TALLINN UNIVERSITY OF TECHNOLOGY
SCHOOL OF ENGINEERING
Department of Civil Engineering and Architecture

ANALYSIS OF REGULATIONS AND PRACTICES OF ENVIRONMENTAL PERMIT PROCEDURES FOR MINERAL RESOURCE EXTRACTION AND OF RECLAMATION OF LAND DISTURBED BY EXTRACTION

MAAVARA KAEVANDAMISE KESKKONNALOA JA KAEVANDATUD ALADE KORRASTAMISE REGULATSIOONIDE NING PRAKTIKA ANALÜÜS

MASTER THESIS

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Tallinn, 2021

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THESIS TASK

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Thesis topic:
(in English) Analysis of regulations and practices of environmental permit procedures for mineral resource extraction and of reclamation of land disturbed by extraction

(in Estonian) Maavara kaevandamise keskkonnaloa ja kaevandatud alade korrastamise regulatsioonide ja praktika analüüs

Thesis main objectives:

1. Literature review and analysing of current situation
2. Analysis of questionnaire
3. Thesis finalization

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1.	Literature review and analysing of current situation	1 March 2021
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3.	Thesis finalization	21 May 2021

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TABLE OF CONTENTS

PREFACE

I would like to express my gratitude to my supervisor Dr. Arvo Iital for his valuable support and contributions throughout the learning process of this thesis. I wish to thank everyone from public sector, local authorities, and enterprise associations and companies whose day-to-day work involves some parts from mineral resource exploration, extraction and usage. Also I wish to thank my family and my fiancée Marjana for supporting and encouraging me throughout my studies and during this project.

List of Abbreviations

EPE	Environmental permit for mineral resource extraction
CMR	Construction mineral resources (sand, gravel, limestone, dolomite, clay)
ECA	Earth`s Crust Act
State	Government of the Republic of Estonia
EB	Environmental Board of Estonia
M^3	Cubic meters
GPECA	General Part of the Environmental Code Act
EIA	Environmental impact assessment
Tukes	Finnish Safety and Chemicals Agency
KOTKAS	Environmental decision information system

1. INTRODUCTION

This thesis deals with the substance of mineral resource extraction, environmental permit nature for mineral resource extraction and the situation of reclamation of land disturbed by extraction.

The aim of the research was to find out problems and contradictions of regulations and practices for environmental permit application proceedings for mineral resource extraction. Also to identify problems and contradictions of regulations and practices for carrying out and ensuring reclamation of land disturbed by extraction. The goal was to present the necessary proposals for improvement or change of regulations and practices for mentioned activities that have been in force since 01.01.2017.

Focus of the research was mainly on regulations, practices, statistics and current situation of mineral resource field of exploration, extraction and use. In the course of this research complete mineral resource extraction, strategy documents and future plans guiding the development of the field, environmental permits issued by Environmental Board and their practices through environmental decision information system, reclamation situation and assurance has been analysed.

In addition for assessing the current situation and problems in mineral resource field, a questionnaire survey was conducted among field specialist working in public sector, in local authorities and in private sector. Three different sectors were chosen to obtain the widest range of possible answers, opinions and suggestions.

The need for this research has emerged from current situation and from increase of various problems and conflicts in the field. Also since 01.01.2017 there have been additional regulation amendments and changes of practices, but new regulations and practices have not been assessed and analyzed in synergy. Therefore, the present research has both an analytical and a practical output. In addition, the Ministry of the Environment has expressed the need to compile a new Earth`s Crust Act. The ministry plans to start development of new Earth`s Crust Act in early 2022.

Research work is divided into 4 major parts: literature review, description and assessment of the mineral resource exploration, extraction, usage and reclamation regulations and current situation and analysis of the questionnaire and discussion with proposals. Literature review briefly describes Estonian geology and mineral resource extraction with quantity analysis. Second part includes description and assessment of procedural proceedings related to applying environmental permit for mineral resource extraction and of reclamation situation of land disturbed by extraction and of according

problems and complications. Analysis of the questionnaire presents questionnaire answers and their assessment. Discussion and proposals presents improvement and modification proposals for mineral resource field.

Research seeks to contribute to clarifying background problems and conflicts associated with applying for an environmental permit for mineral resource extraction and ensuring reclamation of land disturbed by extraction, which can be used in the preliminary development assessment of new Earth`s Crust Act and other future plans.

2. LITERATURE REVIEW

2.1 Overview of Estonian geology and mineral resources

Geologically, the territory of Estonia is located in the north-western part of the East-European Platform. It lies within the boundaries of the southern slope of the Fennoscandia Shield which is mostly composed of Precambrian crystalline rocks [5]. Looking at Estonian geological cross section in figure 2.1, two different complexes are clearly distinguished from each other. Strongly folded Proterozoic crystalline basement consisting of metamorphic rocks and igneous rocks (gneiss and granite), which then are covered with sedimentary rocks from Ediacara and Paleozoic and these, in turn, are mostly covered with loose and uncured Quaternary sediments [6]. Sedimentary complex is represented with Cambrian, Ordovician, Silurian and Devonian. The thickness of sedimentary rocks grows from north to south-eastern direction. It is in correlation with declination of crystalline basement [7]. In Northern Estonia sedimentary thickness is around 100-200 meters and in south-western parts it can be up to 700 meters [6].

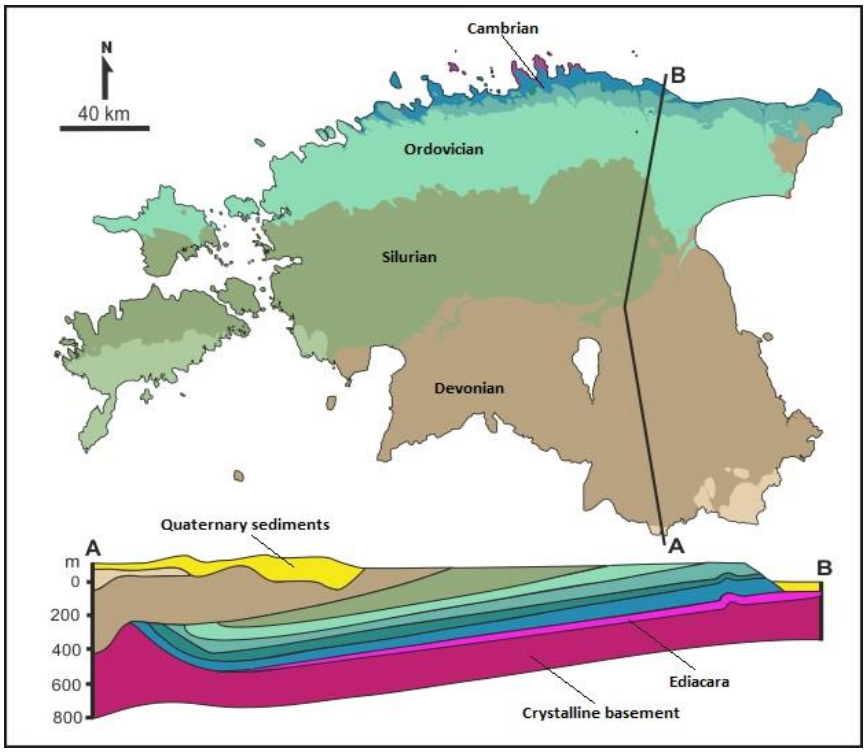

Figure 2.1 Estonian geology [6]

Both Cambrian and Ordovician rocks are widespread in Estonia. Cambrian complex consist mostly of sandstones, siltstones and clays. Those rocks can also be found in Ordovician complex, but dominating part consist of carbonate rocks such as limestones, marls and dolomites. Estonian most known and used sedimentary rock oil shale, known

as kukersite, is also from Ordovician age. Silurian rocks have smaller spread and consist primarily of dolomites. Devonian rocks can be found mainly in southern Estonia. In Devonian complex the main part is formed by sandstones and siltstones. Smaller part consist of limestones, dolomites, clays and marls. [7]

Quaternary cover is rather thin compared to other complexes. In northern Estonia, cover thickens can be less than 5 meters. Because Quaternary sediments originate from glacial age, when the surface was shaped by continental ice, the main rocks are gravel, sand, moraine and clay. [5]

According to Earth`s Crust Act (ECA) mineral resources mean natural rock, sediments, liquid or gas the characteristics of which comply with the requirements specified in the act or established on the basis thereof or the requirements established by the person who orders the exploration and the body or a part of the body of which has been entered in the environmental register as a mineral deposit. [3]

Mineral deposit is a mineral resource body or part of the body which is explored by geological exploration and registered in the environmental register, which is managed by Land Board of Estonia. In accordance with the law there are two ways or permits of exploration. First is geological investigation, which is targeted for scientific research or geological operations conducted to establish the geological structure of the Earth's crust. Second is geological exploration, which is used in order to register and extract mineral resources. Both permits are issued by the Environmental Board of Estonia (EB). [3]

Mineral resources are only registered if they comply with the requirements specified in ECA. Detailed requirements for mineral resources are established by a regulation of the environmental minister for the area. Total of 12 different mineral resources have been registered in Estonia, which are shown in table 2.1 [3]. It is important to note that mineral resources have different genesis depending on their location. Genesis affects resources composition and characteristics, that’s why many deposits have different demand and usage [5].

With geological exploration a proposal for determination of a category for mineral resources are made. The category shows the quality and use classification of the resource [3]. According to the registered category, mineral resource extraction charges are applied. This charge is paid for the extraction, use or rendering unusable of a mineral resource belonging to the Government of the Republic of Estonia (State) [12]. State owned mineral resources are bedrock resources, resources in public water bodies and resources on state owned land [3].

Every year Land Board complies a consolidated balance of mineral resources, which is a statistical report on the quantities of mineral resources and changes. Latest balance was compiled for the year of 2019. As of 31.12.2019, a total of 936 deposits have been registered in the list of deposits in the environmental register. [9]

Table 2.1 Mineral deposits registered in environmental register [9]

Mineral resource	**Registered deposits**
Oil shale	1
Phosphate rock	4
Lacustrine lime	1
Lake mud	2
Sea mud	3
Peat	280
Limestone	58
Dolomite	36
Sand	317
Gravel	187
Clay	46
Crystalline building stone	1

Based on the detail of the exploration, registered mineral resources are divided into proved reserves and probable reserves. In some areas, bordered by a mineral deposit reconnaissance resources may be designated. Also proved reserves and probable reserves are divided as economic and potentially economic on the basis of their possibilities of use. Potentially economic reserves can't be extracted, because they are prohibited under regulations or it is impossible to extract from the standpoint of environmental protection. Deposits consists of at least one, usually several explored blocks of mineral resources, which are then registered as economic proved reserve or probable reserve and vice versa. Different kind of mineral resource status and categories are decided by the Land Board when making the entry in the environmental register. Results of geological exploration and other information available at the time are taken into account. [3]

2.2 Mineral resource extraction and usage

In Estonia, mineral resources utilizing has had quite long history. In order to extract and use mineral resources, it must be economically viable. The amount of mineral resources extracted, as is typical of a dominant market economy system, is determined by demand. However, more and more attention is being paid to sustainable use of mineral resources with the least environmental impact. [10]

2.2.1 Oil shale

Oil shale is considered to be the most important mineral resource in Estonia. Oil shale mines and quarries are mainly located in Ida-Virumaa County. Only old Ubja mine and current Ubja quarry remain in Lääne-Virumaa County [17]. As of first quarter of 2021, there are in total of 18 valid environmental permits for mineral resource extraction (EPE) for oil shale extraction. Of those, nine permits are for quarry mining and other nine are for underground mining [18].

According to ECA, the total annual volume allowed to be extracted is 20 million tonnes [3]. Although 20 million tonnes of oil shale is allowed to be extracted, between 12 and 16 million tonnes is extracted yearly. Yearly extracted volume of oil shale is show in figure 2.2 [9].

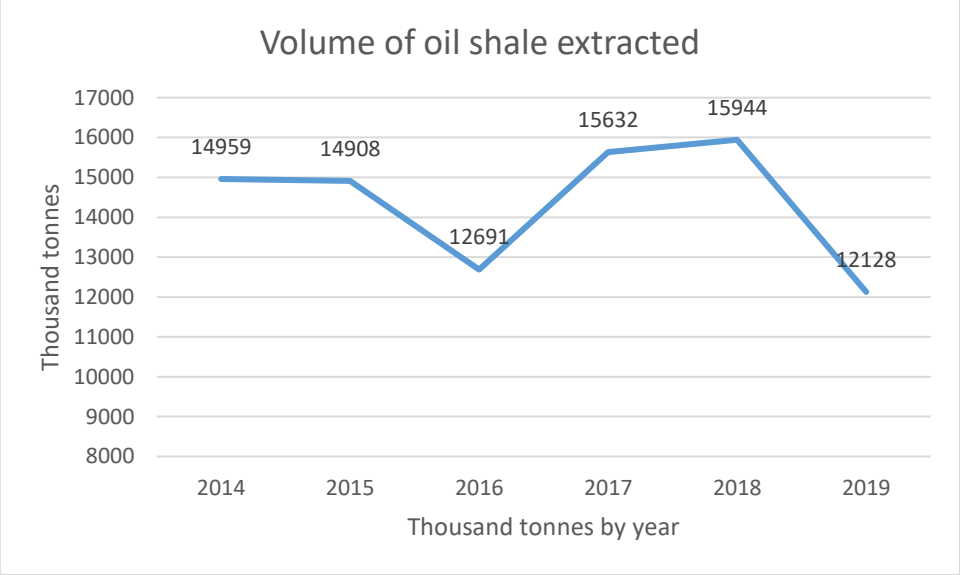

Figure 2.2 Volume of oil shale extracted from 2014-2019 [9]

Oil shale use has been historically established in Estonia. Main fields are electricity and heat production, shale oil and cement production. Due to its low calorific value and high mineral content, oil shale has no export potential as an energy resource. Economic viability is limited to use as a raw material for industries close to mines and quarries.

Export potential of products obtained from oil shale processing, such as shale oil, chemical products and electricity, can be considered good. In recent decades, electricity and heat production has clearly dominated, but shale oil production shows a steady growth trend. [17]

Major change in energy production has taken place in recent years. According to Statistics of Estonia, in 2018, 76% of electricity was produced from oil shale, in 2019 only 57% was produced. It is important to note that electricity production from renewable sources are increasing year by year. In 2019, renewable energy growth was 5% compared to 2018. Wind energy growth was around 8%. Wind energy is accounting for a third of total renewable electricity production. Production of electricity from wood and biogas has also increased significantly [19]. Given the changes taking place in the world and European Union plans to move towards more environmentally friendly energy production solutions, the volume of oil shale use in energy production is likely to decrease even more in the coming years.

2.2.2 Construction mineral resources

Most diverse group of mineral resources extracted in Estonia are construction mineral resources (CMR), under which include sand, gravel, and clay and carbonate rocks such as limestone and dolomite [8]. Estonia is more or less evenly covered with CMR of commercial interest, but different qualities and types of resources are unevenly found [5]. As of first quarter of 2021, there are in total of 515 valid sand and gravel, 6 clay, 4 sea mud, 1 lake mud, 50 limestone and 31 dolomite EPE. The sum of sand and gravel permits have been added together, because permits usually contain both resources [15].

CMR are mainly used in construction sector and industry sector. Most unprocessed and processed CMR are used as filling aggregates. That field of application is very wide and includes construction of buildings, roads and railways. CMR aggregates are also widely used in other construction materials as filler mixtures. Such common materials are concrete, precast concrete elements, asphalt concrete and asphalt mixtures [10]. CMR which have technological properties are used in different industries like cement, lime, and dolomite and glass production [8].

Currently there is no precise data on CMR volumes used in different sectors, but about 71% of extracted limestone is used for state road construction. This is followed by concrete industry and other areas. More than half of total gravel and sand extracted are used for state road, local road and gravel road construction. [20, 21]

Main goal for the Road Management Plan for State Roads for 2021-2030 is to build four-lane state highways (Tallinn-Narva, Tallinn-Tartu and Tallinn-Pärnu-Ikla). Second important goal is to make gravel roads dust-free by 2030 [22]. Another high interest and important international project is construction of Rail Baltic railway. Mentioned infrastructure developments require large amounts of CMR. As many projects overlap in certain periods, annual consumption of CMR is expected to increase, which in turn will increase the need for new quarries [21, 25]. Total amount of CMR required for the four-lane state road construction has not been analysed yet, but approximate amounts for Rail Baltic railway construction are known. In total, about 1.5 million m^3 of limestone and about 15 million m^3 of sand and gravel are needed. The amount of gravel or sand needed can be reduced by using limestone by-product from oil shale extraction. Specific CMR needs will become clearer during preparation of final projects [21].

The use of CMR are affected by their quality and properties. According to Estonian Transport Administration, up to 30% of total limestone stock and up to 20% of total sand and gravel stock are only suitable for state road construction. They have also stated that, the annual volume of CMR required to ensure state road maintenance will increase by 15% by 2030 [26]. When trying to assess more precisely the possibilities of using CMR registered in the environmental register, a problem arises with the quality indicator compliance of CMR requirements established for raw materials needed in construction and industry sector.

From 2014-2019 on average, construction limestone accounted for 83%, cement limestone for 12% and technological limestone for 5% of the annual total volume limestone extracted. Construction dolomite accounted for 81%, technological dolomite 16%, ornamental and aggregate dolomite 3% of the annual total volume dolomite extracted. Construction gravel accounted for 98% and aggregate gravel accounted for 2% of the annual total volume gravel extracted. Construction sand accounted for 66%, aggregate sand for 33% and technological sand for 1% of the annual total volume sand extracted. Biggest change in the amount extracted was for aggregate sand, which has almost doubled. Figure 2.3 shows only extracted CMR volumes extracted by year. In addition, besides shown in figure 2.3, approximately 40 thousand m^3 of clay was extracted, of which 60% was cement clay and 40% ceramic clay. Sea and lake mud was extracted in very small quantities. [9]

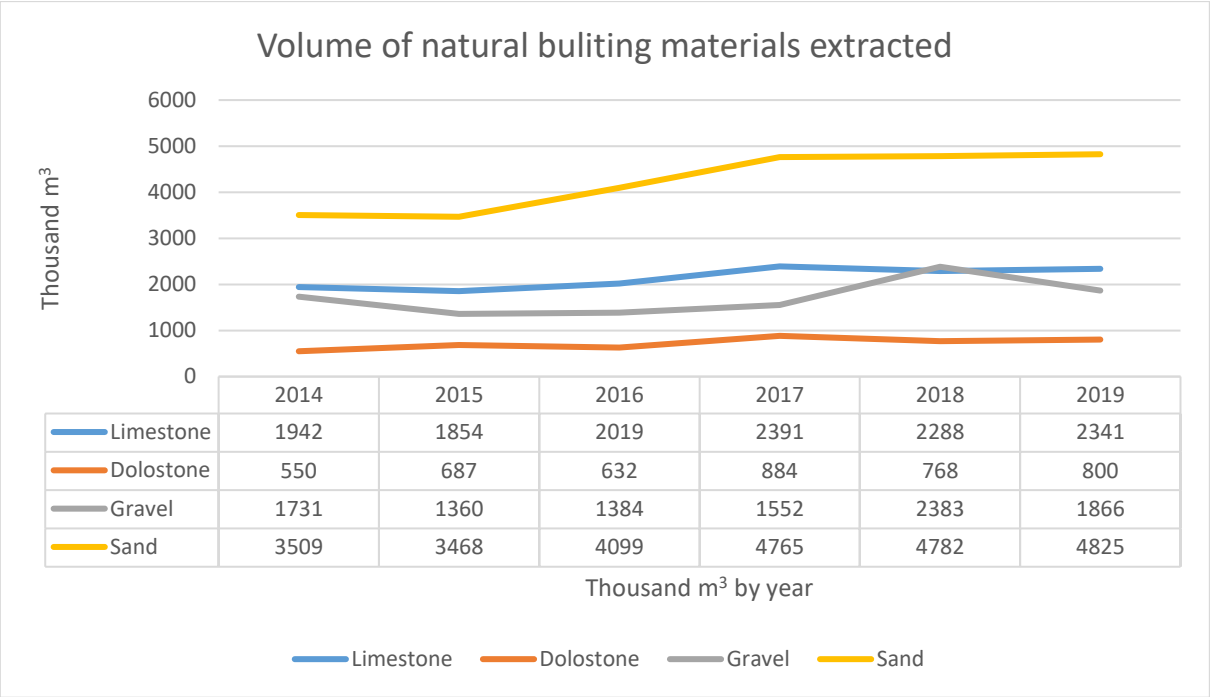

Figure 2.3 Volume of CMR extracted from 2014-2019 [9]

It is important to point out that CMR available for extraction are limited. Main problem is that most favourable deposits are located near towns, villages, and protected areas. Those are big concerns for carbonate rock extraction in northern Estonia where largest deposits and consumers are located. This problem has been current over 20 years and is still waiting for a reasonable solution. [5]

2.2.3 Peat

As of first quarter of 2021, there are in total of 127 valid peat EPE [15]. Peat is divided into two types according to its origin and use. Often both types occur together in the same area. One type is sapric peat, which is used mainly as energy peat. Second type is fibric peat, which is used mainly use as fertilizer [16].

