companies (unclear how 'national companies' are defined).[45]	Procuring goods and services locally, rather than from abroad can provide a significant boost to the economy. This is not easy because local suppliers generally lack the capacity and quality demanded by large extractive projects. The agreement with the mine operator should include clear plans for local procurement and spending, and such spending should be reported consistently and regularly.

[1] Greenovation Hub, 2014.
[2] Government of Afghanistan and MCC-Jiangxi Copper Consortium, 2008.
[3] ICMM, 2019.
[4] Government of Mongolia, 2009.
[5] World Bank, 2006.
[6] Rio Tinto, 2012.
[7] MoMP, n.d.-a.
[8] ICMM, 2011.
[9] Ergo Strategy Group, 2018.
[10] MMG, various years.
[11] Rio Tinto, various years.
[12] MMG, 2015.
[13] Ergo Strategy Group, 2018.
[14] MMG, 2018a.
[15] EITI, 2018b.
[16] EITI, 2018a.
[17] MMG, 2018b.
[18] Oyu Tolgoi, 2012.
[19] Greenovation Hub, 2014.
[20] EBRD, 2017.
[21] MoMP, n.d.-b.
[22] MoMP, 2010.
[23] MoMP, 2018.
[24] Integrity Watch Afghanistan, 2013
[25] MMG, 2017.
[26] ICCM, 2011
[27] JSL Consulting, 2017.
[28] Oyu Tolgoi Watch, 2012
[29] Integrity Watch Afghanistan, 2013
[30] MMG, 2019.
[31] EITI, 2018b.
[32] Ergo Strategy Group, 2018.
[33] As above.
[34] Oyu Tolgoi LLC, 2018.
[35] Oyu Tolgoi LLC, 2015a.
[36] Government of Afghanistan and MCC-Jiangxi Copper Consortium, 2008.
[37] MMG, 2018b.
[38] Calculations based on ICMM, 2011 and Greenovation Hub, 2014.
[39] MMG, 2012.
[40] Ergo Strategy Group, 2018.
[41] Oyu Tolgoi LLC, 2018.
[42] Direct jobs are jobs in the mining company, while indirect jobs are jobs in companies/subcontractors to the mining company.
[43] UNDP, 2018a.
[44] ICMM, 2011.
[45] Oyu Tolgoi, 2015b.

Annex 4. Estimation of mineral production

This annex gives detailed information on mineral production estimation in Afghanistan for selected minerals, used in Chapter 2.

Methodology

The estimations were based on official data and data from existing studies, as well as two series of field observations and interviews.

The first set of field observations was carried out by a team at UNDP Afghanistan, visiting markets and mine sites. Overall, these field visits included:

- Eight visits during 27 March 2017 to 3 December 2017 to border crossing points at Torkham
- Two visits to mine sites in Herat and Nangarhar provinces
- Visits to markets and gemstone centres interviews with traders: 1) Visits to markets and interviews with traders in Kabul's markets - Shams Market, Sharifi, Zarkashan and the main Kabul center for gemstone in Sharenaw, 2) Interviews of traders from Namak Mandi market of Peshawar city, Pakistan.
- Visits to three gemstone cutting factories in Badakhshan and Kabul.

The second set of field observations was done by Afghanite LLC, as part of a study commissioned by UNDP Afghanistan on value added of lapis lazuli, onyx and talc for this report.[1] These three minerals were identified by the report's Steering Committee. The primary motivation for this selection was to investigate minerals that are primarily mined at industrial scale and exported in rough form.

The studies were conducted from August 2017 to Feb 2018. The field investigations of the studies were carried out in southern Helmand, Badakhshan and Nangarhar. During field investigations, the researchers have visited mine and quarry sites, villages serving as mining hubs, mining workers' camping areas, storage sites of minerals and transportation routes, as well as mineral processing factories and workshops. They interviewed mining company owners-managers, their equivalents in the informal mines, mining company workers, community members, traders, association representatives and government officials (See Table A4-1).

Table A4-1. People interviewed for the value chain studies

People interviewed	Talc (Nangarhar)	Onyx (Helmand)	Lapis (Badakhshan)
Government officials	12	1	-
Non-state actors	-	-	3
Industry association representatives	2	-	1
Traders	-	3	5
Processing factory/ workshop owners	3	5	5
Mine owners-operators	2	5	5
Mine workers	5	4	3
Local community members - men	5	6	10
Local community members - women	5	1	6
Total	**34**	**25**	**38**

Estimates of production

The summary data of mineral production for selected minerals, estimated by this report's team, is shown in Table A4-2. The estimates refer roughly to production in 2017.[2] It should be noted that the report's estimates are highly sensitive to their underlying assumptions and are subject to significant margins of error. There have been limitations to gathering and systematizing this data due to insecurity and the resulting difficulty of access to sites, and the lack of written records kept by the interviewed. Therefore, this data only seeks to shed light on what may be possible, in the future, to be captured by official data. Nevertheless, we have made the best effort to triangulate data from various sources to arrive at most plausible estimates and include data only for minerals that could be estimated with reasonable confidence. Overall, we erred on the conservative side in making the estimates.

