

The Commodity Sector and Related Governance Challenges from a Sustainable Development Perspective: The Example of Switzerland

Current Research Gaps

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Abstract: The Swiss commodity sector has come under increasing scrutiny in the last few years as a result of the substantial growth experienced by global commodity trade since 2002 and the importance of Switzerland as a leading international commodity trading hub. These developments have put commodity trading squarely on the agenda of Swiss institutions and non-governmental organizations (NGOs). Swiss academia has also started engaging in the debate, but faced considerable challenges in contributing to an informed dialogue due to the overall paucity of data still surrounding cross-border and transit activities of Swiss-based commodity companies active in physical and derivatives trading, and the consequent substantial gaps in existing literature as to the impacts associated with commodity investment and trading in Switzerland and in host countries. This paper aims at identifying main knowledge gaps and providing a basis for further academic research on commodity investment and trading, while informing current policy debates and decision-making processes in Switzerland.

Research for this paper was jointly conducted by the World Trade Institute (WTI) of the University of Bern, the Centre for Development and Environment (CDE) of the University of Bern, and the Institute for Business Ethics (IWE) of the University of St. Gallen (all Switzerland). The paper was written in the context of the project “Global change and Developing Countries: Why should we care?” managed by the Commission for Research Partnerships with Developing Countries (KFPE) and the Forum for Climate and Global Change (ProClim). This paper was kindly co-sponsored by the Swiss Academies of Arts and Sciences, the Swiss Agency for Development and Cooperation (SDC), and the Federal Office for the Environment (FOEN).



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Table of Abbreviations

AEOI	automatic exchange of information in tax matters
BEPS	OECD Base Erosion and Profit Shifting Initiative
CBD	Convention on Biological Diversity
CDDCs	commodity-dependent developing countries
CFS	World Food Security
DELC	Division of Environmental Law and Conventions
DTAs	double taxation agreements
EITI	Extractive Industry Transparency Initiative
EMAS	Eco-Management and Audit Scheme
EvB	Erklärung von Bern
FACTA	Foreign Account Tax Compliance Act
FATF	Financial Action Task Force
FDI	foreign direct investment
FINMA	Financial Market Supervisory Authority
GMOs	genetically modified organisms
GRI	Global Reporting Initiative
GTSA	Geneva Trading and Shipping Association
IFC	International Finance Corporation
IAs	international investment agreements
ILO	International Labour Organization
IPIECA	Global Oil and Gas Industry Association for Environmental and Social Issues
ISI	import substitution industrialization
ISO	International Standardization Organization
ITPGRFA	International Treaty on Plant Genetic Resources for Food and Agriculture
LCTA	Lugano Commodity Trading Association
LDCs	least developed countries
LSLA	large-scale land acquisition
MEAs	multilateral environmental agreements
MNEs	multinational enterprises

NCP	National Contact Point
NGOs	non-governmental organizations
NOCs	national oil companies
OECD	Organization for Economic Co-operation and Development
OHCHR	Office of the High Commissioner for Human Rights
PCD	policy coherence for development
PCSD	policy coherence for sustainable development
RAI	Responsible Investments in Agriculture and Food Systems
ROHMA	Commodity Market Supervisory Authority
SCGs	Sustainable Development Goals
SEC	US Securities and Exchange Commission
SMEs	small and medium sized enterprises
SNB	Swiss National Bank
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNEP	United National Environmental Programme
UNGA	United Nations General Assembly
US	United States
VPs	Voluntary Principles for Security and Human Rights
ZCA	Zug Commodity Association

Introduction

Switzerland has a long history of involvement in commodity trading. In recent years, however, the Swiss commodity sector has come under increasing scrutiny, mainly because of the substantial growth experienced by global commodity trade since 2002¹ and the importance of Switzerland as a leading international commodity trading hub. These developments have put commodity trading squarely on the agenda of Swiss institutions and non-governmental organizations (NGOs). Swiss academia has also engaged in the debate, but faced considerable challenges in contributing to an informed dialogue due to the overall paucity of data still surrounding cross-border and transit activities of Swiss-based commodity companies active in physical and derivatives trading, and the consequent substantial gaps in existing literature as to the financial, socio-economic, environmental and governance-related impacts associated with commodity investment and trading in Switzerland and in host countries.

Against this backdrop, three institutions – the Centre for Development and Environment (CDE) and the World Trade Institute (WTI) of the University of Bern, and the Institute for Business Ethics (IWE) of the University of St. Gallen – have jointly taken the initiative to make a detailed assessment of research gaps and needs. This working paper reflects this effort and takes stock of the existing literature related to commodity investment and trading. Due account is given to those studies which either specifically focus on the Swiss commodity sector or address issues related to investment and trade in specific sub-sectors and/or countries of particular importance for Swiss-based commodity companies. Without making any claim to comprehensiveness, the paper aims at identifying main knowledge gaps and providing a basis for further academic research, while informing current policy debates and decision-making processes. The paper was written in the context of the project “Global change and Developing Countries: Why should we care?” managed by the Commission for Research Partnerships with Developing Countries (KFPE) and the Forum for Climate and Global Change (ProClim) under the auspices of the Swiss Academies of Arts and Sciences.²

The following sections will be organized as follows. Section 1 gives an overview of the Swiss commodity sector. It illustrates the driving factors that contributed to making Switzerland a leading international commodity trading hub, and describes the structure of the sector in the country, the actors involved and the most relevant political initiatives currently high on the Swiss agenda. Section 2 gives an account of the literature on the impacts of commodity investment and trading in both host (resource-rich) countries and home countries (and Switzerland in particular). Section 3 identifies and discusses positive and negative socio-economic (i.e. livelihood), environmental and governance-related impacts resulting from both soft and hard commodity production in commodity-dependent developing countries (CDDCs) where Swiss-based companies operate based on existing research. Finally, section 4 provides an overview of hard law instruments and soft law initiatives aimed at mitigating or preventing the

¹ Commodities exports (fuels as well as mining, fishery, and forestry products) grew sixfold from 1998 to 2008 (WTO 2010, 54). Overall, “resource trade has more than tripled between 2000 and 2010, from less than \$1.5 trillion to nearly \$5 trillion” (Lee et al. 2012, 4). This increase has been driven mainly by rising prices (including higher oil prices [Lee et al. 2012, 20]), and less by increasing quantities (WTO 2010, 56). In 2008, hard commodities (minerals and energy) accounted for around 20% of world trade, while soft commodities (agricultural products) accounted for around 8% (Ruta and Venables 2012, 3). For definitional issues see section 1.1.

² This paper is co-sponsored by the Swiss Academies of Arts and Sciences, the Swiss Agency for Development and Cooperation (SDC), and the Federal Office for the Environment (FOEN). The paper was discussed during the workshop on the topic of “Hard/Soft Commodities and Switzerland: Identifying Research Gaps” held on 21 April 2015 at the WTI.

occurrence of negative impacts on human rights and on the environment of relevance for the commodity sector, and explores the potential of investment, trade and financial market rules for creating an environment conducive to sustainable commodity extraction, production, processing and trading. Main knowledge gaps and areas of interest for future academic research will be identified at the end of each section.

1. Switzerland's Commodity Sector

Commodities and commodity trading have long played an important role in Switzerland due to two main reasons. First, Switzerland is not a resource-endowed country and therefore it depends on the importation of commodities for its internal consumption and production needs.³ Second, commodity trading has been a lucrative economic activity for Switzerland since the 19th century (Guex 1998; Breiding and Schwarz 2011; Swiss Federal Council 2013; Foraus 2014), although the Swiss trading platform has faced increased competition from other market places⁴.

Despite the economic importance of commodities and commodity trading for Switzerland, few studies have analysed the phenomenon in a comprehensive way (Guex 1998, 151). This section aims at providing an overview of the Swiss commodity sector. After addressing some preliminary definitional issues, it first illustrates the driving factors that contributed to making Switzerland a leading international commodity trading hub and the main historical phases marking the development of the sector. Second, it gives an account of the prominence of commodity trading in Switzerland today based on publicly available data. Third, it describes the actors involved in commodity trading in Switzerland. This is followed by an analysis of the most significant political initiatives currently high on the Swiss agenda. Finally, the section identifies main knowledge gaps and provides some suggestions as to which direction to pursue in future research.

1.1 Preliminary definitional issues

In this study, the term 'commodities' is used to indicate those natural resources that are homogeneous and can therefore be subject to centralized trading with a unified price (WTO 2010, 59). Conventionally, commodities are classified into two main categories: hard and soft commodities (UNCTAD 2012, xi). *Hard commodities* are mined or extracted; they include non-renewable resources such as energy commodities (e.g. oil, gas, coal), metals and other mineral products (e.g. iron, aluminium, copper, gold, and diamonds). *Soft commodities* are cultivated, and therefore consist of renewable resources such as non-processed agricultural products (e.g. sugar, corn, and wheat).

In commodity trading, *physical commodity trading* is commonly distinguished from *derivatives trading* (Swiss Bankers Association 2013). *Physical commodity trading* connects the produc-

³ Switzerland's reliance on commodities imports is transversal, ranging from agricultural commodities to mineral (e.g. precious and non-precious metals) and energy (e.g. oil and gas) commodities. In the latter case, import dependence is absolute, as Switzerland has neither mineral nor energy resources. In the case of the agricultural sector, domestic production is overall insufficient to meet internal demand (see Annex 1).

⁴ Competing market places are spread across Europe, Asia, and North America. Rotterdam, Amsterdam, and Houston are important commodity hubs thanks to their large ports and extensive commodity depots. Chicago and Hong Kong have leading commodity stock exchanges. New York, London, and Shanghai are competing financial hubs (Erklärung von Bern 2011, 36). According to the recent Swiss Background Report (Swiss Federal Council 2013, 13) Singapore, Dubai, the United States, the United Kingdom, and the Netherlands are Switzerland's main competitors in this field.

er with the consumer and fills the gap between supply and demand. Physical traders provide a range of services between two physical locations: the production site and the consumption site. Typical services include transportation, financing, contracting, and insurance. *Derivatives trading*, in contrast, consists mainly of financial activities. Derivatives traders use financial instruments to hedge risks and make investments that leverage fluctuations in commodity prices. They do not deal with physical commodities, but they buy and sell contracts (Swiss Bankers Association 2013, 6). According to the Swiss Bankers Association, the proportion of commodity derivatives in relation to overall derivatives traded only amounts to 3% (Swiss Bankers Association 2013, 10).⁵

An additional classification in commodity trading differentiates between *cross-border trading* and *transit trading*. In *cross-border trading*, the transaction occurs from a seller abroad and a buyer in Switzerland. The object of the transaction thus actually crosses Swiss borders and can be used domestically. *Transit trading* (also known as *merchandising*), in contrast, occurs 'offshore', with a merchandising company buying from a supplier abroad and selling to a buyer who is also abroad. Merchandising is generally more common in commodity trading, so that "merchandising and commodity trading are often used as synonyms" (Beusch et al. 2013, 2). Transit trading can be both in physical commodities and in derivatives but the former is by far more predominant (Swiss Bankers Association 2013, 10-11). In this case, the purchased commodities never physically touch the ground of the merchandising company's country of residence (in our case, Switzerland) and are not transformed, although the company owns them from the moment it buys them until the moment it sells them. Transit trading plays a central role in the Swiss commodity sector. According to the Swiss National Bank (SNB), in 2009 94% of Swiss transit trading concerned commodities (EvB 2011).

1.2 The structure of the Swiss commodity sector

1.2.1 Historical overview

Switzerland is a landlocked country with no significant natural resources. Since the 19th century, however, it has developed into one of the world's most important commodity trading hubs. Existing academic studies, although still scarce, concur that Switzerland's long-standing economic and political stability, along with a number of factors related to the evolution of Swiss trading companies, have contributed to shaping the structure of the sector as it is now and to strengthening its economic importance in the country. Guex (1998) lists several reasons for this 'success story', namely established political neutrality, military non-participation in the two world wars, a strong currency, a tax system that favoured the establishment of trading companies by allowing for 'ring fencing' and, most importantly, the existence of relationship networks (ibid., 150). Along the same lines, Breiding and Schwarz (2011) emphasize the role of relationship networks, tracing trading companies' origins back to the 15th century, when large numbers of Swiss mercenaries started serving the superpowers of the time – Great Britain, France, and the Netherlands – up to the 18th century (ibid., 264). Over time, these mercenaries built a network of contacts across European countries, which helped establish flourishing cross-border businesses. Moreover, such networks kept growing as Swiss economic migrants founded colonial settlements overseas that later served as small hubs for Swiss trading companies (ibid., 265-266).

⁵ Commodity traders are of minimal importance in the derivatives market, as 93% of derivatives trading is based on interest rates and currencies (Swiss Bankers Association 2013, 11).

According to Guex (1998, 152-153), two historical phases marked a decisive step towards the development of commodity trading in Switzerland: the second half of the 19th century and the decade following the end of World War II. The 19th century saw the establishment of so-called traditional Swiss trading companies, founded by entrepreneurial individuals discovering new markets (Breiding and Schwarz 2011, 266-275). Companies like Basler Mission and pioneers like the Volkart brothers, Caspar Brennwald, Hermann Siber, Wilhelm Heinrich Diethelm, Anton Keller, and Johann Caspar Reinhart took advantage of favourable trading conditions in the mid-1800s to start a fast-growing business: they imported raw materials such as cotton, coffee, tea, cocoa, rubber, vegetable oils, and others from Africa, India, and Asia to Switzerland, and they exported Swiss manufactured goods (Breiding and Schwarz 2011, *ibid.*). Most of these traditional trading houses, however, were not able to establish themselves in modern international commodity trade.⁶

At the beginning of the 20th century, Switzerland gradually became an important financial centre and began to provide financial services related to physical commodity trading. The expansion of the sector continued irrespective of the outbreak of the World War I thanks to Swiss political neutrality: Swiss insurance companies and banks kept growing and developed into an important sector of the Swiss economy (Guex 1998, 154). Commodity trade, only marginally affected by the war, continued to expand at significant rates throughout the 1920s (*ibid.*). As a result, Switzerland became a major commodity trading centre during this period, especially for soft commodities (Swiss Bankers Association 2013). Foreign companies moved their headquarters to Switzerland or opened Swiss subsidiaries or branches. The most prominent example is the French Société Générale de Surveillance (SGS), who moved to Switzerland in 1915.⁷ The commodity trading sector grew significantly in the 1920s, and by 1928 Swiss trading companies' total turnover amounted to 11.9% of the Swiss gross national product (GNP) (Guex 1998, 153-154).

However, the commodity sector was profoundly affected by the economic crisis in the 1930s and started recovering only after World War II (*ibid.*). The late 1940s and 1950s saw the emergence of new companies, and foreign companies established a commercial presence in Switzerland. Many companies settled in the Geneva region, further developing the commodity sector (Swiss Bankers Association 2013, 12). According to Leimgruber (2013), Switzerland introduced tax incentives for multinational companies, attracting over 300 US companies between 1956 and 1961 (among them, Philipp Brothers in 1956). Trading companies' annual revenues increased, and by 1953 the sector's contribution to Swiss GNP was back to 1928 levels (Guex 1998, 156). The increasing importance of oil marked a new phase in the expansion of the commodity (and financial) sector in the 1970s (Swiss Bankers Association 2013, 12). The end of the Cold War further contributed to foster growth as a result of increased trade with Russia and Russian traders (*ibid.*).

The above factors explain how the Swiss trading sector evolved and how it acquired its considerable importance. The sector has undergone considerable change since its beginnings. Today, commodity trade is dominated by different companies and by a diverse set of commodities: oil, minerals, and agricultural products. Many of these commodities are used in industrial production and/or fed into global production networks (Breiding and Schwarz 2011, 275). The associated companies established their presence in Switzerland fairly recently,

⁶ Some of these firms disappeared from the market (e.g. André Cie), others reinvented themselves by offering complementary services (e.g. DKSH). There are some exceptions of traditional trading houses still operative today, for instance the Volkart Group and Paul Reinhart AG (Breiding and Schwarz 2011, 276)

⁷ SGS is the biggest certification and inspection company worldwide in commodity trading (Swiss Federal Council 2013, 7).

starting from the 1970s (*ibid.*, 277). Among them are, *inter alia*, Stemcor Europe AG, Petroplus Holding AG, Vitol, and the Gunvor Group (*ibid.*, 280).

Historical analyses of Switzerland as a commodity trading centre are generally scarce (Guex 1998, 151). Several historical studies have focused on the infant stages of the Swiss commodity sector, investigating in particular the development of traditional trading houses. While there have been a number of journalistic investigations into Swiss commodity trading in the 20th century, academic literature is limited.

1.2.2 Physical commodity trading in Switzerland

This section gives an account of the economic dimension of the commodity sector in Switzerland, both at an aggregate level and for single commodities. In particular, it focuses on physical commodity trading in Switzerland and distinguishes, to the maximum extent possible, what constitutes cross-border trading for domestic use and what constitutes transit trading. As will be shown, however, currently available data are highly fragmented and incomplete. The same holds true for the information concerning taxes and trade measures applied to commodities.

Switzerland ranks 17th among the world's largest importers of resources, with a share of 1.6% of the total value of global imports (Lee et al. 2012, 146, 160). Commodities account for 26% of Switzerland's total imports (Schweizerische Nationalbank 2013, 10). Exports of commodities, in contrast, are relatively limited (see Annex 1). The few commodities that Switzerland exports in notable quantities are soft commodities such as coffee, cocoa, sugar, and cereals and, among hard commodities, gold.

Significantly, a substantial share of Swiss physical commodity trading consists of transit trading. Transit trading is reflected in Switzerland's balance of payment statistics as an export of services (Swiss Federal Council 2013, 8). Commodity trading accounts for 94% of Swiss transit trading, with energy, metals and agricultural commodities accounting for, respectively, 59%, 20%, and 15% (Swiss Federal Council 2013, 7).

In 2011, the total turnover of companies involved in commodity transit trading was around 130% of the Swiss gross domestic product (GDP) (Swiss Federal Council 2013, 7). The commodity transit trading sector was estimated to account for 3.6% of Swiss gross domestic product (GDP) in 2010 (creating a value added of around CHF 18 billion) by the Swiss Bankers Association (Swiss Bankers Association 2013, 13) and for 3.4% of Swiss GDP in 2011 by the Swiss Federal Council (Swiss Federal Council 2013, 8). Transit trading as such has been growing constantly over the last decades, with revenues increasing from CHF 2 billion in 2003 to CHF 20 billion in 2011 (Schweizerische Nationalbank 2013, 17). These revenues are, however, subject to high price fluctuations and volatility (*ibid.*); in 2012, for example, they decreased to CHF 19 billion (Schweizerische Nationalbank 2013, 17). Overall, Swiss transit trading increased exponentially at the beginning of the 21st century, with an estimated tenfold growth (Swiss Federal Council 2013, 9; EvB 2011, 39).

Compared to cross-border trading, transit trading in Switzerland appears to be much more conspicuous in value and volume. The same holds true if one compares transit trading to domestic consumption (EvB 2011, 38). According to EvB, Switzerland is a global leader in transit trading, accounting for a share of 15% to 25% of world transit trading in commodities (EvB 2011, 39). Currently, however, information about transit trading in Switzerland can be obtained almost exclusively from studies produced by NGOs (see e.g. EvB 2011; Multiwatch 2014; Gillies, Guéniat and Kummer 2014; Cobham et al. 2013, 2014), think-tanks (see e.g.

Lee et al. 2012; Lein, de Roquefeuil, and van Seters. 2014; Foraus 2014) and industry associations (Swiss Bankers Association 2013). Yet, academic research on transit trading is almost nil. Lack of independent surveys has determined substantial knowledge gaps, particularly with respect to what are the market shares of different players at the national level as well as for specific enterprises. The Swiss government could play an invaluable role in providing more comprehensive official statistics and assembled data in view of facilitating research.

Moreover, information concerning single commodities is often fragmented, and frequently focused on cross-border physical trading. Annex 1 compiles available commodity-specific data taking account of Swiss physical cross-border commodity trading. To the maximum extent possible, it distinguishes among different processing stages per category, although it is sometimes difficult to find sufficiently disaggregated data. Data reported in Annex 1 are sourced from various annual reports of sectoral associations, commodity-specific umbrella organizations, and public databases. The multiplicity of sources notwithstanding, information is frequently incomplete or missing.

Systematic information on *tax revenues* from the commodity sector is not available; there are only rough estimates (Swiss Federal Council Report, 10; Foraus 2014, 13). Annex 1 lists information suggesting that fiscal revenues from sales of crude oil products in 2013 amounted to CHF 6.37 billion, which corresponds to 4.7% of total federal fiscal revenues (Erdöl-Vereinigung 2015, 18). More information is needed to map the commodity sector's relevance for Swiss tax revenues, and the extent to which Switzerland's current tax regulation enables public review must be assessed as well. Information is also missing for figures regarding *employment* provided by the commodity sector (see sections 3.1 and 3.2).

Data on trade measures affecting Swiss physical commodity trading still need to be assembled. Trade in commodities, either in their raw state or processed, is overall affected by a wide range of trade measures, including tariffs, quantitative restrictions, subsidies, and other non-tariff measures, with the selection of trade measures varying greatly depending on the commodity in question (WTO 2010, 114). Trade protection tends to be lower for raw commodities and usually increases with the degree of processing of the goods in question (so-called tariff escalation) (ibid.). Tariffs imposed on hard commodities tend to be lower than those on soft commodities (ibid.). Non-tariff measures, including subsidies, tend to be lower for fuel and mining products than for agricultural and fishery products (ibid.). In contrast, export taxes are higher and more frequent for commodities compared to processed products (WTO 2010, 115-116). The use of export taxes is typical of the commodity sector (ibid., 125) and has increased in the last few years (Espa, 2015). Switzerland is an exception in this regard, as it generally imposes no export duties (OECD 2014).

Publicly available data confirm the existence of tariff escalation in Switzerland (see Box 1). This means that tariffs on raw materials are lower than on processed products, with some exceptions due to preferences conferred to least developed countries (LDCs). While public data are available, the phenomenon of tariff escalation in Switzerland has not been systematically investigated so far, and neither has the question of whether and to which extent standards are applied as non-tariff barriers (Häberli 2008). Prospective research should focus on this relevant topic as well, as it is closely linked to the phenomenon of commodity dependence (see section 2.3.3).

Overall, more analysis is also needed in the field of trade measures. Although the WTO Trade Policy Reviews provide an overview of the measures affecting imports and exports

applied by Switzerland and other WTO Members, also at a sectorial level, information is not always consistent and detailed, with the quality varying greatly across countries.⁸ Future research should also assess the impact of trade measures applied to commodities, by Switzerland as well as by its partners, on the Swiss economy. Moreover, inasmuch as trade in commodities is subject to a patchwork of domestic, bilateral, and multilateral trade disciplines, it would be useful to undertake a mapping exercise in order to identify what disciplines are already in place and any relevant gaps and shortcomings, especially with respect to the need to promote sustainable trade in commodities.

In conclusion, information on physical commodity trading in Switzerland is not comprehensive and several areas are yet to be fully explored. There is a particular need for systematically collecting and assembling information that distinguishes between physical cross-border trading and transit trading and between different types of commodities. The Swiss government could play a key role in this respect.

⁸ The Trade Policy Reviews are periodic reviews conducted by the WTO Trade Policy Review Body (TPRB) in order to closely monitor the trade policies and practices of each WTO Member. The frequency of the reviews varies according to each country's share of world trade (WTO, 2015).

Box 1: Specific Commodities (see also Annex 1)

This box compiles some Swiss-related data on specific types of commodities. The available information is generally incomplete. Gaps include import and export data for certain commodities, particularly base metals and coal.

Hard commodities

Switzerland hosts key oil trading hubs. One third of the total volume of globally traded oil products is exchanged in Geneva, with minor trading activities outside the Lake Geneva region (Swiss Federal Council 2013, 11-12). According to a study commissioned by several NGOs (Gillies, Guéniat and Kummer 2014), Swiss trading companies dominate trade in oil originating from African countries. According to Gillies et al., from 2011 to 2013 they purchased about 25% of the oil sold by African state-owned companies, contributing significantly to African governments' revenues (Gillies, Guéniat and Kummer 2014). These data appear to refer to transit trade.

Compared to transit trade, physical cross-border trading of oil is much less important. In 2013, Switzerland imported 12.43 million tonnes of oil products at a value of CHF 10.78 billion.⁹ Two thirds of oil imports arriving in Switzerland originate in African countries, including Libya, Nigeria, Algeria, and Egypt; one third originates in Kazakhstan (Erdöl-Vereinigung 2015).

Gas is not widely traded in Switzerland. However, companies headquartered in Zug are active in building and running gas pipelines (Swiss Federal Council 2013, 12). The amount of gas imported to Switzerland in 2013 corresponds to 39.8 terawatt-hours at a value of USD 373 million (see Annex 1)¹⁰

Lugano has relevant coal trading activities (Swiss Federal Council 2013, 12). However, data on coal imports are missing.

Two thirds of the international trade in base metals takes place in Switzerland (Swiss Federal Council 2013, 11). Companies from Zug are important players in trading copper and zinc. They are widely active in the extraction of base metals (iron, aluminium, nickel, and palladium). Lugano is a relevant trading centre for steel as well as other base metals (*ibid.*). This information, however, appears to relate to transit trading. Figures on base metal imports are difficult to obtain.

Swiss-based companies hold a strong position in global gold trade. The largest bilateral gold trade relations by value are maintained with India, USA, Peru, and Thailand (Lee et al. 2012). Gold refineries play a key role and are mainly headquartered in the Canton of Ticino (Swiss Federal Council 2013, 11). According to journalistic information, 70% of world gold is refined in Switzerland (Mariani 2012), three of the biggest refineries are located in Ticino and another large refinery is located in Neuchâtel (*ibid.*).

The example of gold illustrates how politically sensitive the disclosure of trade data may be. Official statistics concerning gold and silver trade occurring in the past decades were only recently published by the Swiss Customs Administration (2015c). The available data for 'precious metals' (gold, silver, and platinum) trade suggests that, in 2011, Switzerland imported precious metals for a value of approximately CHF 100 billion and exported precious metals for a value of CHF 80 million (Swiss Federal Council 2013, 9). According to the new accessible database, in 2013 gold imports amounted to 3.1 tonnes for a value of CHF 109.8 billion and gold exports amounted to 2.8 tonnes for a value of CHF 117.7 billion. In the same year, Switzerland imported 1.8 tonnes of silver for a value of CHF 1.4 billion, while exports amounted to 2.4 tonnes for a value of CHF 1.7 billion. Tariff escalation seems to be imposed on gold products (Swiss Customs Administration 2015b).

Altogether, Switzerland is an important importer of mining products (including metallic and non-metallic ores and

⁹ As a comparison, the global crude oil production in 2013 amounted to 68.6 million barrels per day (IEA 2014, 115), corresponding to CHF 3.4 trillion per year.

¹⁰ This number refers to the amount of natural gas imported to Switzerland for domestic use. The average natural gas price in 2013 amounted to USD 2.75 per mmBTU (million British thermal units) (data from www.nasdaq.com). With 1 mmBTU corresponding to 3,412,142 terawatt-hours (TWh), 39.8 TWh corresponds to 135,803,237 mmBTU. The equivalent value of 39.8 TWh is therefore 373 million USD.

their metals). Globally, 1.5% of total mineral imports are directed to Switzerland, amounting to a value of USD 8.1 billion (WTO 2010, 216). Critical raw materials¹¹ are a debated topic in Switzerland (Kohl 2010). We found no in-depth academic studies on Swiss trade in critical raw materials.

Soft commodities

Cross-border trading in raw and processed cocoa is of considerable importance for the Swiss economy. In 2013, Switzerland imported 40,900 tonnes of cocoa at a value of CHF 119 million, and exported 109,662 tonnes of processed cocoa at a value of CHF 792 million. Switzerland is a net importer of cocoa beans and a net exporter of processed products. This pattern follows an economic model which promotes generation of value added in Switzerland, and which is also supported by the current tariff structure. Tariff escalation for cocoa is substantial: imports of cocoa beans (raw or toasted) are not subject to any tariff, while imports of processed chocolate (cocoa powder, chocolate blocks, slabs, and bars) are subject to tariffs varying between CHF 14.80 and CHF 669.50 per 100 kg (Swiss Customs Administration 2015b), with some exceptions. Regarding transit trade in cocoa, information is difficult to find.

More than half of international trade in coffee goes through Switzerland (Swiss Federal Council 2013, 11). These data refer to transit trading. Yet, cross-border trading of coffee is important as well: in 2013, Switzerland exported 131,000 tonnes of coffee at a value of CHF 660 million and imported 131,000 tonnes of unroasted coffee at a value of CHF 500 million (Swiss-Impex 2013). The tariff structure for coffee imports suggests that tariffs escalate, similarly to those on cocoa products: Switzerland imposes no tariff on unroasted coffee while imports of roasted coffee are subject to a normal tariff of CHF 63 per 100 kg (Swiss Customs Administration 2015b).

As to sugar, Switzerland is an important producer and it is basically self-sufficient. Domestic production mainly derives from sugar beet. In 2013, Switzerland produced 217,155 tonnes of sugar domestically, whereas it imported 149,875 tonnes (Schweizer Zucker AG 2015). Data on sugar exports are difficult to obtain. Transit trade in sugar is significant: Switzerland (particularly, the Geneva financial hub) accounts for 50% of total international trade in sugar (Swiss Federal Council 2013, 11).

Two thirds of global cereals trade is based in Switzerland, especially in Geneva. This figure relates largely to transit trading. Regarding cross-border trading, exports of cereals in 2013 amounted to 784,000 tonnes, corresponding to a value of CHF 326 million. Imports of cereals in 2013 amounted to 17,100 kilotonnes at a value of CHF 2.80 million. Quotas are imposed on sugar imports from developing countries (Swiss Customs Administration 2015a).

Switzerland, with the Lake Geneva region, is the world leader in transit trading of cotton (Swiss Federal Council 2013, 12). More detailed data are not publicly available or are difficult to obtain. Switzerland is a net importer of cotton: in 2013, it imported 1.4 kilotonnes of cotton at a value of CHF 2.6 million, while it exported only 315 kg of cotton linters at a value of CHF 3,057 (see Annex 1).

1.2.3 Actors of the corporate segment

Two types of entities are active in the Swiss financial hub: (1) companies established in Switzerland, and (2) companies with branches or subsidiaries in Switzerland (Guex 1998). Companies operating in Switzerland differ widely as to their level of vertical integration. Among Swiss companies, we find all levels of vertical integration. Some are more or less fully vertically integrated companies. This means that they control different stages of the supply chain. In the case of hard commodities, for instance, this would embrace value chain activities going from extraction to trade, including shipping, transportation, and refinement. Other companies focus on specific activities along the supply chain. Most Swiss companies focus on shipping and trading (Swiss Federal Council 2013, 11).

Swiss commodity trading is concentrated in three locations: Geneva, Zug, and Lugano. Geneva's main activities are financing, banking, shipping, and product testing. The main com-

¹¹ Critical raw materials are essential industrial raw materials which share a number of common characteristics, namely economic importance, supply risk, geographical concentration, low substitutability prospects and recycling rates.

modities traded are oil, coffee, sugar, grain, oilseed, and cotton. Dominant companies in the Geneva trading hub include Vitol, Trafigura, Gunvor, Litasco and Mercuria for oil, and Louis Dreyfus, United Coffee and Cargill for agricultural commodities (Swiss Federal Council 2013, 11). Zug specializes in services provision and business consulting, with a substantial concentration on metals (copper, zinc, aluminium, nickel, and palladium) and energy commodities (coal, natural gas, and, to a lesser extent, oil). The Zug trading hub is dominated by the multinational Glencore, a vertically integrated company which trades oil, metals, and agricultural commodities. Other examples are the Stemcor Group and Transocean. Lugano specializes in base metals (iron, steel) and coal, as well as in the refinement of gold (Swiss Federal Council 2013, 12). Two major companies in Lugano's commodity hub are Duferco and Petraco (LCTA 2013).

It remains difficult to estimate how many companies are active in Switzerland in the commodity sector and it is not always clear whether they operate on either cross-border or transit trading, or both. The commercial register lists 90 companies active in transit trading (Swiss Federal Council 2013, 9) although in the case of commodity transit trading the numbers are probably considerably higher.¹² The Swiss Bankers Association estimated that around 570 companies with 10,500 employees were active in commodity trading in Switzerland in 2010 (Swiss Bankers Association 2013, 13). With 400 companies and 8,000–9,000 employees, the Lake Geneva region is the largest commodity trading hub. Zug, hosting 100 companies with 2,000 employees, is the second-biggest cluster; and Lugano, with 70 companies and 1,000 employees, ranks third (Swiss Bankers Association 2013, 13). The number of members registered under sectoral umbrella organizations provides yet another set of figures: the Geneva Trading and Shipping Association (GTSA) lists 150 members (GTSA 2015), and the Lugano Commodity Trading Association (LCTA) lists around 40 members (LCTA 2015). Information about members of the Zug Commodity Association (ZCA) was not accessible. The main political actors engaging in commodity-related policymaking are listed in Annex 2. This list is not exhaustive; this illustrates once again the urgent need for improved and consistent databases.

1.2.4 Political initiatives

Swiss political activities related to the commodity sector have multiplied over the past few years, especially since the release of a seminal book on the Swiss commodity market by a Swiss NGO in 2011 (EvB 2011). Some proposals address specifically the commodity sector and are meant to regulate it; others are actions pursued on broader policy areas which nonetheless affect the commodity sector. The 2013 Background Report on Commodities to the Swiss Federal Council lists 38 political proposals and requests, including parliamentary interventions launched by various commissions and individual members of the Swiss Parliament between 2002 and 2012 (Swiss Federal Council, 2013). They cover a wide range of issues, including human rights, transparency needs, corruption, money-laundering, tax issues, and environmental degradation. A number of actions have also been launched since 2013. The most significant are listed in Annex 3. They include initiatives taken by the federal Parliament and the federal administration.

¹² In Switzerland, companies are not obliged to register their transit trading activities into the commercial register. Data on transit trading derive from recurrent surveys of the Swiss National Bank (Swiss Federal Council 2013, 9). Since the companies responding to the survey are only a sample of the total active companies, we can assume that 90 commodity transit trading companies is an underestimation.

A key contribution addressing the question of how to go forward in the regulation of the Swiss commodity sector is the 2013 Background Report of the Interdepartmental Platform on Commodities to the Federal Council. The Report presents 17 recommendations on issues such as transparency, corporate and government responsibility, development policy, double taxation agreements and transfer pricing, and reputational risks (Swiss Federal Council 2013). The implementation of the recommendations is assessed on a yearly basis. A first follow-up Report was published in 2014 (Swiss Federal Council 2014a; see also section 4); a next report is expected to be released in August 2015. At least five departments of the federal administration are involved in issues related to commodities. Box 2 describes the most cutting-edge and sensitive items currently on the top of the Swiss political agenda and identifies relevant research gaps for each of the topics discussed. Overall, Swiss civil society advocates more regulation and several NGOs support the adoption of legally binding regulations (Box 2). Yet, Swiss institutions have not always kept the pace (see Annex 3). The discussion is made more difficult by patchy knowledge and data. The scientific community can therefore play a key role in shedding light on the issues discussed.

Box 2: Main items on the Swiss political agenda and research gaps

Based on the recommendations to the Federal Council in the 2013 Background Report on Commodities and in response to various political proposals and requests at the national level, as well as to recent developments and debates in according international standard-setting institutions, the Swiss Government is involved in several political activities – including legislative – with direct or indirect implications for the commodity and commodity-trading sectors. Most importantly, respective activities focus on: 1) a revision of the Swiss corporate tax law; 2) the fight against illicit financial flows, especially in form of money laundering, corruption and tax avoidance; 3) improving transparency for payments of multinational companies in extractive industries to foreign governments and state-owned enterprises; 4) strengthening due diligence requirements for multinational companies, including in the commodity sector; 5) introducing and enhancing the automatic exchange of information with other countries in tax-related issues; and 6) environmental responsibilities of the raw material sector (see Swiss Federal Council 2013; 2014). This box gives a rough overview on important activities and developments in these fields, without any claim to completeness.

1) Corporate tax law

In the context of bilateral talks with the European Union and other countries on inconsistencies in their corporate tax regimes, the Federal Council suggested several reforms of the Swiss corporate taxation system. In June 2015, the Federal Council adopted the dispatch on the Corporate Tax Reform Act III, which is now to be deliberated by the parliamentary chambers.¹³ In the dispatch, the Federal Council particularly suggests the abolition of the cantonal tax statuses for holding companies and other corporate forms which are no longer deemed compatible with according international standards. In return, the cantons shall have the possibility for treating revenue from patents and similar rights associated with research and development in a preferential way, as well as for envisaging increased deductions for research and development expenditure. The reform can have implications for the extractive industries and commodity sector as Swiss corporations (or multinational corporations domiciled in Switzerland) active in this field currently often fall under cantonal tax statuses.

2) Illicit financial flows

Legislative activities in Switzerland in the field of illicit financial flows¹⁴ focus on money laundering and corruption, in particular. In December 2014, the Federal Act for Implementing the Revised Financial Action Task Force

¹³ For more information and access to related documents, see <http://www.efd.admin.ch/dokumentation/medieninformationen/00467/index.html?lang=en&msg-id=57551> (accessed 8 July 2015).

¹⁴ The OECD defines illicit financial flows as encompassing any “illegal transactions that are prohibited under the legal systems of the country of origin and the destination country, or that are improperly accounted for in the case of internal transactions within a company” (OECD 2013). The term thus includes a number of practices,

(FATF) Recommendations of 2012 was adopted by the Parliament. FATF is an inter-governmental standard-setting body that promotes the implementation of legal, regulatory and operational measures in the combat against money laundering and other threats to the integrity of the international financial system. With their recommendations, which have been issued in 1990 and last revised in 2012, FATF aims for a coordinated response to money laundering and other threats, and sets a basis for a level-playing field (see section 4.2.2.d). The Federal Act of December 2014 introduces enhancements or amendments in eight areas, including improved transparency requirements for legal entities and more stringent obligations for financial intermediaries when identifying the beneficial owners of legal entities.¹⁵ Respective provisions may also affect the extractive industries and commodity-trading sector. In the fight against corruption, including in the commodity sector, Switzerland has established a legal framework by ratifying the three main international agreements currently in force¹⁶ and is regularly evaluated by peer review (Swiss Federal Council 2014a, 8).

3) Transparency

In accordance with recommendation 8 of the Background Report on Commodities and in response to a postulate by the Foreign Affairs Committee of the National Council asking for more transparency in the Swiss commodity sector (Postulate 13.3365), the Federal Council adopted a report in June 2014, in which transparency regulations with respect to the commodity sector of different jurisdictions (including the European Union, the United States and Canada) are compared and implications of according future regulations in Switzerland are analysed (Swiss Federal Council 2014b). In the report, the Federal Council recommended the adjustment of Swiss transparency regulations to EU and US standards. A respective proposal was submitted for consultation in November 2014. According to the proposal, listed and large companies that are active in extractive industries are obliged to declare all payments they make to governments. The proposed provisions provide for an empowerment of the Federal Council to expand the scope of the transparency regulations so as to include commodity trading companies if this adjustment is in line with developments in other jurisdictions, especially the European Union and the United States, and, therefore, corresponds to an internationally coordinated approach.¹⁷ The deadline for consultation of the proposal ended in March 2015.

4) Due diligence requirements for multinational companies and the state

Recent developments at the international level pushed countries for progress in the protection of human rights (and the environment) from negative impacts of business activities, including abroad: In 2011 John Ruggie, the UN Special Representative on Issues of Human Rights, Transnational Corporations, and Other Business Enterprises, presented the UN “Protect, Respect and Remedy” Framework, in which he highlighted that companies should fulfill social expectations and therefore respect human rights and environmental standards even if they are not legally binding for them. The Framework paved the way to the UN Guiding Principles on Business and Human Rights (see section 4.2.1). In Switzerland, the implementation of the UN Guiding Principles was urged in Postulate 12.3503 “Eine Ruggie-Strategie für die Schweiz” (Swiss Federal Council 2013). Recommendation 10 of the Background Report on Commodities reiterates the need to identify measures needed for implementing the UN Guiding Principles (Swiss Federal Council 2013; 2014a). A Swiss Action Plan (2015-2017) for the implementation of the UN Guiding Principles is currently in elaboration, to be approved by the Government by the end of 2015. The Action Plan specifically focuses on the state duty to protect and presents ways to minimize the risks linked to activities of Swiss companies operating abroad (Swiss Federal Council 2015b). The measures are voluntary and based on a “smart-mix concept”. A multi-stakeholder dialogue envisaging the participation of representatives from the civil society, private companies, the federal administration and academia was developed in the elaboration phase of the document and will serve as a permanent dialogue platform also in the future (ibid.).

including abusive transfer pricing between subsidiaries of the same group for tax avoidance purposes, tax evasion and manipulative trade mispricing (ibid.). Depending on the definition, the term might also include activities that are not illegal in the strict sense, but nevertheless problematic on the sense that vast outflows of money are relocated from developing countries to low-tax locations in OECD countries, thus frustrating public development aid funding and compromising development perspectives (Swiss Agency for Development and Cooperation 2014).

¹⁵ See <https://www.sif.admin.ch/sif/en/home/dokumentation/finweb/regulierungsprojekte/umsetzung-der-2012-revidierten-empfehlungen-gegen-geldwaescherei.html> (accessed 8 July 2015).

¹⁶ The OECD Convention on Combating Bribery of Foreign Public Officials in International Business Transactions in 2000, the GRECO Criminal Law Convention on Corruption in 2006, and the United Nations Convention against Corruption in 2009.

¹⁷ See <http://www.ejpd.admin.ch/ejpd/de/home/aktuell/news/2014/2014-11-28.html> (accessed 8 July 2015).

According to a postulate by the Foreign Affairs Committee of the Council of States (Postulate 14.3663), the Swiss Action Plan's particular focus on the state duty to protect shall be supplemented by an analysis on access of victims of human rights infringements in host countries to existing judicial and non-judicial remedies in different home countries.

With regard to due diligence requirements for multinational companies, the Federal Council adopted a position paper on corporate social responsibility (CSR) in April 2015.¹⁸ The paper enumerates four key strategies for the dissemination and enhancement of CSR principles and standards: (i) promotion of transparency; (ii) active participation in international organizations and fora in the creation, re-elaboration, and development of CSR-frameworks; (iii) CSR awareness raising among Swiss companies; and (iv) support of CSR standards in developing and transition countries (Swiss Federal Council 2015a, 4). An Action Plan for the period 2015-2019 substantiates the strategies and proposes a set of ten concrete measures. The CSR position paper raised a fierce debate in the civil society and among private companies, whose positions are widely divergent.

In its Recommendation 11, the Background Report advocates the creation of a working group with representatives of all different stakeholder groups involved, to elaborate concrete proposals of CSR standards for the commodity sector. Accordingly, and also in response to Interpellation 13.3423 to the Parliament (see annex 3), the Swiss Government has opened a dialogue between the civil society, the private sector, the federal administration and academia in order to create specific implementation mechanisms of CSR standards.

In May 2014, the Federal Council adopted a report containing a comparative legal study on due diligence requirements of Swiss companies with regard to human rights and the environment, especially with respect to their activities abroad. The report was issued in response of Postulate 12.3980 by the Foreign Affairs Committee of the National Council and lists a number of measures that Switzerland might adopt in order to request private corporations and business organizations to respect CSR principles on, among others, human rights and sustainable development (Swiss Federal Council 2014c).

In September 2014, the Foreign Affairs Committee of the National Council submitted a proposal to the parliament in which the Federal Council was requested to more closely adapt the Swiss corporate law to the UN Guiding Principles on Business and Human Rights and to introduce according due-diligence requirements for Swiss companies with regard to human rights and the environment (Motion 14.3671). While the motion was rejected by the National Council, the Federal Council declared in their official statement their willingness to prepare a respective consultation draft which takes into account according EU regulation and does not entail any economic or commercial disadvantages for Switzerland.¹⁹

In April 2015, a group of 60 NGOs launched the "Responsible Business Initiative" (Konzernverantwortungsinitiative). The popular initiative aims to hold Swiss-based companies accountable for activities abroad by virtue of federal regulation. In other words, companies would become obliged to respect internationally agreed CSR standards and carrying out due diligence practices. At the time of writing, the collection of the necessary 100'000 signatures is ongoing.

The question of whether and to what extent CSR standards effectively protect human rights and the environment requires further investigation. In particular, comparative research is needed to assess where Switzerland stands in the implementation of such standards when compared to other countries. A recent study on CSR analyses the pros and cons of action, finding that the CSR frameworks can vary widely, compliance costs are difficult to estimate and the scope of CSR is widening (Byiers and Bessems 2015).

5) Automatic exchange of information in tax-related issues

Recommendation 14 of the 2013 Background Report on Commodities addresses the government's policy with regard to the conclusion of Tax Information Exchange Agreements (TIEAs) and Double Taxation Agreements (DTAs) and suggests the conclusion of TIEAs with developing countries if the interest in concluding a DTA does not prevail. DTAs aim to prevent double taxation of companies and individuals that are domiciled in more than one country and govern administrative assistance in tax matters. Through the exchange of information for tax purposes tax evasion by companies, improper transfer pricing and other abusive practices can be detected more easily. Yet, whether DTAs contribute to reduce tax avoidance largely depends on how they are framed (Bürgi-Bononomi and Meyer-Nandi 2014). Overall, the negotiation of DTAs with developing countries is to be welcomed

¹⁸ CSR is defined by the European Commission as "the responsibility of enterprises for their impacts on society" (European Commission 2011).

¹⁹ See http://www.parlament.ch/d/suche/Seiten/geschaefte.aspx?gesch_id=20143671 (accessed 8 July 2015).

as a development policy strategy (Baumgartner 2014).

In 2013, Switzerland signed the first TIEAs that correspond to the OECD standard with the Isle of Man, Guernsey and Jersey. The three agreements entered into force in October 2014. In the meantime, the government has signed five more TIEAs with Andorra, Grenada, Greenland, San Marino and Seychelles. Moreover, Switzerland has signed DTAs with 51 countries, 41 of which are currently in force.²⁰ Not all of these agreements correspond to the according OECD standard. However, the Federal Council considers unilaterally applying the international standards to all DTAs, even if their text is not in line with the standard. An according consultation was launched from October 2014 to February 2015.²¹

Commodity exporting countries are highly exposed to illicit financial flows (LeBillon 2011). Several authors have pointed to the need for further research in the area of illicit financial flows and development. In particular, Thut (2014) identifies a number of research gaps, and advocates the need for more studies on the effects of DTAs for developing countries and on the limits of the current international taxation system. Bürgi-Bonanomi and Meyer-Nandi (2014) present concrete proposals to improve the disciplines of DTAs concluded by Switzerland with developing countries. Herkenrath (2014) analyzes the consequences of illicit financial flows for developing countries, finding that they can have negative impacts. Empirical scientific investigations are however lacking (especially on political consequences of illicit financial flows). Another important issue that requires further examination is the outward dimension of financial flows, particularly with respect to the development impacts of FDIs from home to host countries. In the case of Switzerland, it would also be useful to have a comprehensive overview of the financial flows directed to and arriving from developing countries. Finally, an analysis of Swiss corporate tax policy and potential tax revenues losses for developing countries, along the lines of the study on “Evaluation Issues in Financing for Development” commissioned by the Dutch Ministry of Foreign Affairs, would be welcomed (Weyzig 2013).

6) Environmental responsibilities of the raw material sector

In October 2012, a popular initiative was launched to promote resource efficiency and sustainable consumption (Green Economy Initiative). While proposing the rejection of the initiative, the Federal Council presented a counter-proposal to the Green Economy initiative which supports the initiative’s goal of sustainable consumption (see annex 3), suggesting an amendment of the “Federal Act on the Protection of the Environment” in order to improve product transparency.

Also, with the Green Economy Action Plan adopted in March 2013, the Federal Council intends, among other things, to “increase the environmental responsibility of the raw material sector” (FOEN 2013, Measure 18, 38).

The Government of Switzerland moreover supports several initiatives to promote sustainable trade of commodities, including the Sustainable Trade Initiative (IDH) and the Biotrade Initiative.

1.3 Knowledge gaps

Switzerland is a leading financial centre and commodity trading hub. Key stakeholders in global commodity production and trade have their head offices in the country. Yet, information is still lacking as to how their presence affects the Swiss economy and what the costs and benefits are, apart from rough estimates of the sector’s turnover as a percentage of Swiss GDP. Further investigation is also needed to better comprehend the relations among companies that are mainly involved in, respectively, transit trading and cross-border trading, and their spillover effects. Overall, existing data are inconsistent and difficult to compare; often, they are missing or yet to be assembled. This is particularly true of historical data, tax-related information, data on financial flows and value chains related to the commodity sector, as well as information on trade practices and tariff escalation. There is also little, if any, academic research specifically dealing with Swiss companies’ investment activities in commodi-

²⁰ See <https://www.sif.admin.ch/sif/en/home/themen/internationale-steuerpolitik/doppelbesteuerung-und-amts-hilfe.html> (accessed 8 July 2015).

²¹ See <http://www.efd.admin.ch/dokumentation/medieninformationen/00467/index.html?lang=en&msg-id=54902> (accessed 8 July 2015).

ty-dependent developing countries (CDDCs). Specific studies have mostly been carried out by NGOs. Most of them are investigations concerning company-specific activities or sector-specific activities carried out in particular countries such as Nigeria, Angola, and Congo. (EvB 2013; 2015).

Finally, further research is also needed to explore the effectiveness of existing regulations affecting the commodity sector and their political, economic and legal impacts, also at a comparative level. Comparative analyses should also be conducted in order to assess whether higher levels of regulation are associated with increased or lowered levels of competitiveness of commodity hubs. In other words, what are the advantages or disadvantages of taking the lead in regulation, i.e. of being first movers? What are the advantages or disadvantages of inaction? In Switzerland the issue is still controversial. Yet, research on competitiveness is lacking. We suggest that these issues be addressed by scholarly work, and comparative research on *level playing field, competitiveness of business hubs and their evolution* be pursued in the future.

2. Effects of Commodity Trading on Home and Host Countries

This section takes stock of commodity-related literature from different academic disciplines. This literature looks into the effects of commodity trading and, although it does not specifically relate to Switzerland, it can serve to guide future research on the Swiss commodity sector.

The section is organized as follows. First, it discusses some preliminary issues inherent in the dichotomy between investors' home and host states which currently informs the literature on commodity investment and trading. Inasmuch as the bulk of existing analyses have mainly focused on host (resource-rich) countries, subsection 2.2 identifies some relevant research questions that future academic research should address in order to shed light on the effects of commodity investment and trading on home countries (and Switzerland in particular). This is followed by a comprehensive review of the literature on host countries, both with respect to the economic effects and the governance-related effects of resource abundance. For both areas, the section identifies main knowledge gaps.

2.1 A difficult distinction between home and host countries

In commodity research, it is useful to distinguish not only between 'hard' and 'soft' commodities, but also between investment and trade impacts in an investor's *home* country and in its *host* countries. A home country is an investor's country of origin. A host country is a country where a foreign investor runs operations to extract, produce, process, or transport that commodity.

While this concept is fairly simple, many commodity companies engage in vertically integrated activities along the value chains of specific commodities. This means that they run operations (investments) at different stages of extraction, processing and distribution of the product. A commodity usually passes through a number of stages from extraction to final use, and often each stage takes place in a different country. Accordingly, the impact of an investment in an intermediate processing stage is different from the impact of an investment in the country of extraction (Gereffi and Fernandez-Stark 2011). For example, copper may be mined and extracted from the ore into refined copper bars in Zambia, in operations owned by a Swiss company. The bars may then be exported to China, where another Swiss-owned

operation may turn the bars into wire, which is then exported to the US, where it is built into electric motors.

A simple dichotomy between home and host countries fails to account for this complexity. Indeed, each stage should be analysed separately as a vertical activity of foreign direct investment (FDI). The potential impacts of foreign investments in downstream stages of the value chain will differ from their impacts at the extraction stage and in the home country (Gereffi and Fernandez-Stark 2011). To date, this is not adequately reflected in the literature. While studies mainly focus on impacts at the extraction stage, impacts on the investor's home state and on countries involved in downstream stages are largely neglected. In view of this gap, the following explications nonetheless refer to home and host countries in the 'traditional' sense.

2.2 Effects on Switzerland as a home country: research issues

We know little about the effects of commodity-related investments on investors' home countries. In the case of Switzerland, there is very little, if any, research on how the presence of numerous head offices of large global investors in commodity-based sectors affects the country. Such research would be highly relevant and could be organized along the following lines.

Of course, head offices of large global investors in commodity-based sectors create employment and output and contribute to tax revenues in Switzerland. However, data on the extent of these effects are still very scarce (see section 1). Further, a common concern about outward FDI is that it substitutes, rather than complements, domestic investment (Barba Navaretti, Venables and Barry 2006). This is a demand-side issue: the question is whether or not outward FDI increases or reduces the level of aggregate demand in the home economy. However, this does not seem to be a concern for commodity trading firms, as they usually cannot source their commodities in Switzerland.

In the case of Switzerland, a more interesting question is how outward FDI affects the supply side of the home country. What are the effects on the input structure of production and labour skills in Switzerland, on innovation, technological upgrading, and scale economies? And are there spillover and external effects on other firms and sectors? In other words, does outward investment increase domestic factor productivity, firm capabilities, and other capacities which will contribute to longer-term growth performance of the home economy? Much less research has been done on these questions in general, and none of the existing studies focuses on commodity sectors and activities.

Since commodity traders as a rule do not engage in production in other industries in Switzerland, their potential impacts relate to upstream (supplier) and downstream (customer) linkages and spill-over effects, as well as to external economic effects outside the firm itself but possibly within the industry. For example, has the presence of Swiss firms in production and trading activities created a pool of technical expertise in Switzerland on these commodities, enabling Switzerland (other Swiss firms or official agencies) to take on a role in other sectoral activities at the global level, such as standard-setting or product innovation, which could result in Swiss services exports? Or does the presence of Swiss-based soft-commodity traders have any impact, positive or negative, on input sourcing or the cost structure of Swiss farms, and thence on Swiss food consumers? There are many similar questions about possible impacts of commodity-related outward FDI on Switzerland. Studying them requires in-depth research at both commodity and company levels.

2.3 Economic effects of resource abundance in host countries

There is no in-depth academic research on Swiss companies' investment activities in commodity industries in developing countries; the only studies were done by NGOs (see section 1.3). As a consequence, this section includes general reflections and refers to literature from different academic disciplines that does not specifically relate to Switzerland but can nevertheless guide future research on the Swiss commodity sector. The studies reviewed use a wide array of empirical approaches and include 'large-N' studies, cross-country analyses, and case studies (see also section 3). Economic and political science research on commodities provides important insights. Many studies have focused on the effects of abundant natural resources on economic parameters such as growth, development, industrialization, investments, inflation and currency volatility, public debt, and tax revenues. Other aspects such as the impact on labour markets and welfare spending have been less studied. The literature in political science has focused on how commodities relate to democracy and democratization, corruption, and conflict. The extractive industry sector has garnered much attention in this respect. In terms of hard commodities, the focus is mostly on economic growth, investment flows, democracy, and corruption, while we found a number of studies on price fluctuations related in particular to soft agricultural commodities. After some general reflections on how FDI can affect host countries, the subsequent sections will expand on some of the aspects mentioned.

2.3.1 General reflections on impacts of foreign direct investment on host countries

While we know little about the effects of commodity-related investments on investors' home countries, the literature on how the commodity sector affects host countries has increased substantially over the years. Besides social and environmental impacts that need to be considered (see section 3), scholars largely agree on certain impacts of commodity-related FDI on the host country's domestic economy and domestic governance. These impacts differ depending on whether they are related to hard commodities or soft commodities.

Extraction of hard commodities commonly involves ring-fenced activities with few linkages to the host economy (UNCTAD 2007). Activities usually involve limited local input sourcing (and thus lead to limited local enterprise development). Operations are usually capital-intensive and provide relatively few local jobs, especially at higher skill levels, and outputs are exported with little or no local processing (Fung and Korinek 2014). The rights to exploit the natural resource are usually owned by the host government, which issues a license or a service contract to a foreign investor in return for a share of the revenue from commodity sales in the form of some combination of direct payments, royalties, and taxes (Collier and Venables 2009; Ruta and Venables 2012).

From the point of view of development, the critical issues for the host country are its share of revenue and its use of that revenue. Whether commodity extraction has a significant long-term economic impact on the host country often depends on how it spends this revenue – whether it is invested in infrastructure, education, and other forms of human capital, or whether it is used for consumption or other unproductive spending, such as white elephant projects (UNCTAD 2007). In many developing economies, including those depending on commodity trading, governance standards related to government revenues and expenditures are low, and accountability is limited (see section 2.4). The terms of the arrangements between investors and the host government are often not made public, which inevitably heightens concerns about possible side payments to influential people in the host country. Deci-

sions on government expenditure are similarly opaque and often not subject to review or audit. These circumstances contribute to political conflict and violence often found in mineral-rich developing countries (Berman, Couttenier, Rohner, Thoenig 2014).

The most significant potential positive impact of resource extraction activities on host economies is thus that they might contribute to enhanced governance. Processes like the Extractive Industries Transparency Initiative (EITI) and “Publish What You Pay” (an initiative by a group of NGOs) are raising awareness of this issue (see section 4.2.2), and home governments have a potentially important role to play in pressing or requiring outward investors to adopt good governance practices in their dealings with developing country governments.²² The lack of transparency often also extends to tax payments by the foreign investor to the host state,²³ in this respect, the home government can also assume a helpful role (see section 1.2.4).

Soft (renewable) commodities differ from hard commodities in several respects. To enter the market, the foreign investor does not necessarily need a host government licence or contract (although access to land may require this in some countries) (UNCTAD 2009). Accordingly, the host government cannot obtain a share of the revenue directly or via royalties. The initial entry of a foreign investor to grow or source a soft commodity for export can have impacts on a significant share of the host country’s population; indeed, it frequently affects more people than the extraction of hard commodities, as smallholder farmers who previously used the land find their role shifting to that of outgrowers supplying the investor (who often supplies credit and production inputs) or waged workers employed by the investor. There is a risk that the shift from locally consumed food crops to export crops might have negative implications for food security in the host country. On the other hand, there may also be positive implications in terms of local enterprise development, as there is often more scope than in hard commodities for some local processing before export. Home country government actions could focus on ensuring that the content of contractual arrangements between investors and smallholder outgrowers or employees meet global (home country) standards, that the process through which the investor establishes its operation in the host country has involved sufficient consultation with groups affected by the entry, and finally that the operations of the investment are monitored to ensure that agreements are adhered to.

2.3.2 Commodity dependence and economic growth: resource curse and ‘Dutch’ disease

A whole body of literature has studied the relationship between resource abundance and economic growth (Van der Ploeg 2011; Morris, Kaplinsky and Kaplan 2012; Allegret et al. 2014). A recurring theme underscored by existing studies is that resource-rich countries, particularly countries richly endowed with hard commodities, tend to experience slower economic growth rates. The existence of a negative correlation between natural resource abundance and economic growth is the core idea at the basis of the ‘resource curse’ theory elaborated by Sachs and Warner (2001). The natural resource curse has been studied by means of both qualitative and quantitative methods (Frankel 2010, 11). Many scholars corroborated the theory with their findings (Manzano and Rigobon 2001; Frankel 2010). In a time series analysis, Auty (2001) observed that resource-poor countries have grown significantly faster than

²² Switzerland has contributed funds to EITI but has not yet joined the process.

²³ In 2011, there was a claim that Glencore was avoiding tax payments in Zambia (EvB 2011).

resource-abundant countries. Collier also confirmed the soundness of the theory, especially in developing countries (Collier 2007; Collier 2010).

Yet, the resource curse remains a contested concept (CEFUP 2013; Cavalcanti et al. 2011; Collier and Venables 2009). Some scholars question its magnitude or even its existence (Davis 2009; Frankel 2010), and point to successful examples of commodity-rich countries with positive growth rates, such as Norway and Botswana (Van der Ploeg 2011). Many scholars argue that the parabola of resource-led development depends on institutional factors, such as the existence of well-functioning institutions (Collier and Goderis 2008; Weinthal and Luong 2006). While commodities may provide development opportunities (Van der Ploeg 2011), positive long-term development depends on a functioning institutional framework and a mix of policy interventions (Frankel 2010; Van der Ploeg 2011; Collier and Goderis 2008). According to Frankel (2010, 1), the risk related to natural resources can be mitigated by interventions such as “indexation of oil contracts, hedging of export proceeds, denomination of debt in terms of oil, Chile-style fiscal rules, a monetary target that emphasizes product prices, transparent commodity funds, and lump-sum distribution”. (Frankel 2010, 1)

More generally, resource-rich countries seem to be more exposed to commodity dependence, institutional failures, corruption, tax avoidance, and the ‘Dutch disease’.²⁴ The latter term describes the phenomenon by which reliance on earnings from exports of hard commodities may affect the overall economic structure of resource-rich countries via appreciation of real exchange rates (Frankel 2010; Barder 2006; Corden and Neary 1982; Corden 1984). The process can be described as follows: after the discovery of a specific (hard) commodity, exports of the said commodity increase and the natural resource sector develops. As a consequence, and particularly in periods of high commodity prices, the country’s currency appreciates, leading to a decline in investment and output from the manufacturing and agricultural sectors, as these sectors lose competitiveness in the global market and also relative to imports in the domestic market. Accordingly, commodity abundance often comes with positive short-term effects and negative long-term effects on real-term economic growth (Collier and Goderis 2008; Weinthal and Luong 2006). This theory is widely supported (Ruta and Venables 2012).

The resource curse is often mentioned in relation to existing business relationships between commodity firms and government agencies and/or state-owned companies that are characterized by corruption, bribery, and money laundering (see section 4.2.2). Tax avoidance has also been mentioned as closely connected to the resource curse (see section 2.4.3), although commodity-specific literature in this regard is fairly scarce. Fostering corruption and undermining economic development, the resource curse ostensibly creates conditions under which human rights violations typically occur (see section 3).

Regarding the drivers of the resource curse, there is a certain consensus that it has to do with the ‘rents’ that are usually available to those who control the resource, because the price of the resource (on the world market) is not connected in any way with the cost of extraction. This leads to conflict amongst parties over ‘property rights’ relating to the resource or the land where it is located. There is less consensus on whether the curse is ‘inevitable’, i.e. resource-rich countries necessarily experience low growth, conflict and poor governance, and on how to address or avoid the curse. There is a particular need for research that investigates measures to combat corruption in both home and host countries and puts them in rela-

²⁴ The expression was introduced in the late 1970s to describe the shrinkage of the manufacturing sector experienced by the Netherlands throughout the decade as a consequence of the excessive exploitation of natural gas earnings (Barder 2006; Corden and Neary 1982; Corden 1984; Davies 1995).

tion to domestic and international measures aimed at strengthening institutions, at the same time providing an effective remedy against ‘Dutch-disease’ dynamics. In this respect, it is worth noting that ‘Dutch-disease’ is, above all, a macroeconomic issue resulting from large surpluses in the balance of payments. As such, it may not necessarily be related to governance issues such as corruption as it can occur in any country (i.e. including resource-poor economies) which experience large capital inflows, e.g. from foreign aid.

2.3.3 Commodity dependence and the post-extractivism debate in Latin America

The Prebisch–Singer hypothesis posits that commodity prices decline over the long run compared to those of manufactured goods (UNCTAD 2012b, 2). The hypothesis is debatable, and evidence is mixed – it depends strongly on the countries and commodities included in the analysis, and on the period analysed. Still, the decline of commodity prices relative to that of manufactured goods is considered an obstacle constraining developing countries’ efforts to develop – a problem which is also referred to as ‘commodity dependence’ (ibid; Harvey, Kellard et al. 2010; Arezki, Hadri et al. 2013).

The classical debates about commodity dependence and resource curse phenomena tend to focus primarily on host country failures, whereas systemic failures and the responsibilities of home countries and international governance do not receive adequate attention. The debate about post-extractivism which is currently ongoing in a range of Latin American countries is an attempt to reverse the premises of the discussion and find ways to avoid post-colonial patterns of commodity dependence. It is directed towards host countries taking direct control of their own commodity sector and at least a significant part of the related value chains. Since it reflects significant ongoing developments in Latin America, we present the main ideas of the debate in what follows.

The debate on post-extractivism is a 21st-century update of a long debate on persisting features of colonial and postcolonial history and is most prominent in Latin America. It acknowledges that the global economy has differentiated into a complex and constantly changing network of regions that are characterized, first, by their position in the value chain: a region either belongs to one of the *centres* of industrial production in which value is added to the material value of natural resources by means of labour; or it belongs to one of the *peripheries* rich in resources or labour. If a region abounds in natural resources, its economic development tends to emphasize extractive and export-oriented production of prime materials such as minerals, oil, gas, timber, fibres, food, fish, and others (Veltmeyer & Petras 2014, 21-46).

Second, post-extravist theories refer to the dependency theory, according to which the relation between centres and peripheries is based on power asymmetries.²⁵ These power asymmetries can only be overcome by means of political and economic emancipation, which requires combining resource extraction with industrialization, by strengthening the role of the state and state regulation. Such emancipation is also described as the path from extractive to post-extractive economies (Kay 2010). Proponents of the post-extractivism debate take a

²⁵ The dependency theory implies that poor countries (whether resource rich or not) cannot develop as surpluses always flow out to the centre, making growth inevitably low. The theory is contentious, due to different empirical findings (see, e.g., the strong growth of many developing economies in the past 30–40 years, starting with Korea & Taiwan in the 1970s and, more recently, China, Vietnam, Brazil, India, etc.). Prebisch-Singer led to policies of import substitution industrialisation (ISI) in the 1950s, especially in Latin America, which worked well until the 1970s; then growth declined, and ISI policies were replaced by more market-led export oriented policies. These had some success in generating growth in some countries especially after 2000, as Chinese demand for resources grew. Yet, the outbreak of the financial crisis and slower Chinese growth seem to have put an end to this phase, too. Post-extractivist theories make an attempt to present new market options inspired by the ISI area.

critical stance towards the idea of the 'resource curse'. Instead of focusing on extractive economies' governance *outcomes*, the post-extractivism discourse concentrates on the political *root cause of dependencies* that lead to these governance outcomes.

While the need for advancing towards post-extractivism is widely acknowledged, the question of how to achieve this goal is highly controversial. A first strand of policies – often underpinning the new leftist governments of Latin America – emphasize the need to overcome the neoliberal theories that dominated the last four decades. Consequently, as a first step, they aim to bring back the state as a key economic and political actor. This key step includes stronger regulation of the extractive industry (and other industries) to increase the state's financial and political capacities to reduce poverty, counteract socio-political exclusion, and improve social and productive infrastructures and services by means of public investments. While this progressive 'neo-extractivism' has been particularly successful in reducing poverty – by 32% in Bolivia, 26% in Peru, 23% in Venezuela, and 22% in Ecuador from 2000 to 2012 (UNDP 2014) – its negative effects in the form of environmental and, in some cases, cultural externalities have been strongly contested (Gudynas 2012). Critics argue that neo-extractivism neither takes account of the internal contradictions emerging from modern forms of financialized capital accumulation – as either a potential or a concrete risk – nor considers the need for economic policymaking to respect the ecological and social limits of economic growth. Accordingly, they stress the need to harness new, radically reframed notions of development, for example in the terms of *vivir bien*/living well (Thomson 2011) and the underlying relations between society and nature. They suggest that this be done, for example, by constitutionalizing the rights of 'Nature' (Acosta & Martínez 2009) or 'Mother Earth' (Boff 2012) as part of rethinking development in terms of 'post-developmentalism'. Acknowledging fundamental criticisms of the concept of development itself, as brought forward by the French 'regulation school' (Gajst 2010), de-growth and dematerialization (Calisto Friant & Langmore 2014; Martínez-Alier 2012) and feminism (Carrasco 2006) offers approaches that could guide the development of new policy models. Gudynas (2012) argues that the currently dominant model of progressive neo-extractivism should be overcome by shifting towards 'precautionary extractivism' in a first step. This would mean increasing regulation and democratic control over financial gains and ensuring strict compliance with national and international environmental, health, and taxation standards. An increasing share of the extractive rent would need to be invested into national or regional projects of industrialization. In a second step, shifting from 'precautionary' to 'required' extractivism would mean shifting exportation away from global to national and continental markets and making efforts to substitute the use of fossil fuels and non-renewable minerals as a fundamental feature of economic policies. In this way, the economy would gradually move towards extracting only what is absolutely required, or towards 'minimalized extractivism'.

However, this vision is criticized for the fact that the political, institutional, and regulatory frameworks required for achieving such a transition are far from available (Foster 2011); moreover, it uses an overgeneralized notion of extractivism that glosses over the fact that there are different forms of economic capitalist systems (Jessop 2013), including in Latin America. As long as it does not take into account the complex diversity of market formations that characterize the different countries in Latin America, the general rejection of extractivism remains too idealistic and falls short of outlining concrete trajectories of change. Although it is possible and necessary to search for local solutions to escape extractivism, it needs to be considered that, according to the theory, "a global crisis cannot be solved at local level, even in a slower, less runaway world that is partly decoupled from the world market and that emphasizes local sustainability. There can be no quick fix to the crisis and more imaginative

work remains to be done to promote a no-growth, solidarity economy that allows for economic and social justice in the ‘Global South’”. (Jessop 2012, 23)

2.3.4 Price volatility, supply and demand, and speculation

The issue of price volatility in the commodity sector has been widely debated in academic literature. Commodity prices experience substantial fluctuations from time to time. The first decade of the new millennium was marked by a long period of high price volatility, especially affecting trade in fuels, minerals, and agricultural commodities (Ruta and Venables 2012, 8). Since World War II, international markets have been affected by two major commodity ‘booms’: the first one occurred in the 1970s and the second one between 2003 and 2008 (UNCTAD 2012b, 30). Commodity prices increased rapidly from 1971 to 1974. After 1974, they declined slowly until 1991, with two small intermediate peaks in 1978 and 1984 (Borenzstein and Reinhart 1994, 241). After 1991, commodity prices remained stable. A slight increase took place between 1994 and 1996 (Gilbert and Morgan 2010, 3024). After 2003, commodity prices boomed once again, and declined after the outbreak of the economic and financial crisis in 2008 (Gilbert 2010, 399). The increase in commodity prices between 2002 and 2008 was general: oil prices increased (Cheung and Moring 2007), prices of metals boomed (Humphreys 2010), and those of agricultural commodities also grew (Robles, Torero and Braun 2009). Increased price volatility in recent years is documented by recent statistical analyses and long-term comparisons (Harvey, Kellard et al. 2010; Arezki, Hadri et al. 2013).

Many consequences of commodity price fluctuations have been investigated to date. Commodity prices are highly relevant because they are closely linked with business cycles and strong drivers of macroeconomic fluctuations (Gubler and Hertweck 2013). Commodity prices can also explain inflation (*ibid.*); they are particularly strongly related to domestic inflation cycles in commodity-exporting countries (Bloch, Dockery and Sapsford 2006). The relationship between exchange rate uncertainty and commodity trade has also been studied: scholars investigated bilateral trade regimes (for instance between the United States and Mexico, China, or Spain) and found that exchange rate volatility reduces commodity trade (Bahami-Oskooee and Wang 2007; Bahami-Oskooee and Hegerty 2009; Bahami-Oskooee, Harvey and Hegerty 2014). Others observed a relationship between the real exchange rate of commodity-exporting countries’ currency and the real prices of their commodity exports. This so-called currency–commodity relationship describes the parallel movement of real currency exchange rates and real commodity prices. The relationship is, however, not constant and may vary considerably over time (Cashin, Céspedes and Sahay 2004). The debate about the consequences of commodity price fluctuations is still ongoing and further research is needed. A holistic approach explaining the interconnections between the different impacts related to price volatility in the commodity sector would be particularly useful.

The drivers of commodity price fluctuations have also been investigated thoroughly. According to the ‘traditional structural approach’, commodity prices are determined mainly by demand; this view has, however, limited explanatory power in accounting for the price cycles in the 1980s and 1990s (Borenzstein and Reinhart 1994). According to Borenzstein and Reinhart, this is because it focuses only on industrialized countries’ demand; by contrast, commodity supply and a broader ‘world’ demand can jointly explain fluctuations in commodity prices (*ibid.*). The explanatory power of a broader global demand is confirmed by various other studies, which demonstrate that emerging countries’ demand for commodities has a strong influence on commodity prices (Cheung and Moring 2007; Baffes and Hanoitis 2010). Other commodity-specific factors of supply and demand, such as new discover-

ies, exploitation technologies and their costs, the level of economic activity in large economies (short-term demand effects), as well as innovation (long-term demand effects) are equally important. The use of trade restrictive measures affecting trade in commodities may also have an effect on commodity prices trends (Espa 2015). However, further analysis is needed, particularly concerning the growing demand for critical raw materials.

Finally, commodity speculation – roughly understood as the buying and selling of commodity futures with the only intention to make profits (Radetzki 2008) – has become a major issue of concern with respect to commodity price volatility. One of the main fears is that speculative activities will lead to commodity price fluctuations. The academic literature thus far has almost exclusively dealt with this aspect with respect to soft commodities.²⁶ A recent meta-analysis commissioned by the NGO Foodwatch has pinpointed the magnitude and drivers of speculation in the context of soft commodities (Bass 2013). The review suggests that index funds play an important role in the increase of soft commodity prices. Moreover, speculative activities on the part of financial intermediaries are also identified as a possible cause of price volatility (Davidson 2008; Robles, Torero and Braun 2009; Cifarelli and Paladino 2010). Evidence is, however, not conclusive. Many studies dispute that commodity speculation increases the prices of (soft) commodities and worsens price volatility (Glauben et al. 2012; IOSCO 2009; Conrad 2014; Pies et al. 2013). A central concern for future research should be, first, to ascertain the magnitude of speculation in the commodity sector and, second, to establish consensus on the extent to which speculative activities are responsible for price rises and price fluctuations.

Box 3: Specific Research on Price Volatility

Energy commodities (oil, gas, coal)

A substantial share of research on energy commodities has focused on oil (Looney 2012). Triggered by the 1970s oil shocks (Kline and Weyant 1982), a number of studies in the 1970s and 1980s focused on the consequences of oil price shocks on economic growth (Hamilton 1983). Since the beginning of the 21st century, the attention has shifted towards the impact of demand shocks on real oil prices, particularly with respect to the growth of developing Asia (Cheung and Moring 2007; Zhang et al. 2014). In this context, the evolution of the role of OPEC and its loss of influence as a cartel regrouping major oil producing countries has also been scrutinized (Kaufmann et al. 2004). Some studies suggest that market price escalation of crude oil was caused by speculation related to futures contracts (Davidson 2008). Other studies do not find significant correlation between speculation on oil and increases in oil prices (Haase, Seiler and Zimmerman 2013). According to recent studies, moreover, new actors are increasing in importance in oil extraction, such as national oil companies (NOCs) (Baker Institute 2007). Finally, the effects of new developments in oil and gas extraction, such as shale gas and tight oil, have gained prominence in recent analysis of oil prices (Troner 2014).

Minerals / base metals

Since 1945, three commodity booms affected minerals and metals: the first occurred in the early 1950s, the second from the early to mid-1970s, and the third from 2003 to 2008 (Radetzi et al. 2008). The 2003–2008 metal boom is not categorized as a supercycle but, rather, as a large cyclical boom (Radetzi et al. 2008). Academic literature supports the thesis of a demand-led metal price explosion (Humphreys 2010) driven by emerging economies, especially China and India (Chen 2010).

Precious metals (gold, silver, platinum)

Precious metals are important in finance because of their high values. Gold is a rare metal, and it is financially

²⁶ There are, however, a plethora of studies by NGOs on hard commodities (see e.g. Mugglin 2014 and references therein cited).

traded in different ways – gold bullion, gold stocks, gold mutual funds, and gold exchange-traded funds – which also have different properties as forms of investment (diversifying, hedging, and safe-haven properties) (Pullen et al. 2014). Precious metals differ from each other, although they have structural commonalities; for example, the price volatilities of gold, silver, platinum and palladium are determined by different factors and therefore these metals cannot be represented in a single asset class or by a single index (Batten et al. 2010). At this point in our research, we found little literature which focuses on precious metals. Further research in this area is needed, for example on gold speculation or on how the gold price relates to the prices of other commodities.

Agricultural commodities (cocoa, coffee, sugar, soya, cereals)

Price volatility in agricultural commodities is a widely discussed topic in academic research, although it is not a new phenomenon (Gilbert and Morgan 2010). Several studies have analysed the fluctuations of agricultural commodity prices over the last decades: they started increasing in 2002-2003, peaked in 2008, and declined from 2008 to 2011 (Robles, Torero and Braun 2009; Pies et al. 2013; Brümmer et al. 2013). Different studies offer different explanations for these fluctuations. According to Robles, Torero and Braun (2009), speculative activities in futures markets contributed to the price spikes in 2008. By contrast, Pies et al. (2013) find that speculation did not have a big impact on price volatility during the food price crises of the late 2000s. According to Conrad, speculation influences prices of agricultural commodities only if it creates a significant excess demand over a significant time period (Conrad 2014). Future research should concentrate on the impacts of speculative activities on fluctuations of agricultural commodity prices.

Biofuels

The impact of biofuel production on growing food prices is contentious. While some argue that there is no such correlation (Baffes and Haniotis 2010; Gilbert 2010), others claim that the influence is substantial (Gallagher 2008). In terms of figures, the demand for biofuels is increasing: in 2003-2004, 5% of the global maize harvest was used for biofuel production; by 2011, the share of biofuel in world maize consumption had increased to 15% (UNCTAD 2012b, 47). This increased consumption of maize for biofuel production is, among others, supported by high government subsidies. The discussion about the potential impact of biofuel production on growing food prices is ongoing: the EU and the USA have introduced policies to avoid substitution of food production by biofuel production (ibid., 50).

2.3.5 Knowledge gaps

Resource abundance may affect the development trajectories of commodity dependent countries and the structure of their economies. Yet, the soundness of the resource curse theory is still subject to debate and the consequences of commodity-related investments on host countries are still not clear. The effects of speculative activities in the sector need deeper analysis and a differentiated perspective for single commodities.

2.4 Governance-related effects of resource abundance in host countries

Besides its economic relevance, resource-abundance has been studied at length with respect to its effects on the political and institutional fabric of commodity dependent countries. The following sections give an overview of the literature exploring the relationship between commodity abundance and governance-related issues.

2.4.1 Democracy vs autocratic regimes

The concept of resource curse has been used in a modified form to address links between commodity abundance and the existence of autocratic regimes. The phenomenon is also referred to as 'political resource curse' (Liou and Musgrave 2014; Wiens 2014; Ross 2015). Some studies have shown that countries which are rich in natural resources, especially in hard commodities such as oil and minerals, are more likely to be ruled by autocratic regimes (Ross 2012). Accordingly, a number of analyses have found a negative correlation between

natural resource abundance and democracy (Jensen and Wantchekon 2004; Ahmadov 2014). The concept is, however, far from being unanimously recognized. Haber and Menaldo (2011), for example, conducted a 'large-N' study and found no statistically significant relationship between resource reliance and authoritarianism. Mitchell analysed the importance of oil and carbon in the industrialization of several democratic countries, arguing that fossil energy actually enabled the development of modern democracies (Mitchell 2009; Mitchell 2011). Some studies found that whether resource abundance affects national forms of government very much depends on the channels through which commodity rents are used and on how public expenditure patterns develop (Dunning 2008; Arezki and Brückner 2012). Others have analysed the correlation between FDI and political regimes, arguing that democracy may have a negative effect on FDI attraction in the case of hard commodities (Asiedu and Lien 2011). This topic is closely related to the issue of corruption (see section 2.4.2), and requires further investigation. Ross (2015) argues that, although academic studies on the political resource curse have proliferated since 2001, many issues remain unresolved, namely "the scope of the resource effect, the conditions under which it occurs, the mechanisms that explain it, and how it can best be remedied".

2.4.2 Corruption, bribery, and money laundering

Resource-rich countries are more exposed to corruption (Global Financial Integrity and African Development Bank 2013), especially when resource rights and income distribution are not systematically regulated. According to Transparency International, corruption involves "the abuse of entrusted power for private gain". Corruption tends to be more likely in resource-rich countries with weak democratic institutions (Bhattacharyya and Hodler 2010). As Petermann et al. (2007) demonstrate, however, the effects of fuel and non-fuel commodities on corruption can be quite different. The risk of corruption has been studied mainly in the context of the oil industry to date. While some scholars identify a positive correlation between oil abundance/dependence and corruption (see e.g. Arezki and Brückner 2011), others maintain that the relationship between these two is heterogeneous (see e.g. Melo and Quinn 2015). In a quantitative study, Busse and Gröning (2013) show that the existence of natural resources may increase corruption. The greater the amount of commodities exported, the greater the propensity for corruption.²⁷ Kolstad and Wiig (2013) even suggest that extractive companies systematically use corruption to gain access to commodities. This means that high levels of corruption do not necessarily prevent multinationals from investing in a resource-rich country in the global South, and might actually be a reason for them to do so. In addition, empirical evidence shows that corruption is detrimental to development (Olatunde 2011). It also potentially leads to low human rights performances, as countries with poor economic growth often witness abuses of basic human rights (see section 3). Overall, the inconsistencies in current research on corruption imply that more research is needed to disentangle the factors causing or preventing corruption and to gain knowledge about the links between corruption and FDI, in particular with respect to Swiss-based investors (see e.g. Rybi and Longchamp 2014).

²⁷ Other governance indicators – the quality of bureaucracy and impartiality of the legal system – do not seem to be affected by the abundance of natural resources. Busse and Gröning (2013, 6) measure the level of corruption within a political system, including financial corruption (e.g. demands for special payments and bribes in connection with import and export licenses, exchange controls, or tax assessments), excessive patronage, nepotism, or secret party funding. Bureaucracy quality measures the strength of the bureaucracy. Strong bureaucracy means that the bureaucratic system acts as a shock absorber, minimizing policy revisions when there is a change in government. The law variable quantifies the strength and impartiality of the legal system.

Bribery describes the act of taking or receiving something which is given with the intention of influencing the recipient in some way favourable to the party providing the bribe. Evidence shows that corruption and bribery are particularly common in the oil, gas, coal, and minerals and metals sectors (Eigen 2007; Karl 1997; Transparency International 2014). Bribery has been observed in both extractive and trading companies in these sectors (Le Billion 2011). Precise estimates of the magnitude of bribery in the commodity sector in general and the Swiss commodity sector more specifically are missing.

Money laundering denotes the process by which the proceeds of crime are transformed into legitimate money or other assets (Chatain et al. 2009). Research has pointed out that corruption and money laundering in developing countries are positively correlated (Aluko and Bagheri 2012). The key concern with respect to the commodity sector is that powerful companies enter business relations with governments of countries with weak legal frameworks. The risk of money laundering is particularly pronounced in the extractive industries, as evidenced by a report on the Canadian diamond industry (Schneider 2004). In line with the Background Report of the Interdepartmental Platform on Commodities of the Federal Council (Swiss Federal Council 2013), money laundering appears more likely under certain ownership conditions, such as when commodity companies are owned by politically exposed persons or by governments that exhibit deficiencies in the areas of political or human rights.

Scientific estimates of the magnitude of money laundering in the commodity sector are hard to find. However, given that money laundering and corruption are positively correlated (Aluko and Bagheri 2012) and that corruption has proved a recurring practice in the commodity sector, there is a fair chance that money laundering too might be part of how the commodity sector works. Moreover, money laundering engenders political instability and economic retrogression of developing countries (ibid.). Accordingly, it is very likely that commodity firms engaging in money laundering are complicit in creating conditions under which human rights violations prosper (see section 4.2.2). Research is needed to underpin these hypotheses with a more solid empirical basis.

2.4.3 Tax avoidance

Tax avoidance is the practice by which multinational corporations exploit the differences between national tax regimes. While tax avoidance is highly controversial, it is not specific to the commodity sector as it determines how multinationals in general operate. Corporations engaging in tax avoidance – which is at times also referred to as ‘base erosion and profit shifting’ (OECD 2013a) – make use of existing tax laws to reduce their respective tax burden. Tax avoidance, unlike tax evasion or fraud, is not per se illegal; its legality very much depends on the domestic laws and the international agreements (particularly double taxation agreements) in place (with respect to Switzerland, see Bürgi Bonanomi and Meyer-Nandi 2014).

While the academic literature is replete with empirical and theoretical studies on tax avoidance, research focusing on the peculiarities of the commodity sector is scarce. Despite the lack of scientific evidence regarding the total amount of tax avoidance in the commodity sector, the OECD (2013a) takes issue with the tendency of many internationally operating corporations to disconnect the location of actual business activities from the location where the profits from these activities are taxed. The broader implications of tax avoidance, including its relation with the resource curse, are widely debated within the NGO community, notably the Berne Declaration (EvB 2011) but less so in academic research. The contention that tax avoidance is a key driver of the resource curse has garnered support from political leaders

such as the former UN Secretary-General Kofi Annan. These assertions will have to be addressed and verified empirically by future research, as well as Switzerland's role in supporting or preventing tax avoidance and the resource curse at large.

2.4.4 Transfer mispricing and trade mispricing

Transfer mispricing (also known as transfer pricing manipulation or abusive transfer pricing) is a topical issue in commodity trading. Transfer mispricing occurs whenever two companies that are part of the same multinational group trade with each other (trade pricing), but artificially distort the price at which the trade is recorded in order to minimize taxes in the countries in which they do business. In contrast to transfer pricing, which is per se a legal activity, transfer mispricing is an abusive and illegal practice whose incidence has increased in parallel to the growing role of multinational corporations, which make taxation more complex. Transfer pricing manipulation is an activity used by multinational corporations to reduce the taxation of their profits through over- or under-invoicing of intra-firm transactions (Eden 2012, 205). The manipulation of transfer prices entails an income shifting among countries (ibid.) and developing countries can therefore suffer tax revenue losses (Le Billon 2014, 51). Even though a conclusive overview of the amount of transfer mispricing in the Swiss commodity sector is out of the question, our experience suggests that – as a general rule – Swiss-based commodity firms engage in transfer pricing rather than in mispricing.

At an aggregate level, transfer mispricing develops into trade mispricing, i.e. the activity of manipulating international trade prices. The manipulation occurs through “the deliberate over-invoicing of imports or under-invoicing of exports” (Hollingshead 2010, 2). Trade mispricing is considered “the most important source of illicit flows of capital out of developing countries” (Cobham et al. 2014, 8) because it is a channel for money laundering and corruption. The implications of trade mispricing for developing countries can be enormous: according to some estimates, the total tax revenue losses amount to 98 to 106 billion dollars annually, that is, about 4.4 percent of the total revenues of developing countries (Hollingshead 2010, 2). Trade mispricing is an issue of concern for Switzerland, as it seems to be widely applied to commodity exports to and from Switzerland (Cobham et al. 2014).

The concept of trade mispricing has however been highly disputed for two main reasons: first, differences and inconsistencies in trade statistics would make it difficult to estimate the exact magnitude of mispricing, especially in terms of country-level comparisons; second, current statistics would be misleading in that they do not make the necessary distinctions between the use of the terms ‘trade mispricing’, ‘trade asymmetries’ and ‘illicit financial flows’ (Nitsch 2012). Nitsch (2012) calls therefore for caution in drawing conclusions from statistics. Additional academic research could address the existing knowledge gaps on transfer mispricing, particularly in the direction of “greater accessibility to transaction-level data on cross-border export and import transactions and on MNE income statements and balance sheets”. (Eden 2012, 205)

2.4.5 Conflicts and civil wars

Resource dependence has been found to be conducive to violence and armed conflict. Conflicts may arise out of the aspiration to gain control over resources and can be sustained by using resources as a large earning source. (Le Billon 2001). However, the link between resource dependence and conflict is not generally accepted. Brunnschweiler and Bulte (2008), for example, argue that, although civil war creates dependence on primary sector exports, the reverse is not true. In their view, resource abundance is associated with a reduced prob-

ability of the onset of war. In contrast, a study on illegal gold mining in Colombia shows that an increase in the exploitation of metals like gold – particularly illegal exploitation – has exacerbated violence in richly-endowed municipalities (Idrobo, Mejía and Tribin 2014).

Companies operating in hostile environments are frequently faced with the dilemma of protecting their premises and personnel while avoiding complicity in human rights abuses committed by the private and public security forces they hire for this task (Banfield 2003; Lilly 2000). Local governments may force companies by law to rely on their public security forces (Banfield 2003; Nelson 2000; Watts 2005), which are notorious for committing human rights violations in response to protests, particularly against oil companies (Kaeb 2008). The protection of extractive industry infrastructure is a key business for private military and security firms as well (Mathieu et al. 2007).

Other studies have focused on how commodity abundance might lead to political instability. Le Billon (2001) observed a shift in how wars evolve and how conflicts are financed: during the Cold War, conflicts were financed mainly by the two competing superpowers and their allies; in the 1990s, these external financial transfers were replaced by revenues from natural resource exploitation as the main instrument for financing conflicts. Statistical studies largely confirm Le Billon's observations and establish a correlation or causation between commodity abundance and conflicts (Morelli and Rohner 2014; Berman et al. 2014; Caselli, Morelli and Rohner 2014). Berman et al. (2014) found that the existence of mineral resources and mines increases the financing capacities of combatant groups and contributes to the spreading of violence. Caselli, Morelli and Rohner (2014) tested the argument that resource abundance is a predictor of interstate conflicts and found that the presence of oil was an important predictor for interstate war in the second half of the 20th century.

Overall, the likelihood of armed conflict appears to depend on the type of commodity. Some evidence suggests that agricultural commodities reduce the probability of an outbreak of conflict, whereas mineral resources, as well as the value and quantity of a country's natural resources, increase this probability (Welsch 2008). Although several studies confirm the correlation between resource abundance and conflict, most of them use indicators at the national or international levels. A better understanding of causes and effects requires more evidence at the subnational level and more knowledge about low-intensity conflicts (Koubi et al. 2014).

2.4.6 Local human rights impacts in general

While the phenomena described in the preceding sections may often result in national-level human rights violations (see section 4.2), the commodity sector is also frequently associated with human rights violations at the local level. The following two subsections give an overview of literature offering general statements in this regard. Commodity-specific local impacts of the commodity sector are discussed in section 3 below. Whether these specific impacts constitute human rights violations needs to be examined on a case-by-case basis.

In the course of his mandate, John Ruggie, the UN Special Representative of the Secretary-General on Issues of Human Rights, Transnational Corporations, and Other Business Enterprises, studied adverse human rights impacts by industries. His conclusion was that the extractive industry accounts for 28% of all allegations, which is the largest share reached by any single industry (Ruggie 2013, 25-26). The extractive industry, according to the Special Representative, "has a large local footprint in terms of the scale of its impact, often in areas inhabited by minority populations" (Ruggie 2013, 26). The most common transgressions in-

clude inadequate procedures for resettlement of populations, insufficient security of the person, and adverse impacts on livelihoods (Ruggie 2013, 26).

a) *Workplace-related human rights violations*

Among the most frequently discussed labour-related human rights issues in the commodity sector are child labour and forced labour. Both of them are considered to be particularly salient in certain branches of mining (e.g. artisanal mining) and in the agricultural sector. Child labour in particular is discussed most frequently in relation to small-scale and artisanal mining (IPEC 2006a), where children as young as 4–5 years old are helping in mining activities (IPEC 2006b). Child labour in small-scale mines is generally considered “the worst form of child labour” because of the dangers and hazards connected to it (Hilson 2010). Much of the literature focuses on the sub-Saharan African context, and some authors point out that the complexity of the issue is not well understood to date (see e.g. Hilson 2010; 2012). While artisanal mining can provide locals with a livelihood alternative to activities such as fishing or farming, working conditions in the mines are precarious, unsafe, and dangerous, especially for children (see e.g. Huesca 2013). Mercury poisoning in small-scale gold mining has been identified as a particular danger for children (see IPEC 2006; Bose-O’Reilly et al. 2008). Yet, women are also disproportionately affected. They hold little power, are ill-informed, and earn less than men – and hence they remain in vulnerable at-risk positions. