The Effects of Mining on a community in Rural Syria

A case Study of Mining in the Region of ArRuhayba, Syria

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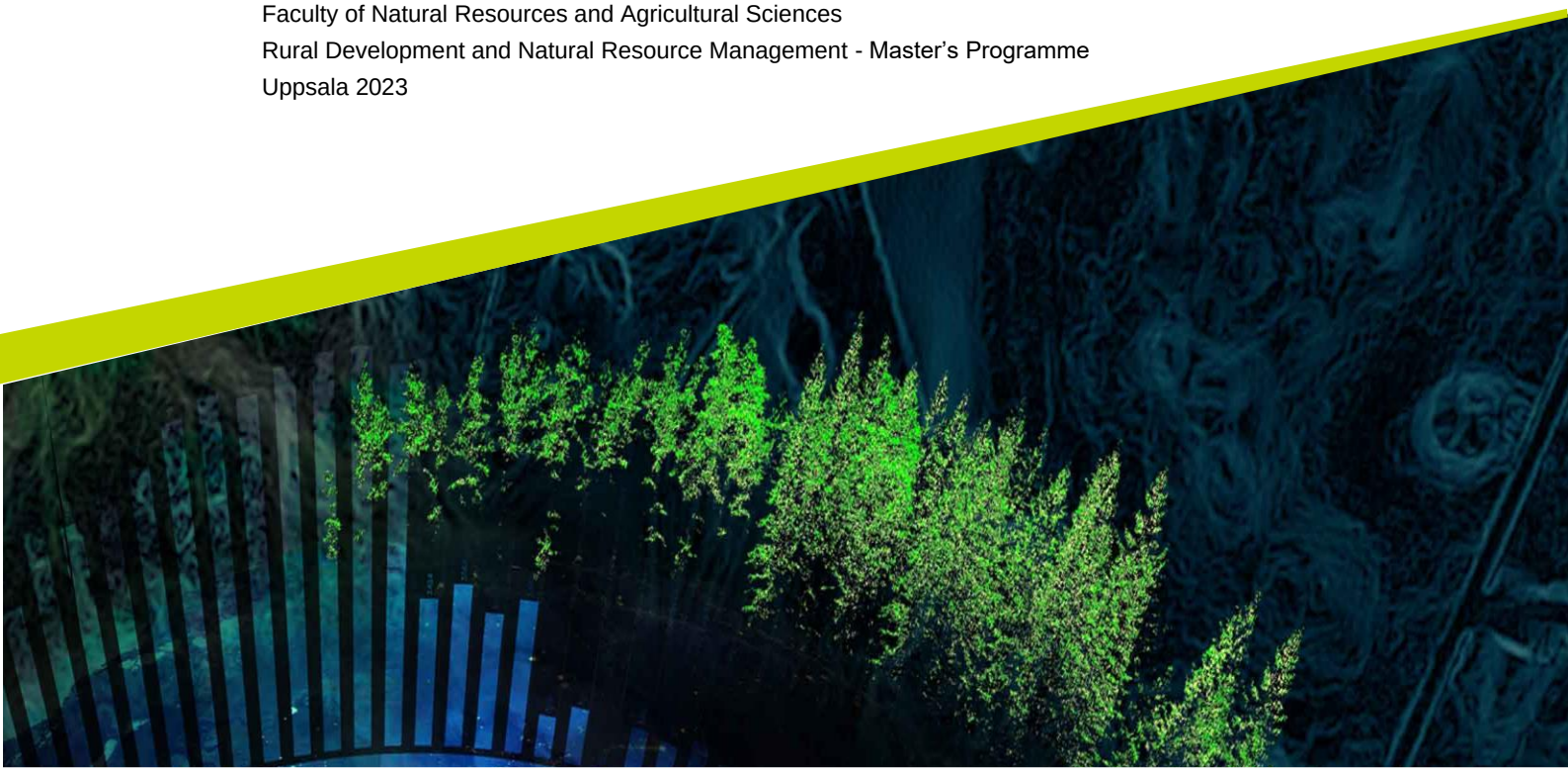

The Effects of Mining on a Community in Rural Syria. A case Study of Mining in the Region of ArRuhayba, Syria

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Abstract

This thesis addresses the effects of mining activities on the livelihoods of rural people and their environment in ArRuhayba, close to Syria's capital Damascus. A public and political debate about such potential effects has not existed yet in Syria, probably because of the ongoing civil war in the country, which leaves a research gap to be filled. Hence, this study explores the effects mining activities have on the livelihoods of local people, who live in the proximity of the mining area, their environment and their lifeworld at large. This is conducted through using different methods to generate data, such as various forms of interviews and participant observation of the mining sites.

The study finds that while mining activities have negative effects on the environment and the lifeworld of local people, the effects on the livelihood system of local people varies between negative effects and positive effects, that are influenced by multiple factors, such as the geographical location; the participation of the local people in carrying out the activities of mining; and the nature of activity. In addition, the study finds that the market economy approach influences the actors in the field who underestimates protecting the environment and considering sustainability. This facilitates the acceleration of mining activities and their expansion over a large geographical area in the absence of relevant regulatory rules and the absence of the participation of local people in the decision-making process.

The findings of this study support the findings of many previous studies that address the same phenomenon. Consequently, the study fills a research gap in the field of rural development and natural resource management by addressing another context with different conditions.

Keywords: rural, mining, livelihoods, development, sustainability, participation, governance, Syria, ArRuhayba

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1. Introduction

During the last decades of the twentieth century, the focus on the environmental aspects of economic growth and material and social well-being has constantly increased worldwide, as well as the political emphasis on sustainable management of natural resources (Dryzek 2005). A crucial economic activity which is located at the crossroads between environmental impacts and potential increase of well-being is mining. Mining activities often support rural people's livelihoods by providing a secure income and diversifying the local population's sources of income. At the same time, however, such activities tend to have large negative effects on the environment, as "[they] moves more earth than any other human endeavor" (Kirsch 2009:88) and often affect the livelihoods of people who live in the proximity of mines in a negative manner. This complexity emerging from the close interconnectedness between ecosystems and human social systems (Dryzek 2005) is of great interest when addressing issues related to development and sustainability.

In 1972, the sustainable approach of natural resources adopted in Stockholm by the United Nations and described as a "conservation-centered approach of development" was criticized for risking having negative effects on the livelihood opportunities of local populations in the Global South (Kirsch 2010). This made the agenda 21 of the UN Conference on Environment and Development, in 1992, stress that the protection of natural resources must safeguard the livelihood opportunities of people who depend on the extraction of natural resources for their livelihoods (Krishna 2012). Yet, the 2030 Agenda for Sustainable Development emphasizes the contradiction between the economic aspect of development on the one hand and the social and environmental aspects on the other.

Studies that focus on mining activities and their economic, social and environmental effects on local people vary depending on the perspectives through which they are approached and of the specific contexts. Syria has declared its commitment to Agenda 21, ensuring that the country strives for sustainable development (SYR. 2012). However, a public and political debate about such potential effects has not existed yet, probably because of the ongoing civil war in the country. This has also led to the fact that most studies that address Syrian issues nowadays focus on war-related cases, which leaves a research gap to be filled, since dilemmas related to rural development and natural resource

management depend largely on the nature of the resources available and their contexts (Acheson 2011; Ellis 2000).

1.1 Aim

The purpose of this case study is to explore the effects of mining activities on the livelihoods of rural people and their environment in Syria. The study explores environmental and social impacts of mining in ArRuhayba, close to Syria's capital Damascus, on the local people who live in the proximity of the mining area.

This major research problem is divided into the following research questions:

- What are the effects of mining activities on local people's livelihoods?
- What are the effects on the local environment?
- What are the effects on local people's lifeworld at large?

1.2 Literature review

This literature review aims to achieve two main purposes. The first is to identify the aspects covered in the field of knowledge related to my research topic and subsequently identifying a gap in the field. In this regard, the review refers to a lack of research addressing the phenomenon under study in Syria. The second purpose is to gain insight about the determinants highlighted by previous relevant studies, to be taken into consideration in the stage of data collection. Furthermore, the results of my study are discussed with the prominent suggestions of these studies.

The studies that focus on mining activities and their economic, social and environmental effects on local people varies in terms of the angels through which they are approached and in terms of contexts, which subsequently leads to various suggestions. In Latin America, Svampa (2012) argues that the type of development connected to extractive activities, including mining, leads to a form of accumulation based on the overexploitation of non-renewable natural resources, having negative impacts on land use and resource allocation. Similarly, Teijlingen and Hogenboom (2016) study the discourse of the mining-development relation in Ecuador, which applies partly to Latin America as a whole, suggesting that the conflict about this relation reflect different meanings of mining, development, and their outcomes between two main actors. On the one hand, the Ecuadorian government uses the concept of responsible mining to legitimate these activities and connect it to development to achieve a "good living" in society, the approach that is adopted by the companies as

a “fair deal”. On the other hand, different groups of Ecuadorian national civil society organizations, including labour unions, environmental and social organizations, oppose this discourse and emphasize a counter discourse. They think that mining should have no prominent role in development, as it destroys the environment and damages all its components such as land, forests and air.

In Africa, Kinyondo and Huggins (2021) discuss the experience of Tanzania in formalizing the small-scale mining activities, in its quest to reduce its environmental impacts represented by various forms of pollution, deforestation, and land damage, in a manner consistent with the Sustainable Development Goals (SDGs). They conclude that organizing these activities based on regulating rules is necessary, but at the same time, achieving effective environmental results requires good governance. Similarly, Bansah et al. (2018) suggest that the same regulations in the informal small-scale mining sector in Ghana are necessary to achieve the same goals. On the other hand, Owusu et al. (2019:44) find that some regulations in Ghana, among other countries, have had negative effects on poor local people who mainly depend on mining activities for their livelihoods. They, therefore, suggest more “sustainable reforms, including increased local participation in decision making, education and training”, to achieve better social and environmental outcomes. Nevertheless, Ofosu et al. (2020) emphasize the role of both agricultural and small-scale mining activities in the livelihood of rural people, suggesting that rational resource management can lead to good economic and environmental outcomes.

In the North, Larsen et al. (2017) address the conflict regarding development activities based on mining projects that have negative effects on reindeer herders in Sami lands in Sweden and are detrimental to the economic, social and cultural rights of indigenous people. They describe the conflict to be essentially a governance dilemma. Similarly, Yilmaz and Marschalko (2012) examine underground mining activities and their effects on the surrounding environment and buildings located in the vicinity of the activities in Czech Republic. They found that these activities lead to serious risks to the environment, land and buildings in their areas. Yet, prior planning, monitoring and good control reduces the risks and mitigate their environmental and structural effects on local communities.

As a result, studies that address mining activities show their negative impact on the environment, while implicitly or explicitly acknowledge their economic necessity, suggesting different approaches to this difficult relationship between economic growth on the one hand and sustainable development on the other. These approaches highlight critical determinants that affect this relationship, such as governance, participation and regulations among others, that vary based on the context. However, the

study of Nilsson et al. (2018) is distinguished in that it addresses this relationship in detail. The study explores how the potential fulfilment of the SDGs might affect the livelihoods and lifeworld of who engage in the extraction of natural resources. It provides insights about co-benefits and trade-offs that helps to define appropriate ways to achieve more sustainable development through increasing benefits and avoiding or mitigating potential tensions. The prominent conclusion of the study refers to three critical factors that determine the potential outcomes of such interaction: governance within the institutional context, the geographical place and scale, including the resources available, and time scales.

Nevertheless, Kirsh (2009), who focuses on sustainability, questions the concept of sustainable mining in general, considering the concept misleading because it empties sustainability from its original essence that indicates the preservation and protection of the environment. He argues that sustainability is based on the relationship between the economic aspect and the ecological aspect of development, that leads to two types of sustainability. The first is weak sustainability which considers "that natural capital and manufactured capital are interchangeable, and that sustainability is achieved when the total value of capital remains constant or increases" (Kirsch 2010:90). This type of sustainability which applies to mining activities can lead to the tragedy of the commons, according to Kirsch. The second type is strong sustainability that focuses on the environment whose relationship with the economic activities is not interchangeable (Kirsh 2009).

1.3 Overview of the thesis structure

This introduction section includes a review of previous studies related to the research topic. It is followed by the background section that includes two issues: the national context and a detailed description of the case. Thereafter, the theory section addresses the theoretical framework, that guides data collection and analysis which are explained in the methodology section afterwards. The empirical findings, resulting from a first stage of analysis of the interviews and participant observation are presented in the findings section. Nevertheless, a second stage of analysis using theoretical concepts are conducted in the discussion section to interpret the empirical material before comparing the results with previous studies. Finally, suggested future studies are included in the conclusion section.

2. Background

Syria is one of the developing countries in the Middle East, located to the east of the Mediterranean Sea. It is divided into fourteen governorates, one of which is the capital, Damascus. ArRuhayba, however, belongs to another governorate, Damascus suburb governorate.

Figure 1. Syrian Arab Republic (Google)

2.1 National context

Syria is an Arabic republic. The executive authority is formed by the president, the council of ministers and the local administration councils of the governorates. Since the beginning of 1970s, Syria adopted socialist approach to its economic policies, which prevailed until the end of the 1980s.

2.1.1 New national economic approach: towards “social” market economy

By 1990, a fundamental change occurred in the prevailing economic approach in Syria, influenced by the collapse of the Soviet Union and its economic ideology based on a planned economy on the one hand, and on the impact of the economic crisis that Syria suffered in 1986 on the other. Consequently, free market principles have been adopted, that enhance the role of the private sector

in investment and liberalize foreign trade to establish economic development based on an export-oriented policy, “aiming to achieve the highest possible economic and employment growth” (Hopfinger & Boeckler 1996:194). The vision of the Syrian government was that liberalization will lead the country from socialism and planned economy to a market economy. Yet this approach remained constrained by social principles in which the state is committed to providing certain forms of subsidies and social support within the framework of welfare state (Hinnebusch 1997). Subsequently, Investment Law No. 10 in 1991 established the rules for investment and facilitated the movement of goods and capital across borders, leading to the expansion of the private sector that grew significantly benefiting from the reforms taken, “[t]his Law is the government's reaction to the ailing state enterprises in order to encourage competition from the private economic sector” (Hopfinger & Boeckler 1996:191). Nevertheless, investments in various industrial and commercial fields remained mostly limited to small-scale economic activities, to free themselves from obligations such as those regarding labour rights imposed by labour law on large scale companies (Hinnebusch 1997).

2.1.2 Integrating sustainable development

In 1992, Syria declared its commitment to sustainable development following its participation in the Earth Summit in the same year and sought to develop its institutions and programs in line with this purpose (SYR 2012). Subsequently, relevant changes have been made. At the institutional level, the most prominent of what has been done is the new constitution of 2012, which explicitly stipulates the state’s pursuit of sustainable development, social justice and environmental protection. Environmental bodies were created within the framework of new legislations to regulate sustainable development to be balanced in terms of economic growth and social factors. This was accompanied by the creation of the Local Administration Law of 2011 and the environment law of 2012. Accordingly, new environmental departments were established in the ministries in addition to regional bodies to coordinate related policies (ibid).

2.1.3 Regulating mining and land tenure system

Law N. (26) in 2009 considers all quarry materials within the territory of the country as a property owned to the state that regulates granting the permits of extraction. The state is also the main player in land management that regulates land uses, as the main owner of the territory, and divides the lands between two main categories, public and private. Nevertheless, the land tenure system is more complicated based on various historical factors that determine the right of access and use of a large

part of the public lands, such as statutory, customary and informal rights that may vary based on the local context, which thus determines how they are traded in the market (Cunial 2016).

The system of land administration is largely based on the principles that were used in the Ottoman period, particularly in rural areas where informal institutions play a complementary role to formal institutions in determining property and use rights in addition to related commercial transactions. The lands are divided accordingly into five categories,

1. mulk – Land "susceptible to full ownership lying within the perimeter of administratively determined built-up areas;"

2. amirié (or miri) – Land owned by the State;

3. métrouké murfaka – Land owned by the State but subject to a right of use in favour of a collectivity of people, usually governed by local customs or administrative regulations;

4. métrouké mehmi – Land that belongs to the State at the governorate or municipality level, and which is part of the public domain;

5. khalié mubah – Amirie land that has not been inventoried and delimited, and on which the first occupant with the State's permission acquires a right of preference. (Cunial 2016: 7-8)

Despite the changes made to the land administration system in Syria since the 1950s, the last of which was within the liberalization process in the 2000s, the latter categories still prevail with some additional regulations sometimes and some adjustments (Cunial 2016).

2.2 Description of the case

ArRuhayba is located in Damascus Suburb Governorate, about 50 km northeast of the capital, Damascus. The town is very old. There are ancient archaeological sites dating back to the Roman and Greek periods inside and outside the town. The population of ArRuhayba is about 30 000 people. The town is characterized by dry climate and often lack of rain, which amounts vary throughout the year and from year to year. However, its land is characterized by fertile soil in large parts of it. The local people historically depended for their livelihoods on both irrigated and rain-fed agriculture, in addition to raising the livestock needed for their households. The lands were divided into two main parts, one of which was used for irrigated agriculture that was irrigated by newly drained springs and canals, while the other part was used for rain-fed agriculture, particularly grain.

Figure 3. Rain-fed agriculture in 1970s. (local people's archive)

Figure 2. Irrigated agriculture. (local people's archive)

However, with the decrease in the comparative advantage of this sector due to the scarcity of rain and water caused by pumping water from the feeding springs basins, accompanied by the lack of modern technology after the middle of the last century, people began to diversify their livelihoods through various activities, including quarrying activities in the nearby mountains, that lasted in a limited way until the 1980s. Influenced by the economic development process of the 1990s, that facilitated investment and encouraged the involvement of the private sector to play an active role in the process (Hopfinger & Boeckler 1996), however, mining activities developed, varied and expanded to include various types of marble, decorative stones and building materials. Moreover, these activities became no longer restricted to the local people, but included investors with large capacities under permits issued on a large scale in different locations.

Figure 5. Mining activities in 1960s. (local people's archive)

Figure 4. Primative means and tools. (local people's archive)

Nowadays, a significant percentage of the people work in the extraction and manufacture of stone and marble, in addition to raising livestock for the purpose of trading, as well as other related works, such as fodder industries which have flourished in recent decades. Most of these activities are concentrated in the rain-fed lands and the mountainous areas that fall within the municipality. As for the irrigated lands, urbanization has expanded to most of them. The rain-fed lands mainly consist of arable lands, called *Mamool*, that belong to the state *(Amirie*) that granted rights of use to local people who has tradable documents that enable them to sell and bequeath their rights[1]. These lands are interspersed with rocky lands that are not suitable for cultivation, in which the first user enjoys the

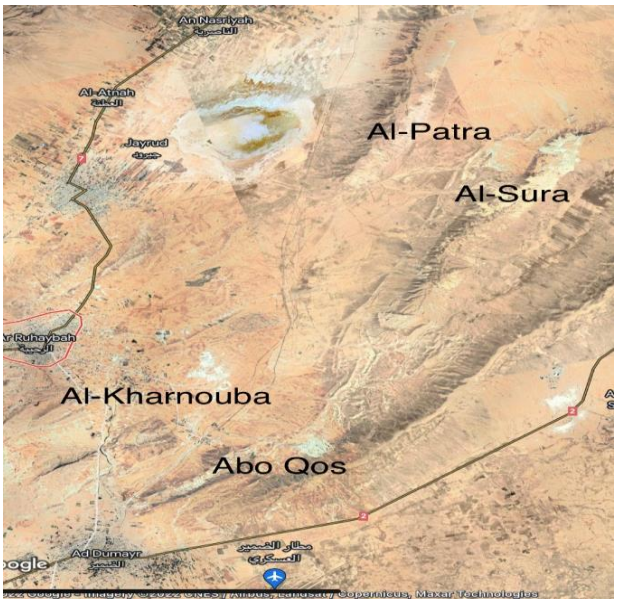

Figure 6. The main sites of mining activities in ArRuhayba (Google)

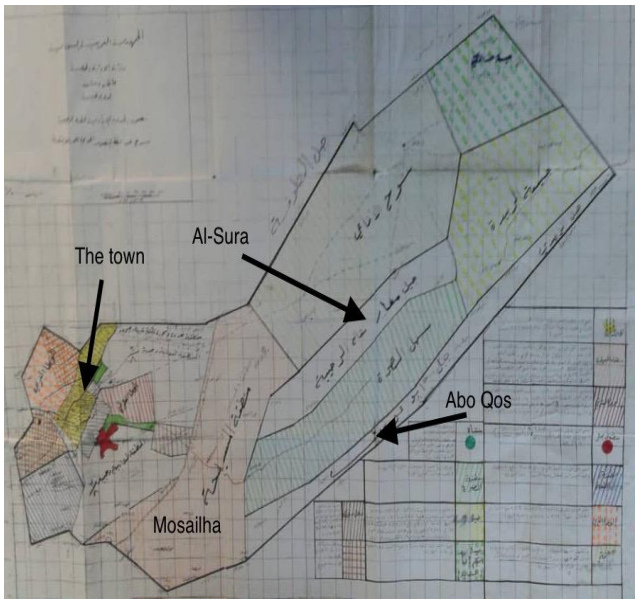

Figure 7. The map of the municipality of ArRuhayba (being prepared by the municipality).

right of use through a permission from the state (*khalié mubah*). However, the prevailing customs state that the owners of the arable lands have the right to the rocky lands that complement their lands up to the tops of their hills, which called *Sipat*. In recent years, the rocky lands and hilltops have become a destination for extraction work, after they were previously limited to the pure mountainous areas somewhat far from agricultural lands. Although mining activities are spread in all these lands and mountains that fall within the specific boundaries of ArRuhayba municipality, they are mainly concentrated in four areas: Al-Sura, Al-Kharnouba, Al-Petra, and Abu Qos.

[1] Appendix 1 includes an example of these documents.

2.2.1 Al-Sura

Al-Sura is an area that contains a mountain considered the first sites where the local people began extracting blocks of stones in 1960s. It is a mountain range located to the east of the town, about 20-25 km away. It is considered as a *khalié mubah* area that overlooks fertile rain-fed plains that is considered *Amirie*. In this mountain, the stone are of high quality, called Ruhayba stone. It is well-known in Syria and some of the neighboring countries where it is used for marble and decorative stones. In the past, people started extracting small blocks of stones from the surface layers using simple tools and primitive ways. Later, it became known that the good quality of rocks is found in layers at a depth of about 20-25 m or more, which requires the removal of all surface layers of soil and rocks. This process is being carried out using blasting and heavy machinery. These quarries are relatively far from the town and its agricultural activities, except for some rain-fed grain cultivation and grazing activities. In each period of time, a specific area of the mountain flourishes based on the quality of its rocks, then its boom expires and the search begins again in another area. In doing so, these activities extended and reached the area of Al-Kharnouba.

2.2.2 Al-Kharnouba

The area of Al-Kharnouba is located next to the town, about 6 km away from the town center. It is characterized by a small mountain with a distinct rocky summit, surrounded by some plains and plateaus that are interspersed with some rocky hills. The people of the town have documents that proves their rights to arable lands (*Amirie*), while the rocky and mountainous lands are considered public (*khalié mubah*). Nowadays, the arable lands are used by their owners as farms, irrigated by wells, and for keeping and raising livestock. In the other lands (*khalié mubah*), different kinds of mining activities are spread under permits granted by the state. Mining activities in Al-Kharnouba are divided into two types of activities:

- quarries to extract marble blocks from surface layers of the earth, using heavy machinery and equipment. Most of these activities belongs to the local people, who have extraction permits in sites located on their own lands (*Sipat*) or on the public lands (*khalié mubah*).
- Quarries to extract and grind rocks to turn them into building materials, using blasting, in addition to heavy machinery and equipment.

The work in this area can be described as random, as there are no rules regulating these activities. Besides, there are no well-defined roads.

Figure 8. Al-Kharnouba. (participant opservation, 28/2/2022

Figure 9. A quarry to extract marble blocks in Al-Kharnouba. (participant opservation, 28/2/2022)

2.2.3 Al-Patra

Al-Patra is a mountain range located to the west of Al-Sura, about 15-20 km from the town center. It overlocks fertile rain-fed lands. After 2005, this site was approved for the extraction and manufacture of construction materials, instead of sites located near the capital, Damascus, which supplies such materials to the southern provinces. Priority was given to former investors in those sites. In other words, most of the investors in this site are from outside the area. Gravel and sands used in construction are extracted from these sites using blasting and heavy machinery and equipment. Although the work on this site is relatively recent and does not exceed a few actual years, the amount removed from the mountain seems significant. In this site, regulation and organization is a feature of the work since permits are specified and granted in advance. The roads are also defined and organized.

2.2.4 Abu Qos

Abo Qos is a mountainous area located about 13 km from the town center. It contains some mining activities to extract construction materials. The activities are similar to those in Al-Petra, but the number is much less. The area has one main road that leads to the sites by passing through rain-fed lands that belong to the local people.

Figure 10. ArRuhayba. (10/3/2022)

3. Theory

The theoretical framework that guides data collection and analysis of this study is based on a so called livelihoods approach. In addition, other theoretical approaches are used to obtain better understanding of the phenomenon under study. Hence, analytical concepts from resilience thinking and from Habermas' lifeworld-system approach are used to elaborate on the data collected.

3.1 Livelihood approach

The lexical meaning of livelihoods as "a means of living" distinguishes it from being just a source of income, as it refers to how people achieve their incomes (Ellis 2000). This meaning leads to a distinct approach of development, aiming to fulfil people's needs in such a way that they are able to live a decent life in all its aspects economically, socially and culturally. Based on such an approach, Amartya Sen focuses on the role of society in enabling its members to achieve their livelihoods in all these aspects (Peet & Hartwick) through development that focuses on people's capabilities and social entitlements, not only on earning income (Hobson 2011; Krishna 2012). After the concept of sustainability became popular in 1990s, sustainable development was defined in the Report of the World Commission on Environment and Development as "meeting the needs of the present without compromising the ability of future generations to meet their own needs" (Krishna 2012:12). The concept combined the livelihoods of local people and environmental issues in Agenda 21 (Scoones 2009).

However, the concept of livelihoods approach included in addition to sustainability, capability and equity as shown in the definition of Chambers and Conway,

> A livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living; a livelihood is sustainable which can cope with and recover from stresses and shocks, maintain and enhance its capabilities and assets, and provides sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at the local and global levels and in the short and long term. (Krishna 2012:14)

Nevertheless, influenced by the previous definition, Ellis (2000:10) coined a detailed definition of the concept, "[a] livelihood comprises the assets (natural, physical, human, financial and social

capital), the activities, and the access to these (mediated by institutions and social relations) that together determine the living gained by the individual or household". The detailed and clear context-dependent aspects of livelihoods definition facilitate how to conceptualize it. According to Ellis (2000), this includes:

- Assets accessed by the household: natural capital (natural resources such as land and water), physical capital (such as machines and buildings for production), human capital (labor and its conditions such as education and healthcare), financial capital (money and other kinds of savings) and social capital (social networks both horizontal with kin and friends, and vertical with politicians and patrons).
- How access of the assets and use them is conditioned by institutions and regulations (such as land tenure).
- Activities: natural resource-based activities and non-natural resource- based activities.
- Outcomes: income security and environmental effects.

Accordingly, Ellis' definition of livelihoods is adopted in this study. yet, the definition of sustainability included in the definition of Chambers and Conway is also adopted together with other concepts from resilience thinking.

3.1.1 Strength and limitations

A livelihoods approach can be considered as a strength in the studies of rural development and natural resource management. The approach has a prominent role in the studies that address rural people's livelihoods, as an actor-oriented approach involved in the fieldwork (Scoones 2009). This role can be considered as a benefit of such studies since rural communities are not homogenous, but they often seek to insecure their livelihoods based on different assets that may be shaped by different local institutions (Ellis 2000). Besides, dilemmas of natural resource management vary based on the nature of the resources and their conditions (Acheson 2011). Accordingly, using livelihoods approach is considered as an advantage in this study. Moreover, as a local perspective, the approach acknowledges the agency of rural people and their capacity to understand and define their problems (Jacobson 2013).

However, it is widely argued that rural activities are shaped not only by the local institutions but also by other broader social structures of politics and governance (Ellis 2000; Scoones 2009). Hence, using a livelihoods approach leaves theoretical gaps that may affect the findings of the studies, which requires "linking to more macro-structural issues" (Scoones 2009:174) to bridge the gap and

overcome the limitations of this approach. Thus, in this thesis I discussed the findings in light of the broader structures of politics and governance.

3.2 Resilience thinking

Two concepts from resilience thinking are used in the analysis to elaborate on issues related to sustainability and resilience addressed in the previous approach, i.e., specified resilience and general resilience in a social-ecological system. Specific resilience refers to the resilience that applied to only parts of the system, while general resilience concerns uncertainty that is applied to the whole system (Folk et al. 2010). It is argued that diversity enhances resilience in the social as well as ecological systems (Ellis 2000). At the same time, however, the focus on specific resilience may undermine the general resilience of any system (Folk et al. 2010). Nevertheless, Ellis (2000:15) define rural livelihoods diversification as "the process by which rural households construct an increasing diverse portfolio of activities and assets in order to survive and to improve their standard of living". In this study, mining activities is considered as a form of diversity through which the local people seek to achieve their basic needs that guarantee them a decent life. Thus, using the concepts of specified resilience and general resilience is critical to avoid misleading findings when analyzing the data collected.

3.3 Lifeworld-system approach

In this thesis the two concepts of Habermas about rationality, the communicative rationality and instrumental rationality (Smith, S.B 1986; Postone 1990), will be used as a complementary approach in the analysis process to have better understanding of the phenomenon under study. Habermas considers modern society on the one hand consist of the civil environment of people's everyday life in all its aspect, labelled lifeworld, and on the other hand the economic, bureaucratic and state institutions and practice, called system. There are different forms of rationalities, which categorize the lifeworld and system. Communicative rationality characterizes the lifeworld and depends mainly on language and argument between social agents who seeks to reach a consensus that achieves the best in society. On the other hand, instrumental rationality characterizes the society as a system and seeks to achieve objectives related to the state and economy, which leads to the rationalization of the lifeworld. Hence, "the concept of communicative rationality gives an inner logic to resistance against

the colonization of the lifeworld" (Postone 1990:175). In other words, a lifeworld-system approach emphasizes the tension emerging from this complexity.

4. Methodology

In this study a qualitative research approach is the appropriate approach to be chosen since the research problem concerns a social phenomenon that requires better understanding, considering the lack of relevant research (cf. Creswell & Creswell 2018). To be able to answer the research questions of my study, I used different methods to generate data, such as participant observation of the mining sites and various forms of interviews, such as life-story interviews, focus group interviews and semi-structured interviews with the main actors, i.e., local people, state representatives, and corporate representatives. Semi-structured interviews, based on interview guide that cover the topics of the study (Esaiasson et al. 2017; Robson & McCarton 2016), is an appropriate method to generate data that aim to understand how the participants in my study articulate their understanding of their lifeworld. I combined this method with participant observation as a complementary approach to fill gaps in the data collected in the field and to enhance accuracy, by comparing with the answers given in grasp what Anthony Giddens label the practical consciousness of the actors (Giddens 1986), that is how do people act and experience their lifeworld. While interviews explore attitudes, feelings of the actors and the reason behind them, the participant observation is useful in determining people's actions directly, and hence it serves as a complementary to interviews (Robson & McCarton 2016). However, initially I used a focus group interview to delineate the positions and views of the people I would interview later on, to better grasp the social context of the interviewees. This approach helped me to encourage many people, with different knowledge and abilities, to participate together and partake in the subsequent individual interviews.

4.1 Selection and data collection

The theoretical framework that guided data collection (and analysis) of this study is mainly based on a livelihoods approach. The selection of who would be interviewed was determined from the very beginning by identifying the main actors, i.e., local people, state representatives, and corporate representative, municipality representative and agricultural associations. Yet the focus group interview conducted in the beginning, the participant observation in the field and the snowball effect

contributed to create a more precise and effective selection. The selection of the local people in the semi-structured interviews were based on two principles: intensity, i.e., the most affected people and a social variation, based on criteria such as age, gender and class (Esaiasson et al. 2017).

4.1.1 Focus group interviews

Focus group interviews are conducted in different stages (Robson & McCarton 2016). In the very beginning, I used a focus group interview to prepare for the main individual interviews, where I attempted to stimulate an interactive discussion about the main topics of the study to explore points of view about them. This kind of interviews facilitated the selection of the appropriate interviewee and shed light on critical issues to be addressed and observed. During the data collection stage, however, I used focus group interviews to assess my results and reflect on them. Moreover, I used focus group interviews as an additional method of collecting data.

The first focus group interview was conducted in my accommodation, where I invited people of different ages, different fields of work and different specializations of studies. I prepared for this interview during the first week in the field through minor conversations I had. Consequently, I made some choices:

- people who expressed enthusiasm for the topic and had already reflected on the main themes of the study and expressed their opinions about them.
- Owners of agricultural activities
- Owners of commercial and industrial activities
- Members of agricultural associations

The discussion addressed the role of mining activities in people's livelihood and its impact on other aspects of their lives. I was interfering in the discussion to address all the topic of the study and asking for supporting example. Through taking notes, I identified people from the session with whom I conducted an in-depth interview later and identified sites that I visited and owners of agricultural activities who visited them and conducted in-depth interviews.

4.1.2 Semi-structured interviews

Before every interview, I prepared an interview guide (Esaiasson et al. 2017; Robson & McCarton 2016) that includes:

- Introduction that includes the aim of the interview and questions about personal information of the participant such as age and job.

- open-ended questions that cover the themes and topics of the study. The questions subject to be developed during the interview.
- Closing question.

The interview guide varied based on the interviewee, whether they were local people, owners of agricultural activities, owners of mining activities, or working in the municipality and the agricultural association.

The semi-structured interviews were mainly conducted through audio-taping. Later, I subscribed and translated the language from Arabic to English. Yet, written notes were taken as much as possible.

4.1.3 Participant observation

By observing the people in the field, and conducting spontaneous minor interviews and conversations, I was able to obtain data linked to the immediate praxis of the people I studied. This method functioned because I am from the area, and I have personal connections with many people there. In the field, the data were collected through written notes; I took photos and sometimes audio-taped minor interviews. Several sorts of written notes were used including a field log, field jotting, field notes that cover both descriptive and methodological notes and field diaries about personal feelings that helped me to reflect on the role of researcher (Southwold-Llewellyn 2002).

4.2 Analysis

I analysed the data collected through the interviews and observations conducted in the field using the phases of thematic coding analysis defined by Robson and McCarton (2016):

- Transcription of the prominent extracts of the data collected.
- Coding the items of data.
- Working deductively by organizing the codes under the themes (and subthemes) that relate to the research questions, and inductively by define emerging themes.
- Mapping a thematic network between the themes.
- The phase of interpretation that enable us to have better understanding about the phenomenon under study using the theoretical concepts, and focusing on patterns, trends and the relation within the data.

A first stage of analysis is conducted where I roughly analysed the data collected based on the research questions. The results are presented in the findings section. However, a further stage of analysis, using concepts and theories, is conducted and presented in the discussion section.

Thematic coding analysis was believed to be an appropriate approach to be used in my study since there are specific themes to be addressed in the research questions. Apart from being flexible, uncomplicated and capable of handling a lot of data efficiently, it is appropriate to analyse the data deductively based on themes derived from research questions or other theories, and inductively from reviewing the data and defining themes (Robson & McCarton 2016). In doing so, I can answer the research questions previously determined in addition to the ability to identify new themes and deal with them by connecting them to the research questions. Thus, the approach can be considered as an advantage in the study.

4.3 Reflexivity, ethics and the role of researcher

Since the qualitative research is based on the researcher's involvement in people's lives to examine how they make sense of their lives, the researcher should pay attention to considerations of ethics and reflexivity to highlight "their biases, values, and personal background, such as gender, history, culture, and socioeconomic status that shape their interpretations formed during a study" (Creswell & Creswell 2018:260). In my study, it was important to pay attention to reflexivity for two main reasons. First, through my career, I experienced mining activities and their industries closely which might influence the themes I addressed, to focus on some themes and exclude others; my data collecting; and how to interpret the findings, which required taking related notes during conducting the study (Creswell & Creswell 2018). Second, I have lived in the area of study where I have relatives and friends. Hence, the so called 'backyard' applies here which requires attention to the validity of the information provided (ibid). For this reason, I was constantly comparing such information with other data to make sure that these relationships did not negatively affect the validity of the data collected.

Regarding ethics, i.e., the principles to be followed while collecting data, such as the clarity of intent to conduct a study of specific nature and the need for participant consent accordingly (Robson & McCarton 2016), I had some concerns in the very beginning, as mining activities are a direct or indirect source of income for a significant proportion of the local people. Hence, it was critical to explain that the study would not have negative effects on people's livelihoods. Furthermore, it would

be helpful to highlighting some incentives (Creswell & Creswell 2018). Thus, I sought to emphasize several points:

- After more than fifty years of mining activities, it is necessary to study them to determine the pros and cons of different locations.
- In this study, the findings will be based on the opinions of the local people.
- It will be an opportunity for people to reflect on these activities and their role in people's lives.

However, when I started the study, I found from my first interview, which was a pilot interview conducted on Zoom, that owners of agricultural activities, farms and livestock, suffer from the negative effects of mining activities on their activities. Moreover, when I arrived at the field, I discovered that there are voices rising in different occasions, complaining about the environmental, social and cultural consequences of the activities of mining in the area.

Figure 11. Al-Patra. (Participant observation, 9/3/2022)

5. Findings

These findings are derived from the first stage of analysis of the interviews and participant observation.

5.1 Local people's livelihoods in ArRuhayba

The local people in ArRuhayba depend for their livelihoods on two main sectors: mining activities and agricultural activities, including raising and keeping livestock, in addition to what relates to these activities of industry and services. The majority of the local people in ArRuhayba have the right to the arable lands, along the plains of the municipality, based on shares divided among families of the local people. The people have tradable documents (*Amirie*) that enable them to sell and bequeath their rights of these resources, where they usually carry out various agricultural activities. The activities of mining, however, are often carried out on the public lands (*khalié mubah*), the mountainous and rocky lands that are not suitable for cultivation, in which the first user enjoys the right of use through a permission from the state. The household in ArRuhayba often has at least one of its members engaged in work related to these two sectors of activities.

5.1.1 Typical household

The typical household in ArRuhayba consists of a large number of members. Even after the sons marry, they and their wives stay in the early years with their original household, while the daughters go to live with their husbands. One example is the household of a local middle-class man, who along with his older brother (who has his own household) carries out three of economic activities: a stone block quarry in Al-Sura; a farm with places to raise and keep livestock in Al-Kharnouba; and a workshop for mixing and preparing feed. The household of this fifty-four-year-old man consists of five members in addition to him and his wife. He also has two daughters who are married and live in their husband's homes. This man mainly supervises the activities related to the farm and the fodder workshop, assisted of one of his sons and one of his nephews, along with some young workers from the local people. His wife works as a housewife and is assisted by her single daughter, who is still a

schoolgirl, and her daughter in law, who works as a teacher. The eldest son works as an employee in the public sector and helps his father and brother with work in his spare time. Another son works in the quarry, which is supervised by his uncle, where he mastered all kinds of work such as driving heavy machinery and using methods and means of cutting and extraction rocks. As for the other son, he works in one of the Gulf countries.

Another example is the household of a 63-year-old retired man who has a small olive farm and some livestock on the outskirts of town. He works in this farm with the help of his wife. His household consists of three sons. The eldest of whom is married and has two children. He works in a stone quarry owned by his father-in-law. The middle son is still single and works in a marble-cutting factory on the outskirts of town, owned by their neighbor. As for the youngest son, he is a university student. The man has also three daughters who are married and live in their husbands' homes. The sons and their wives help their parents with the farm work in their spare time.

Consequently, the local people are linked by kinship relations that play an important role in their various economic activities. Neighborhood and friendship relations are also important in these activities. People need such relations to establishing partnerships, finance, borrow tools and employ and train their children to obtain official skills, such as driving heavy machinery and using equipment's and working methods. Working in quarries required expertise in the field and sufficient funding to carry out exploration and extraction. Hence, it may require sharing among several people to provide the necessary means. If they are fortunate in the quality of the extracted rocks, this will result in good revenues that lead to the development and expansion of the business. In general, the employers and their sons usually perform the main tasks in their projects. By the time, however, they need to employ workers, as the role of the project owners will be limited to supervision and developing the work, in addition to diversifying their activities based on the income generated.

5.1.2 Types of mining activities

There are two types of mining in the area: quarries to extract marble blocks and quarries to extract and grind rocks to turn them into gravel and similar building materials. Local people usually carry out activities to extract rocks that are cut for marble and decorative stones. These activities do not require large funding in its early stages, as they can be carried out with a limited number of machines which may be rented. Besides, obtaining related permits is easy and inexpensive, compared to other activities. On the other hand, quarries for the production of gravel and other building materials require significant funding and equipping the site from the beginning. Moreover, the process of obtaining the necessary permits is complicated and expensive. In some cases, the responsible authority explores

the area and divides the sites into parts where permits are granted according to specific conditions. This happened in Al-Patra, where permits were granted to 105 investors in 2005, most of them from outside the area. Using blasting and heavy machinery are essential in such activities, however. The sites of both types of activities are usually located on the public lands (khalié mubah).

5.2 The effects of mining activities on local people's livelihoods who work in the sector

Mining activities have obvious positive effects on the livelihoods of local people. However, their effects vary based on the type of activities and the extent of participation of the local people in carrying them out.

5.2.1 Quarrying activities for marble blocks

Quarrying activities are mainly located in Al-sora and are relatively far from the town (about 20-25 km). Recently, some of these activities have spread to Al-Kharnouba near the town. The activities are mostly confined to the local people, and they are a major source of income for a majority. They contribute to enhancing their livelihoods in several ways:

- Direct investment in the extraction in different sites.
- Investing in the stone and marble to reconfigure it so that it is ready for use in buildings.
- Workshops directly related to extraction industry, such as making tools needed.
- Transportation and trade of produced materials.
- Working as technicians and workers in these activities.

Accordingly, quarries have a significant positive impact on the livelihoods of the people working in the field, which is reflected in different aspects.

Physical capital

One of the prominent positive effects of working in quarrying activities is to increase the income of the households and diversify their sources. Working in the field of extraction and related industries often leads to an increase in income, which results in improving work by increasing the number and efficiency of the machines and relevant equipment used. Then, at later stages, the income generated enables diversification of investments in different areas, either in this industry or others. An owner of a workshop that started with simple machinery and equipment in the mountain, has expanded to several sites where he has many heavy machinery, equipment and transport vehicles, in addition to factories for shaping stone and marble and investments in other fields. Another example is a former

employee who sold his apartment in Damascus to start a stone and marble factory. Today, he has two factories, and his business is booming. Even workers, who have gained good experience in the field, may start their career in the trade. Some of them have different kinds of physical capital, such as quarries, factories, and agricultural investments. A fifty-year old quarry owner explains how his father, who recently passed away, began extracting rocks with simple tools in the sixties, which later developed into advanced equipment in three extraction sites, in addition to other investments,

> In the sixties, the work, that was in Al-sura, began to achieve richness despite the simple tools used, while the agricultural activities were declining at the time. By the time, the income generated improved our ability to purchase heavy machinery for work in addition to trucks for transportation, the sum of which amounted to a fortune at the time. We also invested some money in raising sheep and rain-fed agriculture and other activities as a form of diversifying our sources of income. (Quarry owner 06/03/2022)

This applies to many investors in the quarrying activities and their industries, as most of them started as workers who developed later to become owners of various investments. This takes us to another positive effect of these activities on people who works in the sector.

Social capital and human capital

The activities of quarries positively affect the livelihoods of local people by enhancing their social capital and human capital. A large part of the local people works in this sector, which constitutes for them either a main source of income or a secondary source by which they diversify their livelihoods. Social relations play an important role in employment. Mining activities provide local people with job opportunities that make them able to support their household in a way that guarantees them a good income compared to other public and private sectors. The work in quarries and its industry have been confined to the local people, who are often linked by kinship, neighbourhood and friendship relations, “I employ more than 15 workers, and you can estimate the number of workers in quarries, factories, transportation, and other workshop that provide good job opportunities of the people of the town” (quarry owner 28/02/2022). In addition, this work has long been characterized by cooperation and mutual assistance between miners. Similar to the prevailing agricultural relations, the relations that characterize mining activities continue in their cooperative and mutual nature and strengthen with the flourishing of these activities, that form a safety net to be resorted when economic difficulties arise to borrow or help.

In addition, quarrying activities and related industries enable family members (basically males) to acquire skills and training that provide them with a diversification of job opportunities. Even when young people study and specialize in different fields, the skills and experiences gained from training with relatives or from working during holidays can be used to diversify their source of income or take

advantage of them in difficult times. A twenty-four-year-old refugee in Lebanon emphasizes this issue,

> My father and brother work in the stone profession, so I chose the same profession as it is the easiest option available to learn a profession. During the war period, our family came to Lebanon. My brother couldn't work in his specialty as an engineer, so the profession that he learned from our father enabled him to earn a living, without which his life conditions here would have been difficult. (A refugee from ArRuhayba in Lebanon 15/02/2022)

Financial capital

The positive impact of quarrying activities on the livelihoods of local people who work in the sector is also reflected in the accumulation of financial capital, especially by investors and owners of the related commercial activities. This capital is kept in the form of savings as liquid money in the bank; various real estate such as houses and lands; and gold that may be used by women as jewellery. This capital is an important mean that people resort to it in times of crises and difficult situations, "like others who work in this sector, our purchase of many lands and apartments is intended to save money. In addition to the money that must be saved for difficult circumstances, these properties are used for this end" (quarry owner 28/02/2022).

5.2.2 Quarries that extract and grind building materials

These activities are mainly located in Al-Patra and Abo Qos and partly in Al-Kharnouba. Most of the owners are from out of the town. Hence, their positive effects on the livelihoods of local people are limited to a limited number of service activities and employment.

5.3 The effects of mining activities on the livelihoods of local people

In contrast to the previous positive effects, mining activities have negative effects on the livelihoods of local people.

5.3.1 Natural capital

Mining activities have significant negative effects on the agricultural activities, grazing, and keeping livestock carried out by the local people in the area. The severity of the impact increases the closer to the mine sites or the transportation routes. Furthermore, the effect resulting from the quarries that grind rocks for building materials are more negative than those that extract blocks for marble, because of the size of the removed areas and the degree of pollution caused by sand and dust resulting from extraction or transportation. The area is historically considered the natural capital of the town that has

long used to support people's livelihoods through agricultural activities based on its fertile lands, diverse wilderness and pristine atmosphere. However, this fact is no longer valid as mining activities are changing the whole area into industrial area where agricultural activities cannot develop. The negative effects on people's livelihoods resulting from the damage of this natural capital are manifested by various phenomena.

First, mining activities emit loud noises which are considered harmful to livestock and poultry. Some types of poultry cannot be raised in such an environment. This is added to various kinds of gases, smoke and dust emanating from sites and transportation,

> The closer we get to the quarries, the greater the damage to the livestock, because of the dust and the release of toxic fumes from some of the materials used in the explosion, in addition to the sounds of explosions that negatively affect livestock activities, especially poultry. Our activities need a calm and pure atmosphere, and therefore these activities should not be located in the same place. (Livestock farm owner 02/03/2022)

Figure 13. Mining activities are adjacent to and overlapping with agricultural activities. (participant observation, 5/3/2022)

Figure 12. A farm for livestock keeping, with mining activities visible behind it. (Participant observation, 2/3/2022)

Second, the effects on the farms in the area are clear, reflected in the decline of their numbers and sizes in addition to the poor conditions of many of them. Some severe effects are evident on the roads, "the area of Al-Musailiha was crowded with prosperous farms that are full of trees, as you know. Most of these farms retreated and their trees withered. Look

Figure 14. Sand and gravel products cover the road and destroy trees. (participant observation, 4/3/2022)

Figure 15. Severe impact on farms near the roads. (participant observation, 4/3/2022)

at the farm of X, its trees on the road and the road itself sums it up" (Livestock farm owner, 02/03/2022).

Third, the removal or occupation of large areas of land has led to a decline in the vegetation cover there. The remaining areas are covered with layers of white dust, resulting in the departure or extinction of many kinds of animals. All that negatively affected grazing activities and the rein-fed agriculture caried out by the local people.

Figure 17. Grazing has become difficult except on private farms. (participant observation, 4/3/2022)

Figure 16. Large areas are being removed and the rest area are being covered by sand (partiipant observation, 4/3/2022)

In addition, the distortion in the topography of the area has led to a change in the movement of rainwater and its natural paths that leads to the plain lands used in rain-fed agriculture, which negatively affects cultural activities. The change has also led to a significant decrease in the rainwater pools which were reservoirs that local people resort to for several purposes especially in summer, the most important of which is watering livestock while grazing,

> The mountain of Al-Patra overlooks the plains that were a main source of life. The advantage of the land is that it keeps water at a depth about less than 10 meters, that allows it to be obtained through simple wells, which are actually there, so people drink during the harvest and water their livestock. The quarries there ended any case of grazing and negatively affected the rain-fed agriculture and the whole ecosystem. (Farmer and former teacher of natural science 10/03/2022)

All of that was accompanied by a decrease in rainfall due to the decline in vegetation cover.

Fifth, the quarrying activities in the rocky part of the lands, that belong to the local people who own the arable part of the land, degrade and destroy land through random roads and dumped waste. A farmer in his sixties sadly explains this issue and what happened to his land,

> Each land is divided int two parts. The first part is called Mamool which is suitable for cultivation. In this part, we have rights of use as owners. The other part is called Sipat, which is rocky and hence not suitable for cultivation. The later part is considered public, but it belongs to the owner of the first part according to the prevailing customs.

> Contrary to the customs, someone opened a quarry in our Sipat and obtained a permit later. Today, the rocky part of our land is occupied by quarries, and the other are occupied by roads. Consequently, we lost our land. (Landowner in Al-Kharnouba 08/03/2022)

As a result, the owners of the lands are severely affected.

5.3.2 Physical capital

The explosions used in many of the sites cause damage to the infrastructure of the owners of agricultural activities. These damages are represented by:

- Damage to the wells used in agriculture and livestock watering.
- Damage to the buildings and facilities used.
- Damage to the roads due to heavy truck loads. Some of the truck weights range between 65-100 tons when loaded.

Figure 18. Heavy trucks loaded with various products. (participant observation, 9/3/2022)

Figure 19. Negative impact on the infrastructure. (participant observation, 4/3/2022)

5.4 The effects of mining activities on the surrounding environment

The negative impact of mining activities on the natural resources of the local people reflects some aspects of the negative impact on the environment in general. The most prominent of these aspects are represented in:

- Removing a large area from the surface of the earth, including its biodiversity, and transforming it into barren areas unfit for the life of animals and plants and human use.

- Damage to the remaining areas by various forms of pollution leading to change in their characteristics, which negatively affects the life of animal, “the restoration of ecosystem is necessary for the wildlife to return to be normal” (farmer and former teacher of natural science 10/03/2022).
- Decrease and fluctuation of the rainfall rates due to the decline in the vegetation cover of the area.

Figure 20. Severe drought and fluctuations in rainfall negatively affect the farms and the entire vegetation cover. (Participant observation, 4/3/2022)

Figure 21. Good rain season. Al-Kharnouba, 2018. (archive of local people)

- A change in the topography of the area, which leads to a change in the normal paths of the rainwater, which negatively affects the irrigation of the plains and plateaus,

The dust spread from the activities of the mines affects the type of wild plants and their growth. so, the types of plants that are prevalent are changing, while the vegetation cover is absent in some places. This is accompanied by a decrease in wild animals, that negatively affects the pastures and the fertility of the soil. (Farmer and former teacher of natural science 10/03/2022)

Figure 23. Natural places where rainwater collects may be affected by topographical changes (archive of local people)

Figure 22. Significant change in the topography of the area. (participant observation, 9/3/2022)

- High temperatures and large differences between day and night, and summer and winter.
- Air pollution by gases and dust, in addition to noise pollution.
- Various production wastes that are dumped on people's lands or even on roadsides.
- Failure to recover quarries after completion, or upon discovering that they are not suitable for extraction, which makes them dangerous places for people and the environment.

5.5 The effects of mining activities on the lifeworld of the local people

Mining activities negatively affect the social relations between local people. The competition for resources on the lands held by the households, has become common. Local customs, which have long been the reference for sharing resources within the municipal boundaries as informal laws, are steadily decreasing in favour of claims based on permits granted by the government. The complexity is further compounded by the absence of any role of the municipality and its local council in regulating these permits or determining their locations,

> Neither the municipality nor the municipal council has any powers regarding the regulation or management of quarrying activities in the areas within the municipal boundaries. On the contrary, these powers are diminishing. All that the municipality gets from these activities is just a small fee. (Municipal council member 07/03/2022)

The result is disintegration of social relations, in addition to permanent problems that grow and develop over time regarding issues such as borders, roads and pollution. The entry of co-investors from outside the town further complicates the situation. People are constantly concerned about the exposure of their lands and farms to encroachment or pollution,

> The X family know that the land they took under the permit of quarrying is considered as a part of our land according to the prevailing customs. Hence, they wanted to compensate us with a small amount that we didn't accept. Their argument that their actions are in accordance with the law, which is on their sides. Such actions break the ties that the townspeople have long been keen on. (Landowner in Al-Kharnouba 08/03/2022)

Furthermore, the authority responsible for regulating permits prioritizes those who have the ability to work and extract from those who do not work, to the extent that the authority may allow them to work in quarries of other people, which was not the case previously and is not approved by the local regulating customs,

> while we do not have the financial ability to work in in Al-Sora quarry currently, our neighbor has had a permit to work towards us in a way that they will take our entire quarry after a short distance. The responsible authority says that our neighbor has the priority as he is working and contributes to production process. Consequently, people are encouraging each other to transcend the common norms to compete for resources, which open the door to many problems. (Quarry owner 09/03/2022)

In addition, mining activities increase the inequality of the town due to the misdistribution of wealth, which has become in the hands of a limited number of people. It depends on the outputs of these activities, which sometimes result in large spikes in the owners' incomes that lead them to significantly increase their spending. However, this usually continues for a period of time when the quality of the rocks is good in some sites, which then changes after a few years to the extent that some owners may spend what they have already obtained, while the star of other owners in other sites may shine. Consequently, wealth always accumulates in the hands of a small group of towns people who often spend at rates far greater than what others do.

Trucks and cars related to mining activities, whether for transportation or services, increase crowding and difficulty of traffic in the town whose roads are not prepared for such vehicles in terms of sizes and weight, in addition to the risk arising from the possibility of falling parts of what they carry. Besides, if the pollution resulting from this movement is added to the pollution resulting from the sites which fills the surrounding area, the damage to the town may be significant. Moreover, when people want to go for hiking or a picnic in the nature, they cannot find a calm place available, "Hiking usually requires calm and pure nature that is relaxing. Today, there are no longer such places in these lands. Even activity-free places are never without the widespread dust that covers you tangibly" (local interviewee 03/03/2022).

Some of the mining activities, especially those close to the town, are continuously destroying the town's natural landmarks, including the cultural heritage dating back to previous historical civilizations. Many of the mountainous sites that are being removed are natural features of the town, and they are known by distinguished names. Besides, many of the rocks have traces and inscriptions indicating ancient and historical civilizations. A 51-year-old topographical engineer from the town expresses on aspect of this issue,

> A short time ago, I came with my children to the town, as I was residing in Damascus, as you know. Since my son always ask me about my childhood and where I spent my youth, I decided to take him to a beautiful place I used to go for a picnic with my family or my friends. So, I came here (to Al-Kharnouba) and stopped the car trying to recognize the area. However, I couldn't identify the place, although it is imprinted in my memory. In fact, what I wanted to show my children was no longer existed. It was removed, and with it, a part of my memory was removed. (Local interviewee 05/03/2022)

Figure 24. Al-Kharnouba: removal and distortion of natural features of the town. (Participant observation, 5/3/2022)

6. Discussion

In the previous section, I presented the empirical findings resulting from the first stage of analysis applied on the data collected from the interviews and participant observation. In this section, I will use theories and concepts to conduct a second stage of analysis that seeks to interpret the empirical material. After defining and summarizing the answers to the research questions clearly, I discuss the results with previous studies.

Mining activities are divided into two types of activities:

- Quarries to extract marble blocks, using heavy machinery and equipment (and blasting in some sites). Most of these activities belong to the local people, who have extraction permits in sites located on their own lands (Sipat) or on the public lands (khalié mubah).
- Quarries to extract and grind rocks to turn them into building materials, using blasting, in addition to heavy machinery and equipment, most of the permits are granted in advanced to people, often from outside ArRuhayba, to extract from the public lands (khalié mubah).

6.1 The effects of mining activities on the livelihoods of local people

The analysis of the livelihoods system of the local people in ArRuhayba is based on the livelihoods approach of Ellis (2000).

6.1.1 Effects on the assets

The findings suggest that the impact of mining activities on the livelihood of the local people is divided into positive effects and negative effects, based on the impact they have on people's assets. On the one hand, mining activities, particularly the quarries of marble blocks, are vital economic activities for local people that enhance their livelihoods through:

- Increasing the physical asset of the local people. Mining activities lead to an increase in the means of production such as heavy machinery, transport trucks, industrial facilities and other equipment's and means that generate income and enhance the livelihoods of their owners. Furthermore, the generated income enables the owners to diversify their physical assets by investing in areas outside the mining sector, such as agriculture and livestock activities.
- Increasing the human asset of the local people. Mining activities support local people's livelihoods through providing job opportunity, where they obtain training and skills which they employ to generate income.
- Increasing the social asset of the local people, who are often linked by kinship relations in addition to neighbourhood and friendship relations. These relations are essential for establishing partnerships, finance and employment, and often form a safety net to be resorted in difficult situations.
- Increasing the financial asset of the local people. The surplus of people's need of income is saved as money, jewellery or property to be used in times of crises.

On the other hand, mining activities negatively affect the livelihoods of the local people by undermining some of their assets:

- Mining activities undermine the natural asset of the local people that negatively affect the agricultural activities, grazing, and keeping livestock carried out by the local people in the area. The locals have agricultural activities, both rainfed and irrigated, in addition to activities for raising and keeping livestock. The latter economic activity has flourished in the last two decades, and has resulted in some related industries, such as processing fodder and other services, so that its role has become comparable to the role of quarrying activities in terms of people's livelihood. The negative effects on the natural asset are represented by:
    - a decline in the vegetation cover there.
    - The distortion in the topography of the area that leads to a change in the movement of rainwater
    - Sound pollution which are considered harmful to livestock and poultry
    - Pollution with sand, smoke and other harmful gases emanating from the sites and transportation.
- Mining activities have negative effects on the physical asset of the local people manifested by:

- Damage to the wells used in agriculture and livestock watering.
- Damage to the buildings and facilities used.
- Damage to the roads due to heavy truck loads

6.1.2 Effects on the activities of the local people

The positive effects on the physical, human and social assets have led to a diversification in the natural resource-based activities and non-natural resource-based activities of the local people. The revenues of mining activities directly or indirectly enabled the local people to expand their economic activities. Many industrial, agricultural and service activities owned by the locals enable them to support their livelihoods and provide them with better tools to coop with crises and difficult circumstances.

6.1.3 Effects on the access to the assets of the local people

Mining activities negatively affect the access of local people to their resources. The land tenure system that regulates the lands in the municipality categorizes the lands in the municipality into three major categories:

- *Mulk:* owned to the local people. They are basically located within the town.
- *Amiri:* owned to the state that granted documented tradable rights to the local people. They are located outside the town, within the borders of the municipality.
- *Khalié mubah:* owned by the state (common). The rocky lands that are not suitable for cultivation. They overlap with *Amiri* lands.

khalié mubah lands are regulated by locally agreed informal institutions. The most prominent of which are two principles:

1. The owner of *Amiri* arable land, which is called *Mamoul*, has the right to *khalié mubah* (common) land that complement their land up to the top of the hill, which called *Sipat.*
2. In the rest of *khalié mubah* lands, the first user in a site enjoys the right of use the site.

However, extraction permits are granted in all *khalié mubah* lands, regardless of the prevailing customs, which leads to local people losing parts of their lands (their *Sipat).* Moreover, their remaining lands (*Mamoul*) are used as roads to access the sites where extraction permits are granted. Consequently, local people lose the ability to access and use their resources.

6.2 The effects of mining activities on the surrounding environment

Mining activities negatively affect the surrounding environment which subsequently undermine biodiversity and the ecosystem of the area. The most prominent manifestation of the damage is represented by:

- Removing the surface of the earth turning it into dangerous and lifeless places.
- Change in the topography of the area which negatively affects the irrigation of the plains and plateaus.
- Decline in the vegetation cover of the lands leads to decrease and fluctuation of the rainfall rates.
- Various production wastes that are dumped every were.

6.3 The effects of mining activities on the local people's lifeworld

Mining activities negatively affect the lifeworld of the local people. This is evident by several phenomena, such as:

- Harm the social relations between people, due to the competition for resources and conflict over resources in light of the decline of the role of the informal local institutions.
- Increase the inequality in the town due to the misdistribution of wealth and misallocation of the resources.
- Destroying the town's natural landmarks, including the cultural heritage dating back to previous historical civilizations
- The town and its surroundings have been transformed into an industrial area that does not meet the usual requirements for residence, such as calm and pure atmosphere.

6.4 The question of sustainability

Mining activities differently affect the livelihoods system of the local people. On the one hand, mining activities often enhance many assets in the livelihood system of the local people, particularly, physical, human and financial assets. This enables the local people to diversify their activities, both based on natural and non-natural resources. In doing so, mining activities increase the resilience of the people's livelihoods system and reduce its sensitivity by increasing the ability of people to coop with challenges and adapt to changes in their environment, which make the livelihoods system more

robust (Ellis 2000). On the other hand, mining activities undermine the natural asset in the livelihood system and hence people's ability to diversify their livelihoods, which negatively affects the stability of the livelihoods system. Consequently, mining activities enhance the specific resilience that relates to problems arising from parts of the livelihood system while they undermine the general resilience of the system by reducing the resilience of some its parts.

In addition, the continuation and prosperity of human civilization in the way we know it depends on the continuation of Holocene era, which is characterized by the stability of the global climate. The Holocene is negatively affected by human activities and their patterns of development that are harmful to the global climate, which are likely to lead to destabilization of the Holocene, endangering the livelihoods of the entire humankind, and hence, social-ecological system resilience "that contributes to Earth System resilience is needed to remain in the Holocene state" (Folk et al. 2010). Admittedly, mining activities negatively affect the local environment and the general resilience of the local social-ecological system in the studied area. Subsequently, the negative effects contribute to change the global climate that undermines the social-ecological resilience of the planet as a whole. In other words, these activities undermine livelihoods systems of the future generations at the global level.

As a result, the livelihood system based on mining activities is partly sustainable as they enhance some of its assets and activities and hence enhance its specific resilience. However, the extraction activities undermine the natural asset of the livelihood system and hence the general resilience of it. In addition, their environmental effects contribute to global climate change, threatening livelihood systems for future generations across the world. Thus, the livelihoods system based on mining activities does not meet the general requirements of sustainability, based on the definition of Chambers and Conway (Krishna 2012:14).

6.5 Influential factors

The findings suggest that the negative and positive effects of mining activities are often affected by specific factors, namely: the geographical location of the activities; the participation rate of the local people in the activities; and the type of activity and the way of extraction. First, the closer the mining activities are to the town and the agricultural activities of the local people, the greater the negative effects of mining activities on people's livelihoods, their surrounding environment and their lifeworld. Second, the positive effects for the local people increase the greater share and participation in the mining, as the benefits obtained from these activities mitigate the resulting negative effects.

Finally, the type of mining activities and the methods used in extraction play a role in the resulting effects, as the negative effects increase by:

- Using explosive materials in extraction
- Grinding rocks into small pieces
- Removing large quantities from the earth surface

6.6 The effects of economy and governance on the social structures of the local population

I will discuss the findings of interviews and participant observation in light of the economic policies and governance.

6.6.1 Economic approach

By the 1990s, Syria adopted a market economy that enhances the role of the private sector in investment, as a new economic approach to achieve economic and employment growth (Hopfinger & Boeckler). After participating in the Earth Summit in 1992, however, Syria declared its commitment to sustainable development and sought to develop its institutions and programs in line with this purpose. Accordingly, the so-called "social" market economy was adopted, through which Syria seeks to achieve economic growth, social justice and sustainable development. Hence, the new constitution of the state adopted in 2012, includes the institutional structure that are supposed to facilitate these gools, "the constitution was adapted in parallel with the new environment law No (12/2012), which considered a regulatory and organizational pillar in the area of environment protection and achieving sustainable development" (SYR. 2012:8). However, the problems that face the state in its effort to achieve the desired gools of sustainability, the most prominent of which are the poor economic conditions, negatively affect the adoption of the planed policies, and "forces the state to prioritize economic growth over development issues and environmental degradation" (SYR. 2012:14-15).In doing so, the current policies of the state focus on economic growth and employment generated by immediate and low-cost solutions, which strip the adopted approach of its sustainability and social justice.

The findings of the interviews and participant observation indicate how the actors in the field are influenced by the economic approach of the state. First, the national economic policies and interventions frame and affect the communities and specifically the miners by stating who has the right to use and access the resources and monitor how this is done. The prevailing logic today among the miners is the same as that of the officials of the relevant authority that regulates mining activities,

which reflect the effect of the dominant economic approach that focuses on economic growth and employment, i.e., I work and produce, and thus the law gives me the right to resources and the right to use them accordingly,

> When we went to the Public Company (the relevant authority) to file a complaint against our neighbour in the quarry of Al-Sura, because they are exceeding the limits of their quarry towards ours to extract resources, the officials told us that since we are not working in the quarry currently, the Company prioritize our neighbour as they work and pay fees and tax. (Quarry owner 06/03/2022)

> The quarry of X family is considered a common land (khalié mubah), but it belongs to us according to the prevailing customs as it is a complementary of our land. Moreover, they use our own land to access the quarry as there is not another way. Their argument is that the law supports them as they work and provide incomes and pay taxes. (Landowner in Al-Kharnouba 08/03/2022)

As a result, these policies have encouraged and facilitated the acceleration of mining activities and their expansion over a large geographical area, in order to benefit from their material incomes to increase economic growth.

In addition, the national economic approach influences the actors and underestimates the value of protecting the environment by not including relevant procedures or significant considerations in the permits granted for extraction. Mostly, there are no main restrictions regulating the extraction, during or after the completion of work. Hence, the miners do not pay significant attention to the environment and sustainability, except to be able to continue their operations.[2] Furthermore, the municipality does not consider the waste resulting from mining activities and their industries, that are randomly dumped within the limits of the town, as a priority to be treated and regulated at present.[3] As a result, the social and environmental considerations are secondary matters, that are not of vital importance when regulating and implementing mining activities, compared to the great importance of material income.

Secondly, the national economic politics influences the social position and identity of the local people. The competition for quick and high economic benefits pushes people to switch their activities from farming and agricultural activities to mining and related industrial activities. Recently, there has been an increasing tendency among the local people to change the use of agricultural lands to extract rocks if the farmers expect them to contain suitable commercial qualities,

> My uncle wanted to open a quarry in his part in our joint farm. We imposed that strongly, because of the great negative impact such activity would have on our farm. Currently, he has changed his mind, but we do not know about the future. (Local interviewee 5/3/2022)

[2] "Our area is rich in different types of rocks, which are treasures that must be explored and invested in a feasible way" (Quarry owner 06/03/2022).

[3] "Securing people's basic needs is a priority under the current living conditions" (Municipal council member 07/03/2022).

The current policies have the effect of gradually changing the identity of the town and the people of the region, who focus on mineral extraction instead of agriculture.

6.6.2 Governance and power relations

The new constitution, adopted in 2012, emphasizes the role of the participation of both state and society in achieving the goals of sustainable development, and stipulates the adoption of laws and creation of bodies focused on the environment and natural resources to achieve these goals,

> All the previous mentioned obstacles did not prevent Syria from renewing the state's role in shaping and achieving sustainable development and the shared responsibility of both state and society in protecting the environment, through a referendum on a new constitution in February 2012. (SYR. 2012:8)

To facilitate this end, the Local Administration Law of 2011 was adopted as a part of governance system that aims to achieve the participation of local communities in the process (SYR. 2012). In fact, this vision of participation and governance is compatible with Habermas framework of the colonization of lifeworld, i.e., the contradiction between a democratic lifeworld based on communicative rationality on one hand and the state's need to govern through economic and bureaucratic institutions and interventions, i.e., instrumental rationality on the other (Smith, S.B 1986; Postone 1990).

However, the findings from the interviews and participant observation show that the policies do not live up to their goals. The municipal council does not work with, nor does it have the power to regulate the mining, or grant permits of extraction. The state Public Company is the main authority entrusted with these powers. Moreover, the powers of the municipal council are increasingly decreasing in the areas that include mining activities.

Nevertheless, while the owners of quarries reject any role of the municipal council in regulating mining activities due to "lack of knowledge about these matters", the local people believe that such a role would be beneficial for the future of the area, as is the case with all other economic activities that fall within the municipal boundaries and affect the local people, such as agricultural activities,

> When people suffered from the problem that rose from keeping livestock, which spread widely within the town and negatively affected the lifeworld and environment, particularly through spreading unpleasant odors, the municipal council decided to compulsorily move them outside the residential areas. This decision solved the problem and spared the town from serious problems that were beginning to appear. (Local interviewee 19/2/2022)

This example illustrates how important the participation of the local people in decision-making process, regarding their natural resources, would be if sustainable development should be achieved. Undoubtedly, regulating mining activities by the government, without the participation of the locally

elected municipal council, leads to imbalance in rationality. The absence of local people participation undermines their ability to prevent economic activities to colonize their lifeworld (Postone 1990).

6.7 Comparison with previous studies

I will compare my findings with the previous studies that I have reviewed.

6.7.1 Effects on the local people

My findings support the findings of many previous studies that address mining activities and their economic, social and environmental effects on local people. First, this overlapping of findings includes the previous studies that show the negative effects of mining activities on the surrounding environment, such as different kinds of pollution, deforestation, and land damage (Hogenboom 2016; Huggins 2021; Yilmaz and Marschalko 2012); the effects of mining on the livelihoods of the local people, a violation of their human rights (Larsen et al. 2017) and negative impacts on their buildings and infrastructure (Yilmaz and Marschalko 2012). Second, it includes studies that highlight the social effects represented by the accumulation of wealth and the depletion and misallocation of the natural resources (Svampa 2012). Finally, in addressing the positive role of mining activities for securing local people's livelihoods, the findings are consistent with the previous studies mentioned above. Yet, previous studies focus on the need to organize such activities to reduce their negative environmental effects and mitigate their social impact on local communities (Kinyondo and Huggins 2021; Bansah et al. 2018; Ofosu et al. 2020).

However, my findings highlight additional issues that are often not focused on when addressing the impact of mining activities on the local people. For instance, the findings highlight the negative effects mining activities have on rural residential areas, located close to the mining area. The area is no longer as calm and clean as before the mining activities started. Moreover, the entire area has gradually become a place where proper housing standards are not met. In addition, the findings highlight the negative impacts on distinctive natural landmarks of the area, including cultural heritage locations.

6.7.2 Influential factors

The findings are consistent with previous studies concerning both positive and negative effects caused by the mining operations. Nilsson et al. (2018) suggest that while extracting natural resources, the difficult relationship between economic growth on the one hand and sustainable development on the

other is determined by major factors that influence the final outcomes of this relationship, such as the geographical place and scale, including the resources available; and the participation of people. Thus, achieving sustainable development by increasing the benefits and avoiding or mitigating the negative effects requires taking these factors into consideration (Nilsson et al. 2018). My findings suggest that the co-benefits regarding the activities of mining increase as the rate of local people's participation increases, and that the trade-offs decrease with the distance from the town and its agricultural activities. Besides, the findings suggest that the very nature of the resources extracted, and the method of extraction also play role in the outcomes, which is consistent with Nilsson et al.

6.7.3 Sustainability

My findings also correspond to those of previous studies regarding sustainability. Kirsh (2009), for example, identifies two types of sustainability, strong sustainability and weak sustainability, based on the relationship between the economic aspect and the ecological aspect of development process. Consequently, mining activities can meet the requirement of weak sustainability, since what is lost by the natural asset is compensated for by other manufactured assets, but not the requirement of strong sustainability that focus on environment protection, according to Kirsh. My findings similarly suggest that mining activities are partially sustainable as they enhance some assets and undermine others, particularly natural assets, which on the one hand increases the economic buffer of the local population against natural events but undermines the resilience against environmental hazards on the other hand. Furthermore, Kirsh suggests that the activities of mining may lead to the so called tragedy of the commons, an outcome consistent with my study.

6.7.4 Governance and participation

Previous studies tend to argue that official discourses often emphasize the advantages of economic growth to achieve people's well-being, while actual politics benefit the owners of capital and sources of natural resources. At the same time, however, social organizations and environmental organizations focus on the negative effects of economic growth on people's living conditions and their environment. For instance, the official Ecuadorian state policy on mining emphasizes the role of "responsible mining" to achieve a "good living" in society. This approach is supported by the companies as a "fair deal" but rejected by social and environmental organizations for their destructive effects (Teijlingen and Hogenboom 2016). In addition, Svampa (2012) argues that the type of development connected to extractive activities have negative impacts on land use and resource allocation. Furthermore, previous studies suggest that the balance between economic growth and

sustainable development is the basis for a stable livelihood system of rural people, as the disruption of this balance in favour of one side will have negative consequences for the other side. For instance, in Tanzania there has been attempts to formalize small-scale mining to make it comply with the Sustainable Development Goals (SDGs). These attempts, however, have not been successful and have negatively affected the livelihood of local people who mainly depend on these activities (Kinyondo and Huggins 2021; Owusu et al. 2019). Hence, previous studies suggest critical factors that affect this relationship between economic growth and sustainable development, the most prominent of which are governance and participations (Larsen et al. 2017; Nilsson et al. 2018; Owusu et al. 2019).

Similarly, the findings of this study show that the government adopt economic policies and actions that promote economic growth, regardless of the conditions of sustainable development. The owners of the mining activities also adopt the same approach when extracting the natural resources, while the local community suffers from the lack of consideration of environmental and social aspects. Furthermore, the findings show the negative effects of mining activities on land use and resource allocation in ArRuhayba. In addition, the findings highlight the importance of local people's participation in the decision-making process of the extraction and management of their natural resources. As a result, the lack of functional policies and bureaucracy affect the livelihood, the environment and the lifeworld at large of the communities negatively, which is the opposite of what sustainable development ought to be.

7. Conclusion

There are two types of mining activities in ArRuhayba: quarries to extract marble blocks, that often belong to the local people who have extraction permits in sites located on their own lands (Sipat) or on the public lands (khalié mubah); and quarries that extract and grind rocks to turn them into building materials, based on permits granted to people, often from outside ArRuhayba, to extract basically from the public lands (khalié mubah). These activities differently affect the livelihoods of the rural people in ArRuhayba, their environment and their lifeworld at large. While they have negative effects on the environment and the lifeworld of local people, the impact of mining activities on the livelihood system of the local people varies between negative effects and positive effects. Furthermore, these effects are influenced by multiple factors, the most prominent of which are the geographical location; the participation of the local people in carrying out the activities of mining; and the nature of activity and the way of extraction.

7.1 The effects of mining activities on the livelihood system of the local people

Mining activities positively affect the livelihood system of local people by expanding the economic sources of the local people, as well as their incomes and assets. First, mining activities increase the physical asset of the livelihood system of local people by increasing the means of production such as heavy machinery, transport trucks, industrial facilities and other equipment's and means that generate income, in addition to increasing the physical assets of economic activities outside the mining sector, such as agriculture and livestock activities. Second, mining activities increase the human asset and social asset of the livelihood system of local people through providing job opportunities and training, and by enhancing cooperation and mutual assistance, that form a safety net to be resorted in difficult situations. Third, mining activities increase the financial asset of the livelihood system in forms of saved money, jewellery and other sorts of property. Consequently, mining activities enhance the diversification in the natural resource-based activities and non-natural resource- based activities of the local people.

On the other hand, mining activities negatively affect the livelihood system of the local people through undermining the natural asset and some aspects of the physical asset of it. Undermining the natural asset are enacted by removing the surface of the earth, leading to a decline in the vegetation cover, the distortion in the topography of the area that disturb the movement of rainwater, and various kinds of pollution, that negatively affect the agricultural activities, grazing, and keeping livestock carried out by the local people in the area. Similarly, some aspects of the physical asset are negatively affected by mining activities, such as the wells used in agriculture and livestock watering, buildings and other infrastructure, such as roads that are exposed to excessively heavy truck loads. In addition, mining activities negatively affect the livelihood system of local people through affecting the access to their assets. Granting permits in all *khalié mubah* lands, regardless of the prevailing customs, leads to local people losing parts of their lands (their *Sipat),* while the rest of their lands (*Mamoul*) are used as roads to access the sites of extraction.

Nevertheless, the positive effects and negative effects of mining activities are influenced by specific factors that play a critical role in determining the overall effect of these activities on the livelihood system of the local people. First, the nature of the material produced and the means of extraction. Second, the geographical location of mining activities in relation to the town and its agricultural activities. Third, the participation of the local people in carrying out the activities of mining. These factors influence to what extent mining activities enhance the specific resilience that relates to the problems arising from the livelihoods system of the local people, and to what extent they undermine the general resilience of the system by undermining the resilience of some its parts.

As a result, the livelihoods system based on mining activities are not sustainable, as such activities negatively affect the local environment and the general resilience of the local social-ecological system in the studied area. Furthermore, the resulting effects contribute to change the global climate that undermines the social-ecological resilience of the planet as a whole, threatening livelihood systems for the future generations worldwide.

7.2 The effects of mining activities on the local people’s lifeworld and their surrounding environment

The effects mining activities have on the environment of the local people and their lifeworld are only negative and destructive. Removing the surface of the earth and changing the topography of the area leads to a decline in the vegetation cover that cause fluctuation of the rainfall rates. Adding the pollution of the air and the wastes that are dumped every were, the entire place is transforming into

industrial area unfit for residence and housing. In addition, the extraction destroys the town's natural landmarks, some of which have cultural values. It also harms the social relations between people, due to the competition and conflict over natural resources that can be used for extraction, and increases inequality among their community.

7.3 The role of politics and governance

The state adopts a market economy as an economic approach that focuses on economic growth and prioritize immediate solutions for the social and economic demands at the expense of development and sustainability. This approach affects the actors in the field in different ways. The approach frames who have the right to use and access the resources and influences the actors who risk underestimating protecting the environment and considering sustainability. Moreover, the absence of relevant regulations has encouraged and facilitated the acceleration of mining activities and their expansion over a large geographical area. Subsequently, the local people who live in the region, began to focus on mineral extraction and related industrial activities instead of focusing on agriculture and other sustainable activities.

In addition, although the constitution states that the responsibility of protecting the environment and achieve sustainable development is shared by the states and society, facilitated through adopting the Local Administration Law of 2011, the municipal council does not work with, nor does it participate in regulating the mining, or grant permits of extraction. Consequently, regulating mining activities are conducted by the government, without the participation of the locally elected municipal council, which prevent the local people from protecting themselves and their natural resources from the negative effects of the activities of mining located in their area

7.4 Theories/ previous studies

The theoretical framework used in the study provided sufficient analytical concepts that facilitated collecting and analysing the data. Using a livelihoods approach emphasized the agency of rural people, but also showed how this agency was channelled and constrained by policies and the way they were implemented. Nevertheless, using concepts of resilience thinking and concepts developed and employed by Habermas helped me to have further interpretation of the data collected, and subsequently, broadened my understanding of the dilemma under study. Similarly, the previous studies provided indicators to be addressed in the phase of data collection, as well as providing a

diverse reference of studies with which the results of the current study were compared. The comparisons demonstrated a large correspondence between the result of the current study and the previous studies that were reviewed.

7.5 Future studies

Through my review of previous research, regarding the effects mining activities have on the rural people and their environment, I found a lack of such research on mining in Syria and in other countries of the region, such as Lebanon and Jordan, in which similar activities are common. This master thesis has addressed this phenomenon through a case study in Syria. At a next stage, however, it would be important that future studies on mining address the same phenomenon in other contexts in the region, to contribute to decreasing the research gap on this subject. Such studies would also need to explore other geographical areas in Syria too. For example, some activities of extraction are located within residential and agricultural areas, where farmers remove trees from their farms to change the lands into quarries to extract rocks. Hence, the difference of conditions between different cases is necessary to be taken into consideration when addressing mining effects.

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Appendix 1

Amirie document

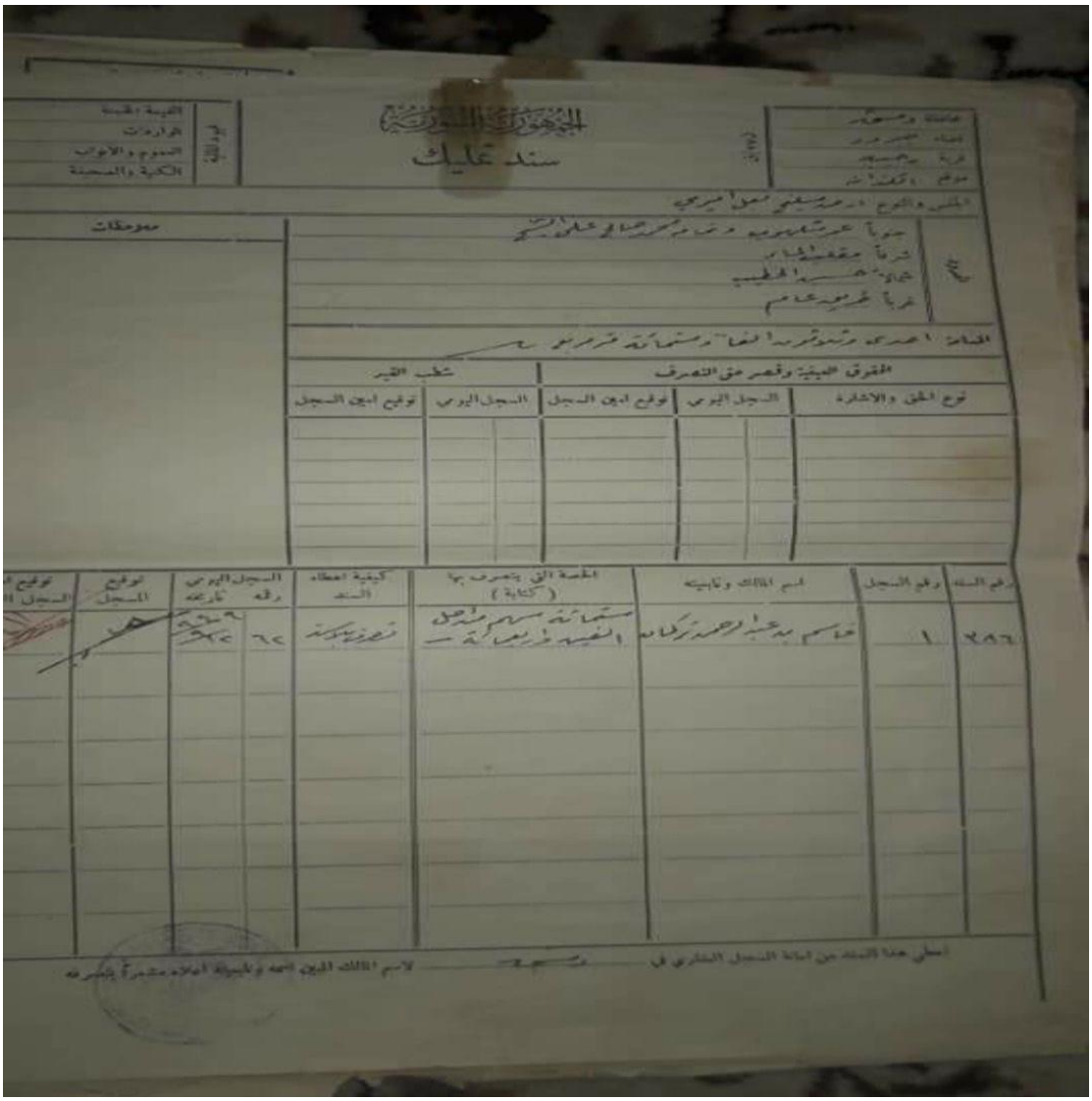

Figure 25. A document states the rights of one of the local peolpe in a rain-fed land (Amirie). (local people's archive)

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