Table A4-2. Production and exports of selected minerals in Afghanistan, in metric tonnes

Minerals	This report's estimates	Central Statistics Office	USGS
	Production, 2017	Exports, 2017/2018 (1396)	Production, average 2011-2015
Precious and semi-precious stones, gold	4,537.4	-	4,850.0
Coal	2,200,000	1,014,113	566,200
Talc	1,000,000	408,936*	-
Marble	60,830	4,698	66,340
Onyx	4,325	-	-
Alabaster	145,250	-	-

Notes:

The volume of talc as reported by the Afghanistan CSO actually appears under 'stone', but this is likely to have been placed there due to misclassification.

For detailed explanation of this report' estimates, see the rest of this Annex.

Sources: USGS estimates are published at the USGS, n.d.-a; Central Statistics Office exports figures are from the Central Statistics Organization, n.d.-b.

It was assumed that except for coal, all the other minerals mined are used only for exports. The amounts of onyx (travertine), marble and talc used domestically are negligible. In addition, while significant amounts of talc are processed at factories in Nangarhar province, only negligible amounts are used domestically as inputs into production of glues and paints; the vast majority is exported. Similarly, precious metals and stones are predominantly destined for overseas markets, and only small amounts are used domestically. However, coal is used in large amounts domestically. Further, it was assumed that all minerals mined during the year are exported within the same year.

Coal

For the volume of coal exports, estimates were made by visiting a key border crossing point, Torkham, and making direct observations. It was observed that approximately 500 trucks were counted leaving for Pakistan per day through Torkham, of which 200-300 trucks were loaded with coal and the rest were mostly with talc (although there is anecdotal evidence that more valuable minerals and semi-precious stones are frequently smuggled, hidden underneath talc and other bulk minerals). The estimates were also corroborated by interviews with drivers. The 500 trucks per day is only an average; in some cases, for example in March 2017, about 1,400 trucks were observed crossing the border in a single day.

To allow for variation in the volume traded and allow for seasonal decline in mineral production, a very conservative estimate of 100 trucks per day was taken. Each truck carries 40 tonnes of coal. The assumption was that the trading is done 300 days per year. This gives a total of 1,200,000 tonnes of coal exports per year, which is somewhat higher than that reported by the authorities. According to the Afghanistan statistics, 1,014,000 tonnes of coal were

exported in 2017, all of it to Pakistan. According to Pakistan customs statistics, 1,010,000 tonnes of coal were imported in 2017-2018 fiscal year from Afghanistan to Pakistan. In the absence of further studies and field observations, the official figures of about 1 million tonnes of coal exports were increased by only 20 percent, to arrive at an estimation of 1.2 million tonnes of coal exports.

However, in addition to coal exports, we must also take into account domestically consumed coal. The volume of coal consumed domestically was estimated as follows. Houses in urban areas in Afghanistan predominantly burn solid fuels for cooking and heating. Virtually all urban households (99 per cent) rely on solid fuels for heating,[3] and of these solid fuels, coal is the predominant form of fuel. In addition, other uses include heating of traditional bath houses (hamams), and industrial uses such as in manufacturing of bricks.[4] However, for the purpose of this report, only coal consumption for heating of residential units was taken. Based on this, the domestic consumption of coal is estimated to be approximately 1,000,000 tonnes per year. The detailed calculation is shown in Table A4-3, along with explanatory notes.

Table A4-3. Estimate of domestic coal consumption for residential use in urban areas, annually

Location	Dwelling units, % [i]	Number of dwelling units [ii]	Coal use during 4 winter months, per dwelling unit, tonne [iii]	Total coal use, winter, tonnes [iv]
Total		**664,988**		**1,006,117**
Kabul		**396,095** [v]		**588,643**
Apartments	7.8%	30,895 (515) [vi]	16.0	8,239
Courtyard houses, multi-family	40.1%	128,586	2.0	257,172
Detached houses, single family	51.0%	202,020	1.6	323,233
Regional hub cities: Herat, Jalalabad, Kandahar, Mazar-i-Sharif		**268,893** [vii]		417,474
Apartments	4.0%	10,665 (178)	16.0	2,844
Courtyard houses, multi-family	36.3%	97,600	2.0	195,200
Detached houses, single family	51.0%	137,143	1.6	219,430

Notes:

i. Percentages of dwelling units were taken from Government of Islamic Republic of Afghanistan, 2015, unless indicated otherwise. These percentages were adjusted to convert dwelling units towards types of fuel use: 1) apartments which typically use coal burning boilers servicing apartment blocks with about 25-80 units; 2) courtyard houses which may use coal burning boilers or stoves, serving multiple households – extended families; and 3) detached houses used by single households, which use stoves.

The shares were estimated as follows:

The share of apartments in regional hub cities was assumed to same as the national average (4%). However, the share for Kabul was available (7.8%) and therefore this figure was used for Kabul.

The share of courtyard houses in regional hub cities was calculated to be 66.6% (data from Ministry of Urban Development and Housing and UN-HABITAT, 2017) of irregular housing which accounted for 54.5% of all dwelling units (data from Government of the Islamic Republic of Afghanistan, 2015), making the share of courtyard houses in total dwelling units 36.5% (66.6% x 54.5% = 36.3%). However, for Kabul, this share was reduced by extra share of apartments (7.8% - 4.% = 3.8%), making the share of courtyard houses 32.5%.