Peat is used to produce horticultural and different absorbent materials. Peat-based growing substrates are used in pre-cultivation and cultivation of a large number of plants, including the pre-cultivation of plants that are later planted in the open. The use of peat helps to compensate for the reduction in arable land and allows the use of soil-free cultivation methods. Also other uses could be found, such as in medicine, cosmetics and the chemical industry. Peat can and could be used to produce different unique products. Today's main selling point is horticultural peat. Exports of horticultural peat account for a large part of peat production volumes. [8, 23]

ECA regulates the allowed annual peat extraction rates. Maximum annual amount allowed for extraction is 2,850 thousand tonnes. That amount is distributed variously between counties. This means that in one county, the sum of extracted quantity issued with EPE may not exceed the annual allowed amount [24]. Peat extraction is also regulated by a list of peat areas suitable for extraction. EPE may and can be submitted only for the areas on the list [25].

Before 2014, sapric peat extracted volume was higher than fibric peat volume [16]. As shown on figure 2.4, extracted volume is now lower for sapric peat. Given the potential of fibric peat and the fact that energy peat has to compete with other energy resources such as gas or fuel oil, and considering current fossil fuel market and climate objectives, the use of sapric peat is set to decline in the near future.

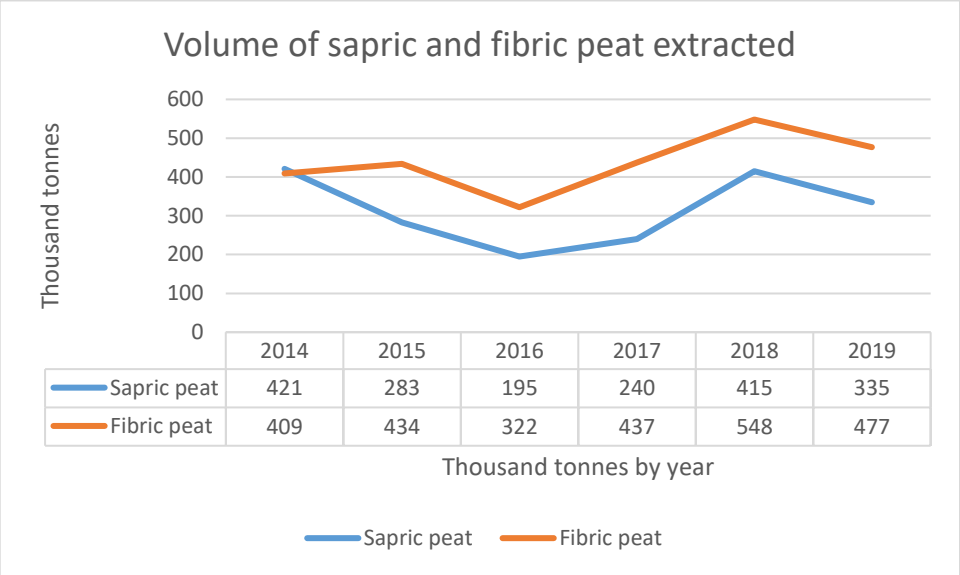

Figure 2.4 Volume of sapric and fibric peat extracted from 2014-2019 [9]

2.2.4 Other mineral resources

Currently there are no mines or quarries for crystalline rock. The only granite deposit is located in Maardu, but the quality is fluctuating and there are technical difficulties to operate extraction activities there [5]. Rakvere phosphorite deposit is the largest in Europe in terms of its explored reserves, but for environmental and technological reasons, phosphorite is currently not extractable or usable [8].

3. REGULATIONS AND PRACTICES

3.1 Regulations of mineral resource exploration, extraction and usage

3.1.1 Regulations in Estonia

Mineral resource exploration, extraction, use and other activities related to earth's crust are regulated by ECA, which main purpose is to ensure sustainable and economically efficient use of the earth's crust and to reduce environmental impacts arising thereby to the greatest extent possible. [3]

Modern ECA was first adopted on 09.11.1994, after the time of Estonian re-independence. It defined several earth's crust concepts, terms and objects. Geological surveys, exploration and extraction, procedure for general geological research, various technical requirements and reclamation of land disturbed by extraction were regulated. It provided the legal bases for extraction, including requirements for an extraction permit and main tasks of state supervision. [1]

ECA has been amended and integrated several times in accordance with technological and economic developments and general regulation changes in Estonia. In 2004, Mining Act was adopted, which regulated construction of underground structures, underground projects, underground extraction operations and marquee work. General requirements and conditions for extraction were set, including termination, suspension and safety. Procedures were put in place for assessment and attestation of the responsible specialist [11]. In the same year new ECA was adopted which was based on the ECA from 1994 [4].

Current in force ECA was drafted in the period of 2010 to 2016. This process was carried out as part of the codification of environmental law. ECA was adopted on 27.10.2016 and entered into force on 01.01.2017. Again, it was structurally based on the old ECA from 1994, but several amendments were made to ensure compliance with the General Part of the Environmental Code Act (GPECA) [4]. Latest amendments and additions were introduced in 2020. Most important changes were:

1) Merging of ECA and Mining Act;
2) All permits related to mineral resources are issued by EB;
3) Division of state and local importance mineral resource deposits were abrogated;
4) The role of the state was strengthened in mineral resource organizing;

5) Exploration permit and EPE proceedings were simplified and some procedural deadlines were shortened.

Main premise of mentioned amendments and several other amendments were to make mineral resource exploration permit and EPE proceedings and related activities more transparent and less bureaucratic. Changes also sought to raise that mineral resources are exploited in a socially and environmentally acceptable manner taking into account the balanced development of nature use, environmental protection, economic and social effects.

In addition to regulations provided in ECA, implementing acts have been prepared to regulate various activities. They are governmental or ministry acts. ECA is supplemented by 12 different acts [3]. Mineral resource exploration, extraction and other earth`s crust activities are also linked to Atmospheric Air Protection Act, Water Act, Waste Act, Nature Conservation Act and Environmental Impact Assessment and Environmental Management System Act.

Regulations for environmental permit for mineral resource extraction

Mineral resource exploration, extraction and other related activities require a specific permit. Exploration and other related activity permits are regulated by ECA, but after the codification of environmental law, extraction permit is now part of one of the specified environmental permits of GPECA. [13]

Environmental permit entitles to perform one of the following activities or several of the following activities simultaneously [13]:

1) Special use of water;
2) Emission of pollutants from a stationary source of pollution into the ambient air;
3) Management of waste;
4) Extraction of a mineral resource.

EPE is issued in accordance with the regulations and procedures provided in GPECA and in Administrative Procedure Act, taking into account the specifications enacted in ECA. [13]

The aim of establishing single environmental permit and making the corresponding changes, was to reduce bureaucracy and to establishing one environmental system where all environmental permits are linked, creating one single permit. [14]

It is too early to say whether the creation of a single environmental permit has brought great benefits, but first concerns regarding EPE application proceedings have already

been risen. One concern is the deadline for issuing EPE. Difference is that the environmental permit for water usage, air pollution or waste management is issued within 90 days, but EPE is issued within one year after the acceptance of proper application. This difference is not in line with the integrated single environmental permit process. Application proceedings are also not uniform, which raises other concerns.

Environmental decision information system

Environmental permit application process takes place in environmental decision information system (KOTKAS), which has been in action since 01.01.2020.

Purpose of creating and implementing this system was to make environmental permit application processing and proceedings easier and faster to specialist working at EB. One system also makes applicants service easier and more efficient. This system has pre-filled boxes and auxiliary calculators to assist the applicant. In addition, this system allows you to declare various reports and environmental charges, and state fee can be paid through the system immediately upon submission of the application. [15]

According to State Fees Act, a state fee of 1,000 euros must be paid upon environmental permit application submission. The exact amount depends on the size of the company and activities related to several different areas. When applying for amendment of an environmental permit, 50% discount is considered. [12]

Creating one large and integrated environmental decision information system is very good and necessary for all parties as all environmental permits and other activity permits are gathered in one system. However, when regulations, practices or technologies used change, then it is necessary to update or change the information system. This can require large amount of financial resources and time. One concern is that this may become an obstacle to implement minor changes that would be necessary, but given the need of financial resources and time, it will be decided not to implement necessary changes.

3.1.2 Regulations in Latvia

In Latvia, most common mineral resources are called widespread mineral resources, which are sand, gravel, clay, loose freshwater rocks, peat, loam, sandy loam and aleirite. Also limestone and dolomite are found. In Latvia, mostly sand and gravel, dolomite, clay and peat are extracted. [31]

Mineral resource exploration, extraction and use are regulated with one act and three additional regulations. Main act is Law on Subterranean Depths, which purpose is to ensure complex, efficient, environmentally-friendly and sustainable use of mineral resources, as well as specify the requirements for the protection of subterranean depths. This act also regulates the ownership of mineral resources. Subterranean depths and all mineral resources present are owned by the land owner. [32]

Procedures for applying mineral resource extraction permit are regulated by Cabinet Regulation No. 696 "Procedures for the Issue of Licences for the Use of Subterranean Depths and Authorisations for the Extraction of Widespread Mineral Resources, as well as Procedures for the Lease of the Land of a Public Person for the Use of Subterranean Depths". [33]

If a developer has interest to extract mineral resources, then first they have to obtain land ownership or acquire lease rights, because mineral resources belong to the landowner. In cases when land of interest is owned by the state or local authority, the permit for the use of mineral resources, except production of hydrocarbons, or the authorisation for the extraction of widespread mineral resources is issued to a developer who has won in a competition or tender regarding the land lease rights and the receipt of the permit or authorisation [32].

If necessary, geological exploration is carried out or when it has already been carried out, then clarification of possibility to extract mineral resources is done by the Latvian Environment, Geology and Meteorology Centre. Then the developer can submit application to the State Environmental Service for passport of deposits of mineral resources and the limit for the extraction. Passport contains basic information regarding the deposit of mineral resources, accepted stocks, quality of the stocks and the opportunities for use. Limit regulates the maximum permitted extraction amount in specified time [33].

When the passport and the limit have been received, application must be submitted to the Regional Environmental Board to perform an initial environmental impact assessment (EIA). If the decision is not to carry out an EIA, then developer receives technical rules. In case the authorisation is received by local authority, the Regional

Environmental Board issues technical regulations even if EIA is not necessary. The Environment State Bureau gives an opinion to the EIA report, but final decision on proposed development is given by the local authority. When developer receives a positive decision from the local authority, application to receive a permit or authorisation must be submitted to the State Environmental Service or to the local authority [31]. If the territory intended for the extraction is located within the protection zone of state protected cultural monuments, then a written consent of the National Heritage Board needs to be added to application. [33]

Local authorities in the administrative territories issue authorisations for the extraction of widespread mineral resources in accordance with the procedures specified by the Cabinet and in compliance with the limits specified by the State Environmental Service. Permit is issued by the State Environmental Service when [32]:

1) The deposit of widespread mineral resources is included in the administrative territory of several local authorities;
2) In addition to widespread mineral resources, in the deposit of mineral resources, stocks of other mineral resource has been accepted;
3) Mineral resources are extracted by a local authority.

For extraction of hydrocarbons like untreated petroleum (crude oil), natural gas and gas condensates, a permit from The Ministry of Economics is also needed. In this situation, ministry also performs administrative supervision over the project. Extraction permits are issued for the period up to 25 years [32].

If the permit holder or authorisation holder wishes to make amendments to the permit or authorisation, they must submit the application to the issuer of the permit or authorisation. It's necessary that in making of amendments all above mentioned procedures must be done. [33]

In Latvia, the purpose of reclamation is to ensure full use of extracted land after extraction activities end and to prevent threats to human health and to the environment, as well as to promote land integration into surrounding landscape. Reclamation type and actions is planned in mineral resources extraction project. Reclamation can be carried out parallel to extraction or can be started one year after extraction activities end. Reclamation type and actions need to be co-ordinated with local authority when developing extraction project. If reclamation type is different than provided in the project, new reclamation plan can be submitted to local authority. Currently there are no financial mechanisms to ensure reclamation obligations. When company goes bankrupt the reclamation obligation goes to the landowner. [34]

3.1.3 Regulations in Finland

Major metallic ores extracted in Finland are copper, nickel, cobalt, zinc and lead ores. Most popular industrial mineral resources extracted are carbonates, apatite and talc. Metallic and industrial mineral resources are state regulated and controlled. CMR are owned by the landowner. [31]

Metallic and industrial mineral resources exploration, extraction and use are regulated by the Mining Act. Construction minerals are regulated by the Land Extraction Act. Addition to Mining Act, the Government Decree on extraction activities provides important provisions to Mining Act. Mining Act establishes that mineral resource exploitation rights belong to the discoverer. Another relevant regulation to extraction activates is Environmental Protection Act. [31]

Concerning mineral resource prospecting and exploration, everyone has the right to conduct geological measurements, even on another's land, and thus no permission is needed provided that activities do not cause any damage or more than minor inconvenience. Developer may reserve an area by submitting a notification to the Finnish Safety and Chemicals Agency (Tukes). Exploration permit is needed if the exploration cannot take place as prospecting work, or if the landowner has not given permission for it, or if the activity could cause harm to people's health, public safety or other industrial or commercial activity or deterioration of landscape or nature conservation values. [31]

For establishing mine or quarry and to undertake extraction activity an extraction permit and an extraction safety permit is required. Named permits are processed and issued by Tukes, except for uranium and thorium extraction. For those minerals the state decides issuing the permit. Exploration permit holder has priority to apply for extraction permit within an exploration area. [41]

Extraction permit application must include same basic information as for exploration permit, but needs to include more extensive assessment of the suitability of the deposit for exploitation. If necessary, an EIA report must be added to application. After application is accepted and application complies with the Mining Act regulations, Tukes request statements and opinions from local authorities, the Centre of Economic Development, Transport and the Environment and the authority or institution responsible for management of the area. Also if necessary statements and opinions are requested from other authorities overseeing public interests, appropriate Regional Council and indigenous people. [41, 42]

Other institutes that are involved in issuing extraction permit are Metsähallitus for permitting activities in state-owned land and the Ministry of Environment for permitting activities in nature conservation areas. [31]

Before extraction permit issuing decision is made, a hearing will be arranged for stakeholders with an opportunity to express their opinions and provide explanations. Stakeholders other than those involved, shall be provided with an opportunity to express their opinions on a matter. Developer is allowed to provide explanations concerning submitted requirements and opinions. [41, 42]

In order for an extraction permit to be issued, the deposit needs to be exploitable in terms of size, ore content and technical characteristics. After permit is issued, access to the land is needed to start extraction activity. This is arranged by voluntary agreements with the landowner. If agreement is not achieved, then the National Land Survey of Finland or the state can grant land redemption permit. Prior to granting said permit, the state request statements from relevant authorities, Regional Council and the Centre of Economic Development, Transport and the Environment. [42]

Tukes also processes extraction safety permit. After application is submitted, Tukes requests statements and opinions from local rescue authority and the Radiation and Nuclear Safety Authority. Similar to extraction permit process other stakeholders are given an opportunity to express their opinions and provide explanations. [41]

When EIA is mandatory or needed, it is supervised and controlled by the regional Centres for Economic Development, Transport and the Environment. EIA outcomes inform extraction permit and environmental permit application process. Environmental permit is mainly for emissions and is issued by the Regional State Administrative Agency. Environmental permit supervision of compliance to conditions is conducted by the Centres for Economic Development, Transport and the Environment. [41]

Extraction permits are usually issued for an unlimited period after becoming legally valid. Some permits can be fixed-term for maximum of 10 years. After term time an extension of 10 years can be applied. This process is similar to applying for a new permit. [41]

Extraction activity ends when extraction permit expires or is cancelled. Within two years after the termination of extraction activity, the developer needs to reclaim the area to a condition complying with public safety and set conditions. After reclamation, developer submits notification to Tukes and final inspection is carried out. Tukes inspects whether necessary measures have been completed, and assess the elements needed for protection of public and private interests. [41]

After Tukes issues extraction permit and Regional State Administrative Agency issues environmental permit, both authorities order the developer to lodge a collateral for follow-up measures. The guarantee from Tukes covers operations to bring extraction area into a case of public safety. With a guarantee issued by the Regional State Administrative Agency, the extraction area will be reclaimed to an environmentally safe condition in the event of operator bankruptcy. [41]

Extraction of CMR such as stone, gravel, sand and clay is regulated by the Land Extraction Act. A permit is required for the extraction of CMR. Permit application must include extraction plan of mineral resources and management of the environment and, if possible, plans for the subsequent use of the land in question. Last condition is not necessary if the extent and effect of planned activities are minor. Also if needed, EIA must be carried out. [43]

Permit for extraction of CMR is issued by a local authority appointed agency. Before the permit is issued, appointed agency requests statement and opinion of the regional environmental centre if applied area holds national of other major significance for nature conservation or applied area is important for the protection of waters. Also when applied activity has direct impact on the land of another local authority. [43]

Permit for extraction of CMR must be accompanied by additional conditions which set what developer must do to avoid or minimize the damage caused by extraction activities. Additional conditions are not needed when they are made clear in the extraction plan. Additional conditions are set for the direction in which extraction proceeds and for protection and clearing of the area during extraction and after. Also for preservation and replanting of trees and other vegetation and new planting during extraction and after. [43]

Local authority or appointed agency may require the developer to provide acceptable guarantee before beginning extraction for additional conditions set. Notice of a pending application is posted on the local authority notice board, and affected stakeholders will be given an opportunity to state their case. After everything is analysed and there are no restrictions, the permit for extraction is issued. [43]

The permit is issued for a fixed period, but not for more than 10 years at a time. Permit may be issued for a longer period in special cases, but not for more than 15 years. If the permit is issued for less than 10 years, and part of the resources to which it applies has yet to be extracted when it lapses, the permit may be extended so that its combined period of validity does not exceed 10 years. [43]

3.1.4 Estonian mineral resource strategies and future plans

Strategic document that guides Estonian mineral resource exploration, extraction and usage is the General principles of Earth`s crust policy until 2050. This document defines state role as the main owner of mineral resources and interest for mineral resource exploration, extraction and usage. It provides a long-term vision and direction for managing the field, and addresses full potential of Earth's crust, including mineral resources, Earth's crust as base and as a construction environment, groundwater and geothermal energy. Also provides framework strategy for development plans and regulations related to the field. This document affects planning and development of areas of economic development, education (including environmental education), and spatial planning. [36]

Another important strategic document is the National Development Plan for the Use of Oil Shale in 2016-2030. Main purpose of this document is to ensure the most environmentally friendly and economically efficient use of oil shale. In addition, strategic goals for the development of oil shale use have been determined and measures and activities necessary to achieve them are described. [37]

Strategic document and development plan for CMR was the National Development Plan for the Use of Construction Minerals in 2011-2020. Main purpose of this document was to determine state interest and resolve contradictions and problems related to CMR extraction and usage. Also to ensure CMR security of supply in construction sector. On 30 November 2017, state decided to terminate the implementation of the development plan, as strategic objectives of the development plan for CMR have been achieved. [2]

As of today, there is no new development plan in force and no plans are under discussion. One of the documents that will guide the CMR exploration, extraction and use is the thematic spatial plan which is currently being initiated. [45]

According to state action plan task number 3.10, the Minister of Public Administration shall initiate the thematic spatial plan and strategic impact assessment of Harju County [35]. Goal of the thematic spatial plan is to determine locations of promising future quarries, exploration areas and expansion areas of active quarries in Harju County. Promising areas will be determined based on the interest of the state and in co-operation with local authorities, taking into account the economic, cultural, social and natural environment impacts. Local communities and individuals whose interests may be affected by the plans will be involved in the preparation of the plan. [45]

During the preparation of the thematic spatial plan, a methodology will be developed, on the basis of which the existing and perspective deposits, quarries and exploration

areas will be categorized according to the perspective of their use. In addition, the plan envisages guidelines for the use of these areas. Categorization helps to control sustainable use of CMR, time required to deplete quarries and reclamation of disturbed land by extraction. [45]

While main principal direction has been chosen, there are a number of open matters. One point is what the rights and obligations of the thematic spatial plan will be. Will the plan be informative document or will it be a document guiding activities in the field. How is state interest assessed in the plan and does the plan reduce bureaucracy and make EPE application proceedings more efficient. It is also undecided what will EPE applying regulations be and what will permit proceeding process be in the areas where thematic spatial plan has been adopted. Currently there are many open questions surrounding thematic spatial plan.

