Responsible mining

TRAINING MANUAL

The training module was developed by Civic Solutions Mongolia (CSM) in collaboration with Sustainable Minerals Institute (SMI) of the University of Queensland.

Lead author

Byambajav Dalaibuyan

Contributing authors

Munkhzul Dorjsuren (authored Module 7 and 8)

Vigya Sharma (co-authored Module 5 and 6)

Usukhbayar Sainjargal (co-authored Module 9)

Ivan Gyozo Somlai (Advisor and editor)

Gerelt-Od Erdenebileg (contributed to case studies)

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Acknowledgements

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Introduction

The main objective of this training manual is to build the capacity of local governments, local communities, and small- and medium-sized mining companies in Mongolia to undertake and oversee responsible mining. The training manual aims to provide a holistic view of responsible mining based on the understanding of the life of a mine and of the challenges and needs of local stakeholders.

The training module focuses on social, environmental and governance aspects of responsible mining.

The training module will:

- Provide a holistic understanding of the life of a mine to participants from technical and non-technical backgrounds
- Provide a better understanding and awareness of the social, cultural and environmental impacts of mining and ways to manage them at all stages of the life of a mine
- Provide best practice examples and other resources
- Provide a knowledge base for tertiary training and curriculum development

The primary audience for this module includes local government policy-makers and officers, local community members and people working in the mining industry, especially those in small- and medium-sized companies. While the authors recognise the diversity of knowledge and current capacity among those groups, this training manual aims to bridge these differences so the stakeholders have a shared understanding of the core aspects of responsible mining.

While the primary target audience are Mongolian stakeholders, this training manual can also be used by stakeholders anywhere in the world. For this purpose, the authors have clarified terms and concepts that would otherwise be understandable only in the Mongolian context, in addition to providing a large number of reference materials available in English, and marking as such those reference materials available only in the Mongolian language.

The training manual does not intend to cover all aspects of responsible mining. Rather, it aims to focus on the key themes that are identified by research and needs assessments. The Civic Solutions team applied the Participatory Curriculum Development (PCD) approach to develop this training manual. Accordingly, the process of writing this manual oversaw the following key processes:

- Development of a preliminary framework
- Scoping study and training needs assessment
- Development of a revised framework and the content of the manual
- National dialogue workshop

- Review of 'expert panel'
- Completion of the training manual

The training manual consists of thematic modules. Trainers can use different modules selectively to suit the needs of particular groups of learners. Each thematic module will have the following components:

- ☐ Learning objectives
- ☐ Overview
- ☐ Suggested timetable
- ☐ Training materials
  - Notes and texts on the key points, regulatory aspects, international best practice and concepts (related references will be shown)
  - Relevant case studies
  - A number of training tools that can be used to enhance understanding of the module's contents. They will include review questions, suggested references to read, instructions and options of exercises and group activities, and options of discussion topics.
  - Suggested PowerPoint presentation slides for each thematic module.
- ☐ Suggested readings and online resources
- ☐ Glossary of key terms and concepts

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ACRONYMS

ASM	Artisanal and Small-Scale Mining		IFC	International Finance Corporation's
CAO	Compliance Advisor Ombudsman		IWRM	Integrated Water Resources Management
CMCS	Computerised Mining Cadastre System		LDF	Local Development Fund
CRK	Citizens Representatives' Khural		LLC	Limited Liability Company
CSR	Corporate social responsibility		MIDR	Mining-induced development and resettlement
DEIA	Detailed environmental impact assessment		MoEGDT	Ministry of Environment, Green Development and Tourism
EBRD	European Bank for Reconstruction and Development		MNS	Mongolian National Standards
EIA	Environment impact assessment		MRAM	Minerals Resources Authority
EFA	Ecosystem Function Analysis		NGO	Non-governmental organisation
EMP	Environmental Management Plan		NRGI	Natural Resources Governance Institute
ESIA	Environmental and social impact assessment		OP	Operational policy
EITI	Extractive Industries Transparency Initiative		RAP	Resettlement action plan
GASI	General Agency for Specialized Investigation		SEAT	Socio-economic assessment toolbox
GDP	Gross domestic product		SIA	Social impact assessment
GIS	Geographical Information Systems		SLA	Sustainable Livelihoods Approach
HRIA	Human Rights Impact Assessment		UNDP	United Nations Development Programme
ICMM	International Council of Mining and Metals		UNEP	United Nations Environmental Programme

MODULE 1. RESPONSIBLE MINING & SUSTAINABLE DEVELOPMENT

Learning objectives

Upon completion of this module, participants will be able to:

- Understand key aspects or pillars of responsible mining
- Understand challenges that the mining industry has faced and responded to in the past decade internationally and in Mongolia
- Explain key features of the business of mining and its inherent challenges such as environmental and social impacts
- Understand the key terms and the life cycle of a mine
- Use the mine life cycle framework to understand both business and social considerations
- Examine linkages between responsible mining and sustainable development

Overview

This thematic module will provide learners an introduction to the business of mining, the challenges it faces, and important changes it has undergone in the past decade. The module is structured around the following three topics.

First, the module will introduce the key features of responsible mining and how mining has been challenged due to societal concerns about negative impacts on the environment and society. This will be complemented by a discussion about the industry responses to these challenges and the emergent attitudinal and institutional changes towards responsible mining. The content of this section will be mostly about global change, but recent initiatives towards responsible mining in Mongolia will also be examined.

Second, the module will introduce the key terms of mining and the concept of the life of a mine. The objective is to help learners acquire a shared understanding of the key aspects of the business of mining. It will look at the exploration stage in more detail to illustrate uncertainties and risks in mining and investment.

Third, this module examines recent discussion about the contribution of mining to achieve Sustainable Development Goals (SDGs). It will touch on some areas where mining is particularly well positioned in terms of contributing to the SDGs.

This module focuses on helping not only people from non-mining or other related professions better understand various risks and uncertainties that may occur during the life of a mine but also build knowledge, capacity and management options for miners and developers to address risks as well as impacts arising through the various stages of the mining lifecycle.

Specific topics discussed in this module are:

- The pillars of responsible mining
- The concept of sustainable development
- Significant changes occurred in the mining industry in the past decade
- Features of the business of mining
- The structure of the mining industry
- Key characteristics of different stages of the life of a mine: exploration, mine development, operation, and closure

Suggested timetable

- Introduction to the topic (20 minutes)
- The Business of Mining (40 minutes)
- Group activity on the business of mining (20 minutes)
- Review and discussion (10 minutes)

Training materials

Lecture notes	Suggested presentation slides
Introduction to the topic (20 minutes) Responsible mining Mining is a complex and intensive process. Mineral products are essential components for the physical and social infrastructure in modern societies. Population growth, urbanization and income growth necessitate more buildings, cars and consumer products, thereby increasing the needs for mined products. Mining is the economic foundation for a number of developing countries.	

Mining causes environmental and social change. Mining-related changes impact the physical environment and local communities. If managed poorly, mining can lead to environmental degradation, displaced populations and increased conflict, among other challenges. If managed responsibly, mining can create jobs, facilitate investment, improve infrastructure and lead to improved quality of life at a significant scale.

Many elements of responsible mining can be identified, depending on the industry, government and civil society perspectives. For example, The Initiative for Responsible Mining Assurance (IRMA) defines responsible mining as an environment where the mining industry respects human rights and the aspirations of affected communities; provides safe, healthy and respectful workplaces; avoids or minimizes harm to the environment; and leaves positive legacies (http://www.responsiblemining.net/).

Marta Miranda, David Chambers, and Catherine Coumans suggests the following four components as central to defining responsible mining:

- Acknowledging the need to preserve ecologically and culturally significant areas.
- Ensuring environmentally responsible mine development
- Ensuring that mine development results in benefits to workers and affected communities
- Ensuring that appropriate corporate governance structures are in place.
  (http://www.frameworkforresponsiblemining.org/index.html)

In Mongolia, a series of multi-stakeholder meetings convened by The Asia Foundation in 2006 brought together representatives from civil society, government, industry and academia to agree on the following definition of responsible mining:

Responsible Mining is a comprehensive and transparent minerals activity respecting the rights of all stakeholders, especially of local people, environmentally friendly and free of human health impacts, embracing the best international practices and upholding rule of law whilst generating a sustainable stream of benefits for Mongolia. (https://asiafoundation.org/resources/pdfs/MGMultistakeholderIV.pdf)

These definitions may seem to include only the responsibilities of mining companies. However, it is important to understand that including the responsibilities of government bodies, local administration and civil society are just as important.

Sustainable development

In 1987, the United Nations World Commission on Environment and Development (WCED) published the Brundtland Report "Our Common Future", which defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." It is relatively common nowadays to define sustainable development as a pathway that meets the triple bottom line of development across economic, ecological and social needs.

There is no one definition of sustainability that has been universally adopted by the mining industry. Some useful descriptions include the following:

- Miners can achieve sustainable development by embracing the social, environment and economic pillars – James 1999.
- Offsetting or reinvesting the benefits from the depleting mineral asset – Labonne 1999.
- The simultaneous pursuit of sustained or enhanced environmental quality, economic growth, and social justice – Eggert 2006.

(References: Carsten Drebenstedt. 2014. The Responsible Mining Concept – Contributions on the Interface between Science and Practical Needs, in C. Drebenstedt and R. Singhal (eds.), *Mine Planning and Equipment Selection*, 3 DOI: 10.1007/978-3-319-02678-7_1)

The transformation of the mining industry in the past decade

In the 1990s, the global mining industry was suffering from an existential crisis. Commodity prices were low and the legacies of a number of major mining projects had triggered a significant, and increasingly global, environmental movement against mining. Historically, mining contributed to environmental degradation, displacement of populations, worsening economic and social inequality, and armed conflicts. Research was also published at this time on the relationship between economic dependence

on natural resources and GDP. This negative correlation came to be known as the 'Resource Curse'. Unwanted pollution and undesirable social impacts resulting from mining, contributed to the industry being labelled as a 'problem industry'.

In 2002, the Global Mining Initiative Conference was held in Toronto, Canada to close a two year worldwide research project on Mining, Minerals and Sustainable Development Project (MMSD) to define the role of the mining industry in its transition to sustainable development. The MMSD report "Breaking New Ground" acknowledged that mining failed to convince some of its constituents and stakeholders that it had the 'social licence to operate' in many parts of the world.

In response to the industry's "existential crisis' at the time, The International Council on Mining and Metals (ICMM) was formed in 2001 to represent the world's leading companies in the mining and metals industry and to advance their commitment to sustainable development. All ICMM members are required to implement the Sustainable Development Framework. This includes integrating a set of 10 principles and six supporting position statements into corporate policy, as well as setting up transparent and accountable reporting practices.

(References: Humphrey, David. 2015. The Remaking of the Mining Industry. Palgrave; Franks, Daniel. 2015. Mountain Movers: Mining, Sustainability and the Agents of Change. Routledge; ICMM. 2016. Our history. www.icmm.com)

Since 2002, the main changes towards incorporating sustainable mining practices have included:
- Better understanding sustainable development in the mining and minerals context, including improved sophistication in discussing how mining could maximise its contribution to sustainable development.
- The industry taking significant steps to professionalize sustainability and community relations roles, including developing corporate policies and processes and institutionalising internal management systems.
- The emergence of a set of global rules for best practice on sustainable development and minerals.
- Ongoing development of a very large pool of good practice guidance

(References: IIED. 2012. MMSD+10: Reflecting on a decade of mining and sustainable development http://pubs.iied.org/16041IIED.html)

In August 2015, governments united behind an ambitious agenda that featured 17 new Sustainable Development Goals (SDGs) and 169 targets that aimed to end poverty, combat inequalities and promote prosperity while protecting the environment by 2030. Agreed to by consensus, the draft outcome document "Transforming Our World: the 2030 Agenda for Sustainable Development" was formally adopted by world leaders at the United Nations Summit for the post-2015 development agenda, held in New York in September 2015. It will be the shared global development framework for the coming generation.

Currently, major international organizations have been working together to create a shared understanding of how the mining industry can most effectively contribute to the SDGs. When managed appropriately, mining can create jobs, spur innovation and bring investment and infrastructure at a game-changing scale over long time horizons. If managed poorly, mining can also lead to environmental degradation, displaced populations and increased conflict, among other challenges. These attributes make the industry a major potential contributor to the SDGs. At the same time, if the mining industry does not participate or if individual companies engage in activities that contradict these goals, their achievements will be compromised.

(References: SDSN. 2016. Public Consultation on How Mining Can Contribute to the Sustainable Development Goals http://unsdsn.org/news/2016/01/13/mining/)

Mining and SDGs

Mining and the 17 SDGs: Indicative Priorities
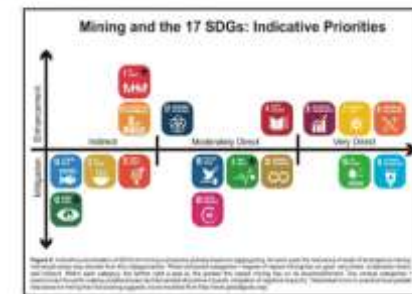
The Business of Mining (40 minutes)

A practical understanding of mining operations will help local and national governments to better define their policies, for local communities and companies to develop better relationships, manage benefits and impacts.

The features of mining

Mining is the process by which ores or related materials are extracted from the Earth. Mining is like any other business regarding the objectives it tries to achieve such as to increase profit, growth and market share, and to survive during hard times. However, there are some important features of the mining

industry differentiating it from other industries.

- Mines are situated where natural geological deposits dictate. There is little to no choice in location. Conditions and resulting mine design (technical, social, environmental) will vary dramatically between sites.
- Because of the hugely varying nature of minerals and ores, the processing technologies required to make these materials available for use will also vary from site to site.
- Mining companies are exposed to high degree of risk. Primarily as a commodity provider, they take the market price and are therefore fully exposed to the boom and bust commodity cycle. The commodity price when a new mine is approved for construction could be dramatically different from that when the mine is operational.
- Cost is crucial. Because prices are largely outside the control of producers and because there is virtually no scope to achieve premiums from branding or clever marketing, the profitability of producers is almost entirely a function of their costs. Accordingly, this is the first area that producers are obliged to address when mineral prices decline.

(References: Humphrey, David. 2015. The Remaking of the Mining Industry. Palgrave).

The Mining Industry

The mining industry is made up of a number of sub-industries with different types of companies. These include service companies, construction companies, exploration companies, mineral processing, mineral extraction and refining companies.

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The mining industry comprises a mix of large and small companies. The large international companies, such as BHP Billiton, Rio Tinto and Vale, are referred to as majors. These companies have access to large amounts of capital and are capable of developing a major mine on their own. In contrast to the oil and gas sector, which is dominated by State-Owned Enterprises (SOEs), the mining industry's biggest

players are mostly privately held international corporations. Some notable exceptions include state-owned enterprises like China's Shenhua, India's Coal India Limited, and Chile's Codelco. Junior companies tend to focus on exploration. They tend to have significantly less access to capital and rely on project-specific equity financing to fund new operations. A few of them also produce minerals on their own or in collaboration with other companies.

At the smaller end of the spectrum of mining operators, there are numerous artisanal and small-scale miners, usually operating as informal enterprises. World Bank estimates suggest approximately 15-20 million artisanal miners currently operate in nearly 30 countries.

(To learn more about the global mining industry, explore www.mining-atlas.com. This interactive website enables one to explore over 13000 mines and projects across the globe. The website is connected with the Google Earth plug-in. The website contains data on mine`s production, resources, reserves, ownership and other characteristics.)

The life of a mine

The life of a mine comprises a series of steps. This life cycle varies in length from a few to many decades, sometimes stretching to centuries. Typically, there is an exploration and evaluation phase (1-10+ years), followed by a site design and construction phase, also popularly known as the mine development phase (2-5 years), followed by the mining extraction phase (2-100 years), and then closure, decommissioning and reclamation (5-30+ years). Each phase of the mine project life cycle brings different environmental, economic and social challenges and opportunities.

Furthermore, within a mine's life cycle there are periods of 'booms' and 'busts', which are driven by volatile commodity prices and other socio-political factors. 'Booms' are fuelled by high mineral demand, which drive high commodity prices and incentivise higher production. 'Booms' are inevitably followed by 'busts', which are characterised by supply surpluses, falling commodity prices, reductions in company capital costs and spending, investment postponements and mine closures (Humphreys, 2015).

(On long-term trends in mining, read Gavin M Mudd. The Sustainability of Mining in Australia: Key Production Trends and Their Environmental Implications for the Future. Research Report No RR5, Department of Civil Engineering, Monash University and Mineral Policy Institute. 2007 http://users.monash.edu.au/~gmudd/sustymining.html)

The life of a mine
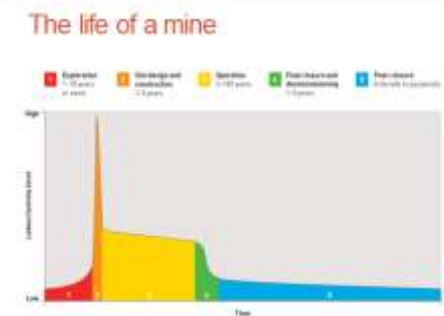
- Exploration

Exploration typically proceeds in a succession of stages, wherein each subsequent stage 'zooms in' to an area to get more detail about the presence of the deposit and economic viability of its extraction. Exploration involves a range of earth science disciplines including geology, geochemistry, geophysics, and remote sensing.

The main objective of mineral exploration is to locate mineral deposits. An additional objective of mineral exploration today is to find significant extensions of prexisting deposits associated with operating or abandoned mines. Accordingly, there are two types of exploration:

- Greenfield exploration: new, remote territories
- Brownfield exploration: close to existing mines

Greenfield exploration projects can be subdivided into grassroots and advanced projects.

Geological surveys are fundamental to exploration. Geological surveys can be used to define smaller areas in which more detailed studies can be undertaken. Many countries have a government-funded national geological survey agency, often producing local maps at a scale of between 1:50,000 and 1:100,000. In Mongolia, 100% of the territory is covered by general geological mapping on a scale of 1:200 000. However, approximately 30 % of the Mongolian territory is covered by more detailed geological mapping on a scale of 1:50 000.   Geological maps are not only for mining. They are very useful also in other fields: looking for ground water resources, major construction projects and assessing soil quality for agriculture.

In the very first instance, large tracts of land are geologically surveyed and mapped to identify areas of potential mineralisation. Airborne magnetic surveys are often used to cover large tracts of land quickly to help identify anomalies that may indicate a mineralised zone. Once a target area is identified, a more detailed ground survey is undertaken using techniques such as seismic surveys, direct sampling and drilling. Depending on the nature of the exploration method, it can require the clearance of topsoil or disruption to existing activities such as agriculture. However, impact can generally be managed through careful site planning.

Exploration is a risky business. For example, some statistics indicate that only 1 in 5,000 to 1 in 10,000 grassroots exploration projects ever reach the production stage. Another example is the success rate of drilling. Drilling is the most reliable – although, also more expensive – technique used to confirm or deny the existence of an ore deposit. However, current technological advancement and skills do not guarantee a successful hit with every drill. It is often said that an average success rate of drilling is less than 1%.

(On the challenges for exploration projects, see Byambajav Dalaibuyan, 2016. The Story of the Discovery of the Oyu Tolgoi. http://blogs.ubc.ca/mongolia/2016/oyu-tolgoi-discovery/)

Following the geological exploration, mining companies conduct feasibility studies where they combine geological information with economic analysis. Mining companies study market uncertainties: What is the current demand for the resource? What is the projected future demand? They also consider sovereign risks: Where is the mine located? How politically stable is the government? Is there a viable workforce option available? These factors are carefully considered before a mine proceeds to the planning stage.

(On economic risks in developing a mining project, read Jamul Jadamba. 2012. Main principles of financing mining projects (In Mongolian))

- Mine development

Mine development refers to the feasibility and construction stages of a mining project. The feasibility stage of a mining project usually includes Scoping Studies, Prefeasibility Studies, and final Feasibility Studies, which all should be prepared with great care by experienced professionals. The ultimate objective of this stage is to demonstrate the project can be constructed and operated in a technically sound and economically viable manner. In addition, the studies provide a basis for detailed design and construction and raising finance for the project from banks or other sources. Mine planning addresses technical considerations such as mining methods, processing methods, as well as inputs required to conduct mining, including infrastructure and workforce options.

Mine construction begins with preparing the designated land area for the construction site. Preparation

Typical mine complex
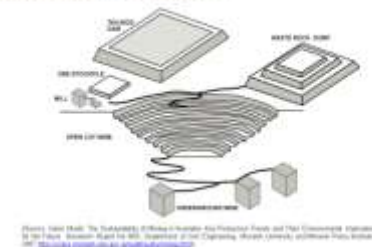
includes the removal or stripping of vegetation, rocks and mountainous terrains, and any previous buildings or structures. Plans for managing social and environmental impacts need to be put in place. After the land is cleared fencing is erected and ancillary infrastructures such as haulage roads, railway lines, and bridges need to be built. Workers camps or "mining towns" need to be built to house the workers. The size of camps to house the workers will be dependent on the expected size of the mine and the number of workers needed.

The type of mining activity will determine the type of construction needed. Underground mining activities will require various tunnels to be built. Surface mining will need the various structures surrounding it. Processing plants are usually built on the site of extraction. Tailings dams and waste rock dumps should be constructed to encompass the wastes that will be generated from the mine.

At the mine development phase, companies should carefully address non-technical considerations such as sustainability and community expectations. A recent study, published by the CSR Initiative at Harvard Kennedy School together with Shift and the University of Queensland, found that the feasibility and construction stages of projects are highly prone to serious conflicts that can lead to the suspension and abandonment of projects. The construction stage can represent dramatic transitions for local communities with major project impacts experienced for the first time, including impacts arising from a large influx of workers.

(References: Davis, Rachel and Daniel M. Franks. 2014. "Costs of Company-Community Conflict in the Extractive Sector." Corporate Social Responsibility Initiative Report No. 66. Cambridge, MA: Harvard Kennedy School. http://shiftproject.org/publication/costs-company-community-conflict-extractive-sector)

- Mineral extraction phase

Mineral extraction

Mineral extraction methods can be divided into two types: surface and underground. The method used depends, primarily, on the depth at which the ore is found and the cost of the methods of extraction.

Surface mining methods (open pit mining, strip mining, quarry mining, leach mining and dredge mining)

extract minerals and metals relatively close to the surface. Surface mining techniques are used when there is large tonnage, high rates of production and when the overburden (soil and rock overlying the mineral deposit) is thin. Examples of surface mining include coal, brown coal and bauxite mines. Underground mining methods (room and pillar, open stoping, longwall mining, sub-level open stoping and block caving) are used when the ore body is deep beneath the surface, and the ore grade is sufficient to cover the cost of mining at depth. Compared to surface mining, underground mining is more expensive and has historically been more dangerous.

(To learn more about how mines operate, take a virtual tour behind-the-scenes of the Kennecott Bingham Canyon Mine in Utah, USA. The tour shows the mine, concentrator, smelter, refinery and other facilities through captioned narration http://www.kennecott.com/visitors-center#virtualtour)

Processing or 'beneficiation'

Separating the valuable metals and minerals from the rock and waste material that surrounds them is known as 'processing'. Different minerals and metals require different types of processing. Coal and iron ore often require very little processing, as they can simply be crushed and/or washed before transport. In contrast, gold, copper and aluminium require several stages of complex processing to separate them into their pure state. Gold ore is treated with chemicals, for instance, while aluminium is separated out by exposing the processed ore to an extremely powerful electric current.

The waste (residue or tailings) produced by the refining process often needs to be stored in tailings dams. Mines generate enormous quantities of waste. In 2000, mines around the world extracted close to 900 million tons of metal—and left behind approximately 6 billion tons of waste ore. This figure does not include the overburden earth moved to reach the ores. Much of this waste came from the production of just iron ore, copper and gold. For every usable ton of copper, 110 tons of waste rock and ore are discarded, and another 200 tons of overburden earth moved. For gold, the ratio is more staggering: about 300,000 tons of wastes are generated for every ton of marketable gold. To provide a perspective, approximately 3 tons of waste is produced per gold wedding ring. Much of this waste is contaminated with cyanide and other chemicals used to separate the metal from ore.

(References: Payal Sampat, "Scrapping Mining Dependence," in State of the World 2003
https://ecoculture.files.wordpress.com/2010/03/scrapping-mining-dependence-payal-sampat.pdf)

- Closure

All mines eventually close. Some mines close for economic or logistical reasons, while others simply run out of viable ore to extract. In some cases mines may close on a temporary basis until markets improve. The closure of any mining operation will have an impact on the local society, economy and the environment. These impacts are managed through a mine closure plan, which addresses key issues such as environmental rehabilitation, socioeconomic impacts, removal of infrastructure and plant. Mine closure further ensures that the site is left in a safe, stable condition while the community is able to generate livelihood and thus thrive in the absence of the mining industry. Land rehabilitation and closure should be based on scientific understanding as well as consultation with local people, including their values and knowledge in the closure plan. The productive use of the landscape in the future is essential in planning for restoration and closure.

(On the most recent international best practice resources, read "Mine rehabilitation in the Australian minerals industry" http://www.minerals.org.au/file_upload/files/reports/Mine_rehabilitation_in_the_Australian_minerals_industry_FINAL.pdf.)

Group Activity (20 minutes)

Option One: Understanding social and business risks in mining

Local communities are worried about social, economic, cultural and environmental risks or potential negative impacts of mining activities while mining companies are often worried about business risks. Ask participants to define these two types of risks and discuss how they are related or can affect each other. If time allows, ask the participants to outline controls or organizational or managerial methods that can be implemented by mining companies and local governments to mitigate or avoid some key risks. For example, environmental management plans are one of the controls for ecology and land disturbances.

Option Two: Reviewing the Minerals Law from the perspective of the Life of a Mine

Ask participants or groups to delineate the following key information from the Minerals Law:

	Exploration	Mine Development	Mining/Extraction	Mine Rehabilitation and closure
Duration				
Companies' rights and responsibilities				
Local government's rights and responsibilities				
Local citizens' rights and responsibilities				

Review and discussion (10 minutes)

- What are the pillars of responsible mining and how do they each relate to sustainable development?
- What are the main differences between the mining industry and other industries (e.g. manufacturing?)
- What should be the main social and environmental considerations in developing a resource project in Mongolia compared to other countries?
- What are the main types of minerals occurring in your localities (*aimag*s or *soum*s) and what technical considerations should be made for mine planning?

Suggested readings

Collier, Paul. 2009. The Bottom Billion. Ulaanbaatar: Admon.
Franks, Daniel. 2015. Mountain Movers: Mining, Sustainability and the Agents of Change. Routledge
Humphrey, David. 2015. The Remaking of the Mining Industry. Palgrave.
UNDP. 2011. Mongolia Human Development Report. (in Mongolian)

Glossary of key terms and concepts

Airborne survey – an aerial survey to obtain photographs, or measure magnetic properties, radioactivity, etc.
Exploration - prospecting, sampling, mapping, drilling and other work involved in searching for mineral

deposits.	
Grade - the metal content of ore measured in grams per tonne or per cent.	
Mineral - a solid substance, formed through biogeochemical processes that has a specific chemical composition and physical property.	
Mineral deposit - mineralized mass that may be economically valuable, but whose characteristics require more detailed information.	
Mineral resources - is a mineral concentration which is known, estimated and interpreted from specific geological evidence and knowledge and with reasonable prospects for economic extraction.	
Mining - all prospecting activities, exploration and exploitation of minerals.	
Ore reserves - an economical mineable part of a mineral resource that can be mined at a profit	
Ore - a mineral-bearing rock, which may be rich enough to be mined at a profit.	
Sustainable development - development that meets the needs of the present without compromising the ability of future generations to meet their own needs.	
Tailings - refuse material resulting from the washing, concentration, or treatment of ore.	

MODULE 2. COMMUNITY ENGAGEMENT

Learning objectives

Upon completion of this module, the participants will be able to:

- Understand the case for effective community engagement
- Define and use different concepts and frameworks of community engagement such as stakeholders and consultation
- Plan for effective community engagement
- Assess company capacity for community engagement

Overview

The first section of this module explores the benefits and strategies of effective community engagement in mining. The highlight of this section is the case for community engagement. Effective stakeholder engagement should not be viewed as something that must be undertaken only to meet regulatory requirements such as EIAs and Minerals Law or appease local government officials or affected communities. Effective community engagement is essential for successfully developing any mining projects. An important step in undertaking meaningful community engagement is recognising that effective communications and engagement provide mutual benefits to companies and local stakeholders and avoid grievances escalating into conflicts. The second part of this module examines the benefits of establishing grievance mechanisms for mining companies and other stakeholders. It outlines basic steps and principles in developing a grievance handling procedure.
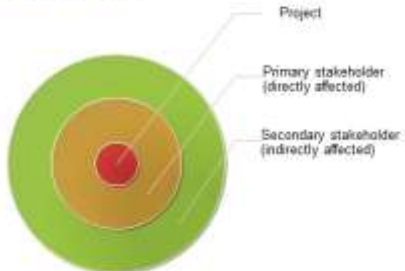
Specific topics discussed in this module are:
- The case for stakeholder engagement
- Trends in stakeholder engagement in the mining industry: traditional and emergent approaches
- Understanding levels and types of community engagement: information, consultation, and active participation
- A systematic approach to community engagement
- The case for effective grievance mechanism
- Developing grievance handling procedures
- A checklist for effective grievance mechanism

Suggested timetable

- Introduction to the topic (10 minutes)
- A systematic approach to community engagement (30 minutes)
- Group activity on community engagement (20 minutes)
- Grievance mechanism (20 minutes)
- Review and discussion (10 minutes)

Training materials

Lecture notes	Suggested presentation slides
Introduction to the topic (10 minutes) Local community and stakeholders In small and medium scale mining, community or local community generally refers to the inhabitants of immediate and surrounding areas of company's activities. In Mongolia, it often means residents (mostly herder households) of one or several *soum*s adjacent to where a resource development project is located. It is important to be clear about project affected community or people. Affected people or households include any people who are impacted in some significant way by a project's activities. In Mongolia, these effects can often include relocation of winter shelters, the loss of access to pasture, personal safety, health impacts and changes in local demographics and social relations. Another important term for a mining project is stakeholder. The term stakeholder has become a commonly used term which overlaps with, but is distinct from, community. A widely accepted definition of stakeholders is "those who have an interest in a particular decision, either as individuals or representatives of a group. This includes people who influence a decision, or can influence it, as well as those affected by it". It is possible to group stakeholders as primary and secondary. Residents of geographic communities in an operation's area of interest are usually referred to as 'primary' stakeholders or 'key' stakeholders. Some important stakeholders also come from outside a local community, such as *Aimag* and national governments, politicians, commercial and industrial enterprises, national social and environmental	

groups, *nutgiin zuvlul*, and the media.

(References: Evans, R & D.Kemp. 2011. Community Issues. SME Mining Engineering Handbook)

The case for stakeholder engagement

Mongolia's Minerals Law includes the following provisions:

"42.1 A license holder shall work in cooperation with the local administrative bodies and conclude agreements on issues of environmental protection, mine exploitation, infrastructure development in relation to the mine site development and job creation.
42.2. A license holder in cooperation with the local administrative agency may organize a public forum in relation to issues set forth in Article 42.1."