The share of detached single-family houses in regional hub cities was calculated to be the remainder of irregular housing (100% - 66.6%) x 54.5% = 18.2%, plus the regular housing, which are predominantly detached houses (32.8%, Government of the Islamic Republic of Afghanistan, 2015), making the total share 51% (18.2% + 32.8% = 51%).

ii. Based on these shares (under endnote i.3), the estimated number of dwelling units for each category was derived (share of category x total number of dwelling units = number of dwelling units in each category).

iii. Based on field observations, it is assumed that an average apartment block uses 4 tonnes of coal per month, an average multi-family courtyard house uses 0.5 tonnes of coal per month, and an average single-family detached house uses 0.4 tonnes of coal per month. Overall, it is assumed that coal is used for heating during 4 months of the year during winter.

iv. The number indicates the total number of dwelling units, while the number in brackets indicates the total number of apartment blocks.

v. From Government of Islamic Republic of Afghanistan, 2015. The estimated volume of coal use is calculated by multiplying the number of dwelling units by the volume of coal use per winter, per unit. The exception is the coal use volume in apartments, where the number in brackets (apartment blocks) is taken to calculate the volume. This is because in apartments, the sources of fuel are per apartment block, not per dwelling unit.

vi. Apartment blocks consist of 25-80 dwelling units and are served by a boiler. It was assumed that on average each apartment block consists of 60 apartments. Thus, for example, in Kabul, where the estimated number of apartment units is 30,895, the number of apartment blocks is estimated to be 515 (30,895/60 = 515) and the combined number in regional hub cities is estimated to be 178.

vii. The combined number of dwelling units in the four regional hub cities: Herat, Jalalabad, Kandahar and Mazar-i-Sharif. From Government of Islamic Republic of Afghanistan, 2015.

Sources:
Ministry of Urban Development and Housing and UN-HABITAT, 2017; Government of Islamic Republic of Afghanistan, 2015.

Thus, the total volume of coal produced in Afghanistan in 2017 is estimated to be 2.2 million tonnes, which includes 1.2 million tonnes exported and about 1 million tonnes used domestically. Even this likely underestimates the amount of coal produced – both exported and used domestically.

The price of coal is taken to be $90 per tonne, which is the prevalent market price in-country, collected from markets in Kabul.

Talc

Pure talc-containing rock is called steatite, while rock containing both talc and impurities is called soapstone. Both steatite and soapstone are used for household items such as decoration, tiles, countertops, but only steatite is used for production of talc powder, which is used in cosmetics, paint, glue and other products.

Most of Afghanistan's talc is mined in Nangarhar province towards the east of Kabul and next to the border with Pakistan, in an area contested by the Taliban and the IS-K. Since 2009, there appeared to have been a boom in the talc trade which drove the establishment of 22 talc processing factories in Nangarhar province, which, together with mine operators and traders of talc, formed the Talc Association of Nangarhar. Many of the companies owning talc processing factories are vertically integrated, as they also own talc mines and use this talc as the industrial inputs. Most companies' processing involves crushing talc boulders into smaller chunks, although some companies also have invested in more advanced equipment to produce powdered talc. These outputs are then directly exported. In addition, there are many mines that export talc directly, without processing.

For the purpose of this report, the volume of talc exports was estimated based on interviews with several sources in the industry and officials in Nangarhar, field observations, as well are review of available data.

Export figures suggest the following: Afghanistan customs data for 2017 show that 452,445 tonnes of talc were exported from Afghanistan at $14 implied price; Afghanistan CSO data for 2017/2018 show 408,936 tonnes of 'stone' exported to Pakistan only, at the implied price of $14.8 per tonne, which means that most of the talc exported from Afghanistan goes to Pakistan. Pakistan's Bureau of Statistics data provides also international customs codes and shows that 469,021 tonnes of unprocessed talc (not crushed and not powdered) were exported to Pakistan from Afghanistan in 2017/2018, at implied price of $91 per tonne. Thus, no processed talc was recorded being exported.

However, according to the mine department in Nangarhar, in 2017, the province exported 453,000 tonnes of processed (crushed) talc. According to the Talc Association, talc processing factories exported 800,000 tonnes of processed talc.

Field observations conducted during visits to the main border crossing points from Afghanistan to Pakistan (see details above in the subsection 'Coal') showed that approximately 500 trucks leave daily to Pakistan from Afghanistan through the Torkham border, of which 200-300 trucks were loaded with talc, with trucks carrying 40 tonnes. To allow for variation in volume and seasonal decline, a conservative estimate of 100 trucks per day of talc was taken. The assumption was that trading is done 250 days per year.[5] This gives about one million tonnes of talc exported per year. A study on the talc value chain, conducted for this report identified that of 100 talc trucks crossing the border at Torkham, only 40 are recorded by customs officials, also based on field observations.[6] If this is the case, the official export figures of about 400,000 tonnes of talc per year tallies with our estimate of about one million tonnes per year. This study also showed that there are 22 talc processing factories in Nangarhar, and they use 250-3,000 tonnes of raw talc per week.[7] Assuming the average use of 1,000 tonnes of raw talc per week per factory, this means that about 1.1 million tonnes of talc are consumed annually by all the talc processing factories. It is estimated that about 10 per cent of talc is wasted during processing, which gives one million tonnes of output. Almost all talc is exported. Finally, Pakistani talc traders in Peshawar city, which is the first regional market for Afghan talc, gave an estimate of 1.2 million tonnes of talc being imported from Afghanistan.