The main principles of General principles of Earth`s crust policy until 2050 points out three important development directions that coincide with the objectives of the thematic spatial plan. Those are following [36]:

1) When directing the selection of a location for use of Earth's crust, practical, sensible, and economical solutions will be sought for Estonia on the basis of the best practises. The management of the use of Earth's crust and thematic spatial planning will work in concert;
2) To better manage the use of Earth's crust and to realise the interests of the state, the state will direct the selection of a location for use of Earth's crust in situations where it contributes to the rational and sustainable use of resources, reduces significant negative environmental, social, and economic impacts, and facilities the management of use of Earth's crust;
3) To create consistency in the regulatory provisions in the field of spatial planning and Earth's crust, the relationship between different levels of spatial planning will be clearly determined with the management of use of Earth's crust.

Considering mentioned principles and the purpose of thematic spatial plan for mineral resource exploration, extraction and usage, it is significant progress in the development of mineral resource field. This plan must be done in a very thoughtful, open and inclusive manner taking into account all stakeholders opinions and proposals.

In order to develop exploration, extraction and use of future mineral resources and non-utilized mineral resources such as phosphorite, the Ministry of Economic Affairs and Communications is preparing an analysis and proposals for a mineral resource concession. This task is also presented in state action plan under task number 3.30. The

deadline for analysis and proposals of mineral resource concession is set for April 2022 [35]. Purpose of mineral resource concession is for the state to find the best developer and technology for extraction and management of state owned mineral resources. This process must be done to ensure the lowest possible environmental impact and maximizing economic returns. With concession it is very important to involve local authorities, local communities and other stakeholders in the process. [46]

Similar to the thematic spatial plan, new regulations and practices for EPE proceedings need to be devised and implemented for mineral resources which will go under the concession. Current regulations do not support EPE issuing and other procedures related to thematic spatial plan and concession. Issuing EPE through a concession would require a radical change in existing practice. As concession is by its nature a purely economic issue it should belong to Ministry of Economic Affairs and Communications jurisdiction.

As of first quarter of 2021, the Ministry of the Environment is in the process of amending current ECA. The aim is to eliminate the shortcomings that have emerged during implementation of ECA, primarily due to practice. Provisions are clarified and missing provisions are added in order to ensure general clarity and common understanding of ECA provisions. In the planning stage, bigger amendment procedures were planned, but after analysing proposals submitted under the intention to develop new ECA, the thematic spatial plan and concession plans, it was decided to introduce faster technical amendments and start developing a completely new ECA from the beginning of 2022 [45]. New ECA would no longer be based on the 1994 ECA.

Recently an important change made, which was proposed in general principles, was the creation of mineral resource management competence in the Ministry of Economic Affairs and Communications. In addition Estonian Geological Survey was created, which is the subdivision of the Ministry of Economic Affairs and Communications. Main field of services are geological mapping, geological research, storage and ensuring the availability of geological information, advising government agencies and informing the public. New positions were also created in the ministry structure, whose task is to coordinate the strategic planning of economic and socio-economic development of mineral resources and to deal with related issues and to plan geological research. [46]

3.2 Environmental permit application proceedings for mineral resource extraction

3.2.1 Proceeding stages

For this chapter, addition to assessing different regulations, EPE application proceedings and current situation, EPE proceeding and EPE issuing ordinances procedures and data was analysed. Open proceedings for new permits and permit amendments have been taken into account. In total, 47 different EPE proceedings and EPE issuing ordinances data were analysed from KOTKAS system. Of those, 15 new EPE for sand and gravel, 10 for limestone and dolomite, 1 for oil shale, 3 for peat and 1 for clay. In addition, 6 EPE amendments for sand and gravel, 5 for limestone and dolomite, 3 for oil shale and 4 for peat.

Actions prior to submitting an application

Before submitting EPE application, developer selects area where they want to conduct mineral resource extraction. Some developers carry out preliminary work and analyse whether it is reasonable to apply in that area and assess how local authority and communities are minded towards applied activities. In some situations mineral resource security of supply is considered. But some developers leave everything mentioned for EB to assess and process.

Current situation and practice where developers can select location based on their needs has caused conflicts and resentment among local authorities and communities [15]. It should be noted that, mineral resource exploration and extraction has become much more relevant than before and public interest has never been bigger. Local authorities and communities standpoint is that mineral resource exploration and extraction location should be regulated by the state, taking into account environmental, economic, social, cultural and other impacts [45].

Submitting an application and compliance check

Application for a new EPE or EPE amendment is submitted through KOTKAS system and is automatically registered as a new procedure. Procedures for amending EPE are the same as applying for a new EPE [3, 15]. In the past, applying for a permit went through a correspondence system and there was no uniform system. Applications were submitted both in writing and digitally. Issued permits were entered into environmental permit system, which also included other field permits. Today, this system is no longer used.

As of first quarter of 2021, EB has in total of 105 new EPE application active proceedings and in total of 73 EPE amendment application active proceedings. Majority of application proceedings, as shown on figure 3.1, are for sand, which is then followed by limestone, peat, gravel, dolomite and then oil shale. There is also one EPE amendment application active proceeding for clay. For EPE amendment, applying for extension of permit validity is most frequent. Usually both extension of validity and extraction area enlargement are applied together. [15]

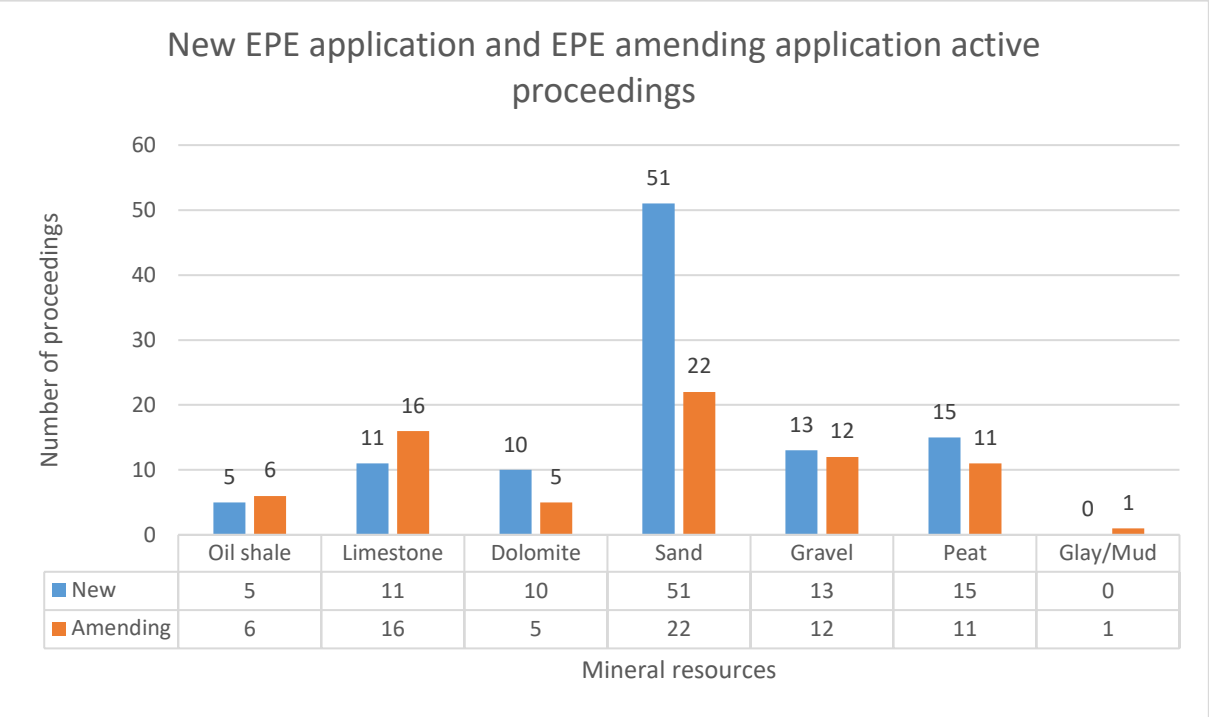

Figure 3.1 Number of active new EPE and EPE amending application proceedings [15]

After application is submitted, a permit specialist and, if necessary, a team of specialist are appointed to process the application. First step is compliance check, which must be done in 21 days. Formal requirements and important content is checked. Application and annexes are also forwarded to Land Board for verification of submitted data. Overlaps with other projects and constraints are checked by the Land Board. When deficiencies in application are found, EB sets a deadline for developer to eliminate deficiencies. If developer does not eliminate deficiencies, EB can reject application and proceeding come to end [3, 16]. Setting a time limit for inspection of application is new practice and did not exist before.

According to data analysed, total of 21 applications had some kind of deficiencies that needed to be eliminated. Application deficiencies occurred equally among all mineral resources. Mainly graphical plans and smaller errors needed some corrections or

adjustments. For some application necessary agreements were missing. Most part, submitted applications met the requirements and were well drafted.

Correcting or adjusting application and annexes can take long time because of back and forth correspondence between EB and developer, and because some verification goes through a third party. From data analysed, longest time to eliminate deficiencies took up to 6 months.

Compliance check and verification of the application and annexes is very important and necessary. Proper application is basis for all subsequent activities, planning of extraction and reclamation activities. Because some problems and concerns exist, it is necessary to review and improve this application proceeding part. Since there is now a unified system that can be further developed, the automation of application control should be considered, which would make proceedings to all parties easier and faster.

Auctioning of right to apply

One part of the application check is control of overlapping applications. This means controlling whether an application has already been submitted for the area applied for. When this situation occurs, according to ECA, the right whose application EB continues to process is determined by auctioning. Auction is conducted only for state-owned mineral resources if an application is submitted for the same area or overlapping part within 30 days after acceptance of the first application. For oil shale and extraction area enlargement, the time period is 60 days. Auctions of right to receive EPE are organised by EB. [3, 47]

For the state, auctioning is a good solution when two or more developers are interested applying for the same area. For the developers, auctioning is not the best solution, because before that process, investments have to be made and when losing the auctioning no return of investments have gained.

Because auctioning situations are becoming more common in areas where good quality of mineral resources are situated, auctioning regulations and practice should be review by the state. State should consider a similar auction process done in Latvia, where before extraction permit application is submitted, developer must obtain land lease rights. This system could help developers reduce investment risk and other application proceeding problems and conflicts between the state and local authorities can be reduced.

Environmental impact assessment

Before EPE application is officially accepted and proceedings begin, the need for EIA is verified whether it is mandatory to initiate an EIA or not. It is regulated by the Environmental Impact Assessment and Environmental Management System Act. Situations, where open-cast extraction area surface exceeds 25 hectares or peat extraction area surface exceeds 150 hectares or underground mining, are considered activities with significant environmental impact and EIA must be carried out. In the case of nature conservation restrictions, the type of restriction must be considered and the need for an EIA must be considered. [3, 27]

When EIA is not obligatory, a preliminary environmental assessment of the activity must be given. Preliminary environmental assessment is also done when EIA has already been carried out for applied activity in the same area. During EIA, EPE application proceedings are suspended until impacts have been assessed. [27]

Because EIA topic is generally a very sensitive issue in EPE application proceedings, there are number of concerns and conflicts between different stakeholders. There have been concerns about whether current practice, where developer orders EIA is truly transparent [52]. Also whether EIA should be carried out more frequently and for smaller areas that not exceed obligatory 25 hectare mark.

Mentioned situation is common for sand and gravel as limestone and dolomite quarries are usually larger than 25 hectares. Of current 515 valid sand and gravel EPE, there are only 18 permits with larger extraction area than 25 hectares. Of current 81 valid limestone and dolomite EPE, there are 19 permits with larger extraction area than 25 hectares. Of current 127 valid peat EPE, there are 50 permits with larger extraction area than 150 hectares [18]. From 47 analysed EPE and EPE issuing ordinances, 12 applied activities were obligated to carry out EIA. From those 4 were for EPE amendment.

Another permit proceeding concern is that EIA must be carried out before local authority will assess whether they are against issuing EPE or not. Current regulation and practice is not efficient when EIA must be carried out and after very time-consuming and expensive assessment, local authority is against issuing EPE.

Open proceedings

New EPE and EPE amending proceedings are based on the regulations provided in Administrative Procedure Act, but taking into account the specifications of ECA. As a rule, an open proceeding is usually used when applying for a new EPE or for amendment of EPE. When EIA is carried out, open proceedings are mandatory. The involvement

extent and notification of stakeholders depends on proceeding type chosen or required. [3, 28]

When there is no significant environmental risk amendment proceedings are usually not conducted as open proceedings. Similar proceedings are used to revoke or suspend an EPE. They are subject to general administrative procedural requirements of administrative Procedure Act. Hearing of opinions and objections of stakeholders in proceedings must be guaranteed in both proceeding forms [3, 28]. Smaller amendment proceedings usually take between 1 to 2 months [15].

In the context of administrative proceedings, the initiation of application proceedings is of great importance. It gives status to the stakeholder in the proceedings and gives them procedural rights and obligations. Proceeding time limit also begins to run. Proceeding purpose is to decide whether to issue, refuse, amend, suspend or revoke EPE. [28]

Proceeding is initiated by sending a formal letter to the developer. In the case of a mandatory EIA, the initiation of the impact assessment and the initiation of proceedings are made in one letter. Joint letter is also sent to all affected stakeholders to inform them of the proceeding and their rights or obligations. Finally an official announcement is made in the national system "Official Announcements". In some cases an announcement in newspapers is required. [15, 28]

In the case of notifying local authority about initiation of EPE proceedings, submitted application is also sent. According to ECA, local authority has two months to submit their opinion whether to agree or be against issuing the permit. EB does not take into account opinions that are submitted later than date set. If no opinion is submitted at all, then EB resolves the application without the opinion from local authority. [3, 28]

Before the last amendment of ECA, opinion from local authority was asked in later proceeding stage. This change made proceeding faster and more efficient, because when local authority is against issuing EPE, then appropriate steps can be taken and different proceeding stages can be applied earlier [47]. From 47 analysed EPE and EPE issuing ordinances there were only 3 situations where local authority did not submit their opinion and EB continued proceedings. Also in 12 proceedings, local authority applied for time limit extension for submitting their opinion. This situation should be only allowed in allowed situations and be an exception.

For other environmental permits other than EPE, local authorities must submit opinions within one month after receiving an application. Only for EPE, local authorities have two months to submit opinions [13]. This again does not go in line with the integrated single

environmental permit and proceeding regulations. From 47 analysed EPE and EPE issuing ordinances, majority of local authorities opinions were submitted at the end of second month. This practice is not efficient and needs to be reviewed.

Assessment of security of supply

If EPE is applied for state-owned CMR, then the state interest must be assessed on the basis of security of supply. This assessment is done according to Chancellors of the Ministry of the Environment Decree No. 610 "Instructions for the assessment of state interest in exploration and EPE application proceedings based on security of supply". If the state interest assessment shows that the security of supply for applied service area satisfies the current demand for more than 10 years, then applied activity may be considered to be against the state interest. In those situations EB asks additional state interest from the Ministry of Economics and Communications. [29]

Mentioned decree was adopted in 2013 [29]. Since then the strategic objectives of the development plan for CMR have been achieved and that document is no longer valid. Also new adoption of general principle strategy, adoption on new ECA with different regulations and practices, changes in CMR supply and demand premises has happened. Because of mentioned changes, it is necessary to review and update the state interest determination practice and the security of supply assessment practice.

There are some concerns how security of supply is assessed. Currently security of supply is assessed for specific application, in a specific area (50 km radius from applied are centre), demand is based on past extraction volumes, security of supply limit is set for 10 years and all CMR are assessed on the same principles [29]. One problem is that security of supply is assessed differently between EB specialist, local authorities and developers. This has raised misunderstanding and conflicts between stakeholders.

For assessing the bigger picture, current assessment practice doesn't clearly determine the forecast of future demand and it does not show clear state interest. Another concern is that, security of supply is not assessed for privately-owned CMR, but in situations where it is assessed, then privately-owned CMR are taken into account, which may favour schemes [29].

In general principle strategy, state interest and security of supply concerns have been raised. To better plan the use of CMR and to ensure the security of supply, the state should regularly prepare and renew forecasts for the demand [36]. Assessment of security of supply is a good tool to assess current CMR demand and supply situation, but for assessing state interest, it should be more in a role of a supportive tool.

It is necessary to analyse state interest and security of supply assessment regulations and practices and make determination of state interest more adaptable and effective to current situation. It is important to have a good overview of CMR, related use and security of supply, so that the use of CMR is in state interest and environmentally sustainable. The state interest is further analysed in chapter 3.2.1.