The Environmental Impact Assessment Law of Mongolia has the following provision:

"17.4 It is the responsibility of the legal entity performing the detailed environmental impact assessment to organize, at the report preparation stage, consultations with and formally seeking comments from the local authority and the community that is likely to be affected by the project as well as local residents living in the area where the proposed project is going to be implemented."

Effective stakeholder engagement should not be viewed as something that must be undertaken only to meet regulatory requirements such as EIAs and Minerals Law or appease local government officials or affected communities. Effective community engagement is essential for successfully developing any mining project. An important step in undertaking meaningful community engagement is recognising that effective communications and engagement provide mutual benefits to companies and local stakeholders, including significantly preventing grievances from escalating into conflicts. For example:

- Delays in exploration, construction and operation phases render significant cost to companies. Therefore, early engagement, communication and consultation are necessary to secure a 'social licence to operate'.
- *Soum* government bodies in Mongolia routinely reject many exploration license

What goes wrong and right?

applications for a number of reasons. Chiefly among them is the, uncertainty and perceived risk about impacts and benefits of exploration and mining projects. Early engagement and a good track record of previous community engagement and development activities of the company can lead to better local perceptions and thus support.

- Public trust towards mining companies is low in Mongolia. Companies perceived as closed and non-responsive are less likely to have the trust and support of a community than those which share information openly, listen and respond to people's concerns, and show that they care about the community and are committed to its development.
- By listening and engaging, companies will also be better placed to identify emerging community issues at an early stage and deal with them proactively rather than reactively ("*gal untraakh*"). This approach allows companies to systematically develop an annual budget for community engagement.
- Effective engagement can lead to leveraging local knowledge to advise design and planning, timing and location of construction activity and deliver possible alternative solutions.
- Permit and approvals processes, such as land and water use permits at the *Soum* level often cause unnecessary delays. Early engagement and effective consultation with local stakeholders can lead to smoother permit and approval processes and reduce approval timelines by minimising appeals.
- Non-government organizations and national-level civil movements can mount significant pressure on the company and stop the project temporarily and in some cases, even permanently because of the lack of communication and engagement from the company. Mutually beneficial relationships between company and local stakeholders have a positive influence on company and project profile and reduce risk of criticism and resistance from third or outside parties.

The role of local government in supporting positive engagement

Both the *aimag* and *soum* governments have an important role in facilitating positive relations between mining companies and local stakeholders. This has been recognised in the relevant laws and national policy documents.

The State Minerals Policy (2014-2025) adopted by the State Great Khural (Mongolian parliament) in 2014 provides policy guidelines in regards to the role of the national and local governments in supporting local development and community engagement (Article 3.5):

- to foster mutual understanding between investors and local communities before commencing any mining operations in a particular area and to increase awareness and responsibilities amongst local authorities in explaining the social and economic importance of mining projects;
- to ensure that local development agreements made between investors and local organizations are made on the basis of transparency and participatory principles in order to support social development during mining operations.

As a result of legal and government policy initiatives and public pressure, there has been a significant change towards improving public participation and transparency in local government decisions and activities over recent years in Mongolia. Citizen Halls, Law on Glass Accounts, and Local Development Funds have been introduced to promote democratic engagement and more transparent local governance structures. There have been numerous cases of how local governors and Khurals implement effective information sharing and local community consultation. For example, some local administrations organise 'open air' community meetings in public places that are convenient for the local constituents, while some local administrations organise extended Khural meetings where local stakeholders, including citizens and organisations share opinion and provide feedback.

In most mining projects in Mongolia, *soum* government has the most constructive role in facilitating "win-win" relationships and partnerships between local stakeholders and mining companies to maximise benefits and minimise negative impacts from mining. Through all phases of the life of a mine, direct interactions with the *Soum* governor's office become prevalent in company-community relations. Aside from their proximity to resource projects and vulnerability to negative effects, the *Soum* government has the ability to influence a mining operation through its rights to grant a range of permits, especially permits for the use of land and water. These rights have often been used by local authorities in bargaining with mining companies over the benefits that will flow to the local economy or budget. Unfortunately, for this reason, the latter may also expose itself to corruption and the

practice of prioritising short-term outcomes over long-term development. Effective implementation of good governance principles, such as transparency, consultation and participation by the local government are early steps that the local government can undertake to deal with these challenges and facilitate partnerships and "win-win" relations with companies.

(References: Byambajav, D. 2015. Mining and social license to operate in Mongolia. In Perspectives on the Development of Energy and Mineral Resources Hawai'i, Mongolia and Germany. Ulaanbaatar: MAPA)

Some multi-stakeholder engagement initiatives are currently emerging across select *Aimag* and *Soum* governments in Mongolia. For example, Bayankhongor *Aimag* organizes public-private partnership fora where the government invites mining companies to discuss about challenges and opportunities for collaboration. In Galuut *Soum* of Bayankhongor *Aimag*, a tri-partite council (local government, companies and civil society) conduct regular reviews of the environmental and social performance of mining companies.

In some *soum*s, there was evidence of the Citizens' Representatives Khural (or simply Khurals) taking a more proactive role in coordinating company-community relations. For example, in Ulziit *Soum* of Dundgovi *Aimag*, the Khural annually organizes a public meeting for each *Bagh* where mining companies operating on their lands are invited to report about their activities and meet with local people. In Zaamar *Soum* of Tuv *Aimag*, the Khural annually convenes a meeting to review the plan and progress relating to the rehabilitation work of mining companies and local cooperation agreements. In Khanbogd *Soum* of Umnugovi *Aimag*, the *Soum* government (both the Governor's Office and Khural) established a tri-partite council jointly with Oyu Tolgoi LLC and elected herder representatives to facilitate conflict resolution and collaborative problem-solving.

(To read more about local government initiatives, explore the website http://www.khural.mn/)

A systematic approach to community engagement (30 minutes)

Trends in community engagement in the mining industry

International good practice in the mining industry suggests that the mining industry's approach to stakeholder engagement has changed over the years to meet emerging societal challenges. In the

Mongolian mining sector, various approaches to stakeholder engagement may be categorised into two broad types.

Traditional approaches: interaction with stakeholders is primarily focused on defusing tensions, actual and perceived, rather than on building ongoing relationships. Engagement mechanisms are largely formal and pre-determined with the intent of informing, rather than involving, specific groups. Many companies have become concerned about their reputation. In this sense, public relation (PR), expressed through a range of programs or events promoting how good the company is remains a key approach.

Emergent approaches: many companies have come to understand that local government and communities have the ability to influence the former's access to resources, while traditional approaches to community engagement and development are no longer working. Progressive companies have moved from a defensive, crisis mentality ("*gal untraakh*") to one that incorporates consultation and open communication with local communities. These companies use a variety of mechanisms in addition to public relations to understand and respond proactively to stakeholder issues, local community concerns and community aspirations.

(To explore more about the different approaches, read the case of Terra Energy and Hunnu Coal)

Understanding levels of community engagement

Both local government and mining companies need to understand what community engagement constitutes in reality. Community engagement can be better understood as a continuum with three main levels: information, consultation and active participation. Each of the levels of engagement is appropriate in particular circumstances to achieve set outcomes. However, it is observed necessary to engage at two or more levels to achieve desired outcomes. Let's examine each level.

Information

The local community to be affected by mining has the right to receive information about the mining project.

Levels of community engagement

Information — Consultation — Participation

Information provision is a one-way relationship in which one party disseminates information to other parties (in the present context, company provides information to the local community). Effective information strategies require information that:

- is accurate, easy to access and easy to understand
- allows two way flows and is consistent
- is relevant and interesting to the intended audience
- is delivered through appropriate channels
- is tailored, where necessary, in language, style and content and
- directs citizens to where they can access further information if required

Consultation

Consultation is a two-way relationship in which one party seeks and receives the views of other parties such as local communities on policies, programs or services that affect them directly or in which they may have some interest. Critical elements of effective consultation include effective information strategies, a shared understanding of how community input will inform policy or decision-making processes (resettlement, compensation, employment opportunities, local procurement, participatory monitoring etc) and timely feedback to participants on how the input contributed to the final outcome. Effective community consultations can be achieved in a number of ways, including: town hall meetings, 'open day' public events, facilitating *bagh* meeting attendance, engagement with different layers of the host community, especially with elderly and youth associations.

(To explore more about facilitating consultation, read IRI. Bagiin tuvshind irgediin oroltsoo, ergeh holboog saijruulah ni (Improving community participation at the *Bagh* level). http://www.iri.org/sites/default/files/flip_docs/Mongolian%20Manual%20on%20Town%20Halls/files/assets/common/downloads/publication.pdf)

Active participation
Participation is achieved through a range of deliberative techniques such as *Bagh* meetings, multi-partite working groups, and consultative groups. Deliberative processes often take time and resources as participants need to build trust with each other as well as gain awareness and knowledge about the issues in order to contribute effectively.

(To explore more about community participation, read the case of Energy Resources in this module and examples of participatory environmental monitoring in the Module 7 and Module 8)

More on community engagement: UNDP. 2011. Enhancing citizens' participation in local government: a guide book (In Mongolian) & Anglo American plc Socio-Economic Assessment Toolbox (SEAT)
http://www.angloamerican.com/sustainability/communities (in Mongolian.)

Community engagement during different stages of the life of a mine

Depending on the stages of the life of a mine, the objectives and forms of community engagement can vary.

During the exploration phase, the main purposes of community engagement can be seeking permissions for access to land, negotiating water use and other agreements, identifying and addressing cultural heritage issues, and informing local people of exploration activities and timetables. Community engagement activities aim to manage expectations and address community concerns about the project such the impacts of exploration, potential for future development, and opportunities for the community.

At the beginning of the mine development phase, the main purposes of engagement include understanding and addressing community concerns about the environmental and social impacts of the mine and infrastructure development activities. Shared use of mine-related infrastructure can be a critical issue at this phase. Companies should consult with national and local government and other stakeholders.

Energy Resources LLC's community engagement plan is as an example of effective community engagement during mine development. During the mine development phase in 2009, the key objective of the company was to understand and address community concerns about the environmental and social impacts of mine construction activity, and community expectations around employment and economic opportunities before the mine development phase begins.

At the operational phase, it is crucial to have management systems in place to ensure that the operation can respond to community concerns and that agreements are complied with and

Engagement during exploration

Exploration is very important from the perspective of community engagement for the following reasons:

- Exploration will be the first contact between the explorer and the community
- There is the danger of creating a "phony mine" situation
- Expectations are created
- Promises may be made, which then have to be kept
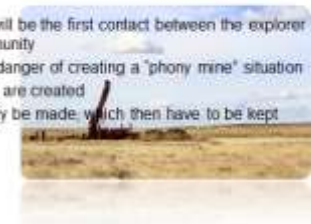
undertakings honoured. Keeping people informed about what is happening at the mine (such as through open days, site visits, community newsletter) is vital.

The objective during the end of the life of a mine is to ensure that the community is kept informed of significant developments and the timetable for closure. Engagement aims to help the community identify its vision for post-mine future, and work with the community and local government to undertake initiatives that work towards bringing this post-mine future closer.

Community engagement during exploration

It is important to understand that exploration projects are central to how the mining industry is perceived and supported by local communities. Exploration is very important from the perspective of community engagement for the following reasons:

- Exploration will be the first contact between the explorer and the community;
- There is the danger of creating a "phony mine" situation. During exploration, a mining company is active on the ground, but there is no real mining. Communities often believe that mining is about to begin when heavy equipment arrives on-site (e.g. road-building machinery, drilling rigs).
- Expectations are created. During exploration, the community – not understanding that most projects fail – will often start to imagine what can happen when the mine starts operating. The exploration team must be aware of the risk that is created by unrealistic expectations and work to provide the community with accurate, timely information.
- There is a strong tendency for exploration teams to suggest, if not promise, benefits or other positive outcomes for individuals or the entire community, when the mine goes into production. Unfulfilled promises may lead to frustration, resentment and potential conflict.

(References: The Prospectors and Developers Association of Canada (PDAC). 2008. The E3 Plus Framework for Responsible Exploration)

A systematic approach to community engagement

A systematic approach to community engagement

- Community and stakeholder identification and analysis
developing a stakeholder database and conducting a stakeholder mapping exercise
- Socio-economic baseline studies
key social environmental and economic factors, gather data on demography, labour market, education profile and family and individual wellbeing
- Community engagement plans
systems and processes in place to ensure that it continues to understand and respond to community issues and concerns
- Iterative and whole of company approach

The key advantage of systems is that they provide institutional memory so that commitments made by key personnel at a particular time, such as during exploration, are captured and managed appropriately for the entire life cycle of an operation. This prevents information being lost when individuals leave or the operation moves on in its life cycle. Some mining companies have invested considerable resources in developing and implementing management systems for community engagement. These systems typically include a number of components such as, socio-economic baseline studies and social impact assessments, planning processes, documentation of procedures, program delivery, regular reviews and audits against defined standards and objectives, and a strong focus on information management. The system is applicable across all stages of mine life, including closure.

The key components of a systematic approach to community engagement are:
- Community and stakeholder identification and analysis are the first steps to establishing positive relationships with stakeholders, including the local community. This includes developing a stakeholder database and conducting a stakeholder mapping exercise.
- Socio-economic baseline studies provide a better understanding of key social environmental and economic factors; gather data on demography, labour market, education profile and family and individual wellbeing, and the current or potential impact of the business and Identify potential risks and opportunities.
- Community engagement plans ensure that the community is aware of the operation's activities, and that relationships are built proactively, not only when issues occur. The plan may also include performance measures, so that the effectiveness of company initiatives can be assessed against set objectives, and improvements made where required.

(To explore more about local multi-stakeholder partnerships, read The Asia Foundation. 2013. Baigaliin nuutsiin khariutslagatai ashiglaltad taluudiin oroltsoog hangah ni (Enhancing multi-stakeholder participation in the responsible natural resource use). Handbook; Cane, I. Schleger, A. Ali, S. Kemp, D. McIntyre, N. McKenna, P. Lechner, A. Dalaibuyan, B. Lahiri-Dutt, K. and Bulovic, N. 2015. Responsible Mining in Mongolia: Enhancing Positive Engagement. Sustainable Minerals Institute: Brisbane (English & Mongolian))

Group activity on community engagement (20 minutes)

Discuss the following question in small groups and present the summaries to the class.

Use the following fictional scenario to complete the table provided.

The Uguuj Gold Mine Project is a proposed open-cut gold mine in the Bayalag *Soum* of Khovd *Aimag*. The *Soum* is located in 1500 km from Ulaanbaatar and 250 km from the *Aimag* centre. It has a total population of 4500 people. Herding has been the key economic activity. Mining is new to this area. RM Co, the owner and operator company is preparing an Environmental Impact Assessment and an associated Environmental Management Plan (EMP). The company is also undertaking hydrogeological investigations to ascertain limits to local water supply to the proposed mine. These investigations require drillings and pipeline design.

Use the information provided in the slide "Community and stakeholder identification" as hints.

Affected stakeholder groups and modes of engagement

	Key stakeholder groups	Suitable modes of engagement
Exploration		
Development		
Operation		
Closure		

Grievance mechanisms (20 minutes)

The case for effective grievance handling

Community concerns can range from commonly occurring, relatively minor issues to more entrenched or serious ones that can become a source of significant concern or resentment. The latter are sometimes referred to as grievances. For example, failures to resolve local concerns in a way that is perceived to be fair can give rise to a grievance. It is important that companies encourage their personnel to view complaints and opposition as a source of valuable information that can lead to improved operations, reduced risk, and a supportive relationship with the community. Company personnel also need to be educated about community grievance resolution mechanisms and

procedures.

Why is it important for companies to have grievance mechanisms in place?

• Reduce business risks

Mining operations need stable operating environments in order to mine successfully, transport goods and services and attract workers. A fundamental goal of the grievance mechanism is to solve problems early at the lowest level.

• Avoid organizational cost

Dealing with disputes can place a major strain on resources, in terms of people, time and budget. Conflict management can be stressful and result in reduced morale and loss of key personnel. There is often an emotional cost for all involved. It is in the best interests of companies to avoid disputes and conflict wherever possible; but when they do arise, it is important to ensure that organisational systems and processes function to minimise negative impacts on internal and external relationships, including the likelihood of escalation. Effective grievance mechanisms can help in this regard.

(To explore more about business risks and cost derived from company-community conflicts, read Davis, Rachel and Daniel M. Franks. 2014. "Costs of Company-Community Conflict in the Extractive Sector." Corporate Social Responsibility Initiative Report No. 66. Cambridge, MA: Harvard Kennedy School. http://www.hks.harvard.edu/m-rcbg/CSRI/research/Costs%20of%20Conflict_Davis%20%20Franks.pdf.)

• Respect and protect human rights

Mining companies have responsibilities to respect human rights in the course of their activities.

(To explore more about business and human rights, read The United Nations Guiding Principles on Business and Human Rights (In Mongolian).

• Access to finance

Banks and financial institutions increasingly require companies to meet certain criteria in order to access finance, including a rigorous approach to manage social and community risks.

Developing a good grievance mechanism

Grievance process

A checklist for grievance handling procedures.

❑ Assessment procedures (who conducts the assessment and how is the assessment conducted)
❑ Procedures to identify appropriate people in the company to whom a specific concern should be forwarded
❑ Procedures to determine the appropriate resolution process
❑ Procedures for making decisions on proposed settlements
❑ Appropriate time frames for each step in the grievance resolution process
❑ Notification procedures to the complainant

An example of the complaint procedure and likely workflow is provided below.

Concerns and grievances can be lodged at a mine-site office. Even if mining companies can dedicate only limited time and workforce for receiving complaints, companies should make sure that community members know how, when and where to access the company to lodge any complaints.

Management responsibilities should be clearly defined, as is an efficient time frame for the handling of concerns and grievances. A 'front desk officer' should conduct preliminary discussions with the complainant, complete and direct the relevant form to the 'resolving officer' who in turn should acknowledge the complaint (within 7 days) and propose resolutions (within 20 days). A 'grievance officer' is responsible for the overall management of the system, for example ensuring records are logged in a computer database (Complaint Log), and a (hand-delivered) response is issued to the complainant (within 30 days). Finally, a 'grievance and complaints committee' is responsible for authorising resolutions beyond the authority level of the resolving officer and, if necessary, escalate concerns and grievances to senior management or independent external bodies. Companies should respond to any complaints within 30 days of submission and more quickly in cases where there is a specific urgency. Importantly, complaints should be treated confidentially and without prejudice. It is important to build an effective multi-department structure within the company with the involvement of the main personnel who deal with issues such as environmental protection, local procurement, employment, and health and safety.

According to the grievance policy of Energy Resource LLC, the Complaints Log records:
- Date the complaint was recorded;
- Person responsible for the complaint;
- Information on proposed corrective action sent to complaint (if appropriate);
- Date the complaint was closed out; and
- Date response sent to complainant.

Companies use the Complaints Log to analyse frequency and common themes and communicate the results. For example, Oyu Tolgoi LLC publishes the following summary information of complaints and their resolution in its community newsletter.

A checklist for Grievance handling procedures:
- ☐ Complaint registration procedures
- ☐ Assessment procedures (who conducts the assessment and how is the assessment conducted)
- ☐ Procedures to identify appropriate people in the company to whom a specific concern should be forwarded
- ☐ Procedures to determine the appropriate resolution process (in consultation with complainant)
- ☐ Procedures for making decisions on proposed settlements
- ☐ The grievance resolution process (including screening, assessment, and resolution)
- ☐ Notification procedures to the complainant

Discussion on grievance mechanisms (optional)

Understanding grievances and existing approaches

- What are the current types of complaints related to company operations? What are possible causes of these complaints?
- How are complaints handled now? Identify formal, informal, and ad hoc approaches a company may take to address grievances.
- Are there mechanisms for early intervention or resolution so cases do not escalate?

- Why are particular procedures for dealing with community complaints being used or not used?
- Where are the gaps?

Review and discussion (10 minutes)

- What are the methods for effective community engagement?
- What are the indicators of effective community consultation?
- What activities could be done by local government to ensure that grievances are handled?

Case studies

Terra Energy: Terra Energy owns and operates the Baruun Noyon Uul (BNU) coal mine in Noyon *Soum* of the Umnugovi province. The company defined its key sustainability policy priorities as:
- Ensure sustainability through collaborative projects.
- Ensure standards are set for current capital investment projects and those in the future.
- Monitor agreed sustainability indicators.
- Seek value-adding partnerships with key organizations.

The company developed a community engagement strategy that identifies the following key stakeholders:
- Local government and the community
- *Aimag* Government, agencies and industry bodies
- State Ministries, agencies and industry bodies
- Industry peers
- Service providers

The company stated in its policy that it aims to respond quickly and effectively to community concerns; advertise and manage grievance mechanisms; and instil a high level of cultural understanding in our employees and operational partners of the importance of their role in developing positive community relations. Importantly, Terra Energy has developed an internal checklist to ensure compliance with the Voluntary Principles on Security and Human Rights across its mining operations. The Voluntary Principles (http://www.voluntaryprinciples.org/), developed in response to reports of human rights abuses allegedly committed by security providers contracted by the extractive industry, are a set of

non-binding principles created to assist extractive companies to balance security concerns with human rights.

Energy Resources: Ukhaa Khudag coking coal mine project is owned and developed by Energy Resources LLC. The project, which includes mine development and road upgrade projects, requires careful community engagement planning. The project is partly funded by the EBRD. Recognizing that there has been insufficient engagement with herders and other affected communities for the project, the company has set out a comprehensive community engagement strategy. The community engagement plan includes activities such as periodic visits to the homes of the most at-risk groups as well as regular (monthly) contact with *Bagh* governors and a series of public consultation events such as 'open ger', hosted in rural and urban locations; these meetings would set out project plans and request feedback from stakeholders. In 2011, the discussion titled "Responsible mining and community participation" was organized in 5 *soum*s and attended by 1090 members of the local communities.

Community consultation with local communities was facilitated also though the 'Local Consultative Councils' established in 2010 in accordance with Article 42.3 of the Minerals Law. The Tsogttsetsii *Soum* Khural appointed the following 13 members representing different groups:

1.   Chairman: Treasurer of Local Governor's office
2.   Secretary: Secretary of CRK
3.   Member: Secondary school teacher
4.   Member: Member of CRK
5.   Member: Monk (Lama)
6.   Member: Female head of a households
7.   Member: Representative of Youth Organization
8.   Member: Representative of NGO (Tsetsii Nutag)
9.   Member: Person with disability
10.   Member: Representative of the Women's Council
11.   Member: Representative of the Seniors' Council
12.   Member: Local doctor (midwife)
13.   Member: Herder in the impact area

The key objectives of the Council included advising (the company) on local environment and traditions;

supporting and actively participating in the company's community relations work; and sharing ideas and initiatives that support the community relations work. The main activity of the Council has been a series of regular meetings. The Council was required to provide Energy Resources with seasonal reports that contained recommendations suggested by the Council at its meetings. Energy Resources, on the other hand, compensated the members of the Council with a lump sum for transportation and communication costs.

Hunnu Coal: Hunnu Coal Resources LLC is a Mongolian subsidiary of Hunnu Coal Ltd, a company originally incorporated in Australia in early 2009 to acquire and develop coal projects in Mongolia. It was one of the first medium-sized companies that successfully undertook capital raising on the ASX for the purpose of developing mining projects in Mongolia. The company's main project, Tsant-Uul coal deposit, is located in the Bayan-Ovoo *Soum* of Umnugovi *Aimag*. In 2013, a 'cooperation agreement' was established between the Bayan-Ovoo *Soum* of Umnugovi *Aimag* and Hunnu Coal Resources. The Tsant-Uul Agreement is valid for three years. As of late 2015, the mine had not started commercial production; however the company has implemented a range of targeted activities linked to its agreement commitments. The company`s strategy to maintain good relations during a financially difficult period through a range of targeted activities in the scope of its agreement commitments in part created relatively positive local expectations and trust. The company holds monthly and quarterly information sessions in Bayan-Ovoo *Soum* and often organises a mine tour for a group elders or herders. Importantly, the company has advertised grievance handling mechanisms through different communication channels.

(References: Byambajav, D. forthcoming. Local level agreements: Lessons from Mongolia)

Suggested readings
Luc Zandvliet & Mary Anderson. 2009. Getting it Right: Making Corporate-Community Relations Work, Greenleaf Publishing.
UNDP. 2011. Enhancing citizens' participation in local government: a guide book (In Mongolian).
The National Human Rights Committee of Mongolia and UNDP. 2012. The Mining Industry and Human Rights in Mongolia. Conference Proceedings. (In Mongolian)

Useful online resources

Network for Business Sustainability. 2014. A Getting Started Toolkit for Exploration and Development Companies. http://nbs.net/knowledge/community-engagement-guide/

IRI. Bagiin tuvshind irgediin oroltsoo, ergeh holboog saijruulah ni. http://www.iri.org/sites/default/files/flip_docs/Mongolian%20Manual%20on%20Town%20Halls/files/assets/common/downloads/publication.pdf) (In Mongolian)

Xueli Huang and Warren Staples. 2014. Community engagement by Chinese firms in Australia: practices and benefits. http://mams.rmit.edu.au/xnjztnvvfxek.pdf.

Glossary of key terms and concepts

Affected community - people who are impacted in some significant way by a project's activities.

Aimag **-** Mongolian administrative and territorial unit, equivalent to a province or state. Mongolia has 21 *aimag*s.

Local community - the inhabitants of immediate and surrounding areas of company's activities.

Stakeholders - those who have an interest in a particular decision, either as individuals or representatives of a group. This includes people who influence a decision, or can influence it, as well as those affected by it.

Primary stakeholders - geographic community in the operation's area of interest.

Secondary stakeholders - parties indirectly affected by the project or groups come from outside a local community, such as *Aimag* and national government, politicians, commercial and industrial enterprises, national social and environmental groups, *nutgiin zuvlul*, and the media.

Community engagement plan - a document a project proponent identifies any community likely to be affected by the mine operations, community attitudes and expectations, necessary information to the community, ways to receiving feedback from the community, and an analysis of community feedback.

Grievance - an issue, concern, problem or claim (perceived or actual) that an individual or community group wants a company or contractor to address and resolve.

Complaint - an expression of dissatisfaction with the company, typically referring to a specific source of concern and/or seeking a specific solution.

Complaint register - a database for maintaining information about complaints received.

Soum - the second level administrative and territorial unit below the *Aimag*s.

MODULE 3. MANAGING SOCIAL IMPACTS

Learning objectives

Upon completion of this module the participants will be able to:

- Understand social risks and impacts of mining
- Use the Sustainable Livelihoods Approach (SLA) in planning, decision making and assessment
- Identify the key steps for planning a social impact assessment
- Understand the social impacts of resettlement and effective management processes
- Assess company capacity for managing social impacts

Overview

Mining projects can create opportunities and benefits for people, but at the same time they can also have negative impacts. Good management is needed to ensure that the benefits of projects are maximised and the negative impacts are avoided or minimised on an ongoing basis during the life of the project. The first section of this module explores social impacts of mining and management approaches. The module introduces Sustainable Livelihoods Approach (SLA) as a useful tool for developing a holistic understanding of social and environmental impacts of mining. The second part of this module examines resettlement management. This section concludes with recommendations on improving statutory and voluntary regulation on resettlement.

Specific topics discussed in this module are:

- Importance of understanding social impacts
- Types of social impacts
- Sustainable livelihoods approach
- Mitigation and opportunity enhancement strategies
- Mining induced displacement and resettlement (MIDR)

Suggested timetable

- Understanding social impacts (35 minutes)
- Group activity on the analysis of case studies (20 minutes)
- Mining induced resettlement and displacement (20 minutes)
- Review and discussion (15 minutes)

Training materials

Lecture notes	Suggested presentation slides
Understanding social impacts (35 minutes) Social impacts of mining Social impacts associated with mining operations include employment effects; changes in access to social services, such as health and childcare or the availability and cost of housing; and cultural change, such as changes in traditional family roles as a result of the demands of mining employment.. Environmental impacts also have social implications. Mining activities can result in changes to the availability and quality of water and land, which then affect the health of people, the social fabric of the communities and their livelihoods. Impacts can be direct, such as the impact of noise and dust, or result from indirect pathways, such as road fatalities. Mine impacts often accumulate and interact such that they trigger or become associated with other impacts. Cumulative impacts arise from compounding activities of a single operation or multiple mining and processing operations, as well as from the interaction of mining impacts with other past, current, and future activities that may not be related to mining. (References: Franks D. 2011. Management of the Social impacts of Mining, SMI Mining Engineering Handbook. 3rd edition) According to Oxfam (2015), mining can negatively affect people by:	

- forcing them from their homes and land
- preventing them from accessing clean land and water
- impacting on their health and livelihoods
- causing divisions in communities over who benefits from the mine and who doesn't
- changing the social dynamics of a community
- exposing them to harassment by mine or government organisations

These impacts are exacerbated when local people aren't consulted and are given no information about a planned mine.

(References: Oxfam. 2015. Impacts of Mining. https://www.oxfam.org.au/what-we-do/mining/impacts-of-mining/)

Social impact assessment (SIA)

SIA is "the process of analysing, monitoring and managing the intended and unintended social consequences, both positive and negative, of planned interventions (policies, programs, plans, projects) and any social change processes invoked by those interventions".

Mining projects can create opportunities and benefits for people, but at the same time they can also create harmful effects. Good management is needed to ensure that the benefits of projects are maximised and the negative impacts are avoided, mitigated or minimised on an ongoing basis during the life of the project. SIA is a process that can greatly assist in ensuring the achievement of benefits and the avoidance of harm.

(references: Vanclay, F., Esteves, A.M., Aucamp, I. & Franks, D. 2015 Social Impact Assessment:
Guidance for assessing and managing the social impacts of projects. Fargo ND: International Association for Impact Assessment.)

Issue-specific impact assessments and mitigation plans have been developed in Mongolia. For example, Human Rights Impact Assessment and Health Impact Assessment procedures exist.

(To explore more about issue-specific impact assessments in Mongolia, read MNE. 2010. Guidance on EIA – Appendix 2:
Health   Impact   Assessment;   Civic   Solutions   Mongolia.   Human   Rights   Impact   Assessment.

https://civicsolutions.mn/2015/07/13/mongolian-human-rights-impact-assesment/ (In Mongolian)

There are a range of industry-wide, international, national and corporate policies and standards that provide guidance on understanding and managing the social impacts of mining. For example, identification, assessment and management of social and environmental impacts are mandatory for all projects financed by the International Finance Corporation (IFC). IFC's Performance Standards, which are part of the Sustainability Framework, have become globally recognized as a benchmark for environmental and social risk management in the private sector. The IFC has an independent Compliance Advisor/Ombudsman to handle community grievances related to IFC-financed projects.

In Mongolia, the Oyu Tolgoi project has developed policies and assessment to meet IFC's requirements. The project undertook Environmental and Social Impact Assessment (ESIA) to meet international standards required by Project Finance lenders (including IFC), as well as its own standards for addressing environmental and social impacts. The final ESIA was released for public review in August 2012. The key social risks and impacts of the project that the ESIA described are listed below.