Putting these figures together, and erring on the side of more conservative estimates, we estimate that the real volume of talc exported from Afghanistan is about 1,000,000 tonnes annually.[8] It is still an underestimate, as it only accounts for talc exports by talc processing factories, and does not account for exports of raw talc.

To estimate the value of production, the price of $100 per tonne of talc was used, which is the prevalent price in Afghanistan. The price information was collected from traders in Nangarhar. This price approximates the implied price of talc as recorded by Pakistan official data.

Onyx

Onyx is a variety of the mineral travertine and is classified as travertine under the international commodity classification system. Onyx is used for interior finishing, as well as for producing art and decorative items.

Most onyx deposits with varieties of prized green, pink and white onyx are mined in Herat province in the west and Helmand province in the south of Afghanistan. Herat's onyx is then exported to Iran, while Helmand's onyx is sold to Pakistan and onwards, being taken through the porous southern border of Afghanistan. According to official records, as of late 2018,

there were three onyx quarries operating under government contracts, in Ghazni and Parwan provinces.

In reality, there are many onyx mines operating without government contracts - in Helmand. As part of the background study of the onyx value chain conducted for this report, the research team visited five onyx mines in south Helmand; of these, two reported that they had MoMP contracts, one said it had applied for a MoMP contract, and two were operating without a MoMP contract.[9] Since there were no records in the MoMP database of onyx contracts in Helmand, but there were records of alabaster contracts in this province, it is possible that onyx quarrying in Helmand is done under alabaster contracts.

There is no record of onyx exports from Afghanistan according to Afghanistan statistics. In Pakistan customs statistics, onyx imports are included together with marble imports.

The research team of the value chain studies also visited six onyx and marble processing factories in Helmand, Kandahar, Herat and around Kabul. The only onyx processing factory of Helmand province is located in Lashkar Gah, the province's capital. The factory dates back to the 1970s and is located far from the onyx quarries in the south of Helmand (estimated 3-5 days' drive). In addition, there are newer onyx and marble processing factories around Kabul, in Kandahar (Kandahar province) and Qozarah (Herat province) which had been established 4-11 years ago. The processing factories experience severe challenges and are currently not operating. The main challenges are procuring rough onyx, the high cost of transportation and poor roads in Afghanistan, as well as high cost and unreliable energy in Afghanistan. Several factors account for problems of onyx processing factories.

The cost of rough, unprocessed onyx has soared in recent years, reaching about $600 per tonne, as a result of which processing factories are increasingly finding themselves not able to make profits. Another factor is the extensive use of blasting methods in mining, due to which small cracks develop in blocks of onyx (or marble), making them fragile and crack even further during transportation by rough roads of Afghanistan, resulting in the loss of raw material. The location of many onyx mines close to Afghanistan's southern border also makes it uneconomical to transport onyx over much larger distances to the processing factories further north. Also, according to field interviews, Chinese marble companies have negotiated exclusive contracts to buy rough onyx from mines in Pakistan and Afghanistan since 2015, which would make it unavailable for processing companies not only in Afghanistan, but also in Pakistan.

For the purpose of this report, the volume of produced (quarried) onyx was estimated simply by using the Small Mines Contracts database by MoMP[10]; the volume of onyx produced illegally was not taken into account. According to this data, at the end of 2018, these three contracted onyx quarries, located in Ghazni and Parwan provinces, were supposed to produce annually 4,325 tonnes of onyx.[11,12] It should be noted that this likely significantly underestimates the actual volume of onyx quarried in Afghanistan. Another indication that this figure underestimates onyx production is that four out of five onyx mining companies visited by the research team of the value chain studies, reported on average about 100-400 tonnes of output per month, which means that just these four companies together would produce about 6,000 tonnes of onyx per year.

In addition, there is considerable amount of alabaster quarrying, alabaster being a close

'relative' of onyx. MoMP small contracts data show that seven alabaster quarries (three in Helmand and four in Herat) hold active mining contracts for alabaster and mine 145,250 tonnes of alabaster annually. If mining companies had been quarrying onyx under alabaster contracts, this would mean that the estimate of onyx production based on official data (4,325 tonnes per year) is a gross underestimate. However, due to the absence of data on prices and the lack of clarity, the estimate of the alabaster was not included in the overall mineral production.

The price of rough, unprocessed onyx blocks ranges from $300 per tonne for light green onyx in Iran to $2,000 for green onyx in Karachi. The average price based on prices collected through the onyx value chain study equals $840 per tonne; considering the margins added beyond the border, the price commanded by companies operating onyx quarries in Afghanistan is assumed to be $600 per tonne. This assumption is also corroborated by the prices quoted by onyx quarry managers/ representatives who were interviewed, $500-700 per tonne.

