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International Guidelines on Mine Closure: Assessment of the Mine Closure Regime in Mongolia

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Dissertation

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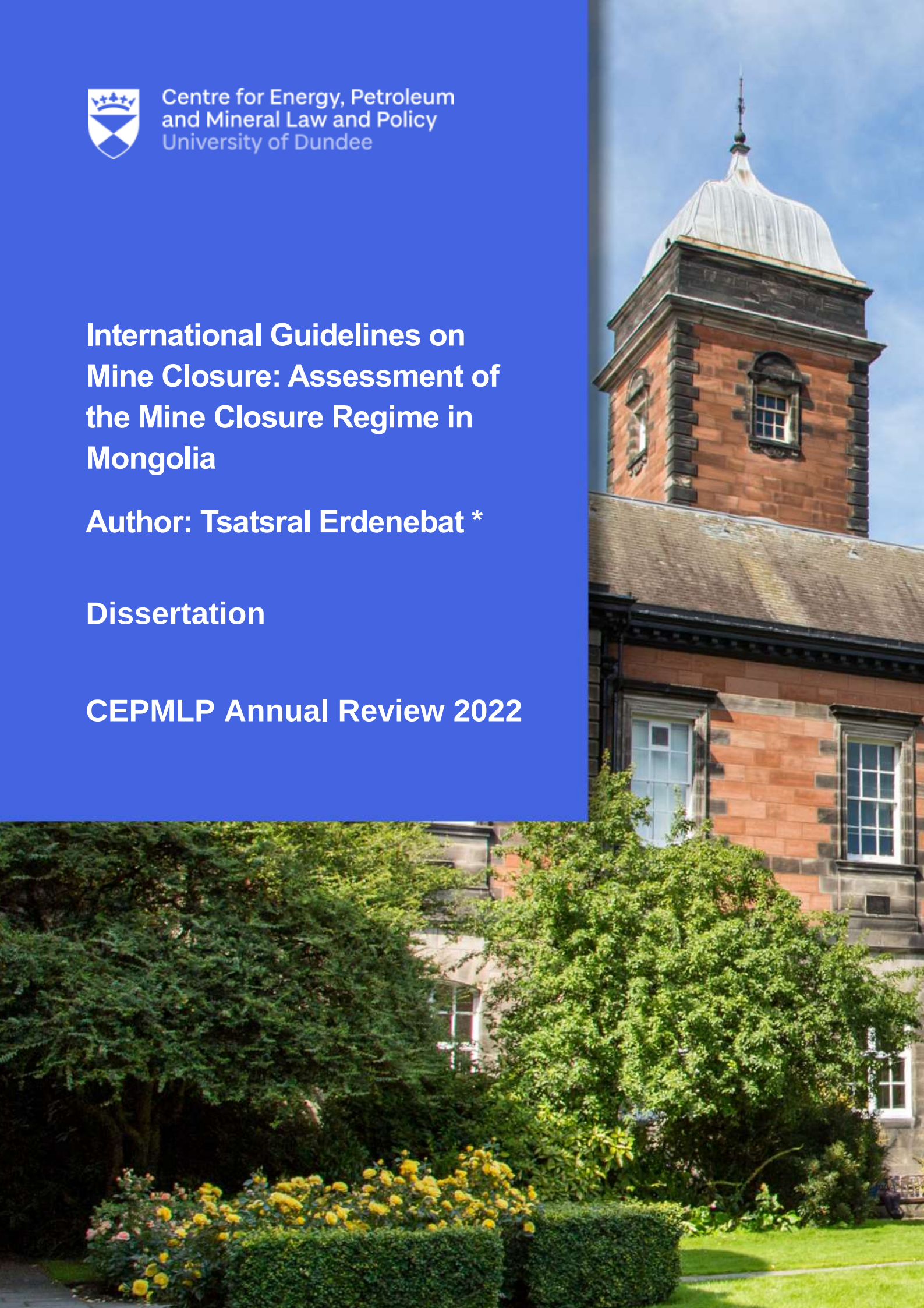

Abstract

Mongolia peacefully transitioned to a parliamentary democracy in 1990 after nearly seven decades of one-party socialist rule. Mongolia adopted its first Constitution two years later, in 1992; its predecessor State, the Mongolian People's Republic, had three constitutions, in effect from 1924, 1940, and 1960. The establishment of the new State, Mongolia, resulted in an overall reform of the legislative system and public governance structures; however, this reform did not occur all at once but was rather gradual and ongoing process.

During the transition into democratic economy, a Law on Subsoil of Mongolia, the first legislation on minerals, was adopted in 1988. Extraction of subsoil wealth as per planned state policy was intensified starting from 1990s, and mining companies started operating in Erdenet mine, Baganuur mine and Bor-Ondor mine. Since the early 2000s, the Mongolian mining industry has expanded, and continues to expand, significantly. As the industry grows rapidly, it has become evident that activities related to the entire mining life cycle from exploration to mine closure and reclamation needed to be regulated and managed wisely.

If mine closure and reclamation are not achieved in a planned and successful manner, a mine site may remain hazardous and a source of pollution for several years. There are an estimated c.600 abandoned mine sites in Mongolia. Abandoned or inadequately reclaimed mine sites can be sites of toxic pollution, such as mercury, that are hazardous to both humans and animals, and also sources of desertification.[1]

The Mongolian parliament recognized the importance of up-to-date mine closure regime which reflects international guidance and approved an Action Plan of the Government of Mongolia (GoM). That Action Plan explicitly included mandated end-of-life mine site rehabilitation and mine closure in line with international best practice. Accordingly, the GoM approved the Regulation on Rehabilitation and Closure of a Mine, Mine Plant and Enrichment Plant in 2019 which aimed to include the international guidance into the mine closure regime.

Because of the growing concerns of the abandoned mines or improperly reclaimed mine sites, growing demands for minerals critical for the global energy transition, there is an urgent need to promote good practice in the mining sector, not least with respect to

[1] CSM, Responsible mining, 75. <https://www.mn.undp.org/content/mongolia/en/home/library/training-manual-on-responsible-mining.html>.

implementation of Mongolia's mine closure and reclamation regime. This work should be planned in light of a rigorous assessment of its current efficacy, strengths, weaknesses and challenges.

This dissertation is intended to assess the current legal framework on mine closure in Mongolia in line with international best practices and guidelines. For that, the dissertation begins by describing the overview of Mongolian legal framework on mining, and legislation applicable to mine closure. This is then followed by summarising literature on mine closure and reclamation, relevant international guidelines, and an analysis of the current legal framework on mine closure in Mongolia, and its implementation.

The findings of the analysis demonstrate that the current legal framework appears to be developed in line with international best practice. However, some improvements in its provisions pursuant to its improved efficacy. The dissertation offers some recommendations of provisions for the current legal framework of mine closure and reclamation in Mongolia that would, if implemented, support responsible mining development there in the future.

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Abbreviations

EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
GoM	Government of Mongolia
ICMM	International Council on Mining and Metals
MMHI	Ministry of Mining and Heavy Industry of Mongolia
METM	Ministry of Environment and Tourism of Mongolia
MRPAM	Mineral Resources and Petroleum Authority of Mongolia
Rio Declaration	1992 Rio Declaration on Environment and Development
UN	United Nations
UNDP	United Nations Development Programme

Contents

1. Introduction

As all mineral reserves are finite at any one location, mine closures are inevitable. A mine may either close due to running out of feasible ore to extract or may close before complete resource depletion due to economic, geographical, environmental, political or social disruption reasons.[2] Historically, mine closure issues have not been prioritized by governments and mining companies.[3] As a result, unexpected mine closures by bankrupt mining companies have occurred, prompted by*, inter alia,* pronounced downward movements in the pricing of the mined subsoil resources. Such value-destroying price trajectories are features of highly-volatile metals and minerals prices, as indeed are upward spikes in the prices of those same commodities; the mining sector is highly susceptible to boom-bust cycles, and exposed to other changes to, notably with respect to: levels of taxes and royalties; currency exchange rates; and fuel costs. Mining companies may not survive periods of downturn to make it through to the next period of financial surplus, and they and their owners are typically left without punishment in cases of simple abandonment – particularly if the legal entity concerned has gone bankrupt.

Abandoned mines have been a critical issue globally because of their threats to human health and safety and enormous damage to the environment. In addition, rehabilitation activities require huge amounts of money, and when there is no one responsible for rehabilitation, it becomes the governments' responsibility to take care of it.

Because of the increased numbers of abandoned mines globally, and their huge environmental damages and threat to human health and safety, a mine closure process has become a hot topic within the industries and governments discussions, and the industry has started to recognize the importance of mine closure and reclamation in an environmentally and economically sustainable way. Over the last decade, almost 100 countries which have abundant mineral resources across the world have renewed their mining legislations by including requirements on reclamation, mine closure and carrying out environmental impact assessment.[4]

[2] 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, s1.