Preparation of draft order

Next proceeding stage is to evaluate and analyse submitted opinions, proposals, conditions and agreements. After gathering and analysing all necessary information, EB prepares EPE issuing draft order. Similar to proceeding initiation, official announcement is made and permit issuing draft order is sent to all stakeholders. In some cases an announcement in newspapers is required. Time limit for two weeks is set to submit proposals or objections. [15, 28]

When preparing EPE issuing draft order, EB sets additional conditions to permit. Those conditions are set based on submitted opinions and proposal, mainly from local authority. The aim is to reduce and mitigate different impacts from extraction activities to local environment and to human health and living conditions. Set conditions can only regulate activities within extraction area and provide mitigation measures directly to the effects of extraction. [3]

In EPE proceeding, majority of proceeding time is for waiting an opinion from local authorities and exchanging opinions and submitted conditions back and forth between local authorities and developers. In more complex situations, discussion over opinions and conditions can take several months. Local authorities like to impose some conditions on emotions and self-interest that are not related to applied activities. The same can be seen from developers where in some cases they want to circumvent some submitted conditions because they don’t want to comply with them. To make EPE proceeding more efficient and faster this proceeding process must be reviewed by the state.

When applying EPE for extraction of oil shale, phosphorite, metal ore, granite or other potential resources not yet registered, then the application has to be sent to the Minister of the Environment for an opinion. In addition, the approval of the Minister of the Environment must be asked regarding the permit issuing draft order. Also the approval of the Ministry of Economic Affairs and Communications is asked. [3]

If EB thinks that additional opinion is required for application and permit issuing draft order, then both documents are sent to Mineral Resource Commission. This commission main function is advising the Ministry of the Environment and EB on the issues of the mineral resource exploration, extraction, use and protection [3]. Before the last ECA

amendment it was mandatory to send permit issuing draft order and application in every situation to the Mineral Resource Commission [47]. Similar to mentioned change in asking local authority opinion, this change made proceeding faster and more efficient.

EPE shall be issued when during the proceedings no causes appear why the permit should not be issued. This means that all necessary agreements and accords have been achieved. There must also be no restrictions on the area that preclude mineral resource extraction, such as nature conservation sites where extraction is prohibited. Finally, official announcement and, if necessary, announcement in the newspaper is made of issuing EPE and corresponding letter is sent to all stakeholders. [3, 28]

In 2020, total of 126 new EPE were issued and EPE amended, as shown in figure 3.2. New EPE were issued 35 times and 91 EPE were amended. In 2019 34 new EPE were issued and 59 EPE amended. On average 67% of all proceedings related to EPE are for amendment. Majority of amendments are for permit validity extension and enlargement of extraction area. [15]

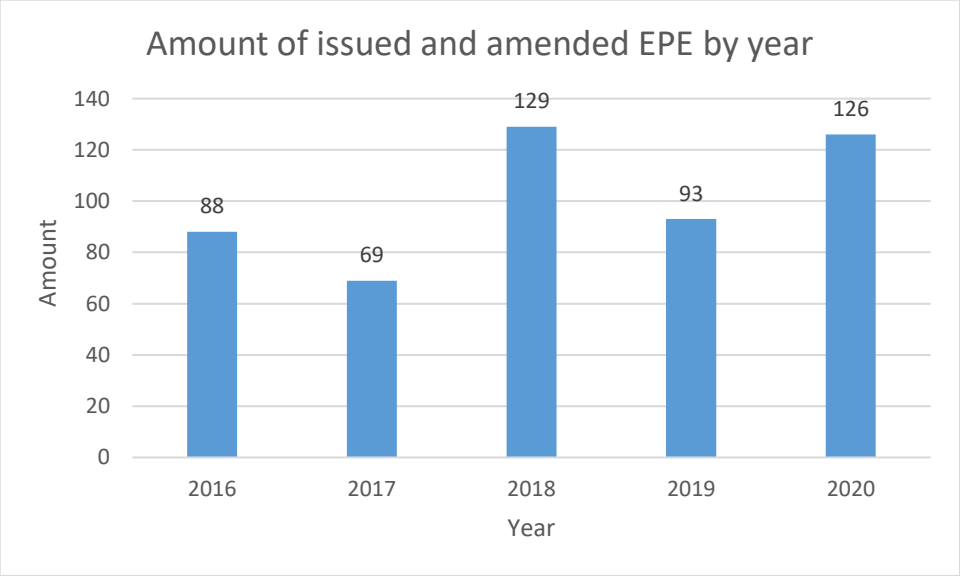

Figure 3.2 Amount of issued and amended EPE by year [15]

Regulations for permanently inhabited small islands

Different regulations are set for local authorities of permanently inhabited small islands to use resources. Local authority of a small island entered in the list of the permanently inhabited small islands or a person authorised thereby has the right to extract resources without an extraction permit to improve local infrastructure and living environment. [3]

3.2.1 Actions and proceedings when local authority is against issuing environmental permit for mineral resource extraction

If a local authority is against with the issuance of an EPE, then it is the basis for refusal to issue the permit. In this situation the applicant has three options. First option is to withdraw the application and the proceeding is terminated or a decision to refuse to issue the permit is taken and proceeding is terminated. Second option is to reach consensus with local authority and proceedings will continue. [3, 28]

For the last option, EB may, on the applicant's proposal, apply for state consent to issue an EPE. Then EB asks opinions from the Minister of the Environment and the Minister of Economic Affairs and Infrastructure. If both ministers find that the applied activity is accordance with state interest, then EB prepares a state consent draft order and submits it with EPE application to the Ministry of Economic Affairs and Communications. Minister of Economic Affairs and Infrastructure turns to the Government Office of Estonia for state interest consent [3, 4]. According to the Government of the Republic Act, area of government of the Ministry of Economic Affairs and Communications includes the development and implementation of the national economic policy and state economic plans with regard to mineral resources [30].

Definition of state interest is based on the importance of mineral resources, ownership of mineral resources, economic considerations related to mineral resource extraction and usage, mineral resource characteristics and quality, security of supply and planned infrastructure development. However, it is inevitable that state interest will not be defined in detail, as the state interest concept is changing over time and it has to be defined only for a specific proceedings. [4, 29]

EB will refuse to apply for state interest consent when according to minister opinions there is clearly no state interest for issuing EPE. In previous cases where state has given consent to issue the permit, EB has generally granted the permit. However, when issuing the permit, EB must also take into account possible changes in circumstances. [3, 18]

According to the state Official Announcements, in 15 years, there has been only 5 situations where state has consented issuing exploration or extraction permits [48]. This process of issuing an EPE with state consent is a tool that should be used rarely and only in very justified cases. Today, a situation has developed in Harju County where local authorities do not consent issuing exploration permits and EPE [52]. This has increased the need to ask state consent because almost every time when local authority does not consent issuing a permit, then applicant proposes to ask state interest and continue proceedings.

Currently there are in total of 11 active proceedings waiting for state interest consent to issue a permit. Most of the state interest proceedings are for exploration permit, but considering the current situation, after exploration, developers will apply for EPE and whole state interest process will repeat [15]. This problem is one of the problems that the state wants to reform with the mineral resource thematic spatial plan and strategic impact assessment of Harju County.

3.3 Reclamation of land disturbed by extraction

Reclamation of land disturbed by extraction is regulated in ECA and with additional regulation of the minister. Reclamation means to render the land usable for its former or new purpose. Developer must reclaim the land during a technologically reasonable period of time. Reclamation obligation shall also continue after expiry or revocation of the permit. If extraction of the same mineral resource in the same area continues on the basis of another EPE, obligation shall transfer to the new developer. [3]

Planning of reclamation activities starts already when EPE application is prepared. Application must include the purpose of further use of the land, its technical and biological operations, formation of water regime and activities expected cost. [3]

Reclamation activities are done in accordance with reclamation project. This project ensures proper and environmentally friendly reclamation of the land. First, EB presents conditions for reclamation to developer after developer asks them officially. When presenting the conditions, EB shall proceed from the recommendations in the EIA if it has been assessed and the direction of reclamation entered on the EPE. Also land owner and local authority opinions are asked. If the area is located on the land that serves national defence purposes or its protection zone, also the opinion of the Ministry of Defence is asked. Conditions have to be presented within six months after receiving a corresponding application from developer. After conditions are set, preparation of the reclamation project shall be organised by the developer. Consent to implement the project shall be granted by the EB. [3]

Land disturbed by extraction needs to be reclaimed before EPE expires. When developer has finished reclamation activities, EB declares the obligation to reclaim land disturbed by extraction to be performed, taking account of the proposal of the approval commission for reclamation. Approval commission consist of representatives from EB, developer, land owner and local authority. Additional representatives or experts form different fields are appointed when necessary [3]. Commission will monitor the situation on the spot and if reclamation work has been done properly they will propose that the area is reclaimed accordingly. If not, a proposal to the contrary shall be made and the reasons given [40].

Before commission is formed, developer is required at land owners demand to carry out surveying of the cadastral unit and to present the cadastral survey documentation to the land owner. That survey must be carried out on the basis of Land Cadastre Act. [3]

If, within three years after reclamation significant environmental nuisances become evident which could not be foreseen at the time of declaring the obligation to be performed, but which arise from failure to comply with the requirements for reclamation or the reclamation project, person who had the reclamation obligation is required to eliminate these. [3]

Whether reclamation is prepared early in the EPE application process and takes place in parallel with the extraction operations, or whether the land is reclaimed in the final stages of extraction, it depends on the choice and capabilities of the developer [40]. It also varies between different mineral resources extraction lands.

The need for an EIA of the reclamation is considered by EB in the preliminary assessment. If necessary, environmental impact can be assessed during the preparation of the reclamation project, in which case EIA report must be attached as a separate part to the project. [40]

Reclamation regulations are different for permanently inhabited small islands. There local authorities needs to reclaim land disturbed by extraction in accordance with conditions issued by EB and accordance with land owner opinion. Reclamation must be done during a technologically reasonable period of time. Obligation continue after expiry of the permit. After reclamation work, local authority compiles a report and submits it to EB and is evaluated by EB. [3]

Reclamation works are either technical and or biological. Technical reclamation consist of levelling and smoothing of the land, covering with an organic layer, construction of facilities necessary for agriculture and forestry and other related work. Biological reclamation consists of works that ensure the development of biota that supports the intended use of the land [44]. Most popular options used are reclaiming lands into water bodies, forest or grassland areas and recreation areas like shooting range or motor sport track. Those options also vary between different mineral resources extraction lands [15].

3.3.1 Current situation and the severity of problem

When assessing the current situation of reclamation, it is important to analyse whether and how big the problem of non-reclamation is and give a statistical overview. As reclamation usually is carried out at the end of the extraction activity, when the mine or quarry no longer generates income and if the permit holder has not taken reclamation costs into account during the extraction operations, there is a risk that the land can be left un reclaimed.

Currently there are no strict regulations or other mechanisms to force developers to reclaim land disturbed by extraction. In situations where reclamation is not carried out in time or actions are not performed properly with set requirements, then EB may issue a penalty payment of maximum rate of 3200 euros per one hectare [40]. As of first quarter of 2021, no such penalty payments have been issued [52].

Every year, there are some developers who do not follow regulations and requirements when reclaiming disturbed land by extraction. Some developers do not even bear reclamation costs in the end of extraction activities. In most cases, developers do not have necessary financial resources or just do not want to deal with reclamation, are going to bankrupt or are already bankrupt. When EPE has expired and the developer does not exist or is going bankrupt, then reclamation obligation goes to the state [3]. So far this has been done at the expense of the state budget and with the help of grants provided by Environmental Investment Centre. However, this is not fair and in line with the prevailing "polluter pays" principle in environmental policy. Therefore, solutions should be found to change current situation. One way is to motivate developers to start reclamation activities earlier or in time and to find mechanisms that would provide the state with the necessary resources in the event of a problematic situation.

According to Land Board information, as of 2020, there were in total of 55 lands disturbed by extraction where EPE has expired after 2006 and which areas have not been properly reclaimed. Abandoned lands from Soviet era were not taken into account [49]. For:

1) 8 lands/permits – Developers has declared bankrupt or are deleted from the business register. These permits are unsolved and lands are not reclaimed;
2) 2 lands/permits – Reclamation activities are in progress, but the permit has expired;
3) 23 lands/permits – Reclamation condition is unknown and the permit is expired. With some cases there has been some correspondence between EB, landowner and former developer;

4) 16 lands/permits – where old permit has expired or developer as gone bankrupt the extraction area has new EPE that is applied or there is some interest to apply EPE;
5) 6 lands/permits – Where developer has gone bankrupt and permit has been sold to other developer.

Most of problematic lands or permits are small quarries for CMR extraction, but there are some problems for larger quarries and in peat and oil shale sector. It should be noted that developers responsible for reclamation have very different financial capacities. With the exception of bankruptcies, non-compliance with the reclamation obligation is often not directly related to developer turnover or profits. Reasons for non-fulfilment or untimely fulfilment of reclamation obligations may range from disagreements over the reclamation project to requests to extend the EPE with a delay. [38]

Assessing mentioned problematic statistics and situation descriptions provided, it is possible to describe the situation differently. On one hand, problems with reclamation are small if looking at the big picture. But on the other hand, if comparing the amount of problematic lands or permits to all total 752 active EPE, then problematic lands or permits make 7,2%. This number does not seem so small or nonsignificant.

There has been a perception that there are no major problems with reclamation regulations and requirements and it would not be worthwhile to toughen the regulations or requirements on the basis of individual cases [52]. But the real situation is different and needs additional research. The state needs to review current regulations and set the future needs accordingly.

Another concern that needs to be taken into account are situations where there is a valid EPE, but no extraction activity has taken place in recent years and where there may be a risk that developers may fail to comply with reclamation obligation. As of first quarter of 2021, no extraction activities have taken place with 43 EPE in the last 5 years, as shown on figure 3.3 [18]. EPE that have been issued in the last 5 years have not been taken into account. Only EPE that expire in 5 years and which still have a significant stock of mineral resources that could be extracted or where stock is zero and no reclamation activities have been taken into account.

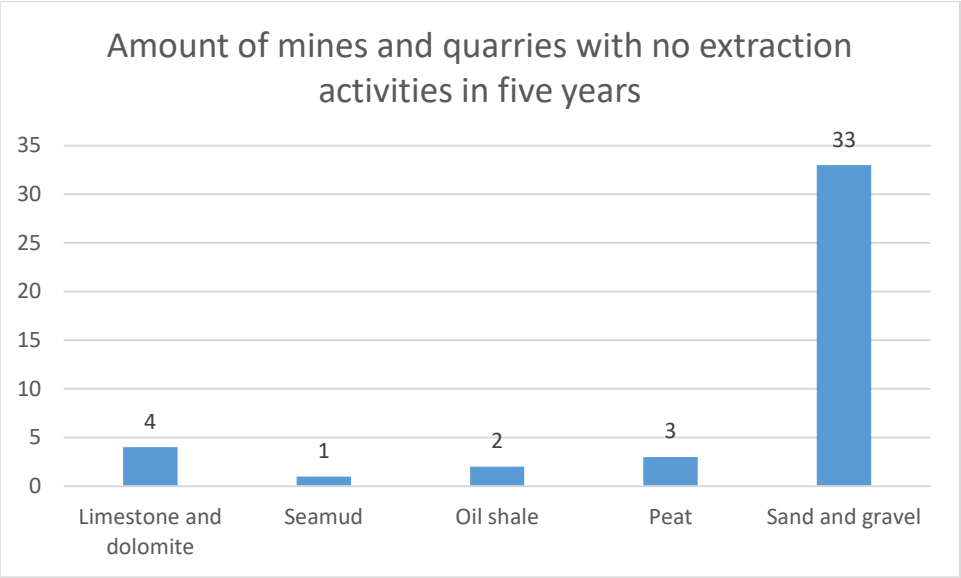

Figure 3.3 Amount mines or quarries where no extraction activities have taken place in five years [18]

This concern is most current in sand and gravel extraction sector. It is understandable, because this sector has the largest fluctuations in supply and demand. In addition, the sector is well influenced by the economy and infrastructure developments being planned by the state. Limestone, dolomite and peat extraction sector is also influenced by named factors, but their permits last two times longer and are more susceptible to change. Huge risk is for lands disturbed by oil shale extraction, because those areas are very large and require different solutions and activates for reclamation, which require more resources and time compared to other fields. Unfortunately, such stagnant activities are detrimental to the entire extraction sector. It affects EPE applying and issuing processes and also affect the reputation of mineral resource exploration, extraction and usage.

Positive side must also be looked at. As of first quarter of 2021, shown in figure 3.4, in total of 80 disturbed lands by extraction have been reclaimed in the last 10 years. These are mainly sand and gravel quarries. [14]

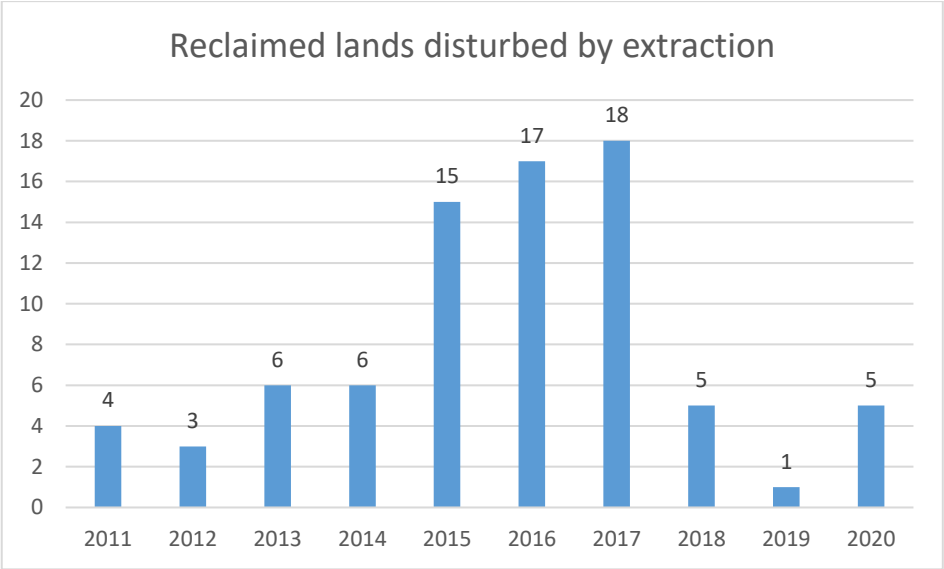

Figure 3.4 Reclaimed lands disturbed by extraction from 2011 to 2020 [14]

In recent years, there have been some researches of reclamation highlighting various regulatory concerns and suggestions for change. In most cases, there have been ideas with proposals that toughen regulations. This situation should be approached differently. For the state, the first step is to analyse and think how to change the current reclamation regulations and requirements in a way that motivates developers to reclaim disturbed land by extraction properly and in time. A need is to motivate developers to reclaim parallel with extraction. Second step is to analyse and think how to change the current system so that all extracted lands disturbed by extraction are reclaimed in a way that there is no risk that reclamation obligations doesn't fall to the state or reclamation cost are guaranteed with financial mechanisms. Toughen regulations and financial mechanisms should exist, but the situation should be approached differently.

