We Move with Water and Gold: The Scales of Urban Mining in the South-West of Ghana

Interlacing (In)Formal Small Scale Mining and Global Environmental Concerns in Tarkwa

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The front page photograph was taken by the author in Tarkwa, Ghana, 2017. The photograph shows a loco boy standing on top of the entrance to a ghetto. All pictures in this thesis were taken by the author during the fieldwork period.
Contents

1. Introduction ................................................................................................................................. 7

1.1. Demarcating the Field and the Object .................................................................................... 10

1.2. Background and Aim of the Study ......................................................................................... 11

1.2.1. The Origin of the Study: Witteveen and Bos ................................................................. 11

1.2.2. Research Sub-Questions ................................................................................................. 12

1.3. Structure of the Thesis ............................................................................................................. 12

2. Methodologies ............................................................................................................................. 14

2.1. On Methods: How Things Worked and Not .......................................................................... 14

2.1.1. A General Idea ............................................................................................................... 14

2.1.2. Questioning or Just Standing There ............................................................................... 15

2.1.3. In-depth Conversations ................................................................................................... 15

2.1.4. Was it Collaborative Research? ....................................................................................... 16

2.1.5. Limitations ....................................................................................................................... 17

2.1.6. The Ethnographer and the Ethnographic Work .............................................................. 18

2.1.7. Final Reflections ............................................................................................................... 19

2.2. A Word on Not Doing Participant Observation ................................................................. 19

2.2.1. The Friend and the Researcher ....................................................................................... 20

2.2.2. Intersubjectivity and Participant Observation ................................................................ 21

2.3. Ethics ....................................................................................................................................... 22

2.3.1. General Reflections .......................................................................................................... 22

2.3.2. Informality and Development Discourses ...................................................................... 24

3. Conceptual Framework ............................................................................................................... 26

3.1. Anthropology of Extractions: Natural Resources and Development .................................. 26


3.3. Scale Making and Resource Materialities: The Value Chain and a Clash of Scales .......... 28

3.4. Concluding Remarks ............................................................................................................. 29

4. The Macro-Scale: Globalization(s), Transnational Actors and Sustainable Development .... 30

4.1. The Global Africa(s) and the Discourses of Sustainability ..................................................... 30

4.1.1. Africa’s place in the World of Structural Reforms .......................................................... 31

4.2. Supranational Institutes, the Sustainable Development Goals, and the Paris Agreement: Poverty Eradication and/or Environmental Protection? ........................................................................ 32

4.2.1. The Paris Agreement ........................................................................................................ 33

4.2.2. Poverty and/or environmental protection ...................................................................... 34

4.2.3. Implications ...................................................................................................................... 35

4.3. The Ghanaian government, the galamsey and the Chinese: A war on “illegal gold” .......... 36

4.3.1. Criminalization of Galamsey .......................................................................................... 37

4.3.2. Ghana’s government and the media ............................................................................... 37

4.3.3. The Chinese in Ghana ..................................................................................................... 39

4.3.4. Technologies: Expanding the Underground, Overheating the Spaces ......................... 39

4.3.5. Is the Government Overlooking the Large Scale Mines Impact? .................................... 41

4.4. Concluding Remarks: Development, sustainability and the war on galamsey .................. 42

5. The Meso-Scale: Tarkwa, Mining in an Urban Town ............................................................... 43

5.1. A General History of the Small Scale Gold Mining in South West Ghana ......................... 43

5.1.1. Transformations of the traditional mining methods ......................................................... 44

5.1.2. Traditional mining and the galamsey .............................................................................. 45

5.2. Mining spaces: articulating gold production in Tarkwa .................................................... 46

5.2.1. Spatial description of Tarkwa ......................................................................................... 46

5.2.2. Mining outside Tarkwa: rural mining and a discussion about legality ......................... 47
5.2.3. Mining in Tarkwa: the heterogeneity of urban mining ........................................ 49
  a. Reworked Old Shafts ........................................................................................................ 50
  b. Shafts .................................................................................................................................. 51
  c. Ghettos .................................................................................................................................. 51
  d. Surface mining ...................................................................................................................... 52
  e. Alluvial Land Mining ........................................................................................................... 53
  f. Washing Sites ....................................................................................................................... 54

5.3. SSM in an Urban Town: water, health and the environment ........................................ 54
  5.3.1. Water and mining ......................................................................................................... 56
  5.3.2. Environmental technologies and the galamsey ............................................................ 59

5.4. Concluding Remarks: Heterogeneity and Pollution ....................................................... 61

  6.1. The Galamsey Value Chain ............................................................................................... 62
    6.1.1. The Loco Boys and .................................................................................................... 63
    6.1.2. Chiselers and Drillers: the Division of Work in a Shaft and the Kutaway ................. 65
      a. Selling the kutaway and the main load ........................................................................... 67
    6.1.3. John, the Gold Agent: The Gold Prices and Global Markets .................................. 68
  6.2. Cohabitation and Heterogeneity ....................................................................................... 70
    6.2.1. SSM and the Galamsey: Sharing the Underground .................................................... 70
    6.2.2. Post-Mining: Washing Sites, former Mine Workers and Adamos ............................... 72
  6.3. On temporalities, sustainability and technology ............................................................. 73
    6.3.1. Poverty, risks and the galamsey ............................................................................... 75
  6.4. Concluding remarks ......................................................................................................... 77

7. Conclusion ............................................................................................................................. 78
  7.1. The gold value chain and the clash of scales ................................................................. 78
  7.2. A consideration about agency ....................................................................................... 79
  7.3. Rethinking the relations between nature and society ..................................................... 80

8. Bibliography ........................................................................................................................ 81
  8.1. Other sources .................................................................................................................. 88
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Pictures and Figures

Picture 1. On the left, an old shaft belonging to Mohammed & Co. It is not in operation as it has been reworked by Chinese investors. On the right an out-of-order Chinese Trommel. ........................................ 50
Picture 2. A loco boy extracting sacks of waste from a shaft at the top of the mountain of Bobobo. ... 51
Picture 3. Galamsey going down a Ghetto belonging to Maggid’s uncles in Efuanta. .................. 51
Picture 4. Maggid showing a surface mining site near M & Co. concession in Efuanta. .................. 52
Picture 5. A crew of 3 galamsey is dragging the basin of what used to be an open pit in Efuanta. ..... 53
Picture 6. George’s washing site in Bobobo. The water recycling system is clearly visible. In the wooden structure next to it, the milling and crushing machines are kept........................................ 54
Picture 7. Bonsa River near the Pumping Station of the GWCL. The color, or turbidity, of the water is due to galamsey at the river........................................... 58
Picture 8. An abandoned cyanide facility in Bobobo........................................................... 59
Picture 9. Loco Boy resting outside a Ghetto in Efuanta ............................................................ 63
Picture 10. Kofi and the gang are hammering the stones to crush them before using the mill........ 65
Picture 11. The washing site of Cape Town is owned by one of the owners of Kofi’s shaft........... 66
Picture 12. Bedu is refining gold in his Kitchen at Bobobo....................................................... 68
Picture 13. A gold buyer in Abosso weights a non-refined piece of gold (box form).................... 68
Picture 14. A piece of John's refined gold on the hand Alessio, a fellow anthropology student..... 70
Picture 15. Maggid’s uncle is arguing with a galamsey for a blasting done without permission.... 70

Figure 1. The location of the different mining sites in Tarkwa................................................. 46
Figure 2. Gavin Hilson adapted Poverty Cycle for SSM ......................................................... 75
Don't blame the Chinese
For your large brown waters
For your quickly vanishing forests
For your new found shackles
Blame your kings and queens
And their ever hungry leeches
For they sell the sacred for pesewas
And trade bars of gold for chopsticks
Blame yourself too! O my people
For voting tsetsefly-stung kin into power
And fanning them with praise as they sleep in broad daylight
Whilst you sweat underneath the weight of their polished palanquins.
We sit on mountains of gold
And happily beg others for brass
We borrow to buy fleets
Of V8s and shiny suits and pot-bellies
Whilst our sick and poor are packed Like sardines in wards and dorms
Don't blame the Chinese
The Dutch, The French
The English, The Portuguese
When you still choose to sleep.

Nana Kofi Acquah. Ghanaian poet and photojournalist.
1. Introduction

I am walking among small hills covered by tall trees that stretch branches in search of the sun. It is a humid day; the sky is black, waiting to discharge a strong rain over the ground. Below, in the underground, within the rocks that shape the hills, gold is waiting to be caught. The fast pounding of multiple engines, constantly roaring, muffles the sounds of the many birds flying around. The monotonous noises come from the *changfa* machines. These machines are used to crush the rocks coming out of the shafts dug by young male Ghanaians to take the gold from the underground. In some parts, the landscape has changed: there are no more tall trees, no more hills. Large pits containing water emerge alongside the road. Small Scale Miners, or *galamsey*\(^1\) as they are called in Ghana, appear from below improvised sheds made with the leaves of palm trees, to stare at me and then smile. I am in Tarkwa, a city in the Wassa region in the south of Ghana. Since it was founded around 1886, gold mining represents an important livelihood for its inhabitants.

While standing in the middle of the dirt road that linked two Small Scale Mining sites in the outskirts of Tarkwa, I asked Maggid\(^2\) how the *galamsey* knew that gold was there. He looked at me, made a pause, and smilingly said: we have underground maps, but we also follow the rocks. In Tarkwa, the gold is everywhere. You know, gold is something that moves, or at least is what the people in Ghana say. One day it can be here, on the site where we are now standing, but the next day the gold could have gone. The mine would be depleted and there would be nothing else to do about it. But then, the gold might appear somewhere else, and the *galamsey* would move there. We move with the gold, as we move with the water. You see, he said, we deal with water in every step of the mining process. To go deeper, we pump it out. We need to dry the rocks to crush them. We wash the smoothed ore and then catch the gold with the mercury. After that, we refine it and sell it to a buyer\(^3\).

This explanation kept me thinking about one thing: that gold, like water, moves, connects and it is caught by multiple actors through different scales. Gold has historically connected Europe with Africa. It links the XIX century mercantilism, the XX century...
capitalism and XXI century neoliberalism. Together with slaves, gold was one of the major “commodities” that came out of the British, Dutch and Portuguese ports in Cape Coast. It is part of the continuous flux of investments and movement of products from Europe to Africa, from Africa to Europe and to the World.

But gold also underlines the disconnection of these expansive processes; the inequalities produced by the projects of capitalists expansion; the poverty growth in Ghana and the millions of dollars made by non-Ghanaian owners of Large Scale companies with offices in South Africa or Canada; the environmental consequences for local communities that create concerns beyond the geographical borders of a country in international agreements to diminish environmental damage. The *galamsey*, analyzed from the dichotomist rhetoric and practices of development, became trapped by the discourses of modernities; by the Global South and North narrative; by the instrumentalized discourse of the (un)developed. Yet, they want to be modern, as Ferguson (1999) explains is his book about the Copper miners in Zambia. *Galamsey* expects to be part of the global situation. Their everyday lives are pieces of the narratives of convergence and dependence, divergence and independence, exclusion and inclusion of the “globalizations” (Eriksen 2010; Gupta and Ferguson 1992; Ferguson, 1999, 2014; Weszkalnys 2010).

In this research, I am aiming at a particular type of gold mining, the Small Scale Mining (SSM hereafter). SSM refers to the extraction of minerals by small groups of people that use limited technology for the whole extractive process. It differs from the so-called artisanal mining because in SSM mechanized elements, like mills and crusher machines, are used for the extraction. Yet, comparatively with large-scale mining, SSM is a more labor-intensive activity, with lower capital investment and occupying a smaller physical space. However, SSM, as large scale and maybe to a lesser degree the artisanal mining, is part of “emergent forms of spatialized order and disorder, [whose] logic is not simply one of an ever-expanding homogenization and standardization” of the livelihoods and the social, economic and political structures of many communities (Ferguson 2006: 381).

In recent times what used to be a traditional craft, with less environmental consequences, was transformed due to the introduction of Chinese technologies in the 2000s in an activity that has created new tensions between the different agents interlaced through multiple scales of action, i.e. global, national and local. As my data pointed out, one of the main tensions occurs among sustainable politics, development policies and the miners’ livelihoods: “If ecological sustainability is given the first priority, jobs may have to be sacrificed, but if full employment is the political goal, sustainability must wait” (Eriksen
The new technology has allowed local miners to increase the production of gold, in 2000 the gold produced by SSM sector accounted for the 6.3% of the total gold production; in 2014 the percentage increased to 34.4% (Crawford, Agyeyomah, et. al. 2016). This has accelerated the environmental impact that mining has always had: mercury pollution near washing sites; an increase in the turbidity of the rivers; agricultural land degradation –i.e. reducing the space for farming (Afriyie, Ganle and Adomako, 2016). In 2010 the 85% of the workforce in the SSM sector in Ghana, from a total of 1.1 million of individuals, was working in informal mining operations (Ofosu-Mensah 2010; Wilson, Renne, et. al. 2015; Afriyie, Ganle and Adomako, 2016). SSM, and the galamsey, has become an important livelihood for people in the south of Ghana, and in other mining regions. These environmental consequences have made the government to launch a “war” against the galamsey and “formalize” an activity that existed long before the modern Ghanaian state.

In this sense, I want to explore the connections producing frictions, between the different scales that are being overheated (Eriksen 2016) with the introduction of new technologies that have intensified the flows of production, creating hot-spots (Pijpers 2016) where discourses and practices of development and sustainability policies collide with local livelihoods. To do it, I propose the following research question:

*How are small-scale gold mining practices in Tarkwa embedded in and affected by changing global economic and political conditions in general and discourses on environmental sustainability in particular?*

In this study, I look at different scales, i.e macro, meso and micro (Gilberthorpe and Papyrakis 2015), and into the global entanglements in the resource materialities that extractive industries entail. In particular I explore the connections of the small scale miners with gold, technology, hopes, world markets, water, money, and futures. The aim of the thesis is to contribute to a more nuanced understanding of the entanglements of the SSM environment, and give more light into the disconnections that exist between scales, policies, and individuals.

First, for clarity, I need to divide the small scale miners in two groups: the galamsey, which operate outside what the law considers formal; and the small scale miners, that are licensed by the State to do mining. Second, I will follow Tsing’s (2000, 2015) proposal of looking at the value chain of a product to understand the entanglements it creates across the scales. Third, I use the case of the Ghanaian town of Tarkwa, whose particularity is being an urbanized town where galamsey, SSM, LSM, and Chinese miners cohabit. Finally, similarly
to what Gilberthorpe and Rajak state occurs in extractive industries, I think the case of Tarkwa can show “how global flows of resource capital unsettle, entrench or generate new forms of dependence, patronage, and clientelism locally. Simultaneously, it brings to the fore local conceptions of wealth, accumulation, resource and ecology which tend to be overlooked” (2017: 189).

1.1. Demarcating the Field and the Object.

Before seeing the first small scale gold mine operation in Ghana, my research question dealt with trying to understand whether and how social hierarchies result from and are reflected in miners’ relations to water. However, after being almost every morning on a mining site, I realized the relations that surrounded this economic activity were beyond the physical boundaries of a localized place: a shaft in the city of Tarkwa.

Looking at small scale gold mining became a process of examining the power relations between the state, foreign capital and individuals; between local and migrant miners; to explore the ideas -from government and miners- about pollution and sustainable (or not) futures; risk and uncertainty, all along the value chain of gold production. Moreover, I started to notice how these dynamics allowed the construction of illegal spaces, articulating an informal economy closely related to international movements of people and capital. I realized the dynamics existing now were like those in the past (Dummett 1998).

For example, the influx of foreign capital and technology allowed local miners to expand the frontiers their mining: gradually they were able to go deeper; new markets for selling gold were opened and new power relations were created, similarly to what has happened with the Chinese arrival to the SSM environment. Gupta and Ferguson explain this continuous interconnection of spaces, embedded in an historical sequence of articulations of social and power relations is what anthropologists need to look at. As anthropologists, we need to explore the lived spaces where “the changing global economic and political conditions” meet; and give the historical place-making processes a special attention to comprehend the “way spaces and places are made, imagined, contested, and enforced” (1992:16).

There is a tension between the imagined and the lived space; they do not always represent the same, i.e. the discourse of a rich country full of natural resources, and the economically unequal nation where most of Ghanaian live. The connections and disconnections in these spaces are socially produced and reproduced, constructed and
reconstructed. The Chinese money is building Ghanaian infrastructure and a war was declared against Chinese miners and its Ghanaian partners, the *galamsey*. The field is precisely that, the processes that construct and produce a lived space, the connections and disconnections produced by the different agents engaged in the context of SSM. In my case, the field is not a particular place, a demarcated physical territory. It is not a geography that I can pinpoint on a map. The field became the interactions between extractive industries, foreign capital, the State, society, and nature.

To create and understand my object of study I use the entanglements of the town of Tarkwa in Ghana with the informal and formal mining operations; the gold buyers and the local and global markets; the Chinese migrants and their technological and financial capital; the government officials and traditional chiefs; the ex-workers of large scales companies and the *galamsey* cohabiting the same spaces. Similarly to Ferguson “specific forms of “global” integration on the continent coexist with specific –and equally “global” forms of exclusion, marginalization, and disconnection” (2006: 41).

Thus, the action of demarcating the field or the production of this idea of “field”, involves a categorization of the multiple relations that produce and generate meanings to (and for) the object of inquiry: small-scale gold mining. Nevertheless, we have to be aware that the field is produced not only by power and socioeconomic relations. But through the discourse we create with our texts, the ethnographies. The object becomes the ethnographic work by itself, and the fields are created by the explanations we give about the power relations that give mining to the ethnographic text. As Roger Berger says: “Without anthropology there is no "field", no "object" of study and without the power to create "fields" there is no anthropology” (As cited in Sulka and Robben, 2007: 18).

1.2. Background and Aim of the Study

1.2.1. The Origin of the Study: Witteveen and Bos

The formulation of the original research question came from an international, Dutch based, engineer Consultancy Company: Witteveen and Bos (W&B). The purpose of the investigation was to understand the relation between the small-scale mining activities and the water in the city of Tarkwa. The idea was to link the findings to possible projects in the future for the Tarkwa region. W&B wanted to understand ways of intervening in the small-scale sector with their technologies and knowledge about water management.