Marble

Marble is used for interior and exterior finishing, as well as for producing art and decorative items. Afghanistan is believed to have rich and varied reserves of marble around the country, counting nearly 400 varieties of marble.[13]

As of late 2018, there were 18 legally licensed active marble quarrying operations in three provinces – Herat, Maidan Wardak, Nangarhar – and Kabul, with the annual production volume of about 60,000 tonnes.[14] Similar with onyx, this volume, taken from the Small Mines Contracts database was used for this NHDR. This volume is less than the annual production estimate made in 2012 of 124,000-155,000 tonnes, according to the study done by the Afghanistan Investment Support Agency[15], and close to the estimate made by USGS (See Table A4-2). The breakdown of this production by provinces is shown in Table A4-4.

In comparison, Afghanistan export statistics show that exports of marble were only 19,000 tonnes in 2016-2017, of which 4,700 tonnes were exported to Pakistan. Pakistan's import statistics show the total imports of marble and travertine from Afghanistan were only about 2,500 tonnes in the 2017/2018 fiscal year.

The prices of marble were obtained through interviews with traders in the regional and Kabul markets and are shown in Table A4-4.

Table A4-4. Estimate of marble quarrying, annually

Province	Annual production, metric tonnes	Price, $/ tonne	Value, $
Herat	45,250	600	27,150,000
Kabul	1,260	150	189,000
Maidan Wardak	14,120	150	2,118,000
Nangarhar	200	150	30,000
Total	**60,830**		**29,487,000**

Source: MoMP, n.d.-c.

Lapis lazuli

The volume of lapis mined was estimated based on discussions with sources in Namak Mandi, a regional market in Pakistan that is the main trading hub for lapis lazuli, and local sources in Kabul. In total, ten traders were interviewed. According to these sources, every month, 300 tonnes of lapis is sold in Namak Mandi in Peshawar, which adds up to about 3,600 tonnes per year. In addition, a large amount of lapis is traded in Kabul. The overall estimate of 4,500 tonnes of lapis mined and traded per year is lower than estimated lapis exports (7,500 tonnes in 2014 and 5,000 tonnes in 2015), estimated in a recent Global Witness report.[16, 17] Interviews from value chain study of lapis indicate widely differing estimates of lapis production in Sar-e-Sang area as recently as 2017-2018, ranging from 1,700 tonnes to 7,200 tonnes annually.[18]

To arrive at the value of lapis production, traders were interviewed from markets in Kabul and Peshawar, asked to estimate not only the total volume of lapis traded in these markets, but also the volumes – or percentages - for each grade of lapis (See Table A4-5).

The total value of lapis production is estimated by multiplying the price of lapis for each grade, by the estimated volume of lapis for each grade. Lapis is classified into nine grades based on its quality, with large variation in prices between them. For example, prices in Kabul markets for rough, unpolished lapis range from $3 per kg for the lowest grade to $1,000 per kg for the highest grade. However, since the high-end lapis is rare, a cap of $300 per kg was set for the purpose of the estimations in this report.

Table A4-5. Estimate of lapis mining, 2017

Lapis lazuli grade	Volume, metric tonnes	Price, $ per kg	Value, $, million
1	200	300	60
2	500	200	100
3	500	100	50
4	500	60	30
5	500	40	20
6	600	25	15
7	600	10	6
8	700	4	2.45
9	400	3	1.2
Total	**4,500**	**63** (*)	**284.65**

Notes:

(*) Weighted average price, $P = (\sum Qi * Pi) / \sum Qi$ for the nine grades of lapis.

Source: Based on field observations and interviews.

Other precious and semi-precious stones and gold

Estimates of volumes and prices of different grades of precious and semi-precious stones were made in a similar fashion with lapis lazuli, based on interviews with numerous traders in Kabul and regional markets, as well as miners and local communities in some of the mining sites during 2017. The total value of gems and semi-precious stones produced is estimated to be $433.7 million, of which lapis and emeralds account for the vast majority. The sources of this data are listed in Table A4-6, last column.

Table A4-6. Estimate of precious and semi-precious stones and gold mining, 2017

	Mineral	Volume	Volume unit	Weighted average price	Price unit	Value, $ million	Sources of data
1	Lapis lazuli	4,500	tonnes	63	per kg	284.6	Traders in Kabul, Namak Mandi (Pakistan); Lapis lazuli value chain study interviewing the commander, miners and local communities
2	Emerald	500	kg	40	per carat	100.0	Traders in Kabul, miners in Badakhshan
3	Ruby	100	kg	58	per carat	28.9	Traders in Kabul, miners in Badakhshan
4	Tourmaline	1,000	kg	15	per gram	15.0	Miners, traders in Kabul and Pakistan
5	Spinal	15	kg	29	per carat	2.2	Traders in Kabul
6	Garnet	1,000	kg	1,500	per kg	1.5	Traders in Kabul
7	Aquamarine	240	kg	2,185	per kg	0.5	Traders in Namak Mandi, Peshawar, and in Kabul
8	Sapphire	10	kg	10	per carat	0.5	Traders in Kabul
9	Kunzite	700	kg	500	per kg	0.4	Traders in Kabul, miners and traders in Kunar and Nuristan
10	Amethyst	800	kg	135	per kg	0.1	Traders in Kabul
11	Gold	1	kg	4	per carat	0.03	Miners and local communities in Badakhshan
12	Fluorite	30	tonnes	206	tonne	0.01	Traders in Kabul, miners in Kandahar
13	Agate	3,000	kg	2	per kg	0.01	Traders in Kabul
	Total					**433.7**	

Notes: Precious stones Semi-precious stones Precious metals

Source: Based on field observations and interviews as detailed in this annex.