[3] James M. Otto, 'Global Trends in Mine Reclamation and Closure Regulation' (2009) 251.

[4] The Legal Institute of Mongolia, 'Overview of Legislation on Minerals' (2012), 258.

The International Monetary Fund (IMF) recognised Mongolia as one of 29 resource-rich developing countries; the country hosts 10% of the world coal reserves, ranks 6th in the world by known reserves of tungsten, 12th for uranium, 12th for molybdenum, 14th for copper, 21st for gold, 30th for zinc, 33rd for iron ore in 2019.[5] Indeed, Mongolia's mining industry has grown dramatically since the early 2000s[6] and, as of 2019, the mining industry sits at the heart of the Mongolian economy, accounting for 25% of GDP and 90% of the total export income.[7]

A Regulation on Temporary and Permanent Closure of 2003 which regulated issues related to mine closure, has been in force in Mongolia for more than a decade. As a result, the country faced serious challenges in managing environmental impacts on its natural resources and the social impacts on its people.[8] In other words, the Mongolian mine closure regime was neither comprehensive nor fully up-to-date, and failed to reflected international best guidelines until a Regulation on Rehabilitation and Closure of a Mine, Mine Plant and Enrichment Plant was approved in 2019.

In Mongolia, due to lack of coherent regulation on reclamation and mine closure, mine sites were abandoned without proper reclamation, and resulted huge negative impacts on environment and local community.

It has been estimated that there are nearly 600 abandoned mine sites in Mongolia.[9] Abandoned or improperly reclaimed mine sites can be sites of toxic pollution, such as mercury, uranium, hazards to humans and animals, and sources of desertification.[10] Besides, only *c.*20% of formerly mined-affected acreage in the country is satisfactory rehabilitated.[11]

Lack of up-to-date mine closure regime also resulted health and safety issues associated with temporary closures. For example, the Nalaikh thermal coal mining site was closed temporarily because of a tragic gas explosion there that resulted the death of 175 miners in 1989. The Government partially closed the mine site in 1990. Since then, between 10 and

[5] Matthias Helble, Mongolia's economic prospects: Resource-rich and landlocked between two giants (Asian Development Bank, 2020) 76.
[6] Cane, I. Schleger and others (n 2) 6.
[7] Ministry of Mining and Heavy Industry of Mongolia, 'Statistical Information of Mining Industry for 2019' (MMHI, 1 January 2020) <http://www.mmhi.gov.mn/public/more/id/923> assessed 20 May 2020.
[8] Cane, I. Schleger and others (n 2) 6.
[9] CSM (n 1), 75.
[10] Byambajav Dalaibuyan, 'Responsible Mining' UNDP (Policy Research Institute), 81.
[11] UNDP 'Responsible Mining' (2015) 119.

17 people have died annually there due to informal artisanal mining activities in its underground shafts.[12]

From an environmental perspective, many woods and virgin soils were destroyed during the mining operation and left without rehabilitation. Because of soil, water and air pollution, people living near gold mining fields are exposed to toxins by food, by water and by air. One of the significant examples of a region polluted in this manner is Zaamar Soum, Töv Aimag (Tuv Province),[13] where births of malformed livestock were linked to the presence of such toxins.[14]

Statistical data from the Ministry of Environment of Mongolia in 2018 shows that 48 rivers, 324 streams and springs have disappeared, and annual water resources have decreased from 608,300 million cubic metres (mcm) to 564,800 mcm due to global climate change. Climatic conditions affect the stability and effectiveness of a mine site rehabilitation. Mining sector itself ranks second in usage of water resources of any industrial sector in Mongolia, exceeded only by agriculture.[15] Warming temperatures increase water scarcity and inhibits water-dependent operations. Improper site rehabilitation and mine closure will result in environmental disaster.[16] Thus, there is an urgent need for strengthening the mine closure regime in Mongolia.

There is no large-scale hard rock mining operations nearing closure in Mongolia, but some small-scale placer gold, coal, and fluorite mines.[17] Even though there are hardly closed mine sites in Mongolia, according to data collected in 2014 by the Ministry of Environment and Green Development, around 13371.43 hectares of areas were abandoned due to mining operations in 2014, of which 2141.5 hectares are needed for urgent rehabilitation.[18]

Because of growing concerns of the abandoned mines and related environmental and social issues arose out of poor mine closure, the Parliament of Mongolia approved the Action Plan of the GoM for 2016-2020 by its resolution 45 in 2016. Under the Action Plan, the GoM

[12] Batzorig U, Dr. Prof Li Guangming, Arturo Cortes et. al, 'Sustainability Management in Mining Closure Plan and its Structural Development in Mongolia' (IJSER 2018) 1114.
[13] The country of Mongolia is divided into 21 provinces or aimags, and aimags are subdivided into soums.
[14] Munkhselenge Purevdorj, 'Legal Issues in the Mining Sector of Mongolia' (Mongolian Law Review 2013), 35.
[15] Ministry of Environment, 'Environmental Baseline Report of Mongolia' 2017-2018, 41.
[16] The Government of Australia, Mine Closure: (2016), 15.
[17] Ibid, 2.
[18] MB Dagva, Davaatseren Ts, Vladimir Kh, 'Dealing with Mine Closure Planning Liabilities, Opportunities and Lessons Learned' (2016) 2.

developed a regulation on rehabilitation and mine closure consistent with international guidelines and ensure sustainable development of the mining sector. As a result, the Regulation on Rehabilitation and Mine Closure of Enrichment Mine Plant (Regulation on Rehabilitation and Mine Closure) was approved on 28 August 2019. The goal of this regulation was to introduce international best practice to mine closure regime of Mongolia. Approval of this regulation was a big step for strengthening the mine closure regime of Mongolia. However, some improvements for the current mine closure framework are still needed.

Mongolia is still in the middle of legal reform after peacefully transitioned to democratic economy and is facing challenges of managing and regulating issues related to mine closure due to historically abandoned mines and related environmental and social threats. In addition, today, mine closure best practices have gone beyond environmental aspects solely, it incorporates requirements on enhancing social and economic sustainability of local communities in the future. As an urgent need to promote good practice faced to mounting demands of minerals and energy transition, and lack of research papers related to mine closure regime in Mongolia, an assessment of the existing mine closure regime of Mongolia is needed to advance the responsible mining in Mongolia.

The aim of this dissertation is to assess the existing legal framework of mine closure in Mongolia as per international guidelines, based on the assessment to offer recommendations of provisions in the legal framework to strengthen the mine closure regime of Mongolia, that will support sustainable development of mining and responsible mining development in the future.

The dissertation begins by outlining an overview of legal framework of mining and legal frameworks applicable to mine closure of Mongolia, continues by summarizing international literature on mine closure and identifying international guidelines. Then, the existing legal framework on mine closure in Mongolia is assessed as per international guidelines. Finally, the dissertation provides recommendations of provisions in the legal framework to strengthen the mine closure regime.

2. Legal framework on mining in Mongolia

2.1 Overview of legal framework on mining in Mongolia

After nearly seven decades of one-party socialist rule, Mongolia peacefully transitioned to a semi-presidential parliamentary democracy in 1990, which led to the overall legal reform of the legislative system and structure.[19] Until 1988, Mongolian development policy was based on socialist rule and national policy on geology and mining were determined by the agreements between the Governments of Soviet Union and Mongolian Republic.[20] During the transition period into a market economy from a centrally planned economy, the Law on Subsoil of Mongolia was adopted in 1988. It was the first law that regulated issues related to minerals.

As of the 1990s, extraction activities of subsoil wealth intensified, and some large mine deposits such as Erdenet mine,[21] Baga Nuur mine[22] and Bor-Undur mine[23] opened. As new relations related to mining industry emerge, the Law on Subsoil appeared to be insufficient for regulating the industry.

Mongolia adopted its first democratic Constitution in 1992. In the Constitution, it was declared that the land subsoil and its wealth shall be the property of the State. Therefore, there was a need for adopting a new law that regulates relations of conducting reconnaissance, geological surveys, exploration and exploitation by private entities.

The Minerals Law was adopted in September 1994 and provided provisions on requirements for obtaining exploration and mining rights, obligations to conduct feasibility studies, to pay mining lease payment and to protect the environment.

[19] Otgonchuluu. Ch 'Mongolia's State Policy on the Minerals Sector and Its Application in the Promotion of Sustainable Development' (Law in Transition Journal) 2016, 71.
[20] The Legal Institute of Mongolia (n 4), 12.
[21] Erdenet mine is one of the largest ore mining and processing operations in the world, it produces over 500,000 tonnes of copper concentrate and 4,500 tonnes of molybdenum concentrates annually.
[22] Baganuur mine produces 60% of coal consumption of Mongolia. As per exploration funded by the World Bank in 2014, JORC reserve report estimated that the deposit has 812 million tonnes of coal ore reserves.
[23] Bor-Ondor is the world's biggest fluorspar producer, produces in excess of 500,000 tonnes of ore per annum.

Mongolia's future became closely tied to the development of minerals sector. However, a key challenge was to attract the foreign investment necessary to drive the development of the mining sector and ensure it becomes an engine of broader economic growth. The State Great Khural of Mongolia adopted a revised edition of Minerals Law in 1997 to attract the foreign investment in the sector.[24] The Minerals Law of 1997 had not been revised for 8 years until the new edition of the Minerals Law was adopted in 2006.

Currently, the Minerals Law of 2006 is the key legislation that regulated the minerals sector in Mongolia. The law does not cover issues related to water, petroleum and natural gas, minerals with radioactivity and commonly distributed minerals such as sand, gravel and granite deposits that are commonly found and can be used for construction materials.

Due to the importance of the minerals sector, Mongolia is making efforts to revise its legal environment and to align it with international standards. The State Great Khural is the main policy-making organ in Mongolia and has power to influence on the state policy. The Government of Mongolia has power to approve regulations and exercises control over the implementation of the legislation.[25] The key legislation and policy of the mining industry in Mongolia are as follows, name the:

1. Constitution (1992) of Mongolia recognises the principle of current understanding of mine closure. Article 6 of the Constitution recognises the principle of sustainable development by stating that state policy on the exploitation of natural resources shall be based on long-term state development policy, ensure the present and future citizens' rights to live in healthy and safe environment, and accumulate wealth from the subsoil into the Sovereign Wealth Fund for fair and equal distribution. It further goes on to guarantee the rights of citizens of Mongolia to know environmental impacts arose out of the exploitation of the minerals;[26]
2. Law on Subsoil (1989) regulates the relations regarding the use and protection of subsoil in the interests of the present and future generations;[27]
3. Minerals Law (2006) is the principal law that regulates mining activities in Mongolia. The purpose of the Minerals Law is to regulate prospecting, exploration, and mining of minerals within the territory of Mongolia;[28]

[24] The Legal Institute of Mongolia (n 4) 13.
[25] Otgonchuluu. Ch (n 19), 71.
[26] Article 6.2 of the Constitution of Mongolia.
[27] Article 1 of the Minerals Law of Mongolia.
[28] Ibid.

4. Environmental Protection Law (1995). The purpose of this law is to guarantee the human right to live in a healthy and safe environment, an ecologically balanced social and economic development, the protection of the environment for the present and future generations, and the proper use of natural resources and the restoration of available resources.[29] The principle of 'polluter pay' and the need for conducting environmental impact assessment and environmental monitoring are included in this law;
5. Law on Environmental Impact Assessments (2012) ensures minimal environmental adverse impacts from the use of natural resources and regulates relations that may arise in connection with the assessment of environmental impacts;[30]
6. 'Long-named Law' or Law on Prohibition of Minerals Exploration and Exploitation in the Headwaters of Rivers, Protected Water Reservoir Zones and Forested Areas (2009). After the adoption of this law, many mine sites that were operating in the prohibited area, were closed, and sudden closures of these mine sites resulted abandoned mine sites without proper rehabilitation;
7. Long-Term State Development Policy: Vision 2050 of Mongolia, approved by Resolution No. 52 of the State Great Khural in 2020.[31] The policy stipulated that the country shall aim to develop the mining sector as less harmful to the environment as possible, be responsible economic sector, and to apply international standards and norm in mining activities.[32] The policy highlighted the development of responsible mining by protecting the environment, conducting rehabilitation; and
8. State Policy on Minerals Sector 2014. The aim of this policy to strengthen private sector development, establish a stable investment environment, improve innovation in mineral exploration, mining and processing, encourage the use of modern, environmentally friendly technologies, and strengthen the international competitiveness of Mongolia's mining sector. The policy included general principles for encouraging the long-term sustainable development of the mining industry, provides equal treatments to investors, and to foster transparency. The policy also requires improving the current legislations on health and safety, small-scale mining, the issuance and transfer of mining and exploration licenses, mineral deposit evaluation, gold mining and dispute resolution through implementing the international standards in these areas.[33]

[29] Article 1 of the Environmental Protection Law of Mongolia.
[30] Article 1 of the Law on Environmental Impact Assessment of Mongolia.
[31] Vision 2050 of Mongolia, Available in Mongolian at https://legalinfo.mn/law/details/15406
[32] Section 4 of the Long-Term State Development Policy: Vision 2050 of Mongolia.
[33] Otgonchuluu. Ch (n 19) 68.

2.2. Legal framework related to mine closure in Mongolia

2.2.1 The Minerals Law (2006)

The Minerals Law is the main legislation that regulates mining activities in Mongolia. As per the Minerals Law, state central administrative body in charge of geology and mining has power to approve regulation on site rehabilitation and a closure of a mine in cooperation with the state central body in charge of environmental matters.[34]

Article 27 stipulates rights and duties of the mining license holder. Article 27.1.12 provides the mining license holder an obligation to include detailed information on the rehabilitation fund in the feasibility study, and Article 27.1.13 imposes an obligation to hire or employ an employee whose responsibility is to report on issues regarding environment, rehabilitation, and closure of a mine to the Mineral Resources and Petroleum Agency of Mongolia on a timely basis.

Regarding mine closure, the Article 45 of the Minerals Law stipulates minimum statutory requirements for closure of a mine. Section 45.1 provides obligation to provide notice at least one year prior to closure to the state central administrative body, and the following three measures must be implemented:

i. Take all necessary measures to ensure safe use of the mining area for public purpose and to rehabilitate the environment;
ii. Take preventive measures if the mine claim may be dangerous for public use; and
iii. To remove all machinery, equipment, and other property from the mining area except those permitted by local administrative bodies or the agency for specialized inspection.[35]

Moreover, the mining license holder has obligation to prepare a detailed map of an appropriate scale showing potentially dangerous areas created by mining operations and place necessary warnings in the mining claim and submit the map to local governor and the agency for specialized inspection.[36] Article 53.3 provides that a license holder's obligation with respect to environmental protection, rehabilitation, and mine closure shall not be excused upon the termination of the license. As a rehabilitation assurance, a license holder

[34] Article 10.1.14 of the Minerals Law of Mongolia
[35] Article 41.4 of the Minerals Law of Mongolia.
[36] Ibid., Article 45.2.

has an obligation to deposit equal to 50% of its environmental protection budget for that particular year in a special bank account established by the Governor of the relevant soum or district.[37] If the license holder fails to deposit the rehabilitation assurance into the bank account, the local governor has right to terminate the mining operations for that year.[38]

In the event of closure of a mine, mining license holder is required to provide evidence of the fulfilment of all the environmental and other obligations as attached to the application of surrendering the entire licensed area.[39] If the mining license holder fulfils all the obligations set forth in the environmental impact assessment report and environmental management plan, the deposited rehabilitation assurances will be returned to the mining license holder during the closure of the mine.[40]

2.2.1 Environmental Impact Assessment Law (2012)

The Environmental Impact Assessment Law regulates relations relating to protection of the environment, prevention from ecological imbalance, ensuring minimal adverse impacts on the environment from the use of natural resources, and issues that may arise from the assessment of environmental impacts.[41] In relation to mine closure, Article 8.4 provides that mine closure activities and objectives, scope, success criteria of rehabilitation measures for the oil, mining and radioactive minerals projects should be included in the detailed environmental impact assessment.

The law also stipulates monitoring bodies on the implementation of mine closure management plan as the environmental officer of the local area, the state environmental inspector, all governors of every level, and the government agency in charge of geological and mining affairs.[42]

Another important provision in this law is that the project implementer should submit the rehabilitation and mine closure plan at least 3 years prior to the closure of a mine to the state central administrative body in charge of environment.[43]

[37] Ibid, Article 38.1.8.
[38] Ibid, Article 39.6.
[39] Ibid, Article 54.2.
[40] Ibid, Article 39.4.
[41] Article 1 of the Law on Environmental Impact Assessment of Mongolia.
[42] Ibid, Article 9.12.
[43] Ibid, Article 14.1.

2.2.3 Regulation on Rehabilitation and Closure of a Mine, Mining Plant and Enrichment Plant (2019)

The Regulation on Rehabilitation and Closure of a Mine, Mining Plant and Enrichment Plant (Regulation on Rehabilitation and Closure) is the only comprehensive piece of regulation that regulates the process of mine closure in Mongolia.

The aim of this Regulation is to regulate relations with respect to developing rehabilitation and closure management plan, taking preparatory measures needed for closure of a mine, and to ensure its implementation.[44]

In section 1.2, the term 'mine closure' is defined as 'integrated activities that aim to prevent, eliminate, reduce environmental and social negative impacts associated with closure of an enrichment and processing plant, to ensure environmental safety in mine affected area, and to transit the affected area to normal condition through implementing monitoring, care and maintenance measures.'

In section 1.8, two conditions of permanent closure of a mine are stipulated that: (i) it has been determined that the known reserves are impossible to extract, and economically unfeasible by the feasibility study, and (ii) it has been confirmed that no reserves are left by the cumulative database.

The content and requirements for the closure management plan are stipulated in Section 2. Important provisions in section 2 are stakeholder engagement during the development of the mine closure management plan[45] and about post-closure use of land.[46]

Other important provision in section 2 is that the closure management plan should include the detailed plan for employees and affected local citizens both prior and post-closure[47] detailed transition plan,[48] post-closure monitoring and maintenance,[49] and measures to be taken in the event of a temporary and sudden closure of a mine.[50]

[44] Section 1.1 of the Regulation on Rehabilitation and Closure (2019).
[45] Ibid, Section 2.3.2.
[46] Ibid, Section 2.3.3.
[47] Ibid, Section 2.3.7.
[48] Ibid, Section 2.3.8.
[49] Ibid, Section 2.3.10.
[50] Ibid, Section 2.3.11.

Moreover, the Regulation includes requirements for the closure planning, procedure of the preparation of closure planning, and review process of the closure plan.

Costs related to mine reclamation and mine closure are stipulated in section 5, and the costs estimates of mine closure shall include the following costs:[51]

a) the cost of technical and biological rehabilitating the mine;
b) the operational cost related to ensuring safety;
c) management cost to implement closure management plan;
d) cost related to post-closure monitoring; and
e) other costs related to mine closure.

The section 5 further goes on to require project developer to establish a closure fund with the equal amount of the cost of mine closure.[52]

In section 8, seven conditions are listed for temporary and sudden closure:

a) situation of technological and hydrogeological has been worsened;
b) running out of finance needed for the project;
c) the market price of raw material has been dropped;
d) the reserves that have been identified during the exploration are not confirmed, and further explorations are needed;
e) ecological imbalance (due to disaster and defeat caused by such as earthquake);
f) dangerous and toxic impacts on environment; and
g) force majeure.

Public engagement in the process of mine closure is stipulated in section 9, and post-closure monitoring and site maintenance are regulated in section 10.

Another important provision in the Regulation is section 10, which imposed criminal and misdemeanour sanctions for any violations of the regulation.

[51] Ibid, Section 5.3.
[52] Ibid, Section 5.8.

2.2.4 Regulation on termination of the mining licenses granted at the headwaters of rivers, taking necessary measures and rehabilitation at water protection zones where licensed exploitation has been started (2015)

The aim of this regulation was to terminate the existing special licenses at the headwaters of rivers, to take necessary measures at water protection zones that started exploitation activities, to protect and to rehabilitate the surrounding environment.

Adoption of Law on Prohibition of Mineral Exploration and Mining Operations at Headwaters of Rivers, Water Protection Zones and Forested Areas (Last amended 2015) (also known as 'Long-Named Law') in 2009 has affected 427 mining licenses and 909 exploration licenses. As a result, 123 mining license holders submitted their request for compensation. Because of the problems such as determining the compensation, the implementation of the law was not satisfactory.

To improve the implementation of the Long-Named Law, the Government of Mongolia approved this regulation. This regulation allowed license holders to continue their mining operations provided that license holders submit their request within 3 months after the approval of this regulation and the area which expected to be exploited is not within the prohibited area.

One of the important provisions in the regulation is that license holders should pay full amount of environmental protection and rehabilitation costs as an assurance for both previously mined mine area and the area expected to be exploited in the future in advance. Upon the acceptance of the rehabilitation by the local administrative body every year, the license holder can submit its request to receive the assurances back in accordance with the related regulation.[53]

Another important provision is that the license holder is responsible for its damages in well, winter place, other buildings, and historical and cultural heritage.[54]

This chapter summarized the mining legal framework of Mongolia and key legislative acts applicable to mine closure, and related mine closure provisions of those legislations are explained. The Minerals Law of Mongolia provides very general requirements on mine closure. The polluter pay principle is included in the key legislations in terms of rehabilitation.

[53] Section 4.5 of the Regulation on termination of the mining licenses granted at the headwaters of rivers, taking necessary measures and rehabilitation at water protection zones.
[54] Section 4.9 of the Regulation on Rehabilitation and Closure (2019).

For example, obligations to rehabilitate the site and provide rehabilitation financial guarantee are stipulated in the Law on Subsoil, Environmental Protection Law, and the Minerals Law. More detailed and comprehensive requirements on closure of a mine are regulated by the Regulation on Rehabilitation and Closure of a Mine, Mine Plant and Enrichment Plant.

The following chapter outlines international guidelines and best practice of mine closure, that will be the used as assessing criteria for the existing mine closure regime of Mongolia.

3. International guidelines on mine closure

3.1 Literature on mine closure

Poorly managed mine closure results negative impacts on the environment, local community, and economy. These negative impacts can be mitigated through a mine closure plan that addressed the issues such as environmental rehabilitation, socioeconomic impacts, removal of infrastructure and plant. Mine closure plan ensures that the site is left in safe, stable condition while the local community can generate livelihood in the absence of mining industry.[55] Abandoned mines and their negative environmental and social impacts took the global attention to the development of policies aimed to prevent abandonment of mine and ensure that mine sites are closed environmentally and socially safe and sustainable.

The closure of a mine has become an issue of sustainable development in which environmental problems must be balanced with the socio-economic requirements of the host nation and local communities.[56]

Since the term 'sustainable development' was first defined in the Brundtland Report in 1987, the Berlin Guidelines outlined the environmental guidelines with emphasis on developing countries in 1991. As a result, many countries required to include closure plan within the environmental impact assessment.[57]

Then, in 1998, UNEP developed a handbook on mine rehabilitation for environment and health protection, and in 1999, the Second Berlin Guidelines was developed with a section on mine closure planning.

The literature on mine closure is wide-ranging and illustrates approaches and techniques in designing, planning, financing, implementing, and monitoring closure and post-closure processes. Though, it can be divided into four categories in terms of the context, which are

[55] UNDP (n 11) 13.
[56] World Bank, 'Towards Sustainable Decommissioning and Closure of Oil Fields and Mines: A Toolkit Assist Government Agencies' (2010) GG-5
[57] Bastida, Walde and Warden-Fernandez (eds.) International and Comparative Mineral Law and Policy (2005) 627.

(i) environment, land, and water, (ii) closure plan, (iii) social aspects of the closure, and (iv) support system for mine closure.[58]

The World Bank publication entitled 'It is not over when it is over: Mine Closure Around the World' focused on the environmental and social aspects of mine closure. The report reinforced the need to plan a closure plan from the outset to mitigate potential negative impacts on environment, society and reputation.[59]

In 2007, the publication 'Environmental Health and Safety Guidelines, Mining' by the International Financial Corporation (IFC), underlined the need to develop a reclamation and closure plan that includes physical rehabilitation and socio-economic considerations as a vital part of the project life cycle.[60]

The International Council on Mining and Metals (ICMM) is a global leadership organization for sustainable development. ICMM's Principles define good practice environmental, social and governance requirements for the mining and metals industry. ICMM's Mining Principles require that sustainable development considerations should be integrated within corporate decision-making, and sustainability principles should be included into the policies, and planning, designing, operating and closing considerations should be in line with sustainable principles.[61]

Equator Principles (EPs) are a set of voluntary guidelines adopted by financial institutions to ensure that large scale development or construction projects appropriately consider the associated potential impacts on the natural environment and the affected communities. IFC's Performance Standards are an international benchmark for identifying and managing environmental and social risk and has been adopted by many organizations as a key component of their environmental and social risk management. EPs and IFC's Performance Standards variously imply or explicitly require that the mining operations should demonstrate their ability and mechanisms for funding closure and post-closure activities.[62]

[58] Chaloping March Minerva, 'Social Terrains of Mine Closure in the Philippines' (2017) 7.
[59] Bainton, N.A and S. Holcombe (2018). The Social Aspects of Mine Closure: A Global Literature Review. Centre for Social Responsibility in Mining (CSRM), Sustainable Minerals Institute (SMI), The University of Queensland: Brisbane, 8.
[60] Ibid, 8.
[61] World Bank (n 56) GG5.
[62] Ibid, GG6.

