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VALUEWORKS

Effects of Financialization along the Copper Value Chain

Working Paper

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Abstract

Based on two years of research in Zambia, Switzerland and China, the interdisciplinary research project *Valueworks* examined the supply and value chain of one metal, copper, across three countries, Zambia, Switzerland and China. Researchers, NGOs, civil society activists and one international organization aimed to map the actors involved and the “capture of value” along the copper chain linking Zambia to China. Our key interest was the role of Switzerland, host to the world’s most important commodity trading hub, and its impact on lifeworlds along the copper value chain.

While the social and environmental concerns are already well-researched for mining itself, *Valueworks* has shown that the service infrastructures of global extraction decisively influence the scope for sustainable development in mineral extractive countries. Mining is embedded into a wider landscape of services – transport, trade, financing, insurance etc. – in which decisions are taken that crucially affect the capacity of countries like Zambia to formulate and enforce policies. This global landscape is shaped by actors who span different countries and are able to move between different regulatory spaces.

For all of them, financialization has become a global condition with which they have to deal; at the same time, their actions reproduce and reinforce dynamics of financialization. While the guises and consequences of financialization are manifold, one common thread is the increasing power of capital owners. This power translates into pressure for companies to perform in relation to indices; it changes the relation between ‘physical’ and ‘speculative’ trade; it shifts the power balance between workers and managers in collective bargaining agreements; and it further erodes the capacity of both Southern and Northern countries to effectively regulate their markets. While Swiss traders are responsible for a large part of the volumes being traded within the production network for copper, employment by the sector is relatively small. Nevertheless, Swiss traders’ structural role in the global economy is huge, due to their influence on transnational trading networks, the pricing of copper and their role in facilitating financialization in globalized trade.

This *Working Paper* offers policy recommendations for Swiss policy makers at regulatory, political, scientific and institutional levels.

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1 Introduction

Our research project, *Valueworks: Effects of Financialization along the Copper Value Chain*, started from the observation that we live in an age of financialized commodity markets characterized by, among other things, a global division of labor. While some countries provide commodities and struggle to derive profit from this activity, others, which are specialized in service provision, trade and move these commodities from sites of extraction or cultivation to sites of production or consumption, and rake in huge profits in the process. We are faced with an economic power imbalance that seems inherent to global production networks. *Valueworks* was aimed at better understanding this phenomenon.

The project focused on one commodity, copper, and three countries, Zambia, Switzerland and China. It grouped together academics and activists (see Kesselring 2018c) around a common question: where, how and by whom is value “captured” along the copper value chain, notably between Zambian mines and Chinese producers?

Zambia is a key site for extraction. The country witnessed an expansion of the extractive sector since the early 2000s, in the wake of a global commodities boom. At that time, Zambian mines had already been privatized as a result of a deal negotiated under pressure by the World Bank and the IMF in the 1990s. Old mines dating back to the 1930s and 1940s were reopened (e.g. Mopani Copper Mines in Kitwe and Mufulira) and new mines commissioned (primarily in the Northwestern Province) thanks to foreign direct investment. These new mines are highly mechanized and provide much fewer jobs than the old ones. The new mining boom has not changed the fact that little manufacturing and fabrication take place within Zambia.

Switzerland is one of the most important global trading hubs (SECO 2018). The share of copper being traded by Swiss companies has increased dramatically since 2003. Today, Switzerland has replaced the United Kingdom as the main destination for global copper – at least on paper (see below). Some 60 percent of metals and 60 percent of copper traded worldwide are traded in Switzerland. Transit trade through Switzerland by companies based there plays a crucial part in the country’s national economy, as it now takes up a bigger share of Swiss GDP (3.8 percent in 2017) than tourism or banking, two sectors Switzerland is much more often associated with.

Today, at least half of Zambia’s copper is traded in Switzerland, often in consequence of off-take agreements between Zambian mines and companies registered in Switzerland. Large trading firms do much more than to buy and sell metals and other commodities. Their business strategies cover a large part of the value chain, ranging from transport to warehousing, ocean shipping, fuel supply, certification and surveillance. Without these essential services, copper would not move beyond the mine gate.

As for China, it is a key site for production, consumption and, increasingly, trade. Most of Zambian copper is eventually sold to Chinese buyers. China exerts influence on commodity markets through the rise and internationalization of Chinese commodity exchanges. For copper, this concerns mainly two companies, the Hong Kong Exchanges and Clearing (HKEx) and the Shanghai Futures Exchange (SHFE). The latter is one of the three main exchanges on which copper contracts are traded globally; it recorded the world’s highest monthly trading volumes for copper contracts in 2014, ahead of its rivals, the UK-based LME and the US-based Comex.

Valueworks sought to better understand a loosely regulated sector of the Swiss economy, the commodity trading sector, on which little research had been conducted thus far, and to assess its effects on the daily life of the people living in Zambia, Switzerland and China. The project also asked policy-oriented questions, e.g.: To what extent should Swiss commodity trading (including logistics and transport) be considered as not only an important sector for Switzerland but also part of a problem of global significance? What are the development impacts of this sector in Zambia?

Such questions are currently debated at the federal level in Switzerland. The Federal Council recently released a report (SECO 2018) on the Swiss commodities sector as well as a set of recommendations regarding commodity trading (FDFA and SECO 2018). A revision of the

country's Company Law is also underway, which provides opportunities to better regulate the commodity sector. Discussions are being held in the public arena thanks to the Responsible Business Initiative, which was launched in 2015 and should be put to a popular vote soon. Importantly, *Valueworks* raised the question of whether Switzerland should move away from a model where the commodity sector is largely self-regulated towards one where it is subject to more state regulation. And if so, how is this supposed to happen and look like?

The project was led by Rita Kesselring (University of Basel) and coordinated by both Kesselring and Stefan Leins (University of Zurich). It ran from January 2017 to December 2018 and was financed by the Swiss Network for International Studies (SNIS) at approximately CHF 260,000. The grant allowed us to conduct two years of research into the global commodities sector and study its entanglements across Switzerland, Zambia, southern Africa more broadly, and China. Twenty-two researchers from Zambia, Switzerland, Germany and the United Kingdom and representatives from Swiss and Zambian civil society organizations, international and non-governmental organizations were involved in the research.

This working paper outlines the main findings of individual and collective research conducted in the framework of *Valueworks*. Early on in the project, we decided that each researcher should conduct a study that draws on his or her expertise based on our joint questions. As a result, *Valueworks* was able to cover a wide variety of topics and regions, and to develop an analytical perspective informed by them.

In spite of a great amount of solid empirical data and analysis produced by the project, many gaps remain and new ones have been identified. There is much we did not manage to find out. With regard to Swiss trading firms, for instance, there remains a lack of evidence regarding such basic information as: the total number of people they employ, their turnover and profit, the taxes they pay to governments or the list of countries they operate in. This lack of information cannot be attributed only to our project's limited funds, time and human resources: all things considered, the trading sector remains very secretive and has successfully maintained a low profile thus far.

Valueworks is embedded in broader debates about development, global governance and North-South relations in the context of the United Nation's 2030 Agenda for Sustainable Development. The questions this project raised and the findings it offered are relevant for policymakers, civil society and the private sector in their endeavors to make the international economy more sustainable and socially just. The project is further informed by long-standing reflections on transformative social change and transformative policy (UNRISD 2016). In order to be effective, policies must result in social change that addresses the root causes, rather than the symptoms of poverty, inequality and environmental destruction. It requires an "eco-social" turn in development thinking and practice, a condition that is especially challenging for extractive industries (Hujo 2018)¹.

This working paper is one of many academic and non-academic publications that have come out of the project (see e.g. Müller 2018a), or will do so soon.

2 Theoretical framework

In studying the transnational flow of copper and its impact on local lifeworlds, we focused on the following conceptual clusters: (1) global commodity or supply chains and production networks, (2) the creation and transformation of value, and (3) financialization and its impact on extractive industries in general and in structuring and transforming transnational commodity trade in particular. What follows is a presentation of the theoretical framework that guided our empirical studies.

¹ The Sustainable Development Goals suggest precisely this approach; in particular, targets and goals 12.2, 12.4, 12.6 and Goal 13, 14 and 17.3 are relevant for a sustainable transformation of the extractive industry (Hujo 2018).

2.1 Transnational supply chains and production networks

The concepts of chain and network are crucial for understanding today's global economic and societal connections, in particular the ways in which unequal relations in the global division of labor emerge and are reproduced.

Since the early 1990s, social scientists have attempted to explain the new structures that characterize the world economy in times of globalization and the new mechanisms that drive it. Many of them have shared a concern for unequal development and an interest in understanding its more recent causes. Drawing on Immanuel Wallerstein's world-system framework, sociologists Gary Gereffi and Miguel Korzeniewicz (1994) developed the concept of "global commodity chains" (GCC) to look beyond the analytical lens of the nation-state at broader governance processes that affect material and financial flows. Later, Gereffi and colleagues noted a shift from "trade in goods" to "value added", "tasks" and "capabilities", which prompted them to start speaking of "global value chains" (GVC) (Gereffi et al. 2005).

Elaborating on these insights, Neil M. Coe and colleagues proposed the concept of "global production networks" (GPN) (Coe et al. 2008). In their model, the global economy appears as being composed of dynamic networks populated by a wide range of entities and spread over numerous regions. The GPN approach reveals the links that tie these entities and these regions together and the ways in which they are embedded into global production and trade. It has a few advantages compared to the GCC and GVC approaches (Coe and Yeung 2015). Unlike them it is not based on the premise that one entity (e.g. a company) occupies a prominent position or is in control of the chain, which may not be the case. It also allows for the detection of uneven development not only between countries but also within them, through an emphasis on multi-scalar analysis. Finally, its relevance goes beyond manufacturing to include other industrial sectors as well.