However, the research question changed during the fieldwork -as I explain in the
methodological part of the thesis. The original question was not sharply defined. But it worked as a starting point to map out the actors involved in SSM activities in Tarkwa. I explored the interactions between mining activities, water, and miners and traced out the network of relations of this activity in Tarkwa. As there was no formal agreement between me and W&B, that allowed me to change the research question. However, it is important to notice the origin of the research came from a third party wanting to understand a social issue. This is a form of applied anthropology that, at least for me, became an interesting method with which I can explore social issues in the future.

W&B can still benefit from the information and data I collected. They can use it to shape a more robust question for future research. The data can help them to start defining a feasibility study for a water infrastructure project as I address two issues where their expertise can be helpful: first, they are expert in water management systems and can explore the chance of helping the Ghana Water Company to think about new methods of water management to contrast the effects of the galamsey in the rivers; and they can work with SSM companies to use in a more efficient, or sustainable way, the water pumped out from the underground and at the washing sites - specifically, to clean it from the mercury they used to catch the gold.

1.2.2. Research Sub-Questions.
To answer my research question I need to answer at least four sub questions:

- Sub-question 1: How are the elements of the gold value chain interconnected and involved in sustainable discourses and practices across three different scales: global, national and local?
- Sub-question 2: As there is a correlation between water and the perceived environmental damage in Ghana, how technologies have accelerated these transformations and how are they observed by the miners in Tarkwa?
- Sub-question 3: How is the mining environment organized in Tarkwa and how it through the three different scales, specifically through water and gold?
- Sub-question 4: How do the galamsey and the other actors behave when policies that aim to end with their livelihoods are enacted and what this say about the disconnections, or connections, between the scales?

1.3. Structure of the Thesis
The methodological chapter describes how I got the data, how the research changed and why
the information I gathered has validity. The next chapter explains the theoretical framework I used to construct the articulations and disconnections described in detail in the fourth, fifth and sixth chapters. The fourth chapter delves into the discourses and actors promoting sustainable development from Supra-National Institutions and National governments. I analyze how these actors influence each other, what makes them act, how they relate to the idea of development and sustainability and how policies are shaped from top to bottom?

The fifth chapter explains the history of mining in Tarkwa and the heterogeneity of mining spaces in the city. It also articulates the relations between water and mining, and how the environmental damage to water creates a tension between the actors. In the sixth chapter, I explore why and how people work in SSM and galamsey. To do it I interlace different stories from my informants. This helps me to understand the local and individual dynamics of small scale gold mining to be able to zoom out and interlace with the relationships that I have been describing throughout the thesis. Finally, the sixth chapter contains the conclusion.
2. Methodologies


To tell the story of this landscape requires an appreciation not only of changing landscape elements but also of the partial, tentative, and shifting ability of the storyteller to identify elements at all.

Anna Tsing, 2000, p. 327

2.1.1. A General Idea

The cardinal method of anthropology is participant observation; its dominant product is the ethnographic text. The production of ethnography implies a process of self-reflection and self-awareness, an anthropological analysis. As Tsing (2000) says, the storytelling -the ethnography- becomes the medium that connects the elements that assemble that landscape. Hence, the fieldwork entails different methods for data recollection and its further analysis. In this chapter, I explain how I conceived the research question; how it worked out (and not) in the field; what I used to collect the data and how I analyzed it.

Firstly, I have to say I went to Ghana with preconceptions of what I would find in the mining sites. These conceptions were created while reading for my research proposal and watching videos about small-scale mining operations. These ideas shaped the methodological approaches for the research proposal: use of a mixed method approach, semi-structured interviews, a recorder and a camera. However, Tarkwa was different from what I had planned and expected.

One of my first concerns was the access to the field. If the sites were ‘illegal’, would it be simple to go there? Would the miners be willing to talk about what they do? How easy would be to find a site to do research? In terms of access, the legal or illegal categorizations prove not be something to worry about. Both types of sites operate in the open, and even if there are practical differences between them, their particularities did not prevent me from engaging in conversations with the miners.

So, finding a place to do research was not complicated. There were too many places to choose from: licensed companies, informal shafts, ghettos, washing sites, gold shops and kitchens. Almost everybody was working in an activity related to mining in Tarkwa. There was a plethora of galamsey, small-scale miners, machine operators, gold buyers, owners of shafts and ghettos, retired workers of large scale companies, women selling food and mechanical parts or chiseling the rock waste produced by the mines. Thus, in terms of quantity, sites and informants were not a problem.

In Tarkwa, I visited six informal shafts, four formalized and re-worked shafts, four washing sites, two ghettos, and two gold shops. I went to the rural mining community of
Bompieso because Helen, a neighbor in Bobobo, had an aunt living there. And one informal operation outside the city of Abosso by recommendation of one of my informants that had a contact working there. The different sites I visited in Tarkwa were because either my informants recommended it or I found them while doing transects across the city.

The difficult part was to choose from among sites, it became a process of trial and error. Not because people refused to talk with me, everybody wanted to give me a detailed explanation of mining that, frequently, became repetitive. This method was inefficient, at least for a short fieldwork like mine. In eight weeks I could not go to all the sites and find the ‘right’ informants.

2.1.2. Questioning or Just Standing There
At the beginning of the research, I started making questions. For moments, the method worked. I got plenty of answers. But with time the informants got bored with me asking questions. Other times, they expected more questions from me. But sometimes, there were no more questions to ask. So, I decided to change my approach.

Even more, I felt uncomfortable with this style. I consider it is due to my personality. I prefer to listen than to talk. So, with time, I started to sit in different places where my informants were working. From time to time, when they were free from work, they sat next to me and then we would engage in conversations. I felt more comfortable that way, because I was not interrupting their work and daily routines. Nonetheless, being there was already disrupting for them. This method, of sitting and observing their activities, allowed me to closely observe the interactions of my informants and the rest of the miners at a site.

2.1.3. In-depth Conversations
The breaks that miners took provided me with the space and opportunity to engage in-depth conversations. These talks helped me to further understand the behaviors and perceptions of my different informants. For example, to discern what my informants wanted in life; to realize that, at times, they were relating and linking their ideas of a better future with the idea that outside Ghana, mainly the US or Europe, life was better. The future was not there or it would not come from what Ghana had to offer at that moment.

With these in-depth conversations, I could recognize *galamsey* was not only a poverty driven activity. A multiplicity of backgrounds constructed my informants: some dropped out of school because their family needed money; several of them were unable to get a job that payed as good as *galamsey*; others just missed using their skills as workers of large scale
mining companies. Furthermore, I did learn about their past, their families and expectations.

My informants made reflections about the risk involved in mining: how some of them lost a family member in a mining related accident or how the dust from the machines could kill them in the long term. The conversations guided me to realize the risk of mining was not only an environmental problem. It was a threat to their health and well-being: everyday they face a risk of permanently damaging their bodies. Moreover, I comprehended their discontent with politics: Ghana government, to them, was always useless. None of my informants celebrated Ghana Independence Day: they are proud of the nation, of the idea of Ghana, but not of the governmental body. For them, the State is a corrupt agent, hampering their future.

Consequently, this method of in-depth conversations helped me to realize the portrayals in the documentaries and papers I had read before being there were far from reality. Galamsey behaviors were steered by an idea of progress, and governed by a notion of improvement of their current state. Quick money and ignorance was not the main element of their habitus.

2.1.4. Was it Collaborative Research?
I want to stress one particularity of my research. I was not alone in the field. Sometimes I was with fellow anthropology student Sylvia, who also conducted research on the small-scale mining sector in Tarkwa, albeit with a different focus. It was an interesting performance to see. She likes to ask one question after another, giving me time to meditate the answers and come up with follow up questions. Furthermore, it gave me the time to observe what others did, and how they reacted to her and then to me when I was alone—sometimes the interactions were completely different. From time to time, miners only talked to me. The probable reason is simple and not: I am a man. The informants did not totally ignore Sylvia but kept her at the margin of the conversations. When I tried to include her, some men would only say hi and continue to talk to me. Usually, those informants prove to be unhelpful for collecting data.

In Tarkwa, the gender roles are performed hierarchically: the man has the final word. Even if in the Fante region where we stayed, the inheritance men get comes from the mother side; men tend to make final decisions. For example, when we were looking for rooms in Tarkwa, the owners of the rooms usually talked to me as the price negotiation began. Even if Sylvia was trying to negotiate the price, men would take me aside and try to convince me to take the room. This hierarchy became clearer when we finally agreed upon a room. The man helping us to get it, Coach, asked me if I was fine with the place. The question came after Sylvia told him that we both had agreed the place was fine. At the end, I realized, that me as
the man still needed to give the final answer.

Finally, part of the data that I present in this thesis would have been impossible to obtain without Sylvia being there. There are two main reasons. The first, as I already said, she asked more questions when we were together. As a consequence, part of my notes came from the answers the informants gave to her questions about legality. Second, the fact that we were two persons performing the same role, the researcher, modified the reactions of our informants. The reactions depended on who was asking the questions or if I was alone with them. Therefore, I recognize the intersubjective process of the research had an extra element, an extra interlocutor that produced a different outcome than if I had been performing as a single male researcher. Nonetheless, there was not much discussion about the everyday research afterwards.

2.1.5. Limitations
I am aware that multiple relations were out of my scope. At the beginning I was only looking at the local scale; I wanted to explain power relations in a shaft. However, once in Tarkwa, I realized those power relations extended through more scales, and articulated networks beyond the shafts. For example, even if I had contact with gold buyers I was unable to interview foreign gold buyers: in particular, Indian or Chinese buyers. The LSM companies perspective of their role in the SSM environment was impossible to directly obtain. It was only at the end that I realized the importance of LSM in the SSM dynamics\(^4\). Sylvia and I lacked the time or contacts to overcome the bureaucratic procedure that would grant me entrance to Goldfields, a LS mine.

I did not engage in dialogues about sustainability, directly. However, I could look at galamsey practices. They were always blaming the Chinese for the pollution of water bodies and galamsey mining outside town for the land and environmental degradation. My informants detached themselves from any idea of pollution even though they, at one point of their life, worked in alluvial operations, dragging the basins of rivers or with the Chinese open pits in the forests, using chemicals near the streams. They kept the distance from what was currently happening. I consider it was a way to legitimize their work.

Likewise, I observed how they threw plastic on the ground or to the water; how plastic bags were floating in the rivers and in the oceans, flying through the open fields that the roads crossed. I saw how communities coexisted around mining places, creating risks for them as they are vulnerable to building collapses due to the tunneling happening down their house:.

\(^4\)See also Luning and Pijpers, Forthcoming.
How they are exposed to health risks due to the washing sites no disposing the mercury in a safer way, thus creating a hazard for the people, and animals, around it. Perhaps, and with this concept I did not engage, the idea of dispose comes together with the idea of decay. They were used to wrapping things with materials that decomposed with time: banana and maize leaves. New materials, like plastic, do not decompose and persist longer than the traditional wrappings.

Certainly, there are more dimensions anthropology can look at. For example, the role of gender in the mining sites and to explore how the roles have changed in time. Machines are now doing the jobs that women used to do in SSM. Or the political negotiations made by galamsey as a group. They have a regional and national organization that congregates the owners of licensed SSM. These ideas are just part of what could be a future research agenda for those interested in doing fieldwork in Tarkwa.

2.1.6. The Ethnographer and the Ethnographic Work.
The ethnographic writing refers to a whole, a larger context, in the imagination of the reader and the anthropologist: “ethnography achieves [closure] by a successful description of a social structure [being this] the image of coherence and order that writing creates” (Thornton 1988). To create these descriptions we use, and produce, classifications to map human interactions with other humans or nonhumans. These categories, as human products, are subject to a plethora of political and economic logics. Simultaneously, the categories are embedded in socio-historical processes of knowledge production. History is made by the subjects and they are, in turn, influenced by history. In the same logic, classifications are constructed influencing human relations, reshaping and creating new categories (Hacking 1995; Bowker & Star 1999).

Then, how can we be objective if there are no neutral categories? Knowledge production implies a negotiation process interlaced with social, political and economic powers. As human products, the categories we use to map social relations have a moral weight and power over our actions. Therefore, in our ethnographic work we have to be critical about the genealogies of the categories because they define a mode of signification. They influence, when performed and enacted, the social space where we are researching and reflecting (Ferguson 1999). The objectivity behind categories is a historical construct as ethnographic works are interventions carrying history (Pels 2014, 2015).

Ethnography, then, implies a negotiation where practitioners are clear on their position, perspective, and purpose as they intervene as active agents, with their texts and
fieldwork (Mosse 2006). Thus, it is socially experienced by others –i.e. the informants- entailing a reflexive concern about the politics of objection (intersubjectivity). This intersubjective dialogue needs to be recognized, but as a limited dyad of interchange, as a hierarchical construction of expertise and experience, as my dialogues with Kofi and Immanuel showed me. Attaining objectivity is impossible without having it as an ideal (Pels 2014, 2015).

2.1.7. Final Reflections
Reflecting on what I did and did not do on the field, I would say that the biggest missed opportunity was not to learn some basic Twi. It would have been helpful to understand the day to day discussions about politics or the situation of the galamsey my informants had. Likewise, learning more about the local history and the history of mining of that region would have prepared me more for what I saw. Probably, it would have helped me to come up with the questions that now appear in my head after reading about colonial mining history of the region.

Lastly, I consider the intention of this fieldwork was to serve as a rite of passage, to have “mistakes” and reflect on them; to learn more about oneself and ‘the others’ through my position as researcher and friend. The purpose was to reflect on what the informants said what I understood and interpreted, what they thought I asked, and embrace that process as an intersubjective one.

2.2. A Word on Not Doing Participant Observation
I did not do participant observation, or at least not an active one: I did not become a miner. At the beginning I thought that going inside a mine shaft would be easy -which I did, but when it was a reworked old shaft with steps. However, the small passages connecting the different branches of a mine, and stretching hundreds of meters down, can be claustrophobic. I did not feel comfortable going down towards the dark humidity of a mine. It is dangerous: there is not protection; no safety while going down, and a high risk of the shaft collapsing is an ever present reality.

Nevertheless, I was (almost) every day at multiple mining sites: at a formal site that held a license, or on the top of the mountain in an informal site talking with chiseler\(^5\) and loco boys\(^6\). Sometimes I went inside the shafts –never down, though- or helped crush some

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\(^5\)Chiseler: they break the rocks in underground using a hammer and a chisel. A chisel is a rebar with a sharpened point.

\(^6\)Loco boys carry out the sacks containing the waste material (stones without gold) and the ore (stones with
stones. For the other parts of the process I lacked the necessary skill to do it. Owusu, one of my informants, told me that if I had more time he would teach me how to use a milling machine or a crusher. But in a couple of weeks, it was impossible for me to learn how to operate them.

Then, if that was my context, how did I manage to create some rapport for me? How did I obtain the data? As I explained, not being able to take part in the everyday labor activities made me feel as an outsider, just lurking around (sometimes). However, it allowed me to look closely at what they were doing and how they interacted. It gave me time to take notes and pictures of what was happening. It also gave me time to make diagrams of the spaces where they were working.

2.2.1. The Friend and the Researcher

Not with all my informants I felt part of the group. I came to realize I was always going to be an outsider. I will describe two moments that made me understand I had to deal with this duality of the friend and the outsider (the researcher) during my fieldwork.

The first time I met Kofi he immediately asked me if he could take me as a friend. I did immediately in my interest of getting informants and data, said yes. However, as I learned with the time, this also meant I would become part of his family and gang. For example, Kofi and his gang shared some profits of their work with me. Once I tried to pay for some sodas for Immanuel, the older man in Kofi’s gang and brother-in-law of Kofi. He did not accept. He argued that I was the younger brother there, so my role was to receive the gift, the Malt soda, and be happy with that. Of course, this made me feel part of the gang.

Yet, one day I was sitting next to Immanuel, a former farmer and now a galamsey. He asked me: why a white man, as I was for him, is interested in a black man like him. What was there to learn from them? This was the first time someone made a clear distinction between white man and black man—beyond screaming obruni. Immanuel placed himself in a hierarchically lower position than me. He was shocked I wanted to learn from him, and the galamsey. This made me feel uncomfortable; hence I tried to understand from where this feeling came. These reflections, as I came to notice, pushed me to understand the dialogues gold). The name comes from locomotive. In colonial times, in the foreign owned shafts a locomotive machine carried out the load from the underground. Therefore, loco boys got their name because they do what the locomotive use to do: take out the load from the underground.

Kofi is the leader of a chiselers gang with whom I spend most of my time in last two weeks of fieldwork. I detail my interactions with him and his gang in the last chapter.

In Twi, the local language, means people that come from beyond the horizon, from outside Africa. It is applied to every non-Ghanaian. Sometimes it was interchanged by white man, or china man.
that I was having, were subject to an intersubjective exchange. I explained what I wanted to do, and why I was eager to learn from them - the miners and the whole process. He objected to that by hierarchically categorizing the “white” knowledge as superior to the “black” knowledge he had. I tried to explain that for me the knowledge production was not determined by a color; that I could learn from them, and if they wanted, they could learn something from me.

At the end of this conversation, there was significant confusion between him and me. But it is partly due to how the conversation went. He said that then, if I wanted to see the whole galamsey I needed to go down. I agreed, but told him that I was afraid. Immanuel understood, even if I explained I was only afraid of going down the mine, that I was terrified of black people. Thus, the following two nights, he escorted me back to my house. This misunderstanding made me feel the idea of going native is untruth. Or at least it was for me and this experience. I realized that I was going to be, for the rest of the research, the “white” man that would be around them.

A duality of being the researcher and the friend was always present in my conversations with Kofi and Immanuel. One night, I went to greet Kofi. They were living in two small rooms five minutes away from my house. In the informal chat, and not mining related, we ended up discussing geographies and politics of the world. I showed them, using my phone, a world map. Their curiosity about the geographies seemed to have no end. Kofi asked me what was the blue thing on the map, where was Ghana, Italy and the US. Immanuel was surprised by the size of Africa. They also asked about Libya and Gadhafi - that one was complicated to explain -. The Pan-Africanism is still strong with some Ghanaians, particularly with Immanuel, and Gaddafi as one of the champions of it is still important. From there, the geopolitics started. They asked me which country is the biggest and the more powerful or why Russia was so big. This exchange made me feel as the subject of their research. For a moment I thought I was them, teaching me how to do gold mining. However, at the end I realized I learned from them, and they from me. Kofi was always reminding me this. He asked me if I was sure that China was as important as I claimed it was, constantly asking me “is it so?” to see if I was sure of what I was explaining. These dialogues made me rethink what I hold as true, and question it.

2.2.2. Intersubjectivity and Participant Observation
After many conversations like the one with Kofi and Immanuel, I realized something: intersubjectivity is inescapable. Even if I was not engaged in an active participant observation,
I was there, being part of something. I became an element of their context for that particular moment, and the context also explained my role and position (Ortega y Gasset 1914). I did not become a miner, but I was part of the gang. We shared food, drinks and the same time-space; shared the idea that our countries, Mexico and Ghana, have similar problems: e.g. corruption, poverty and unemployment; that that our countries are being exploited by others, that our future, as individuals and nations, seems not so bright and sometimes out of our control; to conclude that the outside was better.

This helped me to classify myself in a same position as them; at least I wanted to believe that. However, for them I was classified as another white man. I was just another obruni. Some days I was thought to be from China. Some other days I was Canadian. Others I was just another buyer and my nationality did not play a role in the conversations. My country had to be better than theirs, just because it was not theirs. Because when they did the link between me and the Mexican telenovelas they watch every evening, they thought I spoke English (they are all dubbed), and that the country was full of haciendas, white and rich people (that, of course, is far from true). I am aware of my privileges, my nationality -Mexico is the 14 largest economy of the world. Also, the economical means I have made easier to travel to Europe and then conduct research in Ghana. I also recognize my privileges, as I am part of the 1% of Mexicans that can study abroad and finish a graduate degree. Thus, going native was impossible.

2.3. Ethics

2.3.1. General Reflections
As ethnographers, we engage in the making of ethnographic descriptions of societies, cultures, people, places and spaces through an intersubjective process. In these landscapes that we live and describe, we share our lives, space and times with the subjects of our research. Thus, should we identify with their conflicts or objectify them and distance us from them? The field work entails tensions, conflicts, and dilemmas that we need to recognize (Nash 2007 [1976]). As I mentioned before, the position of a researcher was, for me, sometimes in conflict with that of a friend. I was aware that I needed them for my thesis. But also that they liked to share the time with me, and ask me about Mexico, the Netherlands or what was outside Ghana. I was open to answer the questions they had about the world, the prices of cars in Europe or general questions about visas or the US. I did research with informed consent from all my informants. This meant they agree to talk to me after I orally asked if I could use what they were going to say for my research project. I explained in advance what my goal
with the project was.

Yet, there was an ever present tension in the field. I knew anthropology was a colonialist tool to describe and understand the populations that the empires needed to govern. Nowadays, that role is mainly for policy makers and developmental planners. Then, it was impossible not to think I, an anthropologist in Tarkwa, was not trying to get back at the control of the production of categorizations. The idea of looking at the history of anthropology, as a colonial tool, was more than present for me while in Ghana. I could imagine the colonial administrators, and anthropologists studying the structures and the human relations to help improve governmentality of spaces and bodies.

How to escape from this tension? How my intervention can be considered an ethical enterprise not subjugated to a future instrumentalization and technification of the knowledge in a policy that simplifies complexities around *galamsey*. I consider it is impossible as it would mean that history does not influence present and future, and temporalities exist as isolated points in the time-space. Perhaps, the only way is insisting that participative research is needed in Tarkwa if a policy must be designed. The reflection about the situation should be made in a critical dialogue between all parts involved, and not imposed by an external individual like me. This way, the frequently self-revealed truths that are the argumentative basis of technical sciences, as economy or development studies, can be contested with co-constructed arguments that consider the ecological, human, social, political and historical dimension of a particular space and time.

Gold mining, as a political subject, and mining in general collides with my idea of a sustainable world. I understand sustainability as the balance between the environment and economic activities - a bias from my previous education in economy and political science. Namely, to profit from the earth without destroying or diminishing the next generation's ability to profit from it as your generation did. This idea is also known as weak sustainability (Kirsch 2010). But then, I also came to understand that in Ghana, where job opportunities are limited and where my informants’ futures at times seemed blurry, *galamsey* was a way of living; *galamsey* was the opportunity they had to overcome poverty or to achieve their dreams. It was the tool they had to access “different” futures, to create opportunities. And I say different between quotation marks because some of their futures relied on the same assumptions I have of future: improving my present condition.

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9This question is nicely answered by Nomi Stone (Hagman and Sacco 2017). She reflects on her experience of being a researcher in a training facility of the US army in Iraq. Mock towns were created to imitate Afghan towns where Iraqis performed as Afghans with the aim of better understanding behaviors.
The importance of the context is central for my decision of avoiding moral judgments about the *galamsey*. It is also part of what Pierre Bourdieu calls *habitus*. Loïc Wacquant (2011), in an account of his first experience doing fieldwork, underlines the importance of the *habitus* as a tool for comprehending the others, the subjects of study. The habitus is a tool that I, as a researcher, could use to become them, to be more objective by understanding the reasons of the behaviors. It helped me to not go native, and take a biased understanding of the problem I was researching.

Lastly, it aids me to put some distance between me, my informants and the problem of environmental degradation. The destruction that the media and scholars talk about is happening far from Tarkwa. The miners in Tarkwa are not directly involved in the destruction of the rivers. Yet, they are part of the entanglement that shape politics at the top of international institutions. Simultaneously they are the ones that can directly put a halt to the degradation of the land and destruction of the environment.

2.3.2. Informality and Development Discourses

I was working with people engaged in informal activities. They worked outside of what the State and laws consider legal. The information I collected might be sensitive as some of my informants did jobs considered illegal. If the State would engage in a prosecution of the *galamsey*, their mention in this thesis could produce problems to my informants. However, in my experience as Mexican, a country where diverse informal sectors coexists, I understand that *galamsey* can be tolerated to an extent as it possibly provides dividends for the State or other political agents (Crawford and Botchwey 2017).

So, in this research I only mention my informants by their name. I hope this research helps give a better understanding of the *galamsey* by describing their points of view, and push the discussion beyond the legality and illegality frame that has dominated the public opinion. Even more, to comprehend the *galamsey* as a traditional activity that has been transformed by the global markets and accelerated by the influx of new technologies. Nonetheless, informality can be considered a weakness in the discourse of development and modernization, as I explain later on. Thus, I am conscious that State officials or those working more closely to the government –like the informants in the Ghana Water Company- produced a discourse against these practices because it is their job to defend a teleological idea of development.

Yet, I consider *galamsey* discussion should go beyond the debate of legal and illegal. Indeed, it is important to realize the notions of legality that the miners have, do not correspond with what the law says. This is a crucial element to understand not only the
galamsey but the role of the government in defining it spaces of intervention. Yet, the dichotomous categorization can work as a base to explore the construction of spaces as a social process. Namely, as a political project whose aim is to bring back ownership of the space to its users. Nonetheless, this thesis does not explore that relations and constructions in-depth. For that, see Sylvia van Oevelen’s 2017 thesis.
3. Conceptual Framework

The aim of this chapter is to explain the definitions from where my research departs, give sense to the following chapter and place my study among other scholars’ reflection on natural resource extraction, development and, environment policies.

3.1. Anthropology of Extractions: Natural Resources and Development

Auty defined (1993) ‘resource curse’ as “the disappointing returns” that mining sector has. With this, he explains “the particular extractive industries growth model adopted” (Hilson and Laing 2009: 229) is not distributing the wealth in an equitable form. Countries with abundant natural resource have not improved, comparatively with countries that have less, the livelihoods of its people in the long run (Sachs & Warner 1995; Ross 2015; Venables 2016). This has happened even if the extraction of the resources produced extensive dividends for the State and the private companies involved (Brahmbhatt, Canuto and Vostroknutova 2010).

This conceptualization of development is intrinsically connected to a teleological argument of progress, criticized by Ferguson (1999). Thus, the resource curse theory can be framed as a “paradox of plenty”: countries with natural resources to exploit are unable to “develop” because they have a weak State infrastructure incapable of govern -i.e. big informal sector of the economy- (Hilson & Maconachie 2009), and a rampant corruption taking the rents produced by this industry -i.e. bureaucrats allowing mining without licenses- (Hilson and Laing 2009).

Nonetheless, the paradox also reinforces the idea of a teleological progress only achieved through State intervention. In this sense, it becomes a legitimization of neo-capitalist intercessions through policies like the Sustainable Development Goals. It also nurtures neo-extractivist discourses and practices, appropriating the idea that an effective way to develop a nation is through the extraction of its natural resources (e.g. Richardson & Weszkalnys 2014; Childs & Hearn 2017; Gilberthorpe and Rajak 2017).

3.2. Mining and the Environment: Quantifying Sustainability and Producing Policies

Abundant social science and environmental research about mining have been done from a large-scale mining perspective (e.g. Haarstad & Floysand 2007; Nash 2007; Kirsch 2010; Davidov 2013; Van Teijlingen 2016; Geenen 2016). Recently, there has been an increase in
research around SSM, that often focuses on measuring the environmental impacts (e.g. Long, Renne, et. Al. 2013; Bansah, Valley et. Al. 2016), the informal spaces produced by the law (e.g. Akabzaa & Darimani 2001; Teschner 2012; Geenen 2015), and the policy and economic impacts of small-scale mining (Hilson & Crawford 2013). Nonetheless, research that links these three views has not yet been done extensively.

To understand the link between mining, environment and development policies it is necessary to define sustainability as policy makers do, more closely related to an economic approach to the environment. This is known as “weak sustainability”, a concept arguing “that natural capital and manufactured capital are interchangeable, and that sustainability is achieved when the total value of capital remains constant or increases [thus] a mine is considered sustainable as long as the ‘total shock’ of capital remains the same or increases” (Kirsch 2010: 91-91). This means that nature becomes quantified and monetized, so its value can be used in a financial model. If the monetary utilities produced by a company are large enough to pay for the damages to the environment, then the activity is sustainable.

Fabiana Li (2016) while describing how water has mobilized and shaped socio-natural landscapes around the mining operations in Combayo, Peru, adds that by using the concept of commensurability policy makers give a utilitarian, and monetized, value to natural resources (See Cattelino 2015). Here, through a cost-benefit analysis policy makers gave a value to a glacier affected by the mining operations to compensate the community. The glacier, in the Combayo ecological system, cannot be substituted as it is integral for replenishing the watershed elemental in the livelihoods of the locals and crucial for the ecosystem of the region. The glacier has an incommensurable value, therefore no compensation was equivalent to the existing value of the glacier (Li 2011). Closely to this argument, Gillerthorpe and Rajak write there is “a performative power of resource economics” (2017: 191) as it keeps being recalled by economist and other development experts, to legitimate environmental policies. Namely, interventions aiming to mitigate environmental damage to allow the production of economic profits that, as explained before, generate economic growth that could lead to a social development.

Capitalism is the method of production of these profits that creates a “salvage accumulation”; an amassment of wealth converting “stuff with other histories of social relations (human and not human) into capitalist wealth” (Tsing 2015). Gold cannot be manufactured by men as it is the result of a geological process of metamorphic dehydration of the basaltic layers of the earth, a result of a collision of the tectonic plates millions of years ago. Humans cannot create gold but use it, giving it a use-value for producing wealth and
accumulating it through the creation of a value-chain that takes the gold from Ghana’s underground and place it as ingots on the vaults of a Swiss bank.

3.3. Scale Making and Resource Materialities: The Value Chain and a Clash of Scales

A scale is a space of social organization. SSM scale occupies the same space as other social organizations. Simultaneously, SSM is part of a local scale that in turn is contained by a bigger scale, and so on until a planetary scale. Being part of these scales does not always imply an awareness of the friction between the agents and the scales, or the scales themselves. To start comprehending the constellation of agencies involved in SSM I follow Tsing’s (2000) idea of making scales to explore how space is also a socio-political and economic product interlaced with historical legacies of capitalist resource extractions and traditional livelihoods. Adding to that idea, Eriksson (2016) argues the local and the global, the micro and the macro spaces are part of a dialectical process that “must be seen as two sides of the same coin. One does not make sense without the other; it is yin without yang, Rolls without Royce” (2016: 480).

Gilberthorpe and Rajak (2017) connect to this explaining that material agency unfolds why

the specificities of the resource itself provides a source of power [For example] the qualities of oil itself [...] both its intrinsic material properties and its cultural constructions in local and in global commodity flows [...] endow it with a power to convene actors, knowledge, technologies and of course capital, to create particular configurations (or assemblages) or people and things in diverse localities, which in turn give rise to particular patterns, flows and expectations (2017: 191).

In the SSM environment the gold quantities and origins, and water quantities and qualities embed these materials with a power to modify socio-nature landscapes, to exacerbate frictions between agents and scales, as I explain later. Certainly, they do not possess an agency by themselves as they only have it when humans interact with them (Wagner 2012). It is the network of relations and tensions that give them an agency that increases the friction between scales, in the sense that they influence the landscape of socio-political relations configured upon historical legacies of economic exploitation and external domination.

Appel points out that we need “to attend to capitalism’s simultaneity –uneven, heterogeneous, and contested, yes- but at the same time proliferative, powerful, and (dare I
say) systemic” (2005). The “resource environments” (Richardson & Weszkalnys 2014), the field where this element interacts, highlight “the continuity and the enduring legacy of extraction, exploitation and empire-building” (Gilberthorpe and Rajak 2017). Even more, they are environments where a “clash of scales” (Eriksen) occurs. This means “large-scale interests overrun local concerns [...] when the ambition to save the climate through global treaties is unconnected to the search for work and economic security” (2016: 481). Gold had different use-value through the history of Ghana, but the capitalist system has exacerbated its use-value as a provider of wealth, and generator of development -this, together with oil have been created discourses of neo-extractivism. This now clashes with the use-value of water, as a source of life and wellbeing, through different scales of the gold extraction environment analyzed in this research.

3.4. Concluding Remarks

The gold value chain (Tsing 2015) crosses multiple scales (Tsing 2000), from the underground to the ground; from the local to the global. Gold has a material agency that in relation to humans creates tensions on other materials as water. The global discourses of sustainability and development through natural resources generates a tension in the local settings, as I will try to explain on this thesis. The clash of scales that Eriksson (2016) mention is exacerbated by the capitalist system that places the galamsey in a position where they can decide to keep working an maintaining their livelihoods or stop producing gold to save the forests and rivers. It is precariat or precarity, the lack of security in our futures (e.g. Tsing 2015). It represents a clash of two different anthropocentric takes on the environment. The demand side of this is something that should be analyzed to fully understand the interconnections between the local and the global.
4. The Macro-Scale: Globalization(s), Transnational Actors and Sustainable Development.

In the present chapter, I discuss the place of Africa, as a category of study, in the discourses of development and sustainability. Usually, policies are implemented from top to bottom. However, and as I show in the rest of the thesis, even if these policies are operationalized and reach the bottom, the local actors may have no incentives to follow those policies. So, in practice, nothing changes. In the case of gold mining, it appears there are no incentives at all, for the different actors involved, to cease mining, selling or buying the gold. Then, I explain how the arrival of the Chinese has accelerated, through the introduction of cheap technology and financial means, not only the production of gold but the impact on the environment. As a consequence, it has led to declare a war against the galamsey and their Chinese partners, without considering the other actors entangled in the gold value chain.

4.1. The Global Africa(s) and the Discourses of Sustainability

Africa, as Ferguson writes, is more complex than we usually assume. Is not a unity, it is “a vast, complicated heterogeneous region of the planet” (2006:5). But, for the moment, “Africa” will be as a category that groups different societies since it is useful to keep the narrative in consonance with the main neoliberal discourses that take “Africa” as a whole. A whole and a hole as will be argued later, where the globalization projects of development are urgently needed. Especially, it works to understand why the extraction of natural resources still exist as a central project for development, as it is framed as a powerful tool to overcome poverty. However, that discourses fail to address one of the consequences of this model: inequality (Gilberthorpe and Papyriakis 2015).

Coinciding with this view, Castells (2000) refers to Africa as a “black hole” in modern times. Bauman (2004) portrays Africa as a continent of “wasted lives”. Thus, Africa is frequently depicted, in synchronicity with the IMF and World Bank narratives, as a disconnected point in the network society that we live in. Far from this conception of Africa, Ferguson (1999, 2006) argues Africa is modern and well-connected to the global network. However, and diverging from the idea that capitalism and globalization homogenize and standardize spaces (Scott 1998); Ferguson (2005) adds that Africa seems connected by

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10 Childs & Hearn (2017) compare Ecuador and Ghana discourses about development, economic growth and construction of an idea of nation through mineral extraction activities. Their conclusion is that the State has returned “as the central agent of development in resource-rich nations”.

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discrete points scattered all over the continent.

Taking the categories of *Africa utile* and *Africa inutile* (Reno 1999), Ferguson (2006) explains these connections are facilitated by foreign capital concentrations in spaces disconnected from the national or local networks of interactions, production, and consumption. He is referring, specifically, to the large-scale companies extracting minerals - like gold and oil - in enclosed compounds guarded by strong security mechanism. To Ferguson (2014), capital is hoping and not covering the globe. Africa is, simultaneously, global and not. Thus, I argue the SSM, the *galamsey*, and Tarkwa have become a place where the “local no longer opposes but constitutes the global” (Burawoy, 2001: 157; as quoted in Kalb 2005: 189).

4.1.1. *Africa’s place in the World of Structural Reforms*

Thus, what is Africa’s place in the world? “Africa” can be used as a category that connects and disconnects through history the different projects that culminated in the neoliberal paradigm of development: a narrative where “progress implies that difference is a deficit to overcome” (Mosse 2013:228). Namely, that poverty and inequality are a difference that needs to be normalized. To do it, national governments have followed the ten points of the Washington Consensus. This ten points aim is to stabilize, privatize and liberalize the consumption and production sectors of a country. To achieve it, a set of policies are enacted: tax reforms to extend the taxable base, i.e. the formalization of once illegal sectors; the deregulation of markets to allow foreign and private capital and labor movements, i.e. the Free Trade Agreements; to create a framework and a context where private property rights are protected, and placed at the center of the political-economic structure, i.e. mining concessions.