- Economic Impacts
- Population and Influx
- Employment
- Land Use and Displacement
- Cultural Heritage
- Community Health, Safety and Security
- Cumulative Impacts

Similarly, European Bank for Reconstruction and Development (EBRD) has a policy framework for its clients called Performance Requirements (PRs). One of them is the Assessment and Management of Environmental and Social Impacts and Issues. In Mongolia, several projects such as MAK's Tsagaan Suvarga project and Energy Resource's UHG project have received funding from the EBRD and developed management plans for social impacts assessment and mitigation. A summary of the MAK's assessment of social impacts of its project is available here: EBRD. 2011. MAK Phase II. Non-technical summary. http://www.ebrd.com/work-with-us/projects/esia/mak-phase-ii.html)

A number of resource companies have developed corporate policies, standards and operational procedures that go beyond regulatory compliance in the area of social impact assessment and management. For example, Anglo American's Socio-Economic Assessment Toolkit (SEAT) provides guidance and outlines a comprehensive process of social impact assessment and management for large-scale mining operations.

(References: Franks, D, Fidler, C, Brereton, D, Vanclay, F and P, Clark. 2009. Leading Practice Strategies for Addressing the Social Impacts of Resource Developments. Centre for Social Responsibility in Mining, Sustainable Minerals Institute, The University of Queensland. http://www.csrm.uq.edu.au/docs/Franks_etal_LeadingPracticeSocialImpacts_2009.pdf.)

Sustainable Livelihoods Approach

The full range of social impacts resulting through various phases of the life of a mine requires varied approaches to assessment. In general, there are two broad methodological approaches to local social impact and risk assessment.

- expert-led and top-down approach
- community-based and bottom-up approach

Expert-led approaches predominantly use quantitative indicators drawn from a range of social and other sciences. Some general baseline studies and assessments for large-scale projects such as Ukhaa Khudag and Oyu Tolgoi in Mongolia can be good examples of this approach.

(More information: the Ukhaa Khudag Environmental and Social Impact Assessment (ESIA) www.energyresources.mn/uploads/14649Hrpt_-_ESIAfinal.pdf)

The second approach is more localised and contextual, putting an emphasis on the importance of understanding local conditions, values and livelihoods sustainability.

The effective combinations of these approaches can be useful in better identifying and mitigating social impacts and risks in mining. Moreover, a multi-disciplinary approach to impact identification and monitoring is gaining increasing significance.

Recently, the sustainable livelihoods approach (SLA) has been used often in understanding local social impacts and opportunities from mining. The key advantages of SLA are flexibility in combining with other assessment approaches, focus on the micro level, systematic ways to restructure information from multiple perspectives, and its emphasis on participatory methods. This approach moves beyond the traditional focus on the macro level and economic assets. In Mongolia's case, the SLA, for example, can help better understand the vulnerability of herders who depend on their surrounding environment for their livelihoods.

Livelihoods refer to the way of life of a person or household and how they make a living: in particular, how they secure the basic necessities of life, e.g. their food, water, shelter and clothing, and live in the community. Livelihoods are interdependent on each other and on the biophysical environment.

Livelihoods are sustainable when they can cope with and recover from stresses and shocks (i.e. are resilient) and maintain or enhance capabilities and assets both now and into the future while not undermining the natural resource base. People need a sustainable livelihood in order to survive, and therefore all interventions, including mining projects, need to consider the impacts on people's livelihoods.

(References: Robert Chambers and Gordon R. Conway. 1991. Sustainable rural livelihoods: practical concepts for the 21st century. IDS Discussion Paper 296)

The SLA recognizes that communities have five types of capital (or assets) that are critical for generating and maintaining livelihoods: human, social, economic, physical and natural capital.

- Human capital – the status of a community's human capital can be assessed by considering population size, age characteristics, education and skills, and general population health.
- Social capital – the social resources, networks, associations or relationships an individual draw on to support one's livelihood strategy. Various indicators can be used to examine social capital, including: population mobility, the demographic composition of the community, the number of cooperatives, family structure, and crime rates.

- Economic and financial capital – an individual's capital or financial resources (e.g. jobs, household income, cash, savings, credit etc.) available to pursue a particular livelihood strategy or objective.
- Physical capital – the basic infrastructure or production equipment available to support an individual's particular livelihood strategy. It is important to consider the type, quality and degree of access to public, built and community infrastructure (including amenities, services and utilities) and housing and accommodation.
- Natural capital – refers to natural assets and resources that contribute to community strength and sustainability. Natural capital can include resources such as minerals, pasture, water, productive agricultural soil, presence of forests, which provide commercial and practical benefits to the community, and other environmental assets such as lakes, and springs that generate tourism and or provide social, cultural, and recreational value,.

Mining projects can affect one or more of these types of capital available to local communities, thereby affecting these communities' livelihoods.

(References: Horsley, Julia, Prout, Sarah, Tonts, Matthew and Ali, Saleem H. 2015. Sustainable livelihoods and indicators for regional development in mining economies. Extractive Industries and Society. doi:10.1016/j.exis.2014.12.001; Cane, I. Schleger, A. Ali, S. Kemp, D. McIntyre, N. McKenna, P. Lechner, A. Dalaibuyan, B. Lahiri-Dutt, K. and Bulovic, N. 2015. Responsible Mining in Mongolia: Enhancing Positive Engagement. Sustainable Minerals Institute: Brisbane (English & Mongolian))

The asset pentagon lies at the core of the livelihood framework. This pentagon depicts people's access to the different types of capital or assets. The assets are presented along five axes. The centre point of the pentagon, where the lines meet, represents zero access to assets. There is an uneven distribution of capital assets across individuals, households and communities, which can mean that those with a stronger and more diversified portfolio of assets are likely to have more livelihood options.

Various vulnerability factors (such as environmental stresses and shocks) directly impact assets and policies, institutions and governance processes indirectly impact access to assets – both affecting the degree to which livelihood objectives are realised.
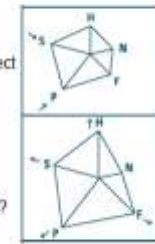

Sustainable Livelihood Framework
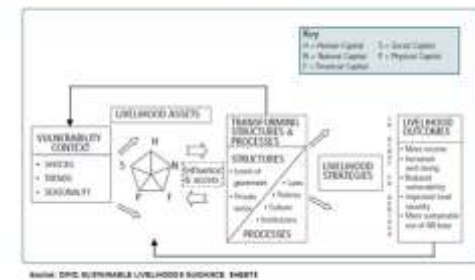
How to explain change of access to assets?

Food for thought

- How can decline in SC and PC affect access the other capital?

- How extended access to FC can interact access to other capitals?

(References: DFID. 2000. Sustainable Livelihoods Guidance Sheets. http://www.eldis.org/vfile/upload/1/document/0901/section2.pdf. and Coakes, S and Sadler, A. 2011. Utilising a sustainable livelihoods approach to inform social impact assessment practice.).

Mitigation and opportunity enhancement strategies

Mitigation can take different forms. For example, many social impacts can be mitigated by mine design. Community engagement can also be conceived as a mitigation strategy that can prevent or reduce negative social impacts.

Mining projects can also bring positive social impacts (or opportunities). Opportunity enhancement entails deliberate attempts taken in the design and implementation of mining projects to ensure direct and indirect benefits from the mining project contribute to community development. Mining companies can contribute to the development of local communities in different ways: local content (local employment and local procurement opportunities); shared infrastructure; capacity building; social investment, or funding of community development initiatives; facilitating or supporting community development initiatives; and, in certain circumstances, the payment of royalties or levies to local authorities and/or local landowners. Ideally all projects should undertake a mix of activities across these six types. (See more on mining and local development in Module 4)

(References: Vanclay, F., Esteves, A.M., Aucamp, I. & Franks, D. 2015 Social Impact Assessment:
Guidance for assessing and managing the social impacts of projects. Fargo ND: International Association for Impact Assessment; Elsa João, Frank Vanclay & Lea den Broeder. 2011. Emphasising enhancement in all forms of impact assessment: introduction to a special issue, Impact Assessment and Project Appraisal, 29:3, 170-180, DOI: 10.3152/146155111X12959673796326)

Group activity (20 minutes)

Option One: Assessing social risks and impacts

Discuss the following case in small groups and present the summaries to the class

The HUH ALT Company decided to develop RICHY, a high grade gold project located approximately 165 km south east of the Mongolian capital of Ulaanbaatar. Access is by a sealed road and

approximately 15 kilometres of gravel tracks. The Richy Project development will cover two separate sites; the gold mine and associated facilities. The site infrastructure will comprise new facilities, including:

- Open Pit Mine
- Waste Rock Dumps
- Access road
- Power supply and distribution
- Fresh/Potable/Process water supply and distribution
- Waste water/sewage treatment and handling
- Mine services building
- Warehousing
- Telecommunication

Ore materials recovered in the course of mining will be stockpiled at the mine site. This stockpiled ore will be shipped to the processing facility within the site using a long-distance conveyer. Mining and processing operations are planned to operate on a 350 days per year, two 12-hour shift basis.

The construction will be completed by the second quarter of 2017. Mine production is planned to commence in the third quarter of 2017, following the completion of site infrastructure. All mining is planned to be completed by 2023. The project will employ about 400 workers.

The primary environmental challenges associated with the mine will likely be:

- Management and disposal of waste rock,
- Management of mine water,
- Management of site drainage water, and
- Site Closure and remediation.

The mine is located 25 kilometres from the Bayan *Soum* centre. Several herder households live in the vicinity of the mine. Total population of the *Soum* is 2507 people. Of the total number of 731 households, just over 500 are herder households.

Analyse the situation and work in group to identify the main impacts that the project may have on

the local community and define mitigation and enhancement measures (refer to the lecture notes above).

Impact	Phase in the life of a mine	Mitigation measures	Opportunity enhancement measures

Option Two: Translating the SLA into practice

A good understanding of the status of a local community's five types of capital can be helpful in managing social risks and impacts that a mining project may induce. It is important to understand and develop right indicators to use the SLA in practice. Ask participants to work in small groups to develop and propose specific indicators of each capital (for example, hospital capacity as an indicator of physical capital and the number of cooperative or pasture user groups as an indicator of social capital) and present to the class. Discuss the importance and applicability of indicators with the class.

Resettlement and displacement (20 minutes)

Understanding resettlement and displacement

Resettlement relates to situations where people move or are forcibly moved from one place to another. It can be both planned and unplanned. Resettlement takes place because of displacement – either 'physical displacement' (direct displacement) or 'economic displacement' (indirect displacement).

In addition to direct, physical displacement, there can be indirect displacement, which can occur without the physical relocation. It can occur where people's mobility is reduced, common resources are diminished, or livelihoods are affected even though the location has not changed. Disruption to social networks, cultural protocols, traditions and rituals are examples of indirect displacement. These impacts are significant yet intangible and therefore not well accounted for in planned resettlement processes. In companies' resettlement action plans (RAPs), the focus tends to be on tangible assets: that is, physical assets that can be valued, compensated and/or replaced.

Mining-induced displacement and resettlement

Managing displacement and resettlement during the life of mine

Mine development: A large proportion of resettlement planning takes place in the early stages of project design and planning and as part of the initial permitting processes. A Resettlement Action Plan (RAPs) – the primary planning document used to define and manage a resettlement process – is usually developed alongside the project`s Social and Environmental Impact Assessment (SEIA). Several Mongolian mining operations that received funding from international lenders such as IFC and EBRD developed and implemented a Resettlement Action Plan in accordance with international performance standards. These included Oyu Tolgoi, Energy Resources, and MAK. Local herders, however, have complaints concerning the procedural fairness and adequacy of compensation for livelihood impacts.

Ooperation: In mining, a large proportion of resettlement occurs during the operational phase. The nature of mining is such that new discoveries and changes to the mine plan often lead to new land being required for roads, ancillary infrastructure, waste dumps, processing plants or pit expansion.

Displacement, resettlement and impacts on livelihoods

- Natural capital

There are numerous reports of negative impacts on natural capital from the effects of displacement. Competing land use (e.g. mining and cash cropping) can push herders off land due to lack of space. Families who remain tend to have smaller herds.

- Human capital

While resettlement packages can include support for jobs and scholarship for children, training for herders displaced by mining (e.g. to grow vegetables and build fences), there are also downsides such as health problems, including mental and emotional stress.

- Economic or financial capital

Compensation packages vary for each family and can include a cash payment along with other support (e.g. scholarships, employment, support to move and rebuild shelters or acquire bank loans

etc.).

- Physical capital

Resettlement packages may include new physical infrastructure, such as water well or a winter shelter. Some companies assist herders to apply for loans, to build or acquire infrastructure and equipment (e.g. building a greenhouse). There are many negative impacts on physical capital. Some families reported that because of limited land availability, they now stay in their winter shelter all year round, in turn, limiting their mobility.

- Social capital

In Mongolia, some herders who resettled to new areas experience tensions with herders who were already living in those areas, and lose their old social networks together with status. In some cases, resettlement exacerbates competition for grazing land, representing competition over natural capital, in some cases, leading to host-migrant community conflict

Principles of good resettlement policy

If resettlement is to take place, local governments and mining companies need to ensure that:

- They have adequate internal knowledge and capacity to engage with resettled people, and manage a coherent resettlement process.
- Company conducts a baseline study on the socio-economic situation of households and the impacts of mining-induced resettlement and displacement (MIDR) on their livelihoods.
- Company develops a Resettlement Action Plan (RAP) based on the baseline study and consultations with local authorities and affected people.
- Government representatives are familiar with standards and corporate commitments for resettlement in order to hold companies accountable.
- Local government is proactively involved in the preparation and coordination of resettlement activities.
- Companies establish clear compensation criteria that are based on a model/formula for estimating the full impacts of resettlement and displacement on sustainable livelihoods
- Companies formalise resettlement processes through agreements, and engage herders

collectively, rather than only entering into family-level negotiations.
- Local governments provide free legal services to affected parties on all aspects of pre- and post-resettlement

(References: Cane, I. Schleger, A. Ali, S. Kemp, D. McIntyre, N. McKenna, P. Lechner, A. Dalaibuyan, B. Lahiri-Dutt, K. and Bulovic, N. 2015. Responsible Mining in Mongolia: Enhancing Positive Engagement. Sustainable Minerals Institute: Brisbane; ICMM. 2015. Land acquisition and resettlement: lessons learned https://www.icmm.com/news-and-events/news/icmm-shares-lessons-learned-on-resettlement; IFC Handbook for Preparing a Resettlement Action Plan http://www.ifc.org/wps/wcm/connect/22ad720048855b25880cda6a6515bb18/ResettlementHandbook.PDF?MOD=AJPERES.)

Review and discussion (15 minutes)

- What are the key features of the Mongolian context that resettlement and displacement induced by mining should carefully consider?
- What is the role of government in mitigation and opportunity enhancement?

Suggested readings

Вакеі, A & B.Chimid-Ochir. 2010. Factors affecting herder livelihoods: ways to improve
http://www.maas.edu.mn/index.php?option=com_content&view=article&id=310:2010-03-01-17-
(In Mongolian)
Cane, I. Schleger, A. Ali, S. Kemp, D. McIntyre, N. McKenna, P. Lechner, A. Dalaibuyan, B. Lahiri-Dutt, K. and Bulovic, N. (2015). Responsible Mining in Mongolia: Enhancing Positive Engagement. Sustainable Minerals Institute: Brisbane
https://www.csrm.uq.edu.au/publications?task=download&file=pub_link&id=1330.
Chuluun, T. et al. Vulnerability of Pastoral Communities in Central Mongolia to Climate and Land-Use Changes. In Vulnerability of Land Systems in Asia.
http://dx.doi.org/10.1002/9781118854945.ch4
Franks D. 2011. Management of the Social impacts of Mining, SMI Mining Engineering Handbook. 3rd edition. 2011

Useful online resources

Anglo American plc Socio-Economic Assessment Toolbox (SEAT) http://www.angloamerican.com/sustainability/communities(in Mongolian.) SIAhub. http://www.socialimpactassessment.com/index.asp Mining & Resettlement eLibrary. http://www.miningresettlement.org/ Boomtown toolkit. https://boomtown-toolkit.org/	
Glossary of key terms and concepts **Sustainable Livelihoods Approach** - a way of analysing the effect of projects on the livelihoods of people and communities. It uses the capitals (livelihood assets) as the basis of the framework. **Social Impact Assessment** – a way of analysing, monitoring and managing the social consequences of resource development. **Resettlement -** situations where people move or are moved from one place to another resulting from a mining project. **Physical displacement** - loss of shelter and place-based assets resulting from the acquisition of land associated with a mining project **Project-affected household -** a household whose livelihood assets are directly or indirectly affected by a mining project. **Economic displacement -** loss of means of livelihood resulting from land acquisition or obstructed access to resources (land, water) resulting from a mining project **Resettlement Action Plan** - a detailed plan about how a specific resettlement process will actually be conducted.	

MODULE 4. MINING AND LOCAL DEVELOPMENT

Learning objectives

Upon completion of this module the participants will be able to:
- Understand the positive and negative relationships between mining and local development
- Define the key principles of supporting local development
- Outline good practice and approaches in mining and local development
- Understand direct and indirect contribution of mining to local development
- Understand effective local agreement-making and its key building blocks

Overview

The first section of the module presents a broad overview of mining's contribution to local development. It is important for mining companies and local stakeholders to understand local development as a collaborative and multifaceted process.

The highlight of this module is a detailed review of how mining may contribute to local economic development. Mining can have direct or indirect contribution to the local economy. The module then examines three key areas where a resource development project can directly support local economic development and livelihoods: local employment and vocational training, local procurement, and community development programs.

The second section of the module examines agreement making between local government and mining companies in Mongolia and introduces international and domestic good practices. This then leads to identifying key building blocks and broad institutional arrangements for managing community investments through trusts and funds.

Specific topics discussed in this module are:

- Mining and local development: the business case and key principles
- Systematic approach to local development
- Understanding contribution of mining to local development
- Local content and community investment

- Local level agreements and community funds

Suggested timetable

- Mining and local development (40 minutes)
- Group activity on the analysis of case studies (20 minutes)
- Local-level agreements and trust funds (20 minutes)
- Review and discussion (10 minutes)

Training materials

Lecture notes	Suggested presentation slides
Mining and local development: the business case and key principles (40 minutes) If managed well, the mining industry has enormous potential to contribute to sustainable local economic development in Mongolia. However, previous research from Mongolia shows that many mining companies and local governments in Mongolia do not have a systematic approach to more effectively contribute to local development. There has been much public demand to improve this situation and we have seen some progress in the mining legislation recently. For example, the Minerals Law requires that no less than 90% of a mine's workforce should be Mongolian citizens. Also, recent changes to the Budget Law (2015) enable *soum*s and *aimag*s that have active mining operations on their lands to receive more benefits from Local Development Fund allocations. Our research in Zaamar and Uyanga shows that mining companies tend to have a one-off donation or project-based approach to contribute to local development but lack a systematic, longer term-view. One mining company executive told us the following: "Our company donated more than MNT100 million the previous year to the *Soum* government. We still face local criticism and sometimes work interruptions from the community we help. I have no idea where we are missing the point."	

This is a typical problem among many companies that have the same 'reactive' approach (it can sometimes be a proactive approach, but more in the style of "gifting" monies and projects). The emerging trend in the global mining industry and experience from some Mongolian mining companies suggest that mining companies need to have a more systemic approach to local development that addresses local needs and perspectives and is based around its social license to operate.

The business case for local development

It is important that mining companies understand that their contribution to local development has a business value. The main benefits for the companies are:
- Enhanced reputation within the mining industry, government and policy circles and among other stakeholders.
- Improved access to new resources or areas in environments that are increasingly challenging due to local resistance
- Better relations with local governments, NGOs and communities that can help ease approval processes for project development
- Avoidance of local protests that may hinder operations
- Reduced local dependency on operations (diversification of the local economy).
- Greater efficiency and productivity owing to the availability of improved local support services.
- Improved education and skill levels of the local workforce enabling companies to reduce their dependence on expensive expatriates and migrant workers
- If host communities gain more awareness and knowledge about mining operations, it minimises scope for misunderstandings or critique from communities over issues that do not match their expectations and remain beyond the scope of the mining company to address,
- Improved employee recruitment, retention and engagement.

(References: ICMM. 2015. Community development toolkit; Davis, Rachel and Daniel M. Franks. 2014. "Costs of Company-Community Conflict in the Extractive Sector." Corporate Social Responsibility Initiative Report No. 66. Cambridge, MA: Harvard Kennedy School. http://www.hks.harvard.edu/m-rcbg/CSRI/research/Costs%20of%20Conflict_Davis%20%20Franks.pdf)

Based on research and experts' recommendations, ICMM has recommended mining companies to incorporate the following basic principles into their operations to better contribute to local development:

- Adopt a strategic approach

Development activities at the operational level are linked to long-term strategic objectives for the company

and are also aligned with existing and future community and/or regional development plans.

- Ensure consultation and participation

Ensuring that communities participate fully in the decisions made about the allocation of benefits that flow from projects will offer the best chance for community development programs to function sustainably.

- Work in partnership

Private, governmental, NGO and community organizations bringing different skills and resources – but shared interests and objectives – can achieve more through working together than individually. Formal or informal partnerships can also reduce costs, avoid duplication of existing initiatives and reduce community dependency on the mining and metals operation.

- Strengthen capacity

Programs that emphasize strengthening of local community, NGO and government capacity are more sustainable in the long term than the supply of cash, materials or infrastructure. While infrastructure is often essential for the development of remote communities, it will only be sustained if there is an adequate maintenance program supported by a well-designed, participatory process including local communities and governments.

- Measuring and communicating

In order to manage community development programs well and to ensure that they work towards sustainable goals, it is important to monitor the programs and to periodically evaluate them against selected sustainability indicators.

(References: ICMM. 2015.Community development toolkit)

Understanding mining's contribution to local development

The "five capitals theory" or SLA can help to reveal not only the various types of capital that people can draw from to enhance local development, but also the impact of mining on different capital that can ultimately shape local development trajectories. Below are suggested potential positive impacts of mining on each of the five types of capital:

Understanding mine's contribution to local development
- Five capitals
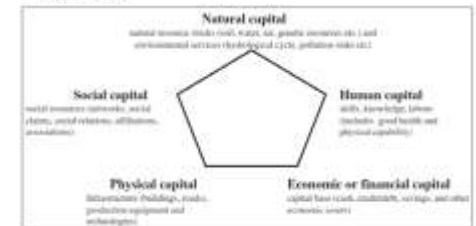
- Economic or financial capital

Mining can increase local financial capital through wages, savings and other financial flows such as local procurement, business development and spending.

- Human capital

Mining companies may invest in local education, health and social infrastructure and help build long-term capacity of local workforce as well as the broader local community.

- Social capital

Mining impacts the economic and social fabric of the local community. However, it can contribute to facilitating local interest-based groups, cooperatives and women's and youth activities.

- Natural capital

Natural capital refers to stocks of renewable and non-renewable natural resources and access to the environment. Some mining companies partake in delivering biodiversity offsets, by investing in the protection of natural parks in other regions of the country.

- Physical capital

There is potential for mining projects to build and upgrade existing infrastructure for the benefit of the local community. Mining can impact the quality, form, and function of natural resources and environmental services.

(References: Cane, I. Schleger, A. Ali, S. Kemp, D. McIntyre, N. McKenna, P. Lechner, A. Dalaibuyan, B. Lahiri-Dutt, K. and Bulovic, N. 2015. Responsible Mining in Mongolia: Enhancing Positive Engagement. Sustainable Minerals Institute: Brisbane; Julia Horsley et al, Sustainable livelihoods and indicators for regional development in mining economies, The Extractive Industries and Society, Volume 2, Issue 2)

Direct and indirect contributions of mining to local economies

Mining can have direct as well as indirect contribution to the local economy (read the case of Ghana). The direct contribution to local economic development comprises the value-add generated by mining activity, often in the form of local employment in mining, and local procurement by mining companies, and direct provision of local infrastructure. The indirect contribution includes local employment in enterprises that sell

their goods and services to mining (such as construction, agriculture, road-building, etc), boost to the local economy from increased incomes earned by people working in mining companies or mining subcontractor companies, and the provision of additional public goods provided by local governments as a result of taxes and fees (fiscal revenues) paid by mining companies.

(References: Eggert R. Mining and Economic Sustainability: National Economies and Local Communities,
Division of Economic and Business, Colorado School of Mines; Radetzki M.1982. Regional development benefits of mineral projects, Resources Policy, 8 (3), pp 193-200; T Gunton, 2003. Natural Resources and Regional Development: An Assessment of Dependency and Comparative Advantage Paradigms: Economic Geography [Econ. Geogr.]. Vol. 79, no. 1, pp. 67-94)

Local employment

One of the great promises of mining for the local region is employment. However, mining has a very high capital to labour ratio compared with other industries. The capital-intensive nature of mining means the number of actual jobs created is small compared to the quantity of revenues generated or investment.
According to The Minerals Law of Mongolia, mining licence holders must ensure that 90% of their work force and the work force of any sub-contractor working at their mine are comprised of Mongolian nationals.

The requirements for many of the mining jobs and related services are very technical, both in the upstream and downstream industries, particularly in electrical, construction and mechanical occupations.
Although there can be people who have formal qualifications; in many cases it has been found that the training provided by vocational schools is not adapted to workplace requirements for mine sites in Mongolia. Furthermore, nontechnical jobs such as food production require a level of capacity that may not exist in the community. Herder households and agricultural cooperatives usually expect that they will be able to supply meat and milk to the mining companies operating in their vicinity. However, from the extractive company's perspective, it needs to be able to order food that is predictably at a high level of quality and quantity. Unless local herders and farmers increase their supply capacity to meet the quality and quantity requirements of the company it is difficult to become a long-term supplier.

For local governments in mining regions, developing or improving technical vocational education and training is a key aspect of employment policy. While the centrally allocated funding comes from the national government, local governments may undertake innovative financing agreements with mining companies focused on supporting local capacity. Local government can also negotiate with mining companies to include

in local cooperation agreement provisions requiring the companies to award a certain percentage of vacancies to qualified local people ("local-local") and implement vocational training programs. Vocational trainings are not only connected to employment outcomes, but can improve knowledge and educational base of people over the longer-term, including their ability to contribute to other development projects (mechanics can work on infrastructure projects, not just at the mine), and social cohesion (reduce 'outsider' influx, build social and work networks).

Mining companies' contribution to creating local jobs also varies significantly depending on the phase and scope of a mining project. For example, in short and small-scale projects, due to the limited timeframe and needs, investing in vocational training of a local workforce may not be feasible; whereas longer and bigger projects provide the opportunity to undertake a broader spectrum of employment opportunity enhancement initiatives. However, it does not imply that small-scale projects are not capable of supporting local employment. For example, based on exploration companies' experience, the Prospectors & Developers Association of Canada (PDAC) recommends the following principles for supporting local employment:

- Establish and publicize to local communities policies regarding employment opportunities
- Inform local communities regarding available jobs and required skills and training
- Identify local, potentially qualified employees through community skills database, local employment authorities, or early community engagement activities
- Improve access to employment opportunities for women, youth and other minority groups

What goes wrong in local employment practices? In Mongolia, for example, mining companies and communities sometimes have different definitions of "local". While local communities and government tend to define "local" as the population of *Soum* and *Aimag* where a mining project is located, international mining companies often define "local" as the population of Mongolia. While domestic mining companies and the *Aimag* governments understand as "local" the population of the entire *Aimag* where the mining company operates, *Soum* governments and communities understand as "local" only the population of the *soum* where the mining project is located and subsequently, expect greater opportunities for the *soum*. Thus, it is essential to establish and publicize to local communities company's clear policies regarding employment opportunities.

Another important issue is that mining companies' hiring policies are often non-transparent. It was observed

that non-transparency in hiring and termination could turn frustrated local people against the company. Furthermore, it is often observed in mining regions in Mongolia that young people are dismissed because of misconduct and breach of safety regulations at the mine site. It is essential for youth with little or no previous experience working in high-risk industries such as mining to receive adequate training on apprenticeship and transitioning to mine jobs.

Local procurement

Local procurement of companies is often referred to as local content. It has many local development benefits, including:
- Increasing the capacity of local businesses supplying mining projects
- Transferring technology and skills to local businesses
- Creating regional and local business networks and clusters
- Increasing local government revenue and local employment

Local procurement has been an important development strategy in many developed countries. Governments often encourage investing companies to purchase local goods and services. South Korea is a good example where local procurement strategies have helped significantly in developing strong national manufacturing capacity.

Purchasing more locally is also considered good mining practice. Firstly, purchasing locally can reduce costs for many goods and services in the long run. Secondly, local procurement can help mining companies develop good relationships with local communities and local government.

Although mining companies have offered opportunities for local enterprises and suppliers in the past in Mongolia, the number of local small and medium enterprises (SMEs) that supply goods and services to mining companies has remained limited. Few local businesses have been able to meet the requirements from mining companies and to supply their products. As a successful example, Umnugovi has been a leader in facilitating a robust local enterprise base whereby mostly local companies produce and supply bottled water, work clothes and timber products to mining operations in the *aimag*.

Some mining companies in Mongolia provide local suppliers with programs to help them increase their health

and safety standards, and financial support such as concessional loans. Some companies fund training sessions on human resources, marketing, finance, and production technology, and organize study tours. They often collaborate with business facilitation professionals and local government. Some companies develop internal communication strategies to identify suitable products and services for local supply, explain the requirements of goods and services, and provide support mechanisms to local suppliers.

Local government can play an important role in enhancing opportunities for local business and entrepreneurs to become local suppliers of mining companies and expend their market beyond a local area through development planning and pro-active facilitation. For example, a special government-funded entity in the Queensland state of Australia (http://c-res.com.au) was specifically established to provide opportunities for small businesses with less than 25 full-time employees to competitively supply goods and services to mining companies in townships throughout a particular mining region in the state.

In more developed mining economies of Australia and Canada, local government and communities also negotiate local procurement provisions in many of the local agreements signed with mining companies. In Mongolia, local procurement provisions are also included in some local cooperation agreements signed between mining companies and local governments. For example, the Cooperation Agreement between Khovd *Aimag* and MoEnCo LLC contains the following clause:

Parties shall cooperate to build capacities of local businesses by letting local business entities implement more than 50 percent of supplying goods and services to the project including meat, milk, vegetable, water, uniforms, bus and small vehicle rent, security, bakery products, fuel and other goods and services. Company shall have preference for local business entities in purchasing goods and services for the project and if local businesses meet the Company requirements it shall work with them on a contract basis. Company shall consider the market price, quality and stable supply capacity of goods and services. Company shall cooperate with local business entities in improving their capacity and enhancing local procurement opportunities (14.2).