Our research bears the influence of these three approaches. As in the GCC literature, we focus on one commodity, i.e. copper. Following work on GVC, we seek to find out how much value-added is produced where and by whom. And like GPN scholars, we are interested in studying regional institutional dynamics and the embeddedness of local entities in global markets. In their seminal book, Coe and Yeung (2015) acknowledge that the role of financial entities in global production networks is crucial but not yet well understood. We have heeded their call and made this aspect a particularly important part of our research.

In our research, we drew on the above approaches in at least two important ways. First, we offer an analysis of the links between local and global dynamics. We transcend the limits of scholarship on GPN by approaching local lifeworlds as complex social situations in their own right, not just as production networks. We also avoid some of the shortcomings of the GCC and GVC approaches, which mainly study the mechanisms behind commodity or supply chains and not so much their effects at the local level, thereby missing the social and cultural dimensions of economic interactions. Instead, following Anna Tsing (2009), we explore "the full tapestry of gender, race and national status, through which supply chain exploitation becomes possible" (p. 172). Second, we link the literature on global production networks to themes that have gained considerable attention in current economic anthropology, i.e. the construction of value and the impact of financialization. These two themes are discussed below.

Specifically, *Valueworks* researchers Christian Busse and Miriam Wilhelm (2018) propose a comprehensive conceptual model of sustainability proliferation through global supply chains. Focusing on supply chain management, their model explains why the pressure for sustainability exerted by stakeholders often does not permeate throughout the extended supply chain. The authors argue that current supply chain governance inherently facilitates "sustainability collapse", and that a process of commoditization happens along the supply chain. Sustainability should thus not be regarded as a corrective feature for supply chain management but as a key characteristic thereof. Their research follows the UN Sustainable Development Goals, which demand sustainability principles be respected along supply chains, ranging from financial flows to labor conditions, fair and transparent taxation, and local content policies.

2.2 Value, values and valuation

In recent decades, the division of labor between social scientists studying “values” (social norms) and economists studying “value” (economic measure) has gradually been challenged. Some economists became interested in the quantification of social norms and cultural trends, while at the same time some anthropologists and sociologists have started to study “value” as something that emerges from culturally framed valuation practices (see, for example, Stark 2009, Çalışkan and Callon 2009, 2010, Helgesson and Muniesa, 2013, Vatin 2013). While studies of valuation practices have helped us understand “value” from a constructivist perspective, they often fail to integrate the broader political and economic contexts that determine how valuation is performed (see Mirowski and Nik-Khah 2007; Corpataux and Crevoisier 2014).

Our research examined valuation as it is practiced in various real-life settings along a single supply chain. We adopted a systematic perspective on how copper’s value changes along its journey as a commodity. Our aim was to understand what valuation practices transform copper into an economic good and a financial asset. To do so, we drew on the Marxian distinction between use value and exchange value. In some stages in the production cycle (industrial production itself, but partly also extraction, transport and processing), copper is primarily perceived as a resource to be used for its material qualities. Its use value drives the agency deployed around the commodity. Exchange value is, of course, never absent, and its fluctuations seriously affect all stages, but copper’s value in productive processes could not simply be replaced by a different material. For other actors, however, copper’s use value is of importance only insofar as it affects its exchange value. This is true for mine owners and informal copper miners, and even more so for exchange-based copper traders, for whom the product ultimately becomes a speculative tool replaceable by any other commodity or financial product (see Lepinay and Hertz 2004; Ortiz 2014).

In general, the literature on value chains remains separated from the literature on valuation, as the former takes commodities’ value for granted. With the increasing financialization of commodity markets, this perspective no longer seems appropriate. Since commodity chains link societies by organizing the production and distribution of valuable goods, the values attached to a good at different stages drive and shape the integration between different places. Today, traders’ conceptions of value might affect the conditions of this integration to a disproportionately high degree.

2.3 Financialization

Introduced by sociologist Greta Krippner (2005) and economist Gerald Epstein (2005), the concept of financialization can be defined as the “increasing role of financial motives, financial markets, financial actors and financial institutions in the operation of [...] economies” (Epstein 2005, 3). It is increasingly used today to describe the rise to prominence of finance and its underlying rationales. Financialization encompasses economic, social and political dimensions and affects livelihoods, as well as capitalist dynamics both within and across countries. The literature on financialization offers various definitions and methodologies aiming at investigating “how an increasingly autonomous realm of global finance has altered the underlying logics of the industrial economy and the inner workings of democratic society” (Van der Zwan 2014, 100). While some authors focus on the inherently economic dimension of financialization (Akyüz 2014) and its distributional implications (Stockhammer 2012; Zalewski and Whalen 2010; Palley 2007), others examine how financialization affects the everyday life, turning citizens into investors (Van der Zwan 2014, 111), or how financial rationales have “colonized” valuation processes of social, cultural or environmental activities and assets, proposing “a redefinition of the object being valued, which comes to be seen from the investors’ viewpoint” (Chiapello 2015, 30).

Financialization has deeply affected commodity markets, among many other domains. Since the early 2000s, new derivative instruments, higher market volatility and automated trading have critically changed the role of finance in commodity trading. Today, financial instruments play a critical role in determining commodity prices at all points in the supply chain. This process

is not only driven by trading firms, but also by private, public and institutional investors looking for returns in a risky market environment. This trend has further dissociated trade in commodities from these commodities' materiality. Commodity markets are now said to be more dependent on expectations about trade in derivative instruments than on commodity demand from the real economy (Thomson and Dutta 2015, 23; see also Beckert 2017). As a consequence of this decoupling between the material and the imaginary, and the accompanying complexity, supply chain transparency and sustainability become next to impossible to achieve for commodities traded on financial markets (see UNCTAD 2013).

In our research, we started from the assumption that structural changes in global production networks, among them financialization, affect the distribution of opportunities at the sites of extraction, transport, trading, manufacturing and recycling. We analyzed such changes in different local sites along copper's commodity chain and sought to conceptually reconnect the social, political, economic and moral spheres of action disconnected by transnational processes and financialized trade.

Horacio Ortiz, who contributed to *Valueworks* as an external expert and researcher, has identified three levels of financialization that impact the copper supply chain (see also Hujo and Lupo 2018). First, financialization can be observed on a macroeconomic level, which means that commodity trade becomes more important; a fact which in turn has created pressure to adapt regulations in favor of the commodity trading sector. In Switzerland, this pressure is very strong (see below). In Zambia, a country where copper makes up the lion's share of the country's exports (see chapter 4), the state also mostly gives in to pressure from international mining companies to regulate minimally and to tax little. Second, financialization generates particular dynamics at the company level, in particular with regard to companies listed on stock markets. Here, rationales of "shareholder value" create new pressures to exploit employees and shift profit from investing in people and infrastructure to offering pay-offs to investors (see Lazonick and O'Sullivan 2000). Third, financialization affects the everyday lives of people and households through the penetration of financial rationales into family budgeting and household economics (James 2014, Musonda 2018), an aspect which a number of *Valueworks* studies focused on (see below).

Based on a review of the literature on financialization and its diverse economic and social development impacts, *Valueworks* researchers Katja Hujo and Luisa Lupo (2018) conclude that an analysis of the impact financialization on the copper value chain across different countries needs to combine a macro, meso and micro perspective.

The macro perspective is useful to understand the broader global context in which copper extraction and trading takes place. The question is how the international financial and monetary architecture and the functioning of (financialized) international commodity trade impacts the copper sector and specifically copper-producing countries such as Zambia.

At the meso level, an actor-centered perspective helps us analyze the positions and strategies of different actors involved in the copper value chain as well as their regional and local development implications. The question is how financialization of global copper trade impacts on power relations in the specific copper GNP under study (distinguishing between different actors such as mining companies, trading and storing companies, banks, governments, pension funds, contractors, trade unions, civil society).

At the micro level, the question is how individual firms (for example local suppliers), but also communities and households are affected by changes occurring in the copper value chain and the national and international policies regulating the sector.

3 Case studies

Valueworks focused on three countries: Switzerland, Zambia and China. This section describes the work done by members of the project in, or in connection with, each of these countries.

3.1 Switzerland: a global commodity trading hub

The following empirical findings and analytical insights stem from research done by Anna-Sophie Hobi, Ganga Jey Aratnam and Stefan Leins. Hobi did fieldwork on political activism in the Swiss canton of Zug, where activists campaign against mining and trading companies, in particular Glencore. Jey Aratnam conducted interviews with representatives of the commodity trading sector and politicians in Zug as well as elsewhere in Switzerland. Leins' research took place mainly in Geneva and involved participant observation during a four-month training to become a commodity trader, interviews and document analysis.

3.1.1 The boom of commodity trading in Switzerland

Switzerland is currently the world's largest commodity trading hub. Roughly speaking, one third of all commodities traded globally are traded via Switzerland. For some commodities (e.g. metals, coffee, sugar), Swiss trade even accounts for more than half of global trade. Switzerland hosts approximately 500 companies active in commodity trading. The sector makes up 3.8 percent of the country's GDP (SECO 2018, 12; SRF 2016). In the canton of Geneva, which is Switzerland's largest commodity trading site, tax revenues coming from the commodity trading sector make up no less than 20 percent of the cantonal budget (SECO 2018, 14). In terms of employment, the role of the sector is somewhat unclear. A recent study supported by the Swiss Trading and Shipping Association (STSA) claims that more than 35,000 people are working in the Swiss commodity trading sector (Eggert and Ferro-Luzzi 2017). But a counterstatement issued by Public Eye (2017) questions this figure and advances that of 7,500 instead.