[1] UNDP, 2018b.

[2] Given large variations from year to year due to market conditions and regulatory changes, the 2017 should not be taken as a representative year for mineral production or exports.

[3] Central Statistics Organization, 2018.

[4] There are over 1,200 brick kilns in Kabul alone, located in the north east part of the city, manufacturing bricks. The kilns operate 8 months per year and use 3 tonnes of coal every day. Overall, the use of coal for brick kilns is significant and if it was included, could further raise the estimates substantially.

[5] Here, we assume that talc is exported fewer days in a year (250 days) compared with coal (300 days), because coal demand increases in the winter, while talc demand likely declines.

[6] UNDP, 2018b.

[7] As above.

[8] Overall, our calculation points to a difference between our estimate of talc export and official figures on talc exports that is greater than the difference in those of coal exports. One possible explanation is that there is talc mining is controlled to a greater degree by insurgents and therefore there is likely to be considerably more illegal export of talc than of coal.

[9] Unless otherwise indicated or referenced, the information on onyx is based on UNDP, 2018b.

[10] MoMP, n.d.-c.

[11] Mining contracts specify only the 'promised' volume of production, rather than the actual volume. Nevertheless, since mining companies pay royalties per volume, it is likely that the 'promised' volume would be less or equal to the actual volume, since companies do not have an incentive to pay more royalties than needed. Therefore, the 'promised' volume of production, specified in contracts, is likely a conservative estimate of actual mineral production.

[12] Quarries' contracts are usually specified in tonnes; however, one company's contract was specified in m3. The volume of onyx in m3 was converted to tonnes at the conversion rate of 1m3 = 2.5 tonnes, using the conversion rate for travertine from http://www.amlinkmarble.com/weigtcalculator/weightcalculator.htm.

[13] Rassin, A., 2012.

[14] Calculated based on MoMP, n.d.-c. This represents 'promised' production volumes that the mining company estimates at the time of obtaining the contract. However, since royalties are collected on the basis of these production volumes, it is unlikely that they are overestimates of the actual production, since no mining company would be interested in paying more royalties than due.

[15] Rassin, A., 2012.

[16] Global Witness, 2018c.

[17] Interviews with miners and experts point to a significant decline of lapis prices, and accumulation of lapis stockpiles in China. Therefore, the estimate of 4,500 tonnes per year of production could well be an overestimate.

[18] UNDP, 2018b.

Annex 5. Estimation of fiscal revenues

Potential fiscal revenues were estimated for the minerals which were investigated for this report. This annex explains how these revenue estimates were made.

The volumes and prices obtained through field work (see Annex 4) were used to calculate the production value of these selected minerals or mineral groups. These production values are shown in column 3 of Table A5-1. Except for coal, other minerals were assumed to be fully exported, because their domestic consumption is negligible, and thus the export value was equated to production value (column 4). For coal, the export value was calculated by multiplying the estimated exported volume by the prevalent coal price per tonne.

To calculate potential revenues from export duties, shown in column 9 of Table A5-1, the prevalent export duty rates were used, shown in column 5. Export duties were taken from the Customs Tariff Schedule of Afghanistan, dated 2014.[1]

To calculate potential revenues from royalties, shown in column 8, average royalty rates were calculated for each type of minerals, using data from the Small Mines Database of the Ministry of Mining and Petroleum. The average royalty rates per tonne of mineral are shown in columns 6 and 7 of Table A5-1, the latter showing the royalty rate in US$.

Given that the volumes of mineral production and exports used conservative estimates, the potential royalties and export tax revenues on minerals are also likely to be on the lower, conservative side. It should be noted that there is a large margin of error in these estimates, and therefore these estimates are meant to only be used as ballpark figures.

Table A5-1. Potential fiscal revenues from selected minerals – royalties and export duties, 2017

Mineral	Estimated volume, thousand metric tonnes, 2017	Estimated value – production, $ million	Estimated value – exports, $ million	Export duty	Royalty rate, Afghanis per tonne	Royalty rate, $ per tonne	Potential royalties, $ million	Potential export duties, $ million
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8	Column 9
Precious and semi-precious stones, gold	4.5	433.7	433.7	5%	10%*	10%*	43.3	21.7
Coal	2,200.0	198.0	90.0	2.5%	985.6	14.4	31.6	2.3
Talc	1,000.0	100.0	100.0	5%	634.6	9.3	9.3	5.0
Onyx	4.3	2.6	2.6	30%	452.5	6.6	0.03	0.8
Marble	60.8	29.5	29.5	30%	653.3	9.5	0.6	8.9
Total	**3,269.9**	**763.8**	**655.8**				**84.9**	**38.6**
Grand total - potential royalties and export duties								**123.4**

Notes:

* Royalty rate for precious and semi-precious stones are ad valorem, calculated as % of value.