For mining companies, some important principles for effective local procurement strategy are:
- Start stakeholder engagement and communication on local procurement early
- Remove unnecessary bureaucracy and ensure transparency in procurement
- Provide seed capital and concessional loans
- Reduce the risks for local contractors and suppliers (flexible payments, subsidies business

development services)
- Support the competitiveness of local businesses
- Integrate local procurement into the company management systems

(References: Luc Zandvliet & Mary Anderson. 2009. Getting it Right: Making Corporate-Community Relations Work, Greenleaf Publishing; Esteves, A.M., Brereton, D., Samson, D. and Barclay, M.A. (2010), Procuring from SMEs in Local Communities: A Good Practice Guide for the Australian Mining, Oil and Gas Sectors. Brisbane: Centre for Social Responsibility in Mining, Sustainable Minerals Institute, University of Queensland; Byambajav Dalaibuyan.2016. Local-level agreements in Mongolia: a source book)

Group activity (20 minutes)

Option One: Developing and implementing effective local development projects

Most companies invest in community projects. However, there is no correlation (and sometimes even an inverse correlation) between the amount of money companies spend on community projects and the health of company-community relationship. Ask participants about what are the wrong ways of developing and implementing local development projects and what are the better ways of doing it. Two common examples of what can go wrong include community projects that are used to reward influential local people, or when companies have preconceived notions of what a community needs.
(To explore more, read Getting it Right: Making Corporate–Community Relations Work)

Option Two: Improving local planning mechanisms

First, ask participants to read and discuss the following case of Galuut *Soum* of Bayankhongor *Aimag*. Galuut *Soum* has 8 mining business entities that hold 11 exploitation licenses for 2998.84 hectares of land and 7 business entities with 10 exploration licenses for 12284.57 hectares of land, which equal 5.03 percent of total *Soum* territory. Until recently, gold miners, local residents, state administrative institutions have not concluded any concrete agreements on environmental protection and rehabilitation, nor on local development. Since 2008, multilateral cooperation has begun to emerge through a "Multilateral Council" comprising representatives of local stakeholders and local cooperation agreements. Since 2010, local residents have access to information regarding an environment protection work plan, its implementation report, and the allocation, purpose and expenditure of investment coming from mining. Reports have been presented regularly to the residents and Citizen's Khural of those *bagh*s where mines operate. In the

beginning of each year, a local development plan proposal is sent to business entities for their suggestions for joint implementation and is then presented to the Multilateral Council for discussion and endorsement.

Ask participants about possibilities of establishing the same structures in their local areas and opportunities and limitations of 'multi-stakeholder councils'.

Managing local-level agreements and community investment (20 minutes)

There are a variety of structures and processes that can be used as vehicles for delivering development benefits to communities impacted by mining projects. These include company-controlled social investment programs, development forums, bilateral and multisector partnerships and collaborations, formal agreements, and community-controlled trusts and development funds. In this section, we examine agreements and trust funds as an emerging issue in Mongolia.

- Agreements

As the mining sector grew rapidly over the past decade in Mongolia, there has been increasing pressure from local civil society and community groups to incorporate interests of local stakeholders and communities in mining development. An important change in the mining legislation addressing community-company relations was the mandatory requirement introduced in 2006 for "local-level agreements" (LLAs) between mining companies and host local governments.

Under different names, LLAs between mining companies and host communities have been used in some resource-rich countries, such as Australia and Canada, to manage local impacts and benefits of mining and secure a social license to operate through mutually beneficial relationship building. In Australia, community agreements of any type were rare prior to the 1990s. In Canada, there are reports of agreements between mining companies and Indigenous groups being negotiated as early as the 1970s, but a recent study was able to identify only 13 'benefit agreements' that were signed in the period up until 1990. In the past two decades, by contrast, agreement making has become a widespread practice in each jurisdiction. There are now several hundred agreements in place between Indigenous communities and resource companies in Canada and Australia, with much of this growth occurring during the post-2005 resource boom years.

In most parts of the world, formal agreements involving community entities are still largely the exception rather than the rule in the mining industry. Instead, companies and governments tend to rely primarily on

more flexible, and mostly non-binding arrangements to mediate relations with impacted communities, such as social impact management plans, community development programs, community funds, rolling community engagement plans, advisory committees and non-binding MoUs.

At the same time, there are indications that community agreements are being negotiated, or at least considered, in an increasingly diverse array of settings. Companies operating in Latin America are also coming under increasing pressure to enter into local level agreements, particularly where indigenous communities are likely to be impacted.

In another potentially significant development, several resource-rich developing nations have enacted laws requiring companies to enter into some type of development, or benefit, agreement with local communities. Mining regions where this has already occurred include Nigeria, Sierra Leone, Guinea, South Sudan and Mongolia.
(References: Byambajav, D. Local-level agreements in Mongolia: a source book)

Local-level agreements are written agreements between companies and community entities, which are intended to create enforceable obligations for all parties. A 'community entity' is any organisation, association or local institution which represents, or purports to represent, the collective interests of a group of people residing in – or who are otherwise connected to - a defined geographical area. In Mongolia, local administration is the main local entity that establishes agreements with companies. 'Enforceable' suggests that there is the potential to seek recourse to the courts or to another third party (e.g. an independent arbitrator) if a party does not honour its commitments under the agreement, and that there are consequences for non-compliance (such as damages, termination of the agreement and/or withdrawal of approvals).

Local-level agreements in Mongolia go by a variety of names such as Cooperation Agreement, Social Responsibility Agreement, and Multi-stakeholder Agreement with considerable variation in structure and content. Research suggests the following broad trends in local-level cooperation agreements in the global mining industry:
- an increase in the range of issues addressed in the agreements
- greater emphasis on mitigating the negative impacts of mining, including through community participation in environmental management and in closure planning

- a growing trend to provide for community use of mine infrastructure such as roads, ports or power lines, and for the transfer of infrastructure to local interests at the end of mine life
- more specificity in the commitments by companies such as employment and business development targets
- increasing focus on governance mechanisms to support implementation

(References: O'Faircheallaigh, C. 2012. Community Development agreements in the mining industry" an emerging global phenomenon)

The potential benefits of effective local-level agreements include the following:
- The agreement-making process can enable local government and communities to articulate their development goals and aspirations;
- Through engaging in dialogue and discussion, local stakeholders are likely to acquire a better understanding of the financial and other constraints under which a developer is operating, which in turn facilitates mutual understanding of expectations;
- Agreements provide a mechanism for 'locking in' all parties to long-term commitments.
- By defining mutual obligations, agreements assist in building a sense of shared responsibility.
- Agreements provide a greater degree of certainty for all parties. Parties involved in the agreement know what is expected of each party, thus reducing the risk of future confusion, conflict and uncertainty.

There are many guides and toolkits available on effective or good local-level agreements. Our review of these resources and research on agreements in Mongolia suggests that there are some important principles of successful local-level agreements which local stakeholders and mining companies need to consider carefully. These include:
- *Commitment:* all parties must commit to making the agreement work . Commitment, in simple terms, means that each of the parties understands and accepts its obligations under the agreement, sees it as having value, and acts in ways that are reinforcing and affirming, rather than undermining.
- *Approach*: Local-level agreements need to be approached differently from standard commercial negotiations. The success of a community agreement relies heavily on whether or not the negotiation process was seen as fair, transparent and equitable by the parties involved.
- *Negotiations*: The outcome (i.e. agreement) is arrived at through fair negotiation; and communities, or community representatives, have been engaged in these negotiations.
- *Obligations*: Each party has an understanding of the other's objectives and needs and there is clarity

around obligations and commitments. These are clearly identified and expressed in the agreement.

- *Governance*: The agreement includes effective governance arrangements for managing the relationship between the parties on an ongoing basis and adequate resources are allocated to support these arrangements.
- *Monitoring*: There is periodic monitoring, review and adjustment of the agreement, to ensure that governance mechanisms are working effectively and progress is being made towards key objectives.

(References: Brereton, D., Owen, J. and Kim, J. 2011. World Bank Extractive Industries Source Book: Good Practice Notes on Community Development Agreements. https://www.csrm.uq.edu.au/Portals/0/docs/CSRM-CDA-report.pdf)

- Managing community investment through trusts and funds

The IFC defines community investment as "voluntary actions or contributions by companies, beyond the scope of their normal business operations, intended to benefit local communities in their area of operations". In many cases, companies should understand that community investment is distinct from a company's obligations to mitigate or compensate local communities for environmental and social impacts caused by the project.

Foundations, trusts and funds (FTFs) are the vehicles through which community investment, compensation and government payments related to mining are increasingly being channelled. While the legal structures of foundations, trusts and funds can vary considerably; FTFs in general provide a structure independent of a mining operation with opportunities for governance to be shared amongst a number of stakeholders. The terms "foundation", "fund" and "trust" are often used loosely and interchangeably on many occasions, although differences can be made clear.

The Civil Code of Mongolia states that "Non-profit legal persons shall be established in the form of association, foundation or cooperative" and "Foundation shall be a legal person without membership, established by one or more founders by raising funds to attain publicly beneficial common goals." Article 37 of the law defines that:
- The Governing body of a foundation or the governing board shall consist of donors, supporters and their designees.
- Governing body shall nominate its executives and controlling body.

- Foundation executives shall carry out activities consistent with the foundation statute, have performance and financial reports considered by the governing body and published for public distribution.

The two main types of fund structure are identified as company/corporate funds and community funds:
- Corporate/company funds – Created by companies as separate legal entities with the purpose of delivering social development projects. There are some company foundations in Mongolia that have been established recently such as MAK Foundation, Oyu Tolgoi's Goviin Oyu Foundation, and Khushuut Development Foundation in Khovd *Aimag*.
- Community funds – An independent, non-profit organization working in a specific geographic area which, over time, builds a collection of endowed funds from many sources. Although its legal status is different, the case of Goviin Oyu Development Support Fund is a good example of an emerging approach in Mongolia to ensure good governance and multi-stakeholder collaboration in managing local funds.

(References: World Bank. 2011. Mining foundations trust and funds: a sourcebook. http://documents.worldbank.org/curated/en/2010/06/18550631/mining-foundations-trust-funds-sourcebook)

Case studies

Ghana: Many works discuss the 'enclave' nature of mining. An enclave economy is associated with lack of productivity, physical backwardness and missing forward linkages. Bloch and Owusu (2012) challenge the enclave thesis with respect to gold mining in Ghana. Gold mining is depicted as having an enclave status, disconnected and isolated from the rest of the economy. However, their research found that after a period of strong investment and growth, gold mining can no longer be seen as an enclave activity: it is in fact more deeply rooted in the Ghanaian economy than previously understood. Based on the registration of local suppliers and data on the distribution of mining expenditures by mining companies, they found the existence of a range of 'input supplying' backward linkages for mining.

Four tiers of the minerals or mining inputs cluster were found. These included:

Tier 1: direct suppliers
Engineering and service providers (e.g., project engineering companies).

Original equipment manufacturers (OEMs) (capital equipment).
Consumables input suppliers (explosives, chemicals).
Agents and distributors (pumps, bearings, vehicle parts).

Tier 2: indirect suppliers
Specialised engineering and services (electrical engineering, ventilation).
Component manufacturers
Manufacturers of standard components (cabling, electrical motor parts)
Manufacturers of specialized niche components (hoisting hooks, pinch valves)
Foundries and machine shops
Input providers (chemicals, steel products).

Tier 3: direct mining services
Geological services, surveying, land use planning.
Laboratory services.
Drilling services.

Tier 4: indirect producer services (which range from the basic to the sophisticated):
Finance, Insurance, Real Estate
Legal services
Transportation and logistics
Civil engineering
Environmental services
Construction and landscaping
Catering
Cleaning
Security.
Since 2013, Ghanaian laws require development of a 'local procurement list' of products of Ghanaian content, and the submission of individual local procurement plans by mines. The Chamber of Mines submitted a collective local procurement plan on behalf of members in 2013.

(To explore more read, R. Bloch, G. Owusu. 2012. Linkages in Ghana's gold mining industry: Challenging the enclave thesis.

Resources Policy, 37 (2012), pp. 434–442)

Oyu Tolgoi: In April 2015, A Cooperation Agreement between Oyu Tolgoi LLC (OT) and Umnugovi *Aimag* and four project affected *soum*s was established. Under the agreement, the Relationship Committee and the Goviin Oyu Fund are the key implementation mechanisms.

The Relationship Committee will comprise four OT leaders and nine Umnugovi leaders, and its main function is to oversee all interactions between OT and its Partner Communities. An important area of its work will be to ensure comprehensive and transparent consultation on all OT community interactions. In this regard, from time to time, some OT managers and employees may be asked to present reports to the Relationship Committee. Another important area of work is to review submissions to the Development Support Fund (DSF) and advise the DSF Board on the suitability of proposals and their relative merit, evaluated against the long-term development trajectory of OT and Umnugovi *Aimag*, to ensure a shared vision for the future. The DSF will have a Board made up of four senior OT leaders and three senior Umnugovi leaders. The DSF will manage the funds that OT makes available for Umnugovi projects and programmes. It will meet four times a year and review proposals for community projects and programmes suggested by community groups and local governments in Umnugovi *Aimag*. Funding guidelines are publicly available, which also include general steps followed for funding:

- Submission of DSF Proposal application – Eligible applicant
- Receive and register Proposals – "Gobi Oyu DSF"
- Review , assess and prioritize Proposals – Relationship Committee quarterly meeting
- Fund long/short term plan and strategy based on prioritized Proposals - "Gobi Oyu DSF"
- Decision making and approval of Proposal –"Gobi Oyu DSF" quarterly Board meeting
- Give official report to the applicant of approved Project or Program - "Gobi Oyu DSF"
- Implement Project, Program – Eligible applicant
- Assessment and Analysis of implementation process –"Gobi Oyu DSF"
- Auditing – Custodial Trustee
- Auditing – Audit bureau

Review and discussion (10 minutes)

- How might the allocation of benefits impact the different kinds of capital? What trade-offs between capitals might occur?
- What is the role of *Soum* government in coordinating economic contributions of mining companies

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for local sustainable development in Mongolia? • How should mining companies and local government allocate benefits from mining in terms of entire community vs. affected households? • What are the aspects of local business activities in *soum*s where mining companies can help most effectively?	
Suggested readings Eggert R. 2001. Mining and Economic Sustainability: National Economies and Local Communities. Division of Economic and Business, Colorado School of Mines. Esteves, A.M., Brereton, D., Samson, D. and Barclay, M.A. (2010), Procuring from SMEs in Local Communities: A Good Practice Guide for the Australian Mining, Oil and Gas Sectors. Brisbane: Centre for Social Responsibility in Mining, Sustainable Minerals Institute, University of Queensland) ICMM. 2015. Community development toolkit. Luc Zandvliet & Mary Anderson. 2009. Getting it Right: Making Corporate-Community Relations Work, Greenleaf Publishing. WEF. 2013. Responsible Mineral Development Initiative. Geneva, Switzerland: WEF. http://www3.weforum.org/docs/WEF_MM_RMDI_Report_2013.pdf	
Glossary of key terms and concepts **Capacity building** - actions taken to develop the ability of individuals, groups, institutions, or organizations to identify and solve development problems. **Local content** - number or proportion of local people employed; amount or proportion of locally procured goods and services **Local level agreements** - agreements between companies and community entities, which are intended to create enforceable obligations for all parties based on shared criteria.	

MODULE 5. ENVIRONMENTAL IMPACTS AND GOVERNANCE IN MINING

Learning objectives

Upon completion of this module, the participants will be able to:

- Identify the main environmental impacts during different stages of the life of a mine
- Understand key concepts in the field of environmental governance and management in mining
- Understand environmental governance of mining in Mongolia, including laws, standards and institutions

Overview

This thematic module is an introduction to environmental governance of mining. It will provide an overarching review of the main environmental impacts of mining and various regulatory and management practices currently in use to address these impacts.

The first section of the module will re-visit the concept of the life of a mine and outline different environmental impacts occurring at each stage of mining. It will introduce key terms and concepts necessary for understanding these impacts. Impacts on the environment can be direct, indirect or cumulative; localised or widespread; and easy to measure or complex, requiring sophisticated methodologies.

The second section of the module provides a general overview of the environmental governance of mining in Mongolia, including a review of major international standards. It will examine environmental governance in mining as a system of regulatory and voluntary frameworks, processes and institutions that define environmental management standards and regulations and ensure their compliance at all levels. This section reviews not only formal regulations and institutions but also information on social activism and litigation applied to facilitate long-term environmental governance of mining.

Suggested timetable

- The life of a mine and the environment (30 minutes)
- A group activity (15 minutes)
- Environmental governance for responsible mining (35)
- Review and discussion (10 minutes)

Training materials

Lecture notes	Suggested presentation slides
The life of a mine and the environment (30 minutes) There are various phases in a mining project, beginning with mineral ore exploration and ending with closure (Read about the life of mine in Module 1). Each phase of mining has different environmental impacts and therefore requires different strategies, tools and technological interventions to address these impacts. In addition, the environmental impacts of mining projects differ considerably depending on the particular kind of mining methods they employ. The table below provides a useful framework for understanding the environmental impacts of mining and associated regulatory and management requirements.	

Phases	Sources of impacts	Affected environment	Common environmental concerns	Management strategies
Exploration	Intensive exploration (off-road vehicle use, airborne surveys, trenching, and drilling etc)	Vegetation Land Use Noise Water quality Soil	Erosion and sedimentation Disturbance of livestock and wildlife Deforestation Scarring of land Soil and vegetation toxicity from chemical and oil spills	Planning and engagement Environmental protection plan Contractor selection Monitoring and review Post-exploration land rehabilitation
Mine development	Construction activities Transportation Mine preparation Mine camp activities	Soil Vegetation Wildlife Air Quality Water quality and quantity Noise and vibration	Deforestation and loss of habitat Erosion and sedimentation Disturbance of livestock and wildlife Increased dust Depletion of springs and streams Reduction of water levels of wells	Environmental impact assessment Mine design Conceptual site model Environmental management plans Contractor selection Monitoring and review

		Water quality degradation from spills Soil and vegetation toxicity from chemical and oil spills	
Operation/mineral extraction	Mining activities Processing Transportation Waste disposal	Soil Vegetation Wildlife Air Quality Water quality and quantity Noise and vibration	Erosion and sedimentation Degradation of groundwater and surface water quality, quantity, and accessibility Deforestation and loss of habitat Increased dust Tailings dam breaches Acid rock drainage potential (metal and coal mining) Cyanide contamination of groundwater and surface water (metal mining) Soil and vegetation toxicity from chemical and oil spills	Environmental management plans Contractor selection Water treatment Soil treatment Monitoring and review
Closure	Removal and backfilling Restoration activities Post closure	Soil and geology Vegetation Water quality Wildlife Air quality	Stability of waste rock piles, mining slopes, and dams Groundwater and rainwater contamination Failure of vegetation to properly re-establish Acid rock drainage potential (metal and coal mines)	Community engagement Closure plan, including closure financing provisions Review and monitoring

(Adapted from U.S. EPA. 2011. Volume I EIA Technical Review Guideline: Non-Metal and Metal Mining. https://www.epa.gov/international-cooperation/eia-technical-review-guidelines-mining-sector)

- Exploration

Early stages of mineral exploration, including airborne surveys, mapping and stream sampling do not cause significant environmental disturbance. However, it is important to make sure that these activities do not have negative impacts on the livelihoods and safety of local host communities. Mining companies and local government agencies can work together to contain and manage fire risk, local

disturbance to native vegetation, and invasive alien species such as rats, which can be transported via mining equipment. The risk of environmental impacts increases as exploration becomes more intensive. The later, intensive stages of exploration can have impacts such as disturbance of vegetation and river environments, erosion and sedimentation, and scarring of land. For example, drilling may require access roads, the preparation of drill sites, and facilities to deal with drilling waste. When exploration occurs in a jurisdiction with little or no experience with mining, local governments should receive training about how to interpret and evaluate environmental protection plans, which companies in Mongolia are required to produce. This can increase local preparedness for exploration-induced environmental impacts.

For mining companies, the following considerations can be important to better manage environmental impacts during the exploration phase:

- Careful planning prior to commencing exploration work among both companies and local governments.
- Careful attention to the selection, management and ongoing performance of contractors and subcontractors to ensure that they practice sound environmental stewardship.
- Periodical reviews to ensure that the exploration work is consistent with good practice.

(References: PDAC. The Excellence in Environmental Stewardship e-toolkit Good Practice Guidelines. http://www.pdac.ca/programs/e3-plus/toolkits/environmental-stewardship)

The following box provides clauses from the Minerals Law of Mongolia that state responsibilities of mining companies with regards to environmental protection during the exploration phase.

Environmental protection obligations of an exploration license holder

- Within thirty (30) days following the receipt of an exploration license, the exploration license holder shall prepare an environmental protection plan by consulting with the environmental inspection agency and the Governor of *soum* or district in which the exploration area is located;
- The environmental reclamation plan shall provide measures to ensure a) the level of environmental pollution does not exceed accepted limits and, b) reclamation of the area is planned by means of backfilling, plugging, and cultivation to allow future utilization for public purposes.

- The environmental protection plan shall be delivered to and approved by the Governor of the relevant *soum* or district where the exploration area is located.
- Upon approval of the environmental protection plan in accordance with the Article 38.1.3 of this law, a copy of the plan shall be delivered to the local environmental inspection agency.
- The license holder shall record all instances of adverse environmental impact resulting from the exploration activity in the annual report of the environmental protection plan and deliver the report to the Governor of the relevant *soum* or district and environmental inspection agency.
- The report specified in Article 38.1.5 shall contain information on measures taken to protect the environment and proposed amendments to the environmental protection plan directed at preventing the possible impact on the environment of new exploration machinery and technology. All amendments to the environmental protection plan shall be approved by the Governor of the relevant *soum* or district.
- To provide the State and local administrative body official in charge of monitoring implementation of the laws on environmental protection with an opportunity to enter the exploration area to conduct monitoring activities on the site.
- To ensure the discharge of its responsibilities with respect to environmental protection, an exploration license holder shall deposit an amount equal to 50 % of its environmental protection budget of the year in a special bank account established by the Governor of the relevant *soum* or district.
- Within ten (10) days of receiving the environmental protection plan and proposed amendments to it the Governor of *soum* or district shall review and approve the plan and deliver it to the license holder

- Mine development

Environmental impacts and ways of mitigating them need to be carefully examined in planning and site design, with involvement of environmental professionals and host local government and community. Mine construction, including construction of access and haulage roads has substantial environmental impacts.

Mining projects differ considerably also depending on the particular kind of mining methods they employ. In turn, varied methods call for different environmental governance mechanisms and strategies. These are discussed below in further detail:

Surface mining (also open-pit mining or strip mining): the key environmental actions that must be taken during surface mining include the following:

- Control drainage from the mine to avoid contamination of surface water and groundwater.
- Control inflow or surface water to make sure that they are not contaminated by passing through the mine.
- Carefully analyse the groundwater regime in and around the mine, and use monitoring wells.
- Design and construct waste dumps and tailings dams to minimize erosion and protect surface and groundwater.
- Control emissions of dust.
- Control the environmental impacts of increased heavy truck traffic to and from the mine site.

(References: Darling, Peter. (2011). SME Mining Engineering Handbook (3rd Edition) - 16.1 Site Environmental Considerations. Society for Mining, Metallurgy, and Exploration (SME). Online version available at:
http://app.knovel.com/hotlink/pdf/id:kt008K1EX7/sme-mining-engineering/site-environmental-considerations)

Placer mining (also alluvial mining) is a type of surface mining. Because placer mining often occurs within a streambed, it can cause large quantities of sedimentation that can further impact surface water quality for several kilometres downstream of the placer mine. For example, a study on the environmental impacts of placer gold mining in Zaamar *soum* in Tuv *aimag* conducted in 2000 found that the most serious environmental problems were injection of silt and suspended sediments into the Tuul river from improperly operated mines and destruction of the river's riparian ecosystem.

(References: Farrington, John. 2000. Environmental problems of placer gold mining in Zaamar Goldfield, Mongolia
https://www.researchgate.net/publication/228975338_Environmental_problems_of_placer_gold_mining_in_Zaamar_Goldfield_Mongolia)

Underground mining: the key environmental actions that must be taken during surface mining include the following:

- Design waste dumps to minimize erosion and protect surface and groundwater.
- Control drainage from the mine to avoid contamination of surface water and groundwater.
- Control inflow or surface water to make sure that they are not contaminated by passing through the mine.
- Carefully analyse the groundwater regime in and around the mine, and use monitoring

Typical mine complex
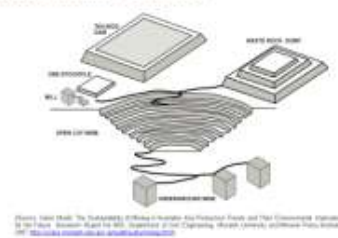
wells.
- Analyse and predict the subsidence likely to result from the mine.

(References: Darling, Peter. (2011). SME Mining Engineering Handbook (3rd Edition) - 16.1 Site Environmental Considerations. Society for Mining, Metallurgy, and Exploration (SME). Online version available at: http://app.knovel.com/hotlink/pdf/id:kt008K1EX7/sme-mining-engineering/site-environmental-considerations)

- Mineral extraction

Significant differences of environmental impacts can be identified between open pit mines and underground mines. The following table outlines some key environmental considerations.

Environmental Aspect	Open Pit Mine	Underground Mine
Waste rock disposal	Requires large area and leachate and dust management	Less waste rock than open pit mines, but requires similar management
Tailings	Larger tailings volumes	Smaller tailings volumes
Reclamation concern	Both mine and waste rock area	Waste rock area
Dust	Caused by pit operations, haulage roads and waste rock piles	Caused by haulage roads and waste rock piles
Mine Water	Mine water volume influenced by precipitation, surface and groundwater ingress.	Mine water volume normally quite stable.

(Adapted from Government of Canada. https://www.ec.gc.ca/lcpecepa/default.asp?lang=En&n=CBE3CD59-1&offset=5&toc=show)

The Minerals Law of Mongolia requires that mining project developers submit an environmental protection plan that identifies preventive, comprehensive strategies to protect air and water, humans, animals and plants from the adverse effects of mining operations, and must include the following measures:
- storage and control of toxic and potentially toxic substances and materials;
- protection, utilization and conservation of surface and underground water;
- construction of tailings dams and ensuring mine area safety;
- reclamation measures
- other measures as may be appropriate for the particular type of a mining operation.

(To explore more about how mines operate and what ancillary facilities exist, take a virtual tour of Twin Creeks Gold Mine and Mill in Nevada, USA. http://vtour.govtour.com/xplorit.php?tid=70628)

- Closure

A century ago, when mines depleted mineral deposits, production stopped and the mines were simply abandoned, which was considered to be 'mine closure'. There are currently more than 200,000 polluting abandoned mine sites worldwide. In Mongolia, that practice has occurred even recently although most companies now recognise that mine closure means much more than simply ceasing production. As of 2012, nearly 600 abandoned mine sites were identified in Mongolia. Abandoned or improperly reclaimed mine sites can be sites of toxic pollution, such as mercury and uranium, hazards to humans and animals who may fall into mine pits, and sources of desertification. Please read about closure in Module 8.

(Watch this interesting short video demonstrating the importance of planning for mine land by using chocolate chip cookies as a proxy https://www.youtube.com/watch?v=39BFPtCQgwE)

A group activity (15 minutes)

Option One:
Ask participants to organise themselves in groups of 4. Using the diagrams in the previous section, ask them to identify the main environmental impacts of current mining projects in their *soum*. Discuss what management strategies and mitigation measures the companies should take to address these impacts.

Option Two:
Ask the participants to form sectoral groups such as mining industry, local government, and local communities. Each group will have a sheet in the format below to discuss and fill. Identify environmental impacts of one exploration and one mining project in the area you live or other areas in your *aimag* you may be aware of. Identify the main impacts. Also identify what measures can be taken by your group to address or mitigate these impacts.

Impacts of an exploration project	Impacts of a mining project	Measures to be taken to address or mitigate these impacts		

Environmental governance for responsible mining (35 minutes)

Environmental governance

Broadly speaking, environmental governance in mining means a system of regulatory and voluntary frameworks, processes and institutions that define environmental management standards and regulations and ensure their compliance at all levels. It includes not only formal regulations and formal institutions, but also social activism and litigation. Another definition of environmental governance considers it a set of 'regulatory processes, mechanisms and organisations through which political actors influence environmental actions and outcomes' (Lemos and Agrawal 2006).

(References: Lemos MC, Agrawal A (2006) Environmental governance, governance annual reviews environment resources, Annual Reviews, School of Natural resources and Environment, University of Michigan, pp. 298–303; Harashima Y (2000) Environmental governance in selected Asian developing countries. Institute for Global Environmental Strategies 1(1): 193–194)

What should environmental good governance look like? Heldeweg (2005) exemplified environmental good governance from the perspective of environmental legal policy making in Europe. Based on five broad principles of good governance: openness, participation, accountability, effectiveness and coherence, the following key components of good environmental governance were presented:
- access to environmental information, and public participation,
- access to judicial review in environmental cases;
- making environmental principles such as prevention and the polluter pays benchmarks for accountability in environmental policy-making;

- making more use of horizontal instruments;
- need for overall consistency across sector policies.

(References: Heldeweg, M. A. (2005). Towards good environmental governance in Europe. European Environmental Law Review, January, 2-24.
http://www.kluwerlawonline.com/abstract.php?area=Journals&id=EELR2005001)

Similarly, United National Environmental Program (UNEP) states that good environmental governance takes into account the role of all actors that impact the environment, from governments to NGOs, the private sector and civil society (http://www.unep.org/environmentalgovernance/).

Environmental governance for responsible mining

Environmental governance for responsible mining can be examined by outlining the following key levels or components:

- International standards and voluntary codes
- National policy and regulatory institutions
- Local government policies and coordination
- Industry initiatives and voluntary codes
- Social activism
- Litigation

International standards and voluntary codes
There are a number of internationally recognised sustainability standards that provide guidance on what should mining companies do in order to mitigate or address environmental impacts in their operations. These are usually voluntary, non-binding standards adopted by leading practice companies which recognized that the poor record of the mining industry is leading to increased conflicts and is affecting their businesses. Financial institutions and international lenders have also adopted such standards and now require companies to abide by these standards in order to get credit to finance their mining operations. Some key standards for environmental performance are listed below.
.

General standards	Overview

ISO standards	ISO 14001 provides guidance and accreditation of environmental management systems. Developed in 2004, it is a detailed document that outlines policy, planning, operational, and compliance safeguards. These can be used by a community or an organization to implement a series of practices and procedures that, when taken together, result in an environmental management system (EMS). ISO 14001 is not a technical standard and thus does not in any way replace technical requirements to monitor and evaluate environmental performances of organisations embodied in statutes or legal regulations. It also does not set prescribed standards of performance for organizations. In Mongolia, Erdenet LLC was one of the first mining companies to implement ISO 14001 in 2007.
IFC's Environmental and Social Performance Standards	It defines IFC clients' responsibilities for managing their environmental and social risks. The IFC Performance Standards has been adopted by many mining companies as a key component of their environmental and social risk management. The IFC Performance Standards encompass eight topics such as environmental and social assessment and management system, pollution prevention and abatement, and biodiversity conservation. If non-compliances with the IFC Performance Standards are identified, the IFC can require the mining company to develop a corrective action plan for addressing the issue within a reasonable timeframe and stipulate this as a condition of the financial transaction with the company. In Mongolia, Oyu Tolgoi LLC is a client of the IFC and is obligated to comply with its performance standards.
ICMM principles for sustainable development	Ten principles for sustainable development for the mining industry.
EBRD Performance Requirements	It defines EBRD clients' responsibilities for managing their environmental and social risks (similar to IFC Performance Standards). The Project Complaint Mechanism (PCM) is the EBRD's accountability mechanism that has been established to assess and review complaints about Bank-financed projects. For example, in 2015 the PCM announced that it will investigate the EBRD-financed mine, operated by Altain Khuder in the Gobi-Altai region of Mongolia. The investigation came in response to a complaint filed from herders affected by the project.
Issue-specific standards	**Overview**
The Cyanide code	A voluntary initiative for the gold mining industry and the producers and transporters of the cyanide used in gold mining. (www.cyanidecode.org). In Mongolia, Boroo Gold LLC was certified in full compliance with the Cyanide Code in 2013.
International Atomic Energy Agency Safety standards related to Mining	It sets out principles for the management of radiation, health and safety, and waste and is applicable to sites throughout the world.
The Minamata Convention on mercury	It includes a ban on new mercury mines, the phase-out of existing ones, and guidelines for mercury use in artisanal and small-scale gold mining. Mongolia joined

	the convention in 2013.	