Commodity trading has grown substantially in Switzerland within the last two decades, but the country has been a place for traders for a long time. From the 15th century onwards, a number of Swiss families played key roles in transnational commodity trading (e.g. Kaspar Stockalper for salt, Salomon and Johann Georg Volkart for cotton and coffee, Georges R. André for grain, and the Basler Mission for palm oil, rubber and cacao) (Berne Declaration 2011; Haller 2016). Later, in the middle of the 20th century, two companies that were instrumental in shaping contemporary commodity trading settled in Switzerland. In 1956, Cargill opened its trading subsidiary in Geneva. It was to become Switzerland's third largest company by sales volume in 2016 (see Table 1). In 1957, Philipp Brothers, an American company, opened its European headquarters in Zug. The company is widely known as having originally trained Marc Rich, who went on to become a commodity mogul and a model for many traders. Along with Nestlé, which had been operating in the Lake Geneva region since the 19th century, these two companies laid the ground for Switzerland to become a global center for commodity trading. In 1974, Marc Rich became independent and founded Marc Rich + Co. AG in Zug, which was renamed Glencore in 1994. Around the same time, Trafigura, another large global player in the commodity trading sector, was founded in Lucerne². Simultaneously, many foreign companies active in commodity trading moved their headquarters or trading subsidiaries to Switzerland. This resulted in a dramatic increase of trading operations, especially after 2000 (see SECO 2013; SRF 2014).

3.1.2 Why Switzerland?

In his biography of Marc Rich, Amman (2009, 76-77) explains that Philipp Brothers chose to set up their European headquarters in Zug for three reasons: (1) political neutrality, (2) the Swiss bank secrecy, and (3) the low tax environment. Many practitioners Stefan Leins and Ganga Jey Aratnam talked with also mentioned the following factors as making Switzerland particularly attractive: (4) a geographically favorable location, (5) a cosmopolitan environment (due in large part to the high number of international organizations), (6) the proximity of many banks that have expertise in trade finance, and (7) a business-friendly political landscape. It is fair to say that all of these factors have contributed to the growth of commodity trading in Switzerland.

² Today, Trafigura mainly operates from Geneva.

In addition, personal networks are also of great significance. This is true for many of the economic activities taking place in Switzerland, including banking, and, more generally, for business involving rich people (see Jey Aratnam 2015; Leins 2018; Mäder, Jey Aratnam and Schilliger 2010). Most business relationships are built on long-term informal networks. In Geneva, these networks may include not only business people but also employees of international organizations, diplomatic personnel, politicians, state representatives and academics. And in Zug, strong personal relationships have been identified between company representatives and people working for the municipality (Hobi 2017).

It should be emphasized that the advantage of being based in Switzerland for commodity traders is directly linked to the Swiss regulatory and political environment. Our research has shown that a key reason why companies choose to be located in Switzerland is the country's tax environment. Switzerland allows very aggressive accounting strategies, such as forms of transfer pricing in which companies shift gains to low-tax centers such as Switzerland through particular accounting practices. In doing so, Switzerland does not only benefit as a host to traders, but also as the main beneficiary of tax payments, which could otherwise have been paid in resource-rich, producing countries such as Zambia. Here, the main responsibility lies with the politicians in Switzerland, who allow trading companies to use these techniques, which they often refer to as instruments of "tax optimization". In fact, these techniques, which are used nationwide, enable tax evasion.

Furthermore, political neutrality allows commodity traders to trade with countries under embargo. Marc Rich made this one of his "competitive advantages": he used Switzerland as a platform to trade with Iran and the South African under apartheid, when these countries were facing sanctions from the international community. To this day, Swiss companies trade with partners that are considered by many as problematic. They are able to do so thanks to several of Switzerland's institutions. Political neutrality is one of them and so is bank secrecy, which puts companies' financial information beyond the reach of judicial bodies. Due to external pressure, this way of doing business has recently become riskier. For instance, BNP Paribas, which used to play a leading role in financing Swiss commodity traders, had to withdraw from the sector after having been found guilty in the US of financing trade with Iran, Cuba and Sudan (see Finanz und Wirtschaft 2014; Handelszeitung 2014).

3.1.3 Swiss commodity trading beyond buying and selling

The Swiss commodity trading sector involves many more activities than just buying and selling. As Leins' research has shown, commodity trading requires the interplay of trading houses with shipbrokers, certification companies, trade finance institutions, legal advisors, and many more actors (Leins 2018b, see also chapter 3.2.2 and Dobler and Kesselring 2018, 2019).

3.1.4 Key players and locations

The complexity of the professional field of the Swiss commodity trading sector can be seen when examining the variety of players in relation to the three main hubs that are Geneva, Lugano and Zug. The approximately 100 companies that make up Switzerland's shipping industry are headquartered in the Lake Geneva region (mainly Geneva and Lausanne). Together, they organize and coordinate 22 percent of all shipping movements worldwide.³ SGS, the world's largest player in commodity sampling, testing, and certification, is also based in Geneva. SGS partners with almost all Geneva-based trading companies. While most of Switzerland's commodity trading companies are located in Geneva, the fact that Glencore and a few other companies are headquartered in the canton of Zug makes central Switzerland another hotspot for commodity trading (see Jay Aratnam 2015). Glencore not only trades commodities but also extracts most of the commodities it trades – which sets it apart from other companies – and acts as a logistical enterprise. A third Swiss region that increasingly specializes in commodity trading is the business area in and around Lugano, in southern Switzerland. Broadly speaking, each region

³ Conversation of researcher Stefan Leins with STSA representative (22 September 2017).

dominates in a particular type of commodity. According to practitioners, Geneva plays a leading role in oil and soft commodities (i.e. agricultural products), Zug is important for metals, and Lugano is primarily specialized in gold. While in the mid-1970s, the top five Swiss firms (counting by sales/turnover) were in food industry, pharmaceuticals, machinery and retailing, the list now contains only firms from the commodity cluster. Table 1 shows the ten largest Swiss companies in terms of sales volumes. In 2016, the top five were all companies active commodity trading. And among the runners-up, three companies (Louis Dreyfus, Nestlé, and Gunvor) were also active in that sector⁴.

Table 1
10 largest companies in Switzerland in 2016

	Sales volume (in CHF billion)	Head office	Business sector
Glencore	156	Baar	Commodity trading
Vitol	155	Geneva	Commodity trading
Cargill	109	Geneva	Commodity trading
Trafigura	100	Geneva	Commodity trading
Mercuria	90	Geneva	Commodity trading
Nestlé	89	Vevey	Food products
Louis Dreyfus	51	Geneva	Commodity trading
Roche	51	Basel	Pharmaceuticals
Novartis	49	Basel	Pharmaceuticals
Gunvor	47	Geneva	Commodity trading

Source: Handelszeitung 2017

All of the three hubs have their own regional association: the Geneva Trading and Shipping Association (GTSA, now merged with STSA) is the largest one, representing around 100 member institutions. The Lugano Commodity Trading Association (LCTA) has around 50 members, and the Zug Commodity Association (ZCA) has around 40 members.

The Swiss Trading and Shipping Association (STSA), which is located in Geneva, acts as umbrella organization for the regional associations⁵. STSA is active in lobbying, as well as in the organization of business-related trainings. STSA has strong links to the University of Geneva, where they co-organize and co-finance a master's degree program in commodity trading and a diploma of advanced studies in commodity trading. In 2015, STSA, along with a number of governmental and corporate institutions, founded the Swiss Research Institute on Commodities (SRIC)⁶, which aims at building a platform for research and serve as a forum for discussions for both public and private economy stakeholders.

The relationship between Switzerland and commodity trading companies should not be approached only from the latter's perspective (Switzerland as a convenient location) but also from the former's. The existence of commodity trading in this country impacts its economy and civil society. Even though Swiss commodity traders pay little tax in Switzerland, they have a considerable impact on the country, most of all through the profit they generate. Moreover,

⁴ This list reflects the fact that commodity trading is a business with a high turnover and low margins. In terms of revenues, the list would look different, but due to the private nature of many trading companies, we lack the data to know for sure. In any case, the list reflects the size and importance of commodity trading companies located in Switzerland.

⁵ Commodity trading company Trafigura left the association in 2016 after disagreements on how to position Swiss companies in terms of data transparency. Glencore, on the other hand, was never a member of STSA, as the company presents itself as a mining, not trading company.

⁶ The founding members of SRIC are the STSA, the Swiss Coffee Trading Association (SCTA), Swisscontact, the University of Geneva, the Département de L'Emploi, des Affaires Sociales et de la Santé of the Canton of Geneva, and the Swiss Federal Department of Foreign Affairs.

Switzerland benefits from the presence of these firms, because experts employed by them spend money and pay taxes in Switzerland. For example, Rüslikon, a small town located on the shores of Lake Zurich, benefitted from a tax payment of approximately USD 360 million by one individual in 2012: Glencore’s CEO Yvan Glasenberg.