Royalty rates calculated as the average from the actual royalty rates for specific types of minerals, from MoMP, n.d.-c.

Export duties (rates) are from Ministry of Finance, 2014.

Sources: Export duties (rates) are from the Ministry of Finance, 2014.

Estimated volumes and values of mineral production and exports are based on investigative work conducted for this NHDR, see Annex 4.

[1] MoF, 2014.

Annex 6. Integrating extractive industry-related databases

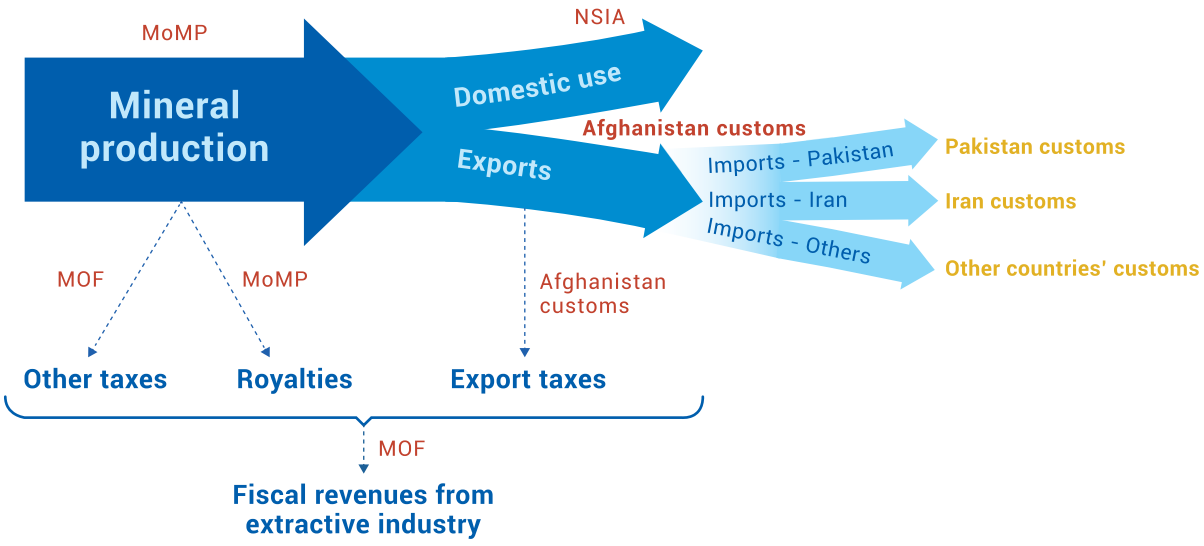
One of the key impediments for the Government of Afghanistan in raising fiscal revenues from the extractive industry is the absence of an integrated system of records – which is especially needed with regard to small- and medium-scale mines. By integrating these databases and cross-checking data related to the extractive industry, it is possible to identify some 'leakages' or losses of fiscal revenues and taking targeted measures to stem these losses.

With the support of donors, the government has built several databases related to the extractive industry, such as the geological database at AGS, a database of mines at MoMP, and records of exports at the Customs Office; it is currently developing the Mining Cadaster Administration System (MCAS) and Non-Tax Revenue System (NTRS). In theory, mineral exports, production, royalties and export duties should all be reconciled (see Figure A6-1). For instance, data on mineral exports from Afghanistan to Pakistan should be equal to data on mineral imports to Pakistan from Afghanistan. Mineral exports reported by the Customs Office should equal to that reported by the Statistics Office. Exports should have correspondence to export revenues on minerals collected by the Customs Office. Mineral production by MoMP should have correspondence to royalties collected by MoMP. Finally, royalties and export duties should have a correspondence (should be less than) to total fiscal revenues collected by the extractive sector. However, these records and databases sit separately in different ministries and agencies.

The government has also implemented AEITI for a number of years, which ensures verification of payments by extractive companies to governments. Although AEITI conducts cross-checking of large- and medium-scale extractive companies, the coverage of AEITI should be expanded. Fiscal revenues from the extractive industry should also be reported separately and transparently. The absence of detailed information published by the Ministry of Finance on various flows of revenues from the extractive industry means that there is no possibility for independent verification.

Also, there should be cross-checking with the countries-importers of Afghan minerals on whether customs records are consistent with those of Afghanistan's main trading partners and among government agencies in Afghanistan.