National policy and regulatory institutions

Mongolia's environmental policy and regulatory institutions related to mining are based on the Minerals Law and other relevant legislation. The Ministry of Mining (MoM) is the leading institution with a policy function and it oversees two quasi-operational agencies, the Mineral Resources Authority of Mongolia (MRAM) and the Petroleum Authority of Mongolia (PAM). The agency with the principal regulatory inspection function is the General Agency for Specialized Inspection (GASI). The Ministry of the Environment, Green Development and Tourism (MoEGDT) also has regulatory functions.

The MoM is the policy body responsible for defining the policy, legal and regulatory framework in mining in the country. The MRAM is the implementing body. MRAM's operations include geological survey, coal management, cadastre, licence management, monitoring, evaluation and statistics and mining research-training.

The MoEGDT's principal activity with regard to environmental governance of mining is to set environmental standards for mining and usage limits for mineral resources. In 2014, with the adoption of the Green Development Policy of Mongolia, the status of the Ministry has upgraded from line ministry to core ministry, on par with the Ministries of Finance and Justice. The MoEGDT is also responsible for environmental regulation. It approves Environmental Impact Assessments (EIA) and Environmental Protection Plans.

GASI is the core regulatory function in the mining sector. The agency has the mandate to raise inspection to a higher level of standardized assurance. Under the Environmental Protection Law and the Inspection Law, GASI undertakes governmental monitoring of the environmental performance and compliance of mining companies. The process of monitoring environmental compliance and performance includes initial inspection, on-site inspection, and follow-up inspection. However, recent studies show that the link between GASI's findings and enforcement of regulations is not well defined, and there are serious challenges in relation to its technical and human resources capacity. Recent research in Mongolia also indicates that *aimag* and *soum* staff of the GASI often are not adequately technically trained or qualified and provided necessary resources. Additionally, standard checklists that

GASI inspectors use for on-site inspection do not have adequate indicators to fully cover environmental issues related to mining (Tsetsegjargal, 2015).

(References: Butcher, David and Ron Smit.2013. Policy Advice to the Ministry of Mining on a Functional Review of Institutions engaged in the Management and Regulation of the Mining Sector. World Bank MSISTAP project; Uyanga, Gankhuyag and
Otgonchimeg Dunkhersuren. 2016. The current state of environmental governance of mining in Mongolia. UNDP Mongolia; Tsetsegjargal, Enkhbayar.2015. Building government capacity for environmental monitoring of mining in Mongolia through effective institutional arrangements and coordination. The University of Queensland)

Key laws and regulations

Name of the law and regulation	Key attributes
The Law on Environmental Protection (2012)	The "polluter pays" principle and collective management of natural resources were introduced in 2012. The amendments in 2012 also introduced the concept of environmental audit. It states that organizations that use natural resources such as mining and petroleum companies are obliged to commission an environmental audit at their own expense every two years, and implement recommendations of the audit.
The Law on Environmental Impact Assessment (2012)	A requirement to develop an environmental management plan (EMP) and report on its implementation to local population and local governments was introduced in 2012. Mining companies are obligated to submit mine closure plans to MoEGDT. Article 17.4 of the law states: "It is the responsibility of the legal entity performing the detailed environmental impact assessment to organize, at the report preparation stage, consultations with and formally seek comments from the local authority, the community that is likely to be affected by the project and local residents living in the area where the proposed project is going to be implemented." However, many of the progressive amendments of the law such as public participation and disclosure of EIAs are not implemented adequately.
The Law on Natural Resource Use Fees (2012)	The amendments made in 2012 shortened the period for water use permits, set stricter requirements for abstraction and discharge of water, and increased water use fees.
The Regulation on Public Participation in EIA (2014)	This document provides the responsibilities of a professional company that will carry out EIA to receive public and community opinions and comments through

	consultation processes.
The Regulation on Accountability of Special Accounts for Rehabilitation Bond	In response to the lack of effective implementation of the Special Accounts for Rehabilitation Bond managed by the *soum* government, the MoEGDT issued a procedural guidance for adequately managing the account. However, there are instances of many companies not complying with the law as well as local government personnel having used the bond money for purposes other than rehabilitation.

References: Uyanga, Gankhuyag and Otgonchimeg Dunkhersuren. 2016. The current state of environmental governance of mining in Mongolia. UNDP Mongolia)

Mongolia's climate and relationship with the mining industry

Mongolia is very sensitive to climate change because of its geographic location and fragile ecosystems. Climate has played an important role so far in shaping Mongolia's past and present, and will continue to do so in light of the intricate dependence between the Mongolian herders and natural climatic conditions. Currently, approximately 80% of the total national territory is considered extremely vulnerable to climate-influenced disaster events. Historically, Mongolia has experienced high natural climate variability, including significant inter- and intra-annual and daily variation in temperature and extremely low rates of precipitation. Throughout Mongolia's past, there have been recurring instances of natural disasters, commonly known as dzuds.

The nature of relationship among the mining industry, natural climatic conditions and rural, remote communities holds great significance in the Mongolian context. Given that Mongolia's livestock herding is almost exclusively dependent on pastoralism, water availability (quantity) and quality in an arid landscape is vital to the survival of rural communities (Sternberg, 2008). With an expanding mining industry and its water-intensive activities, not only is there going to be a greater demand for water industry-wide but based on experience in other regions, there is also a real possibility for minerals development to negatively impact the quality of Mongolia's already challenged water sources. Mining and ancillary infrastructures also compete for land that herders require for spatially extensive and flexible pastureland use. Resulting impacts of any magnitude on pasture availability may thus become a potential source of long- term conflict between various actors operating in the region.

(References: Sharma, V, Byambajav D, Gerelt-Od, E, Myagmartsooj, Natsag, & Saruulzaya, A. 2016. Traditional Livelihoods and Mining in Mongolia's Changing Climate: Exploring the Potential of Crosssectoral Partnerships in Achieving Sustainability. APN Science Bulletin. Sternberg, T 2008. Environmental challenges in Mongolia's dryland pastoral landscape. Journal of Arid Environments, 72, pp. 1294-1304)

Local government policies and coordination
In parallel with responsibilities under the national environmental laws and regulation, local governments can develop and implement specific policies and measures to improve the environmental performance of mining companies operating on their territories. For example, in Zaamar *Soum*, Tuv *aimag*, the *Soum* Citizens' Representatives Khural annually reviews the operational and rehabilitation reports of mining entities operating in the *soum* territory before establishing local agreements with them (Read about local cooperation agreements in Module 4).

There are good examples of local government coordination. The central Queensland town of Moranbah in Australia is surrounded by coal mines. Confronted by increasing community concerns about the potential health impacts of dust, the town convened a workshop in 2009 to discuss how these impacts could be managed. The meeting was attended by stakeholders from mining companies, the community, and local government. The outcome was the formation of the Moranbah Cumulative Impacts Group – a multi-sector collaboration to improve ongoing monitoring and reporting of cumulative impacts from mining on the town.

Industry initiatives and voluntary codes
Mining companies and industry associations have played an important role in resource-rich developed countries such as Australia, Canada and Chile in promoting good environmental practice in mining through agreed voluntary codes of conduct and joint initiatives. For example, in Western Australia, the Association of Mining and Exploration Companies (AMEC), in partnership with the Chamber of Minerals and Energy, created a voluntary code of environmental practice for mineral exploration to help mineral explorers meet their environmental obligations in 2010. In Mongolia, nine mining companies committed to a Voluntary Code of Practice (VCP) on Water Management in 2016, representing a collective effort towards disclosing, managing and sharing vital information on water resources management.

Another potential initiative that mining companies can work together is biodiversity management. The following box introduces biodiversity management approach that has been applied in various mining contexts across the world.

Biodiversity management approach (BMA)

It encourages an all-encompassing understanding of interdependence between various components of the ecosystem as well as inter-ecosystem interactions and dependencies that may still be evolving over time. This approach provides a strong grounding in context-specific social, cultural, aesthetic and spiritual values. This is of particular relevance in places such as Mongolia where the protection and management of biodiversity has important livelihood and cultural implications. Although the approach advocates for voluntary biodiversity commitments, its proactive and integrative focus on dynamic societal needs, expectations and priorities provides this approach a definite edge over other approaches currently in use. It is defined as a long-term strategy that 'starts at the very beginning of a mining project, and continues after mine closure and lease relinquishment. It is not limited to the immediate area affected by operations, but must take account of all relevant site, local, regional, national, and even international aspects.'

(For further detail on how to operationalize various principles of BMA, see Leading practice sustainable development program for the mining industry – Biodiversity management (Australian Government, Department of Industry, Tourism and Resources, February 2007)).

Social activism
Due to demands from environmental and social justice activists, the State Great Khural approved the Law on the Prohibition of Minerals Exploration in Water Basins and Forested Areas (known as Law with the Long Name) in 2009. Under the law, the government cancelled over 200 mining and exploration licenses that operated within 200 meters from water and forest sources. This law had the effect of zoning mining to arid and semi-arid regions of the country, such as the Gobi provinces. It is also an example of social activism influencing environmental governance institutions.

Litigation
By law, NGOs now can sue duty bearers over the breach of environmental legislation on behalf of public interest. For example, mining licenses issued to Talstmargad company in the area located in Khuvsgul were revoked by the Mongolian court in 2013 because the licenses issued breached relevant laws such as the Environmental Impact Assessment Law. Another example is PetroChina Daqing Tamsag. The company was found guilty of causing significant harm to the environment and fined 1.3 billion MNT by the Bayanzurkh District Primary Court in 2013.

Review and discussion (10 minutes)

- What are the key environmental considerations that must be addressed during surface and underground mining?
- How are environmental impacts of mining related with social and community well-being?
- Compared to the 1990s, what are the key legislative changes towards effective environmental governance of mining in Mongolia in the past few years?

Suggested readings

CSRM. 2015. Responsible Mining in Mongolia. https://www.csrm.uq.edu.au/publications/responsible-mining-in-mongolia-enhancing-positive-engagement

Darling, Peter. (2011). SME Mining Engineering Handbook (3rd Edition) - 16.1 Site Environmental Considerations. Society for Mining, Metallurgy, and Exploration (SME). Online version available at: http://app.knovel.com/hotlink/pdf/id:kt008K1EX7/sme-mining-engineering/site-environmental-considerations

ELAW. 2010. Guidebook for Evaluating Mining Project EIAs - complete Guidebook (English & Russian) https://www.elaw.org/mining-eia-guidebook

PDAC. The Excellence in Environmental Stewardship e-toolkit Good Practice Guidelines. http://www.pdac.ca/programs/e3-plus/toolkits/environmental-stewardship

Glossary of key terms and concepts

Cumulative impact - the impact on the environment that results from the incremental impact of the action when added to other past, present and reasonably foreseeable actions.

Direct impact - the impact is caused by an action that occurs at the same time and same place as the activity.

Drainage - artificial or natural removal of surface water or groundwater from a certain area.

Environmental Impact Assessment (EIA) - a document prepared to analyse the impacts of a proposed action and released to the public for review and comment.

Ecosystem - a dynamic complex system of plant, animal and microorganism communities and the non-living environment, interacting as a functional unit.

Invasive species - non-native plants and animals whose introduction may cause economic or

environmental harm. **Impact** (or effect) - a modification of the existing environment caused by an action of the project. **Mitigation** - the reduction or abatement of an impact to the environment. **Sedimentation** - the result when material is transported by water, wind, gravity or other means and deposited in bodies of water or on land. **Tailings** - those portions of washed ore that are regarded as too poor in value to be treated further. **Waste rock** - a layer of rock containing low concentrations of ore.	

MODULE 6. ENVIRONMENTAL IMPACT ASSESSMENT

Learning objectives

Upon completion of this module, the participants will be able to:

- Understand the key principles of the Environmental Impact Assessment (EIA) process, the terminology and methods used in EIA,
- Identify the diversity of likely impacts and draw meaningful conclusions from an EIA study,
- Understand the role of EIA in decision-making process, particularly relating to mining development,
- Understand the current EIA trends and practices in Mongolia, including challenges and key knowledge gaps

Overview

Environmental Impact Assessment (EIA) is a tool that helps to systematically identify, predict and evaluate the environmental impacts of proposed actions and projects. EIA is not a form of bureaucracy to complicate businesses. It is there to assist companies and local governments in managing environmental impacts of mining effectively. Active engagement and participation in EIA process is also a responsibility for community, local government and NGOs. This module discusses the objectives and purposes of different forms/stages of EIA and various roles and functions of relevant stakeholders. The module highlights the recent legislative requirement in Mongolia to ensure community participation in EIA processes, which solidifies the role and responsibility of local communities (public) in improving environmental management in mining.

The module offers opportunities to 'learn-by-doing' for participants through group exercises on:

- Identifying common challenges in implementing EIA processes in an example site/region.
- Discussion on flow charts, exchange of experience
- Role plays in hypothetical scenarios or real life cases

Specific topics discussed in this module are:

- EIA objectives and process
- Public participation and transparency in EIA
- EIA outcomes and limitations
- EIA system in Mongolia
- Process and decision making of EIAs
- Public participation in EIA in Mongolia

Suggested timetable

- Overview of EIA (25 minutes)
- Group activity (15 minutes)
- EIA in Mongolia (30 minutes)
- Group activity (20 minutes)

Training materials

Lecture notes	Suggested presentation slides
Overview of EIA (25 minutes) EIA purpose and objectives An Environmental Impact Assessment (EIA) is a tool that helps to systematically identify, predict and evaluate the environmental impacts of proposed actions and projects. EIAs are conducted before any permissions for proposed mining projects are granted. An underlying objective of an EIA is to prevent or mitigate any adverse impacts that may result from undertaking an action or a project, over the life of the project as well as beyond it. An EIA has two sets of objectives: immediate/ short-term and ongoing/ long-term. The short-term objectives relate to the project in question. On the one hand, an EIA helps policy makers take decisions on the basis of improved understanding of environmental impacts from proposed projects, while on the other hand, it aids mining companies by providing them with information necessary to take actions to mitigate or address these impacts. The long-term objectives allow keeping a broader perspective on development and ecosystems, as well as resources provided by the ecosystems and communities dependent on these ecosystems. The following table provides more detail on each set of objectives:	

Short-term objectives of EIAs	Long-term objectives of EIAs

Optimise resource use	Safeguard resources and their usage over the long-term
Identify likely impacts and address or mitigate negative impacts	Contribute to sustainable development by avoiding irreversible damage to the ecosystem
Inform decision-making based on current and expected planning scenarios	Generate positive outcomes for human health and security
Bring together multiple stakeholders to contribute to impact identification, assessment and management	Increase project's social acceptability and use it to build social capital

EIA process

There are eight basic steps involved with every EIA process. These are:

- Screening

This is the first step before launching an exhaustive EIA study. It allows a closer examination of not only the project proposal but also legal requirements of the land in which the project is based and the depth and rigour of EIA required depending on the nature and severity of likely impacts. Screening also provides an initial understanding of the key stakeholders who may have a voice in the decision-making process relating to the proposed project.

- Scoping

This stage allows elucidating current (baseline) and alternative scenarios, including initial impact identification; identifying and informing stakeholders likely to be affected; drawing up project boundaries; and gathering information needed to establish a clear set of Terms of Reference (ToRs) for the study.

- Analysing impacts

This step helps identify the full range of impacts, including sources of these impacts. In addition, this stage in the EIA process helps assess and evaluate the severity of identified impacts. Among other things, this requires a clear understanding of impact significance to allow comparing alternatives, and considering mitigation and compensation options. Impacts can be short-term or long-term, direct or indirect, positive or negative, or cumulative in nature.

- Mitigating impacts

This step essentially looks at making the most of the current situation by eliminating, and if elimination is not feasible, minimising negative impacts. It is here that stakeholders are clearly identified and each actor's institutional responsibilities for undertaking mitigation plans are considered. An implementation schedule is prepared to meet deadlines and manage reporting procedures.

- Reporting

Reporting in a clear concise manner is fundamental to informed decision-making. A comprehensive report comprises an executive summary, an Environmental Impact Statement, description of the proposed project, baseline data, assessment of significant risks and or expected impacts, mitigation options, and recommendations.

Effective and transparent community engagement and communication is critical for the EIA process. The following example shows the risk and cost of mismanagement of the process.

Environmental Impact Assessment of Conga project in Peru

In October 2010, the Ministry of Energy and Mines of Peru approved Environmental Impact Assessment (EIA) of a mega-gold project in Peru, located 73 km northeast of the city of Cajamarca at about 4000 m above sea level at the headwaters of multiples rivers. The project, called 'Conga', was planned as an investment of US$ 4.5 billion. It originally involved removing four lakes and replacing them with four man-made reservoirs and was expected to create 5000 jobs. Immediately thereafter, local opposition movements declared that the EIA was socially unviable. First, they did not believe that the reservoirs would ensure the necessary supplies of water for human and agricultural use. Second, as a consequence of the owner company's previous controversial operations in Peru, they did not trust the company to operate the Conga project without polluting the environment. In July 2011, the Regional President of Cajamarca joined the communities' protest. In September 2011, with the company maintaining its firm intention to implement the EIA as approved by the National Government, local communities declared that the Conga project would not, under any circumstances, receive a 'social license' to proceed. In November 2011, due to the rising protests and at the request of the Government, the company halted project operations. Among other problems related with the EIA, there were deficiencies in communication within stakeholders. A lot of the miscommunication in this case came down to the report's lack of using simple

lay language to communicate findings. Over-reliance on complex graphs, indicators, etc. prevented effective interaction between consultants and end-users. According to a review of the EIA, the electronic version of the EIA contained at least 9,030 pages. However still, the most important information was scattered in a disorganized fashion throughout these pages, with very little efforts or recognition to make critical information available for the public in easy-to-understand tables, figures and jargon-free Executive Summary.

(References: Fiorella Triscritti. 2013. Mining, development and corporate–community conflicts in Peru. Community Dev. J. 48: 437-450)

- EIA review

The review, conducted by the regulator, serves to assess if the EIA report provides adequate knowledge on the range of potential environmental impacts from the proposed project. It provides a timely opportunity to ensure stakeholder input is considered, recommendations made are both scientifically as well as practically feasible, and compliance with existing legal and regulatory requirements is in place. The review can also be helpful in highlighting gaps in the assessment that may call for further investigation and alternative methodological pathways.

- Decision-making

EIA has a fundamental purpose of evaluating options, identifying varying impacts and informing decision-making by the regulator on whether the mining project should go ahead. EIA provides guidelines for both the decision making body as well as other stakeholders involved in the project. Active consultations through the EIA process, right to appeal the decision, and transparency in decision making with all information made publically available are examples of tools and principles that help achieve a robust and objective decision.

Transparency in decision making during the EIA process is essential to ensure effective public participation and monitoring and securing a 'social license to operate'. The following example outlines ways to ensure the EIA process is transparent and EIA decisions and reports are open for public comments and appeal.

Environmental impacts assessment in Western Australia (WA)

Internationally, the EIA process in WA has been acclaimed as one of the most comprehensive and effective systems. Overarching objectives for EIA in Western Australia are outlined in the Administrative Procedures. Environmental Protection Agency's assessment report and recommendations on a proposal are publicly available (free of charge). The decision by the Minister for Environment is made available to the public in the Agency's library. The EIA process uses a combination of strategies identified below, thereby providing several opportunities for public participation and easy access to information:

- screening decisions of the Agency are published weekly
- for projects that are formally assessed, the period of public review and information on how the public can obtain copies of the EIA documents is recorded in the advertisement
- any member of the public can appeal against the screening decision of the Agency and the level of assessment can only be increased
- a public review period of 4–10 weeks occurs for all proposals formally assessed
- summaries of public comments are provided to the proponent and they are required to respond
- the public comments and proponent's response are included in the Agency's assessment report
- the Agency's report and recommendations to the Minister is publicly available
- any member of the public may appeal the Agency's report and recommendations prior to the Minister making a decision
- a record of the Minister's decision is publicly available.

Angus Morrison-Saunders and John Bailey. 2000. Transparency in environment impact assessment decision-making: recent developments in Western Australia, Impact Assessment and Project Appraisal, 18:4, 260-270, DOI: 10.3152/147154600781767321

- Monitoring, audit and internal review

Implementation of environmental impact mitigation actions is a key component of the EIA process. Monitoring and audit are post-EIA steps to ensure that the Environmental Management Plan developed as part of the EIA to address and manage expected impacts is implemented with due diligence. Mining companies should also conduct regular internal review of the EIA to provide updates and identify any unexpected occurrences that may have been missed in the initial assessment.

The role of public participation

Public participation is critical both through the various stages of the EIA process, as well as during

advocacy and scene-setting before and after the formal EIA process. It can be done using a number of approaches, including public hearings, consultations, focus group discussions, and typical research tools such as Participatory Rural Appraisal.

Ultimately, EIA findings aim to mitigate or address likely impacts that may result from a project going ahead. These impacts not only affect the environment but also communities and the wider public that either inhabit this environment, or depend upon it for livelihood generation directly or indirectly. It is therefore, extremely important that the public – which is in better sync with local conditions and priorities for development – is involved following a comprehensive approach.

- Typical EIA outcomes

When undertaken in a robust, transparent and efficient manner, EIAs can provide valuable information for the proponent, governments and local communities. Typically, an EIA is able to advise:

- situations when a project must not go ahead due to serious irreversible impacts on environmental conditions that cannot be compromised.
- how to modify proposed project design and process to reduce any negative impacts
- inform decision-making based on sound data collection and empirical findings
- most suitable development option to maintain long-term environmental sustainability
- range of mitigation options and corresponding in-depth analysis of how each option may result differently
- compliance with current environmental standards, thereby resulting in greater environmental good
- cost optimisation as EIA applies an 'anticipate and avoid' approach, lowering unplanned expenses for any impacts that may be unaccounted for.

EIA limitations

In some cases, EIAs may face several challenges. These mostly arise due to the following reasons:

- Failing its good intentions and objective approach, there are examples from real life cases across the world where EIAs have been unable to 'stop' a mining project despite the presence of a comprehensive assessment of negative impacts likely from the

project

- Follow up on impact management and mitigation can be challenging, particularly in regions where governance structures remain weak and agencies do not follow stringent regulations of compliance and necessary follow-ups.
- EIA is increasingly becoming mandatory for large scale projects. However, for many smaller projects in developing regions, time and budget constraints prevent a comprehensive EIA process. In many of these settings, EIAs maintain a certain 'tokenistic' value, and therefore do not translate into long-term positive development.
- EIA is an important – but just by itself, an insufficient – planning tool. The mere presence of an EIA activity does not guarantee that the proposed project will have no negative impacts during the length of the project and beyond. EIA is, to that extent, not a magic bullet
- Ensuring widespread public participation is not easy, particularly from within groups that have conventionally had a 'lower' voice. These would include poorer households, female-headed households, the elderly and remote communities who may not be fully aware of the scale of the proposed operations.

Integrated assessments

Integrated assessments are becoming increasingly common. The most common type of integrated assessments is Environmental and Social Impact Assessments (ESIAs), They integrate social, cultural, economic and ecological changes in their analyses with the objective of identifying, and subsequently managing inter-relationships, cause-effect linkages and multiplicity of impacts. Integrated assessments further enable policy and decision makers to identify trade-offs, and appropriate leverages that need to be considered to achieve the overarching purpose of sustainable development. Integrated assessments allow greater impetus for stakeholder involvement as these assessments cut across sectors that have traditionally been dealt with in silos, using methodologies that were negligent of causal impacts resulting across other aspects. It therefore, motivates actors to get together for dialogue and partnerships to address common concerns and mitigate shared impacts.

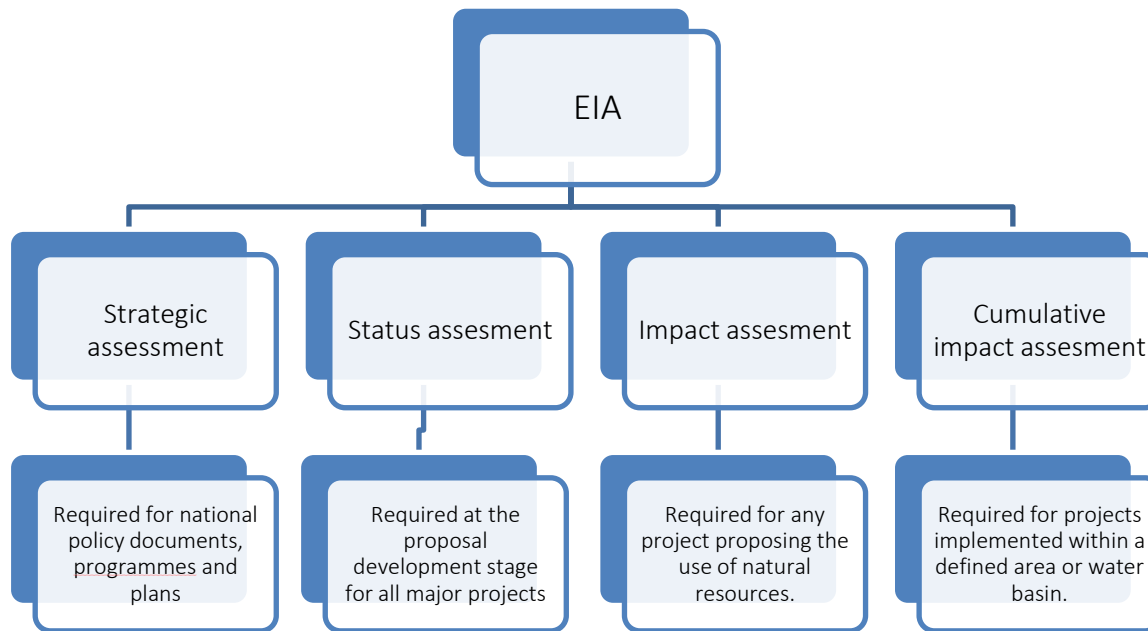|	
Recent developments have brought to attention assessments that go beyond the three pillars of sustainable development (social, economic and environmental) to focus on impacts on health (Health Impact Assessment), human rights (Human Rights Impact Assessment) and gender (Gender Impact Assessment).	
Group activity (15 minutes) Organise participants in pairs and ask to use information provided above to draw together a flow chart (sequential order) of the various EIA steps.	
EIA in Mongolia (30 minutes) The Mongolian Law on EIA was amended in 2012. About 80 percent of the provisions of the previous version of the law (1998) was revised and amended in accordance with international standards and good practice on the EIA. The Mongolian Law on EIA defines it as a process of prior identification of possible adverse impacts, and measures to mitigate and eliminate these impacts from a particular project on the environment, to be implemented by individuals, business entities and organizations (Article 3.1.6). The EIA includes four types of assessments (Article 4.1): • Strategic environmental assessment • Environmental status assessment • Environmental impact assessment • Cumulative impact assessment The following graph summaries the functions and procedures for conducting these assessments.	

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(Adapted from Oyunaa Lkhagvasuren. 2015. Impact Assessment: Story of Mongolia. The IAIA Proceedings. http://conferences.iaia.org/2015/iaia15_proceedings.php)

General and detailed EIA

Under the Law on EIA, all projects or development initiatives, whether new or renovation/expansion, are subject to General Environmental Impact Assessment (GEIA) or environmental screening prior to implementation. For mining projects, the Ministry of Environment and Green Development and Tourism (MoEGDT) conducts the GEIA. The project proponent is required to submit the following for screening by the appropriate authority:
- project description
- technical and economic feasibility study
- working drawings and
- other relevant documents.

Detailed EIA

GEIA screening takes a minimum of 14 days and makes one of the following decisions:

- The project is rejected on grounds of non-conformity with the relevant legislation, or adverse impact of the equipment and technology on the environment, or absence of the project in the land management
- The project may be implemented without conducting a detailed environmental impact assessment (DEIA), but pursuant to specific conditions
- The project would require a DEIA

The below graph illustrates the potential decisions from GEIA screening and follow up processes.
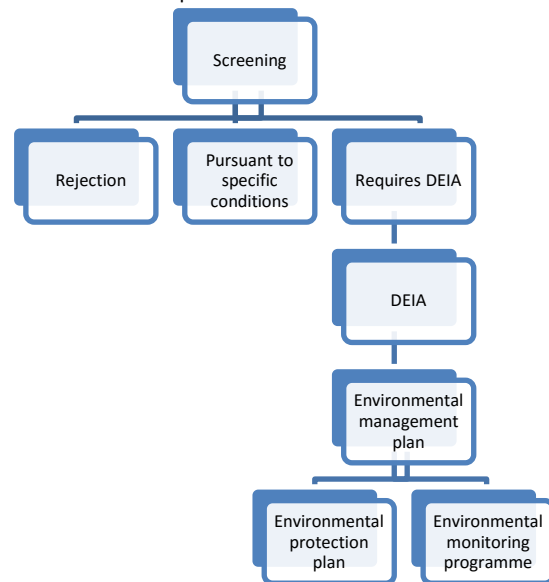
If DEIA is required, the project proponent should contract a MoEGDT-registered professional entity to conduct the DEIA. The entity should develop the DEIA Report, which should have the following contents (Article 8.4):

- Environmental baseline data of the environment in which the project is proposed to be implemented
- Estimations and findings of studies that are conducted to identify potential and major negative impacts of the project and establish their magnitude, spatial extent and consequences.
- Recommended measures to mitigate and eliminate potential adverse impacts
- Recommendations for alternative methods and technology that may potentially reduce the pollution level expected from the proposed project and for the uptake of environmentally-friendly methods and technology
- Risk assessment of impacts of the proposed project on human health and the environment if the general environmental impact assessment requires doing so
- Discussion of mine closure activities, objectives, scope and indicators of restoration measures and details of ex-situ conservation measures for petroleum, and mining projects and radioactive minerals projects
- Discussion of objectives, scope and indicators of environmental management plan
- Minutes of public consultation meetings with local authority and community likely to be affected by the proposed project and feedback comments on prior information provided
- Discussion of cultural heritage issues in the project area
- Formal comments from the project proponent

Under the law, the professional entity should submit copies of the DEIA Report to the MoEGDT, the project proponent, and the 'host' *soum* administration. Article 8.8 of the law states that environmental rangers, GASI inspectors, Governors of all administrative levels, and MRAM should oversee whether the DEIA was carried out by the project proponents and the professional entity. The DEIA is submitted to the MoEGDT for review, which is expected to come up with a conclusion within minimum 18 working days. The Ministry may appoint an in-house or external expert to review submitted EIA reports for approval. The Ministry has a professional Council responsible for reviewing the expert's conclusion, the DEIA Report and EMP and making final conclusions to be submitted to the MoEGDT. According to the Regulation on conducting an EIA approved by the Government of Mongolia (http://www.eic.mn/legalinfo/upload/2013/talegalannex/20131116_5713_462.pdf), the Ministry's Council makes one of the following conclusions:

- An approval with conditions that the project proponent will make necessary revisions
- A rejection for the reason that the DEIA does not adequately address the required costs of impact management and needs additional research
- A rejection for the reason that the project will cause serious harm to the environment and human health

The final decision on the DEIA is approved if the MoEGDT's Senior Expert, who is also a member of the Council, signs the Council's decision.

