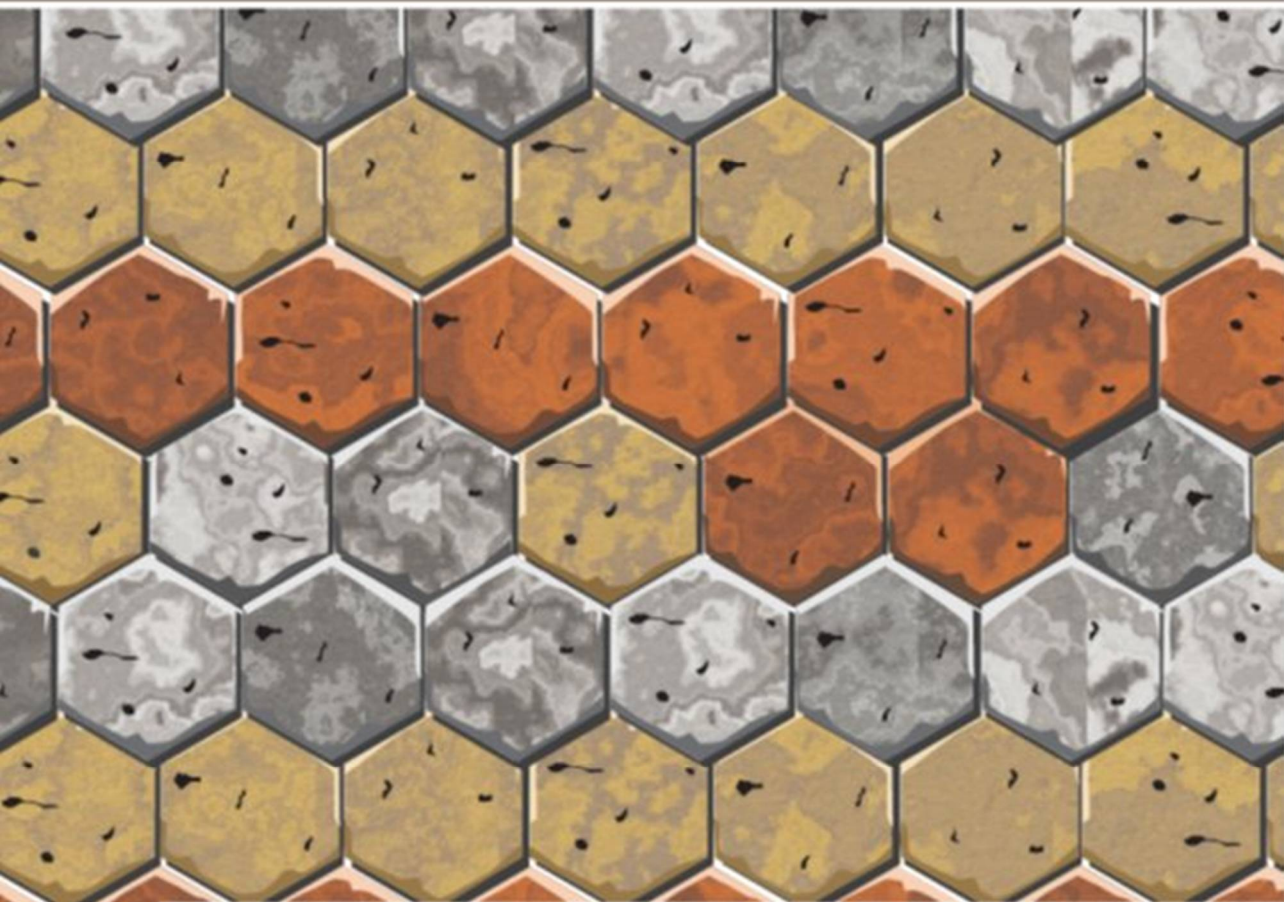


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IS SUSTAINABLE MINING POSSIBLE - BOURDIEU'S FIELD APPLIED TO THE EXAMPLE OF GOLD MINING IN BURKINA FASO

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Abstract

By using the example of gold extraction and use, the paper addresses the issue of sustainability of the mining industry. It proposes arguments leading to an understanding of the use of non-renewable resources within the concept of sustainable development. A mind-map is elaborated, applying Bourdieu's theory of the Field, using the example of gold mining in Burkina Faso. With the understanding of sustainable development, as established by the World Commission on Environment and Development-WCED and a number of international law documents, I show that mining of non-renewable resources can only be sustainable insofar as its benefit is translated into the well-being of people fully, equally and in a way that it transcends the generations. It is argued that under circumstances, similar to the example of Burkina Faso, it is impossible to satisfy the criteria of sustainability.