Those kinds of policies are commonly referred as “Structural Reforms”, regarding the changes and pressures they produce upon the existing economic and social structures. The policies are promoted by different international organization like the World Bank and the International Monetary Fund and have become the core of the political dynamics trying to rescue the continent from its “black hole”. Nevertheless, these policies have not created much improvement for most inhabitants of Africa as the last statistics from those same institutions have proven. For example, in Ghana the distribution of income by quintile has been almost the same in the last 20 years\(^\text{11}\). This implies nothing has changed, in income terms, after the

\(^{11}\)Following the teleological development discourse, the Gini index is used to measure inequality based on income distribution. The index says that Ghana has passed from having a 38.4 index in 1991 to a 42.8 in 2005, meaning that in this measure, Ghana is more unequal than before - as numbers closer to 100 means total
“Structural Adjustments” widely promoted by Supra-National Institutions and National Governments and implemented in the 90s.

To understand these dynamics it is useful to think of them as simultaneous processes. The World, Africa, and Ghana are part of a sociopolitical arena where inclusion and exclusion processes occur in everyday practices. For example, the formalization of the SSM sector and the environmental protection practices that are enacted by the national government of Ghana can exclude a great part of the existing workforce in the country from a source of income, as 85% of the SSM is informal. The world has always been a place where connections and disconnections materialize new spaces and push individuals into different power relations. The crucial difference today is the speed at which these connections and disconnections produce the changes. This speed has overheated (Eriksen 2016) what once was a traditional mode of subsistence in rural Ghana, the galamsey.

Consequently, as Inda and Rosaldo (2012) notice, globalization entails processes that produce multiple outcomes where the local and the global occur simultaneously and in the same space. Our world is constituted by a multiplicity of spaces where the local and the global cohabit, where the formal and the informal spaces are interconnected; the precariat and the wealthy act as constitutive elements producing a heterogeneous world and not a seamless one (Tsing 2000; Kalb 2005).

4.2. Supranational Institutes, the Sustainable Development Goals, and the Paris Agreement: Poverty Eradication and/or Environmental Protection?

We are the first generation that can end poverty, and the last one that can take steps to avoid the worst impacts of climate change. With the adoption of a new development agenda, sustainable development goals and climate change agreement, we can set the world on course of a better future.

Ban Ki-Moon, former Secretary General of the UN, Paris Conference 2015.

There are two central arguments in this statement of the former Secretary General of the UN:

inequality. The Human Development Index, a more robust measure than mere income based indexes, includes variables like education, health and life expectancy to account for the complexities of inequality, shows a similar tendency.

Karen McVeigh (2017) explains that the $162bn received in 2015 were “mainly in loans, aid and personal remittances. But in the same year, $203bn was taken from the continent, either directly through multinationals repatriating profits and illegally moving money into tax havens”. Of course, this is also an example of the discourses that see Africa as a whole and a hole.

first, poverty and climate change have to be overcome through a sustainable development that involves an anthropocentric idea of future. This idea forgets that one of the consequences of the anthropocentric development is the exclusion of non-humans. Second, according to this idea, there is a single sustainable future that denies the possibility of multiple and alternative futures promoted from other centers of thought that do not see in the model of sustainable development a path to follow.

The Sustainable Development Goals (SDG)\textsuperscript{14} were devised to tackle the global climate change and decrease inequalities around the world by promoting “sustainable patterns of production and consumption” (Goal no. 12). The impact of these goals is yet to be seen. However, taking the experience of similar efforts done before by the UN, namely the Millennium Goals (MG), the results can also be futile: “around four billion people remain in poverty today, and around two billion remain hungry -more than ever before in history, and between two and four times what the UN would have us believe” (Hickel 2016:1).

On the other hand, Biermann, Kanie and Kim (2017) argue the SDG are a new form of “governance through goals [that] it is rather bottom-up, non-confrontational, country-driven, and stakeholder-oriented”. The SDG are not legally binding and more flexible than the MG in terms of the mechanism needed to achieve the goals. However, they are still from a teleological construction of progress and understand poverty as an obstacle to overcome, and sustainability as a balance between economic activities and nature. Consequently, Kopnina (2016) argues the central problem with the SDG is their promotion of an anthropocentric image of the future. For her, sustainable development must raise an ethical agenda with projects based on an ecocentric notion; namely, a notion that understands that human and non-humans cohabit and form an ecology, a system where everything and everyone is connected.

4.2.1. The Paris Agreement

The Conference of the Parts in Paris 2015 (COP 2015) concluded with an agreement where 148 countries of 197 consented to diminish their CO2 emissions to decrease the speed in which the world is heating up. Similarly to the SDG, the agreement is not legally binding and depends on the country's willingness to reduce the determinants of pollution through the adjustment of their current production and consumption models.

But, how this agreement impacts Ghana? The Intended Nationally Determined Contribution (INDC) where countries describe the mechanisms they used to achieve the SDF.

\textsuperscript{14} http://www.un.org/sustainabledevelopment/sustainable-development-goals/
Ghana has proposed multiple mechanisms, but there are four in particular that impact the *galamsey* and the value chain of gold. Firstly, the sustainable use of forest resources that could increase regulations to protect forests. This probably will intensify the efforts of the Armed Forces of Ghana to put a halt into the informal mining sites in the forests; a higher attention on the water resource management, because the foremost and easy to spot consequence of the *galamsey* has been the pollution of rivers that has reduced the quality and quantity of water, increasing the cost of treating and pumping it to the cities; agriculture resilience, as agriculture has been affected by the reduction of land available for farming; the last one is the action that promotes a diversification of livelihood for vulnerable groups, that has produced the Multilateral Mining Integrated Project. One of its aims is to restore farming lands and replace the Chinese investors with State regulated machinery.\(^ {15}\)

4.2.2. Poverty and/or environmental protection

To explain the friction between poverty and environment policies I use the definition of “weak sustainability” explained before. Even more, using this definition keeps the categories of analysis in consonance with the SDG, and to what the Corporate Social Responsibility discourse uses to assert that large mining companies are sustainable. Certainly, and as Kirsch (2010) explains, this conceptualization is a strategical deployable shifter to legitimize the operations of large-scale companies and frame them in a discourse of sustainability.

By quantifying and monetizing the environment, policymakers can deploy mechanism to protect it. The formalization of *galamsey* and the shutting down of mining sites are an example of this. Water bodies have been affected by the *galamsey* operations, increasing the operative cost of pumping and treating water for the Ghana Water Company Limited (GWCL).\(^ {16}\) It has also produced tension between Ghana and Ivory Coast as the rivers at the southern border has been contaminated by *galamsey*.\(^ {17}\) SSM and *galamsey* are considered an operative cost and on June 2017 a diplomatic tension arose, increasing the pressure on the government to end this activity.

However, protecting the environment can increase the number of people categorized as poor by marginalizing them from productive activities that have ecological consequences. I consider the *galamsey* and the SSM environment is a good example of this. *Galamsey* is rooted in the history of Ghana and in the West Region of the country –as I explain later on. It

\(^{15}\)The full Ghana INDC is available at: http://bit.ly/2rI9fIL

\(^{16}\) For a detailed explanation: http://bit.ly/2kxJ877

\(^{17}\) For more, see: http://bit.ly/2sK9eEi
was a subsistence activity that has transformed into an important source of income for individuals in the Tarkwa district. By closing down the sites, the State is excluding and marginalizing the *galamsey* from the opportunity to generate income and take care of themselves and their families. The public policies that the Ghana government is deploying – here the formalization of the sector, and the closure by the military intervention of the sites - are good examples of how entangled the economy, the society and the environment are. They also exemplify how the idea of weak sustainability is used: there must be a balance between the environment and the material production.

4.2.3. Implications

Development has become a mechanism that actors outside the “not-developed” countries mobilize to control and to create a biopolitics of the otherness: rule over other bodies that do not belong to the main economic system. Development, in a top to bottom approach, constructs a governmentality to appropriate the spaces at the margins of the State, to expand modernity and legality, as the case of formalizing the *galamsey*. It is a process that has left most Africans empty-handed. More money is going out of Africa in profits from big companies than the money going in as development aid (McVeigh 2017). Modernity is represented through the language of development, in a teleological line of thought. Modernity has its performative act of significance and value production through different instruments. For example, the Paris agreement and the multiple institutions promoting the idea of “sustainable development” in Ghana using the SDG, or the new MMIP recently presented by the national government.

However, and as Ferguson (2006) states, invoking the environment as a global issue implies that attending to the environment at a national level is inadequate according to the neo-liberal and sustainable development discourses. This can be seen in the recent tensions with Ivory Coast. The pollution of the rivers has affected the shared water bodies in the south of the Ghanaian-Ivorian border. The environmental issues tend to affect spaces beyond the national borders, even if capital is connecting scattered points across the globe. Then, and as Ferguson notices, pollution and environmental issues can be understood as “a form of point-to-point connectivity that bypasses and short-circuits all scales based on contiguity […] ecosystems do not work ‘point-to-point’ any more than they work nationally” (Ferguson 2006: 42).
4.3. The Ghanaian government, the galamsey and the Chinese: A war on “illegal gold”

Our forefathers bequeathed these lands to us; if we can’t put them to good use, it’s better we leave them in the state we came to find them but not to destroy them. That is what has led to this war against galamsey.

Nana Addo Dankwa Akufo Addo, President of Ghana, June 2017

In 2013, Ghana’s government declared an open and full front “war” against the galamsey. The arrest of 571 Chinese miners was the beginning of these government movements against the informal mining sector (Hess and Aidoo 2016). John Mahama, the former president of Ghana, was targeting the Chinese miners working in Ghana’s rivers and forest. Why the Chinese and why then? The Chinese gold miners brought with them new technologies that allowed the traditional Ghanaian miners to increase the production of gold, and consequently their consumption power. This, however, brought clear consequences for the environment and for traditional livelihoods. It increased the pollution of the rivers and the degradation of land that could be used for agricultural production (Aragón & Rud 2015). Even more, according to Gilbert and Albert (2016) mining could produce a food crisis as it has increased the food prices in the mining regions, higher than the national average, and lowered food productivity.

In a similar discourse as Nana Akufo Addo, galamsey threatens the idea of Ghana as beautiful land with vast forest and rivers and a blessed nation with riches on the underground that needs to be used to further develop the country.

These environmental transformations were clearly visible on the landscape when I was moving from Tarkwa to Kumasi. But they became a shocking realization when looking at Google Maps: open pits where crops were supposed to grow, deforestation and river pollution that have increased the turbidity of the water flows. These changes have created tensions between three actors: the Government, the Chinese and the galamsey. However, it has also generated connections between them that have proven hard to break: for example, the state agency that monopolizes the gold buying from SSM, PMMC, also buys gold from the galamsey who simultaneously gets technology from Chinese persecuted by the State (Hilson & Potter 2003; Tsuma 2010).

19Edem Srem (http://bit.ly/2qwQcDG) flies a drone over multiple small scale operations showing its impact on the landscape. However, this is what happens when I, or my informants, refer as “the bush”.
4.3.1. Criminalization of Galamsey

Two main arguments are behind this criminalization. The first is a mineral led economic growth can happen in Ghana and, even more, is desirable for the country as the wealth produced can tackle poverty and stimulate social development (Bush 2009). This first argument forgets there is plenty evidence economies with resource extraction do not improve their statistics about relative poverty (Richardson & Weszkalnys 2014; Gilberthorpe and Rajak 2017). Even more, understanding poverty as insufficient income fails to recognize other frictions that produce inequality: e.g., gender, age, health or education level. The second argument behind this criminalization deals with the idea that only state regulated activities can produce development and poverty reduction (Aryee, Ntibey & Atorkui 2003; Tschakert and Singha 2007). Namely, that only a strategy of formalization could balance out the tensions between an economic opportunity for the inhabitants of Ghana and the environmental effects it is provoking (Kirsch 2010).

These two ideas are linked to an idea of apolitical solutions from the international organizations and development narratives echoing the idea that transparency and accountability can solve social problems without addressing them. As Bush (2009) argues, the belief in promoting property laws gives Ghana’s government the tools to protect investors and create a stable scenario for future investments from large scale companies, promoting what Ferguson (1999) defines as abjection; meaning continuous process of being excluded from the economic and political spaces. However, the galamsey challenges this process through multiple strategies like occupying the land part of the concessions of big companies, and producing gold without the direct intervention of the State. They achieve this by using the market mechanism that exists in the formal sector to make an alternative livelihood to the ones promoted by the State, i.e. cocoa farming and service related activities (Bush 2009).

4.3.2. Ghana’s government and the media

When I talked with some government officials, read or listened to the declarations of Ghanaian Ministers in the printed and electronic media, a discourse predominated: the focus was the pollution of water bodies and the perpetrators are the galamsey and the Chinese. As also noted by Afriyie, Ganle and Adomako (2016), it appears that the government discourses have shifted towards an environmental discourse, but one mixed with a neo-extractivism ideology (Childs & Hearn 2017). However, due to this the government and the media have failed to recognize the more complex reasons behind galamsey and the whole gold value chain.
In this sense, poverty and unemployment are overlooked with the overemphasis on water bodies and an idea of sustainable future that can only be achieved through a formalized and large scale mineral extraction. The acknowledgment of the causes of the *galamsey*, like insufficient agricultural lands (not in the case of Tarkwa) or the limited education, would imply recognition of an essential failure for the State: taking care of the bodies of its subjects. This would suggest a flaw in the Ghanaian Government core responsibility and portray a weak image of its governmental apparatus that roots its current strength in a promise of teleological development (Childs & Hearn 2017).

These conceptualizations of neo-extractivism and sustainability became clearer in the State of the Nation discourses analyzed by Childs & Hearn (2017). Neo-extractivism implies modernization, progress and development can only be achieved by a State and National control of the natural resources of the nation. That State control is the single path to economic progress and improvement that can make Ghana a developed country. The discourses mostly refer to the discovery of oil in 2007. However, the construction of these imaginaries of national development by extractive resources helps legitimize governmental actions towards the informal sectors. These imaginaries have also modified the government stance about *galamsey*. In consequence, the State has been trying to formalize a sector that since the colonial times has been out of its gaze.

The Ghanaian government wants to restore the public’s favor through a delegitimation discourse against the galamsey. However, the Government and the Media have missed a crucial point: what triggers Ghanaians to work as *galamsey* has not been fully understood. *Galamsey* is not a quick money activity, just to get rich and spend the money. It is a traditional livelihood rooted along rural and now urban areas of Ghana (Hilson and Crawford 2003); a craft that has intensified its production with the arrival of Chinese technology. Without addressing to this, State fails in understanding *galamsey* reasons to work. Even more, excluding the other elements of the value chain of gold, i.e. the gold buyers and the washing sites, the media and the Government only see the “evil” side of galamsey (Afriyie, Ganle and Adomako 2016).

Thus, how exactly has the media been promoting this vision of the “evil” galamsey? Media has reinforced the dialectics of inclusion and exclusion that capitalism promotes. Most of the news analyzed in the period of my fieldwork, and the period after, usually conceived the *galamsey* as a menace and a problem that needs to be solved (e.g. Ohane 2017; Adofo 2017; Rockson 2017). Few of them (e.g. Anas 2011; Badu 2017, Agbesi 2017) describe its complexities beyond the consequence of pollution and depict the people engaged in it as
individuals that cannot find better opportunities. And emphasize it is a trade older than the current environmental friction. This construction of the galamsey and Chinese as enemies to overcome is like the construction of otherness as a mechanism of protection: putting distance between *us* and *them* facilitates the applications of policies that understand the social situation as an obstacle that must be overcome, and not to be attended.

Yet, as Afriyie, Ganle and Adomako argue, describing the galamsey as a problem to solve helps to understand the SSM environment as “a contested space within which social and scientific meanings are produced and challenged” (2017: 494). This contested space is simultaneously a “continued pattern of primitive accumulation” (Bush 2008:38). The process has entered a new dimension with the arrival of Chinese technologies in the 2000s and it was accelerated by the increase in gold prices on 2013. The next section explains more about this Chinese and galamsey pressure to the environment.

4.3.3. The Chinese in Ghana

Chinese investment has become more palpable on the south-west region of Ghana than anywhere else in the country. Their presence is not new, but it has intensified in the last years of the first decade of the 2000s (Al Jazeera 2011; Crawford and Botchwey 2017). According to Hess and Idoo (2016) the first big movement of Chinese to Ghana in search of gold occurred after 2006 when a group of miners from one of the poorest provinces of China, Shanglin, “returned from Ghana with riches earned working in small-scale gold mines, some becoming US dollar millionaires [...] spreading the word that there were fortunes to be made mining” (2016: 314) in Ghana.

At a more global scale, the government of Beijing is looking to appropriate the energetic resources in Ghana. To do it, it has given loans and lends technical support for the construction of new infrastructure in the country: Chinese companies are constructing the new roads and dams of Ghana (Afriyie, Ganle and Adomako, 2016). Even more, the trade exchange between Ghana and China almost doubled after the discovery of oil in the Gulf of Guinea in 2007. It has also been criticized by other development agents as a reproducer of colonialist categories as its expansion and reminds the European colonialist project of Africa, especially the British in Ghana.

4.3.4. Technologies: Expanding the Underground, Overheating the Spaces

The Chinese brought with them money and new technology. This modified the way artisanal mining was done. The indigenous miners, that had chisels, pans, and hammers, were able to
increase the quantity of gold they were producing with the introduction of heavy machinery – and some cheap machinery like the *changfas* and a more constant flow of cash and mercury (Crawford and Botchwey 2017). It also created new kinds of relations where Chinese and Ghanaians collaborate through formal and informal spaces. The informal and most common space where this collaboration occurs is on alluvial sites: the river mining, usually called “mining in the bush”, is the mining configuration that needs a lower level of investment. The investment is usually Chinese and the crew is mostly Ghanaiian.

Examples of formal spaces are the three legal sites in Tarkwa that are owned by Mohamed & Co (M&C). The license holders, i.e. legal, have subcontracted Chinese to increase the production of their mines. However, it is not an uneven agreement, as Maggid said, even if the Chinese investors are getting 90% of the profits generated on that site. The Ghanaians benefit from these investments because otherwise, they could not access to the deepest parts of their mining concessions. This was clear at the main site of M & Co: the water was constantly drained by pumps brought by the Chinese. Nonetheless, M & Co was not the only one benefiting from this arrangement. The *galamsey* operating in the surroundings are allowed to access parts of the concessions’ audit because the tailings produced by the *changfa* machines –owned by the Company- are property of the company as compensation for providing the *changfas*. Then, the gold that *galamsey* extract is sold to M & Co, who added this profits to the ones that tailings produce.