Public participation in EIA in Mongolia

The MoEGDT approved "The regulation on public participation in the EIA" in 2014 (http://www.legalinfo.mn/annex/details/6169?lawid=9746) Under the regulation, the MoEGDT should disclose information about the projects that carried out an EIA on its website. Article 1.5 of the regulation states that Environmental Management Plans should be publicly accessible. The table below summarises responsibilities of all relevant parties for ensuring public participation in conducting and implementing different types of EIAs as defined by the regulation.

Strategic assessment — • The professional entity and the relevant government ministry should disseminate adeqaute information and receive public comments (minimum21 days)	
Cumulative assessment — • The professional entity should receive comments from local stakeholders and organize open consultation meetings.	
GEIA — • Local government should publicly disclose information about a proposed project	
DEIA — • At the scoping phase of an DEIA, the professional entity should organize public meetings and receive citizens' comments through a participatory assesment method. • At the assesment phase of the DEIA, the professional entity should organize consultation meetings and conduct surveys • The professional entity should present the DEIA Report and a summary of public comments to the 'host' bagh and soum Khural meetings to receive feedback • The professional entity should incorporate opinions of affected communities in developing a Environmental Management Plan • The soum and bagh administration and the Department of Environment of aimags are responsible for ensuring public access to approved DEIA Reports. • The project proponent should present an implementation report of the EMP to local host communities and citizens at least once a year.	
Group activity (20 minutes) **Option One:** EIA challenges Organise yourselves in pairs and consider, based on the discussion above, what key challenges currently remain in Mongolia's use of EIA as a policymaking instrument. List down 3 such challenges and identify 3 improvements that may further need to be made to allow the EIA process and its outcomes to inform effective policy in the country. **Option Two:** Role play Consider the following situation: A foreign company has just completed an exploration activity to mine gold in the *'paradise' soum* of Bayankhongor province. Exploration results have been positive and the company would now	

like to approach the governments – both central and *aimag* – to seek mining license to set up an open-pit gold mine and start the operation by January 2018. The expected production from this proposed mine is approximately 200,000 ounces of gold per year for the duration of the mine, which at this stage is expected to be 25 years. The proposed mine site is 8 kilometres from the *soum* centre.

The company has approached some investors and lenders to support the development of this mine. However, to comply with the national legal requirements for EIA in Mongolia, the Ministry of Environment, Green Development and Tourism (MEGDT) has notified the developer that an EIA is required for a project proposed at this scale. At the same time, community around the *soum* centre are also nervous about this development; if the project goes ahead, they believe it will have significant impacts on their livelihoods, livestock as well as health.

Organise in groups of 4. You are asked to imagine that within your group there is a proponent/ developer, working alongside a consultant, a member of the local community who is a herder by profession and lives in the *soum* centre and therefore has concerns about the project, and a MEGDT representative.
The EIA law in Mongolia requires that all those with concerns should be consulted and all concerns addressed appropriately so that their concerns can be addressed during the study.

The group is required to carry out scoping for this proposed project, identify key impacts and how these impacts will manifest on the ground in terms of effects on ecology, biodiversity, human settlements and animals.

Exercise report back
Each group will have 5 minutes to a) identify top 4 impacts likely to be experienced, b) who will be most affected by these impacts, and c) suggest 1 measure for each impact that can be implemented to either mitigate the impact or lessen the damage that it may cause over the course of the mining operation or modify the project.

Take the final 1 minute to end your discussion with your decision on the project's future (*choose only one* from the following three options): a) go ahead with changes, b) not go ahead as impacts

too many, too strong, and irreversible, c) go ahead and no significant change of plan/ approach required.	
Suggested readings Glasson, J., Therivel, R. and Chadwick, A. Introduction to Environmental Impact Assessment. http://www.inforse.org/doc/Final%20EIA%20Training%20Resource%20Manual%20(a).pdf UNDP. 2011. Mongolia Human Development Report. From Vulnerability to Sustainability Environment and Human Development. (In Mongolian) Ojima, D., Chuluun, T., & Altanbagana, M. (2014). Vulnerability and Resilience of the Mongolian Pastoral Social-Ecological Systems to Multiple Stressors Vulnerability of Land Systems in Asia (pp. 27-40): John Wiley & Sons, Ltd. **Useful online resources** UNU. Open educational resource on Environmental Impact Assessment (EIA) http://eia.unu.edu/course/images/Generalised_EIA.pdf ELAW. 2010. Guidebook for Evaluating Mining Project EIAs - complete Guidebook (English & Russian) https://www.elaw.org/mining-eia-guidebook	
Glossary of key terms and concepts **Environmental Impact Assessment (EIA)** - assessment of the effect of an action or project on a local or regional environment. **Environmental audit -** a systematic approach to determining the compliance of an operation with prescribed criteria and standards. **Environmental impact** - damage on the environment caused by an activity. **Environmental management system (EMS)** - company's overarching management system related to environmental protection. **Environmental protection plan** - a document that describes the actions required to minimize environmental impacts of a project before, during and after project implementation. **Cumulative environmental impacts** - the environmental impacts that are likely to result from a project in combination with the environmental effects of other past, existing and future projects or activities. **Environmental monitoring** - continuous or frequent measuring and evaluating environmental	

| parameters in order to prevent negative impacts on the environment. | |

MODULE 7. WATER MANAGEMENT

Learning objectives

Upon completion of this module, the participants will be able to:

- Apply key principles of sustainable water management in mining into current practices
- Understand the impacts of mines on water quality, quantity and the strategies to manage impacts
- Read and assess basic indicators of water quality
- Know where to find information

Overview

Water is an essential and finite resource for communities, businesses and societies. Without water mines cannot operate. This module discusses the direct and indirect impacts of mining activity on water resources and the resulting implications on livelihoods, economies and wider society. The module aims to ensure that all relevant stakeholders have a common understanding about the nature of human-induced impacts as well as climatic and ecological influences on water resources. The module consists of lectures, facilitated discussions and group exercises that provide a detailed account of water management principles and how they are implemented in real life situations by analysing local and international case studies and sharing participants' own experiences

Specific topics discussed in this module are:

- The impact on mining on water quality, quantity and availability
- Pathways of mine impact on water and communities
- Importance of stakeholder participation and partnerships in water resource management
- Importance of regular monitoring of water quality
- Useful tools of rapid, *in-situ* water monitoring

Suggested timetable

- Understanding mine impacts on water resources (20 minutes)

- Group activity on participatory approach to planning water management (20 minutes)
- Water management strategies (30 minutes)
- Water monitoring (15 minutes)
- Review and discussion (5 minutes)

Training materials

Lecture notes	Suggested presentation slides
Understanding mine impacts on water resources (20 minutes) Mining and water The use of water in mining and impacts on water from mining operations can lead to serious environmental and social issues. Local communities close to mine sites are often concerned about the availability of water and potential water contamination. In some cases, water management is the most important and vexing issue that mining companies often deal with. In Mongolia, the negative impacts of mining on water have triggered protests and conflicts across the country over the past decade. For example, The Citizens' Representative Khural of Umnugovi *aimag*, where several large-scale mining projects exist, passed a resolution in July 2013 to prohibit groundwater use for mining purposes from 2016 onward. Though this resolution was suspended shortly, it indicated increasing public pressure to create stricter Laws and regulations for managing impacts of mines on ground water resources. Due to negative mining legacies from the past, governments, international bodies and communities are becoming increasingly demanding on mining companies to demonstrate a responsible and efficient approach to water use and management. For instance, UN-Water, an inter-agency entity of the United Nations, defined the following priority concerns about water management in mining: • Focus on water management to ensure that water is used efficiently and discharges are managed.	

- Negative long-term impacts on the environment from the various by-products of mining transported through water
- Mining can be the largest user of water within some catchments

Some possible solutions for challenges listed above include:
- An effective and enforceable legislative framework to plan, regulate and control water use and discharge in mining operations
- Site-specific water pollution prevention plans supported by regular water monitoring.
- Strong national policy frameworks for environmental and health impact assessments

(References: UN-Water. 2010. Water Issues: Contributing to the Success of the eighteenth and nineteenth sessions of the Commission on Sustainable Development. http://www.unwater.org/downloads/UN-Water_UNSGAB_CSD_18_19.pdf)

The latent water stewardship framework developed by International Council on Mining and Metals (ICMM) determined the guiding principles in managing water resources in mining industry.
- Be transparent and accountable. Water risks, management approaches and company performances should be open to public.
- Engage proactively and inclusively. Identify each stakeholder and understand their concerns, engage and communicate openly and provide opportunities for partnership approaches to mitigate risks.
- Implement effective water resource management. Manage water input, use, and output for the operation; improve efficiency measures in water use.
- Adopt catchment based approach. A management approach that realises the different users and their needs in a catchment and draw holistic view of impacts in a catchment or basin level.
-

(Reference: A practical guide to catchment-based water management for the mining and metals industry, ICMM, 2015. http://www.icmm.com/document/8329)

Mine water use

Ground water resources

Renewable resource
"the amount of water received from precipitatic surface water infiltration, ground water recharge"

Non-renewable resource
"the amount that trapped in deeper soil layers, which does not receive water from rainfall infiltration and groundwater recharge"

Water is required for and used in every stage of the mine life cycle. Mine water demand is consistent with the different phases of the life of mine. The peak in water use at a mine site is experienced during the operation phase. For example, water is required in the processing of minerals by using chemical solutions to recover gold and copper. Water is also required for cooling and other parts of mineral processing, for example in platinum and copper production. Water is used for dust suppression, most notably, for dust control on haul roads and waste dumps sites. For the latter purposes, water can be lower-quality, industrial water.

(Reference: Water management. Leading Practices Sustainable Development in Mining Industry, commonwealth of Australia, 2006. http://www.industry.gov.au/resource/Programs/LPSD/Pages/LPSDhandbooks.aspx)

Mongolia is located in arid to semi-arid zones with low precipitation (on average in Khangai region ~260 mm and in Gobi ~60 mm per annum) where the majority of annual precipitation is lost through evaporation due to high altitude and low humidity (Water Centre Mongolia, 2015). Ground and surface water systems are an interconnected natural system that is recharged by precipitation (snow and rainfall) and permafrost. Drainage and infiltration of surface water into the soil aquifer contributes to ground water. In this way, groundwater is a renewable resource. Water occurred in deep layers of soil is non-renewable resource as water is essentially trapped, not being recharged by precipitation or drainage from surface water. Although groundwater accounts for a small fraction of water resources in Mongolia (less than 2%), about 90 % of the water use in Mongolia comes from groundwater sources. Mining accounts for 55% of the ground water use in Mongolia. By contrast, surface water accounts for 98% of water resources. However, most surface water flows through isolated, remote areas with poor infrastructure for water capture and storage (Water Association, 2015).

According to a study conducted by the Asian Development Bank, annual water use in Mongolia, excluding withdrawals for hydropower, was estimated to be 321.0 million m^3/year in 2010. The agriculture sector was the largest consumer (31% for irrigation and 24% for livestock), followed by domestic and drinking water (20%), mining (13%) and energy-related thermal electric cooling (10%).

(References: Asian Development Bank. 2014. Demand in the desert: Mongolia's water–energy–mining nexus. http://www.adb.org/sites/default/files/publication/42820/demand-desert.pdf)

The guiding principle of Mongolian government in allocating renewable ground water resources is to balance between potentially available quantity and natural recharge capacity in a basin/area. For industrial activities, authorities perform "Ecological and economic assessment of water" along with supporting guidelines (Annex 2, Resolution 302, Annex, Resolution 327) to estimate the amount of available water that can be used without compromising ecosystem water balance.

Impacts on water

Mining operations can disturb the hydrological balance in a number of ways, with resulting changes causing both direct and indirect impacts on habitats and humans. The following graph outlines this process.

FACTORS

Proximity of a mine to water resources

Types of mineral to be mined

Mining and processing method to be used

Scale of operation

Emissions (solid, liquid and gaseous)

Climatic and geological conditions

Changes in water quality and quantity

IMPACTS ON

People (Surrounding communities and people downstream)

Habitats (Flora and fauna)

Water (River catchment – surface and groundwater)

(Adapted from Department of Water Affairs and Forestry. 2006. Best Practice Guideline A1: Small-Scale Mining (Standard Format). South Africa.
https://www.dwa.gov.za/mzimvubu/documents/IAP/Final/Appendix%20A%20Best%20Practice%20Guidslines.pdf)

Impacts on water quality

Surface water pollution with high levels of heavy metals, sediments and organic substances are common in river basins of mine regions. The pollutants disperse into the environment in two ways:

- *Point source*, if pollution is sourced from a single point, such as factories, households and sewerage.
- *Non-point source*, if pollution is caused by contaminants that have travelled a distance from where they were originally discharged or generated. Despite mines operating in a single location (immobile), they are considered 'non-point source' polluters since the pollutants travel far, dispersing into the environment through air, water and soil pathways.

Primary sources of pollution generated at/from mine sites can be a combination of:
- Uncontrolled discharge: Mine water discharge contains chemicals (e.g. mercury and cyanide) used for separation of minerals (e.g. gold).
- Surface runoff: Flooding from heavy rainfall carries pollutants from mine site to adjacent rivers and streams.
- Riverbed disturbance: Dredging for alluvial gold mine has adverse effects on river bed, exposing sediments and river bed and increasing turbidity (suspend soil particles and sediments in water). Microbial cysts (dormant/inactive stage) can be dug up from riverbeds which can flow into drinking water sources. Under favourable growth conditions (e.g. warm temperature, excess of nitrogen or phosphorus), microbes pollute water, causing gastrointestinal diseases to humans and animals.
- Seepage: mine waste containing high levels of contaminants may seep into ground water.
- Mismanaged chemical use (e.g. oil/fuel leakage, cyanide, mercury).

Water pollution affects human health and wellbeing through direct and indirect ways. For example, in the absence of appropriate natural lining, high concentrations of heavy metals and organic substances from mine waste and voids may gradually seep through the soil beneath and disperse into ground water. Heavy rainfall can wash processed water away from the site, if the site assessment and planning were inadequate or incomplete.

Water pollution by mines may also impact the food chain of biota and humans for generations. For example, high concentrations of lead and mercury in the rivers and lakes are taken up by fish, which would be consumed by humans later on. Chemical contamination of natural waters has long-term effect on the food chain and requires high cost and long time to clean up.

(Read more on mercury pollution in Mongolia's historical mining regions from WWF research http://awsassets.panda.org/downloads/mn_toxics_mining.pdf)

In Mongolia, the 'polluter pays' principle was introduced into the environmental protection legislation in 2012. The pollution source is assessed and identified as directed by the Law on Water Pollution Fee. Article 8.2.1 of the law also states that the government will waive water usage fees of the project developer, if the water is recycled or re-used. The amount that is waived is determined by the volume of water recycled or treated for re-use.

Impacts on water quantity

Water scarcity indicates situations when water supply becomes less than the demand. Water scarcity issues are interrelated to water quality deterioration as potable water supply becomes limited due to pollution.
Causes of low water supply and availability are:
- Unregulated river flow and channel diversion (surface mining and big infrastructure development)
- Land clearance at headwaters and river banks (riparian vegetation loss, cutting trees)
- Pollution and quality deterioration
- Increased use or overexploitation (multiple sectors)
- Limited accessibility (displacement of communities due to industrial development)
- Climate change (drought, slow recharge)

According to the Law on Natural Resource Exploitation Fee (2012), companies should comply with the requirements for obtaining Water Use Permit, establish water use agreements on an annual basis, pay water use fees and conduct water monitoring. As specified in Articles 27 and 28 of the Law on Water (2012), different fees and fee estimation factors apply for the nature of water use (industrial and manufacturing) or consumptive use (households, animal husbandry). The availability of water resources varies in different natural and climatic zones across Mongolia. Some regions and provinces charge higher fees on ground and surface water usage than others (Resolution 326, Annex, 2013, Law on Natural Resource Exploitation Fee, 2012). Ground water usage fee per m^3 is 2- 3 times higher than that of surface water.

For mining activities, water usage permissions granted on the basis of the volume (m^3) of water to be used per day. MoEGDT grants water use permissions by comparing purposed use with estimated available use in the area that is safe to ecosystem water balance (Law on Water, 2012). The corresponding government department should monitor to ensure that mining companies do not exceed the allocated amount. The measures of control include equipment capacity (e.g., water pump), water usage meter installed onsite, designated personnel for water management and other terms specified on the Water Use Agreement between local government (*soum*) and mining company. The above requirements are applicable to any mine site, if water use is more than 50 m^3 per day (Articles 30, 31, Law on Water, 2012). If mine water use exceeds the amount allowed, usage fee increases by 50% per m^3. The Water Use Agreement is reviewed local government on annual basis.

Group activity (20 minutes)

Ask participants to work in small groups and do the following tasks:

- Show video/image of a catchment where people operate a placer gold mine at 60ha area with 15 people on site.
- Identify risks and impacts of the operation on water resources.
- Develop a at least 2 strategies to mitigate or avoid the impact
- Report back and discuss

Water management strategies (30 minutes)

The overall objectives of water resources management are:

- To avoid, minimise and mitigate mine impacts on water quality and availability.
- To allocate water resources to different users in the basin
- To maintain the balance between demand and supply.

Within these objectives, water management in mine regions consists of two components:

- Integrated Water Resource Management (IWRM)

IWRM is a coordinated approach to management of water and related natural resources. In Mongolia, the MoEGDT has introduced IWRM policies and established 29 River Basin Authorities (RBAs) since 2009. RBAs oversee River Basin Councils (RBC), which can include the authorised government, citizens' representation and administration, environmental and professional inspection agencies, agriculture, industry, citizens, researchers, rangers, and NGO delegates. According to the Law on Water (Article 20), the RBC shall exercise certain legal powers, such as advising on the establishment and the withdrawal of water rights, mineral exploration and mining permits, formulating and monitoring water use plans, and assisting in the monitoring of Environmental Impact Assessments (EIAs).

(References: UNEP. 2014. Towards Integrated Water Resources Management International experience in development of river basin organisations.
http://www.unep.org/disastersandconflicts/portals/155/countries/Sudan/pdf/SudanWRM.pdf)

- Mine (site) water management

Mining companies conduct activities in accordance with government policies and legislations while the government is responsible for coordinating policy development, implementation, monitoring and evaluation and improving management effectiveness. Mining companies should establish internal management system for planning, financing, implementing, monitoring, and assessing the effectiveness of their water management approaches.

Mining companies should avoid, minimise and mitigate mine impacts on water quality and availability. To achieve this objective, mines may choose the following measures:
- Develop impact mitigation methods (Environmental Management Plan) based on EIA or baseline assessments
- Conduct regular monitoring and review exercises (onsite and offsite)
- Employ environmentally sound and water-efficient technologies through various stages of the mine lifecycle.

A risk-based approach is an important first step for mines to identify the sources of water pollution and dispersion pathways; and to assess the potential consequences on the receiving environment. Regular monitoring of the quality of mine water onsite (e.g. ponds, discharge) and

natural water bodies downstream are the cheapest and the most effective way to prevent water pollution (See more for below sections).

Leading mining companies currently comply with the following principles on water management throughout their project lifespan:

- **Reduce** fresh water use, waste water discharge offsite
- **Recycle**/re-use water by using processed water for dust suppression or treat processed water
- **Store** water surplus from shallow aquifers, rainfall
- **Avoid** pollutant discharge from waste streams (tailings and processed water)

To achieve the above, mining companies adopt a number of measures, including those identified below:

- Storage water surplus (dewatering) for use onsite or by the local community (if quality conforms to recommended standards)
- Reclaim riparian vegetation that was cleared or eroded during mining to boost hydrological systems
- Invest in or upgrade infrastructure such as facilities for recycling of used water (treatment plants). Paved roads and hand wells can improve clean water access to local community and reduce mine footprints (*e.g.,* pasture fragmentation by haul roads).
- Build levees and channels to remove excess water (flooding, surface runoff, water erosion)

Coordination and partnerships with local stakeholders is important for mining companies in effective water management. Investment in water infrastructure can improve livelihoods of surrounding community and create partnerships with local government and communities (Read Case study 1). Aligning company's social responsibility policies with local government`s long-term development plans is critical in creating effective partnerships. Also, coordination across mining companies operating in the same region is important to address cumulative impacts and encourage good practice. This will also allow for costs and resources to be shared, for example for water quality monitoring and protection efforts. The voluntary water management code

Mine site level water management

Mine site water policy
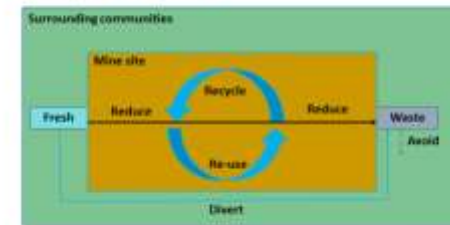
initiated by the International Financial Corporation (IFC) in Mongolia's Umnugovi *aimag* is a good example of emerging company-level partnerships in water management (Read Case study 2). Oyu Tolgoi LLC, Energy Resources LLC and Areva Mongol LLC have implemented shared participatory approaches to build positive community relations that will, in turn, create shared value with their stakeholders (Read Case study 3).

Water monitoring (15 minutes)

By law, mines are obliged to conduct regular monitoring on chemical properties of both onsite (sedimentation ponds, voids, tailings dams) and offsite water to control and maintain acceptable quality standards (e.g. non-polluting). The objective of monitoring offsite (downstream) water quality is to ensure that natural water sources surrounding the mine site remain safe for human consumption and wildlife. Water monitoring samples are taken by scientifically verified methods, involving field and laboratory based analyses. Careful planning around seasonal variations and choice of appropriate sampling points and frequency are crucial for obtaining reliable data and information.

Soum environmental officers should conduct mine inspections to ensure whether company data is collected using appropriate methodology (Law on Water, 2012). Mines should conduct monitoring as part of their EMP and report the results to government authorities annually.

Monitoring water quantity
Water quantity information is significant for decision- and policy making for regional and national socio-economic development and environmental protection. Water level, sedimentation and flow data are used for predicting future demands as well as influencing social and environmental sustainability.

Monitoring water quality
Water quality is determined by chemical, biological and physical (turbidity) properties of water. The key water quality measurements are: pH, electric conductivity, suspended solids (turbidity) and dissolved oxygen. In addition to these, fish and invertebrates are commonly used as both

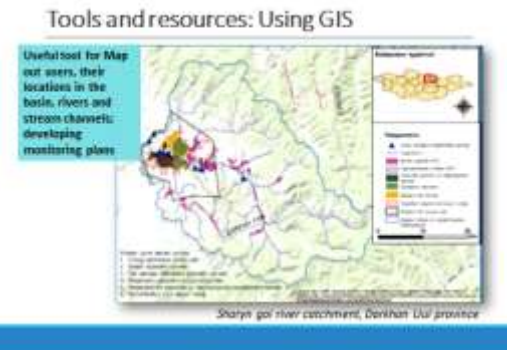Tools and resources: Monitoring water quality

Turbidity (NTU)

Basic water quality and pollution indicators

measure and indicator of water quality. MNS 0900:2005 MNS 6148:2010, MNS ISO 5667-10:2001 are guiding standards for monitoring water quality. It outlines acceptable levels (i.e., safe to environment and human health) of water quality indicators in both drinking water (Section 5.4.1, 5.5.1) and water discharged from industrial activities (Section 5.5.3). According to quality standards, water quality measurements should be conducted twice a month in any settlement area with population up to 5000, and 5 times a month in areas that have populations in the range of 5001-10,000 inhabitants.

Using visual or low-cost, easy-to-learn data collection techniques in water quality monitoring is an easily transferrable skill to mining company employees or community members who may have no prior technical experience in water monitoring. Visual measurements stated in Resolution 326, Annex 2, together with pH and electric conductivity can be measured by non-expensive test kits onsite (availability permitting). Smart phone cameras are useful for geotagging location and coordinates of visual observations and data. However, reported images must be credible and honest. Another useful tool is Geographic Information System (GIS), which is commonly used in mapping water users (herders, mines) and developing monitoring plans. Mongolia's national Environmental Information Centre (www.eic.mn), administered by MoEGDT, is an online database for maps and real-time monitoring for ground water resources across Mongolia.

Tools and resources: Using GIS

Useful tool for Map out users, their locations in the basin, rivers and stream channels; developing monitoring plans

Sharyn gol river catchment, Darkhan Uul province

Case studies

Case study 1: Public-private partnership in infrastructure development.
Freeport-McMoRan's Cerro Verde mine (copper molybdenum), Arequipa, Peru. The mine partnered with local government and civil society groups in building a water treatment plant under its social responsibility agreement. Chili River is the nearest fresh water source for the residents of the city of Arequipa, surrounding farmers and the mine. The river was polluted due to under-capacity sewerage treatment system in Arequipa. The mine funded and designed a water treatment plant that could provide potable water to the surrounding community (currently 300,000 people). The significance of the new treatment plant was that it contributed to a significant reduction of water pollution from urban waste.

(References: ICMM. 2015. A practical guide to catchment-based water management for the mining and metals industry. http://www.icmm.com/publications/water-management-guide)

Case study 2: Industry initiative in water monitoring and reporting.

The IFC initiated a joint Code of Practice in 2015, involving 8 mines operating in Umnugovi *aimag*. Thirteen mining companies operate in this scarce water environment (annual rainfall <60 mm). Coordinated management of mine impacts on water resources was necessary to improve impact mitigation, monitoring efforts and stakeholder engagement. The broader significance of this initiative was to assist the government's goal to implement integrated water resource management plans. A joint code signed by 8 companies aims to facilitate:

- Environmental monitoring and reporting
- Regular information exchange and communication
- Community engagement
- Sharing of experiences and learning lessons and success stories from all perspectives-water, environment, social and community-relations
- South Gobi Water and Mining Roundtable discussion

(References: IFC. 2014. Water, mining and communities.
https://commdev.org/userfiles/IFC_140201_Water%20Mining%20Communities_0519c%20web.pdf)

Case study 3: Community participation in water monitoring.

Rio Tinto's Oyu Tolgoi Mine (copper gold) is located in Khanbogd *soum*, Umnugovi *aimag*, Mongolia. The mine implements a participatory approach in the water monitoring program of the project as part of its Participatory Environmental Monitoring Program. The mine provides equipment (GPS, cameras, tape measures), trains and hires herders to take and record measurements and visual observations. This data is then reported and consolidated with the data collected by the company`s environmental department. Through local community engagement, mine's environmental staff are able to acquire additional data informed by engaging local knowledge on weather patterns, community seasonal movement patterns and wildlife. Being involved in monitoring, herders understand the climatic, environmental and human factors affecting pasture quality, water and biodiversity. The company reports monitoring results to the local government and the community at *bagh* and government meetings.

(References: _http://ot.mn/participatory-environmental-monitoring/_; IFC. 2014. Water, mining and communities. _https://commdev.org/userfiles/IFC_140201_Water%20Mining%20Communities_0519c%20web.pdf_)

Review and discussion (5 minutes)
- Who are the key stakeholders in water management in your region?
- What is (are) the key missing element(s) in responsible water use in your _ag_?
- Name one issue on which miners, local government and herders can work together to improve current mine water use in your _soum/aimag_? How can each party contribute?

Suggested readings and online resources

Handbook on calculating water tariff and payments, Building Integrated Water Management in Mongolia project publications (Mongolian), MoEGDT. 2012. http://www.riverbasin.mn/
ICMM. 2015. A practical guide to catchment-based water management for the mining and metals industry. https://www.icmm.com/document/8329
IFC. 2014. Water, mining and communities: Creating shared value through sustainable water management, white paper. https://commdev.org/wp-content/uploads/2015/06/Water-Mining-and-Communities-Discussion-Draft.pdf

Glossary of key terms and concepts

Basin or Catchment - a drainage basin or catchment basin is an extent or an area of land where surface water from rain, melting snow, or ice converges to a single point at a lower elevation, usually the exit of the basin, where the waters join another waterbody, such as a river, lake, reservoir, estuary, wetland, sea, or ocean.
Mine voids – last remaining open cavity on land. Void forms after the completion of mine rehabilitation as uses rocks and soils are used for backfilling the open pits progressively during the operation.
Sedimentation pond – a temporary pond that prevents excess of water discharge from mine site (dewatering or runoff) until the suspended particles and debris are settled at the bottom.

| **Seepage** – drainage of water from pore space between soil and tailings particles
Dewatering – some ores occur at or near to the ground water table. In order to gain access to the ore water needs to be pumped out or 'dewatered' and collected into a pond for further use onsite.
Water balance estimation - the estimation and assessment of potential surface and ground water resource and accounting for the current and future water consumption and utilisation.
Onsite water management – holistic land and water use management system that ensures water do not discharge into adjacent environment from the mine site.
Mine water discharge – water or slurry from mineral processing disposed offsite.
Ground water recharge – a hydrological process in which water moves downwards from soil surface to lower layers.
Polluter-pays principle - the polluter should bear the cost of measures to reduce pollution according to the extent of either the damage done to society or the exceeding of an acceptable level (standard) of pollution. | |

MODULE 8. MINED LAND REHABILITATION

Learning objectives

Upon completion of this module, the participants will be able to:

- Understand importance of planning rehabilitation in relation to different mine life phases
- Define rehabilitation objectives and progress indicators
- Identify key steps involved in mine rehabilitation and closure
- Know where to find more information

Overview

Examples of mines that were not "closed" properly, or ran out of money before completion of rehabilitation of mined land can be found in many countries. Responsible mining requires successful mine rehabilitation, which is a result of careful planning, due diligence in implementation and monitoring of progress towards the completion. Rehabilitation is a process that should occur throughout the life of a mine. This module examines the key steps and processes in planning and conducting mine rehabilitation. In the first part of the module, the participants will learn the main components of planning for successful mined land rehabilitation. The second part of the module examines mine rehabilitation process and monitoring.

Specific topics discussed in this module are:

- Mine closure and mined land rehabilitation
- Rehabilitation planning
- Land use after mine closure
- Rehabilitation process and community participation
- Financial assurance
- Monitoring

Suggested timetable

- Mined land rehabilitation: Planning and assurance (30 minutes)

- Rehabilitation process (20 minutes)
- Group activity on rehabilitation process (10 minutes)
- Rehabilitation monitoring (15 minutes)
- Group activity on rehabilitation planning (10 minutes)
- Review and discussion (5 minutes)

Training materials

Lecture notes	Suggested presentation slides
Mined land rehabilitation: Planning and assurance (30 minutes) Mining is a temporary form of land use. All mines eventually close; some close at a planned time, while some close prematurely due to economic, social, environmental and/or political factors (read more about the life of a mine in Module 1). Mine closure means a permanent cessation of operation, including the relinquishment of tenement. The process of closure consists of decommissioning mineral processing facilities, removing and disassembling built structures and rehabilitating the mine-affected land. All of these processes must comply with specific requirements set by the governments. In the 1960s, environmental activists and authorities in industrialised countries began to demand mining companies to clean up and restore damaged land into the state that existed prior to mining. Today, governments are becoming more stringent with the policies and regulations to avoid negative mining legacies. Countries with long-term mining experience, such as Canada and Australia, have developed legislation that governs issues solely related to mine closure. In most other countries, including Mongolia, mine closure is regulated under several legislations and government bodies. In Mongolia, approximately 20% of the mine-affected land is satisfactorily rehabilitated (MoEGDT, 2015). The amendments made to Minerals Law of Mongolia in 2014, brought new requirements related to compulsory mine closure, rehabilitation planning and trained employees in conjunction with other relevant legislations. The Minerals Law of Mongolia (2014) states that *soum* and district governments	

can suspend mining operation if the company failed to fulfil planned rehabilitation activities in its annual EM Plan within the specified timeframe; and the suspension of mining licence will not exempt the licence holder from the obligation to rehabilitate the site and related costs (Articles 38 and 39). Failure to clean up environmental pollution and rehabilitate a mine-affected site is treated as a 'criminal act against environmental sustainability'; and the licence holders may be charged under Criminal Law (Articles 24.1-24.4 and 24.9, Criminal Law, 2015).

The overarching goals of mined land rehabilitation (commonly referred to as mine rehabilitation) are to ensure that after the mine closure, the land remains:

- Safe to human life and wildlife habitation
- Stable to natural processes (wind and water erosion, seismic activities)
- Non-polluting to soil and water systems
- Economically viable for the intended plan and form of use

(References: Mine Closure and Completion, Commonwealth of Australia, 2006. http://www.industry.gov.au/resource/Documents/LPSDP/LPSDP-MineClosureCompletionHandbook.pdf)

Careful planning, due diligence in implementation and ongoing monitoring are essential components in achieving desired outcomes of mine rehabilitation.

Rehabilitation planning

Planning is the most important stage for ensuring successful mine rehabilitation. It clarifies rehabilitation goals, financial assurances, duration and timelines as well as resources required for successful rehabilitation. Planning for rehabilitation is necessary for not only mining activities but also for mineral exploration projects.

To do mine rehabilitation successfully, mining companies must start with setting realistic and site-specific objectives that are aligned with the mine plan and with the agreed form of land use after closing the mine. Whether or not the objectives are achieved is measured by selected rehabilitation indicators and the nature of completion criteria. Planning should start with setting realistic and site-specific objectives.

Mine rehabilitation objectives are specific and measurable outcomes to be achieved at the completion of rehabilitation. In general, the objectives of rehabilitating a land affected by mineral exploration and

Goal of mine rehabilitation

Planning mine rehabilitation

Mine rehabilitation planning

mining activities include, but not limited to:

- Attaining regulatory compliance
- Maintaining geotechnical stability
- Restoring native ecosystems
- Reclaiming to a pre-existing land use
- Striving to achieve a more beneficial land use
- Reducing the social impact on local communities

(References: PDAC. e3 Plus: A Framework for Responsible Exploration http://www.pdac.ca/programs/e3-plus)

The following table outlines the mine rehabilitation objectives set by BHP Billiton's Mt Arthur coal mine in Australia:

Goals	Objectives
Establish non-polluting final landforms/ landscape	The rehabilitated post-mining landscape will not cause environmental impacts greater than surrounding non-mined land, including: • Water quality impacts (watercourses, waterbodies and groundwater); • Land management impacts such as weed generation, wildfire and feral animals; and • Air quality impacts such as windblown dust.
	• The rehabilitated post-mining landscape will be visually consistent with the surrounding non-mined landscapes • All hazardous or contaminated material will be removed and/or appropriately contained in the rehabilitated post-mining landscape to ensure no contamination impact on surrounding environment.
Establish structurally stable rehabilitated landform	• Rehabilitated post-mining landforms will be safe to humans and animals, stable, and demonstrate erosion trends comparable to surrounding non-mined landforms of similar topography.
	• Final rejects emplacements will be constructed and rehabilitated to ensure landform stability and containment integrity. • Mining voids remaining in the rehabilitated post-mining landscape will be safe, stable and non-polluting • Land uses selected for the rehabilitated post-mining landscape will be determined following consultation with relevant external stakeholders.

Establish a rehabilitated landscape that supports selected post-mining land uses	• Post-mining land uses will be consistent with surrounding land uses/ industries, and be aligned to relevant land zonings and regional strategies; • Land uses selected for the rehabilitated post-mining landscape will be of social and economic benefit to the local and wider community. • Land uses selected for the rehabilitated post-mining landscape will be determined following consultation with relevant external stakeholders ….

(References: BHP Billiton. Mt Arthur Coal Mine Operations Plan. 2015.
http://www.bhpbilliton.com/~/media/bhp/documents/society/regulatory/_coal/nswec/mt-arthur
coal/150902_coal_nswec_rehabilitation-management-plan--mining-operations-plan.pdf?la=en)

Individual components on a mine site may require different mine rehabilitation approaches and objectives such as establishing vegetation on waste rock, preserving mine pit, and sealing underground openings. Typical components within a mine site that are subject to mine rehabilitation include:

- Stock piles
- Mine pit
- Mine shaft (underground mine)
- Land subsidence, voids
- Tailings dam, sedimentation pond
- Heap leach piles
- Waste rock dump
- Levees, channels
- Infrastructure area (smelter, concentrate or catering unit)
- Onsite and offsite roads
- River, stream diversion

Different mining methods also require different mine rehabilitation approaches and may affect the form of post-closure land use. For example, placer gold deposits are mined at 40-50m at the deepest and the mine footprint is elongated on the land surface. In this case, technical and biological rehabilitation starts immediately after excavation and processing, and the completion takes relatively short period of time. If mine components include waste rock, stockpiles and tailings dams (e.g., hard rock mines), rehabilitation may require time and on-going maintenance until such time when rehabilitation is complete. This is due to the constant change in regards to size, shape and volume of these components (e.g., building up of tailings dams or waste rock dump) as operation continues. Therefore, such variations in mine rehabilitation objectives should be well planned and communicated with all concerned stakeholders at

the mine development phase.

Determining the post-closure land use is a crucial part in setting rehabilitation objectives. The process should be based on effective consultation with local communities and governments. It is important to involve mine managers, engineers, hydrologists, environmental officers, and community relations officers in the process. The company should aim to understand economic, social, environmental and cultural values; needs of local communities and governments; as well as to facilitate dialogue. In Mongolia, for example, local communities and governments may want to determine the viable post-closure land use as:

- Agriculture (pasture and farming)
- Forestry (forest strip, nursery, surface soil protection from wind and water erosion)
- Watershed or water facilities (fishery, recreation, farm irrigation)
- Sports and recreational use (tourism, health and recreation facilities)
- Conservation purposes (green belts, forest areas)
- Developing built environment (solid waste and earth material disposal facilities for construction, manufacturing industries)

Government and local communities often prefer to recreate the previous land form into an equally productive state (e.g., pasture land). There are also areas where mining companies and local stakeholders might agree to rehabilitate the land for different uses such as tourism and recreation. For example, Blaenavon, a coal mining town of in Wales, transformed the old mine pit, underground mine openings, coal transport railway, and other facilities into a cultural heritage site. This new function of the mine site includes underground mine tours, outdoor sporting activities and museum visits.

(References: Astron. Mine Rehabilitation and Closure - can we learn anything from a World Heritage Site and the fastest zip line in the world? 2010. http://www.astron.com.au/news/mine-rehabilitation-and-closure-world-heritage-site/)

Good examples of rehabilitated quarry sites

Capital Paving's rehabilitation of a quarry site in Puslinch, Ontario, Canada
Capital's quarry site is an excellent example of sand and gravel extraction as an interim land use and progressive rehabilitation to agriculture. The end use includes forested areas, hay and pasture for horses, and an equestrian operation. Before extraction the soil exhibited low fertility, drought and stoniness. After shaping the land, the subsoil and topsoil were replaced and seeded with a mixture of alfalfa, timothy, brome grass and clover and the

Case study: Complete rehabilitation in Ereen coal mine
2009
Aug 2009
May 2010

yield is increasing each year. In 2003, the Ontario Stone, Sand & Gravel Association presented Capital with the Outstanding Achievement in Property Rehabilitation Award for this site.

Huntsmans' rehabilitation of a limestone mine site in the Cotswold Hills, Gloucestershire, England.

Huntsmans has operated in the Cotswold Hills for over 70 years. This site is located in one of the most ecologically sensitive portions of England, an area of outstanding natural beauty. This area is an example of progressive rehabilitation. After limestone is extracted the land is partially filled with quarry waste. The subsoil and topsoil are then carefully placed over the land and it is rehabilitated to agriculture. In August 2009 a crop of barley was harvested from these rehabilitated fields. The typical crops for this area are wheat, barley and grasses. Huntmans is also including biodiversity enhancements and restoring natural heritage amenities in its rehabilitation works at this site, including habitat creation and protection for rare plant species.

(References: S.E.Yundt Limited. Outstanding rehabilitation and reclamation sites. 2010. http://www.toarc.com/pdfs/Outstanding_REHAB_RECLAIM_July2010_.pdf)

In order to assess whether rehabilitation objectives are being achieved, there should be measurable performance indicators in place. Performance indicators should be determined at the planning stage of a project and measure the following key aspects:

- Physical: the area's stability, resistance to erosion and re-establishment of drainage.
- Biological: species enrichment, vegetation density, canopy cover, seed production, fauna return, weed control, productivity, establishment of nutrient cycles, and water quality standards for drainage water.
- Regulatory: public safety issues, regulatory requirements, and stakeholder satisfaction.

Performance indicators are created in accordance with existing regulatory standards and guidelines, scientific literature or industry best practice guidelines around issues such as mine safety, soil and water quality, vegetation cover percentage, and species diversity.

In Mongolia, the following standards and guidelines can be applied in developing rehabilitation performance indicators:

- MNS 5850:2000. Soil quality assessment.
- MNS 5916:2008. Topsoil stripping and storage during earthworks
- MNS 5917:2015. General technical requirements for the rehabilitation of land affected by mining activities
- MNS 5918:2008. General requirements for revegetation of eroded land
- Methodology for Technical and Biological Rehabilitation of Land Affected by Mining Activities (2015)

Another important aspect in planning mine rehabilitation is defining completion criteria for mine rehabilitation. The purpose of completion criteria is to assist regulators and stakeholders to assess whether rehabilitation objectives are being achieved in terms of agreed post-closure land use and other relevant regulatory requirements in an objective and fair way. Completion criteria are specific to the project being closed, and should consider its unique set of environmental, social, and economic circumstances. Therefore, completion criteria should be developed jointly by experts, environmental officers and regulators.

Example of complete mine rehabilitation and post-closure monitoring

Peabody Energy's Ereen Coal Mine, Saikhan *soum*, Bulgan *aimag*, Mongolia

Ereen is located in the fertile grazing land in central north Mongolia. The site was decommissioned in 2009 and subsequently commenced rehabilitation. By 2010, the total mine footprint area was rehabilitated, covering 18 ha land, to restoring the pastureland that existed prior to mining. Ereen mine is an example of early planning and determination of performance indicators and completion criteria for mine rehabilitation. The determined post-closure land use was pastureland which was the land use prior to mining activity commenced. The company re-established native pasture species and conduct post-rehabilitation monitoring. The progress of the rehabilitation is assessed by the performance indicators, such as vegetation cover, the presence of native species and return of native fauna. To date, the mined land has been returned to local communities for pastureland and hay fodder harvest site and has brought positive economic transition of the land and its significance for the local community.

Source: https://www.ieca.org/membersonly/cms/viewabstract.asp?AbstractID=695

Financial assurance

Setting clear and realistic rehabilitation objectives and completion criteria are essential for both mining companies and regulators to calculate the cost or financial assurance required for completing the rehabilitation and closure. Governments employ various financial assurance models to guarantee that necessary funds be available to rehabilitate the site even in case of premature or unforeseen closure of a mine. Commonly employed models among various financial assurance options include third party guarantee or bonds released by financial institutions, cash deposit and letter of credit. These models have both advantages and disadvantages.

Common models	How it works	Advantages	Disadvantages

Third party guarantee	Includes unconditional bank guarantee and insurance bonds. All are required to be unconditional and/or irrevocable.	Relatively inexpensive (usually between 1 and 1.5% of amount) for the operator to establish • Has full backing of financial institution (funds available 'on demand') • Transparent and operation specific • Cannot normally be unilaterally withdrawn by the issuer • Can be altered as requirements change	• Often considered by financial institution to be part of working capital, thereby reducing available operating funds • "Small" companies often unable to access
Cash deposit	Normally deposited directly with government and only usually accepted for "small" operations	Provides an advantage to the government which has direct control over funds and sole responsibility for making funds available if required • The cash is normally returned to the company, on completion of closure works	Providing cash 'upfront' is a financial impediment to the operator and potential loss of income through interest on funds • If operator goes bankrupt cash may be classed as a company asset and available to all creditors or the cash may not be enough to complete the rehabilitation • Government must have a system to ensure segregation of funds for their intended use
Letter of credit	A form of third party guarantee, which normally has one-year term, usually extended following review by the issuer. If not extended the beneficiary (government) is notified and has the option of drawing down the full value.	Relatively inexpensive for the operator to establish	Can be unilaterally withdrawn by the issuer at the end of the credit term • May restrict company access to other credit

(References: Financial assurance for mine closure and reclamation, Study Report, ICMM, 2005; Financial assurance for mine closure and reclamation, Guidance Paper, ICMM, 2006)

In the case of Mongolia, the government holds financial assurance for mine rehabilitation in the form of 'cash deposit'. Every year, companies deposit 50% of the total estimated cost of implementing annual EM Plan upfront in 'Environmental protection and mine rehabilitation fund' or EPMRF (administered by MoEGDT) until the mine is closed (Article, 9.10, Law on EIA, 2012). Cash is returned to the company at

the fulfilment of planned environmental management activities for the year. Government will have direct control over this deposit and is solely responsible to make funds available. The cash deposit should be visible online for public information (see Transparency in Module 9) and supervision (Ministerial order, A-04, 2014).

Under the Law on EIA, the financial assurance for mine rehabilitation is defined by the regulation on controlling transactions within 'Environmental protection and mine rehabilitation assurance fund' (MoEGDT, 2014). Local governments are the primary regulating authority on finding allocations for required rehabilitation activities (Articles 13 and 18, Law on Natural Resource Exploitation Fee, 2012).

The effective implementation of these regulations, however, has several challenges in law enforcement and compliance by both local government and mining companies, including:

- The financial assurance fund is often used for a *soum*'s operational and local development activities, rather than mine rehabilitation or being returned to the company upon satisfactory rehabilitation
- Estimated rehabilitation cost for environmental damage is unrealistic or often too low
- Lack of 'monitor, evaluate and improve' action by local government on mine's performance in implementing an annual Environmental Management Plan
- Lack of coordination and reporting between local governments and government agencies
- Lack of transparency of financial arrangements of mines

(References: The National Audit Authority of Mongolia. Report of Audit in Dundgovi *Aimag*, 2015)

Western Australian Mining Rehabilitation Fund (MRF)

The state government regulates MRF as special purpose account. Through regular monitoring of account balance and levy percentage, the government makes sure that the fund maintains its capacity to meet rehabilitation costs for existing and emerging abandoned mine sites and ongoing administration costs.
- Mining companies to report environmental disturbance data and pay rehabilitation liability annually to MRF. Mining activities below the defined threshold of rehabilitation liability are exempted from payments.
- MRF money is available for all sites and tenements across the State. The interest earned by MRF deposits provides budget for the rehabilitation of abandoned mines.
- Department of Mines and Petroleum releases MRF report annually. The published MRF data is public and

(References: http://www.dmp.wa.gov.au/Environment/Mining-Rehabilitation-Fund-MRF-4906.aspx)

Rehabilitation process (20 minutes)

Mine rehabilitation process has the following four stages:
- Baseline studies and information gathering
- Landform design and reconstruction of a stable land surface
- Revegetation or the development of alternative land use form
- Environmental monitoring and auditing to assess the success of the rehabilitation processes

Baseline information often should include soil vegetation types, existing land use forms, climate, topography, biodiversity, water resources and sites of cultural and spiritual significance. In most countries, baseline assessments are legally required to be undertaken in the early stages of mine planning (e.g. in the process of permitting mineral license or conducting EIA). In Mongolia, it is a mandatory requirement for all new mineral exploration and mining license approvals (Minerals Law 2014).

According to current regulatory guidelines and industry standards in Mongolia, mine rehabilitation process is conducted in two phases: technical and biological.

Technical rehabilitation (or landform establishment) activities include: backfilling, creating landform, topsoil coverage, ploughing and fertilising topsoil. At this phase, companies evaluate the key components on the mine site, their dimensions (surface area, depth and height) as well as related costs and resources required for rehabilitation. Generic requirements for technical rehabilitation processes on mine sites are, but not limited to:
- Mine process solid wastes and different types of earth materials (e.g. soil) should be placed and stored at approved areas onsite.
- All openings developed for both underground and surface mines (e.g. shafts, voids) must be fenced-off, backfilled or sealed for safety.
- Flooding and surface run-off should be reflected in the location and landform design.
- Hills and elevated surfaces should be shaped into forms similar to surrounding landscape.
- Drainage channels and levees should be filled or flattened.

Process of mine rehabilitation
1. Baseline study
2. Landform establishment
   - Stable
   - Non-polluting
3. Development of land use form
   - Vegetation
   - Recreational
4. Monitoring
   - On-going (from design to closure)
   - Post-closure

- Final soil layers should consist of coarse material and topsoil, which support water infiltration. Choose appropriate thickness of soil layer in relation to the choice of plant species (grass or shrub).
- Any river and stream diversion should be restored to its original flow.
- Extra topsoil should be outsourced, if topsoil quality is poor and the soil is available.

Biological rehabilitation (or vegetation establishment) should aim to create productive agricultural land; restore mine affected land; and prevent environmental pollution. Companies should make sure that:
- Topsoil fertility (nutrients and organic matter) is maintained by using plant biomass and dung (herd droppings)
- Seeds are collected from local habitats from surrounding pastures; seedling and cuttings of native shrubs are transplanted.
- Vegetation cover on rehabilitated site should be at least 60% of surrounding (native) pastureland.
- Rehabilitation site receives regular maintenance, such as watering, weeding, fertilising and fencing.
- Return of native fauna (insects and rodents)

(References: MoEGDT. Methodology for mine rehabilitation. 2015 http://www.legalinfo.mn/law/details/11004)

Progressive mine rehabilitation at Monpolymet's Toson Mine (placer gold) in Zaamar *soum*, Tuv *aimag*, Mongolia. The mine has been in operation since 1996. Between 2001 and 2015, the company successfully implemented mine rehabilitation over 783ha area, including biological rehabilitation in 473ha area. The land reclaimed included varied land uses: an artificial lake, pastureland, forested area and fruit tree groves. The artificial lake functions as an ecosystem, being host to a number of migratory bird and fish species inhabiting the lake. The lake was formally recognised as a permanent watershed in the national water accounting registry in 2015. A number of perennial shrubs have been matured successfully in the grove, of which sea buckthorn and blackcurrant provide fruits and berries to mine employees. The company has established a nursery in its greenhouse and outdoor areas. This example provides useful lessons for other mining companies, communities and government departments in negotiating and undertaking successful mine rehabilitation.

To explore more about this case, see: http://www.monpolymet.mn/portfolio/monpolymet-nuhun-sergeelt/

Involving communities in mine rehabilitation

Case study: Progressive rehabilitation

◇ MonPolymet LLC's Toson Mine (placer gold), Zaamar soum, Tuv aimag.

There are many positive examples of community involvement in mine rehabilitation process, which benefitted both mines and the communities.

Stakeholder participation in determining post-closure land use and developing criteria for mine rehabilitation completion

BHP Billiton Mitsubishi Alliance's (BMA) Gregory Crinum coal mine, Queensland, Australia.
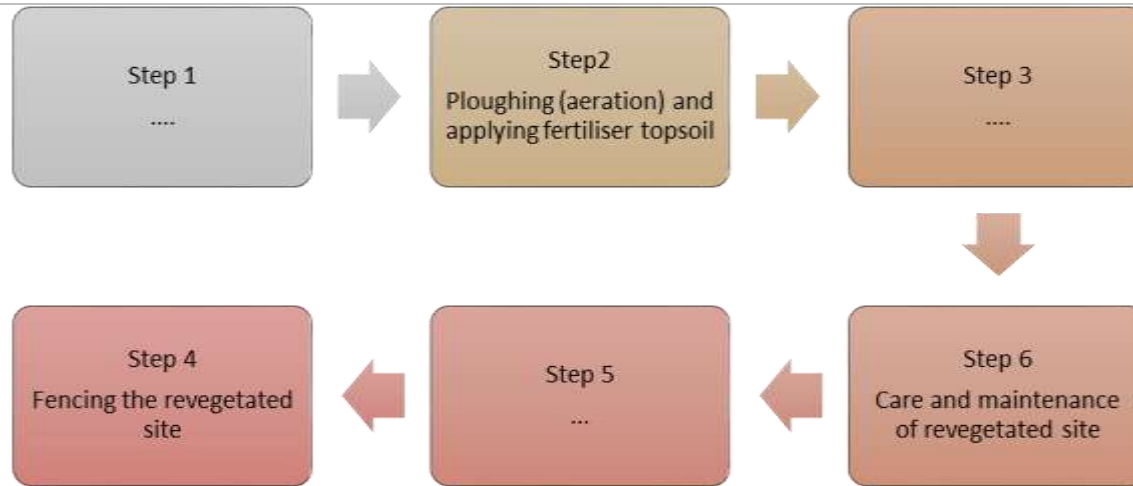The mine is located in central Queensland, Australia and has been operating as open pit and underground since 1979. In 2002, BMA planned an expansion of the operation, which concerned the existing land users in the area, as large scale farming, agricultural and conservation activities co-existed with the mine. The company facilitated community consultation processes and 16 public meetings were undertaken over 18 months. A community working group was formed with farmers, regional and local government representatives, environmental officers, conservation groups and mine environmental and community relations personnel. As a result of the engagement, the company facilitated collective decision-making on long-term land use. The working group and the company cooperatively decided the post-closure land use and mine rehabilitation criteria. This model is now being used for other mine sites across Australia.
(References: Mine rehabilitation, Commonwealth of Australia, 2006.
http://www.industry.gov.au/resource/Documents/LPSDP/LPSDP-MineRehabilitationHandbook.pdf)

Participatory approach in environmental monitoring in mining can generate positive relationship between companies and communities, and can provide training and employment opportunity for local communities. Some examples of the mining companies' engagement with local communities at different phases of the life of mine are shown in the table below.

Exploration and mine development

- Incorporating local knowledge: local community members possess traditional undocumented knowledge of local water bodies (springs, streams, lakes), vegetation (rare, medicinal, fodder species), biodiversity and areas of cultural historical and religious significance (sacred sites).
- Consultation: defining rehabilitation objectives, post-closure land use, and indicators.

Operation:

- Participation in regular monitoring (soil and water) and biodiversity offsetting
- Employing local workforce for nursery and offsetting, training and skills development for local communities
- Revisiting mine closure plans
- Communicating about the progress of rehabilitation

Closure:

- Assessment of rehabilitation outputs
- Dialogue and consultation on closure planning
- Monitoring vegetation, biodiversity, soil and water.
- Developing strategies for creating income sources for the communities after the closure.

Group activity on basic steps for biological rehabilitation (15 minutes)
Simple rehabilitation methods
- Work in small groups
- Discuss the missing steps and complete the diagram
- Present the completed table to other groups

For trainers: Further details of about the six steps and the complete process can also be found at: http://esec.mn/backend/f/GiOZuOmg5i.pdf

Step 1. Seed germination and grow seedling in nursery. Local pastureland seeds, as purchased, tend be mixed with weeds and invasive species that destroy native habitat.

Step 2. Ploughing (aeration) and applying fertiliser topsoil. Sourcing horse manure and cow dung are excellent sources of organic fertiliser.

Step 3. Transplanting seedlings and saplings into topsoil. Tube stock transplanting is best for protecting the young root system in the new environment.

Step 4. Fencing the revegetated site.

Step 5. Establishing irrigation system (using drip irrigation).

Step 6. Care and maintenance of young seedling to maturity. Maintain soil moisture, nutrient levels, protection from wind and water erosion.

Rehabilitation monitoring (10 minutes)

The aim of mine rehabilitation monitoring programs is to assess and evaluate whether the rehabilitation objectives are being achieved. The monitoring involves visual observations, sampling, measurements and analyses of soil, vegetation, water and biodiversity parameters in rehabilitated land in accordance to

relevant standards and regulations. The following are the key components and assessment parameters of monitoring rehabilitated landscape:

Monitoring components	Example parameters
Structural attributes of vegetation	- Height - Species diversity (e.g. native species) - Cover percentage - Presence of weeds and invasive species
Assessment of surface and slope stability and substrate performance as a growth medium	Soil quality and formation process (in the case of tailings) through - Biological (e.g. organic matter decomposition, microbial activity), - Chemical (e.g. organic matter, pH, concentrations of metals and metalloids, electric conductivity) and - Physical (e.g. compaction or bulk density, water holding capacity, infiltration) properties of vegetation growth medium (waste rock, tailings, land after technical rehabilitation) and any sign of erosion, such as gullying due to surface runoff.
Water bodies	- Mine pit water - Water quality in the surrounding natural water bodies downstream (surface and groundwater) - Seepage water from tailings and waste rock, any remaining ponds and voids
Selected ecosystem functioning indicators	- Augmentation of habitats, return of insects, rodents - Suitability to desired land use (e.g. Micronutrients-Cu, Zn, Cr in plant above ground biomass exceeding accepted levels indicates toxicity, thus unsuitable for grazing)

(References: Mine rehabilitation. Commonwealth of Australia. 2006. http://www.industry.gov.au/resource/Documents/LPSDP/LSDP-Mongolian-MineRehabilitation-20130527.pdf)

The above parameters are measured and analysed through scientific methods. The applicable standards in mine rehabilitation monitoring in Mongolia include:

- MNS 5917:2015. General technical requirements for the rehabilitation of land affected by mining activities.
- MNS 5918:2008. General requirements for revegetation of eroded land.
- MNS 5850:2000. Soil quality assessment.
- Other standards for measurements, sampling procedures and analyses

According to the Methodology for the rehabilitation of mined land (MoEGDT, 2015), a rehabilitated mine site should be monitored for 3 years following the completion of biological rehabilitation in order to

Post-closure monitoring

Practical tools: Use of GIS

ensure that the site is non-polluting and safe to humans and wildlife.	
In recent years, some new methods and techniques have been used for rehabilitation monitoring in the mining industry. For instance, Ecosystem Function Analyses (EFA) is an approach that integrates individual assessments on soil, water, vegetation and fauna into a holistic analysis that combines visual and physical measurements (e.g. sampling and analyses, taking measurements) on above and below ground features of the rehabilitated landscape. Moreover, GIS (Geographic Information System) has been increasingly used in rehabilitation monitoring. GIS uses real-time satellite imagery to illustrate topography and landscape components. In an advanced application of this tool, users are able to measure and conduct detailed soil, subsoil and vegetation analysis.	

Group activity on rehabilitation planning (10 minutes)

Option 1. Developing conceptual mine closure plan for a surface mine with five-year life span.

Tasks

- Name or draw picture of mine site components subject to rehabilitation
- Brainstorm on expectations on post-closure land use and local development (social and environmental expectations)
- Formulate a conceptual closure plan

Report back. Summary of discussion from each group. Consider whether rehabilitation objectives and expectations are realistic.

Option 2. Defining clear, practical objectives of mine rehabilitation in relation to long-term land use

Tasks

- Determine post-closure land use with economic productivity
- Define rehabilitation goal, objective, indicators using the worksheet below.

Rehabilitation goal	Possible rehabilitation objectives	Possible indicators	Nature of completion criteria
e.g. Sustainable land use or non-polluting land	e.g. Self-sustaining vegetation	e.g. Presence of native species	e.g. Certification that identified species, species diversity and weed management are achieved

Review and discussion (5 minutes)

- What are the key steps in mine rehabilitation planning process?
- What are the possible ways to engage local communities in mine rehabilitation processes in your case?
- Is mine rehabilitation in your area conducted in accordance with the principles described in this module?

Suggested readings and online resources

Tsedendorj. S, Byamba-Oyu. J and Dagva. M, 2009. Improving legislative environment of mine closure in Mongolia. http://forum.mn/res_mat/res_mat-197.pdf (In Mongolian)

The Asia Foundation. 2008. Citizen's guide for mine rehabilitation http://documents.tips/documents/-55720f56497959fc0b8c903c.html(In Mongolian)

ESEC. 2015. Environmental rehabilitation methodology for artisanal and small scale mining. http://esec.mn/backend/f/rd1B2g1QB4.pdf (In Mongolian)

Government of Australia 2006. Mined land rehabilitation (In Mongolian) http://www.industry.gov.au/resource/Documents/LPSDP/LSDP-Mongolian-MineRehabilitation-20130527.pdf

Glossary of key terms and concepts

Decommissioning - a permanent discontinuation of entire mine operation or an activity on a mine site.

Mine closure - a complex set of processes that involves a number of stages: planning, decommissioning, closure and relinquishment. The term closure alone is sometimes used to indicate the point at which operations cease, infrastructure is removed and management of the site is largely limited to monitoring.

Biodiversity offsetting - compensation for the damage to species and habitats caused by mining by creating an 'ecologically equivalent' benefit.

Topsoil – 0-20 cm of the soil that contains the highest concentration of nutrients, rich in plant roots and microorganisms. It is the most fertile layer for producing biomass.

Progressive rehabilitation - mine rehabilitation process immediately following mineral extraction with objective to return the land with economic productivity. It is a "rehabilitate-as-you-mine" process.

Rehabilitation indicator - a set of standardised environmental parameters that can be measured in soil, water, vegetation and the entire ecosystem (biodiversity) according to existing standards and guidelines in force.

MODULE 9. TRANSPARENCY AND ACCOUNTABILITY

Learning objectives

Upon completion of this module the participants will be able to:

- Understand the role of transparency and accountability (TA) in mining
- Examine different dimensions of transparency and accountability in mining
- Review compliance of mining companies and government with transparency regulations in Mongolia
- Explore key priority areas of transparency and accountability at the local level.
- Do basic analyses of or "mine" the Extractive Industries Transparency Initiative (EITI) data

Overview

Module 9 examines the rationale for ensuring transparency in mining and clarifies the meaning of key concepts such as transparency and accountability (TA), disclosure, and openness. The module outlines the key aspects of ensuring transparency throughout the mining value chain. The main focus of the first section of the module is to explore transparency at the local level and to outline the rationale for disclosing different types of information at the local level such as licenses, contracts, impact assessments, local content and beneficial ownership.

The second part of the module examines the objectives and outcomes of the EITI in Mongolia. It introduces ways to access and explore the EITI data for understanding and monitoring of the scale and performance of mining activities at the sub-national or local level.