The International Cyanide Management Code for the Manufacture, Transport and Use of Cyanide in the Production of Gold (Cyanide Code) is a voluntary program designed to assist the global gold and silver mining industries and the producers and transporters of cyanide used in gold and silver mining in improving cyanide management practices and publicly demonstrate their compliance with the Cyanide Code. It requires the company to set up an assurance mechanism able to fully funding cyanide-related decommissioning activities. It allows any forms of financial instruments, i.e., cash, bond, letters of credit, insurance, and accruals, as long as the amount is equal or higher than the estimated decommissioning cost.[63]

The Prospectors and Developer's Association of Canada (PDAC) is a leading voice of the mineral exploration and development community, and supports a competitive, responsible, and sustainable mineral sector. It emphasized the importance of building good relations with local communities in the exploration phase that could be the basis of good communications practices during mine operation and closure.[64]

The Minerals Council of Australia developed a framework for sustainable development, as well as of implementation guidelines. It encourages the regular communications with stakeholders to inform closure plan development and update throughout the entire mine life cycle.[65]

3.2 International guidelines on mine closure

A range of sustainable development policy frameworks that have been developed by industry and other organizations are now acting as drivers for improved practice.[66] Industry best practices highlight the importance of an integrated approach to mine closure and emphasizes the following concerns of different stakeholders associated with a closure of a mine: (i) mine owner(s)' seek to achieve liability-free closure, (ii) governments seek to avoid mine legacy financial and social liabilities, (iii) communities want to improve or at least maintain their livelihoods, with socio-economic development continuing after mine closure,

[63] International Cyanide Management Code for the Gold Mining Industry, <https://www.cyanidecode.org/about-cyanide-code/cyanide-code > accessed 10 April 2021.
[64] World Bank (n 56) GG7.
[65] Ibid, GG7.
[66] Australian Government, Department of Industry, Tourism and Resources, 'Mine Closure: Leading Practice Sustainable Development Programme for the Mining Industry' (2016) 4.

and (iv) public policy makers and communities demand a rehabilitated and safe physical environment.[67]

The ICMM adopted a set of 10 sustainable development principles to connect the industry's commitment to sustainable development in 2003. In terms of mine closure, the following key principles are applicable:

ICMM principle 2: 'Integrate sustainable development considerations within the corporate decision-making process' which means plan, design, operate and close operations in a manner that enhances sustainable development.[68]

ICMM principle 4: 'Implement risk management strategies based on valid data and sound science' which means consult with multi-stakeholders in the identification, assessment and management of all social, health, safety, environment and economic impacts associated with mining activities.[69]

ICMM principle 6: 'Seek continual improvement of environmental performance' applies to (i) assess the positive, negative and indirect and the cumulative impacts of new projects-from exploration through closure; (ii) rehabilitate land disturbed or occupied by operations in accordance with appropriate post-mining land uses; (iii) design and plan all operations so that adequate resources are available to meet the closure requirements of the operations.[70]

ICMM principle 9: 'Contribute to the social, economic and institutional development of the communities in which the company operate' applies to contribution to community development from project development through closure in collaboration with host communities and their representatives.[71]

ICMM principle 10: 'Implement effective and transparent engagement, communications and independently verified reporting arrangements with stakeholders.[72]

[67] M. Akerman, G.van der Waldt, and D. Boltha, 'Mitigating the Socio-Economic Consequences of Mine Closure', (2018) 441.
[68] ICMM, 'Mining Principles: Performance Expectations' (2020) 1.
[69] Australian Government, Department of Industry, Tourism and Resources, 'Mine Closure and Completion: Leading Practice Sustainable Development Programme for the Mining Industry' (2006) 4.
[70] Ibid, 5.
[71] Ibid, 5.
[72] ICMM (n 68) 6.

Six aspects of mine closure as adopted by international guidelines and standards are outlined in the following section. A good and effective mine closure regime should include provisions on those aspects of mine closure.

3.2.1 Planning for Mine Closure

Planning for closure and implementing a mine closure plan became, from the 1970s, standard practices in Mongolia.[73]

Designing for mine closure must be integrated into planning from the earliest stages of exploration and a mine development. Designing for closure means incorporating closure activities into the mine business plan throughout the mining life cycle while considering environmental, social and economic considerations.[74] Early consideration of mine closure planning will make it easier and more cost effective to achieve final closure objectives and can improve the opportunities for relinquishment.

International best practice requires that the closure plan should be developed as early in the project as possible and must be reviewed and updated throughout the entire life of a mine in order to protect public health and safety and to avoid or mitigate potential environmental and social impacts associated with the site closure.[75] Moreover, a project implementer should have mine closure plan approved by the competent authority to commence exploration or mining activities. National legislation should stipulate the requirements on the content of the mine closure plan, and the following issues usually should be considered and included in the mine closure:

a) closure vision and objectives;
b) project information data, location and information of the land tenure;
c) environmental and socio-economic issues;
d) detailed closure methods for each facility;
e) financial assurance that the company is fiscally able to complete the closure; and
f) demonstration that the company have the technical ability to complete closure.[76]

[73] Chaloping March Minerva (n 58) 1.
[74] International Council on Mining and Metals (ICMM) 'Integrated Mine Closure: A Good Practice, 2nd Edition' (2019) 13.
[75] Chaloping March Minerva (n 58) 2.
[76] Dawn H. Garcia, 'Overview of International Mine Closure Guidelines' (2008) 4.

One of the important considerations in developing closure plan is temporary shutdown for economic or other reasons. It should be included in the closure plan even though it is not regarded as closure. Equally, demobilization and site restoration should be considered in the closure plan.

There will be at least two types of closure plan, progressive closure plan and final closure plan. The closure plan either can be associated with environmental mitigation plan, a mine plan or reclamation plan, or can be a separate plan.[77]

International guidelines require that there should always be stakeholder engagement in the process of developing the mine closure plan, and the closure plan should be reviewed and updated frequently to reflect operational change and new information.[78]

3.2.2 Financial assurances

One way in which governments can influence a company to comply with reclamation and closure requirements is requirement of some sort of financial assurance.[79] Financial assurance instrument is means of guaranteeing environmental protection following the mine closure or the complexion of an exploration activities.[80]

There should be requirements for financial assurance early in the life cycle of a mine.

The forms of the financial assurance can be various in different jurisdictions. Relatively common types are third party guarantees, such as bank guarantees, insurance bonds, renewable letter of credits. Cash deposits, trust funds, collateral and insurance policies, parent-company guarantees, balance sheet tests and financial strength ratings are also used.[81]

The following costs are generally included in closure cost estimates:

a) decommissioning and demolishing costs of structures and clean-up of contaminated sites;
b) implementation of rehabilitation measures;

[77] James M. Otto (n 3) 262.
[78] Government of Western Australia, Department of Mines, Industry Regulation and Safety, 'Mine Closure Plan Guidance' (March 2020) 16.
[79] James M, Otto (3) 267.
[80] ICMM (n 68) 12.
[81] ICMM, 'Integrated Mine Closure: Good Practice Guide, 2nd edition' (2018) 49.

c) earthworks costs;
d) water management;
e) liner installation and removal;
f) construction of seals on underground mine openings to surface;
g) disposal costs;
h) project management costs; and
i) post-closure monitoring and maintenance.[82]

Moreover, it is important to stipulate that how much financial assurance should be provided at any given time in the mining life cycle. Different approaches such as the total cost upfront assurance method, annual readjustment assurance method, fixed schedule assurance method, equal annual increase over set time period assurance method are used.[83]

International guidelines provide that the cost estimate should consider third-party costs to implement the closure plan if the mine was abandoned, be based on current disturbance, and must be updated when there are huge changes to the mine operation. In addition, there also could be requirement for the third-party audits of the cost estimates.

3.2.3 Environmental, Health and Safety Protection

Mining operation involves the permanent alteration of topography, landforms, disturbance to flora and fauna, surface water hydrology and groundwater, soil and water contamination. Environmental management will help mitigate these negative impacts and minimise the costs of management.[84]

Environmental, health and safety protection are the main elements of responsible mining where the industry respects human rights, the aspirations of the affected communities, provides safe and healthy workplaces and avoids or minimizes the harm to the environment, and leaves positive legacies.[85] International trends in closure regulation seeks to minimize the negative impacts on the environment and biodiversity from the mine operation through mining life cycle from exploration to closure.[86]

[82] Ibid, 50.
[83] James M Otto (n 3), 271.
[84] Australian Government (n 66) 5.
[85] UNDP (n 11) 3.
[86] James M. Otto (n 3) 259.