Adaption and renewing reclamation regulations are supported by the fundamentals of the General principles of Earth`s crust policy until 2050. Fundamental principles state that reclamation of disturbed land by extraction must be ensured at all time and in any situation. Also in order to prevent the problematic situations with reclamation obligation fulfilment by developers, the state should analyse regulatory and economic mechanisms to ensure reclamation. In order to achieve those goals, it is expedient to follow the example of local and other countries best practices. [36] When changing reclamation regulations or requirements and implementing new financial mechanisms, unit-based mineral resource extraction charge and its regulations must be taken into account. Also assessment of land value must be taken into account. It has been 18 years since the last land assessment. During this time, market participant's assessment of land value has changed. According to Land Board next land assessment will be carried out in 2021 to 2022. [49]

3.3.2 Financial regulations for ensuring the obligation to reclaim land disturbed by extraction in European countries

The European Commission has analysed best practices for ensuring the reclamation of disturbed land by extraction. In Denmark, reclamation is ensured through the requirement for compulsory consent to the extraction planning and maintenance program and through financial guarantee. In Netherlands, an extraction permit application will not be accepted without comprehensive reclamation plan. In addition, the developer must provide a financial guarantee to ensure reclamation. In Belgium, surface minerals reclamation is ensured by a decree through extraction permits, financial guarantees and a reclamation plan. Financial guarantee is also a requirement in Finland, Greece, France, Spain and France. European Commission has stated that in order to obtain permit, developer must provide a financial guarantee to ensure reclamation. [38, 39]

In all identified best practices, developers are required to provide some form of financial guarantee. Currently in Estonia there are no financial guarantee obligations. There are also no regulations to submit financial information and confirmations when applying for EPE. Thus, the issuance of EPE is quite liberal and there is significantly less certainty that developer will be able to reclaim land disturbed by extraction.

A review by Organisation for Economic Co-operation and Development of Estonia highlights that EPE do not contain any financial requirements or guarantees to meet the reclamation obligation. Review finds that this could lead to problems if developer goes bankrupt or avoids obligations. It is pointed out that Estonia should strengthen EPE issuing regulations and permits should include clear conditions and plans for reclamation. Also for innovative land reclamation projects financial support by the state should be provided. [38, 2]

There are two ways to use financial mechanism in Estonia. One option is a bank guarantee, where the terms are determined by a guarantee agreement between the bank and the developer. A letter of guarantee from the bank should be one of the preconditions for issuing an EPE. Another option is to deposit as a financial guarantee in a state bank account. For both ways, calculation of the reclamation costs are based on the estimated cost of the activities specified in the reclamation project or the cost is calculated by EB taking into account the average reclamation cost per unit area [38].

4. ANALYSIS OF QUESTIONNAIRE

When choosing the methodology of the questionnaire, I wanted to collect feedback and suggestions on legal regulations and practice related to applying and application proceedings for EPE and for reclamation of land disturbed by extraction. For that I decided to conduct a questionnaire survey as part of this work. Web-based survey platform Google Questionnaire was used as the method of collecting the answers.

This questionnaire consisted mainly of questions that could be answered either by choosing between the given answer options or by using a free comment. It consisted of three main parts. In total there were 21 mandatory questions. The questionnaire was open between 22.03.2021 and 04.04.2021.

First part of the questionnaire included survey data on respondents and the collection of general knowledge in the field, see appendix A. This section consisted of a total of 6 multiple choice questions. Second part included questions related to applying and proceedings of EPE. This section consisted of a total of 8 multiple choice questions and one free comment question. Third part included questions related to the reclamation of land disturbed by extraction. This section consisted of a total of 5 multiple choice questions and one free comment question. Free comment questions were asked in order to give the respondent an opportunity to explain his or her thoughts and suggestions, which should assist in the preparation and analysis of research proposals.

In order to obtain the widest range of possible answers, opinions and suggestions, the survey was conducted among mineral resource field specialists working in public sector, in local authorities and in private companies. The questionnaire was sent via e-mail to nine public sector officials, two mineral resource associations, 13 local authorities associations and directly to local authorities who are not members of relevant associations. Officials and associations were asked to forward the questionnaire to members whose work is related to mineral resource field. A targeted sample was used to sample the questionnaire. Sample size of 50 was chosen as target goal, because it would represent about 33% of selected three sectors sample population.

First and second question of the questionnaire was related to place of work and work experience. Total of 42 specialist whose work is related to mineral resource exploration and extraction responded to the questionnaire. In more specific, 18 respondents from public sector institutes, 12 respondents from private companies and related associations, 11 respondents from local authorities and related associations and one respondent from a university. Some private companies and local authorities combined

their thoughts and they were submitted together through represented associations as one answer.

Just over half of the respondents 54,8%, have 10 years or longer work experience in the field. Five of the respondents have between 7 to 10 years of experience, two of the respondents have between 4 to 6 years of experience and 12 of the respondents have between 1 to 3 years of experience in the field. Majority of the respondents have been working in the mineral resource exploration and extraction field quite a long time and are very component in their profession. This in turn increases the credibility of submitted answers, opinions and suggestions.

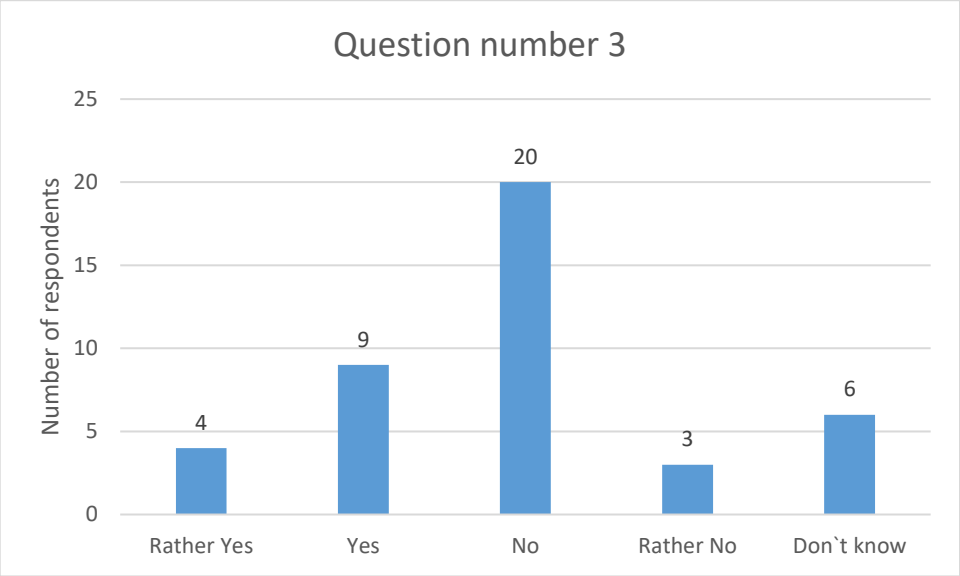

Figure 4.1 Question number 3. Are you pleased with the regulations governing mineral resource exploration, extraction and use?

Based on the answers to question 3, majority of respondents are not pleased with regulations governing mineral resource exploration, extraction and use. Biggest dissatisfaction is among extraction companies in the field, where 72% of the respondents are not pleased with the governing regulations. This is understandable as companies are applicants for activities and are also financially involved. There is also dissatisfaction among local authorities. Surprisingly, there was more dissatisfaction among public sector employees than initially thought. Additional comments submitted were following:

1) Activities related to the field must be regulated in a better way;
2) There is too much bureaucracy, especially in the introduction of new technologies;

3) From interested developer side, the governing regulations are very complicated and application proceedings take very long time. Other parties see the process only from the developer's point of view;
4) Reclamation regulations and provisions need to be reviewed.

All additional submitted comments are analysed with submitted problems and suggestions for two specially formed questions in the last part of this chapter. Similar comments, problems and suggestions are combined in such a way that the main submitted idea is not lost.

For questions 4 to 6, which were related to how aware the respondents are of the Ministry of the Environment and the Ministry of Economic Affairs and Communications and their subdivisions plans and activates, yes and no answers were relatively equal. Also, many answered do not know. Can be concluded that the ministries should agree on one ministry to lead the mineral resource field. This is supported by additional comments submitted:

1) For both ministries to better understand their role, one ministry should be chosen to lead mineral resource field. It should be the Ministry of Economic Affairs and Communications;
2) Stakeholders should be involved earlier in setting up sectors plans, future activates and goals;

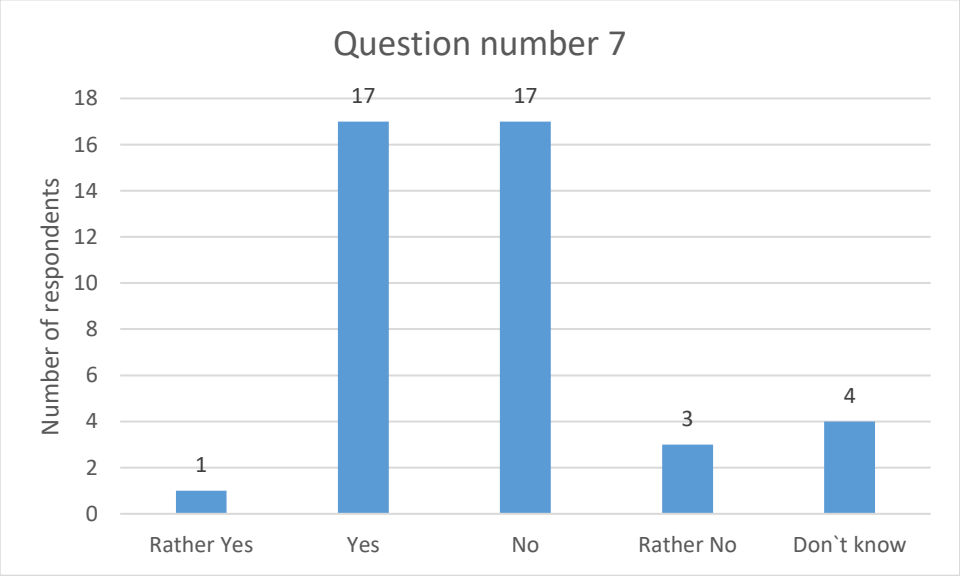

Figure 4.2 Question number 7. Are the regulations for applying and proceedings of EPE simple, clear and understandable?

About half of the respondents consider that the regulations are simple, clear and understandable. Surprisingly, 84% of the local authority respondents believe that the regulations are simple, clear and understandable. Respondents who do not think that the regulations are simple, clear and understandable were mostly from public sector and then from extraction companies. One additional comment was submitted:

1) In practice, the regulations and provisions are relatively simple, but some solutions are not always reasonable.

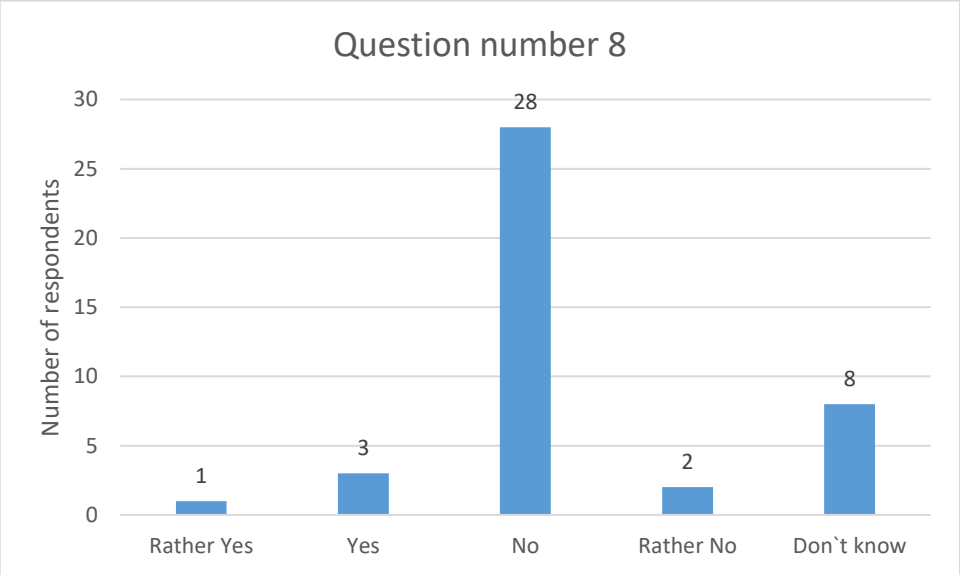

Figure 4.3 Question number 8. Are EPE proceedings fast and efficient?

Regarding the EPE proceedings, majority of the respondents think that the proceedings are not carried out fast and efficiently. This shows general dissatisfaction on all sides. Additional comments submitted were following:

1) Some local authorities reduce the speed and efficiency of the proceedings;
2) Proceedings of EPE are too fast. EB should consider and analyse more in detail before issuing the permit;
3) Both the proceeding regulations and practice should be reviewed.

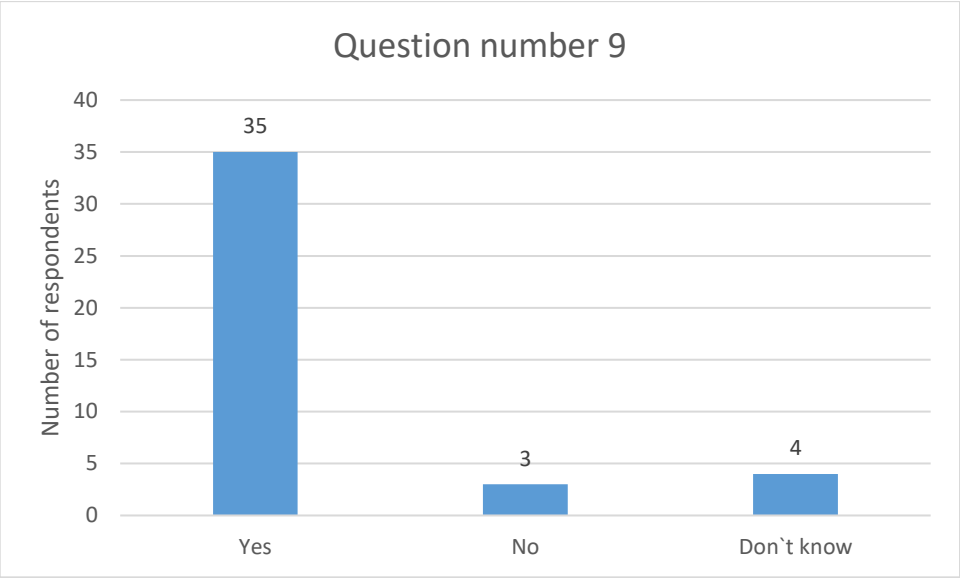

Figure 4.4 Question number 9. Should different types of mineral resources have their own regulations and practices when applying for EPE?

Just over 83% of the respondents believe that when applying for EPE, different types of mineral resources should have their own regulations and practices. It is collectively characterized that, according to the different types of mineral resources, the regulations and practices are over-regulated for some mineral resource types and that does not correspond to the actual situation.

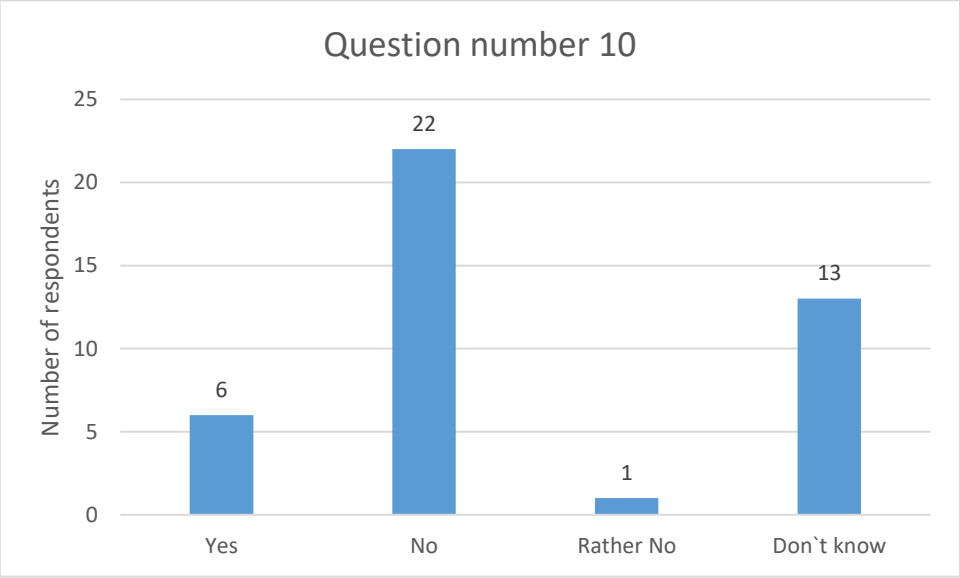

Figure 4.5 Question number 10. In the situation when local authority does not agree issuing the EPE, are the proceedings for applying state consent simple, clear and understandable?

Regarding the situation when local authority does not agree issuing the EPE, majority of the respondents consider that the proceedings for applying state consent are not

simple, clear and understandable. Many respondents from local authorities answered don't know, because this situation has occurred only in a few selected counties.

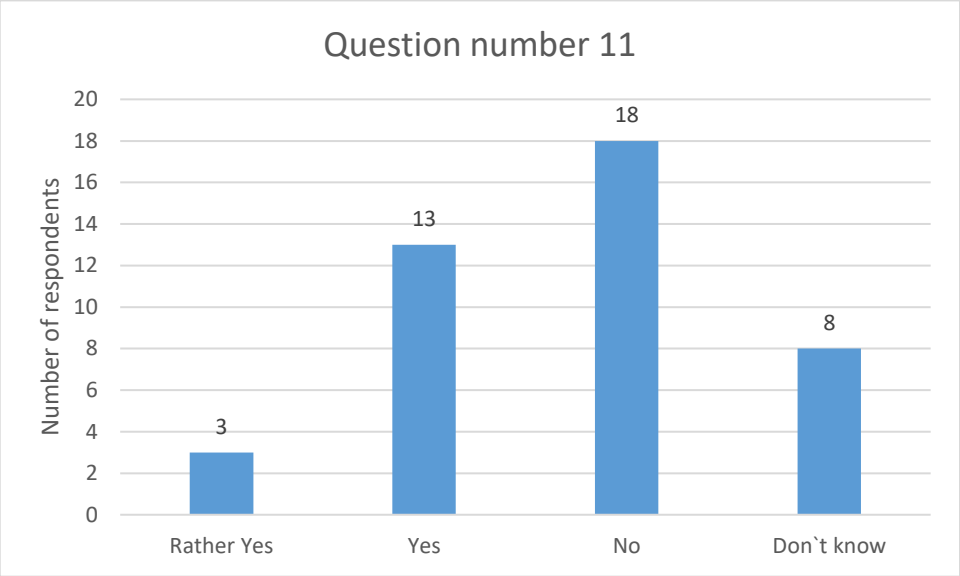

Figure 4.6 Question number 11. Should a mineral resource exploration permit be linked to EPE and form a single permit?

A little more than half of the respondents believe that a mineral resource exploration permit should not be linked to EPE and forming one single permit. Extraction companies are largely opposed to such a change. Respondents from public sector and local authorities consider this on one way and the other. Additional comments submitted were following:

1) For interested developers, in such situation the exploration permit costs will go unnecessarily high because then environmental and other effects should be assessed at the exploratory stage;
2) The state should carry out mineral resource exploration which is followed by an extraction permit concession process.