Specific topics discussed in this module are:

- Key concepts of transparency and accountability in mining
- The mining value chain, transparency and accountability
- Subnational transparency in mining (required information types and their use)
- Extractive Industries Transparency Initiative (EITI)

Suggested timetable

- Transparency and accountability in mining (45 minutes)
- Group activity: transparency and accountability during the life of a mine (15 minutes)
- Introducing EITI (15 minutes)
- Online EITI 'data mining' exercise (10 minutes)
- Review and discussion (5 minutes)

Training materials

Lecture notes	Suggested presentation slides
Transparency and accountability in mining (45 minutes) Importance of transparency and accountability in mining In most countries, mineral resources are the property of the people. The state, as the representative of the people, issues licenses or signs contracts with companies. Article 6.1 of the Mongolia's Constitution of 1992 states that "the land, its subsoil, forests, water, fauna, flora, and other natural assets in Mongolia shall be subject to the people's authority and under the protection of the State". A clear implication of the article is that the rights, obligations and benefits arising from using natural resources have impacts beyond the primary stakeholders involved in mining. As the sovereign owners of country's natural resources, citizens have a right to know how decisions over mineral extraction are made, how much their government receives from mining companies, and how revenues are being spent. However, unlike many forms of economic activity, mining operations take place often in remote areas and revenues are not known by the majority of citizens. Thus, if adequate regulations and capacity are not in place, various decisions in mining can be difficult to monitor, providing opportunities for corruption and poor management. The failure to govern and harness natural resources for development has serious consequences. In many resource-rich countries, mining has caused significant challenges such as corruption, conflicts, poverty and social vulnerability, as well as negative environmental impacts. Nearly two-thirds of the twenty-five lowest ranked countries on Transparency International's Corruption Perception Index are dependent upon oil or mineral exports, compared with just a fifth of the twenty-five highest ranked	

countries in 2011. Nearly half a billion people live in poverty in the most resource- dependent countries around the world. These negative development consequences associated with natural resources abundance are referred as the "resource curse" and "the paradox of plenty".

Resource curse: How do local stakeholders interpret the term?

The following answers are expressed during a training needs assessment workshop held by the project team in Zaamar *soum*, Tuv *aimag*, Mongolia.
- The resource curse is a situation when mining revenues are spent by the government without proper planning.
- The interest of a few self-centred people is above the interest of the people.
- It is an action angering the *lus savdag* (nature spirits). Land, soil, rivers, and springs have their owners. If people dig land, rivers and springs, the spirits will curse them.
- The resource curse is one form of an economic crisis caused by the misuse of minerals revenues.

Though the "resource curse" can be seen in many countries and regions around the world, the experiences of countries such as Australia, Botswana, Canada, Chile, and Norway, show that the existence of strong institutions and good government can mitigate the resource curse and enable positive growth for resource rich countries. Transparency and accountability is recognized as an essential solution to improving the governance in mineral-rich countries, thereby improving the long-term sustainable development of their natural resources. For example, the Natural Resource Charter, a global initiative to assist resource-rich countries to effectively manage mineral resources for positive development outcomes, states (Precept 2):

Where resource wealth is managed on behalf of citizens, it can lead to sustained prosperity only if the government is publicly accountable. Ongoing scrutiny of behavior provides a strong deterrent against corruption and an incentive for improved performance across all levels of government. Furthermore, a national strategy of managing resource wealth will remain effective into the future only if this scrutiny ties present and future governments to the objectives they set themselves.

Despite the efforts of governments, the mining industry and civil society organizations around the world to develop diverse instruments for increasing transparency and accountability such as stricter anti-corruption and transparency laws together with new reporting and social accountability

Corruption Perception Index

mechanisms, a significant global change has not yet occurred. Natural Resource Governance Index shows that only 11 of the 58 countries surveyed have satisfactory standards of transparency and accountability.

In Mongolia, a number of important anti-corruption and transparency and accountability laws have been adopted in the past decade such as The Law on Anti-Corruption in 2006; the Law on Information Transparency and Freedom of Information in 2011; The Law on Public Procurement in 2011 (amendments); The Law on Conflict of Interest in 2012; The Law on Glass Accounts in 2014; and The Law on Auditing in 2015. Moreover, some important amendments to the laws and regulations related directly to transparency of the mining sector and donor-funded initiatives have been introduced in the past few years such as disclosure of Environmental Impact Assessments and a web-based mining cadastre system, which are in part discussed in the other thematic modules. However, a wide gap persists between legal changes and realities. As the below table clearly shows, the mining sector is widely viewed as corrupt in Mongolia, especially in the ways the government deals with mining licenses and revenues.

Resource Governance Index

The five most corrupt institutions in Mongolia

	Rank 1 (highest)	Rank 2	Rank 3	Rank 4	Rank 5 (lowest)
2011	Land authority	Mining authority	Court	Customs	Political parties
2012	Land authority	Mining authority	Procurement authority	Inspection authority	Political parties
2013	Land authority	Mining authority	Procurement	Political Parties	Customs
2014	Land authority	Mining authority	Procurement	Court	Customs
2015	Land authority	Political Parties	Mining authority	National government	Parliament

References: The Asia Foundation. Survey on Perceptions and Knowledge of Corruption: Strengthening Transparency in Mongolia Project. 2015. www.asiafoundation.org/publications/pdf/1513

Transparency and accountability: key concepts and applications

Transparency is the unfettered access to timely and reliable information on decisions and performance. Accountability is the set of mechanisms to report on the use of public resources and

consequences for failing to meet stated performance objectives. Transparency and accountability are strongly interrelated: Unless there is accountability, transparency would be of little value. In other words, transparency does not automatically produce accountability but is a necessary yet insufficient condition for it. Without transparency, it would be difficult to call public sector entities to account. The existence of both conditions is a prerequisite to effective, efficient and equitable management in public institutions.

(References: United Nations Committee of Experts on Public Administration (27-31 March 2006). "Definition of basic concepts and terminologies in governance and public administration." Fifth Session. New York. Web content retrieved from http://unpan1.un.org/intradoc/groups/public/documents/un/unpan022332.pdf)

Transparency and related terms

Unlike accountability, the meaning of the term transparency in mining may seem to be relatively straightforward. However, transparency is often confused with similar concepts such as disclosure and openness. They are all relevant `vaccines` against secrecy and corruption but do not have the same meaning. Openness means that governments listen to citizens and businesses, and take their suggestions into account when designing and implementing public policies. In this sense, transparency is a prerequisite of openness.

Disclosure is release of information and data whereas the essence of transparency is the usefulness of information and data that is being disclosed, especially to hold the government and mining companies to account. Government institutions and public and private companies may disclose a lot of information, but citizens, shareholders, investors and local communities may not be able to know true conditions. Independent research organizations, NGOs, and mass media can have an important role in processing and making publicly available information accessible and relevant to the critical mass of citizens. Most citizens may not have the sufficient capacity and time to access and process information from public records. In many countries, independent media and civil society groups have succeeded to publicly expose misconduct and injustice by carefully processing and delivering publicly available information around the world. For example, social media activists have been central to improving the implementation of Mongolia's Law on Glass Accounts by accessing and identifying infringements across different government institutions.

Active and passive disclosure of information

Information disclosure is a two-way path consisting of passive and active disclosure. Passive or request-based disclosure refers to the obligation on public authorities to respond to public requests for information. Active disclosure refers to the obligation of public authorities to collect, update, and disseminate information without requiring an official request. Request-based disclosure is based on the right to access information rooted in Article 19 of the International Covenant on Civil and Political Rights (ICCPR). It states that "everyone shall have the right to freedom of expression; this right shall include freedom to seek, receive and impart information and ideas of all kinds, regardless of frontiers, either orally, in writing or in print, in the form of art, or through any other media of his

choice." Article 16 of the Mongolia's Constitution of 1992 holds that "the citizens of Mongolia shall be guaranteed the privilege to enjoy the right to seek and receive information except that which the state and its bodies are legally bound to protect as secret. Secrets of the state, individuals, or organisations which are not subject to disclosure shall be defined and protected by law".

Disclosure and the business secret

When citizens request information related mining such as contracts, concessions and feasibility studies it is very common that companies and government agencies turn down their requests referring to the legal protection of company secrets. In Mongolia, under the Law on Information Transparency and Right to Information (2011) and the Law on Business Entity's Secret (1995), companies have the right to protect information regarding technological solutions, project and R&D documents, information related to required equipment and machinery considered confidential for the purpose of protecting its market share and strength in fair competition. However, companies should have a formal regulation or a bylaw that define a list of business secrets, and publicly inform it. Importantly, it is worth noting that most information related to mining projects that citizens and local communities seek are not related to the above mentioned company secrets.

Accountability

Accountability is a means to achieving a wider set of goals such as human rights, justice and sustainable development. The term accountability has the following two key components:
- Answerability: people and organizations that are to be held accountable should provide information and justification for their actions and decisions to those who hold them accountable. Decisions and actions should be reported and justified in public. It requires officials to reveal the evidence basis upon which decisions were taken, such as supporting documentation, baseline studies, consultation reports, and testimony from experts consulted.

- Enforceability: those in power are able to be sanctioned for poor performance or for violations of their duties. There must be sanctioning mechanisms in order for regulations to be effective. Parliaments, courts, inspection, anti-corruption and auditing agencies, and strong civil society organizations are central to strengthening accountability in the public and private sectors.

The following two news items illustrates the enforceability component of accountability.

(References: DIFID. 2009. Accountability Briefing Note. www.gsdrc.org/docs/open/innovations-in-accountability/ia4.pdf)

Chile may revoke Teck's copper mine permit over environmental breaches (June 23, 2015)
Chile's environmental regulator SMA is seeking sanctions against Teck Resources over environmental infractions at its Carmen de Andacollo copper mine. Teck is facing sanctions that could include revoking its permit for the mine in question and a maximum penalty of a $4 million fine or the withdrawal of its project's environmental permit. Among the breaches, the authority cited a failure to build sufficient water infrastructure. The company has 10 days to present its plan to address the issues or 15 days to provide evidence.
http://www.mining.com/chile-may-revoke-tecks-copper-mine-permit-over-environmental-breaches/)

Brazilian court freezes companies' assets in mining spill (December,20, 2015)
A court has blocked the Brazilian assets of mining giants Vale and BHP Billiton to ensure they pay for damage of a deadly toxic discharge that buried villages. The dam burst last November - considered Brazil's worst ever ecological disaster - killed more than a dozen people, left hundreds homeless and polluted an 800-kilometers stretch of the Doce River.
http://www.dw.com/en/brazilian-courts-freezes-companies-assets-in-mining-spill/a-18930273

The mining value chain, transparency and accountability

The mining value chain refers to the steps from the extraction of minerals, to their processing and sale, all the way through to the expenditures of the revenues. The value chain is a useful framework for understanding and improving transparency and accountability in mining. Transparency and accountability should be in place throughout the value chain.

The mining value chain

Value chain	Actions for greater transparency and accountability
Access to mineral resources	• Disclosure of data and reports on licenses, geological surveys, cadastres and reserves • Development of a national cadastre and a national data bank • Disclosure of environmental and social impact assessments • Disclosure of national and local level contracts

Regulations and monitoring of operations	• Disclosure and enforcement of environmental management plans • Consultation and participatory monitoring practices at the local community level • Regular audits of production and export volumes • Disclosure of the names of companies operating and beneficial owners
Collection of taxes and royalties	• Disclosure of mining revenue data at an appropriate level of disaggregation such as location, project and product type • Creating a clear legal definition of accounting procedures to determine royalties, income taxes, dividends, social contributions and other fiscal related terms • Regular audits and reconciliations of the government's accounts and of companies' financial statements • Regular disclosure of revenues generated by mining activities though disclosure mechanisms like EITI.
Revenues management and distribution	• Developing transparent decision-making procedures on revenue management • Implementing transparent procedures for the operation of any saving arrangement. • Disclosure of government funds' information on the balance sheet and cash flows, recipients of payments, and audits • Developing transparent and simple procedures for revenue sharing between the central government and the sub-national governments
Sustainable development policies/projects	• Reporting on spending and a regular auditing of expenditures • Improving procurement and acquisition rules to enhance competition and transparency in undertaking infrastructure investments.

(References: EI Sourcebook. Transparency and Accountability. http://www.eisourcebook.org/625_4TransparencyandAccountability.html. NRGI. Natural Resource Charter -Precept 2: Accountability and transparency http://resourcegovernance.org/approach/natural-resource-charter/precept-2-accountability-and-transparency; Eleodoro Mayorga Alba.2009. Extractive Industries Value Chain. World Bank; Daniele La Porta. 2011. Extractive Industries Value Chain. EITAF. http://www.eisourcebook.org/cms/files/learning/4%20EI%20Value%20Chain%20-%20EI%20Source%20Book.pdf)

Transparency and accountability at the local level

The impacts and benefits of mining are often immediate and distinct at the local level. Consequently, the needs for information are often specific and localised. Unfortunately, local communities most affected by mining projects often receive very little information about potential impacts and benefits. Aggregated information, like national production and overall economic growth, sometimes

lead to misunderstanding and mistrust towards mining operations at the local level. Though a company discloses information, thick environmental reports and aggregated financial figures often do little to help the local community understand the real impacts and benefits of the company's activities.

Timeliness becomes more crucial at the local level, as local stakeholders are preoccupied with immediate concerns such as environmental impacts, employment opportunities, community development projects and infrastructure upgrades. The capacity of local administration and communities to access and process complicated information about mining activities can be very low due to different factors such as education and training, time availability and access to Internet.

(References: Rebecca Iwerks and Varsha Venugopal. 2016. It Takes a Village: Routes to Local-Level Extractives Transparency. NRGI)

Unlike the general public, local government and communities have more specific and immediate information needs in regards to mining activities. The following issues can be more relevant to them than the other issues relevant throughout the mining value chain.

Transparency of licenses and license allocations

'Who is digging our land' is a common question among local community members when those responsible fail to provide the most basic information of local mining activities. Local people seek Information about the licensing process, local land areas associated with mining licenses, local land areas allocated for mineral exploration in the future, subnational consultation processes before confirming exploration licenses, license transfers, license fees, and channels to find detailed information about issued licenses. The full disclosure of such information can create a common understanding of who will be impacted by the mining project and to what extent, as well as facilitate better local land use planning and reduce land use conflicts.

In Mongolia, Article 11 of the Minerals Law obligates the government `to provide interested persons with access to the register of licenses and the cartographic register of licenses and to notify relevant government agencies of changes in these registers, and to publish official notices informing the public of such changes`. In 2014, The Cadastre Division of the Mineral Resources Authority of

Mongolia (MRAM) launched a new web portal with real-time connection to the cadastre database (https://cmcs.mram.gov.mn/cmcs). The main purpose of this portal is to enhance transparency in the mining sector by providing information to the general public and to governmental and private authorities and organisations about the mineral licensing activities in Mongolia, via the Internet. The services provided by the web portal enable visitors to obtain real-time access to mineral licensing information, retrieve information about present activities in the mineral sector, such as the tendering of areas for mineral licenses, and access forms, documents and key information required to file applications. The Mongolian EITI Reports contain data on licenses and the new an E-reporting system, which will be discussed in the section on EITI, provide various data on licenses.

Environmental and social impacts

Local communities especially need transparent information on environmental management in mining. They need to know what mining companies plan to do—how big the mine will be, what technology will be used, or what the expected impacts will be on the environment and local communities. The scale and seriousness of environmental impacts that mining activities induce reinforce the need for public access to information. The public visibility of environmental impacts leads to the strong community demand for transparency and access to information. Moreover, local government, host communities, and environmental activists simply often do not trust government's environmental approval processes. Though this attitude is related to citizens' general trust (or lack of it) towards government, it is also related to information imbalance between mining companies and local stakeholders, including local governments. In many developing countries, the information imbalance also operates between government agencies and mining companies. Government agencies often rely on environmental impact assessments and reports prepared by private companies and lack the capacity to analyse thoroughly the veracity and all of the impacts from proposed developments, and to monitor and investigate environmental performance of all mining companies.

Local community concerns about environmental and social impacts of mining issues have led to protest and conflict in many localities around the world. According to Davis and Franks (2014), pollution and competition over environmental resources are the most common issues that can trigger conflict in mining. Corporate environmental and social disclosure is crucial for preventing

conflict and obtaining a 'social license to operate'. Environmental disclosure refers to disclosure relating to environmental protection and resource use, and social disclosure usually refers to disclosure about the interactions of a company with the community and employees. Corporate social and environmental disclosure can take a variety of forms, such as Environmental Reports, Community Reports, Sustainability Reports, regular press releases, and websites. Some companies increase the credibility of information in their reports via third party verification.

In Mongolia, local communities often demand access to feasibility studies, environmental impact assessments, and information about funds available for mined land rehabilitation, water and land use data, operational health and safety data, plans for infrastructure development and use, resettlement action plan, community compensation programs, plans for local content and community investment, plans for local recruitment, government's inspection reports, and a plan for mine closure. This information can enable government and people to understand potential environmental impacts, develop fact-based opinions about proposed projects, monitor actual impacts, ensure that adequate compensations are received, and participate in mitigation and rehabilitation works. For companies, transparency can allow them to alleviate distrust and secure or strengthen a "social license to operate".

(References: Jenkins, H, and Yakovleva, N. 2006. Corporate social responsibility in the mining industry: Exploring trends in social and environmental disclosure. Journal of Cleaner Production. Journal of Cleaner Production, 14, 271-284; Davis, Rachel and Daniel M. Franks. 2014. "Costs of Company-Community Conflict in the Extractive Sector." Corporate Social Responsibility Initiative Report No. 66. Cambridge, MA: Harvard Kennedy School)

Transparency of local level agreements

Known often under different names, such as "Community Development Agreements" "Impacts and Benefit Agreements", "Cooperation Agreements" and "Social Responsibility Agreements", agreements between mining companies and local communities and their representatives have been increasingly used in mining. While agreement making with Indigenous communities has become a standard process in the mining industry in a few countries such as Australia and Canada, it is relatively nascent in many resource-rich developing countries. In Mongolia, local level agreements are required by law and negotiated between mining companies and host local government. Unlike mining agreements between national governments and mining companies that are often undisclosed

due to confidentiality provisions to protect commercially sensitive information, local level agreements should not be kept confidential because their scope and content are not about production, revenue sharing and technology, but rather focused on co-managing impacts and local development contributions. Usual arguments against contract transparency do not work in this case. However, local level agreements are often not in the public domain despite the fact that they usually do not contain specific restrictions against public disclosure. However, there is a good precedent for transparency. The Cooperation Agreement between Oyu Tolgoi LLC and Umnugovi *aimag* established in April 2015 was immediately made publicly available. Moreover, Mongolian EITI and other organizations have developed recently an open database of local level agreements in Mongolia. It is worth noting that local communities demand information disclosure on the implementation of local level agreements.

(References: Byambajav, D. 2015. Enhancing transparency of local level agreements in the Mongolian mining industry. http://goxi.org/profiles/blogs/mongolia-s-model-cda-intent-and-limitations?xg_source=activity)

Revenue streams and management

In many countries, local governments receive revenues from extractive industries through either direct payments of taxes and fees from companies or transfers from the national government.

Direct payments: A company's direct payment to a subnational government may be the result of contractual obligation, national law or local regulation. For example, subnational governments in Indonesia and Philippines collect fees from mineral licenses they issue.

Resource revenue transfers: Resource revenue transfers are revenues from extractive companies collected by the national government that are shared with the district, provincial or municipal governments of mineral extraction areas. How much is transferred to which local area varies greatly from country to country. Some countries provide resource-rich areas with a percentage of the revenues that are paid to the national government from extraction in the territory. Other countries use a statutory formula to distribute resource revenues, with a calculation of each area's share based on several characteristics, such as population size, per capita income or revenue collection effort.

(Iwerks, R and Venugopal, V. 2016. It Takes a Village: Routes to Local-Level Extractives Transparency. NRGI. http://www.resourcegovernance.org/analysis-tools/publications/it-takes-village-routes-local-level-extractives-transparency)

Sharing mining revenues: Local Development Fund in Mongolia

In Mongolia, mining revenues are distributed to local governments mainly through earmarking and Local Development Funds (LDFs). By law, 25 percent of domestic VAT payments, 5 percent of mining royalties, 30 percent of petroleum royalties, and budget surpluses of local governments are transferred to local (*aimag* and capital city) governments via the General Local Development Fund (GLDF). This money is distributed to *aimag*s and the capital city according to a formula that includes population, population density, remoteness, size of the territory, development indicators and tax generating capacity. *Aimag* LDFs should redistribute at least 60 percent of the fund to *soum* LDFs. In 2015, the government passed a new law whereby an additional 30 percent of mining royalties and 50 percent of mining license fees should go directly to *aimag*s that have mining operations on their territories. The *aimag*s should reallocate one third of the royalty amounts and 50 percent of revenues from mining license fees to the *soum*s hosting mining operations. This new revenue sharing regulation does not apply to "mega mining projects."

References: NRGI. Case Study: Mongolia Revenue Sharing. http://www.resourcegovernance.org/sites/default/files/nrgi_sharing_Mongolia_revenue-sharing.pdf.

Effective revenue transparency can have important benefits for government, local communities and companies such as:
- preventing corruption and improving the quality of technical, administrative and social services of local government
- increasing the responsibility of mining companies and government agencies
- reducing information imbalance between different stakeholders
- increasing the mutual trust and understanding of local government, citizens and companies
- improving environmental management and mined land rehabilitation.

Local content

Local government and people are naturally interested in types and estimated number of jobs that might become available over the life cycle of the project and the training necessary for those tasks.

Locals would also have keen interest in the proposed and actual disaggregation of jobs for national (local vs. from elsewhere in the country) vs. foreign vs. regional. Companies should disclose necessary knowledge and skill requirements along with hiring practices as early as possible.

This type of information should contain indirect economic development opportunities, if available, such as needed goods and services, contract recipients broken down by source (i.e. local, national or foreign), and the procurement process with necessary qualifications.

The disclosure of this type of information can enable local government and people to monitor company obligations, conduct local economic planning and develop local businesses. For companies, it can help monitor local benefits and actual economic beneficiaries of the mining project.

(References: Rebecca Iwerks and Varsha Venugopal. 2016. It Takes a Village: Routes to Local-Level Extractives Transparency. NRGI)

Beneficial ownership

Disclosure of the identity of the real owners – the 'beneficial owners' – of mining companies is a crucial issue related to the transparency of the mining sector. A beneficial owner of a company means the natural persons who directly or indirectly ultimately owns or controls the corporate entity. Some extractive companies hide their owners to evade tax payments or to keep secret the relationship with government officials. For example, in 2010-2012, the Democratic Republic of the Congo (DRC) lost at least USD 1.36 billion from five mining deals because they were hidden behind secret company ownership. Reporting the information relevant to "beneficial owners" can help to detect and reduce above mentioned adverse practices. (NRGI, 2015)

In 2014, EITI Multi-Stakeholder Group in Mongolia decided to include a beneficial ownership section in its 2013 EITI Report. The EITI Multi-Stakeholder Group asked to provide the details of stakeholders who own 5% or more of extractive licenses with a simple questionnaire. Even though it was a volunteer survey, 215 of the 250 companies disclosed the information related to their beneficial owners. 'A total of 368 shareholders of the 215 companies were identified, of which 215 were individuals, 144 were corporate entities and 13 were central or local government entities.' The new EITI Standard adopted in 2016 requires all implementing countries to develop a roadmap to ensure

full implementation of the beneficial ownership requirements by 2020.

(References: EITI. 2016. Beneficial ownership. https://eiti.org/files/eiti_bo_factsheet_en_final.pdf; EITI. Pilot project. https://eiti.org/pilot-project-beneficial-ownership)

The following case is helpful in understanding the importance of disclosure of beneficial ownership.

The case of Chovdar in Azerbaijan

Although the law of Azerbaijan prohibits government officials, including the president, from owning a business, this restriction does not work for members of the family members of the government officials.
Two decrees adopted in 2007, allowed a company called Azerbaijan International Mineral Resources Operating Company, Ltd ('AIMROC') to develop the Chovdar gold mine and other five mines. AIMROC is the owner of 70 percent of shares of those six mines while the government of Azerbaijan owns 30 percent of the stake. AIMROC is a consortium comprised of four foreign companies such as Londex Resources, S.A, Willy and Meyris S.A, Fargate Mining Corporation, and Globex International LLP. According to the officials of Azerbaijani, all four companies are shell companies established especially for this deal and there is no proof of whether they have mining experience or other mining projects. A fifth company of the consortium, Mitsui Mineral Development Engineering Co Ltd ('MINDECO'), is a daughter company of Japan's Mitsui Mining and Smelting Company. Even though it is indicated as an official supervisor of MINDECO, it has no ownership.

One of the companies of the consortium, based in the UK, owns 11 percent of shares worth US$ 200 million. However, this company was owned by three companies including Hising Management SA, Lyndel Management Group, Inc and Arblos Management Corporation, which were registered in Panama. Interestingly, all three companies had registered their senior manager names as Leyla and Azru Aliyeva who are daughters of president of Azerbaijani, Ilham Aliyev, and Swiss businessman Oliver Mestelan.

In 2006, Globex was included the consortium which was established by a decree of Azerbaijani president. In the following year, 30-years of lease of mining sites awarded to AIMROC. According to the report of the Azerbaijan Environment Ministry, Chovdar is the wealthiest site among six mining sites, and contains $2.5 billion worth of gold (44 tons) and silver (164 tons).

During the parliamentary hearing in June 2007, the decision of awarding mining sites to AIMROC was objected by parliament members on several grounds such as opaque ownership of the consortium, violation of procedures in the bid awarding process, lack of mining experience of consortium members and that the

Group activity (15 minutes)

Option one: Transparency during the life of a mine

Ask the participants to form groups of 4-6 and discuss the following questions. Each team will present its summaries. Use a graph or chart that illustrates the mine lifecycle.

Question 1: What can be the main types of information that should and can be disclosed during each stage of the life of a mine?

Question 2: What can be the main non-judicial methods or steps to ensure that transparency and accountability are in place during the life of a mine?

Option two: A rapid assessment of transparency of mining companies in your area

Ask the participants to form groups of 4-6 to assess transparency of the mining companies operating in a selected local area of familiarity by using the following table. Groups can adjust the table. Ask each team to present their summaries.

Transparency aspects	Company A	Company B	Company C
Information about licences			
Social impacts and management			
Environmental disclosure			
Revenue streams			

Local content			
Summary			
Notes			

Extractive Industries Transparency Initiative (15 minutes)

The EITI is a response to the resource curse; it is a process initiated by the British government in 2003 to help resource-rich developing countries manage extractive industry revenues more effectively.   Since its inception, the EITI has become the most widely used and internationally accepted mechanism to promote accountability and transparency in resource rich countries.

The resource rich countries that adopt EITI are supposed to take specific actions.

- First, these governments require extractive firms operating within their territory to "publish what they pay" to the government for the right to explore and extract energy or minerals.
- Secondly, government officials must record the revenues they receive and entrust an independent auditor to reconcile government receipts from the extractive sector with payments by extractive sector companies to the government.
- Finally, governments are supposed to create a multi-stakeholder group which includes representatives of civil society. The multi-stakeholder group is tasked to evaluate the information provided by business and government and independently review the evaluation.

The EITI Standard an annual reconciliation of material payments by entities in the Extractive Industry (EI) and related receipts received by the government, and to prepare a report in compliance with the EITI Standard setting out the results of the reconciliation together with contextual information about the EI in the country.

According to the 2016 EITI Standard, the following information is required to be disclosed:

- Legal and institutional framework, including allocation of contracts and licenses: legal framework and fiscal regime, license allocations, register of licenses, contracts; beneficial ownership; and state-participation in the extractive sector.

EITI process

- Exploration and production: Information about exploration activities, production data, and export data.
- Revenue collection: comprehensive disclosure of taxes and revenues, sale of the state's share of production or other revenues collected in kind, infrastructure provisions and barter arrangements, transportation revenues, State Owned Enterprise (SOE) transactions, subnational payments, level of disaggregation, data timeliness and data quality.
- Revenue allocations: distribution of revenues, subnational transfers, and revenue management and expenditures.
- Social and economic spending: social expenditures by companies, SOE quasi-fiscal expenditures, and an overview of the contribution of the extractive sector to the economy.

By 2015, EITI had been joined by 48 countries. Mongolia first implemented the EITI Standard for the 2006 reconciliation, and has issued nine M.EITI Reports. The National Council on Extractive Industries Transparency Initiative is headed by the Prime Minister. Currently the National Council consists of Head of Strategy and Policy Planning Department of Ministry of Mining, a coordinator of EITI working group, a member of Board of Citizens Council on Environment and the president of Mining Association.

In 2014, the EITI Mongolia introduced an E-reporting system (M.EITI, 2015). Among many advantages of the E-reporting system, a key benefit is expected to be an increase in access to information for the general public. In addition, the E-reporting system uses both Mongolian and English languages making the information available both for Mongolians and interested parties outside of Mongolia.

Furthermore, the new E-reporting process should decrease the data collection time, risk of data error in the reporting, and overall burden for reporting entities. Based on a survey conducted by the M.EITI Secretariat, 71% of reporting entities stated that they spent less than 3 days to report the data and 69% of the reporting entities stated that the E-reporting system was easy to use.

(References: EITI. 2016. The EITI 2016 Standard. https://eiti.org/document/standard; M.EITI Mongolia. 2015. 9th EITI Report; Dorjdari, N. 2013. Data mining: An Analysis of 2006-2011 EITI reports. http://www.forum.mn/index.php?sel=resource&f=resone&obj_id=948&menu_id=3&resmenu_id=113)

Group activity: Exploring the M.EITI data (10 minutes) 1. Open http://e-reporting.eitimongolia.mn/ 2. Go to http://e-reporting.eitimongolia.mn/reportList 3. Ask the participants to work in small groups and select a *Soum* and all companies that have licenses and operations on its land. Using the company reports, please prepare a summary of the *Soum*-level EITI report. 4. Differentiate between those revenues that are 1) paid directly to *soum*; 2) paid to *aimag* or central government, but are traceable – i.e. it can be identified with a degree of certainty that these revenues will be transferred to the *soum*; 3) paid to *aimag* or central government, but are not traceable – go to the 'general pot' of the government budget. 5. If necessary, watch training videos on the EITI website.	
Review and discussion (5 minutes) • What are the benefits of greater transparency for governments, companies, civil society and communities? • What are the key differences between national and sub-national transparency and accountability? • What are the benefits of EITI implementation?	
Suggested readings Collier Paul. The Bottom Billion: Why the Poorest Countries are Failing and What Can Be Done. (In Mongolian). Rebecca Iwerks and Varsha Venugopal. 2016. It Takes a Village: Routes to Local-Level Extractives Transparency. NRGI. http://www.resourcegovernance.org/analysis-tools/publications/it-takes-village-routes-local-level-extractives-transparency NRGI. Natural Resources Charter. http://resourcegovernance.org/approach/natural-resource-charter Naranjargal, Kh, Tuul, J, and Munkhburen, D. 2005. Freedom of Information. Open Society Forum. (In	

Mongolian) http://www.forum.mn/index.php?sel=resource&f=resone&obj_id=909&menu_id=3&resmenu_id=59 **Useful online resources** Resource Governance Index http://www.resourcegovernance.org/resource-governance-index 'Glass Accounts' http://www.shilendans.gov.mn/ EITI Mongolia E-reporting system http://e-reporting.eitimongolia.mn/ Global Reporting Initiative. https://www.globalreporting.org/	
Glossary of key terms and concepts **Accountability** - he set of mechanisms to report on the use of public resources and consequences for failing to meet stated performance objectives. **Beneficial ownership -** natural persons who directly or indirectly ultimately owns or controls the corporate entity **Cadastre -** an official register of oil, gas and mining licenses. These registers often include information such as the name of the company holding the license, the duration of the license and coordinates of the license area. **EITI Report** - countries implementing the EITI Standard publish EITI Reports that disclose the revenues and other information from extraction of the country's natural resources. **Extractive Industries** - usually refers to the oil, gas and mining industries. **Resource curse -** the phenomenon by which revenue from natural resources leads to poor standards of human development, bad governance, increased corruption and sometimes conflict. **Transparency** - he unfettered access to timely and reliable information on decisions and performance.	