However, such economic benefits do not mean that the companies are uncritically welcomed and accepted in Switzerland. As Anna-Sophie Hobi (2017) noted, various civil society groups in Switzerland point to the existing inequalities between the countries that host commodity producers and those that host commodity traders. In her case study on Zug, Hobi shows how Zug-based activists have succeeded in putting pressure on Glencore in recent years. They have done so via public rallies, the distribution of information on people’s lives in producing countries and the impact of the activities of Swiss companies on these lives, as well as via political art.

3.1.5 Categories of traded commodities

In physical trading, commodities are normally categorized as follows:

- Agricultural products, sometimes also called “soft commodities” (e.g. grains, cattle, sugar, soybeans, cacao, coffee)
- Energy (e.g. crude oil, natural gas, nuclear energy, hydro energy)
- Metals (e.g. iron, copper, aluminum, nickel, lead)

Switzerland occupies a key position with regard to all these categories, as can be seen in Table 2.

Coffee	60%
Crude Oil	35%
Grains	35%
Metals	60%
Sugar	50%

Sources: STSA, Swiss Academies Factsheet 2016

Some traders are specialized in a single commodity, while others trade various commodities at the same time, from one or even several of the above categories. In order to successfully trade any commodity, a trading house needs to have considerable expertise in that particular commodity. This has to do with the fact that commodity traders do not only buy and sell but also organize the physical transportation of the cargo. Thus, physical traders are committed to one commodity for a long time. Unlike actors in the financial market sector, they do not simply approach commodities as exchangeable assets and means of making quick profit.

Commodities can be traded either “on the market” or “over the counter” (see also Hujo and Lupo 2018). Trading “on the market” involves a public contract and a price defined by a particular exchange, such as the London Metals Exchange (LME), the Chicago Board of Trade (CBOT), or the Shanghai Futures Exchange (SHFE, see point 3.3.4). Trading “over the counter” (OTC) means that commodity traders enter a bilateral and private agreement. When they do so, they often use a market price as reference.

The physical commodities traded in Switzerland rarely ever reach the Swiss territory.⁷ Swiss traders normally act as intermediaries, linking producers to consumers, and commodities are shipped directly to the intended country of destination. Currently, over 60 percent of transnationally traded copper is traded via Switzerland (SECO 2018), which makes this country the most important intermediary country in global copper trade.

⁷ Gold and coffee are notable exceptions.

Swiss commodity traders are massive logistics companies with established links to producers, port authorities, shippers, customs officials, local brokers and consumers. One of their key skills consists in establishing and maintaining social and economic ties with a variety of actors. The key importance of personal networks became apparent through many of the conversations that Stefan Leins had with commodity traders in Geneva. The same is true for Zug.

Jey Aratnam's most recent research on the Zug commodity hub, which builds upon his first reflections on connections in the global economy as forming chains or rhizome-like structures (e.g. roots in Switzerland and tentacles in Zambia, see Jey Aratnam 2015), conceptualizes the manifold entanglements and poly-dependencies of the Zug copper commodity hub as a "cloud". It shows that connections and relations within the international commodity structure (between businesses as well as between businesses and society) ought not to be regarded (solely) as closely knit and interlocked, but rather as loose, partly opaque and elusive, and fluid, in coincidence with the various physical states of copper production and trade. This results in connections without direct material connectivities. Only a cloud-like structure can help explain, he argues, what happens to the hundreds of thousands of tons of copper that Zambia officially exports to Switzerland when the official Swiss customs statistics only report an inflow of Zambian copper at the kilogram-level.

As a commodity, copper belongs to the category of "metals". In Switzerland, it is traded mainly by Glencore, Trafigura, and, to a minor extent, Louis Dreyfus (see Berne Declaration 2011, 35). Swiss traders have different arrangements in terms of where they buy copper. Normally, it is bought "ex works" (i.e. at the mine gate, see Dobler and Kesselring 2019). From there, it is transported to a port and shipped to the buyer. Such a process can involve more than one trading firm and be highly complex in terms of its structure. One way in which commodity traders manage to reap large benefits is by shaping these processes and structures according to their own economic interests.

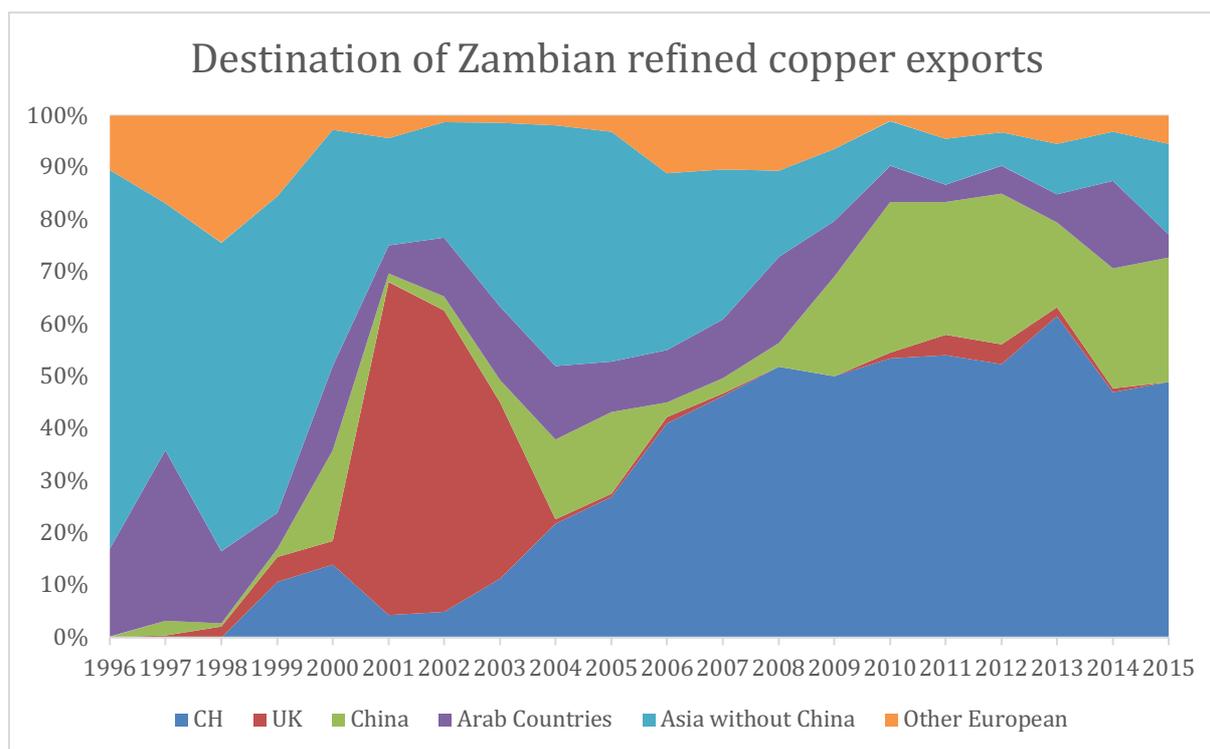
3.2 Zambia: a country reliant on copper extraction and exports

As a case study, Zambia, a resource-rich country, was central to our exploration of the practices of Swiss companies, in particular commodity trading companies, in a global value chain. Zambia is only the world's eighth largest producer of copper, but the country is highly dependent on copper extraction and export. In 2016, its extractive sector accounted directly for 10.5 percent of national GDP – and indirectly for as much as half. Metal exports represented 72.8 percent of Zambian exports in 2016 (67.6 percent for copper alone); and mining contributed 26 percent to domestic revenue, the largest part coming from mineral royalties (EITI 2018).

3.2.1 The trade of copper between Zambia and Switzerland

In the 1990s, most Zambian copper was directly exported to Asian countries (Japan, South Korea, Malaysia, Pakistan, Emirates, Saudi Arabia). The early 2000s saw a surge in exports to the United Kingdom, which was then replaced by Switzerland as a major export destination. This was paralleled by a great increase of exports to China. In 2015, 45 percent of Zambian refined copper was officially exported to Switzerland (valued at USD 2.8 billion), and 22 percent to China. The same year, 69 percent of raw copper was exported to China and 21 percent to India. Between 2007 and 2015, roughly a quarter of the total worth of goods exported from Zambia went to Switzerland in the form of refined copper.

Official trade statistics should be taken with a pinch of salt (see Dobler and Kesselring 2019), but they offer an indication of the changing trends that can be observed in the international trade in Zambian copper. The graph below shows the countries to which refined copper from Zambia was exported between 1996 and 2015 (based on UN COMTRADE data, see <https://atlas.media.mit.edu>).



Research undertaken by Gregor Dobler shows that the shift to the United Kingdom and later to Switzerland as a main destination country illustrates the expansion of metal traders' market share, and the movement of business to companies based in Switzerland. It coincides with new investments made in mining during the commodity boom of the 2000s, which led to a marked expansion in overall copper production in Zambia.

Zambian copper is usually sold by mines and smelters ex works, through off-take agreements that typically run for periods from one to up to fifteen years. These agreements can be made for various grades of metal: concentrates (30 percent copper by volume), anode or "blister" (around 99 percent) and cathode (99.99 percent). They are often exclusive, in the sense that they cover all the copper produced in a given mine. When this is not the case, they are ranked in order of preference and only fulfilled if production reaches high enough levels (e.g. the first customer gets the first 500,000 tons, the second one the next 200,000, and so on). The price is normally quoted based on the LME price. However, since off-take agreements are not made public, it is generally difficult to know what price the parties have agreed to.

3.2.2 The role of Swiss traders beyond trading

One of the key findings of *Valueworks* is that Swiss firms are involved extensively in the copper supply chain in southern Africa. Many of them provide services at various points along the chain, and one of them, Glencore, even owns copper mines.

Switzerland is rarely looked upon as an important economic actor in Africa. However, taking Zambian copper as a case study, Gregor Dobler and Rita Kesselring show how important Swiss companies have become in that region of the world – a phenomenon they refer to as "Swiss extractivism" (Dobler and Kesselring 2019). Focusing on one part of copper's global production network, they identify service provision and tax regimes as crucial elements of present-day African mining regimes and key nodes of value capture for Swiss companies. They denounce the unequal distribution of risks and gains between Zambia and Switzerland, and conclude that it illustrates current trends in global capitalism. At the same time, they note that opportunities for value capture depend on regulation in Northern countries, the violation of which represents a reputational risk for Swiss companies.

Dobler and Kesselring's research also shows that trading firms do not operate in isolation. They are part of a booming commodity logistics sector, where even the most integrated

companies have to resort to services provided by others. Following *Zambian copper on its way from the mine to the harbor*, Dobler and Kesselring analyze the logistical infrastructure that commodity traders rely on, and reveal that many Swiss companies participate in it. Companies headquartered in Switzerland play a major role in all aspects of logistics, including shipping, insurance, certification and warehousing.

Most of these companies do not invest in mining activities themselves, which are very localized, expensive and require long-term commitments, but rather in the services attached to these activities, which are more flexible, less risky and often highly profitable (Dobler and Kesselring 2018; see Müller 2019 on fuel supply in Zimbabwe). They generate profit at all stages of the copper value chain, while at the same time avoiding the political exposure that mining – and increasingly trading – brings. Swiss involvement in the copper supply chain goes well beyond trading. Based on this insight, Dobler and Kesselring argue that the impact of Switzerland's commodity trading on other countries cannot be understood – much less regulated – without taking into account the whole range of activities Swiss companies are involved in.

3.2.3 Financialization and land acquisition

Three of *Valueworks's* sub-projects looked specifically at processes of financialization in the *Zambian context*. Some researchers addressed the financialization of commodity markets, others the effects of financialization on land tenure and land acquisition in *Zambia*, and others yet the impact of the financialization of *Zambia's extractive sector on mining communities*.

Dale Mudenda, Maio Bulawayo and Manenga Ndulo (2018) examine the increasing financialization of commodity markets since the early 2000s. Using data on quarterly exports and stock prices of *Zambia's key mining and trading firms (Glencore and Vedanta)*, they investigate the extent to which these are associated with global copper prices. In terms of method, they use a Granger causality test to identify a possible association among these variables. In line with existing studies, they find indications of some positive association between the selected share prices and movements in copper prices. In particular, they find a strong bi-directional causality between commodity prices and the movements in share prices of key investors (index traders and money managers). They obtain a similar result for share prices and the country's export values. The adjustment occurs within one quarter, indicating some strong responses among the variables. However, the variations in export volumes and global copper consumption are not statistically associated with changes in share prices.

The authors argue that their insight into the financial integration of *Zambia's mining industry* has various policy implications. First, financialization tends to increase the volatility of commodity prices. Thus, *Zambia*, as a country that depends on a single commodity, should design policies that protect the economy from increased volatility in prices and revenues, in order to avoid potential losses in welfare. Second, it needs to diversify its economy, notably by developing other export sectors and increasing value addition – through value chains that mitigate the adverse effects of financialization of the commodity markets.

Mining and land issues are closely intertwined, as the rationale for land policies was often the demand to private property and land access by mining company. In their research, Tinenenji Banda and Marja Hinfelaar found processes of financialization at play in *Zambia* in the realm of land acquisition. By default, land is owned communally in *Zambia*. But, historically, commercial exploration for mining required private ownership of the land. This is true regarding the period that precedes the 1970, when *Zambia* nationalized its mining sector, and the period after the 1990s, when the country re-privatized it. The current *Zambian land administration system* was designed over a hundred years ago and remains largely unchanged. Originally, it reflected the political calculations of the colonial administration and its desire to make land accessible to (white) elites. The British South Africa Company (BSAC) and the British colonial government equipped *Zambia* with a set of institutions regarding land divisions and property rights that are the foundation of today's land situation. Policies that encouraged and legitimized European settlement for commercial agriculture and mining have set the current patterns in the distribution of customary and state land (Honig and Mulenga 2015, 2).

By and large, Zambia was spared the negative repercussions of finance-led capitalism that took place after the end of the Bretton-Woods system in 1971, as the country nationalized its mining industry. Prior to this change of capital and ownership, the mining sector was dominated by what Banda and Hinfelaar call a “socially-thick capitalism”. Liberalization and deregulation of the economy only took effect in the Third Republic, when Zambia re-entered a multi-party regime. Eventually, Zambia was exposed to a wide range of capital. The opening up of financial markets within Zambia also saw the introduction of financial products that enabled the urban elite to speculate and invest in housing and land.

Liberalization and deregulation also led to the introduction of a Land Act in 1995, which exposed Zambian land to market-based reforms. As a result, the practice of converting customary land into state land in order to gain private property rights became more widespread. Land that has been converted cannot become customary again, even if the individual lease is cancelled. Thus, the 1995 Land Act allows for the slow and permanent shift of land in Zambia from customary to state control. Justifications for land acquisition changed as a result of that, which led to two distinct developments. First, an increased interference and manipulation of customary law by the urban elite, including political leaders and international investors. Second, the legal framework around land and land resettlement referred to the language of self-determination, in line with international law. The Land Act was based on the idea that private ownership would be a precondition to economic development. The consequence was an accelerated commodification of land in Zambia, especially around urban and mining areas. While it is estimated that 94 percent of the land was customary at the time of independence, this figure has sunk to 60 percent today (Sitko and Jayne 2014). Yet, it is not clear whether land privatization has had the expected effects. Sitko and Jayne (2014) show, for instance, that “elite land capture”, especially close to urban and mining centers, has not led to any increase in productivity (2014, 195). Elite land capture, in their view, hides unproductivity.

The rapid privatization and commercialization of land triggered a backlash. Resistance took various forms, notably resource nationalism and new land policies. Resource nationalism can be defined as involving the maximization of public revenue from resource extraction, the regulation and ownership of extractive industries by the state, and the enhancement of developmental spill-overs from resource extraction (Caramento and Saunders 2018). According to Banda and Hinfelaar, resource nationalism informs the Mining Act of 2008, which abrogated the unfavorable Development Agreements that Zambian authorities had entered with mining companies during the privatization process in the late 1990s. In 2017, Zambia adopted a new Draft National Land Policy, with the aim of regaining control over expropriated land. The proposed text promises that “there will be opportunities for every Zambian to be able to access land and secure their interests in land whether male or female” (Government of Zambia 2017, Chapter VI: Rationale). Whether this draft is likely to pass is unclear. Banda and Hinfelaar argue that implementation and enforcement are extremely challenging, as we have seen recently with the reversals of new tax measures that followed pressure by international finance institutions and international mining companies.

In their draft paper (Kabala and Lungu 2018), Edna Kabala and John Lungu discuss the copper value chain and the influence that some of the main actors in this chain have had on the regulatory framework for copper mining in Zambia. They also explore how actors have been influenced by the financialization of the copper sector. The authors show that the fluctuations of the copper price has repercussions on communities based in the Copperbelt, including unemployment, casualization and pollution (see also García 2018), and that it also affects regulations applying to copper mining.

3.2.4 Life next to the mines, inequality and resistance to extractivism

Several studies within *Valueworks* have looked into the effects of the extractive industry on the life of people in and around Zambian mining towns (see also Müller 2018b).

Researcher Hanna Haile’s study shows how expenditure and employment decisions made by companies as a result of the volatile prices of copper become the primary determinants of

peoples' livelihood in mining towns in the *Zambian Copperbelt*, with impacts differing according to gender. Her research revealed that the activities of mining companies have negatively impacted the health and environment of some and caused displacement and loss of livelihood for others (Haile 2018, 2019). Moreover, current and retrenched mineworkers lamented the precarious nature of their employment due to the volatile price of copper and the tendency of mining companies to prioritize profit maximization over the welfare and interests of their workers and the communities within which they operate.

Her research attempted to see the link between what is happening at the local level within mining communities and the increasing financialization of the economy. While the volatility of the price of the copper commodity globally can be a function of a complex set of political and economic factors, there is a growing literature acknowledging the influence of financialization on global commodities prices and companies' decision-making processes, ultimately causing a "universal and pervasive impact on economies and societies" (UNCTAD, 2012; Clarke, 2014). The research also looked into legal literature on how corporate and investment law encourage corporate managers who act as agents of the company, to prioritize shareholder value maximization in their decision making, sometimes relegating other societal and environmental interests to less important position. This however is arguably not a legal imperative. Indeed, a group of corporate law scholars have argued that since the company is a legal person, which is not "owned" by shareholders but rather built upon deeper values and purposes other than shareholder maximization, decisions can be made taking long-term purposes into account (Stout 2012).

Interviews with current and former employees of the Glencore-owned Mopani Copper Mines showed that following privatization and increasing financialization of the company, decisions pertaining to retrenchment, environmental impact minimization, benefits, and conditions of employment, particularly in response to the changing price of copper, appear to prioritize profit maximization, rather than societal or employee wellbeing. While it would be simplistic to attribute rights abuse directly to financialization or to profit maximization, there is evidence that company decisions do not necessarily respect human rights standards and that this aggravates already existing poverty and vulnerability.