Figure A6-1. Reconciling data on extractive industry

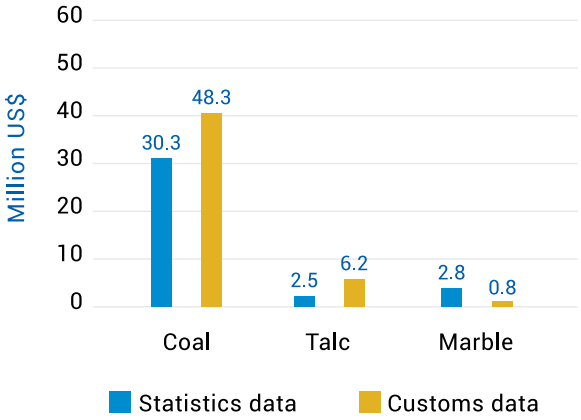


This report has identified, based on analysis of available data from different agencies, and verification through field observations and interviews, that the tax returns from building such a system could be substantial. Analysis of publicly available data shows that there are large discrepancies in this data.

First, there are large differences in the value of minerals traded between Afghanistan and Pakistan, as reported by the two countries' statistics offices. The value of coal exports as recorded by Pakistan is more than twice than that recorded by Afghanistan (annual average in 2015/16-2017/18 fiscal years). The value of talc exports is 11 times more. In contrast, the value of marble exports is less by 40 percent compared to that recorded by Pakistan.[1]

Second, there are also differences in the value of exports as reported by Afghanistan customs and statistics offices.[2] The value of coal exports according to Statistics was 59 per cent higher than that reported by Customs (annual average in 2015/16-2017/18 fiscal years). That of talc exports was 143 per cent higher. In contrast, the value of marble exports was 72 per cent lower.

Figure A6-2. Value of mineral exports to all countries: Discrepancy between Afghanistan Customs and Statistics data, annual average, 2015/16-2017/18



Sources: Afghanistan Customs Department and NSIA

Third, the total fiscal revenues collected from the extractive sector should be at least equal to, or larger than the sum of royalties and export duties on minerals.[3] However, the absence of detailed breakdown of revenues from the extractive industry prevents such comparison.

Table A6-1 shows which databases and data sources have been used for estimation of mineral production, exports and selected fiscal revenues. These sources should be the starting points for developing an integrated database.

Table A6-1. Data sources for cross-checking mineral production, exports and revenues

Domain	Official government and other databases	Surveys and studies by the government and UN agencies
Mineral production	▪ Central Statistics Organization (CSO), n.d.-a. *Table 9-6, Private sector industrial production, 2008/09-2016/17 (1387-1395)* ▪ Ministry of Mining and Petroleum (MoMP), n.d.-c. *Small Mines Contracts Database.* ▪ United States Geological Survey (UGSG), n.d-b. *Afghanistan: Production of mineral commodities, tables 2011-2015.*	▪ Field investigations and observations (see Annex 4) ▪ Studies on value-added in Lapis, Onyx and Talc ▪ Estimation of domestic coal production is based on data from: ▫ Government of Islamic Republic of Afghanistan, 2015 ▫ Ministry of Urban Development and Housing and UN-HABITAT, 2017 ▫ Central Statistics Organization, 2018.
Mineral exports	▪ Central Statistics Organization (CSO), n.d.-b. *Tables of Exports by Countries & Commodities, 2008-2018.* ▪ Pakistan Bureau of Statistics, n.d. Imports by commodities and countries, 2014/15-2017/18. ▪ Ministry of Finance (MoF), 2014. Ministry of Finance, Afghan Customs Department, Tariff Schedule (Import & Export). ▪ ITC Market Access Database, n.d. *Tariffs of countries importing minerals from Afghanistan – Tariff Analysis – Applied Tariffs.*	▪ Field investigations and observations (see Annex 4) ▪ UNDP, 2018b. *Overview of Value-Added for Three Afghan Mineral Commodities: Lapis, Onyx and Talc.*
Fiscal revenues	▪ General government revenue data is from UNDP, 2018c. *Government revenue, Afghanistan.*	▪ AEITI, 2012a, 2012b, 2014, 2016, 2017. ▪ EITI, 2018a. *Summary tables Afghanistan.*

[1] See data sources in the Table A5-1. Pakistan's fiscal year is from July to June, whereas Afghanistan's fiscal year is from March to March. This can cause some discrepancy between trade data between the two countries. To address this lack of comparability, averages of the past 3 years were taken (2015/2016 – 2017/2018). As an average of multiple years, the trading values should at least approximate to each other. Exports of 'stone' as recorded by the Afghanistan Central Statistics Organization was assumed to be the exports of talc.

[2] Some discrepancy is expected because the Customs Office reports on Gregorian calendar basis (Jan-Dec), while the Central Statistics Organization reports on Afghan calendar basis (March-March).

[3] Since there is no publicly available official data with the breakdown of fiscal revenues, the exact data on royalties and export duties could not be verified.

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A young woman joins Muqadasa – a civil activist against violence - on her graffiti campaign for peace in Jalalabad city, Nangarhar province.

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A street vendor in Kabul is helping his daughter in her school studies.

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A worker sorting marble tiles in a marble factory in Herat province.

Page 48 © Afghanite Company

A mine worker inside the lapis mining cave in Badakhshan province.

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A large-scale mine in Mozambique. Energy and transportation infrastructure built by large mining companies can benefit surrounding communities.

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Children play in Band-e Amir National Park in Bamyan province.

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A young man working in a marble factory in Herat province, western Afghanistan.

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