International guidelines suggest that it is vital to develop standards or regulation on how these environmental impacts are to be dealt with on closure, for example, standards on physical and geochemical stability, waste management or waste removal, post-closure land use, removal and backfilling, decommissioning and restoration of ecosystem, safety guidelines. Absence of clear standards will make it difficult for a license holder to conduct rehabilitation work as per regulator's expectations.[87]

3.2.4 Socio-economic considerations

Very little attention was given on the socio-economic impacts of the mine closure.[88] The standards or regulatory frameworks for managing the social aspects of mine closure are still at an early stage of the development.[89] A mine may become the primary local economic driver in developing country. Good practice requires that there should be recognition for the risks associated with the local communities' dependence on the mine and creation of opportunities to encourage the development of sustainable post-closure options.[90]

International standards on mine closure requires socio-economic considerations on employee, community and infrastructure should be included in the closure plan.[91] Closure planning should be associated with the regional development goals and commitments in the social impact assessment and include requirements for transition strategies for local economy and workers.[92]

Social transition for mine closure should incorporate the identification of social risks and their mitigation measures into the earliest phases of mine planning and considering government-led development plans for the social transition helps to reinforce the role of government and enable ownership by the local community over social investment programmes in the long run.[93]

The investment for social transition should include those aspects that focus on generating post-closure economic and social returns in local communities and on building community

[87] Mwaka Nakazwe, 'Life beyond the Glitz and Glamour of Mining: Strengthening the Mine Closure Regime in Zambia' (2017) 334.
[88] Andre Xavier, Marcello M. Veiga, and Dirk van Zyl, 'Introduction and Assessment of a Socio-Economic Mine Closure Framework' (2014) 38.
[89] Bainton, N.A. and S. Holcombe (n 59) 28.
[90] ICMM (n 81) 43.
[91] Mwaka Nakazwe (n 87) 337.
[92] Asia Pacific Economic Cooperation (APEC) 'Mine Closure: Checklist for Governments' (2018) 52.
[93] ICMM (n 81) 43.

resilience to the impacts of mine closure.[94] Moreover, the mine closure policy should stipulate what aspects of the socio-economic matters must be addressed in the closure plan.[95]

3.2.5 Relinquishment and post-closure obligations

The main objective of mine closure is to leave a mine site in a condition which is safe and stable, and that limits further environmental impacts so that the mining tenements can be relinquished for alternative land use.[96]

Relinquishment means the end of site ownership by the mining company. Achieving relinquishment means the mining company fulfils all the obligations outlined in the closure plan. Achieving successful relinquishment requires careful planning and engagement with an appropriate regulatory regime. Where relinquishment is planned, ongoing engagement with stakeholders will be required leading up to the eventual relinquishment.[97]

After the completion of the closure activities, monitoring should be undertaken to evaluate the effectiveness of the closure activities at agreed closure objectives. Post closure monitoring is a version of the operational monitoring programmes refined for post-closure.[98]

Monitoring can be a one-time post-closure event or long-periods of monitoring. If it is identified by the monitoring that the post-closure objectives are not met, the maintenance activities will be needed.[99]

International Finance Corporation Guidelines on Environmental, Health and Safety Guidelines for Mining recommended that closure and post closure plans should include appropriate aftercare and continued monitoring of the site, pollutant emission, and related potential impacts.[100] The duration of the post closure monitoring should be defined on a risk basis, however, site conditions typically require a minimum period of five years after closure or longer.

[94] Ibid, 44.
[95] Ibid, 29.
[96] Bastida, Walde and Warden-Fernandez (n 57) 627.
[97] ICMM (n 81), 12.
[98] Ibid, 57.
[99] Ibid, 54.
[100] IFC, 'Environmental Health and Safety General Guidelines' (2007) s 1.4.

3.2.6 Public participation/ multistakeholder engagement

The guidelines require companies to identify all stakeholders that are involved in closure, develop a register of historic stakeholder, provide details on agreed post-mining land use and closure objectives.[101]

Failure of the community involvement during the mine closure process can lead to numerous negative outcomes, such as, unnecessary expenditure of management, post-mining land use may be threatened, social ills, collapse of local businesses, elimination of communities and negative corporate image.[102]

Therefore, it is important to involve community before, during and after the closure to better associate with them on post-mining land use and completion criteria.[103] The industry guidelines require companies to engage communities in the earliest stages of the mine closure planning process, if not the earliest project planning phases, and often, and the engagement process should be transparent and effective.[104]

[101] David C. Laurence, 'Optimizing Mine Closure Outcomes for the Community – Lessons Learnt' (2002) 27.Bainton, N.A. and S. Holcombe (n 59) 12.
[102] David C. Laurence, 'Optimizing Mine Closure Outcomes for the Community – Lessons Learnt' (2002) 27.
[103] Ibid, 12.
[104] Ibid, 17.

4. Assessmebt of mine closure regime of Mongola

The previous chapter summarized international standards on mine closure. The following six important aspects of mine closures that international best practices require to be regulated by national legislations, are selected and summarized:

i. planning for mine closure;
ii. financial assurances;
iii. environmental, health and safety protection;
iv. socio-economic considerations;
v. relinquishment and post closure obligations; and
vi. public participation/ multi-stakeholder engagement.

This chapter assesses the existing legal framework of mine closure of Mongolia as per the above six aspects of international best guidelines on mine closure to determine whether the legal framework on mine closure of Mongolia is in line with international guidelines and needs any improvements.

4.1 Mine closure plan

The Mongolian legal framework stipulates that two types of closure plan should be developed by a project developer: (a) the preliminary closure plan; and (b) the closure management plan. The preliminary closure plan is embedded in the detailed environmental impact assessment process while the closure management plan is a separate comprehensive plan. These plans are considered in turn and in more detail below.

a) **The preliminary closure plan**: In order to commence exploration or exploitation activities a project developer is required to have general environmental impact assessment (general assessment) conducted by the appointed analyst from the central administrative body in charge of environment, namely the Ministry of Environment and Tourism of Mongolia (METM). The analyst then will provide a conclusion whether there is a need to conduct a detailed environmental impact assessment (detailed assessment), in which issues relevant to closure activities, objectives and scope of rehabilitation works need to be included. Based on the detailed assessment, a detailed assessment report and environmental management plan will be developed, and the

environmental management plan needs to be approved by the METM for commencing the exploration or exploitation activities. In the environmental management plan, measures and scope of mine closure are needed to be included.

From a comparative international perspective, in many jurisdictions, developing a closure plan during an exploration phase becomes a challenge for the project implementer because at this stage there are hardly knowledge of where and to what extent future disturbances will take place.[105] For this reason, most jurisdictions achieve exploration rehabilitation objectives by requiring certain types of disturbances must be resolved by the explorer, not requiring a formal closure plan.[106] Thus, the Mongolian legal framework appears to be comprehensive in terms of the rehabilitation during the exploration stage.

During the development stage, most jurisdictions require a closure plan either can be associated with environmental mitigation plan or a separate document. In Mongolia, the preliminary closure plan is needed before obtaining a mining license. The content of the preliminary closure plan is defined by the feasibility study and exploration activities report. The feasibility study should contain the cost estimate related to rehabilitation and closure, and the exploration activities report should indicate the known reserves are enough for covering the rehabilitation. Other than these two issues, Mongolian legal framework does not stipulate any requirements on the content of the preliminary closure plan. In other words, a license holder can commence mining activities after approving the known reserves are viable to extract and can cover the rehabilitation and closure costs estimated.

Every year a license holder should submit environmental management plan for the next year, and have it approved by the METM. In these environmental management plans, there should be a section on the closure activities that are planned to do in that specific year. Moreover, any changes in the main documents of the project should be reflected in the revised preliminary mine closure management plan;[107]

The author is of the view that the provisions on the preliminary closure plan is reflected international guidelines at some point by requiring to include issues related to mine

[105] James M. Otto (n 3) 262.
[106] Ibid, 262.
[107] Section 3.10 of the Regulation on Rehabilitation and Closure (2019).

closure and rehabilitation in the environmental management plant at the early stage of the exploration and development. However, the flaw is the absence of the provisions on the contents and scope of the closure plan, and the provisions are too general. As international best practice dictates, there should be provisions on the information to be included in the mine closure plan. For example, and by way of international comparison, Statutory Guidelines for Mine Closure Plans approved by the Department of Mines, Industry Regulation and Safety, Government of Western Australia require that the mine closure plan must include a description of the mining operation, a map of the location of the operation, land disturbances, tenements and other land tenure, and an estimated mine project completion date. In addition, the mine closure plan should include all legal obligations for rehabilitation and closure that will affect the post-mining land use and closure outcomes.[108] Good practice dictates that an effective mine closure regime should have comprehensive details on the closure plan; and

b) **Closure management plan:** Current legislation requires mining companies to prepare the closure management plan as a separate document at least 3 years prior to the closure of a mine and to have it approved by the relevant authorities. The closure plan is developed at the stage nearing closure of a mine. In terms of contents and scope of the closure management plan, Mongolian legal framework provides very comprehensive provisions and sets up two-step review mechanism.