The Chinese workers that I contacted came to Ghana under legal documents, i.e. tourist visa. Or they crossed the border in Togo as this is a visa-free country for them (Hess & Aidoo 2016). The problem is no foreign is allowed to directly extract minerals from the underground. Nonetheless, the foreign-owned large companies are granted concessions under the 1998 Mining Act. Reus and Lilian explained some Chinese groups are trying to get the same rights the big companies have. Some of my Ghanaiian informants, Maggid especially, agree with this view. They do not understand why a national company cannot hire foreign workers to do a job in a similar way as the transitional large scale mining companies do when they bring foreign individuals to work in the mining concessions.

This situation is like what Crawford and Botchwey describe: “Ghanaian and Chinese miners [are] engaged in both conflict and collaboration over access to gold” (2017: 2). Sometimes the Chinese are the only ones destroying the environment; other times, they are recognized as the providers of technologies that allow them to increase the production: from

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20 ‘They’ are my Chinese informants. It was only one interview but the language barrier made impossible to establish more relations with the Chinese miners.
the illegal mercury to the *changfas*, the pumps and the heavy machinery present in M & Co. concessions.

### 4.3.5. Is the Government Overlooking the Large Scale Mines Impact?

The question that still remains unanswered here is: are the *galamsey* the only ones polluting and destroying the landscapes of Ghana as the president Nana Akufo Addo said? A short answer will be no; they are not the only ones modifying the environment or polluting (Kuma 2003; Kuma & Ewusi 2009; Kuma & Yendaw 2010). However, the *galamsey* are the target of the media and government and the public discourse has been assembled around the idea that the *galamsey* are the problem to solve.

For example, Banchirigah explains “the simultaneous expansion of large-scale mining operations, a priority of the government under reform, has also induced landlessness and further expansion of ASM” (2008: 30). A consequence of this land control by the large-scale mining companies have produced a reduction in the productivity of the agricultural sector in Ghana in a 40%, as Aragón & Rud (2015) proved by analyzing regional statistics across Ghana between 1997 and 2005. Even more, the increased use of plastic and insufficient waste management systems in the cities, and the agglomeration of individuals in urbanized spaces have produced a negative impact on the water sources and the environment (Kuma 2003; Kuma & Ewusi 2009; Kuma & Yendaw 2010).

Consequently, this shift of the government discourses towards the water and environmental pollution is in line with the new agreements promoted by Supra-National Institutions and National governments: the SDG and the Paris agreement. In this sense, Ghana politics and policies have been focusing on the more visible consequences of *galamsey*: water pollution; destruction of rivers; degradation of land and illegal extraction of gold by Chinese. But the politicians and policymakers have been promoting the private property and the exploitation of resources by state-controlled concessions -the large-scale mining companies, and the new SSM-, both crucial elements of the neo-extractivism discourse of development.

However, the undeniable increase in the impact of *galamsey* activities produced by the arrival of foreign capital is not the solely manufacturer of a future imaginary where water insecurity is the big issue to solve and the *galamsey* the enemy to reduce. As remarked by Carl Fiati, Director for Natural Resources at the Environmental Protection Agency: “We anticipated this problem [*galamsey*] long time ago it is going to come a time when we continue the way we are going as a country, we are going to destroy all our water bodies and
import water for drinking.”

As Kirsch (2010) has explained after more than 20 years of fieldwork in Papua New Guinea, mining and extractive activities are undeniably unsustainable. The natural resources extracted are limited, thus not renewable. There is a contradiction in promoting a sustainable development through mining extraction on the bases of private property rights and foreign land concessions denying local inhabitants the opportunity to use the resources to assure themselves a livelihood.

This process of capital accumulation can be framed as dispossession by capital accumulation and abjection (Bush 2009; Ferguson 1999). The value of gold mining as a livelihood has changed; the pressure over the environment has modified the existing power relations. The speed of the changes that transformed the galamsey into a public enemy of Ghana has modified the future of many communities. Then, the galamsey and the whole value chain of gold has become a space where power relations are being renegotiated.

The galamsey identity has been modified by the introduction of the Chinese technology. What used to be a traditional activity of subsistence and a complementary one to farming has been altered into a marginalized livelihood in Ghana. The temporalities in galamsey environment have been transformed by the changfa and the heavy machinery that the Chinese have introduced. It has accelerated the traditional dynamics that surrounded the galamsey and the gold value chain in Ghana.

4.4. Concluding Remarks: Development, sustainability and the war on galamsey

Ghana’s government policies have created a trade-off between the environment and present livelihoods: gold mining represents, mostly in rural areas, a way of subsistence. Furthermore, with the arrival of foreign capital and technology, it has become more than just a mere mode of subsistence. The pressure on the environment has increased simultaneously as the production of gold. In this chapter I discussed the place of Africa and the neo-extractivist discourse in combination with the SDG. Also, I showed how this discourse is connected to an idea of sustainability based on an imaginary of a nation rich in natural resources. But, this two discourses are disconnected: mining is not sustainable and historically it has not improved the lives of the inhabitants of resource rich countries(Kirsch 2010).

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22 On May, the Ghanaian government proposed the Multilateral Mining Integrated Project (MMIP) promotes “alternative livelihoods” for galamsey, and gives the opportunity to work directly for the State. The government would become the technology providers. A budget of 10 million dollars is needed, and the Chinese have offered a loan for this. However, there is not much information about it. For more information: http://bit.ly/2rKsqSb.
5. The Meso-Scale: Tarkwa, Mining in an Urban Town

In this chapter, the mining environment of Tarkwa interacts with the global scale, as transnational agencies coexist with local ones, creating tensions that have repercussion over the other scales. First, I will describe SSM in the South of Ghana, pointing out the historic transformations of it and emphasizing how it evolved to what today has become the *galamsey*, the SSM and the LSM.

Then, I divide the space of the Tarkwa district in rural and urban, to single out the characteristics of Tarkwa and highlight why it is an interesting case of study. However, after making the distinction it becomes necessary to link these spaces, to understand as one. That way, the meso scale appears as an interconnected system of relations, similarly to the macro scale explained before.

From then on, I address one of the consequences of the development discourses in Tarkwa: the creation of formalized spaces, legal and illegal. Finally, I conclude the chapter with an explanation of water as an object of analysis concerning mining, and how it can explain the discourses of sustainable development that Ghana’s government have been promoting through public policies like the formalization of *galamsey*.

5.1. A General History of the Small Scale Gold Mining in South West Ghana

Gold mining in Ghana dates back to long before the arrival of the Portuguese to the coast in 1471: “African indigenous gold mining […] stretched back for centuries […] The *skadifo*, or gold miners, occupy an extremely important place in the economic history and culture of the Akan people” (Dummett 1998: 41). In pre-colonial and colonial times, gold dust or *sika future*, was used as currency and gold jewelry, in the Ashanti region. The jewelry still exists as an example of the local use of gold. As I will explain, the arrival of the colonial powers – the Portuguese first in the XV century, then the Dutch in the XVI century and finally the British in the XIX century- increased the extraction of gold in the region modifying the political and social arrangement that existed (Dummett 1998; Ofosu-Mensah 2011).

During pre-colonial times, and before the xx century, a kin-based mode of production was common: husband, wives, kids, and other family members formed the basic work unit that participated in a communal effort to get the gold from the surface of rivers (Dummett 1998). Deep shaft mining was not as common as it became after the arrival of the Europeans; it was a slow and complicated process, thus most of the people resorted to alluvial and surface mining since the washing and panning of the gold proved to be easier and faster methods
5.1.1. Transformations of the traditional mining methods

As I explained, the traditional gold mining was done by families or kind-based groups. Currently, at least in Tarkwa, this mining structure does not exist anymore. Some gangs - organized groups of miners that go in the shafts- are made by kin-related individuals. However, it is usually an exception. The gangs are formed either by individuals living in the same community or people that met at the shaft. The workforce in SSM is composed by individuals laboring at different locations, with the flexibility to move and change sites when a pit is starting to be depleted. However, and as Hilson and Crawford (2013) shows, the family-structure of mining still exists in rural Ghana.

Traditional mining had a seasonal character. In the rainy season, people in the West Region of Ghana interchanged mining for farming as the start of rains meant it was time to prepare for the harvesting season. During the dry season, farmers and their families resorted to artisanal mining as a mode of subsistence, while waiting for the rains to fall again (Dummett 1998; Ofosu-Mensah 2011). This type of complementarity is still present in some regions of rural Ghana (Hilson & Potter 2003; Hilson & Crawford 2013). In Tarkwa, there are no important agricultural developments in the urbanized space of the district, namely the township and the communities surrounding it: Bobobo, Bogoso Junction, New Atuabo, Efuanta, Green Compound, among others. In the rural parts of the district, cocoa plantations and banana farms are still elements of the landscape and the economic lifestyle of the people. My informants rarely had some other source of income as individuals, i.e. Kofi’s gang members only depend on the income generated after selling the gold. However, at the household level other elements of the nuclear and extended family -when present- brought money home by selling different products at the market, i.e. Immanuel wife sells food in Kumasi’ market.

The role of gender has changed too. Women, nowadays, have a less active role in mining activities, i.e. they do not crush the stones or wash the load in Tarkwa as in traditional mining. However, they carry stones from the shafts to the washing sites in the shafts of Abosso or the surface pits in Efuanta. Technology, specifically the changfa, has substituted one of the traditional roles of women in small and artisanal gold mining. In clear contrast to the Artisanal Mining Sector where 100,000 women are employed, in the small-scale and galamsey sectors, women represent 6% of the workforce (Hilson 2001; Yakovleva 2007). Women sell food to the galamsey and small-scale miners, in fixed shops around the sites or by
carrying it on their heads and visiting the multiple sites. In Tarkwa, prostitution has also become an activity related to mining: after the galamsey or the small-scale miners sell the gold, they go to spend money on sex and alcohol (Yakovleva 2007). Nonetheless, the role of gender relations in Tarkwa was insufficient explored during this research. The conclusion I can make is: the new technology has modified the traditional role of women in the SSM done in the Tarkwa region and surrounding communities, and this need to be further explored.

5.1.2. Traditional mining and the galamsey

According to Ofosu-Mensah (2011), the European mining companies, with the introduction of more advanced technologies, excluded Ghanaians from participating in the mining industry. However, he argues, the pre-colonial forms of mining still survive as galamsey, coexisting with the large companies. The traditional miners adapted their knowledge to the new technologies: they use crusher and a milling machine with traditional sluice boxes and panning techniques; or to crush and wash the load with a changfa, but still wash the blankets and catch the gold using mercury with their bare hands. But the Europeans also used the traditional knowledge: “If traditional African miners benefited to a limited extent from brief contact with European prospectors, it is also well to point out that the early expatriate companies frequently built their first vertical shafts on the exact sites of earlier African pit mines” (Dummett 1998: 58). This coexistence does not only produce frictions over the control and access to resources, but it has allowed a bidirectional transfer of knowledge. The new technologies, as Dummett (1998) argues, pushed the boundaries of the capitalist mining in Ghana, creating new relations and increasing frictions between traditional agents.

A further distinction between artisanal mining and galamsey is using pumps to extract water: “the old traditional miners abandoned their shafts upon hitting the water table, the galamsey miners of today use of water pumps to pump the water from their shafts and continue with their activities” (Ofosu-Mensah 2011:15). Using dynamite, mercury and cyanide also indicates a difference amid the traditional miners and the galamsey. These technologies were introduced by the British during the colonial times (dynamite) and by the Chinese during the last 15 years or so (changfa machines). Mercury was banned by colonial authorities -in an attempt to stop Ghanaian from mining gold- and has been illegal since then. Although illegal, mercury is the only method for retrieving the gold in Tarkwa.
5.2. Mining spaces: articulating gold production in Tarkwa

5.2.1. Spatial description of Tarkwa

Figure 1. The location of the different mining sites in Tarkwa.

![Map of Tarkwa](image)

Source: OpenStreetMap, edited by me.

The growth of the corridor that goes from the port of Takoradi-Sekondi in the cost to Obuasi, in the North of Tarkwa and later to Kumasi is the result of the introduction of the railroad. The railroad helped connect the settlements of Abosso and Bogoso- that already existed- and facilitated other cities' introduction in the trading route to the south and Europe. The region, and especially Tarkwa, is hardly understood without looking at the mining activities. According to the Ghana Statistical System 16% of the population works in mining; however in 2010, 85% of the people that works does it in an informal space.

Tarkwa is situated on the road -as the railroad has disappeared as a transportation method- that connects the capital of the Ashanti region, Kumasi, with the oil capital of Ghana, the twin city of Takoradi-Sekondi. Tarkwa district can be divided using the classical sociological dichotomy of rural and urban as the areas that surround the township, i.e. the most urbanized space, is where agriculture predominates. I conducted my research in the urban part of the city.

I am demarcating the township of Tarkwa, where I conducted most of my research, from the surrounding parts using the intensity of agricultural activities, services and the concentration of the population. The space-time compression that Harvey (2015) reckons as an element of our present times makes harder to distinguish an urban individual from a rural
one, similarly to what Ferguson recalls (1999) for the case of Zambia. However, this dichotomist categorization aids me in my ethnographic descriptions to demarcate my space and time of research and to underline the particularities of mining in an urban space.

5.2.2. Mining outside Tarkwa: rural mining and a discussion about legality

To comprehend better the space of an urbanized town like Tarkwa, I would like to describe a small village situated one hour away from Tarkwa. Bompieso is a village I went to, located beyond the city of Abosso. The washing sites surround the community, connected to a small river stream that flows on the outskirts of the village. Here I had a long conversation with Frederick, a galamsey working in SSM for 10 years. His brother owns a shaft, and his father is the local chief.

To own a shaft in Bompieso, Frederick said, people just have to go to where the gold is. They knew where the gold was because Goldfield has been mining in the area. People start digging along with two others, and when they find a gold vein, they call more people to accelerate the mining. The owners usually do not go inside and the galamsey divide the load equally between the owner of the pit, the chiselers and loco boys (i.e. ⅓ each). Then, each group divides what they got equally among the members of each group (i.e. 1/N, where N is numbers of elements in the gang). In Bompieso, the miners pay royalties to the chief as they are working in land owned by him, usually the 10% of the sacks they obtain.

Conversely, to what happens in Tarkwa, in the rural areas of Ghana small scale gold mining is, as Hilson and Crawford (2013) explains, done in combination with farming; especially during the dry seasons. Bompieso is a good example of this. The galamsey I talked to, combined mining and farming when it was forbidden to go to the mine, when the “ghosts”\(^{23}\) that take care of the underground are working the gold. This contrasts with Tarkwa where the miners work full-time at the shafts, meaning that they do not have another job when mining.

To wash, they use the changfa machines and not the miller or crusher, as most of the Tarkwa miners do. This, Frederick explained, is because in Bompieso the like fast money. The process of drying, crushing and milling the stones can take a full day. To them, having money in their pockets is better, even if the quantities of gold they could get from the other method are higher. There was an abandoned site where they used the crusher and the miller, a clear sign that the Bompieso miners do not like washing processes that can take more time.

\(^{23}\) I say ghosts because is the word Frederik used. Maggid also referred to them as ghosts or spirits. They are no gods or deities.
Then, what about the conflicts I described in the previous chapter? How do the frictions between large companies, the government and the \textit{galamsey} occur in Bompiosio? Frederik said that Goldfield is working their land. To him, the inhabitants of Bompiosio are the owners of the land because they have been living there for generations. Use of the land gives them the right over it. Goldfields have a concession to mine the land, but the ownership –for Frederik- falls on Ghanaians as they have been occupying and using that space for generations. Comparatively, to the legal definitions that keep the ground and underground separated, in Frederik’s explanation these two spaces are intertwined as a single and simultaneous space.

Goldfields bought the land from the government -the concession-, but the land still belongs to them as the chief of the village is the one that decides to whom to lease the land, and he gave them permission to work it. The ownership rights are not clearly defined for everyone as Apoh, Wissing, et.al (2017) describe. The State, Goldfields and the inhabitants of Bompiosio understand ownership different, and this in consequence creates tensions over who is the rightful owner and user of both, the land and its underground minerals.

Later in the conversation he also claimed Bompiosio, as a community, have the right to the land because the ones polluting the rivers and destroying, degrading the land, are the big companies. Ghanaians and inhabitants of Bompiosio used land for farming, now Goldfields does not allow them to farm the cocoa. Because Goldfields is using and exploiting Bompiosio’s land, Frederik and the other \textit{galamsey} have the right to work the land the government gave to Goldfields.

There is a tension between Goldfields and the \textit{galamsey} in Bompiosio. Frederik said that from time to time, \textit{galamsey} boys go to Goldfields’ shafts to take some gold; after this, the company sends security forces to close the \textit{galamsey} operations. However, it does not happen all the time and mostly they cohabit in the same space as the shafts worked by the \textit{galamsey} do not have enough gold for the large companies to be interested in -it would be costly for them to construct a shaft, or to blow the mountain for small quantities of gold.

Property and ownership are sometimes far away from the State constructions of legality. Ferguson explains that, in general, “the property laws that are sometimes taken for granted as the bedrock of capitalism in its most familiar form are only precariously institutionalized in many African settings” (Ferguson 2006: 28). Tarkwa and the \textit{galamsey} environment are an example of this.

Hilson & Potter (2003) notice, that illegality nurtures an identity for \textit{galamsey} miners as they feel part of a bigger social setting and, as Teschner (2012) describes, they can exercise
their agency to undermine new proposals to regulate the sector –however, not all the time, I would add. Contrary to this, Tsuma (2010) proposes formalization draws legitimacy from the idea of promoting development through economic growth in mining communities. However, one of the conclusions of Geenen (2015) is formalization accelerated the replacement of labor intensive mining for a more capital intensive mining.

In Tarkwa, the idea of legality and illegality between the *galamsey* is not rooted in the concept of ownership of the underground -as the law states. Ghanaians, and sometimes foreigners, can own the land through arrangements with the local chief, who is the traditional authority in charge of lending it (Apoh, Wissing, et. Al 2017). This ownership of the land entitles them to work it, and they understand the underground as an element of this ownership -as the case of Bompieso illustrates. Public and private property distinction relates to surface and subsurface property (Luning & Pijpers, forthcoming).

Pollution, as I have mentioned, appears as the recurring marker in the discourse about legality. If the mining activity pollutes the water then it is considered illegal, regardless if the miners have papers that allow them to work the land, or mine the underground. Rivers and water bodies are placed as nodal elements in the discourse against *galamsey* and from there the definition of legality is constructed.

However, in practice, the discourses employed by the government have no real effect on the actors involved in small scale mining. I realized that the origin of the gold is unimportant for buyers –and this in extension, not for sellers, i.e. the miners. The legal and illegal distinction and discourse did not to shape the behaviors of the buyers. My informant John buys the gold from underground mines, surface mines or alluvial mines at the bushes. Nonetheless, he is aware of the damage of mining: to him, a mining site is illegal if there is a negative impact on arable lands, the forest or the rivers. He explained it was because the *galamsey* are taking the land away from the farmers, in the same way as the large-scale companies do it, similarly to the argument of Aragón & Rud (2015). John said that when mining is damaging others, then is when it needs to be stopped. However, John was reflecting about this while buying gold that came from a site in the bushes, which according to him is an activity that hurts people.

5.2.3. Mining in Tarkwa: the heterogeneity of urban mining
To explain the heterogeneous space that articulated the urban mining environment of Tarkwa I will describe the different types of sites I visited. This heterogeneity do not only includes informal and formal spaces, which are defined differently depending on the informant.
Bansah, Yalley and Dumakor-Dupey (2016) have already distinguished eight mining methods in Tarkwa: Anomabo; Chisel and hammer; Underground ghetto; Dig and wash; Changfa method; ‘more blade’; Dredge and the alluvial washing plant. Following this classification, I propose to classify the sites I observed as: Reworked Old Shafts; Shafts; Ghettos; Surface Mining; Alluvial Land Mining and Washing Sites.

a. **Reworked Old Shafts**

Picture 1. On the left, an old shaft belonging to Mohammed & Co. It is not in operation as it has been reworked by Chinese investors. On the right an out-of-order Chinese Trommel.

These sites were owned by colonial companies before independence. They were taken under the control of the State Mining Corporation of Ghana after independence. Later, the sites were given as concessions to different SSM licenses holders. Five of the six old shafts present in Tarkwa are owned by license holders. In three of those five, Chinese investors are present - two are part of the M & Co. sites. They brought Chinese trommels to increase the capacity of production, machinery that Ghanaian in Tarkwa do not own; bigger and more powerful pumps to expand the underground operation and, Chinese workers to do jobs that require skills that Ghanaian did not have. My Chinese informants explained me that jobs like welding, chemical analysis of geological samples or administrative activities were not carried out by Ghanian as they did not have the necessary skills to do it.
b. Shafts

Picture 2. A *loco boy* extracting sacks of waste from a shaft at the top of the mountain of Bobobo.

At the top of the hill between Bobobo and New Atuabo various shafts were open. Some were abandoned due to insufficient sponsors -or investors- to keep the operation going. They are not formalized operations and the washing sites they use are in Bobobo or New Atuabo. The gangs working there, i.e. Kofi’s sells the gold to buyers in town. Their configuration is as follows: a group of individuals own the shaft (owners); one or two gangs of chiselers and drillers perform the more skillful jobs, i.e. drilling and blasting the stone; a gang of *loco boys* works in the site, helping the chiselers gangs to take out the loads. Sometimes, there are also pumping mans, that are in charge of operating the small pumps located in the underground. They turn on the pumps before going down, as they cannot cover a constant pumping of water, as the Ghanaian-Chinese operations do.

c. Ghettos

Picture 3. *Galamsey* going down a Ghetto belonging to Maggid’s uncles in Efuanta.

These sites are called this way because the life inside them is rough and hard, as in an
American movie, my informants told me. They bend themselves and then walk in a squatting position to the underground. Maggid said this was the most risky way of mining gold. The probability of collapse is higher than in other methods as the techniques used to hold the ceiling are not strong enough to resist rain and dynamite explosions. I differentiate them from the shafts as they are dug one next to the other. The shafts I explained before have more distance between them. The ghettos are usually created on hard rock, and they can be used for more than 4 years. The life span of a ghetto depends on the quantity of gold miners found; the probability of collapse and the money that the owner have that allows him to sponsor the operation and the *galamsey*. These sites are not always formal, and are the most common form of mining in the places around Tarkwa, i.e. Efuanta; in the city, shafts and reworked old shafts predominate. Chiseler gangs consisting of 4 to 6 individuals work there. *Loco boys* gangs of 3 to 8 individuals carry the stones out of the place. They work under the sponsor of one or two individuals that own the place. Sometimes, the owner of the site brings someone else to act as a sponsor when he does not have enough money to maintain the daily operation.

*d. Surface mining*

Picture 4. Maggid showing a surface mining site near M & Co. concession in Efuanta.

Both small-scale operations and large-scale operations do surface mining. The latter stopped using shafts as it became a more expensive operation. The two LS mines of gold in Tarkwa, Goldfields and Anglogold Ashanti, are located at the margins of the town. The small-scale operations that use surface mining in Tarkwa are near the community of Efuanta. The method consists in digging out the ground until the stone is found. Then, dynamite is placed inside holes in the stones and the rocks are blasted. The cracked stone is taken to *changfas* machines placed next to the surface pit. Women work in these sites carrying out the stones after the blasts are done. These were the only sites where I could observe women engaged in mining.
activities in Tarkwa. In Abosso they have the same role, as the shafts are in the top of the mountain.

e. Alluvial Land Mining

Picture 5. A crew of 3 galamsey is dragging the basin of what used to be an open pit in Efuanta.

There used to be open pits near the surface sites. The method of More Blade was employed in these open pits. However, these sites do not exist anymore, and now are filled with water, allowing a type of Alluvial Land Mining. This type of mining was uncommon in Tarkwa. It did not happen near the downtown but in the outsides of the community of Efuanta, south of Bobobo and the township of Tarkwa. Alluvial mining is usually the done at the rivers. However, the crews of 4 to 5 people I could observe (Picture 5) were using the same methods as the alluvial mining. A platform carrying a changfa machine connected to a hose submerged in the water. These hose dragged the basin of the flooded landscape and, as in alluvial mining, extracted the gold from the ground to a platform that simulated the sluice boxes but on a larger scale. There were no rivers near, but small streams were redirected to this part of Tarkwa. The water flowing from the underground ghettos and the washing sites around this place, were dumped in these pits.
f. Washing Sites

Picture 6. George’s washing site in Bobobo. The water recycling system is clearly visible. In the wooden structure next to it, the milling and crushing machines are kept.

The Washing Sites were simultaneously a work site and gathering place for galamsey and small-scale miners. The washing process can take time, and for some of it only a couple of members of a gang work. Usually, the formalized operations had washing sites next to the shafts, or used changfa machines to wash the load. However, there was a high demand for places with crushers and mills in Tarkwa, as almost none of the shafts had a washing site next to it, mostly because they were up in the hills and the access to water was complicated. They need a constant source of water and a large space to create the basins that can be seen in Picture 6. When I walked from Bobobo to the township of Tarkwa, the sites were located along the railroad and close to the entrance of the old colonial shaft.

The main cluster of washing sites was Akon, a community between Green Compound and the downtown of Tarkwa. Here loco boys gangs, chiselers gangs or owners washed their load. It could be a cutaway, a small load they wash before the main load to get money; the big load, or main load, that comprised their main source of income; or small loads that an individual bought in other sites but wanted to wash in Tarkwa as the prices of gold offered by the buyers in Tarkwa are higher than the ones the buyer can offer in small communities. I will explain more in detail these sites in the next chapter, and the dynamics of washing.

5.3. SSM in an Urban Town: water, health and the environment

We have a right to exploit the bounties of the earth and extract the minerals and even redirect the path of the rivers, but we do not have the right to denude the land of the plants and fauna nor poison the rivers and lakes.

Nana Addo Dankwa Akuffo Addo, President of the Ghana, March 2017

As I lack the technical view to study the galamsey and the Small-Scale Mining environment.
Sylvia and I contacted the University of Mines and Technology of Tarkwa (UMat). Professor Al Hassan is an expert in mining technologies and a former worker of the Goldfield Company. One of our conversations started with him telling us: “They have politicized the Small Scale Mining”\(^\text{24}\). With this, he was trying to explain to us that there are many interests surrounding the sector, similarly to what Crawford and Botchwey (2017) describe. Not only the locals are involved in mining, politicians from the national and regional level own mining sites or are silent investors. The politicians do not directly own a site but they use strawman to invest. Chiefs are also involved, as they give land concessions to Chinese even though they know that mining is forbidden for foreigners, and allow locals to mine as they get royalties in return.

A consequence of this politicization for Al Hassan was an increasing inability of the government to stop the galamsey operations. On one side, the National Government ministers attack galamsey because it destroys the environment. Yet, gold mining is promoted by Members of the Ghana Parliament and local chiefs in a less visible way: they silently own concessions or galamsey sites. What is failing, according to Al Hassan is the policing and not the public policies. However, he recognizes the current formalization policy is not working at all. According to him, the penalty is too small to deter the galamsey. It is a fine they can easily pay: 100 euros, an amount an informal miner can make in one day of work.

But, what is it making these policies to fail? Apparently, the corruption that occurs in Ghana is more serious on the bottom of the bureaucratic chain than in the top. He said that for public servants in the local areas is easier to engage in illegal practices as they have more incentives to do it -and fewer restrictions to not do it. Their wages are low, and nobody is looking at them. Thus, accepting bribes or not doing their jobs is easier for them than for those in the National offices.

The Ghana Mining Act of 2006 does not capture the complexities of SSM that I described before. It defines it in a simple way, as the mining of “ore deposits by individuals or groups of persons with little technical know-how and characterized by minimal or no mechanization of gold by any effective and efficient method that does not involve substantial expenditure by an individual or group of persons not exceeding nine in number or by a co-operative society made up of 10 or more persons” (Bansah, Yalley, et. Al. 2016: 1-3).

This definition does not consider that the type of mining will determine amounts of individuals working on the site. For example, in a Ghetto operation not more than 10 will

\(^{24}\)This was a more formal interview. We, Sylvia and I, asked more structured questions to him and wrote his answers as he was explaining us the technical parts of mining and SSM.
work in each ghetto. However, in these sites there is one ghetto next to the other, creating spaces where more than 40 people can be working simultaneously, where multiple sponsors interact and sometimes there is more than one land owner. Additionally, it does not regulate the arrangements between Ghanaians and Chinese that involve a substantial expenditure in technology. This makes the operations fall to a legal vacuum as they do not “exist” as a legal activity for the current legislation.

This allows Chinese, for example, to move the gold out of Ghana without paying royalties. The license that the Ghanaian partners of the Chinese have does not consider the quantity produced. The State obtains money through the Precious Minerals Marketing Company (PMMC) that monopolizes the legal sector of gold buying for exportation; nonetheless, the PMMC does not regard the origin of the gold and buys it regardless of the source.

5.3.1. Water and mining

In this section I will take on a political approach on water, as water can be understood as “relative to the capitalist imaginaries that underpin and structure the ‘official’ narratives of the national resource extraction project” (Reinert 2016: 721). As I mentioned before, these narratives of development through extraction projects are elemental to untangle the teleological discourse promoted by Ghana’s government and supported by the Supra National Institutions.

In this sense, water can be analyzed as a substance “engaged with the senses as it mediates through social products and practices that relate to specific cultural values” (Limbert 2001). From an anthropological view, water can be conceptualized as a total social fact. Namely, something that has implications through multiple spheres of human interaction: society, economic, legal, political and religious. As Hastrup (2009, 2013) and Orlove and Caton (2009) emphasize, water has a social life because it is shared in communities, it flows through different scales and is integral for a sustainable environment. Singer and Evans explain this idea:

[Water] is essential for survival; it can be a daily reminder (especially in some contexts) of our personal collective vulnerability; our interaction with it and assessment of it shapes our lived experience; it is controllable and changeable in ways that some people may not approve; and a billion people in the world, one seventh of Earth’s human population, lack access to safe drinking water (2013: 338).
Bakker has also argued that water is connected to multiple human domains because “water is a resource upon whose constancy (of both quality and quantity) we depend; and yet, water engenders attempts to regulate its inherent variability in time and space—which are in turn frustrated by ecological, technological, and economic barriers to human control” (2012: 617). The quality and quantity of water are the two material characteristics that I consider elemental when discussing water. They are not only scientifically measurable, the quantity and quality of it are also subjective.

In the case of small scale mining in Tarkwa, the technologies brought by the Chinese have modified the value and the meaning of water: pumping the water allows the ore extractions, thus it becomes an enabler. But it also modifies two crucial material aspects of water that are important for human relations with water: quality and quantity. According to Long, Renne, et.al (2013) people in Ghana give different values to water that relate to different particularities of place and time. Sociocultural, economic and chemical values of water have changed as mining activities have affected the local water resources (Kuma 2003; Kuma & Ewusi 2009; Kuma & Yendaw 2010)

The alluvial mining in the Ankobra and Bonsa rivers have increased the levels of turbidity in the water flowing in this two rivers. Turbidity is the measure that explains the cloudiness of a fluid, and helps measure the quality of the water. The water in these rivers now needs more chemicals to become suitable for human use. The increase in the quantity of chemicals the GWCL uses has increased the cost of their operations. Also, the damage in the pumps GWCL uses to distribute the water to many parts of Tarkwa have reduced the useful life of the machines, as the sand and rocks contained in the water have increased. They used to change the pump every 20 years. Now, it lasts only 5 years.

The dredging has provoked an increase in the width of the rivers, accelerating the rate of evaporation of the water and diminishing the quantity of water available for extraction. This means there will be less water in Tarkwa in the future, and the quality of water will be lower because there is less water available to pump and it takes more time, and money, to clean it. Sylvester, the manager of the station, stated that now there is only half of the water they usually have during dry seasons. His solution, if the galamsey problem is not solved, would be to construct a dam or to expand the water treatment plants they already have to pump a constant supply of water.

The GWCL do not own the rivers because the Water Resource Committee (WRC) is the governmental agency in charge of regulating water and the Environmental Agency
regulates the quality of the water. The GWCL must pay to the WRC for the water they take from the rivers, and they do not have the power to intervene directly in the river. GWCL have to wait for the WRC to do something about the *galamsey*, as the Company can only call security forces when they *galamsey* are near the station. This means the Company cannot directly start an operation in the whole river to stop the alluvial mining. When they see alluvial miners near the pumping site, they call security - in this case a small group of police that guards the entrance of Bonsa town. He argues even if the police catch the *galamsey* - if they are not armed - they will have to pay only a small fine to not being sent to jail.

Picture 7. Bonsa River near the Pumping Station of the GWCL. The color, or turbidity, of the water is due to *galamsey* at the river.

Thus, what about the future of the rivers? Sylvester, and later Mr. Francis Ofe – the manager of the Tarkwa branch-, said that the rivers would dry if the *galamsey* continue to spread at the speed they have being doing it the last years. However, until now the quality of the water they extract has not surpassed the limits that the Ghana Standard Authority - the state body that regulates the quality standards- has established for water. This means the water being pumped out of the Bonsa River is not harmful for human consumption, yet.

Furthermore, the pumps and the *changfas*, the mercury and other chemicals elements that “more advanced technologies” introduced to the SSM interact directly with water. The pump creates a value for the ore, for the labor of the miners, as allows them to access deeper part of the mines. It is the materialization of modernity, of industrialization in a once *artisanal* activity. The underground water – and the underground itself- holds values that are implicated in the imagination of the communities. Ghosts roam the underground, according to many of my informants. They take care of the gold, and protect the water bodies too. Mining has disrupted this as not everyone respects the tradition of not working on sacred days when the ghosts are supposed to work on gold or water. Water can configure societies and generate values through its interaction with different everyday actions. Hastrup explains its configurative power “must be taken into account, if we are to project futures that are not
already negatively implicated in the present, or in other words if we are to uphold a sustainable society” (2013; 2016).

And these projects, these futures, are interlaced with the multiple ideas that coexist, in permanent friction, in the discourses of sustainability. In particular those that explain how water justice is interlaced with environmental justice and the expansion of capitalism. For example, Singer and Evans (2013) in a medical anthropology study of water pollution in Louisiana found that public water does not sustain life but it has become, as pollution problems arise, a threat to it. They argue the transformations produced by capitalism influence relations of humans with nonhuman subjects. Thus, water becomes political as it treats the life of the subjects of a State but also became the argument of the State to end with a traditional livelihood in Ghana.

As Reinert (2016) describes for the case of a large-scale mining site in Norway, the boundaries of capitalist expansion are marked by the water in the underground, the frontier to the unknown is explored as the desires of gold in the global market grow. In this sense, the small-scale miners are linked with a large scale network of global interactions through the gold price fluctuations and the evolution of the small-scale mining sector. But also, the local practices create frictions with the national scale as a flow of new technologies transformed the way they used to mine. This is related with the new international agreements on climate change and environmental protection. Thus, the frictions are not unidirectional: is not top to bottom or bottom to top. They are simultaneous.

5.3.2 Environmenta, technologies and the galamsey

Picture 8. An abandoned cyanide facility in Bobobo

In the picture 15, the hope of a better future led some individuals to create a washing facility that used cyanide. This facility was in the middle of a community, Green Compound. It was
near to a big washing site where the workers of a reworked old shaft washed their load. However, when they started using the cyanide animals around the site died. John, the gold buyer, told me that then a government official came and closed down the site. A school was just 100 meters from the place and the danger of contamination was high enough for government to react. The site was closed down after not much time of operation. Here, a technology that could improve the livelihoods of many -as it can extract almost the 100% of the gold from the ore- is forbidden as the license to operate such sites are reserved for bigger companies. There is no doubt is dangerous, but what happens with cyanide is similar to what happened with mercury. The government forbids it, instead of creating a scheme where Ghanaians learned how to use it in a safe way. That pushed some Ghanaians to learn how to construct informal facilities that increase the danger of spills as they do it in a rudimentary way.

Later that day, I remember asking John if he bought from “those guys in the bushes” knowing that they were polluting. He said that there was significant money in the bushes, so they usually can buy that gold cheaper because galamsey wanted to sell it fast to keep working before someone closed down their operation. To John, the bushes represented illegality as water pollution, and forest destruction, occurred. However, the condition of illegal or legal does not have any practical meaning for him. The quantity he can obtain is high enough to forget about the river pollution he hates. The Chinese do not appear as a problem when he is buying gold from their sites.

Some days later, while I was sitting with Frederik outside George’ site, I started to ask about the formalization efforts of the government. My intention was to learn what he thought about the pollution of water is central in the political discourses about the environment. Especially, my intention was to understand how these policies could affect him. He started by saying that “every time was future”. With this, he was referring to what the President said about the future of Ghana being destroyed by the galamsey. For him, that future did not exist, as the present was more important. He said that if their grandparents owned the land and the gold was in the land, why the state does not allows them to use the gold. This again reminded me of the arguments of Frederik of Bompieso about ownership. Legality and illegality are dissociated to what the miners understand as ownership, or as the access mechanism to the gold. The private property promoted by the government to regulate the SSM sector through mining licenses is contested by the everyday practices of the galamsey and other elements of the gold value chain who keep working the gold although the government keeps pressuring
them to close the operations.

After this, Frederick started recalling what happened some years ago in Obuasi. The government tried to close down an alluvial site but the workers of the place had guns. Frederik said that people died that day because those *galamsey* did not have any other way of supporting their families. And perhaps, they considered that it was their right to mine that river, so they defended the site. Although they could do other jobs, the quantity of money they get in alluvial mining is high enough to make them risk their lives. This helped me to understand the interrelations that the flow of a river creates. It connects different villages, so if the *galamsey* pollute a place upstream then the villages downstream cannot use the water of the river. But, if the government starts closing the sites, conflicts like the one recalled by Frederik can occur. Also, this would have an effect on the washing sites: they do wash some gold coming from alluvial sites.

5.4. Concluding Remarks: Heterogeneity and Pollution

In Tarkwa, multiple forms of mining occur and coexist in a same space. Through history the gold mining in Ghana has experienced transformations due to the introduction of new technologies from outside, and the open up of new markets where the gold can be sold. This has not only allowed increasing the production, and the generation of profits for local miners. Gold mining is rooted in the history and livelihoods of the people in the south west of Ghana. However, and as I also said in the last chapter, the environment impact has become a serious treat for future livelihoods in Ghana that can be seen in the reflections of Frederick: the tension between the government, the Chinese and the miners have increased at a local level. At a macro level, the Chinese will build the infrastructure of Ghana, in an apparently cordial relation.
The central actors of this chapter are the *galamsey*, individuals working at informal operations, and the small-scale miners, people working at licensed operations, of the city of Tarkwa. In this chapter, I explore the everyday life of different miners, from the owners of formal and licensed small-scale operations, to former LS gold miners and *galamsey*. I will try to show how the tensions that Ferguson and Appadurai (1999) mention, appear more strongly in this “small” place. Hence, I will try to show how the reasons that make people mine are not compatible with the policies that the Government has been implementing. Even more, they occur in temporalities that appear to be unsynchronized (Persoon 2000).

However, I need to make a clarification before describing the gold value chain. I did not engage in direct conversations with the owners of *galamsey* shafts. So, my data comes from what chiselers and *loco boys* said about them. In the case of licensed operations I did engage in conversation with the owners or supervisors of the operations that were kin related to the owners.

6.1. The *Galamsey* Value Chain

*Artisanal gold production depends on a diversity of controllable and non-controllable factors, on a mix of experience, skills and luck.*

Geenen, 2015, p. 95.

The objectives of this section are multiple. I unfold the relations of the *galamsey*, buyers, owners and gold workers in general, in the city of Tarkwa. First, I describe three informants, their roles and positions in the gold value chain: the *loco boys*, the *chiselers* and a gold buyer. I want to explain the power relations that exist in SSM and show it is an organized activity where the shaft is not the only place to search for connections and disconnections.

Second, this section reveals that the gold workers (I use this category to capture the *galamsey*, the gold buyers, the owners and the operators) I encountered in Tarkwa understand both the potential environmental and health consequences of their work. Miners, most of the time, acknowledged their activity is damaging the environment and themselves. So, to explain what drives the *galamsey* and other gold miners to works I need to explain why some decide to do it.
6.1.1. The Loco Boys and

Picture 9. Loco Boy resting outside a Ghetto in Efuanta

A hierarchical arrangement of the gold mining value chain, ordered by the amount of manual labor needed, would place the *loco boys* at the top of that chain. Arranged by financial and technological investment, they would be placed at the bottom. *Loco boys* work as a separate group with a variable number of elements depending on the size of the shaft where they are working at. They can work for a gang of chiselers, and for the owners of a shaft.

The name derives from colonial times when the ore was extracted from the underground with a locomotive car. Nowadays, in the SMM the locomotive role is performed by young men transporting heavy sacks -up to 50 kg- with their bare hands, or a cloth strip tied to their foreheads to help them carry the sacks on their backs. The manpower, in the current times, has substituted the machines of the industrial revolution in some shafts in Tarkwa -specifically those without Chinese intervention.

*Loco boys* get money in advance from so-called sponsors in return for gold when found. While the *loco* boys are bringing up the sacks of ore the sponsor gives them *chop money*, or pocket money, so the *loco boys* can buy food. They can also provide the *loco boys* with tools like torches, shoes, sacks or in the event of an accident they help them to pay the medicines. A gold buyer can act as a sponsor, the same as the owner of a shaft or an individual with a high flux of cash as the role implies a constant giving of money. John, one of my informants and gold buyer, did not trust them. Some *loco boys* have cheated him in the past, he said: they asked for money in advance, but never get the gold back to him in time.

This points out to one of the tensions in the *galamsey* sites, buyers distrusted the *loco boys* and they, in turn, distrusted the buyers -even if they are entangled in debt relations that require a high level of trust as there is no collateral supporting the loan. Yet, it is not only the
promise of gold that holds the debt relations. Reputation also shapes them as the gold buying system is a mouth to mouth mechanism based on past experiences.

John told me that the *loco boys* work for quick money. The kids, as he referred to them, just want to buy things and not save money. *Loco boys* spend the money they get from washing gold fast, John said. They buy watches, big smartphones, and clothes, go clubbing and pay for sex. Some of my informants, that where not *loco boys*, said that *loco boys* do not always save the cash. However, I realize the *loco boys* do save the money mainly for two reasons: when they have kids or when they have concrete goal, e.g. going back to school, buying a car, a plot of land or to start a business.

There are not many restrictions to become a *loco boy*. Nonetheless, they have some unwritten rules: do not use drugs before going down the shaft (at time they drink energy beverages or sniff a green powder\(^{25}\)); be healthy, namely do not have a broken bone or malaria; and finally, do not be hear impaired, as the darkness inside the mine makes shouting the best way of communication.

The *loco boys* were inside the mine, as they tend to work more than 8 hours, slowly moving the load from the bottom. They arrange themselves in a consecutive line, passing the sack from hand to hand until it reaches the last *loco boy*, at the entrance of the shaft. They can take, in one month, more than 2,000 sacks this way (between waste sacks and ore sacks). The number of *loco boys* depends on the depth of the shaft. This site had 32 *loco boys* at it was a deep shaft, around 7 poles down. A pole is equivalent to 7 meters, and it is the way they measure the depth of a shaft.

In this section I wanted to show how the *loco boys* are in the lowest hierarchical position in terms of hard work. According to Raff, an informant, they receive the less money among all the other elements of the value chain. Also, they are totally dependent on the sponsors for their daily activities. A relation that is not extent of frictions as *loco boys* not always meet the agreements made with the gold buyers.

\(^{25}\) Maggid said the powder they were sniffing was made of herbs. The *loco boys* told me that it helped to ‘clean the dust’ out of their heads, keep them healthy and gave them energy. I believe the powder is made by crushing moringa leafs.
6.1.2. Chiselers and Drillers: the Division of Work in a Shaft and the Kutaway

Picture 10. Kofi and the gang are hammering the stones to crush them before using the mill.

I met Kofi in a washing site in New Atuabo to observe the complete process of gold washing. Hierarchically, the chiselers are in the middle of the value chain of a shaft. The chiselers are the workers that possess more skills, yet the manual labor they do is as heavy as the one loco boys realize.

After two hours, the gang finished crushing the stones and left a small part of the load for the machine operators, men that are in charge of the crusher and the milling machine. It is a skillful job—as I recalled in my talk with Owusu in the methodological part of this thesis—. Machine operators do not make as much money as the chiselers, but they are better positioned than the loco boys. The tradeoff for them, as a machine operator told me, is a less risky and not so hard job for less money. However, as Frederick told me, the dust generated while crushing can cause serious pulmonary diseases.

Kofi paid two euros -the same price of a plate of rice and chicken- for each of the 15 sacks they crushed. As Kofi explained to me, it is usual to leave some ore behind for the operators, this way they can get their share. Nonetheless, I discovered this did not happen in other washing sites. For example, in George and Frederik site, the operators earn a wage, usually a fixed quantity that can change depending on the amount of work they do during the month. More sacks washed increases the possibility of a higher wage.

Kofi’s gang did not wash the load at the New Atuabo place. The five owners of the shaft where the gang works have their own washing site. Owners of washing sites get money by selling the tailings to LS companies. So they have an arrangement where people working on their shaft have to wash the load at the site in Cape Town, close to New Atuabo. The tailings are what is left after the gold is washed. According to all my informants, the tailings contain around 70% of the gold, but special chemicals –i.e. cyanide- are required to extract
this. The rest is what the gang has got, the relatively easily accessible 30% that can be retrieved using mercury.

The work roles in Kofi’s gang are interchangeable. All gang members know how to chisel or use the compressor machine to drill. When they wash, the roles are defined but, if they want, they can change them. To decide the roles, they all talked and then organized according to what they knew better or liked to do more. For example, Immanuel does not know how to use the compressor well, but he can chisel the rocks down. For his age, 65 years old, they let him rest when they wash the load. He helps carry sacks occasionally, but the bulk of the work goes to the rest and younger members of the gang. Kofi is the leader of the gang; he was the first to arrive and is the one that knows more about the galamsey.

In Kofi’s gang, the experience creates and sustains the hierarchies of power. The family relations are also important as they create trust among them: only two of the members were not part of the family, and lived in a separated place. Decisions were taken as a group, because everybody knows the other's job. However, the selling of the gold was always done by the leader, Kofi. The hierarchy of positions was confirmed by this action as they entrust him with the negotiations for the gold price.

During the washing process, the gang divided the work as follows: Kofi and the younger member of the gang went inside the water pond to wash the load. There were two men in charge of the washing site, but they only emptied the ore sacks into a cement basin where they mixed the ore with water.

Picture 11. The washing site of Cape Town is owned by one of the owners of Kofi’s shaft.

Mensah, one of Kofi’s brothers was doing the elebum, the rinsing out of the towels used to trap the gold in two different rubber buckets or embumadi. Two other members were emptying the water from the two buckets and removing the water from them. Immanuel, the oldest one, was sleeping next to the washing site. Only one of the members was using the mercury to catch the gold, they call this process inchimadi, and separate it from the black\textsuperscript{26}.

\textsuperscript{26} Here I want to explain the washing process. For now I will leave it like that.
Later, the gold is placed in the *apia dankua*, a small basin. The gang did not pay anything for using the site, and in exchange left the sacks and some ore to the workers of the site so they get their share of gold. This led me to understand one thing and confirm another: first, that the roles were clearly defined in the gang and second, in comparison to younger elements of the gang, old people cannot endure a day of washing work so easily.

### a. Selling the kutaway and the main load

The process I described was the *kutaway*; a load *galamsey* wash while they wait for the main load. It gives them “pocket money” to buy food until the “big money” comes. It is a portion of the main load, so it takes them around a month to obtain it. At the end of the day Kofi, I and the owner of the site went to sell the gold to town. Kofi does not trust the buyers. He said that if he did not pay attention, the buyers will take some gold without you noticing. For Kofi, the gold buyers and agents are people that only love the money.

After refining the gold, the buyer weighed the gold and calculated the karats. He offered 770 euros; the minimum wage for a work day in Ghana in 2017 is 1.5 euros. The owner called the other owners to compare prices and then he accepted the buyer’s offer. We went back to the shaft. There, the leader of the owners took the money and started distributing it. He took 41 euros for the petrol and diesel used for the drilling machine, and for the dynamite. 100 euros were placed aside -I do not know for what. The owners divided the rest of the money equally: half for the five owners, and a half for the seven members of the gang. I was unable to see the final division of the money inside Kofi’s house. However, they told me it was divided equally: 44 euros each at the end of the day, almost the official monthly minimum wage in Ghana, and half of what a primary teacher makes in one month.

The next time I went to the washing site the gang was washing the main load. The load was the product of a month’s of work. It was divided between five groups that later divided each part among them: five owners, 32 *loco boys*, 2 gangs of chislers (14 in total), 5 drillers and the sponsor of the machines. The first distribution was made using the sacks as division unit, and not the money. This distribution of sacks comes from pre-colonial times, as Dummett (1998) explains. The subdivision of those sacks inside each group is done on the profits obtained from selling the gold.

Kofi’s gang obtained approximately 2,800 euros that day from crushing and washing the ore of 147 sacks that represented a fifth of the total sacks in the main load produced after the “breaking day” that implied more than a month of work. They gave 200 to Bedu, the man that refined the gold in an agreement they have for the rooms were Kofi, Immanuel, and three
of his brothers live. They got 370 euros each, 7.4 times the monthly minimum wage in Ghana. Finally, they gave me 15 euros as a gesture of friendship, and we went to have some dinner.

It is possible that in some sacks there is less gold than in others. Gold, and therefore money, are a mix of luck and hard work. Or a game of chances, as Kofi said. Sometimes you can get significant money, other almost nothing. To be sure about the money they get, they test a sample of the load and then decide if it is worth to keep working for more sacks or not.

The gang of Kofi bases its power hierarchies in kin relations but also in experience. It think because most of them are family, the decisions are taken in a more peaceful and organized way. Mining, to all of them, provides the security that others jobs do not. And in this particular case, they can support their family back in Kumasi.

Picture 12. Bedu is refining gold in his Kitchen at Bobobo.

6.1.3. John, the Gold Agent: The Gold Prices and Global Markets.

Picture 13. A gold buyer in Abosso weights a non-refined piece of gold (box form)

A gold buyer position on the local market, and towards the miners as a serious agent, depends totally on his cash flows. They are the ones that can “big money” in a short period of time, if
they have the connections and the cash to sustain their operation. However, they also totally
dependent on what the miners think of them, as cash providers, and on the quantity of gold
available at the local market. The world prices, as I will explain, also have an effect on their
position on the value chain.

I met John at George’s washing site. John is a gold buyer, a man with significant cash
friendly to everyone. He owns a small shop in Bobobo. Here, John showed me some rough
gold, or box gold, and some refined gold. He studied at the University of Mines and
Technology in Tarkwa, but dropped out because he did not see a future with the drilling
degree he was trying to get. He met Rob, who was working as gold buyer too, and decided to
open a shop. Rob works as an off-shore oil driller too, and this allows him to bring a constant
flow of cash to the shop. The advantage of being a gold buyer is missing the hard work. The
disadvantage is that you depend on others to obtain the gold, and sometimes it can be risky to
give money in advance. In Bobobo there were at least 4 buyers shops; however, only John
shop was working. In Tarkwa there are more and some gold buyers have their own washing
sites. It is a privileged position but only for risk seeking individual. It also has a health
problem, as I mentioned before if the buyer refines the gold by himself in a kitchen.
Sometimes, they hire some else to do the refining as they know the mercury fumes are toxic.

John said it was better to buy the gold in its box form than refined. The box form is the
gold without mercury but not yet melted and cleansed of other metals. The price of box gold
is lower than the refined one, by a 10% to 15%. John owned a Kitchen\textsuperscript{27}, so he could refine
the gold and then sell it at market prices. The market price is higher than the price the gold is
sold directly at the washing sites. However, the price is not near the global markets price: a
gram or blade of raw gold was bought for 24 euros from a galamsey site, and then a local
buyer sold it to international buyers at 30 euros. However, the price that gold could reach
outside of Ghana, during the spring of 2017, was 38 euros, depending on the quality and the
place where it is sold.

I want to explain the gold price dynamics. To do it, I wander -for a moment- away
from the local scale. As one of the objectives of the thesis is to show the interconnections and
frictions between scales, I am going to illustrate the dynamics behind the gold prices, locally
and internationally. Gold prices are changing every hour. The buyers, and the galamsey, keep
themselves updated with these changes, as they want to give and be given a fair price for the
gold. So, they access the internet or use other forms of connectivity with the outside world:

\textsuperscript{27} A kitchen is where gold is refined, or “cooked”. They are small structures made of wooden boards. Inside,
they use charcoal and an air pump to heat a ceramic pot containing the rough gold in order to refine it.
newspapers that publish the daily world prices, a text message or a call to a bank or friend to know the price, or a quick google of the “price of gold”\textsuperscript{28}. Mobile internet (3G) is available in Tarkwa and in most parts of Ghana. Most of the young people working in SSM have a smartphone are know how to use it. The older men use mobile phones and call friends to know about the prices.

Picture 14. A piece of John's refined gold on the hand Alessio, a fellow anthropology student.

6.2. Cohabitation and Heterogeneity.

I will mention two cases to depict how the heterogeneity in SSM created by different sites coexisting in one place. It is also the cohabitation of different actors in a single site. Thus, I will talk about space coexistence; to underline the heterogeneity does not mean that SSM actors are isolated.

6.2.1. SSM and the Galamsey: Sharing the Underground.

Picture 15. Maggid’s uncle is arguing with a galamsey for a blasting done without permission.

The main site of M& Co. is an old shaft reworked by a Chinese company. As Geenen also

\textsuperscript{28}The prices of gold are for the period of my research: January to March 2017. The current, and projected, trend in the price of gold is downwards.
notice for the case of colonial mines in Kamituga in the Democratic Republic of Congo, old shafts in Tarkwa and LS companies that are still mining in surface pits around the city, “translates in a large workforce with experience in the mining sector” (2016: 217). In Tarkwa, miners can work the old shafts that the big companies left because they possess the knowledge on how to do it. Maggid’s uncle, for example, used to work as a foreman for the large scale manganese company that still exists in Tarkwa. Maggid works as the boss and “policy maker and implementer” of the sites owned by the company. His uncle used to do this job, but now he is relying on his nephew to do it. I will explain how the galamsey and the licensed company, together with the Chinese workers, share the same space: the ground and the underground.

M&Co. and the Chinese signed a yearly contract between them, where M&C subcontracts the Chinese to do the mining in the old shaft. December of 2016 marked the beginning of the second contract. The first time Chinese came was 8 years ago. Chinese took samples of the underground to analyze if the gold was enough to invest. M & Co. needed investors as there were parts of the shaft inaccessible for them, i.e. they needed bigger pumps to continuously take out the water from the audit. The Chinese take the 90% of the main production of the mine because they pay the electricity bills and the wage of the employees. The Chinese also brought the machinery: one bowl mill, one trommel, compressors, “loco machines” (motorized tricycles to carry the stones), and the water pumps.

Before the Chinese arrived, M & Co. allowed galamsey to access the audit occasionally. The condition for granting this access was that the galamsey had to wash the ore in M & Co. changfas, after paying a fee for the load and sell the gold to one of Maggid’s uncles. After the arrival of the Chinese, the audit was divided so the galamsey could keep working and M & Co. could take the gold produced by the galamsey. The operators of the changfas get a fixed salary from M & Co. The underground is divided as follows: the right part of the audit is for the galamsey; they can access to the fourth level of the mine. The Chinese are now down to the fifth level; each level is equivalent to 20 meters. The galamsey cannot go into the fifth level or cross to the side of the Chinese operation.

However, there are tensions between the galamsey and the SSM operation. The galamsey, at times, access the Chinese part of the audit. To prevent this, M & Co. blocked the right side of the audit, so the galamsey could not access the main shaft and they were only allowed to work on the right side. However, at times the galamsey use dynamite to break the stones without telling M & Co. about it. This creates a double risk: first, it can put pressure on the structure of the audit and damage it, preventing the future access to the mine for both, the
galamsey and the SSM. Second, the blasting has to be done when nobody is inside the mine as it creates a risk for people working in the Chinese part of the audit. If the galamsey do not communicate about what they are planning, people can be working down the mine.

Geenen (2016) described, following Ribot & Peluso’s (2003) definition of access as the different mechanisms to obtain and maintain power over a resource, the different mechanisms enacted to access the to the underground in CDR. In this story, I tried to describe how entangled can be the SSM and the galamsey. First, showing that the water is the obstacle that prevents the galamsey from accessing deeper parts of the mines but also how the pumps, provided by Chinese investors, enable not only M & Co. but the galamsey to keep working. It is not only the ground they share but the underground too (See also Luning and Pijpers, forthcoming). Second, they create arrangements that can benefit everybody from the gold in the underground. They have rules for a cohabitation that allows the galamsey, the Chinese and M& Co. to maintain the access to the gold and its profits. M & Co. The risk of being evicted is low for the galamsey, as they are allowed to work there by the M & Co., making the site a mix of legal and illegal?

6.2.2. Post-Mining: Washing Sites, former Mine Workers and Adamos
I explained elements of the process of washing. Yet, I have not described how different actors come together in a washing site. For example, former LS workers own washing sites and LS companies buy tailings from them, as the LS are allowed by the government to use cyanide to extract the 70% of the gold remaining in the tailings. The connections between the galamsey, the large-scale companies, and the washing sites are multiple. There is a transfer of knowledge and a high mobility from big companies to galamsey -not so much the other way around. Former LS workers own washing sites as they know how to wash the gold: for example, they employ magnets to extract the iron dust, and other magnetic metals, that appeared during the crushing of the stones. That was something I only saw on the site where Frederick, a former Goldfields worker, shares the ownership of the place.

The LS companies buy the unrefined gold of the galamsey that the tailings contain. Anglo Gold Ashanti or Goldfields get tailings from the washing sites. Frederik, an owner of a washing site, said the LS companies add the tailings from the washing sites to the tailing dams they have. The LS companies do it to increase their production of gold when what was mined is not enough to cover the costs of their monthly operations. Adamos is a company that buys the tailings too. They subcontract a fleet of trucks to search for tailings, take samples back to their laboratories and based on the quality they offer a price to the owners of a washing site.
According to one informant from Adamos, and others that owned a washing site, the offer can be between 9,000 euros to 35,000 euros depending on the quality and quantity. The drivers of the trucks pay the owner of the washing site a part when they take the tailings, six weeks later Adamos pays the rest of the agreed quantity.

For the owners of the washing site and the machine operators the tailings represent an opportunity. Tailings materialize the hopes of a future. For example, the machine operators get a monthly wage or part of the earnings from that month, around 20 euros, hence much less of what the galamsey can get. Thus, the tailings are like the main load for the galamsey: a chance to break from their current condition. On the other hand, for the owners of the washing sites tailings represent the main source of income, as the washing and renting of the machines do not generate much money. Thus, they need the LS companies to access the Gold because they are not allowed to use cyanide. The companies that collect the tailings do it every six months or yearly. The time of collections depends on the price of gold; the LS company needs to cover their operating costs; or if the owners of the washing site need to money.

To conclude, galamsey wash their loads in different washing sites across Tarkwa. This happens when the site -shaft, old shaft, or ghetto- does not have a changfa machine near: they do not want fast money -which the changfa creates. The milling and smoothing of the ore makes the gold easier to catch. Or because they have an arrangement with the owners of a washing site, i.e. the owners are sponsoring a galamsey operation, and they get the money back through the tailings. Thus, the washing sites congregate not only the galamsey, machine operators, sponsors, former LS workers and gold buyers. It also connects the SSM environment to the LS.

6.3. On temporalities, sustainability and technology

In this section, I will try to show how the different ideas of futures, or temporalities, are creating a clash between scales. To understand how sustainability is seen from below, from the actors directly engaged with the activities that have an impact on the environment, I will discuss how they get engaged in these activities and how they interact with the environment.

Tsing (2015) affirms precarity is the condition of our times. With this, she explains there is a social class -the precariat- that lives without job security, no assurance for their future. In all my conversations with my informants, there was a constant feeling being expressed by them. It did not matter if they were supervisors, like Maggid; chislers, like Kofi, Immanuel, and Raff; or buyers like John. They did not want to do gold mining. The
physical burden of it was immense: they can be inside a shaft for more than 8 hours, it can be during day or night as below the only light comes from their torches. A washing session can take more than 3 days, depending on the size of the load. The results are a mix of chance, luck and hard work. The buying of gold involves walking to different sites to establish relations of trust, and sniffing the toxic smokes that the mercury produces when it is burned during the refining process.

For my informants, mining was what they have, and what they got; they were conscious about the environmental consequences and the hazards for their health. Frederik, John and Kofi, among the other miners I talked to, were always complaining about the hard work, meanwhile they acknowledge that mining is the best path to achieve their future goals. The hopes of improvement, similarly to what the government says in its discourses about development, can be materialized by the gold.

Geenen (2016) states SSM is still considered an element of underdevelopment countries, mainly because it is labelled as a chaotic project in the modernization discourses where order reigns. Familiar with the idea of expectation (Ferguson 1999), Geenen explains that gold mining is an economy of expectations: it deals with futures, material or immaterial. There is a hope of progress linked to the gold, to the activity of mining. The idea of development is a strong part of government discourses and international institutions: the modernization of the uncivilized worlds, in this case through neo-extractive discourses and formalization policies. However, the condition of precariat fits with the galamsey, and even with the licensed miners. They work in what they have, even if they know that probably the risk, to both their bodies and their environment, will destroy a long term future. Gold moves, as Maggid said, and one they it is going to disappear from Ghana’s underground. Accelerating

The value chain of SSM is an economy of expectations and not a chaotic project. Sometimes it is out of the scope of capitalism as it refuses to use wages and operates outside the State framework. Galamsey still divide the load like in traditional mining, even if modernity has arrived, e.g. in the form of changfas. However, in the current discourses and policies aiming to protect the environment, the galamsey and their expectations that can only be achieved through gold mining are hampering the future of water and the landscape. Nana Akufo-Addo, Ghana’s president, said: “Since the Almighty blessed us with precious minerals, there will be mining in our country [...] This present generation does not own the earth; we hold the lands in trust for generations yet unborn and we cannot destroy it”.

74
6.3.1. Poverty, risks and the galamsey

The poverty cycle refers to a cycle where individuals, and families, get trapped in. It is also defined as a poverty trap (see Hilson 2012). The basic argument is: poverty creates limited funds for investing in education, health, and businesses. These limited funds create a dependency on external subsidies or funds, making the search for a job are limited by the initial conditions that poverty creates. This translates in a job where the wages are low as in this argument education or health increases the chances of getting a better job. This exacerbates poverty. Thus, increases the limitation of funds available for investing in education or better businesses that could allow them to break the cycle. It is intergenerational, as it not only affects the present but future generations get their opportunities constrained as the elements that would break the cycle are not accessible to them. It is a self-reinforcing mechanism.

Figure 2. Gavin Hilson adapted Poverty Cycle for SSM

Source: Hilson 2012

In most of the SSM, the concept of wage does not exist. It is not because galamsey or small-scale miners do not know about it. It is because gold workers usually divide the load into equal parts, as it is the traditional way in which they divide the production of a mine (Dummett 1998). They work in a system where expectations play a big role. For example, for Kofi the constant money that he as galamsey makes it the main element that keeps him working in SSM. He left his job in Kumasi because the money he got was not as constant as it is with gold mining. The quantities that he can obtain do not compare to what he was earning as an electrician. For him, the risk of damaging his body is low enough to keep working at the mines. He does not want to keep working as a galamsey in the future -even if he has been doing it for 8 years. He wants to go back to Kumasi with his family, buy a car and become a “mobile electrician”. Thus, in his time horizon, the family and his future investment plan are what drive him to keep being a galamsey.
Another example is Raff, a driller who is saving money to travel and work elsewhere. He left Obuasi, a mining city, to work with a friend in Tarkwa. He is an electrical engineer but he has not found a job with the education he received. He was working as security in one of the Obuasi LS companies. For him, the risk of going down a mine is high. He is afraid of working in the underground, and he was continuously saying that working as a *galamsey* implies accepting there is a 40% risk of damaging the body. Nonetheless, he has a short-term plan: the money he can obtain by working a couple of months is enough to help him travel somewhere else in or outside Ghana. He said that he does not have to maintain a family, and this makes it easier to travel to Accra or a neighboring country. Even more, he is willing to risk his body to do it.

Similarly, Frederik, a machine operator in George’s washing site mentioned the risk of working with a milling machine. The dust produced by this machine creates health issues for them, like bronchopulmonary problems as the dust they breathe damage their lungs. For this, he must buy medicine for the pulmonary problems and go to check-ups every two months. Despite this health problem he said “we know is a dangerous work, it can kill you. But we do it because is what we have”. Yet, Frederik was always thinking about other possibilities to work in something different. He used to be the recipient of a scholarship but it ended as the “international foundation” ceased to sponsor him. That drove him to work as a *loco boy* first, and because he lacked the strength, he became a machine operator. He would like to go back to school, but he must support his wife and kids.

With these stories, I wanted to show the poverty cycle Hilson (2012) propose to understand why a miner is going to be always a miner is not sufficient enough. Even more, it does not take into consideration the contextual elements of the other scales -that are not so clearly present in the individual one- that create pressures over the individual. The *galamsey* work today even if they are risking their life because, as Prof. Al-Hassan said: it is better to die tomorrow than die today. The *galamsey* tend to behave on a short and medium time frame, according to this reflection of Al Hassan. But, as I tried to show, they also create ideas of futures that imply a long-term reflection: Kofi idea of being a “mobile electrician”; Maggid dream of producing movies in other countries; Charles Again, make explicit what concrete evidence you found for this. However, this long-term do not always take into consideration the consequences on the environment and the effect those consequences can have on them, even if they acknowledge the connections between pollution and health.
6.4. Concluding remarks

In this chapter I tried to explain how the different actors create the gold value chain and how the internal dynamics and power relations work, and how this says something about the position of the actor along the value chain. I also wanted to show how LS companies and *galamsey* are entangled, and is not enough to just look at a shaft to understand the SSM resource environments. To grasp the complexities of the gold environment in Ghana, as the case of Tarkwa showed, it is necessary attain to the different elements together: the buyer in his shop, or at washing site or a shaft; the former LS worker managing a washing site; the chiseler at the top of the hill or inside a water basin washing the load. Doing this, the disconnection of the environmental policies promoted by the Ghana government is visible. There is a supply but also a demand for gold. The policies need to be defined from an ecocentric view, where not only the “nature” or the “human” are taken in consideration. Both need to be placed in the same temporality to design policies that do not hamper both of their futures (Persoon 2000). Furthermore, recalling Tsing (2015), precarity can explain many of the behaviors of my informants. It is not ignorance, as the media says; it is a lack of a security for the future, and the security that gold creates –even if it is a game of chances- moves the miners and other actors to engage in relations among them.
7. Conclusion
This chapter’s aim is to bring together the reflections that being in a Ghanaian mining city produced. It is organized in three subsections. The first one uses the gold value chain to explain the connections and disconnections that produce the mining environment of Tarkwa. It also underlines how technology has produced a stronger clash of scales in the resource environment of Ghana and Tarkwa. The second subsection delves into a consideration about the agency of miners. Agency understood as the capacity of an individual to act independently and generate a change on his/her context; in this case, to act politically to transform the power relations existing in Tarkwa and the SSM. The third subsection retakes the ideas of nature, sustainability and development explored in the study to identify how these elements are understood by gold miners and how diverts from policies about sustainability and development. Then, it diverts by exploring a methodology that can create less disconnected policies if the “war on galamsey” continues.

7.1. The gold value chain and the clash of scales
Following Tsing’s (2000, 2015) suggestions to look at the value chain of a product, in this case gold, the local galamsey can be placed in a global system of production and consumption. Simultaneously, I tried to place the global in the local by disentangling the environmental conflicts produced by gold mining. Thus, by showing that SSM is a complex activity, similarly to the case of the Democratic Republic of Congo analyzed by Greenen (2016) I explained how local tensions are exacerbated by global frictions: the promotion of SDG, the protection of the environment and the flux of Chinese capital have exacerbated tension over the ownership of the land and the access to gold that use to be defined in a more communal way: if you owned the land, you could wash the gold. Even more, the increase on the population living on urbanized settlements implies that services as providing water will need to increase its production. If the water that is pumped from the rivers that the galamsey use or depleted. I tried to show how the hot-spot (Pijpers 2016) of Tarkwa is an important element in the clash of scales (Eriksen 2016) that capitalism, in its extractivist form, generates when it tries to produce a sustainable development that places humans first and the environment second. Yet, there is a complication. Even if galamsey seem trapped in the discourse of progress, it is clear they exist in a parallel temporality. The galamsey construct and imagine their futures, and by consequence act in the present, in a temporality that seems unsynchronized to how government produces policies (Persoon 2000). To transform the galamsey and the SSM environment, the whole value chain needs to be considered.
Interlacing the formal and informal operations; the SSM and LS; the idea of nation full of gold and where the glorious nature is devastated by the *galamsey*; and the hopes of the *galamsey* to build a future with the opportunities they believe are for them to take as they own the land and the underground, the gold and water of Ghana, aids to understand the complexity of the scales that are in constant friction in the SSM of gold environment.

7.2. A consideration about agency
During the fieldwork at times the *galamsey* looked as a resistance to the “globalization” forces that “homogenize” everything; to the alienation that capitalism and wages create concerning work. The idea that the *galamsey* were fighting against the social exclusion that the discourses of capitalism and the practices of development have created in countries like Ghana appeared. Yet, they are not a resistance group, as they do not act as it. The *galamsey* of Tarkwa are a group of different agents pursuing their own hopes and dreams. When State or political forces start to pressure them, they do not react. They blame others for contamination or land degradation. They displaced the impact of their activities to the bushes, far in the forest; disconnected themselves from the consequences that their activities have in their surroundings. The *galamsey*, the gold agents, the owners or the machine operators, namely the whole assemblage of gold workers were eager to participate, of being also categorized, inside the box of a teleological modern time. Simultaneously, they hold a huge agentive power: if they decide to stop mining in the meanders of the rivers, or slow down the massive exploitation and extraction of gold, perhaps the idea of a sustainable future is possible. Furthermore, this research –as others have done- tries to criticize large-scale companies in the mining environments. To blame solely the *galamsey* and Chinese for the destruction of the environment in Ghana is not been able to discern from the multiple entanglements that simultaneously give mining to this economic activity. Perhaps the lack of a discursive resource as CSR that works to create a sense of responsible exploitation of a non-renewable natural resource for the large-scale mines makes the *galamsey* the target of the political apparatus of the State. If the *galamsey* had the tools to apply to their everyday life a discursive shifter as sustainability it could have helped them to not being categorized as the evil and the big problem for the environment in Ghana. Resorting to apolitical and technical solutions like formalization has failed in many countries. Space is socially produced, and in this social space, politics have an important role. Politics as an agency, as the intentionality of entanglements that simultaneously produce a socio-political and economic space, i.e. the SSM value chain.
7.3. Rethinking the relations between nature and society
What if we think humans and nonhumans are part elements of the same system? Technology, nature and humans are all politically, historically and socially created. As I said before, not all have agency, but their interactions is what produce an agency. Rethinking these relations would aid in producing policies that are not anthropocentric but ecocentric. If a policy needs to be made, it can be: one, promoted from below: two, constructed in a dialogue with all the actors in the value chain. I consider only then, it would be possible to co-produce a policy that includes all. So the frictions, that probably go deeper in history and are present in more complex ways that I could not observe, can be engaged in a more inclusive way. Then, if these temporalities produce a clash of scales it is important to address them. First, by understanding the landscape as a socio-natural element it is possible to create policies that take into consideration the agent producing the change, i.e. *galamsey*; the technology that facilitated the change, i.e. the *changfa*; and the elements that have been modified, i.e. gold and water. This would mean, spaces produced by the interactions of humans, nature and technology. It implies to understand it as a web of interconnected elements that are constantly shaping each other in a system of relations where humans and non-humans produce the socio-natural space. Even more, to understand that landscape is also linked to the waterscapes. Water, gold and land are elements of a same system and treating them as materials that do not interplay, and with other human and nonhuman elements misses the large picture. Therefore, creates policies that seem apolitical and disconnected from reality, as the 2006 Mining Act in Ghana and the current “war on *galamsey*” that a sector of the media and the State have launched. The policies need to be defined from an ecocentric view, where not only the “nature” or the “human” are taken in consideration. Both need to be placed in the same temporality to design policies that do not hamper both of their futures (Persoon 2000).
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