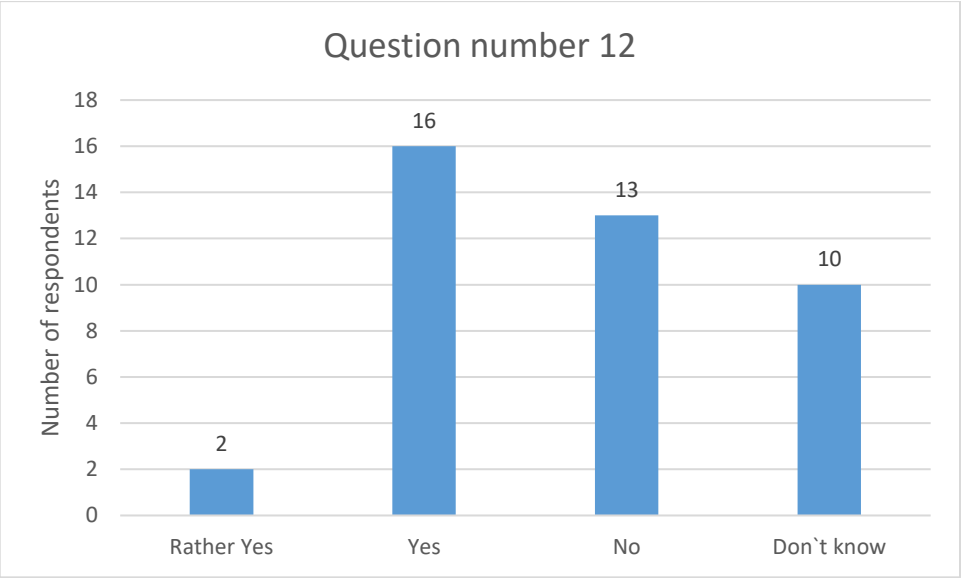

Figure 4.7 Question number 12. Should a mineral resource extraction permit be part of an economic activity permit and should mineral resource field be under jurisdiction of the Ministry of Economic Affairs and Communications?

Over 90% of respondents from extraction companies believe that the mineral resource extraction permit should be part of an economic activity permit and also mineral resource field should be under the jurisdiction of the Ministry of Economic Affairs and Communications. Respondents from local authoritys are largely against on both ideas. Additional comments submitted were following:

1) The Ministry of Economic Affairs and Communications should have a bigger role in the mineral resource field;
2) New regulations and practises should not be more burdensome and complicated than the current system;
3) Mentioned change would be good if it increased efficiency;
4) This situation would create more confusion as then for several permits needed for extraction, extraction permit must be applied from different instutute.

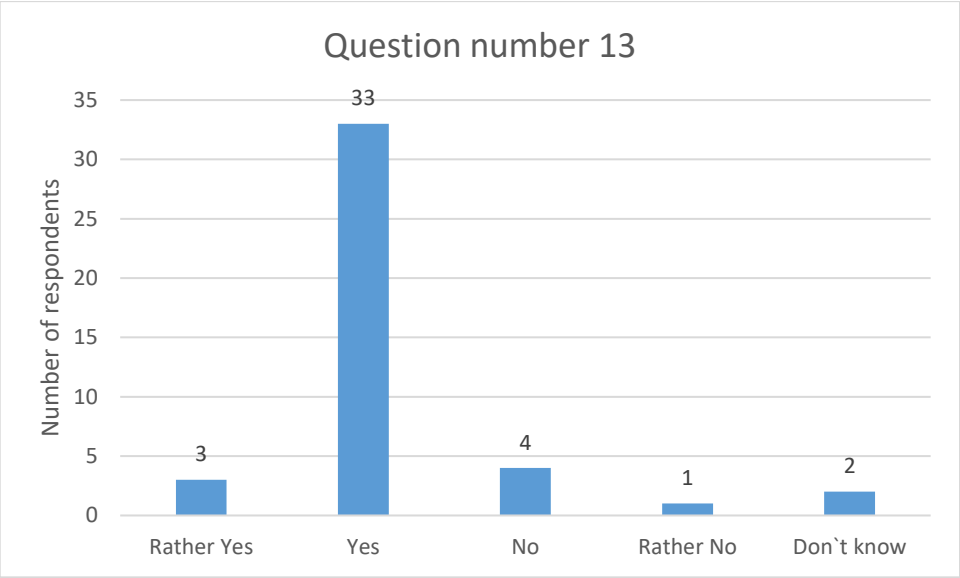

Figure 4.8 Question number 13. Is EPE required in certain criteria and for the types of mineral resources that have a lower environmental impact such as smaller sand and gravel quarries?

Majority of the respondents consider that EPE should always be required in all situations and for all types of mineral resources. This collective one side answer was a surprise. Additional comments submitted were following:

1) Sand and gravel EPE should be a registration that is regulated by local authorities;
2) Sand and gravel EPE proceeding regulations should be simplified compared to other mineral resources.

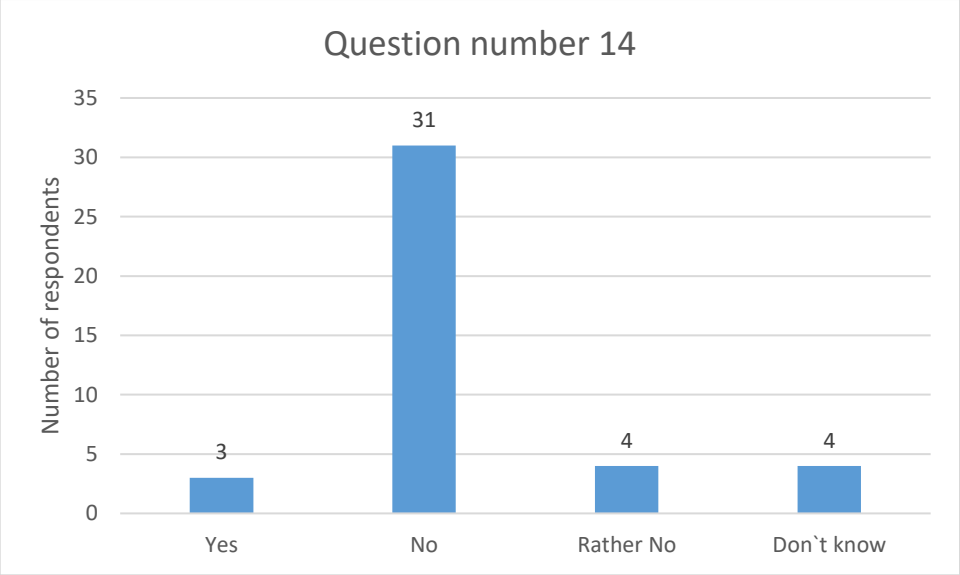

Figure 4.9 Question number 14. Should extraction permitting in certain criteria and for some types of mineral resources with lower environmental impact be in the jurisdiction of the local authorities?

Majority of the respondents believe that extraction permitting in certain criteria and for some types of mineral resources should not be in the jurisdiction of the local authorities. This collective one side answer was a surprise, because local authorities have expressed interest to have greater influence in mineral resource permitting processes. Additional comments submitted were following:

1) Local authorities lack the resources and competence to regulate mineral resource permitting;
2) This solution may rise a problem for mineral resource security of supply for the state.

Question number 15 was a free comment question where respondents can submit their thoughts and suggestions. With that question I asked the respondents to name at least two main regulation and practice problems in applying the EPE and in EPE application proceedings. In addition to briefly explain why they identified these problems and what the possible solutions might be. Following problems and suggestions were submitted:

1) Local authority opinion is based on local conditions and therefore is should be impossible to issue EPE without local authority consent. Unfortunately EP refuses to issue an EPE only if there are grounds for refusal provided in ECA. If local authority does not find a suitable basis for refusal, EB will not take the opinion into account. In situation where there is a house 90 m from site and the community expresses its opposition with arguments, then it should be enough. Local authority should stand for local life and environment, but this is not the case at the moment.
2) In situations where local authority does not agree with issuing EPE the practices of issuing EPE with the consent of the state should be stopped.
3) Proceedings for issuing EPE with the state consent should be less complicated and time-consuming for the applicant. Specific procedural steps, deadlines should be set.
4) Local authorities like to stop exploration and extraction activities with local protected areas and other actions. Today, everything can be challenged in court, and since local authorities have unlimited money, everything is challenged, Main thing is to be able to prolong the process as long as possible. Solution must be found.
5) Local authorities do not have development plans for the use of mineral resources. At the same time, local plans are likely to impose indirect restrictions to extraction activates like excluding access roads, planning housing construction, green areas, etc.
6) Local authority has too much influence in the decision-making process, especially in extension of EPE validity.
7) Local authority does not even have to scientifically justify their opinion. However, interested companies must always carry out all research and expert assessments.

8) Local authority should have a greater influence and additional conditions submitted should be taken into account, and not partially when EB issues the EPE.
9) The state should have a comprehensive plan for mineral resource exploration extraction and field future. Both state and all counties should have a thematic spatial plan and mineral resource action plan to map all the needs and opportunities. Currently, EET are issued without having a complete information and plan. No distinction is made between deposits where extractions are planned to be carried out in the near future or not at all. The prospect of future mineral resources is not taken into account.
10) A situation has arisen where an interested party who has enough money and power can extract mineral resource where they wants. Regulations on refusal by local authorities and the state are non-existent and supervision is powerless. There is a situation where the one who screams the hardest wins.
11) Major concern is the state interest and security of supply assessment and their consideration in EPE proceedings.
12) A major concern is the assessment of the state's interest and security of supply and their consideration in EPE proceedings. Everything related to security of supply assessment in EPE proceedings are unnecessary. Security of supply should only be assessed if local authority does not agree issuing EPE and applicant wants to apply for state consent.
13) There's no strong will in the Ministry of the Environment to ensure security of supply. One branch work to prove the need to extract mineral resources, while subdivision wishes to deal with nature protection and other protection in the field. It often seems like they work against each other inside the house.
14) Unreasonable delays in EPE proceedings doe to some stakeholder intervention. EPE proceeding time, especially with EIA process is very long. EPE proceedings and regulations for smaller area and with lower environmental impact should be different and faster.
15) Goodwill agreement between local authority, local community and developer should be favoured in order to reduce future problems due to the regulations.
16) Local authorities like to add unnecessary burdens to developers like goodwill agreements. In addition to pollution fees and mineral resource extraction charge, developers also have to pay for additional wishes of the local authority which are not regulated.
17) In EPE proceedings, EB does not act as a decision-maker and doesn't guide the stakeholders, but mediates the views of stakeholders. As the representative of the state, EB must have the right to make a discretionary decision in assessing the

appropriateness of the opinions received, especially when local authority does not agree issuing EPE. Problematic situations must be solved by developer or local authority and usually in count. EB doesn't take responsibility.

18) In EPE proceedings, EB likes to add such monitoring and other conditions to EPE, which cost they have no idea. If you ask why, the do not know and do not answer. Something must be changed to curb official's discretion.
19) Mineral resource deposits are restriction on land use for local authorities. It is difficult to assess deposit conditions in comprehensive plans. There are no specialty employees in local authorities in mineral resource field.
20) Local authorities like to submit unreasonable conditions, which are usually taken into account by EB.
21) Local authorities are not economically interested in mineral resource extraction. Mineral resource extraction charge received are very small and even almost non-existent for some mineral resources. Compensation system for local communities and residents must be developed.
22) Minimum distance between quarry and neighbouring property (residential land) should be determined which should be different according to mineral resource an expected environmental impact.
23) Overall there are too many quarries and permits.
24) EPE validity should be shorter and validity extension should be allowed in some cases.
25) EPE validity should last until mineral resource is exhausted and the area is reclaimed. In situations where there is no market need for the material, the state should somehow motivate extraction not to still extraction activities.
26) In EPE proceedings, EB must present reasons when EPE proceedings are overdue.
27) Auction regulation is very superficial and doesn't take into account different possible situations, especially in auction failure. Auctioning regulations should be more precise because auctioning has become more frequent.
28) Mineral resource extraction and permitting activates should be in jurisdiction of the Ministry of Economic Affairs and Communications.
29) In situations where bedrock mineral resource is extracted without lowering water level and with less environmental impact, then mineral extraction charge should be reduced by 50%. Similar regulation is already for sand and gravel extraction. Mineral extraction charge should also be paid for sand and gravel extraction in privately owned lands.
30) For local authorities there are proceeding criteria problems when EB requires EIA to be carried out.

31) EPE are currently being applied on a first-come, first-served basis. With regard to CMR the state should explore, plan and auction those areas with designated conditions. This matter would take place through public procurement as a concession, a similar regulation is currently being planned for the so-called future mineral resources.
32) ECA is outdated regulation that does not allow the state to effectively meet its needs.
33) Current system, where mineral resource extraction permit is part of the environmental permit is disproportioned. In many cases the applicant does not have the necessary information to submit needed according to GPECA. Some of the information is only possible after EIA. Such approach is formalistic and only ensures an unreasonable administrative burden, but does not substantially contribute to the quality of the application proceedings.
34) Unreasonable and meaningless, mainly formal, treatment of environmental impacts and existing environmental restrictions. In particular, extending the impact of nature conservation restrictions to an indefinite depth, regardless of the actual relationship between the conservation objectives and the proposed activity. For example, a ban on underground mining at depths of more than 60 m to ensure the protection of flying squirrels or birds. Excessive application of the precautionary principle and only a two-dimensional approach to the measures needed to ensure conservation objectives.

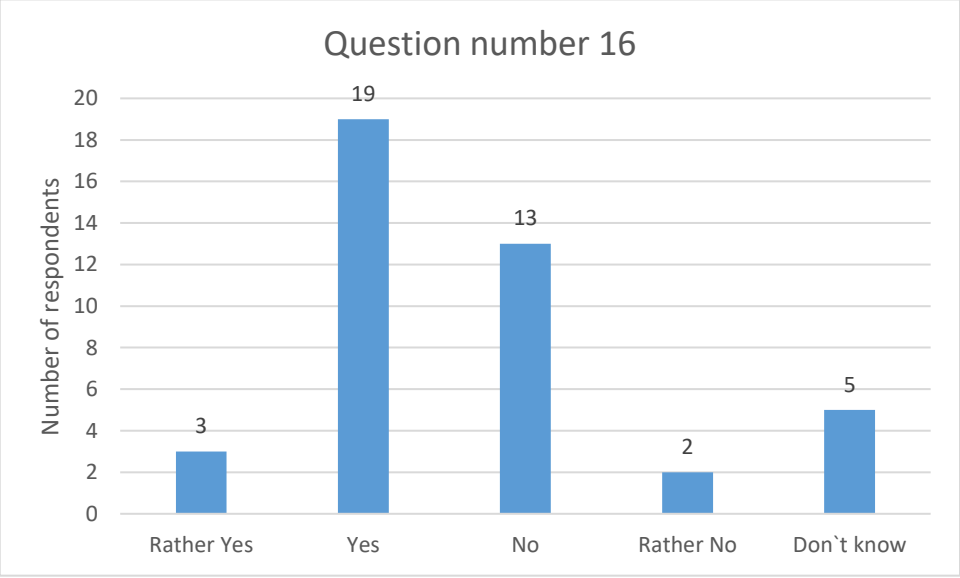

Figure 4.10 Question number 16. Are the regulations for reclamation activates (asking reclamation conditions, reclamation project approval, etc.) simple, clear and understandable?

More than half of the respondents consider that regulations for reclamation activities are simple, clear and understandable. Respondents from local authorities and some

respondents from extraction companies believe that reclamation regulations and practices should be review and appropriate amendments to regulations should be made. Additional comments submitted were following:

1) Reclamation activates should be less bureaucratic and should be modernized with the objectives of the environmental strategy;
2) Situations where environmental impact assessment is required should be limited for reclamations.

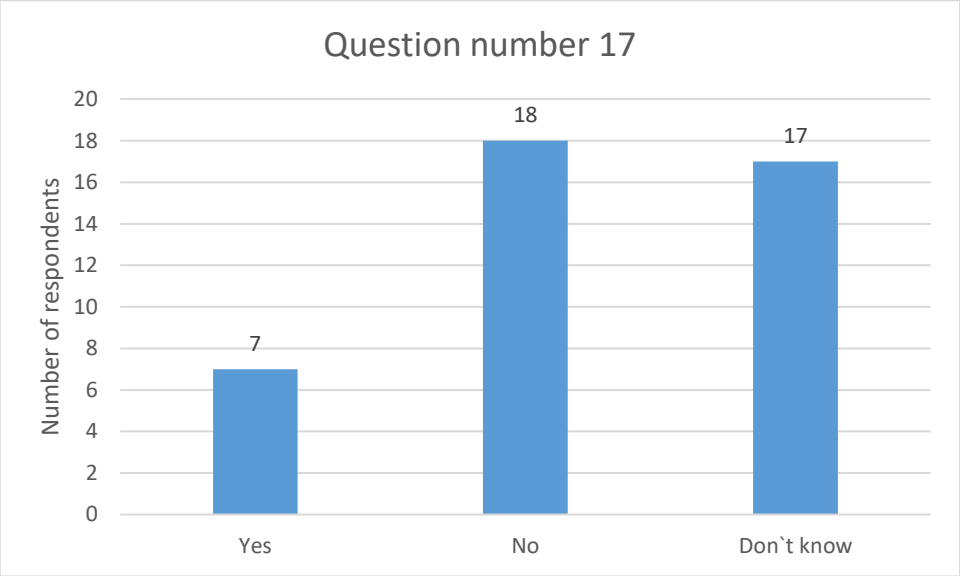

Figure 4.11 Question number 17. Are reclamation activity proceeding fast and efficient?

The majority of extraction companies consider that reclamation activity proceedings should be faster and more efficient. Most respondents from local authorities and public sector answered, don’t know. Because reclamation activities usually take place at the end of extraction activates, the proceedings must be fast and efficient for companies to reclaim land disturbed by extraction in timely manner.

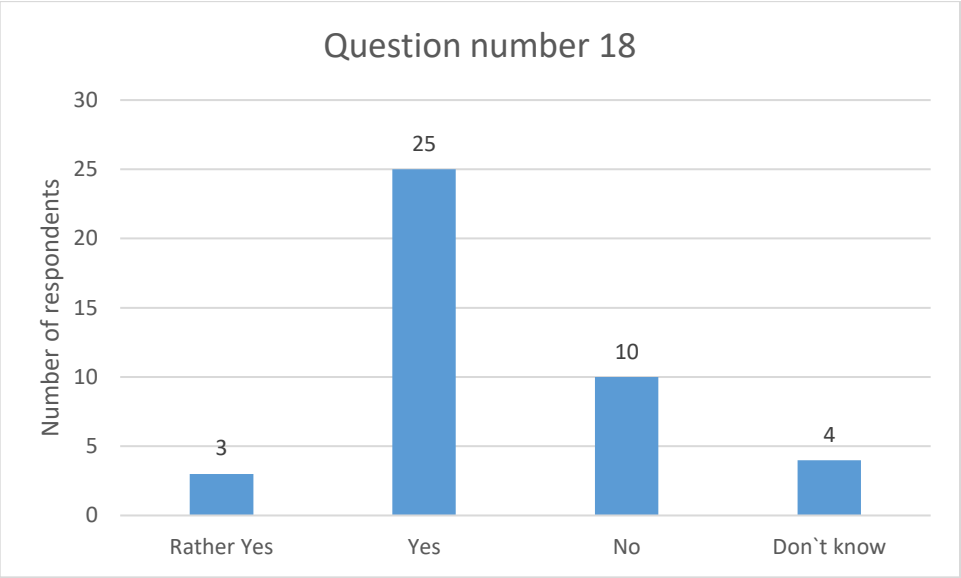

Figure 4.12 Question number 18. Should there be different regulations and practices for different types on mineral resources for reclamation land disturbed by extraction and for the assurance of reclamation?

Majority of the respondents believe that for different types on mineral resources there should be different regulations and practices for reclamation land disturbed by extraction and for the assurance of reclamation. Most respondents from public sector believe that there should not be different regulations and practices. Additional comments submitted were following:

1) Some flexibility must be maintained in regulations and practices;
2) The specificity of the location and the interest of the landowner must be taken into account;
3) Regulation should be one and flexible and practices different for each mineral resource.

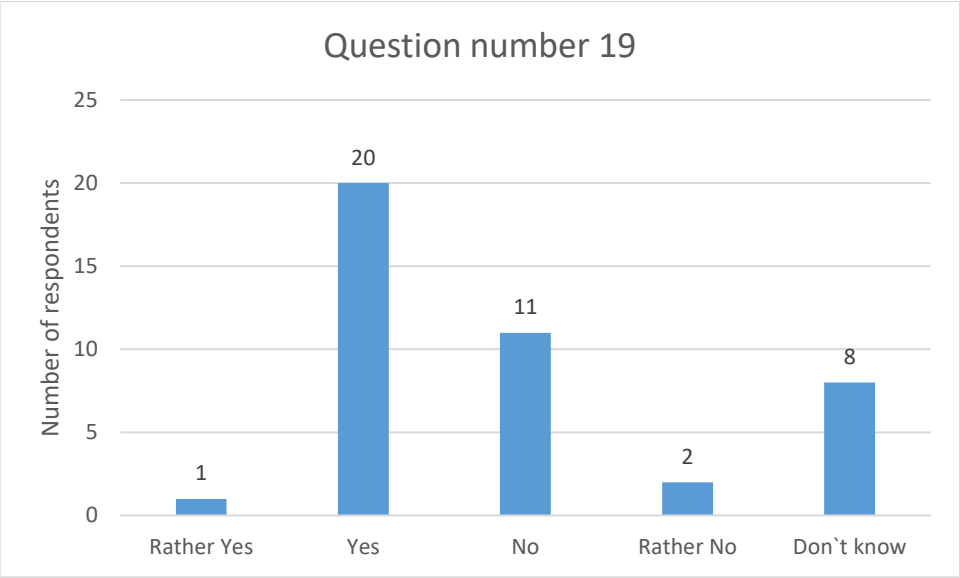

Figure 4.13 Question number 19. Is it necessary to introduce stricter regulations or financial mechanisms to ensure the reclamation land disturbed by extraction?

Majority of the respondents from local authorities believe it is necessary to introduce stricter regulations and financial mechanisms to ensure reclamation land disturbed by extraction. Majority of the respondents from extraction companies believe that there is no need for stricter regulations and financial mechanisms. It is understandable that companies do not want additional financial burdens, but in the other hand, areas that have not been reclaimed are dangerous and damage the reputation of mineral resource extraction field.

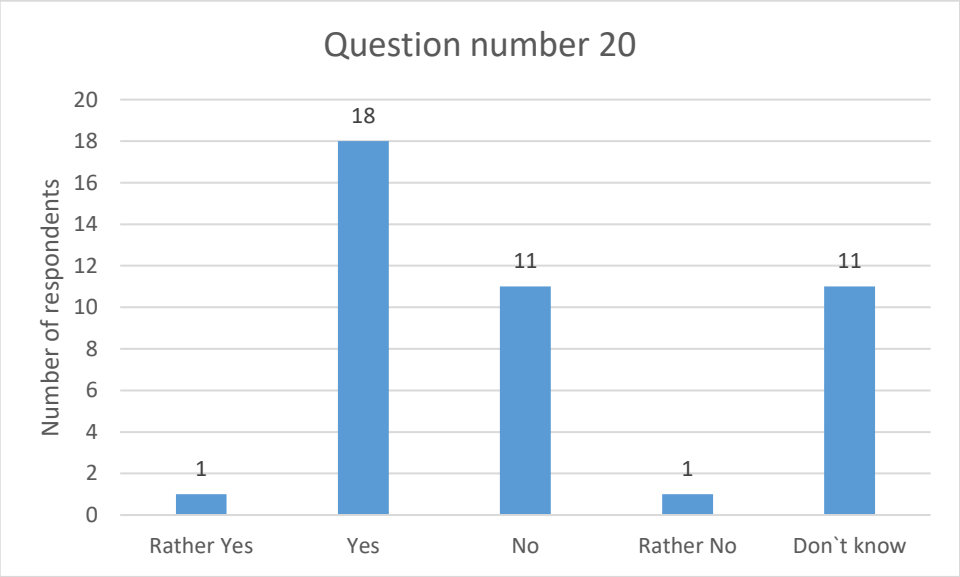

Figure 4.14 Question number 20. Should the actions and operations necessary for reclamation land disturbed by extraction (requesting remediation conditions, submission of a remediation project, etc.) be carried out earlier than it is being done today?

Most of the respondents think that actions and operations necessary for reclamation land disturbed by extraction should be carried out earlier than it is being done today. Majority respondents from local authorities believe that and is followed by respondents from public sector. Majority respondents from extraction companies do not support the idea to carry out the necessary actions and operations earlier. Additional comments submitted were following:

1) Reclamation conditions should be requested earlier for old mines and quarries;
2) Extraction companies start planning necessary activities too late;
3) It must be considered, that the way and solution of reclamation can change over time. In this case, the amendment proceedings for necessary documents must be easier and faster;
4) If possible, gradual reclamation should be favoured and used. Then, when extraction activities end, most of the disturbed land by extraction is already reclaimed.

Question number 21 was a free comment question where respondents can submit their thoughts and suggestions. With that question I asked the respondents to name at least two main regulation and practice problems with reclamation activities and operations. In addition to briefly explain why they identified these problems and what the possible solutions might be. Following problems and suggestions were submitted:

1) Some extraction companies do not reclaim land disturbed by extraction, because it is financially expansive and does not bring any value to company.
2) Gradual reclamation or reclamation parallel to extraction must be favoured in cases where it is possible. This lowers the risk if the company is unable to reclaim the land. Gradual and parallel reclamation system should be simple and easily process by EB. Also this system should have strong control and supervision by EB. Both technological and biological reclamation should be done if possible. The state should consider making this arrangement mandatory for sand and gravel quarries.
3) Reclamation should take into account the whole deposit as a whole, not for individual quarries. There are also no general architecture solutions for bigger deposits.
4) Reclamation regulations are too inflexible and are applied jointly to all mineral resource extraction areas regardless the size and specific situation. Reclamation regulations should be made more flexible and practice should be freer. In addition, there are too many different bureaucratic stages and steps before actual reclamation. Final formalization is too time consuming and complicated.
5) Financial guarantee mechanisms such as a financial guarantee or a bank guarantee should be put in place to ensure reclamation and lower the risk.

6) There are no stricter regulation or sanctions for companies that do not reclaim land disturbed by extraction. Reclamation obligation compliance supervision and control mechanisms should be stricter.
7) When setting reclamation conditions, local authorities sometimes set selfish conditions that companies can't or shouldn't do. Sometimes unrealistic requirements for monitoring and inspections are imposed. Local authorities should think carefully about conditions they want to set.
8) More positive examples of reclaimed lands disturbed by extraction are needed. Those examples should be in densely populated areas, in order to improve extraction field image and to contribute to social acceptance. It hard to justify decades of opened quarries where no reclamation steps have taken.
9) In addition to the remediation plan and a brief description of the remediation, even more attention should be paid to remediation when applying for a EPE. Most reclamation activities should be decided during the EPE proceedings. Local authorities should analyse reclamation direction and corresponding conditions when giving their opinion about EPE application. Reclamation direction should be accepted by all stakeholders when issuing EPE.
10) Regulations and bureaucracy for changing reclamation project should be more flexible. Currently it takes very long time to change some simple conditions. Another problem is changing reclamation direction in EPE. This means full proceedings as amendment of EPE.
11) Major concern is constant EPE validity extension and procrastination, which has created a situation where there are no extraction activates, but the land disturbed by extraction is not reclaimed. In mentioned situations, the state should demand reclamation where extraction activities have ended or stopped.
12) Various reclamation agreements with landowners, local authorities, and interested stakeholders should be made by the extraction companies themselves. EB has too big role in mediating communication and disputes between different stakeholders.
13) EB should follow the Environmental strategy until 2030 when reclamation of the state owned lands take place. EB should be interested in ensuring biodiversity and start directing companies to do so.
14) Process of returning reclaimed or partly reclaimed state owned land should significantly simpler.
15) Currently the start of reclamation activities will only depend on extraction company sense of duty and obedience to the law. There is no substantive ability to oblige them to fulfil the obligation in a timely manner or at all, even when there are proper instruments in regulations.

16) Reputation of mineral resource extraction is affected by individual examples where there are problems with reclamation. This in turn puts the state under pressure to adopt stricter regulations for reclamation. Stricter control and supervision is needed for reclamation, which can solve most of the reclamation problems.

Main concerns and problems with applying for EPE are related to the speed and efficiency of permit proceedings. Also there are concerns about different practices used today to process EPE applications. All regulations in mineral resource exploration, extraction and use field should be systematically reviewed and assessed for relevance and updating. In addition, excessive bureaucracy must be reduced.

Understandably for developers most problematic concerns are the activities related to local authority opinion and agreeing issuing EPE. Also setting additional conditions to EPE. On the contrary local authorities have concerns and problems when it comes to regulating the activities applied by developers. It is understandable that conflicts arise between two mainly affected stakeholders that require longer and more in-depth discussion. It can be concluded that there is a fault or error in the system as more and more stakeholders go to court due to conflicts. In those situations and in everyday proceedings, EB should play more decision-making role and should not act only as a mediator between the stakeholders.

All stakeholders jointly agree that different types of mineral resources should have their own regulations and practices when applying for EPE. There is also a consensus that the state should analyse, plan and better express mineral resource future and needs. Currently, mineral resource exploration, extraction and use field is divided between two different ministries. The state should decide and let the field be managed by one ministry, presumably the Ministry of Economic Affairs and Communications. Regulations and practice of assessing the state's needs and interest and calculating security of supply are of concern. Also all stakeholders jointly agreed that the state should invest more in mineral exploration and related activities. In addition, the state should regulate mineral extraction activities and help to assess appropriate locations ensuring that the impact on local communities and residents are kept to a minimum and, if necessary, compensated. Mineral resource thematic spatial planning and concession are great solutions to the filed. Also combining different activity permits is not sensible and should not be divided between several state authorities.

With regard to reclamation of land disturbed by extraction, all stakeholders jointly agree that reclamation regulations and operational practices need to be reviewed and analysed. There are certain concerns and problems that need to be addressed more

quickly. Similar to applying for EPE, it has been found that there is too much bureaucracy to carry out necessary activities for reclamation and it is difficult to make changes to reclamation plans. When issuing EPE more detailed guidelines and agreements related to reclamation should be established. In addition, it is commonly agreed that different types of mineral resources should have different regulations and practices for reclamation land disturbed by extraction. At the same time, regulations should remain flexible enough to allow work to be carried out in practice, but supervision and control of activities should be tightened.

Stricter reclamation instruments need to be put in place that do not place a heavy burden on developers, but at the same time ensure that land disturbed by extraction are always reclaimed in a timely manner and according to conditions set. Motivational solutions should be considered so that developers will start reclamation activities parallel to extraction and do not simply leave land disturbed by extraction standing still when activities cease or stop. This practice should be mandatory for sand and gravel quarries. Reclamation activities should pay more attention to architectural solutions, environmental strategies and reclamation direction solutions should be considered earlier by all stakeholders. More positive examples of reclaimed lands disturbed by extraction are needed.

It can be concluded that current regulations and practices are outdated and problems have been around for a long time. Because of bureaucracy, it is very hard to deal with problems quickly. That's why many difficult situations and concerns remain unresolved. It is important to inform people working in mineral resource exploration, extraction and use field of the state and ministries future plans and involve stakeholders as early as possible. It is also important to train local authority environmental specialists in the field so that they can make well-considered decisions.

Based on the responses, suggestions and opinions submitted, the next chapter provides more detailed suggestions on how to change, improve and make mineral resource exploration, extraction and use field regulations and practices more effective.

5. DISCUSSION AND PROPOSALS

By describing and analysing mineral resource exploration, extraction and related activity regulations, practices, statistics and taking into account answers to the questionnaire, it can be concluded that current regulations and practices need to be reviewed, updated and changed. Principles of most regulations are now obsolete and future plans or strategies are needed. The Ministry of the Environment and the Ministry of Economic Affairs and Communications plans for the development of mineral resource exploration, extraction and use field are positive and necessary. Greatest need is for a completely new ECA and practices. It is necessary to discuss and analyse what the purpose of new regulations for activities related to the mineral resource field should be.

Following are various proposals for developing and changing mineral resource exploration, extraction and use field, also entire Earth`s crust field. Proposals have been drafted taking into account the analysis of this research, answers to the questionnaire, best possible practices of the neighbouring countries and of Europe, as well as the general needs.

General proposals:

1) In order to develop mineral resource field and sector of exploration, extraction and use, the state must first reach a common understanding of what the future of this field and sector should be. Specific strategic goals and results need to be set, both in the short term and in the long term.
2) All plans and developments must be created in cooperation with associations in the field, local authorities, universities and experts, analysing the concerns and problems in the field. Only after thorough mapping and assessment is it possible to move towards future solutions. It is important to involve all stakeholders as early as possible and to do so effectively.
3) The plans initiated by the state, according to which it is planned to prepare county spatial thematic plans for mineral resources, create a mineral resources concession and start developing a completely new Earth`s Crust Act in the near future, are positive. It is important to implement a those ideas, but considering that within two years the state has not allocated the necessary resources to initiate and prepare a thematic plan, it is difficult to assess when the existing problems and the concerns will be solved.
4) With regard to mineral resource exploration, extraction and use, the state should play more a decision-making role and not act as an intermediary between the stakeholders. According to current practice, EB has been given more of a role as a

mediator of problems and conflicts of other stakeholders. Similar to Latvian practice, main goal of EB should be more of a decisive role whether to allow or prohibit applied activities. To this end, it is sensible to change regulations and practices so that other stakeholders, be they developers or local authorities, should find agreements and solutions to problems themselves. Application, together with all approvals and agreements, should be submitted to EB for review, verification and for necessary decisions.

Proposals for EPE proceedings and procedures:

1) As a first step, the state needs to analyse various concerns and problems in order to make EPE procedures for issuing and amending more efficient, faster and to reduce the general procedural bureaucracy.
2) When changing EPE procedures for issuing and amending and related regulations and practices, it is necessary to proceed differently from the types of mineral resources (incl. future mineral resources). Also to follow specific situations and conditions. It is important that new regulations and practices should take into account the existing situation and technology.
3) The state should consider a way that, different types of mineral resources should have their own regulations and practices, because regulations and practices are over-regulated for some mineral resource types and that does not correspond to the actual situation. In addition, regulations and practices for mineral resource extraction in quarries with low or lower environmental impact should be different, both from a procedural point and point of the execution of works.
4) In order to resolve current conflicts and problems faster, the state should, similarly to the Latvian practice, consider conducting an auction of the right to lease state-owned land of interest before the start of the EPE application process. With such practice, the state can find agreements and solutions with local authorities, local communities and developers. In the lease agreement, it is possible to set conditions for planned activities and set corresponding agreements. This solution is also supported by the current regulation. It is only necessary to change or supplement current practice. It must be considered that it is not sensible to carry out this practice for each EPE application proceedings, but only in situation of high public and high state interest.
5) Similar to previous point, it is important to change the regulations and practices for assessing, presenting and ensuring security of supply, as the current situation is outdated. Regarding faster changes, consideration should be given to changing the practice of assessing the security of supply, where the Ministry of the Economic Affairs and Communications would assess security of supply instead of EB. Currently,

it is not reasonable to assess security of supply in EPE application proceedings. This should be done only if local authority is against issuing an EPE and developer has submitted a request to apply the state consent to issue an EPE.

6) As mineral resource extraction is mainly related to economic activities and extraction is a part of the state interest, the state must assess and consider transferring mineral resource field and the issuing of an extraction permit to the administrative area of the Ministry of the Economic Affairs and Communications. In this way, extraction permit would be a part of economic activity permits, on which the state can reach an agreement with local authorities and developers on various financial and support measures.
7) In addition to extraction permit, it would be additionally necessary for an interested developer to apply for an environmental permit, which is processed and issued by EB. Environmental permit verifies whether the requested activity can be carried out based on environmental aspects and restrictions. In addition, mitigation conditions are set for activities, in terms of noise, dust, working hours, etc. In the case of an environmental permit, local authorities would not have the right to refuse to issue the permit, but extraction permit can be refused.
8) In order to develop mineral resource field, it is necessary for the state to reach a conclusion and continue forward with the spatial thematic planning of mineral resource exploration and extraction, and continue developing plans for mineral resource concession. By drawing up these two major plans, it is possible to assess and highlight the field concerns and problems that need to be addressed. In turn, information and knowledge gained would contribute to the development of a new Earth`s Crust Act and in addition, to amendment of other regulations. It is also possible to change the practice as a matter of urgency on the basis of the knowledge gained.
9) As regards of additional conditions set in EPE, EB should consider and assess the relevance of opinions and proposals submitted and set fair conditions by a considered decision. It is important to ensure that the conditions set are met by the developer and that the state has effective control.

Proposals for reclamation of land disturbed by extraction:

1) The state needs to analyse various concerns and problems in order to reduce the requirements of the reclamation project and its procedure, as well as the general procedural bureaucracy of reclamation. Reclamation regulations need to be made more versatile, but simpler, which would ensure and motivate developers to reclaim land disturbed by extraction in a timely and correct manner.

2) Changes in the regulations and practices of reclamation, especially in the development of financial mechanisms, must be based differently on the types of mineral resources (incl. future mineral resources), the size of extraction areas, their situations and conditions. It is important that new regulations and practices and financial mechanisms are equal and proportionate to stakeholders in all circumstances.
3) With regard to faster changes, it is important to change the regulations and practices in force for situation of EPE reclamation direction change and for parallel reclamation. They need to be made more flexible and faster. Currently if a developer wishes to change EPE reclamation direction, they must apply for the amendment of entire EPE. Also, in the case of parallel reclamation, developers must go through several bureaucratic stages, which are too time-consuming and complicated. Such conditions affect the behaviour of developers with regard to reclamation, as it is easier and more reasonable for them to reclaim the area at the end of extraction activities.
4) Consideration should be given both in the case of parallel reclamation and in the case of reclamation in general, in addition to reclamation direction and reclamation plan, a more detailed reclamation project or plan approved by all stakeholders should be attached to EPE application. In this way, all stakeholders would know more specifically about future plans and directions according to which landowners and local authorities can take them into account when planning their future activities in those areas. Developer can also plan extraction activities in such a way that the area can be reclaimed up as quickly and correctly as possible.
5) In addition, different regulations and practices for carrying out reclamation activities with small or less environmental effects should be considered. It is important to note that, under some conditions, the procedural costs of carrying out reclamation activities are higher than direct reclamation activities that are carried out. It must be assessed whether, in such situations, the extracted areas could be reclaimed according to standard projects created by the state, which will be supplemented in each situation in accordance with the proposals of the stakeholders. Also to assess whether the reclamation activities could be carried out according to extraction project, where detailed reclamation plan is attached. It is important to ensure that, in cases where there is a need to change the necessary projects or plans, they can be carried out quickly and efficiently. It will be difficult to determine a specific boundary at which the extracted area qualifies as with little or no environmental impact.

6) It is also important to ensure the reclamation of all extracted areas and the correct enforcement of reclamation obligations. It should be assessed to impose conditions or provisions that would prevent or prohibit an developer from applying for new exploration permits and EPE in situations where the same developer has not complied with established rules, has not reclaimed areas on hasn't done it in a timely manner. Those conditions would also prevent and prohibit amendments of existing EPE.
7) In addition, the state should further consider establishing financial mechanisms to meet the reclamation obligation. When designing and considering the allocation of financial mechanisms, it is important to take into account that the changes not only ensure that funds are provided for the reclamation of land disturbed by extraction, but also that possible changes motivate developers to carry out reclamation operations more efficiently and correctly.
8) It is also important to take into account that possible mechanisms would not burden developers or create other obstacles to the extraction and management of mineral resources. It is also important to assess the possibilities of different financial mechanisms, which have also been reflected in some studies.
9) In the light of this research, one solution of financial mechanism may be the following. The amount of the guaranteed deposit is related to the size of the open quarry and the size of the reclaimed area. The first step is to determine the potential cost of reclamation, according to which the developer will provide a guarantee. If a developer opens 20% of the area, they guarantee 30% of reclamation cost. An additional 10% has been taken into account in cases where the developer fails to comply with the reclamation obligations. If the company then wants to open additional 20% of the area in the next stage, but at the same time reclaims 20% of the extracted area in parallel, then the developer does not have to pay an additional deposit. Consideration should also be given to allowing developers to apply for the guaranteed money in instalments for the reclamation activities in the event of earlier completion of the extraction activities. Establishing financial mechanisms to ensure reclamation would also reduce the risk of local authorities and residents feeling that areas could be left not reclaimed.
10) It is understood that this solution can only be used for certain mineral resources and situations, but on this basis the possibilities for other mineral resources should be further explored, as well as in the context of extraction authorization procedures under a concession. Purpose of the financial mechanism should not be to burden developers but to motivate them to fulfil their obligations to reclaim land disturbed

by extraction and, if possible, to reclaim parallel to extraction activities. Also to motivate developers to thing about innovative reclamation solutions.

11) In developing changes and practices to ensure reclamation obligations, the state should also consider a positive incentive system that provides benefits or other compensation to developers that comply with reclamation obligations correctly and in a timely manner. It is possible to link such a system to good extraction practice.

Presented thoughts and proposals should be analysed by the state in the development of a new Earth`s Crust Act and in the development of a new direction in mineral resource field. It is important that the best solution from an environmental and safety point of view is ensured when developing and creating new regulations and practices.

6. SUMMARY

The aim of this research was to find out and assess the problems and concerns of environmental permit application procedures for mineral resource extraction and of reclamation of land disturbed by extraction. Research revealed that the main principles of regulations and practices governing mineral resource exploration, extraction and use have been in force for a long time and are now obsolete and partly over-regulated.

This research work was divided into four major parts, which were described, researched and assessed using regulations, strategy documents, prepared reports, studies and statistics. Environmental permits for mineral resource extraction issued by the Environmental Board and pending applications were also used. In addition, a survey of employees of the public sector, local authorities, field associations and developers was conducted as a supporting part of the research.

In summary, it can be concluded from the results of the research that in order to develop and change the field of mineral resources and the earth's crust, the state must clearly define future goals of the field and draw up corresponding strategies. Based on the specifically set goals and plans, it is possible to carry out development of a new Earth's Crust Act in cooperation with all stakeholders. It can be considered positive that the Ministry of the Environment has assessed the need of a new Earth`s Crust Act and considered it necessary.

An important development in the field of mineral resources is the Ministry of the Environment idea to start spatially plan mineral resource exploration and extraction in cooperation with affected stakeholders. Another important plan of the Ministry of Economic Affairs and Communications is to start regulating mineral resource extraction through a concession, through which the state can better manage and control mineral resource extraction and use.

Procedures for issuing and amending environmental permits for mineral resource extraction must be made more efficient, faster and the general procedural bureaucracy must be reduced. The state should consider transferring mineral resource field of exploration, extraction and use from the Ministry of the Environment to the Ministry of Economic Affairs and Communications, as the extraction of mineral resources is mainly related to economic activities. In addition to economic extraction permit, it would be additionally necessary for an interested developer to apply for an environmental permit for activities related to air, water and waste, which is processed and issued by the Environmental Board.

Regulations related to reclamation of land disturbed by extraction has to be made more versatile, but simpler, which would ensure and motivate developers to reclaim areas in a timely and correct manner. It is important that reclamation activities begin as early as possible and, if possible, in parallel with mineral resource extraction activities. It is also necessary to ensure that all extracted areas are reclaimed and that the obligations are properly fulfilled. The state should consider and establish financial mechanisms to meet the reclamation obligations.

According to the author of this research, the field of mineral resource exploration, extraction and use is very wide and there are many interested stakeholders. The whole field needs to be reviewed by the state first, and then appropriate future plans must be drawn up in cooperation with all stakeholders, on the basis of which the necessary changes can be made to ensure efficient and optimal exploration, extraction and use, taking into account economic, social, cultural and environmental aspects.

6.1 KOKKUVÕTE

Käesoleva uurimistöö eesmärk oli analüüsida ja välja selgitada maavara kaevandamise keskkonnaloa taotluse menetlemise ning kaevandatud alade korrastamiseks vajalike tegevuste menetlemise ja korrastamise tagamise murekohad ning probleemid. Uurimistöö käigus selgus, et maavarade uurimist, kaevandamist, kasutamist ja korrastamist reguleerivad seadused ning praktika on kehtinud pikemat aega sarnastel põhimõtetel ja on tänaseks vananenud ning osati liialt üle reguleeritud.

Uurimistöö jagunes neljaks suuremaks peatükiks, mille kirjeldamisel, uurimisel ja analüüsimisel kasutati peamiselt valdkonda reguleerivaid seaduseid, strateegia dokumente, koostatud aruandeid, uuringuid ning statistikat. Samuti kasutati Keskkonnaameti poolt väljastatud maavara kaevandamise keskkonnalube ja menetluses olevaid taotluseid. Lisaks viidi uurimistööd toetava osana läbi küsitlus avaliku sektori, kohalike omavalitsuste, eriala liitude ja ettevõtete töötajate seas.

Kokkuvõtvalt on uurimistöö tulemusest võimalik järeldada, et maavarade ja maapõue valdkonna arendamiseks ning muutmiseks tuleb riigil määratleda selgelt valdkonna tuleviku eesmärgid ja koostada vastavad strateegiad. Lähtuvalt konkreetselt seatud eesmärkidest ja plaanidest on võimalik valdkonna kõikide osapooltega koostöös viia läbi uue maapõueseaduse väljatöötamine. Positiivseks saab pidada, et Keskkonnaministeerium on hinnanud uue maapõue seaduse väljatöötamist ja pidanud seda vajalikuks.

Oluliseks valdkonna arenguks on Keskkonnaministeeriumi plaan hakata maavarade uurimist ja kaevandamist määrama ruumiliselt koostöös mõjutatud osapooltega. Samuti on oluliseks Majandus- ja Kommunikatsiooniministeeriumi plaan hakata maavarade kaevandamist reguleerima läbi kontsessiooni, läbi mille saab riik maavarade kaevandamist ning kasutamist paremini juhtida ja kontrollida.

Maavara kaevandamise keskkonnaloa andmise ja muutmise menetlused tuleb muuta efektiivsemaks, kiiremaks ning vähendama peab üldist menetluslikku bürokraatiat. Riigil tuleks kaaluda maavarade uurimise, kaevandamise ning kasutamise valdkonna üleviimist Keskkonnaministeeriumi valitsemisalast Majandus- ja Kommunikatsiooniministeeriumi valitsemisala alla, kuna maavarade kaevandamine on peamiselt seotud majandustegevustega. Lisaks kaevandamisloale oleks täiendavalt vajalik huvitatud arendajal taotleda ka keskkonnaluba, mida menetleb ja väljastab Keskkonnaamet.

Kaevandatud alade korrastamisega seotud regulatsioonid tuleb muuta mitmekülgsemaks aga lihtsamaks, mis tagaksid ja motiveeriksid ettevõtteid kaevandatud alasid õigeaegselt ning korrektselt korratama. Oluline on, et korrastamistöödega alustataks võimalikult varakult ja võimalusel paralleelselt kaevandamisega. Samuti tuleb tagada kõikide kaevandatud alade korrastamine ja kohustuste korrektne täitmine. Riik peaks kaaluma ja seadma korrastamise kohustuse täitmiseks finantsilised mehhanismid.

Uurimistöö koostaja hinnangul on maavarade uurimise, kaevandamise ja kasutamise valdkond väga lai ning huvitatud osapooli on palju. Tervik valdkond vajab esmalt riigi poolt suuremat ülevaatamist ning järgnevalt koostöös kõikide osapooltega tuleb seada konkreetsed tuleviku plaanid, mille alusel saab valdkonnas viia läbi vajalikud muudatused tagamaks efektiivse ja optimaalne maavarade uurimise, kaevandamise ning kasutamise arvestades majanduslikke, sotsiaalseid, kultuurilisi ja keskkonna aspekte.

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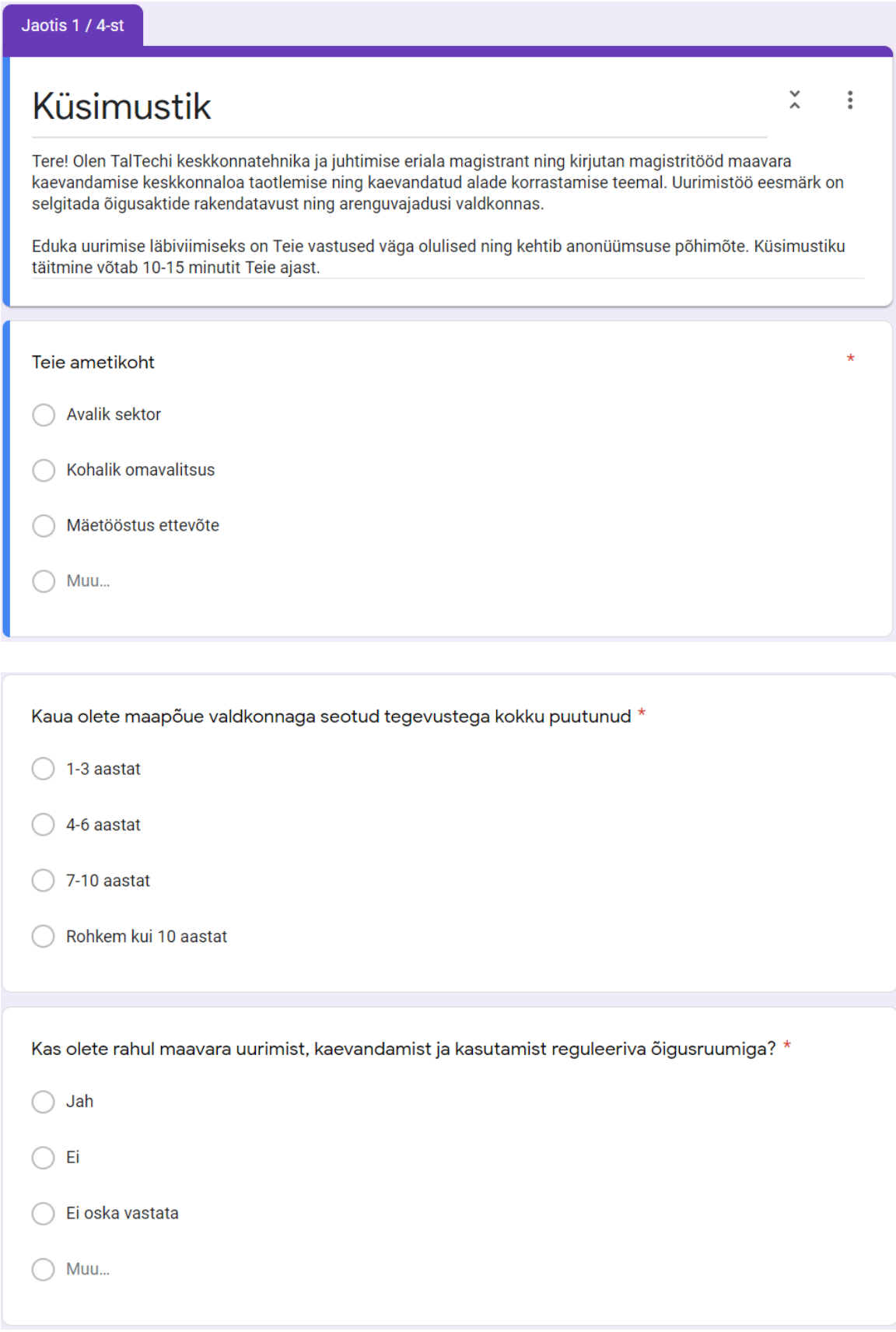
APPENDIX A



Jaotis 1 / 4-st

Küsimustik

Tere! Olen TalTechi keskkonnatehnika ja juhtimise eriala magistrant ning kirjutan magistritööd maavara kaevandamise keskkonnaloa taotlemise ning kaevandatud alade korrastamise teemal. Uurimistöö eesmärk on selgitada õigusaktide rakendatavust ning arenguvajadusi valdkonnas.

Eduka uurimise läbiviimiseks on Teie vastused väga olulised ning kehtib anonüümsuse põhimõte. Küsimustiku täitmine võtab 10-15 minutit Teie ajast.

Teie ametikoht *

- Avalik sektor
- Kohalik omavalitsus
- Mäetööstus ettevõte
- Muu...

Kaua olete maapõue valdkonnaga seotud tegevustega kokku puutunud *

- 1-3 aastat
- 4-6 aastat
- 7-10 aastat
- Rohkem kui 10 aastat

Kas olete rahul maavara uurimist, kaevandamist ja kasutamist reguleeriva õigusruumiga? *

- Jah
- Ei
- Ei oska vastata
- Muu...

Kas praegune valdkondade jaotus Keskkonnaministeeriumi ning Majandus- ja Kommunikatsiooniministeeriumi vahel on rahuldav? *

- ◯ Jah
- ◯ Ei
- ◯ Ei oska vastata
- ◯ Muu...

Kas olete teadlik Keskkonnaministeeriumi ja allasutuste maapõue valdkonna tegevustest ning plaanidest? *

- ◯ Jah
- ◯ Ei
- ◯ Ei oska vastata
- ◯ Muu...

Kas olete teadlik Majandus- ja Kommunikatsiooniministeeriumi ning allasutuste maapõue valdkonna tegevustest ja plaanidest? *

- ◯ Jah
- ◯ Ei
- ◯ Ei oska vastata
- ◯ Muu...

Pärast jaotist 1 Liigu järgmisesse jaotisesse ▾

Jaotis 2 / 4-st

Maavara kaevandamise keskkonnaloa taotlemine

Kirjeldus (valikuline)

Kas maavara kaevandamise keskkonnaloa taotlemist ja menetlemist reguleerivad õiguslikud sätted on lihtsad, selged ning arusaadavad? *

- Jah
- Ei
- Ei oska vastata
- Muu...

Kas maavara kaevandamise keskkonnaloa taotlemine ja menetlemine on kiire ning efektiivne? *

- Jah
- Ei
- Ei oska vastata
- Muu...

Kas maavara kaevandamise keskkonnaloa taotlemisel peaksid olema erinevatel maavara liikidel oma regulatsioonid ja praktika? (põlevkivi, ehitusmaavarad, turvas, tulevikumaavarad jm) *

- Jah
- Ei
- Ei oska vastata
- Muu...

Kas kohaliku omavalitsuse keeldumisel on maavara kaevandamise keskkonnaloa andmiseks Vabariigi Valitsuse nõusoleku küsimise menetluslikud toimingud lihtsad, selged ning arusaadavad? *

- Jah
- Ei
- Ei oska vastata
- Muu...

Kas maavara kaevandamise keskkonnaluba tuleks siduda maavara geoloogilise uuringuloaga moodustades ühtse maapõue loa? *

- Jah
- Ei
- Ei oska vastata
- Muu...

Kas maavara kaevandamise luba peaks kuuluma majandustegevuse lubade hulka ning maavarade kaevandamise valdkond kuuluma Majandus- ja Kommunikatsiooniministeeriumi valitsemisalasse? *

- Jah
- Ei
- Ei oska vastata
- Muu...

Kas teatud kriteeriumite ja maavara liikide puhul, mille kaevandamisel on keskkonnamõjud väiksemad (näiteks väiksemad liiva- ja kruusakarjäärid), on vajalik maavara kaevandamise keskkonnaluba? *

- ◯ Jah
- ◯ Ei
- ◯ Ei oska vastata
- ◯ Muu...

Kas teatud kriteeriumite ja maavara liikide puhul, mille kaevandamisel on keskkonnamõjud väiksemad (näiteks väiksemad liiva- ja kruusakarjäärid), peaks vastava tegevuse loa andmine kuuluma kohaliku omavalitsuse pädevusse? *

- ◯ Jah
- ◯ Ei
- ◯ Ei oska vastata
- ◯ Muu...

Nimetada vähemalt kaks peamist kitsaskohta maapõue regulatsioonis või praktikas, mis puudutavad maavara kaevandamise keskkonnaloa taotlemist ja seotud menetluslikke toiminguid. Lühidalt selgitada, miks tõite välja nimetatud kitsaskohad ja millised võiksid olla võimalikud lahendused. *

Pikk vastuse tekst

Jaotis 3 / 4-st

Kaevandatud alade korrastamine

Kirjeldus (valikuline)

Kas kaevandatud alade korrastamisega seotud toiminguid (korrastamistingimuste küsimine, korrastamisprojekti koostamine jm) reguleerivad ja korrastamist tagavad õiguslikud sätted on lihtsad, selged ning arusaadavad? *

- ◯ Jah
- ◯ Ei
- ◯ Ei oska vastata
- ◯ Muu...

Kas kaevandatud alade korrastamisega seotud toimingute menetlemine on kiire ja efektiivne? *

- ◯ Jah
- ◯ Ei
- ◯ Ei oska vastata
- ◯ Muu...

Kas kaevandatud alade korrastamisega seotud toimingutel ja korrastamise tagamisel peaksid olema erinevatel maavara liikidel oma regulatsioonid ning praktika? (põlevkivi, ehitusmaavarad, turvas, tulevikumaavarad jm) *

- ◯ Jah
- ◯ Ei
- ◯ Ei oska vastata
- ◯ Muu...

Kas kaevandatud alade korrastamise tagamiseks on vajalik kehtestada rangemaid regulatsioone või finantsmehhanisme? (pangagarantii, finantsgarantii jm) *

- Jah
- Ei
- Ei oska vastata
- Muu...

Kas kaevandatud alade korrastamiseks vajalikud toiminguid (korrastamistingimuste küsimine, korrastamisprojekti esitamine jm) tuleks varem läbi viia, kui seda tehakse täna? *

- Jah
- Ei
- Ei oska vastata
- Muu...

Nimetada vähemalt kaks peamist kitsakohta maapõue regulatsioonis või praktikas, mis puudutavad kaevandatud alade korrastamisega seotud menetluslikke toiminguid ja korrastamise tagamist. Lühidalt selgitada, miks tõite välja nimetatud kitsaskohad ja millised võiksid olla võimalikud lahendused. *

Pikk vastuse tekst

Pärast jaotist 3 Liigu järgmisesse jaotisesse

Jaotis 4 / 4-st

SUURED TÄNUD, ET LEIDSITE AEGA VASTATA KÜSIMUSTELE!

Kirjeldus (valikuline)