Haile's research looked into the nature and extent of the mining company's responsibility to its employees and to the communities within which it operates. Two approaches to making companies accountable are a corporate social responsibility (CSR) approach and a business and human rights approach. While the CSR approach relies on a company's voluntary commitment to act with due diligence and give back to the community, the business and human rights approach, seeks to impose human rights obligations on companies through legal instruments. The idea behind the business and human rights approach is that even though states are the main entities obliged (by national laws and international treaties) to respect and protect human rights, many transnational companies have now become so large and powerful that, in a way, they act as "quasi governments". It is therefore reasonable to assume that they should have the same obligations as governments (Wettstein, 2009).

The study undertaken by Wilma Nchito focuses on colonial planning practices and their effects beyond nationalization and re-privatization of the mines in Zambia. Today, private owners of mines focus on profit maximization and pay little attention to the former mining townships and their inhabitants. Mines like Glencore-owned Mopani work with a reduced number of workers due to improved technologies or downsizing necessitated by the high market volatility of minerals. At the same time, the proximity of colonial housing infrastructure to the mines has the effect that those who inhabit these townships continue to face the impact of mining activities whether they are involved in these activities or not (on the example of electricity shortages, see also Kesselring 2017). Such a situation has a negative social and economic impact on those living in Mufulira, who have historically depended on selling their labor to the mines or to companies involved in mining-related activities. Apart from this, mining activities have also continued to compete with other land uses such as agriculture. Conflicts often arise between

mine owners and residents who use the hinterland for subsistence farming. The current owners of mines in towns like Mufulira, in the Copperbelt, have to deal with these historical legacies within a global system of production. Nchito's work argues that mining companies cannot justify their profits to local communities who are not employed by the mine, and asks for the removal of barriers to the equitable distribution of the gains obtained from mining. She assesses what the mine owners are doing to shift some of the benefits of the mines for the local communities, but is sceptical that these actions are susceptible to remedy a situation where places like Zug, Switzerland receive the lion's share of the profits originating from places like Mufulira.

In her master thesis, Anna-Sophie Hobi (2019) looks at the resistance of civil society organizations (CSOs) against large-scale mining in the "new" mining region of Northwestern Zambia. In the past fifteen years, locally established CSOs, including non-governmental and faith-based organizations, have gradually included extractive industries in their programs, received international funding and engaged very motivated civil society activists. Such CSOs are monitoring environmental changes, keeping track of the government's as well as the mine's development projects, and advocating for the rights of mining host communities. Lobbying involves interaction with mining companies, which CSOs generally manage to access only through the offices in charge of CSR.

CSR offices both act as general grievance offices, deflecting popular criticism of mining operations and their impact, and actively implement mining companies' developmental projects – which are often little planned and researched, rarely coordinated with local civil society, and tend to interfere with governmental responsibilities (see also Kesselring 2018b).

In Solwezi, people have mixed feelings about mining. Few of them are either "for" or "against" mining, contrary to depictions by Western activists – and to these activists' own stance toward mining. Local CSOs' proactive approach towards the mine is related to their dependency on donor funding causing unstable financial situations and the donor's concentration on large civil society organizations, which are often based in the capital Lusaka. When funding is short, the CSOs requests for support from CSR officers can offer alternative opportunities, and therefore be pragmatic. Thus, Hobi argues, the relationship between CSR offices and CSOs is a mirror of global social and economic inequalities.

Finally, Rita Kesselring (2018a) shows that decisions regarding infrastructure development taken by horizontally integrated firms such as First Quantum Minerals, whose trading arm is headquartered in Switzerland, have direct consequences for the people who live close to the mines. These companies invest in large-scale infrastructure (e.g. roads and neighborhoods housing company managers and highly skilled staff), whose only purpose is to facilitate the extraction of copper and its transportation to southern African harbors; but which – due to their massive spatial reordering of the town – negatively impacts on urban residents' capacity to plan their life independently from fluctuating global commodity prices. Furthermore, the unequal distribution of electrical power (see Kesselring 2018b), great quantities of which are consumed by the mining industry, leaves large swathes of the Zambian population facing limited supply and shortages. This contributes to social stratification and conflict.

3.3 China: a major force on the global copper market

The impact China has on commodity markets in the twenty-first century cannot be overemphasized. As one of the world's most populated country, the world's second largest economy by nominal GDP and a major industrial powerhouse, China plays a predominant role in everything commodity-related. The country is a major consumer of, producer of and, increasingly, trading hub for all sorts of commodities. This section of the working paper identifies the role played by Chinese stakeholders (e.g. state authorities, enterprises and individual investors) on the copper market, both within and beyond the Chinese territory. It zooms in on the phenomenon of financialization, asking what forms this phenomenon takes when we adopt a China-centered perspective.

The findings presented below are based on a six-month research carried out by Yvan Schulz over the course of two years (2016-2018). Schulz conducted 18 interviews, analyzed a

multitude of documents, and did participatory observation in several events such as specialized international conferences.

3.3.1 China as a commodity giant

According to the Financial Times, “China has been the most important factor in commodities demand in the past decade” (Sanderson 2015). Looking at world metals consumption, for instance, the country has increased its share from around 12 percent in 2000 to almost 50 percent fifteen years later. China is also a big producer of commodities, in particular unrefined fossil fuels and refined mineral concentrates or finished products such as steel bars. Given the country’s considerable needs, however, it consumes most of what it produces.

China’s evolution during the period known as “reform and opening” (*gaige kaifang*) has had far-reaching repercussions worldwide, for a multitude of economic entities and in a wide range of sectors. In the words of two experts, “in the past thirty years, China has transformed from an impoverished country where peasants comprised the largest portion of the populace to an economic power with an expanding middle class and more megacities than anywhere else on earth. This remarkable transformation has required, and will continue to demand, massive quantities of resources. Like every other major power in modern history, China is looking outward to find them” (Economy and Levi 2014). In most cases, Chinese companies still obtain the resources they need through markets. Since the turn of the century, however, many of them have also started to set up mines and farms abroad (see, e.g. Lee 2017 on Chinese companies active in Zambia) or to buy shares in such operations.

3.3.2 A major copper consumer and producer

In recent years, China has been consuming between 40 percent and 50 percent of the world’s refined copper. In 2017, the International Copper Study Group calculated this figure at 50 percent (ICSG 2018b). In other words, nowadays, China consumes as much refined copper as all the other countries in the world grouped together. By way of comparison, India, another emerging country with a huge population, accounted for only around 2 percent of world copper refined consumption of late. Chinese demand is driven by various industries, notably construction, power, transportation and manufacturing. Most refined copper is used domestically, but a significant portion also gets exported in the form of manufactured goods (e.g. electrical and electronic equipment) on account of China’s role as the “world’s factory”.

In 2017, China was also the world’s largest *producer* of refined copper with a 38 percent share (followed by Chile at 10 percent and Japan at 6 percent), as well as the world’s third largest producer of copper ore with a less than 9 percent share (following Chile at more than 25 percent and Peru at 12 percent) (ICSG 2018a). China’s position ahead of Zambia (as well as three other countries) as a producer of copper ore deserves to be stressed, for it reveals the two countries’ unbalanced relationship: Zambia depends on China to a much greater degree than China on Zambia. Very recently, China also ranked first (far ahead all other countries) in terms of smelter production (copper blister and anode) and semi-finished products production capacity (copper sheets, wires, rods and tubes), with shares of 40 and 41 percent, respectively.

Finally, China has been the world’s major destination for global copper scrap since the end of the twenty-first century and until 2018. The country’s scrap use increased steadily during the 2000s, reaching 3 million tons (or roughly half of total domestic copper production) in 2010, 70 percent of which came from abroad (Risopatron 2012). Imports have, however, decreased steadily during the 2010s and fell sharply in 2018, as a consequence of the Chinese central government’s highly restrictive policy regarding incoming flows of scrap materials (Yucel and Thomas 2018).

In brief, China plays a crucial role on the global market for copper. As far as countries are concerned, the “Middle Kingdom” is the main industrial actor. Any factor likely to influence Chinese supply and demand, even only slightly, will therefore have repercussions on every node in the global market. Countries that rely to a great extent on revenue from commodity exports,

such as Zambia in the case of copper, are particularly exposed to risks arising from the Chinese economy.

3.3.3 The importance of China as a factor in market analysis

This explains why China commands attention. Analysts and other observers worldwide are particularly interested in information about the country's macroeconomic and microeconomic "fundamentals" (e.g. data on exports, industrial activity, interest rates and currency interventions, see Leins 2018a). The idea is that solid economic growth in China announces an increase in global copper demand and, conversely, strong Chinese copper demand indicates that the global economy is in good health – hence the red metal's nickname, "Dr. Copper".

Observers tend to focus on China when trying to understand present trends and identify future ones, especially with regard to price movements. For instance, many of them associated the commodity "boom" that took place throughout the 2000s, featuring a continuous and significant increase in real commodity prices, with China's rapid urbanization and industrialization. Some even predicted that the country's economic rise would sustain a trend rise over several decades and announced a commodity "super cycle" similar to that triggered by post-world war II economic expansion in Western Europe and Japan (Smith Barney 2005), which lasted almost thirty years. As a matter of fact, prices of most commodities decreased during the 2010s (after having crashed and recuperated in connection with the financial crisis of 2007-2008). But, again, experts attributed this evolution to the China factor. In particular, many of them argued that the price of copper had dropped from 2010 to 2015 as a result of the deceleration of economic growth in China (often referred to as a "new normal" (*xin changtai*) or misleadingly as "economic slowdown") (Taylor 2016). This said, the link between Dr. Copper and the health of the Chinese economy is not absolute. Tellingly, the deceleration of economic growth in China has continued since 2016, whereas the copper price has picked up recently.