Key words: Sustainable mining, Bourdieu's Field, development, natural resources, gold, Burkina Faso

Introduction

Is it possible to imagine sustainable mining? All our activities are nowadays assessed in the light of sustainable development and in the case of mining, the term sustainable adds to it a very important requirement. At first sight, it appears that there is an inherent contradiction in the idea that mining could be sustainable - something that took millions of years to be made, is taken away and an empty space is left there. And there is more to mining: a lot is at stake and the phenomena of natural resource curse is well known, as write several writers (for ex. Subramanian & Sala-i-Martin, 2003; Badeeb et al., 2017; Stevens et al., 2015). Not only environment depletion,

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but also huge inequality in the world, human rights violations, wars and extreme poverty are directly or indirectly often the »side effect« of the global resources' extraction. Regardless of the above said, many mining enterprises adopt »sustainable mining« strategies and promote their products as sustainable.

If we first agree that any human intervention in nature must be checked for sustainability, I propose a method to use which should bring us closer to that result. To place mining within the realm of sustainable development, we first need to understand its requirements. Sustainable development has become a key concept in international (environmental, human rights, etc.) law and even if it is not easy to grasp its normative content, a lot has been written about it and I will present some relevant thoughts and critical arguments which should be helpful in assessing sustainability and later, in finding a way to deal with the question of mining and sustainability. I will then look at the life of gold and place it within the "field", a concept borrowed from Pierre Bourdieu, by which this phenomenon can be assessed in its entirety. The argument is that mining of non-renewable resources must be thought of in its entirety, from the extracted matter and its value, through the production process, to its final use, together with all the players/stakeholders in the field, their various powers, entitlements, and benefits. The presented map of the field of gold will lead to some conclusions as to how the value of gold is distributed, by using a practical example, the case of Burkina Faso. By understanding a concrete country scenario, I can draw conclusions on the possibility for sustainable mining.

The mining economy

To understand the scale of the problem, it is necessary to keep in mind that the stakes are very high. The past two decades have seen dramatic expansion of the volume and range of natural resources traded internationally. This is transforming the markets and the structure of the global economy. Despite the limited data availability and its complexity, it is assumed that the mined materials support roughly 45% of the world's economic activities.¹ The World Trade Organization (WTO) report of 2010 was dedicated to natural resources and stated that the value of trade in natural resources rose

¹ <https://www.theguardian.com/sustainable-business/2015/jan/05/sustainable-mining-business-poverty-environment-new-framework>

six-fold between 1998 and 2008, to 3,7 trillion USD (WTO, 2010). Between 2003 and 2008, the trade in fossil fuels and metals and mineral ores more than tripled in value terms and increased by 50 per cent in terms of volume (WTO, 2014, p.149). The comprehensive data on trade with minerals is not easy to find, the newest I could find is The Royal Chatham House resource trade data¹, which shows for 2020 that trade in all commodities amounted to 4,8 trillion USD, of which 1,8 trillion in fossil fuels and 1,5 trillion in minerals and metals², so trade in non-renewables decreased around 2015 and is now growing again for the minerals and metals.

In 2015, International Finance Corporation's oil, gas and mining client companies contributed approximately US\$3.9 billion to government revenues, created or sustained about 102,000 direct jobs and funded US\$62 million of dedicated community-related spending.³ Extractives companies are a major source of income and economic growth. Oil and gas and mining operators, suppliers, and related supporting industries represent an estimated five percent of global gross domestic product. Five of the world's ten largest companies are extractives companies.⁴ Extractives sector has a huge economic output, valued at \$3.5 trillion in 2012.⁵

Sustainable development and the relation to natural resources

It is in the above global context that we ask ourselves how sustainable this activity is. So let me position it within the idea of sustainable development. As the point of reference, the desired development is described in »the bible« of sustainable development,

¹ <https://resourcetrade.earth/?year=2020>

² <https://resourcetrade.earth/?year=2020&category=4&units=value&autozoom=1>
and <https://resourcetrade.earth/?year=2020&category=5&units=value&autozoom=1>

³ <https://documents1.worldbank.org/curated/pt/874001487843365620/pdf/112708-AR-WBG-in-Extractive-Industries-2015-Annual-Review-PUBLIC.pdf>

⁴ <http://www.telegraph.co.uk/business/2016/07/20/revealed-the-biggest-companies-in-the-world-in-2016/>

ie. China National Petroleum (state owned), Sinopec group of Hong Kong, the Anglo-Dutch Royal Dutch Shell, the Texas based Exxon-Mobil and the British BP.

⁵ <https://www.sharedvalue.org/resource/extracting-with-purpose-creating-shared-value-in-the-oil-and-gas-and-mining-sectors-companies-and-communities/>

the Brundtland report from 1987 (WCED, 1987)¹. This document laid the ground for all the modern policies and interventions, by engraving in our minds the term »sustainable development«. The UN established World Commission on Environment and Development defined sustainable development as »a development that meets the needs of the present without compromising the ability of future generations to meet their own needs« (ibid). In support of this »people oriented« approach, Gro Harlem Brundtland points out in the introduction of the report, that limiting the Commission's mandate and concerns to environmental issues only would be 'a grave mistake' because:

„ The environment does not exist as a sphere separate from human actions, ambitions, and needs, and attempts to defend it in isolation from human concerns have given the very word 'environment' a connotation of naivety in some political circles ... But the 'environment' is where we all live; and development is what we all do in attempting to improve our lot within that abode. The two are inseparable. “

According to Schrijver, the initial clash between development and conservation has been reframed as sustainable development (Schrijver and Weiss, 2004), aiming to become a useful analytical framework to bridge the North-South divide. ² However, although sustainable development received considerable attention, it seems that the broader conceptual framework, as was designed by WCED,

¹ In recognition of former Norwegian Prime Minister Gro Harlem Brundtland, chair of the World Commission on Environment and Development - WCED), titled **Our Common future**. The document was the culmination of a 900-day international-exercise which catalogued, analysed, and synthesized submissions and expert opinions from government representatives, scientists, research institutes, industries, representatives of non-governmental organizations, and the general public held at public hearings throughout the world. It placed environmental issues firmly on the political agenda but aimed to discuss the environment and development as one single issue. It brought a global consensus on the question of which kind of development humanity – and its future generations want and need.

² The positioning of sustainable development in public international law is that it functions as, at a high political level, an instrument to record agreed basic principles and prudent courses of action in a legal document rather than just to codify the generally accepted *opinio juris* in the practice of States and international organizations (Schrijver, 2007, p.231).

ie. the integration of environmental and development strategies into what was to be a global partnership (including social justice within and between generations, solidarity, concern for poor and respect for our common environment), was overshadowed, at least in the beginning, by the discussion about the relationship between growth and sustainable development only (Langhelle, 2016). Nevertheless, a more in-depth reading of the report explains the concept much more than it may seem at first sight and shows that »Our Common Future is more coherent and potentially more radical than either adherents or critics seem to be aware of« (ibid p.130).

While the first part of the definition addresses the importance of satisfaction of the present human needs, the second recognizes a sense of guilt about what we have done to the planet and a deeply rooted desire to make sure our children's futures are provided for (Reid, D. in Langhelle 2016)¹. This means that each generation is permitted to pursue its interests only insofar as they do not interfere with the ability of the future generations to meet their needs, it in fact implies that such patterns of economic and social development must be chosen which will be compatible with sound environmental stewardship (Meadowcroft et al.,2019) and would not compromise the capacity of future generations for their own development. As stated by Sachs (1993, p.10), sustainable development calls for the conservation of development, not for the conservation of nature. It is thus as a prerequisite for development that the injunction to conserve plants and animals in Our Common Future must initially be understood. It is because the environment is vulnerable to destruction through development itself that the constraint of sustainability is placed on the goal of development (World, 1987; Mikkelsen, 2008) and so it is not a particular activity or environmental asset that needs to be sustained but rather a process of development (Meadowcroft, 1997, 2000; Meadowcroft et al., 2012). Sustainable development, understood as a process of development which is to be sustained, leads to the consequence that an activity which is not itself sustainable could be a part of an ongoing process which is sustainable. So, an activity with negative environmental effects is not necessarily contradictory to sustainable development, but it can be.²

¹ Reid, D. (1995). Sustainable Development: An Introductory Guide (1st ed.). Routledge. <https://doi.org/10.4324/9781315070605>

² This is in accordance with Brundtland own idea: "I have often seen it argued that one or another activity cannot be sustainable because it leads to environmental

Similar logic applies also to activities like the use of non-renewable resources. If this was not so, non-renewable resources could not be consumed at all. Such a reasoning will be important for my consideration of sustainability of mining. As opposed to the purely physical concept for a resource or for an entire ecosystem, Dixon and Fallon (1989) provided also for the third type of usage of the concept of sustainability, ie. the socio-economic physical concept by which the goal is not a sustained level of a physical stock, or the physical production of a given ecosystem, but an unspecified "sustained increase in the level of societal and individual welfare" or, more directly, in accord with the language of *Our Common Future*, a sustained level of need satisfaction and equal opportunities (ibid, p.6). This usage, the authors say, may have implications for the use of renewable resources contradictory to the first two. While the two first usages imply using no more than the annual increase in the resource or maintaining different aspects of the ecosystem without reducing the physical stock, the third usage makes it possible to imagine a sustainable reduction of the physical stock. As stated in *Our Common Future*:

"There is nothing inherently wrong with clearing forests for farming, provided that the land is the best there is for new farming, can support the numbers encouraged to settle upon it, and is not already serving a more useful function, such as water- shed protection. But often forests are cleared without forethought and planning" (World, 1987, p. 107).

There is also a discussion on poverty and inequality as global problems which imply that sustainable development and its ethics need to be addressed as well. What needs to be said is that while sustainable development as an economic concept, has been heavily debated (Beckerman, 1994; Beckerman & Pasek, 2001; Daly, 1996,

problems. Unfortunately, it turns out that nearly all activities lead to one or another form of environmental problem. The question as to whether something contributes to sustainable development or not, must, therefore, be answered relatively. We must consider what the condition was prior to the action undertaken and what the alternative would have been, as well as to whether the activity could be replaced by other activities.... We can be forced to make difficult, holistic judgments. That is why there have been very mixed feelings of affection between parts of the environmental movement and the very notion of "sustainable development"" (Brundtland, 1997: 79, in Langhelle, 2016, p.134, indirect quote).

2007; Maes & Jacobs, 2017; Wilfred, 1997; Yusuf et al.)¹, it has received much less attention as an ethical principle.

What is then the ethical framework of sustainable development? In the view of Langhelle, the answer lies in the obvious attempt by the Commission (WCED) to link environment and development on a global scale. This can be demonstrated by an elaboration of the text with respect to the relationship between social justice and need satisfaction; the connection between social justice and equal opportunity; and the attempt to give needs a precedence over wants or desires (Langhelle, 2016, p. 139). There is a close relationship between need satisfaction and social justice in *Our Common Future*. Social justice can be seen as equivalent to the satisfaction of human needs, which is what constitutes the primary goal of development in sustainable development (Lafferty & Langhelle, 1999; Langhelle, 2016). The proviso of sustainability, on the other hand, is a precondition for social justice between generations, since violating the sustainability constraint would undermine the ability of future generations to meet their own needs. Moreover, the concern for social equity between generations must, it is claimed, “logically be extended to equity within each generation” (World, 1987, p.41). All activities assessed in light of sustainability are therefore subjected to the test of social justice or equity and this goes for extraction of natural resources as well. Langhelle claims that social justice constitutes an inherent part of the conception of sustainable development. The fundamental goal of WCED was to reconcile physical sustainability, need satisfaction and equal opportunities within and between generations, and sustainable development is what defines this reconciliation (Langhelle, 2000, p.318).

If equality and equal opportunity are the essence of sustainable development, poverty becomes, in my view, not an issue but an extreme manifestation of inequality and injustice, rather as a malfunction or disease that needs to be addressed as such, in a curative as well as preventive manner. There is no poverty without inequality. In the concept of sustainable development there is no mentioning of needs satisfaction for only a certain class or group of

¹ The Brundtland report actually stipulates that while growth is needed given the goal of reducing poverty, but it also prescribes a change in the content of growth, to make it more equitable in its impact, that is, to improve its distribution ((World, 1987, p.52). The prescribed growth is seen as environmentally and socially sustainable only under several conditions, further elaborated in *Our Common Future*, and must be seen as complementary aspects of a pro-growth position.

people or country. If we apply this thinking to the realm of natural resources, what logically follows is that the outcome of their exploitation must be equally beneficial for all. Furthermore, even if this was hypothetically the case, the question of the existing gap or the historical injustices that made this gap possible, would still have to be addressed. In other words, regardless of the present time, the unsustainability of past development will remain an issue. But let us see then how to address sustainability of mining at present.

Sustainability of mining

Scientific literature on sustainability of mining is scarce. What is mostly examined is the process of mining and everything around this process, from environmental, labor and sometimes cultural impacts. Dubinski for example says that implementation of sustainable development in mining means the integration of activities in three key areas: technical and economic activities ensuring economic growth, ecological to ensure the protection of natural resources and the environment, and social - meaning care for the employees at the workplace and community development around the mining area. (Dubiński, 2013). Similarly, others seek to establish criteria or principles to be applied in mining, such as Corporate Social Responsibility (CSR) standards ¹, or attempt to set the standards for the exploratory phase in mining (Caron et al., 2016) ². It goes without saying that all the above-mentioned aspects are very important, but they show, in my view, only limited angles of the whole topic. They limit themselves to the »technical« part of mining, the process and not to "the field" of mining in its entirety, as already mentioned and will be discussed a bit later.

Being very critical, Stuart Kirsch claims that sustainable mining has a special, yet unexplored or misleadingly interpreted meaning. Kirsch calls it a »corporate oxymoron« (Kirsch, 2010, p.90) such as for example to say »clean coal«. In his words, »despite the indisputable

¹ <https://youmatter.world/en/definition/definitions-iso-26000-standards-csr-definition/>

² The authors divide the criteria into the following (Caron et al, 2016, p.217): Preliminary list of principles and criteria of sustainable development for the mineral exploration industry are Environmental quality, Quality of life, Work environment, Local investment, Business ethics, Innovation, Transparency and reporting, and Economic efficiency.

evidence of the environmental damage caused by mining, for the last decade the industry has aggressively promoted the corporate oxymoron of sustainable mining«. The concept of sustainability, as originated in the Brundtland report of 1987, has undergone progressive redefinition, “emptying out the meaning” (Negri & Hardt, 1999 in *ibid*, p.2)¹ of the term, notably its original reference to ecology, so that mining industry's use of the phrase sustainable development now refers primarily to economic variables.

Sustainability is also an example of a »strategically deployable shifter« (Urciuoli, 2003), which are words or phrases that lack a standard lexical meaning or definition because their referential value depends on the context -their key function is to indicate social alignment and although the concept of sustainability may previously have been used to criticize the environmental impacts of the mining industry, it has now become a means to promote mining. There are indeed numerous examples of mining companies and various policy papers promoting sustainable mining in such misleading manner. According to Kirsch, one of the first mining companies to integrate sustainability into corporate audit culture was the Canadian firm Placer Dome, which in 1997 began to issue annual sustainability reports for all of its major projects. These reports identify the primary objective of sustainability as the capacity “to maintain profitability for the shareholders,” although they also seek to “develop closer integration as a partner and contributor to community development,” and “to leave an environment that offers no loss of opportunities to future generations after mine closure” (Placer Dome Asia Pacific 2000 in (Kirsch, 2010, p.90)². The use of the term “environment’ strategically refers to a location or place rather than to the ecological sense of the term. The promotion of mining as a form of sustainable development also makes it more difficult for critics of the mining industry to increase recognition of its true social and environmental costs. The deployment of corporate oxymorons like sustainable mining is one of the key strategies corporations use to conceal harm and neutralize critique”, concludes Kirsch (*ibid* p.91).

¹ Negri, A., & Hardt, M. (1999). *Value and Affect. boundary* 2, 26(2), 77-88,

Indirect quote

² Placer Dome Asia Pacific. 2000. Porgera mine sustainability report 2000: Towards a sustainable future.

The discursive shift also covers up the fact that there have been no significant reforms in how mining is practiced, or overall reduction of its harmful impacts, which the term sustainable would require. Several researchers (for ex. Blindheim et al.; 2008; Bush, 2008; Jaques, 2006; Mikkelsen & Langhelle, 2008) are showing how modern mining practices in reality do not differ much from old practices. Their writings are exposing the several “good practices” such as for example Whitmore (2004) claiming that, despite the push in many countries for this new „sustainable mining“, nothing seems to have changed from the perspective of mine-affected communities. Their land is still being taken from them without free, prior and informed consent, and they are suffering the same ill effects on their ways of life, health and environment. Many of the affected communities are indigenous people ‘s communities. Similarly, my ethnographic research in Burkina Faso showed that many local people, if not all, had a better life before the big industries arrived. They now feel betrayed and have indeed lost their land and their livelihoods, which can never be compensated enough. I was told that some local people perform rituals at their sacred sites, hoping that gold would not be found on their land.

The Field

In the following text, I argue that, to understand mining as a whole and its relation to development, we must think about it, not as a product, but as a process, with all its causes and effects and implications for economy and therefore for the society. To be able to think of the use or exploitation of resources holistically, I borrow the theory of the “field” from Pierre Bourdieu (Bourdieu, 1984), by the use of which one observes the phenomena in its entirety. Bourdieu provides economic theories with an anthropological grounding, attributing a central position to their social origins, restoring economy to its true function as a historical science. His notion of “the field” breaks with the logic of the automatic, mechanical and, in relation to the economic field, he argues that “it is a field of struggles, a socially constructed field of action in which agents equipped with different resources confront each other in order to gain access to exchange and to preserve or transform the currently prevailing relations of force” (Bourdieu, 2005, p.78). The author also says that the structure of the economic field is defined by the “agents”, in this case the firms/enterprises that are found within the field. In fact, it is by the relationship between the various “field sources” or production firms, defined by the volume and structure of specific capital they possess,

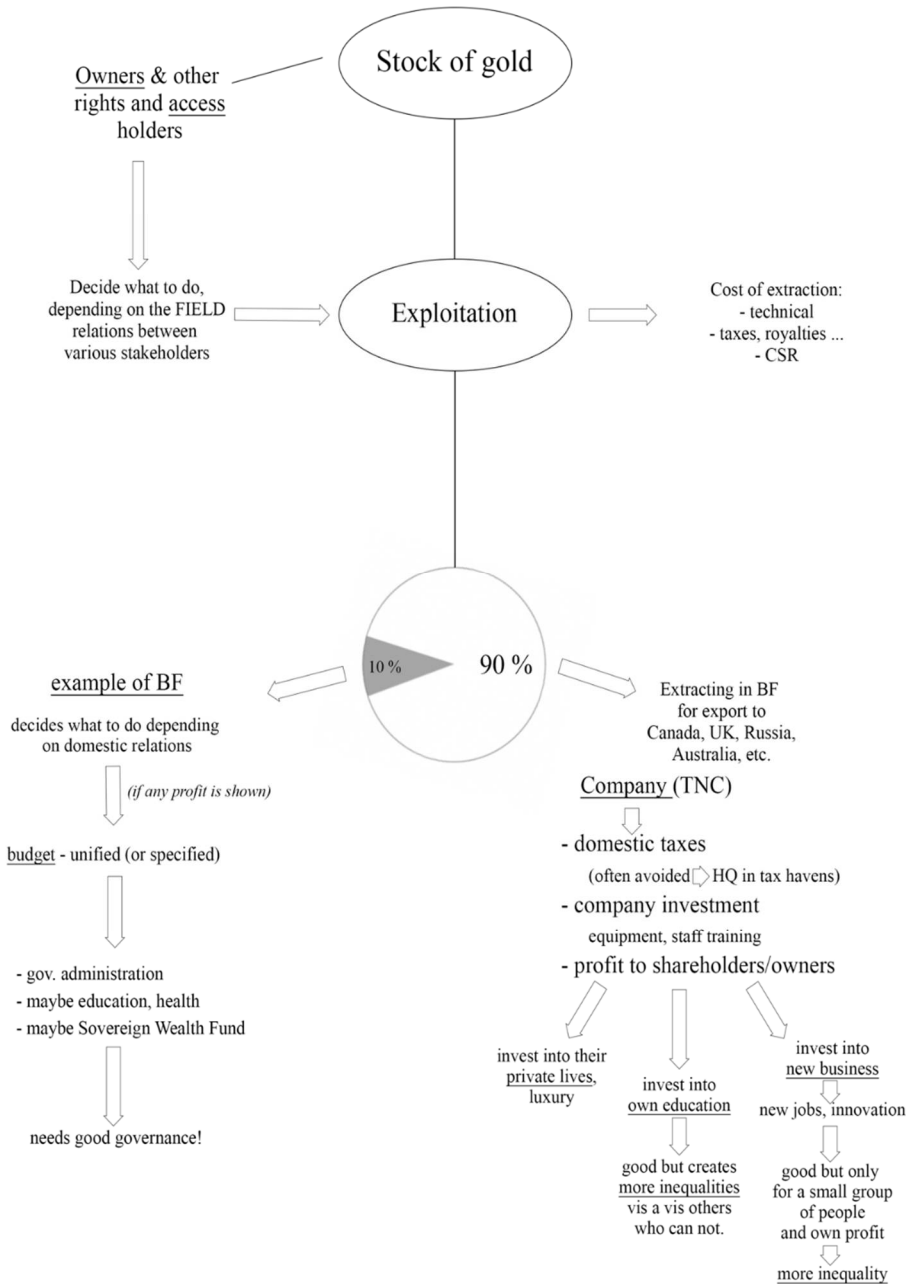
that the field and the relations of force characterizing it are established. (Ibid, p.75). The structure of the distribution of capital and the structure of the distribution of costs determines the relations of power among firms: the mastery of a very large proportion of capital in effect confers a power over the field and hence over the firms less well-endowed in terms of capital; it also governs the price of entry into the field, and the distribution of the opportunities for profit. (Ibid, p. 76). Further, he also says that the “field” ends where its effects end (Bourdieu, 1984 in Luning, 2008, p.388)¹.

In the field of extracting industry, I argue that the field would not be complete and could not be understood with all its causes and effects if it is not taken as a whole, including all actors ie. stakeholders who have a say or an interest. At the same time, it is important to note that social reality is conceived as fundamentally relational, that it is therefore the relationships among the elements (or actors, stakeholders), and not the elements themselves, that must be at the heart of the analysis (Hilgers & Mangez, 2014). I propose to imagine the field of gold extraction in its entirety, from the very foundations of the process, ie. the ground or the land on which it is found, together with its formal/informal and power/access relations, to the birth of the metal, the way it travels to the end user or consumer, and finally its potential recycling or loss. The very complex relationships during the “life and death” of gold includes the understanding of power and powerlessness, the processes of learning and analysis that expose the invisible powers and possibly brings out the potential of empowerment and change. To picture this “field”, I propose the following map, describing the field of economy of gold, with the distribution of costs and profit, to be used when analyzing the process of extraction, production, and use. Here, I had in mind the example of Burkina Faso, but it can apply to other, similar countries. Further, it is important to note that several actors have a stake in this process, and therefore belong to the field, as pictured. The value chain of gold or the distribution between stakeholders is important, especially when assessing the sustainability of the whole process.

Image of the field of gold: BF-Burkina Faso

¹ Bourdieu, 1984, indirect quote

THE FIELD OF GOLD



Source: the author

The challenge here is to understand the reality of the economy of natural resources, to identify the actors/stakeholders in their “field” of action and see who gets the benefits and how this is shared. If we understand that the mined resource or the stock of gold has a given value, of which the cost of production/processing is deducted, the net value remains. The net value is a benefit that should be distributed according to the sustainable development criteria. In other words, and as said earlier, the net value of the asset should give a proportionate benefit back – in line with sustainable development principles.

Burkina Faso

In my case study in Burkina Faso, I analyzed the geo-physical, historical, institutional, political, and economic circumstances of the country and they led me to the findings I will present below. I continued by the presentation of the perceptions of actors involved in mining which allowed me to make some conclusions on the impact of the industry on the lives of people. A special question was devoted to sustainability of the industry in connection with the national SD strategies and regulations.

Among the key factors that played a role in Burkina Faso becoming one of the large producers of gold in Africa were certainly the geological data and mining potential (Nombre, 2013), accompanied by the pressure of the post-cold war neoliberal era and the structural adjustment policies, pushed by the global financial institutions (Bourdet&Persson, 2001). They played a major role in Burkina Faso hastily giving access to its mineral richness, but this was accompanied by the expectation of the country to benefit for its development. Being one of the economically poorest countries in the world, the hope put in the extracting industry, which followed the discoveries of wealth in mineral reserves, is easy to understand. The country opened space to foreign investment (Otayek, 1992; Cote, 2013), but this was made possible only after the change of government internally, following the foreign backed assassination of president Sankara in 1986. As was also confirmed during all my interviews without exception, the need to address poverty has been the main reason for the government to accept investment offers, while the loss in country’s assets/minerals has not been and is still not questioned.

While Burkina Faso may not be the richest in deposits, it certainly has one of the most welcoming legal frameworks, according to many testimonies (personal communication, 2019,4.4.)¹. Burkina Faso adopted the Mining codes, first in 1997, followed by the 2003 one, enabling a more favorable environment. Following the civil unrest and the fall of the former president Blaise Compaore in 2014 – it adopted a bit less favorable last version in 2015 (Werthmann, 2017). Its main achievement was the Local Development Fund into which mining companies are paying 1% of their income (Initiative, 2022). Several tax exemptions have been made for the mining companies, to attract foreign investors. The legal framework was adapted to facilitate the industry, while new regulations and new institutions still need to be put in place.

As to social and economic impact, I have not been able to find studies showing an optimistic picture. True, the country had an average growth in GDP of 5.7 percent in the decade 2008 to 2018 (Faso, 2019; Bank, 2022), however, population growth is estimated at 3.1 percent. Despite the drop in poverty and inequality, these remain significant and are the source of the socio-political tensions, reported the government (Faso, 2019). Several scientists researched the local impacts of the industry; however, their work seems to have no effect on policies. Even the excellent and rather critical government's study on the impact of the industry from 2014 (Zerbo & Ouedraogo, 2014) seems to have brought little change since it was published. According to the study, despite an attractive legal framework for investors, the mineral processing activities are unfortunately very limited, and this leads to a significant shortfall in the creation of added value and jobs. The relations between mining operators and local host communities are below expectations due to the lack of deconcentrated structures of the Ministry in charge of the mines, the weak capacity of the local actors, as well as the insufficiencies of the mechanisms of consultation put in place at the local level. These do not facilitate the promotion of a win-win partnership between mine operators and host communities. The contribution of companies through CSR is selectively improving the living conditions of local populations, but they are also insufficient to ensure the sustainability of the local development process after the cessation of mining activities. The household surveys have shown that mining activities have negative social impacts on households, particularly in terms of children's schooling in disadvantaged

¹ the source is available with the author (3)

households, consumption of alcohol and narcotics by children. Many households in the mining areas have been dispossessed of arable land and/or have lost livestock mainly because of surface water pollution, reports the study (ibid).

The mentioned study also confirms my own findings that the contribution of the mining sector to the national economy has increased, however, the mining companies are little integrated into the national and local economic fabric. The effects of the mining sector on household income are positive but relatively low compared to those of the manufacturing sector. (ibid).

In addition, even the National Plan for Social and Economic Development 2016-2020 (Faso, 2015, p.21), gives a very sincere summary of the impact of the mining industry in which it states that the boom in the mining sector has not been accompanied by a significant creation of decent jobs and a significant ripple effect on other sectors of the economy. I share its conclusions that the industry led to the degradation of natural resources and water pollution, requiring evaluation through strategic studies on the development of geological and mining information, the creation and exploitation of national expertise, the supervision of artisanal mining and improved control and monitoring of mining activity and, most importantly, an improvement of the impact of mines in local development and a good use of the mining rents and taxes.

In what concerns the economic sustainability of gold mining, there is local expertise, for example research done by Ouoba (2017), finding that the countries revenues are smaller than the loss in assets. Many of my interlocutors stated that the government measures the value of financial gains but not the loss in assets and that, in fact, nobody knows or questions the ratio between the two.

Data from my ethnographic research shows that gold mining effects are perceived as being largely insufficient. The recent research of Pokorny et al. (2019), shows that artisanal gold mining can generate more job opportunities and cash income for local households, whereas industrial gold mining much less so. This goes hand in hand also with the popular perception that mineral resources belong to all people, hence the people should benefit from them more. Several of my interviewees said that the government does not represent their interests, that they are being cheated by the state and by the foreign mining companies, while life was better before their arrival. This impression is all the stronger if the high value of exports is compared to the "weak" receipts of the state, which do not allow exit of the overwhelming poverty. There is an increasing awareness by the

people, that the damage suffered, such as displacement of the local populations, destruction of their livelihoods, increase in the cost of living, discrimination in employment, rise of criminality, prostitution, destruction of the environment and their lands, is in comparison with the economic benefits of the mine, much too high and, above all, is often irreparable.

The discussion on the wider issues, such as equality, transparency, and corruption as well as development in general expressed that these questions are not thought of much and that the state or its employees are not equipped to deal with the question in a holistic manner. The notion of sustainable development appears to be an abstract idea that has little to do with the reality of local population, even if it is often pronounced. Many expressed their view that industrial mining is too aggressive and leaves nothing for future generations. Finally, it was also said that people are getting very angry and that there are many points of resistance. This anger is lately accompanied by the numerous terrorist attacks which make the country more and more fragile.

Despite the declaratory dedication to the principles of sustainable development and the existence of a set of relevant laws and institutions, the government officials admit that there is still a lot to learn and a long way to go. My conclusion in particular shows that extracting industry is poorly nested into the sustainable development strategies. In theory, the Mining Sectoral Policy (Burkina Faso, 2013b, p.10) reads that "... the overall objective pursued by the sectoral mining policy is to promote a competitive mining sector capable of boosting Burkina Faso's economic growth and sustainable development....", a specific objective being to "promote the mining sector as a leverage for sustainable development...", but it fails to explain what it means by sustainable development and how the country intends to use mining as a leverage for sustainable development. According to my analysis, the sustainable development legislation and the mining legislation follow each a separate path and mining is not really included in the sustainable development framework.¹

¹ The only link is the example in which the Fund for the Future Generations, established under the Law on Sustainable Development is meant to draw its income from the natural resource exploitation, ergo mining included. It is not more specific than that and, in any case, almost none of the public officials is aware of it.

Conclusion

In answering the question of sustainability of mining, to begin with, I have agreed with the socio-economic physical usage of the concept of sustainability. This means that if the mined assets are used and exhausted, this is acceptable as long as they are proportionately translated into some other wealth that covers, equally for all, the needs of the present generations without endangering the needs of the future generations. Hence, as previously said, the challenge is to find out whether the loss or the void that will never be replaced, gives a proportionate benefit back – in line with the principles of sustainable development. The potential for sustainability in the »field« depends on the institutional and legal arrangements, ie. on the ownership and governance over natural resources, through which the revenue of a resource/gold is distributed or used for the well-being of the population, while respecting equal rights and needs of all, including those of the future generations. So not only must the socio-economic physical sustainability show that any given natural resource has been translated into a form of well-being that was achieved by respecting the standards of environmental and economic sustainability but must also show that it represented an investment into people's welfare equally at present and will not negatively affect the interests of the future generations.

On the question of how sustainable is mining in Burkina Faso, and considering all the above said, I find two problems. The first has to do with “the field” assessment, as I presented it above. If this industry is meant to translate the full potential of mining to positively benefit the economies, improve the lives of people, and respect the environment of the producing countries, it is obvious at first glance that this is far from being the case. In Burkina Faso, the industry is run by the foreign based extracting corporations which have little incentive to care for or be responsible towards the local environment. It is easy to find many examples of destroyed environment, soil, and water as well as natural habitats as a consequence of mining while socially more inequality and severe poverty is produced as well as less stability and security within the society, as also researched by Lunning (2008) and Arthur (2012). These foreign companies transfer their profits outside of the country of extraction and their profits are quite impossible to track and test for sustainability. The corporations largely remain in private hands, so a large majority of profit from extraction of the underground resources goes to shareholders/beneficial owners – private people. The part going to

private “beneficial owners” cannot be sustainable by definition, because its use, even if for a good cause or a “good investment”, will still serve only those owners or their partial interests and will therefore impact for more inequality. Further, by not investing equally into the future benefits, it will deprive the future generations. There is no mechanism to force private shareholders/owners to use their profits for global sustainable development. In such circumstances, the loss in assets does not come with a proportionate benefit back to the impacted population – as would require sustainable development principles.

The second has to do with what happens with the share of the benefit that remains in the country, which really addresses the question of the effectiveness of the state’s income use, as well as the sustainable development standards. It goes without saying that, even if 100% of the benefit remained in-country, this would not automatically mean that it would be used in a way respectful of the sustainable development principles. Even in the absence of decision on standards for the use of revenue, aligned with sustainable development principles (which would be subject to a new area of research), the “unicité de caisse”¹ prevents the specific planning and use of the revenue from extractives. The governance of revenue from extractives would therefore need to be much more elaborated, should it attempt to be in line with the sustainable development principles.

Given the problem with the distribution of benefit within the “field”, as well as additionally the problem with the use of the government’s share of benefit, it is impossible to view mining in Burkina Faso as being sustainable.

In conclusion and putting aside the research about the questions of ownership, access, social, cultural, environmental, and human rights standards, it suffices to point out that a large part of non-renewable natural resources’ benefit finds ways other than to impact development or other than a proportionate improvement of people’s lives, within the meaning of sustainable development. In countries, comparable to Burkina Faso, similar conclusions could be drawn.

¹ Unity of budget – the revenue from mining is not separately accounted for in the state budget.

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