The content of the closure management plan is stipulated as below:

1) overview of the project, objectives of the closure;
2) post-closure land use;
3) post-closure physical stability;
4) post-closure chemical stability;
5) measures related to removal, evacuation and demolishing of infrastructure, equipment and constructions;
6) physiochemical stability in the project area, rehabilitating and closing plan related to ensuring health and safety of the citizens, and environmental protection;
7) detailed plan on employees and citizens that could be affected before and after the closure of a mine;
8) detailed plan for the preparatory measures during the transition period;

[108] Government of Western Australia, The Department of Mines, Industry Regulation and Safety, 'Statutory Guidelines for Mine Closure Plans (March 2020), 4.

9) post-closure risk assessment and risk mitigation plan;
10) plan on post-closure monitoring, maintenance;
11) plan of temporary and sudden closure; and
12) cost estimate related to mine closure.

In terms of the review process, the Mongolian legal framework provides review and approval process of the mine closure plan which is in line with international guidelines. In particular, a mine developer needs to submit it to the MMHI for review. If the closure plan is not developed as per requirements set forth in the regulation, then it will be given back to a mine developer for revision. Once, the MMHI considers the closure plan is developed satisfactory, it will be forwarded to the METM for review. The METM will accept the closure management plan if it is acceptable.

The flaw in the legal framework is that the closure management plan is developed at the latest stage of the mine, which is contrary to the international best practice requiring the mine closure plan should be developed as early as possible and approved before commencing any activities and be updated regularly. International guidelines dictate that a systematic and beginning-to-end approach for mine closure plan will make it easier and more cost effective to achieve final closure objectives, can improve the opportunities for relinquishment, and leave the mine site in a desired condition post closure.

4.2 Financial assurance

The existing mine closure framework of Mongolia requires the establishment of a financial assurance mechanism based on cost estimates. According to the regulation, the cost estimate should be included in the section of preliminary closure planning of the feasibility study of the project;[109] costs for mine closure should be enough for covering rehabilitation, temporary and unexpected closure, and post-closure monitoring and maintenance.[110] The following costs should be included in the mine closure cost estimates under the existing legislation.

1) costs related to mitigating or reducing negative environmental and social impacts that resulted or could be resulted from mining activities, and rehabilitating costs;
2) costs related to ensuring safety of a mine plant;
3) management costs for implementing closure plan;

[109] Section 1.6 of the Regulation on Rehabilitation and Closure (2019).
[110] Ibid, Section 5.1.

4) post-closure monitoring and maintenance costs; and
5) other costs related to closure of a mine plan.[111]

The scope of the costs covered is stipulated broadly, and the closure costs should be calculated in present value based on third-party's price, which are in line with the industry best practice.

In terms of forms of the financial assurance, international guidelines proposed several forms of financial assurance, however, only one form of financial assurance is allowed in Mongolia, which is the cash to the fund.

A mine developer is required to set up a closure fund.[112] Environmental rehabilitation cost is an integral component of the financial assurance for closure. According to rehabilitation works that have been conducted before the closure the rehabilitation amount will be deducted from the closure fund.[113]

In Mongolia, there is no legal stipulation in place regarding how much financial assurance for mine closure should be provided at any given time in the project's life. International best practice suggests that financial assurance for mine closure should be provided in order to commence mining operations and the financial assurance method for determining the amount should be stipulated in the legislation. Even though the financial assurance mechanism is established under the Mongolian legislation, there is lack of provision on timeframe of providing financial assurance. As a proposed reform, and please see below, the mandating of the financial assurance method for determining the amount of funds that should be contributed to the mine closure fund, and when, plus acceptance to that (currently restrictively defined) fund of diverse forms of financial assurance, would ameliorate this situation. This would be achieved both by raising the bar in terms of the funding required and its timeliness, and by increasing flexibility in how this is done, respectively as per the two reforms proposed above.

Further, under the Mongolian legal framework, financial assurance for closure will only be provided in cash or bank transfer when the license holder submits its request for closure which is contrary to the international guidelines. Mining Policy Framework established by the Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development

[111] Ibid, Section 5.3.
[112] Ibid, Section 5.8.
[113] Ibid, Section 5.2.

(IGF) recommends that legislation should require an adequate financial assurance for closure to commence the mining activities and have it validated or approved by the relevant authority.[114]

Moreover, enforcement of mine closure obligations appears to be incomprehensive. There is no enforcement provision related to failure to make contributions to the closure fund. General provision is stipulated in the Law on Misdemeanour that violations of any obligations when conducting exploration and mining activities will be subject to penalty of 10,000,000 togrogs, official currency of Mongolia, (around £2,598).[115] If large amount of damage occurred to the environment because of failure of satisfactory rehabilitation work, a mining company will be subject to penalty equivalent of MNT 10,000,000 – 40,000,000 (approximately £2,598 -£10,390).[116] The penalty amount is quite low, which is not sufficient for the encouragement of the compliance.

4.3 Environmental, Health and Safety Protection

The Mongolian mine closure regime appears to be incomprehensive for the detailed technical requirements for environmental, public health and safety. However, general provisions on these aspects are in place in the current legislation. For example, in terms of environmental requirements, Article 39 of the Minerals Law outlined the obligations of the mining license holder to restore the environment and to develop rehabilitation plans as part of detailed environmental impact assessment. The Environmental Management Plan should cover actions to mitigate environmental impacts and reclamation including backfilling, re-grading and re-vegetation to achieve designated post-mining uses. With regards to health and safety, the mining license holder has obligation to ensure the operational safety of the enrichment mine plant, safety of all roads, electricity grids, water supply equipment, office, sites and factory.[117]

Standards approved by the Mongolian Agency for Standardization and Metrology[118] include MNS 6296:2001 General standards on open pit mine closure, General standards on heap leaching mine closure (MNS 6297:2011), standards on planting rare flora species (MNS

[114] Intergovernmental Forum on Mining, Minerals and Sustainable Development (IGF), IGF Mining Policy Framework: Mining and Sustainable Development (2013),14.
[115] Section 2.1 of the Article 7.11 of Law on Misdemeanour of Mongolia.
[116] Section 2 of the Article 24.2 of Criminal Law of Mongolia.
[117] Section 6.6 of the Regulation of Rehabilitation and Closure (2019).
[118] Mongolian Agency for Standardization and Metrology is responsible for the development and agreement of standards in Mongolia.

6191: 2010), and international standards on environmental management – water footprint (ISO 14046:2019), environmental management – life cycle assessment (ISO 14048:2004), environmental management – environmental performance evaluation (ISO 14031:2001).

It appears that national standards on mine closure is out-of-date, and international standards which Mongolia is approved, are related to environmental assessments. Thus, this author concludes that regulated standards on mine closure and reclamation management of Mongolia needs to be updated in order to much better reflect international standards on reclamation and closure within the current legal framework in an orderly and comprehensive way.

4.4 Socio-economic considerations

Mongolian legal framework stipulated requirements for a mining company to prepare 'a detailed plan of all the preparatory measures and other measures to be taken during social transition of mine closure' as a part of the closure management plan.[119] Under the Law on Environmental Impact Assessment of Mongolia, in conducting an environmental impact assessment, a license holder should assess the socio-economic aspects of a mine project.

A license holder should conduct a risk assessment to identify the effects of mine closure and to plan preventive or mitigating measures in the closure plan.[120] Detailed plan for employees of the mine project and local people that could be affected by the mining activity both before and after the closure of a mine should be developed as part of a closure management plan.

In the event of sudden closure, regulation stipulates obligations to rehabilitate the mine area, and resolve the safety and social aspects of employees.[121] Moreover, the Regulation of Rehabilitation and Closure enabled the multi-stakeholder's engagement in the mine closure process starting from drafting the closure planning, and its implementation.

However, the flaw of the current legal framework is that the closure management plan is required to be developed at the latest stage of mine life cycle. As a consequence, socio-economic considerations related to mine closure would be unable to be planned in the early stage of mine life cycle. That efforts towards economic diversification, skills development of

[119] Section 2.2.8 of the Regulation on Rehabilitation and Closure (2019).
[120] Ibid, Section 2.2.9.
[121] Ibid, Section 8.6.

local communities commence too late will make the socio-economic plans unable to reach sufficient levels for sustainable results in the absence of the mine.

4.5 Relinquishment and post-closure obligations

In terms of relinquishment, Mongolian mine closure framework appears to be comprehensive. The legal framework provides that upon completion of all the measures stated in the detailed closure management plan, the mine plant can be relinquished. The closure commission[122] established by the Collaborative Order of the Ministries of Mining and Environment will exert control over the entire process of the mine closure. The Commission will decide of the acceptance of the closure based on the result of external inspection. Upon completion of closure, a mine developer should transfer the rehabilitated area to the local administrative body, and costs related to further maintenance and care should be deposited to the bank account opened by a mine developer and local administrative body. Under Mongoloan law, issuance of the acceptance of mine closure will not release the mine developer from the obligation to pay for the pollution in the environment, which reflected 'the polluter-pay principles' even after the closure.[123]

A flaw that was identified in this study is the absence of minimum time frame for post-closure obligation for monitoring and maintenance. In particular, section 10 'Post closure monitoring and maintenance' of the Regulation only provides two provisions, which are a mine developer should conduct post-closure monitoring and maintenance as per mine closure plan, and monitoring and maintenance work can be done by professional entity based on agreements.[124] No minimum time frame for post-closure monitoring and maintenance is stipulated by the legislation.

4.6 Public participation / multi-stakeholder engagement

In the process of implementing the actions associated with preparing closure plan, a mining company should inform to the community that could be affected by mining activities and provide with information about the drafting of the mine closure plan.[125] The issue related to

[122] The Commission includes representatives from MMHI, METM, specialized inspection agency, state administrative body in charge of geology, authority on emergency, local environmental department, a legal entity which prepared the feasibility study, the EIA and closure management plan, local people, and NGO.
[123] Section 8.10 of the Regulation on Rehabilitation and Closure (2019).
[124] Ibid, Section 10.2.
[125] Ibid, Section 2.3.2.

land use after the closure shall be determined in consultation with local people, local governor and land possessor, and be agreed in line with local development goals.[126]

The company has obligation to upload its approved closure management plan in its website, and to inform closure plan implementation process at least once a year to the public.

Public participation and multi-stakeholder engagement in the development of mine closure plan is ensured by the existing legal framework of Mongolia, which reflected the international best practice on mine closure. However, it is worth noting that international guidelines dictate that early public participation during the development of mine closure plan and its amendment will lead to sustainable results. Under the Mongolian legal framework, closure management plan development process starts at least three years prior to a closure of a mine, thus, lack of early, frequent and open communication with multi-stakeholders can lead to misunderstanding relating to expectations of all stakeholders.

[126] Ibid, Section 2.3.3.

5. Conclusions and recommendations

As international guidelines suggest, some jurisdictions have already taken into account of sustainable development, social impacts and local communities' considerations when developing mine closure regulations. The goal of Mongolian mining policy is to promote responsible mining while attracting foreign direct investment and increasing the country's competitiveness in the minerals sector market. To achieve these goals, national legislations on mining are required to provide guidance to the successful mine closure as well as to address issues of environmental liability and responsibility.

This dissertation aimed to assess the current legal framework of mine closure of Mongolia in line with international guidelines. Pursuant to ameliorating the inadequacies to Mongolia regulatory regime and applicable legal frameworks identified in the previous chapter, the author proposes the following provisions, detailed in the subsections below, for their domestic incorporation and adoption into Mongolian law.

5.1. Provision on developing and approving a mine closure management plan in the early stage of a mine development

One of the inadequacies in the current framework is that the preliminary closure management planning which is included as part of the environmental management plan, appears to be sufficient because the content of it is too general. Without a proper closure plan, it is difficult to determine the closure costs estimates that will be incurred to closure activities. Another inadequacy is that the comprehensive closure management plan is developed at the latest stage of the project which is at least prior to 3 years before the closure.

In accordance with the international best practice, the exploration license holder should submit the closure management plan before obtaining a mining license, and have it approved by the state administrative body. Further, the license holder is prohibited to commence operation without a valid closure plan approved in accordance with legislation.

Therefore, a provision on the developing a closure plan with closure objectives, and visions and including the contents required by the legislation at the early stage of the mine should be included in the existing legal framework.

5.2. Provision on closure obligations in mining right transfer process

No closure obligations in the mining right transfer process were stipulated in the legal framework of Mongolia. When the original holder and owners of a mining license sells or otherwise transfers its license to another party, or changes its ownership, it could create risks associated with implementation of the closure plan. Thus, a provision that the original holder of the mining license should remain responsible for implementation of the closure plan in the event of the new owner or management is unable to unwilling to implement the plan, can secure the closure obligation in the mining right transfer process.

5.3. Provision on financial assurance method for determining the size of a mine closure fund

In accordance with best practice, a mine operator must not commence operations until financial assurance for mine closure has been submitted and accepted, and the financial assurance method should be stipulated. The main part of the financial assurance mechanism is how much assurance (how much money) needs to be provided to the mine closure fund at any given time in the mining project's life,[127] however the timeliness aspect of fund additions is currently absent from Mongolian regulation. Different types of financial assurance method are used for determining the amount.

A popular method in the best practise is the periodic readjustment assurance method. It requires the mine developer to submit a revised closure plan periodically with the cost estimates. The amount of assurance required in any year equals the estimated cost if the mine closes at the end of the current planning period.[128] Therefore, a provision on the method for determining the amount is needed to be included in the existing legal framework.

5.4. Provision on diverse financial forms of financial assurance

Cash and electronic payments (i.e. bank transfers) to the mine closure fund are recognised in the current Mongolian legislation. This author proposes the following reform to the above, highly restrictive, state of affairs, namely that: other forms of financial assurance such as an irrevocable or unconditional letter of credit issued to the relevant authority by a bank, a security guarantee by a bank, or a company legally able to do so, security interests, a trust

[127] James M Otto (n 3) 269.
[128] Ibid, 272.

fund, and a combination of the above, should be so recognized. Hence, a provision on the acceptability and recognition of a diverse range of suitable forms of financial assurances is recommended to be included in the existing legal framework regarding mine closure funds.

5.5. Provision on updates of financial assurances

It is crucial for regulators to have sound bookkeeping and monitoring of financial instruments. When mining company merge or restructure, record keeping of financial instruments needs to be updated to reflect the changes in the instruments.[129] Thus, a provision on obligation to update the financial assurances shall be needed when the company is restructured by a process of corporate merger, divestment, or acquisition; or in the case whereby the mine title is transferred, partially or wholly, to other entities.

5.6. Provision on review process of the financial cost estimate by the relevant authority

Where the competent authority is not satisfied with the amount of financial assurance for closure or for removal of a doubt, an independent assessor can be usefully appointed to conduct the assessment and determine the amount of financial assurance for closure required. Thus, this author suggests a provision on an independent assessor monitoring and assessment be introduced (added) to the existing legal framework as part of the overall package of reforms outlined herein.

5.7. Provision on post-closure obligations

The current legal framework does not stipulate time frame of the post-closure obligations. As international guidelines suggest, it would be better to specify in the mine closure regulation the minimum time period of post-closure obligations, such as monitoring and maintenance, that would apply post-closure.

5.8. Other provisions

Provisions regarding enforcement of the existing legislation in the event of failure of violation of any obligation and frequent review and update of environmental, health and safety requirements by the relevant authority are needed. In terms of socio-economic requirements and public participation in the closure plan, the current legal framework should be revised

[129] James Boyd, 'Financial Responsibility for Environmental Obligations: Are Bonding and Assurance Rules Fulfilling Their Promise?' (2001) 61.

to ensure early participation in the development of socio-economic planning of the closure plan. Taking a more integrated approach to mine closure planning and doing it earlier can achieve effective mine closure and completion and mitigate negative effects of unexpected or unplanned closures.[130]

This dissertation has highlighted that the existing legal framework on mine closure of Mongolia reflected aspects of sustainable development by approving the Regulation on Rehabilitation and Closure of 2019. Though mine closure planning and its approval, monitoring, and financial assurance systems need to be regulated comprehensively to better reflect international best practice. Draft revised edition of the Minerals Law of Mongolia is currently being developed and has not yet been disclosed to the public, as at the time of this dissertation's authorship. In line with international best practices, the following should all be mandated consistently across the Mongolian mining sector: mine closure planning at the outset of each new mining project; transparency and constant review of the closure plan; and rigorous mine closure assurance mechanisms.[131]

The cornerstone of effective governance is a legal framework that is clear and certain (predictable). It is essential that the rules and procedure with respect to mine closure should be clear and unambiguous. The content of the law should reflect proven aspects of international best practice.

Mine closure, and the assessment of the applicable mine closure legal framework and regime in Mongolia are important topics that need further research as there is hardly any published research on this, important, topic. This dissertation focused on better informing public policy regarding the mine closure regime of Mongolia, its present state, and how it might be improved. Specifically, the author concludes by suggesting possible reforms and amendments to Mongolia's existing legal framework that would help apply international guidance and best practice to mine closure in Mongolia, for the benefit of its citizens and natural environment.

[130] Australian Government (n 66) 4.

[131] Narantuya D, 'Law on Minerals: Importance of Ensuring Development of Minerals Sector in the Future' (Mongolian Mining Journal, 01 November 2021) https://www.mongolianminingjournal.com/a/71827/ accessed 16 February 2022.

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