Analysts of the global copper market also follow closely Beijing's major policies, especially in areas such as transnational trade, international cooperation, land use, real estate, banking, industrial development and environmental protection, as these policies are likely to have considerable impact. In recent months, they have been focusing on the US-China trade tariffs (or "war") and the Chinese central government's announcement of a ban on imports of copper scrap to be implemented from late 2018 onwards. The two events are deemed to have considerably affected supply and demand, at least in the short term, and therefore also price levels (Fulp 2018)⁸.

3.3.4 The emergence of Chinese trading

Another way in which China exerts influence on commodity markets is through the rise and internationalization of Chinese exchanges. For copper, this concerns mainly two companies, the Hong Kong Exchanges and Clearing (HKEx) and the Shanghai Futures Exchange (SHFE)⁹. In 2012, HKEx took over the London Metal Exchange (LME), which presents itself as "the world centre for industrial metals trading" and is widely recognized as such. With this acquisition, HKEx took a shortcut in the expansion of its commodity business. Originally, the company also sought to create and leverage a connection between the LME and mainland China, but it has not been able to make this a reality thus far (Home 2017).

In the mid-2010s, trading of copper futures on the mainland China-based SHFE rose spectacularly, making it one of the three main exchanges on which copper contracts are traded globally. For instance, the SHFE recorded the world's highest monthly trading volumes for copper contracts in 2014, which placed the exchange ahead of its rivals, the UK-based LME and the US-based Comex (Sanderson 2015b). In the same year, Chinese futures contracts were the top four most traded metals contracts in the world (ibid.). This evolution led the *Financial Times* to write in 2015 that "many traders believe the SHFE has now taken its place alongside New

⁸ Analysts Mickey Fulp singles out these two factors, but mentions others as well.

⁹ The Dalian Commodity Exchange and the Zhengzhou Commodity Exchange, which also feature among the world's ten largest exchanges, offer contracts for certain metals but not for copper.

York Mercantile Exchange's Comex and the LME as a key price centre for the world's metals trade" (ibid.). There were talks about metals trading "moving east" and China, traditionally a price-taker, turning into a price-maker (Tan 2017).

This surge in trading volumes on the SHFE can be attributed almost entirely to domestic actors, more particularly to wealth managers and retail investors. These actors began to view commodity futures as attractive investment opportunities in the 2000s and early 2010s. In the mid-2010s, small-time speculators flocked to the commodity market as a result of both the credit surge engineered by Chinese policymakers in 2016 to prop up the Chinese economy and currency and the stringent regulatory measures triggered by China's 2015-16 equity market meltdown, which reduced the attractiveness of equities for speculators. Faced with ballooning trading volumes on the SHFE, many feared that China's commodity futures market would go down the same path as the country's equity market had gone. In 2017, however, the management teams of the SHFE and other Chinese commodity exchanges reacted by increasing transaction fees and margin requirements on futures, in an effort to cool speculative ardor (Sanderson 2016).

Nowadays, official discourse in China insists that the main purpose of the SHFE and other commodity exchanges in the current era of "supply side reform" is to serve the real economy and cater for the needs of industrial players wishing to hedge price risks (see China Daily 2016). In this regard, it is perhaps telling that major Chinese funds such as Shanghai Chaos (see below) have recently cut their copper exposure on the SHFE following the introduction of stricter requirements and moved to Comex or LME (Snowdon 2017). However, interviews conducted by Yvan Schulz with specialists in Shanghai in August 2017 revealed that many of them still associated the SHFE mainly with domestic speculation by wealth managers and retail investors – whereas they viewed the LME, for instance, as better reflecting the state and direction of the real economy. One boss of a brass zipper manufacturing company, for instance, told Schulz that he had started to invest some of his savings on the SHFE – though none of the company's money. "Since I have to keep an eye on the evolution of future prices anyway," he explained, "I might as well take advantage of this to try and make a little extra money for my family". He spoke of investing on the SHFE as a form of "gambling".

The Chinese government's strategy to strengthen the global clout of domestic commodity exchanges is not new but it has become particularly obvious in recent years. For instance, the SHFE launched China's first platform for trading physical commodities and introduced copper options in 2018, thereby dealing serious blows to the LME and Comex. The exchange also announced that it would open its copper futures contract to foreign investors, in a bid to attract more trading to China.

3.3.5 China's contribution to financialization

This brings us to the topic of financialization. Analysts of commodity markets tend to lay great emphasis on fundamentals from China. At the same time, however, they acknowledge that, in China like elsewhere in the world, purely financial investors¹⁰ are increasingly active on these markets. Researchers often refer to this phenomenon as "financialization" and some argue that it affects commodity markets in significant ways (e.g. Staritz et al. 2018), including through distorting prices and increasing price volatility (see Cheng and Xiong 2014).

The rise of the SHFE described above can be interpreted as a form of financialization, since it features the irruption of a great number of actors with purely financial motivations on the copper market.

In recent years, several other events have made headlines and been interpreted as signs of Chinese financial actors' growing influence at the global level. One of them is known as the copper "carry trade". Between late 2009 and late 2014, large amounts of copper were stockpiled in warehouses in China and used as a collateral for bank loans instead of being fed to the industry. China's copper carry trade is suspected to have inflated demand – by a factor of 54 percent,

¹⁰ Purely financial investors are defined here as those who are interested in copper not as a physical commodity but exclusively as an investment channel.

according to some analysts (Kawa 2016) – kept prices higher and led miners to raise output. When the conditions necessary for this arbitrage disappeared in 2015, so did the carry trade (Sanderson 2015c). But bonded inventory remained huge in China in 2016 and 2017 at close to half of domestic consumption (Nian 2017), which may have been reflected in market prices. The carry trade shows that huge discrepancies can exist between apparent and actual use of copper and that traded volumes cannot be attributed entirely to physical use.

Another event that made international headlines in the mid-2010s is the emergence of Chinese hedge funds as key players on global commodity markets (Sanderson and Hornby 2015). For instance, in 2015, Shanghai Chaos, a Shanghai-based hedge fund involved across the futures spectrum from commodities to equities, was suspected of shorting Glencore while pushing down the price of copper (*ibid.*). Yvan Schulz’s interview with one of the fund’s managers in August 2017 confirmed that it – and other Chinese hedge funds too – had indeed rocked metal markets and other commodity markets in the past, thereby generating huge profits. But the manager also claimed that commodity futures had become much less attractive for hedge funds as a result of the restrictive measures taken by regulators in 2017.

It is difficult to assess whether Chinese hedge fund activity on the copper market has had any lasting influence on price levels or volatility. A view shared by many market players is that activity by hedge funds and retail investors creates more volatility in the short term but does not affect price levels in the long term – tellingly, finance specialists refer to this activity as “noise”. The fund manager interviewed by Schulz stressed that no hedge fund can influence the market for more than a few days in a row, as this would require an investing power that such companies simply do not have. However, there are various cases in which observers suspect that market players may have misinterpreted “noise” in commodity futures trading as a sign of economic growth or decline (see, e.g. Cheng and Xiong 2014:421) and made long-term decisions on this basis.

Schulz’s interviews with executives of companies located in the Yangtze River Delta that manufacture products containing copper (e.g. brass zippers) indicate that, unlike purely financial actors, these companies are not active on commodity exchanges. They only follow the prices of copper future contracts as an indication of possible future stock prices. Besides, they do not stock the red metal but rather wait for an order to be placed by a customer, and then purchase the quantity they need from their suppliers at stock prices. As they work fast, products are usually ready for delivery before any change in the price of raw materials has occurred. Thus, these companies are not affected by the rise or fall of copper prices. More generally, many Chinese firms, in particular those with a strong industrial orientation, tend to place little emphasis on optimizing profit or shareholder value and more on stabilizing, and where possible intensifying, material flows (see Lee 2017).

3.3.6 The omnipresence of the Chinese state

The above discussion provides a nuanced picture of the financialization of the copper market as seen from a China-centered perspective. The phenomenon appears to have been particularly pronounced in the mid-2010s and to have subsided more recently. China-based financial actors such as hedge funds and mom-and-pop investors figured prominently as new players that have rocked global metal markets through speculative practices around 2015. Since then, Chinese regulators have been striving to reshape commodity exchanges such as the SHFE for the needs of industrial users and to reign in speculative practices.

Given the official rhetoric that presents the Chinese central government as a champion of the real economy and a strong controller of financial markets, one might be tempted to believe that the Chinese government opposes financialization. Admittedly, Beijing has an interest in keeping the financialized dimension of the copper trade in check, because large quantities of physical copper are needed for economic activity and development in China – unlike in Switzerland, where interest in the “red metal” stems mainly from its potential as a vehicle of profit for corporations. But in China, the state is involved in the economy in multiple and complex ways. Crucially, it is not only a regulator but also a market player, notably through

numerous, large and powerful state-owned enterprises – which sets China apart from most other countries. Numerous entities active on financial markets, in particular, formally belong to the state apparatus.¹¹ In this context, dichotomic representations that oppose the state to the market, or the real economy to the financialized one, do us an even greater disservice than in others. In support of this point, it should be stressed that Chinese state-owned corporations involved in the copper industry and market (e.g. Chinalco, Tongling Copper, Jiangxi Copper, Yunnan Copper) all have teams that specialize in “paper” trading and whose non-official mission – beyond the official one, which is to hedge spot-price risk – consists in speculating by buying and selling future contracts. Several of Schulz’s interviewees even told him that these teams spend more time speculating than hedging (see also Cheng and Xiong 2014:432-3)¹².

4 Conclusion

Valueworks involved both qualitative and quantitative research into the supply and value chain of one metal, copper, across three countries, Zambia, Switzerland and China. It has revealed the complexity of copper’s global production network. The high volatility of the copper price forces producers to constantly adapt to quickly changing market conditions. While these choices have to be taken by companies according to commercial criteria, they have consequences beyond individual firms. Business ethics as well as state regulation should lead companies to take into account their societal and economic impact and aim at making copper production sustainable throughout its value chain, from Zambia to China and Switzerland.

Such an approach would be in line with the principles of the UN Agenda 2030 for Sustainable Development, to which all three countries have committed in 2015 (Hujo 2018). The transformative approach of Agenda 2030 and its integration of social, environmental and economic goals open up a space for rethinking the role of mining and extractive industries in development, and developing the sector in a socially and environmentally sustainable way. As a universal agenda, the SDGs also require reforms and transformative change in developed countries and international systems, if these are detrimental to sustainable development. *Valueworks* illustrates in a very concrete way how various countries are connected and embedded into a global economic system that produces increasing inequalities and concentration of wealth and income in rich countries, particularly among the owners of multinational companies, whereas countries such as Zambia and their populations lag behind, despite being wealthy in natural resources. The project also shows how these global drivers of inequality affect communities on the ground, and throws light on their daily struggle to make a living, adjust to increasing employment insecurity, mobilize against pollution and hold companies as well as their own government to account.

While these social and environmental concerns are already well-researched for mining itself, *Valueworks* has shown that the service infrastructures of global extraction decisively influence the scope for sustainable development in mineral extractive countries. Mining is embedded into a wider landscape of services, including transport, trade, financing and insurance, in which decisions are taken that crucially affect the capacity of countries like Zambia to formulate and enforce policies. This global landscape is shaped by actors who are active in many countries and able to move between regulatory spaces.

For all of them, financialization has become a global condition, which they have to deal with. At the same time, their actions reproduce and reinforce dynamics of financialization. While the guises and consequences of financialization are manifold, one common thread is the increasing power of capital owners. This power translates into pressure for companies to perform in relation to indices; it changes the relation between ‘physical’ and ‘speculative’ trade; it shifts the

¹¹ Not only that but, when it comes to the introduction and spread of typically financial values and principles, such as shareholder value maximization, the Chinese state has been at the vanguard (Wang 2015).

¹² Unfortunately, Schulz was not able to obtain confirmation of this from the corporations in question, as his requests for interviews have all been they all either ignored or rejected.

power balance between workers and managers in collective bargaining agreements; and it further erodes the capacity of both Southern and Northern countries to effectively regulate their markets. This fact is often used as an argument against national regulation (among others by the Swiss government), but in the absence of effective international regulatory instruments, a mix of national laws and the advancement of global standards still seems the most promising way to implement change.

Swiss traders' role in copper's production network is a symptom rather than the reason for Switzerland's position in the global economy. While trade volumes are high, employment by the sector is relatively small, and not all 'Swiss' trading companies generate substantial income in the country. Nevertheless, their structural role in the global economy is very significant, due to their influence on pricing and their role in facilitating financialization and globalization. This said, the direct consequences of their actions are still difficult to ascertain, due to a lack of transparency in, and data on, the industry.

What has become very clear from our project is that we cannot separate trade from other activities that power the mining economy. Swiss firms are active in all segments of the global production network for copper, but their activities in southern Africa are mainly concentrated in services pertaining to copper transport, certification and trade. "Servicification" is a reality in mineral value chains (Miroudot 2017), and Swiss companies – among them integrated trading companies – play an important part in it. Our qualitative analysis shows that higher-skilled service tasks that create stable added value are increasingly taken over by international companies (Dobler and Kesselring 2019). This affects the distribution of profits within the production network and contributes to the dynamics of financialization on the one hand, global power imbalances on the other.

In two short years, we have been able to provide a detailed image of the role of financialization in copper's value chain. Throughout our research, we have been limited by Swiss companies' disinterest in cooperating with researchers, and yet we have managed to gain solid knowledge of the Swiss commodity trading sector, its activities and their direct and indirect impact on other parts of the world. We strongly encourage further projects to take up this theme and to build further on our results.

5 Policy recommendations for Switzerland

Based on our research findings, we offer a number of policy recommendations for Swiss policy makers at regulatory, political, scientific and institutional levels.

5.1 Adopt more state-regulation

Swiss regulators should increase their control of the commodity trading sector. At the moment, the sector is largely self-regulated: the same companies that participate in it also make the rules that govern it. Efforts have already been made to formulate binding and enforceable standards, but they need to be strengthened. To this end, we propose:

5.1.1 The creation of a central market authority

A central market authority could collect extensive and reliable data on transit trade and supervise the activities of commodities traders in order to make sure that their operations remain legal and ethical. Public Eye has suggested creating a Swiss Commodity Market Supervisory Authority (ROHMA, for *Rohstoffmarktaufsicht*), following the example of the Swiss Financial Market Authority (FINMA) (see Berne Declaration 2014). There is reason to believe that the commodity sector poses a bigger reputational and financial risk for Switzerland today than the financial sector. Thus, a well-organized market supervisory authority is indispensable. Such an authority should have stronger duties of democratic accountability towards the Swiss public than FINMA.

5.1.2 The creation of inter-state and sub-state structures

There is a need to strengthen the capacity of the Zambian and other governments to monitor and regulate multinational companies. Existing efforts like EITI rely largely on self-reporting. Their creation has been an important step, but in their current form, they are not enough to address the need for information. A further step could be the creation of cooperation mechanisms between producing and trading countries, or even a supra-national agency that would expand transparency in trade and mining. Such a structure could be established between African nations or within the African Union and gradually include European nations and supra-national organizations such as the OECD (for a possible analogy, see efforts for concerted action against BEPS).

In Switzerland, sub-state-level responsibility should be addressed, especially in the field of cantonal tax policy. Debates on the Swiss fiscal equalization scheme and its reforms should include a reflection on the international and developmental implications of tax competition between cantons.

5.1.3 The reform of the Swiss company law

Strengthened transparency laws that are currently being discussed and revised at the federal level (small chamber) as part of the reform of Swiss company law should also apply to commodity traders. At the moment, the majority of members of parliament are in favor of applying them only to mining companies, of which there are only a handful in Switzerland, thereby ignoring the fact that, as our research has shown, mining, logistics and trading actually cannot be separated, and corruption abounds in many segments along the chain.

5.1.4 Beyond the Responsible Business Initiative

This initiative aims at introducing a binding framework to protect human rights and the environment abroad. The mandatory due diligence is based on the UN Guiding Principles on Business and Human Rights. A counter-proposal, which is a compromise between the initiators, parliamentary forces and industry representatives, was launched by the parliamentary Legal Affairs Committee and accepted by the National Council, Switzerland's large chamber. It is currently pending at the Council of State, the country's small chamber. Based on our research, we are convinced that a legal avenue for addressing wrongs committed by multinational companies in their home countries is a necessary step towards sustainability and responsible business. We also think, however, that Switzerland needs a broader discussion on the uneven allocation of profits, wages, taxes and benefits in the global economy.

5.2 End Switzerland's promotion of tax evasion

Our research has shown that Switzerland's tax environment is an important factor why companies choose to be located in this country, and that many industry actors also link this to the possibility of reallocating profits across national legislations. Techniques such as "tax optimization" are legal in Switzerland, even though, from the perspective of commodity exporting countries, they amount to tax evasion, especially when taxable profit and income is shifted, for example from Zambia to Switzerland (or elsewhere). Here, Switzerland should join global efforts to effectively tax multinational corporations and stop promoting itself as a destination for companies interested in "tax optimization".

5.3 Involve producing countries in political debates

Transnational trade requires transnationally coordinated supervision. Policy makers in Switzerland need to start engaging with policy makers in producing countries, rather than just act on behalf of Switzerland-based commodity traders. This type of cooperation is key to recognizing human rights violations, raising environmental concerns, and fostering equal trading relationships. As we have learned through our research, the problem is not a lack of expertise in producing countries, contrary to what some policy makers claim. The problem is simply that those who benefit from unequal trade are not interested in engaging with the demands of the

countries they exploit and in finding transnational solutions. Inviting producing countries to a fair discussion could finally lead to a fairer deal and help making a risky and volatile market more governable.

5.4 Commission a National Research Program

Because of the problems we have identified and others, the Swiss commodity trading hub represent a reputational risk for Switzerland. This is something that the Federal Council has acknowledged. We believe that part of this risk stems from the low transparency of the sector. Good regulation requires information, so the lack of transparency helps the sector avoid regulation. There is an urgent need for a large research project that follow the leads provided by our studies as well as previous ones. One possibility would be to commission a (trans- and interdisciplinary) National Research Program (NRP), which ensures not only good research access to policy makers at national and international levels but also to representatives of the trading sector. Such a program would also signal to the world that Switzerland is indeed interested in an increased transparency of its commodity trading sector.

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Note: Publications and draft papers marked with an asterisk () are project outcomes. Unless stated otherwise, all links were last accessed on January 12, 2019.*

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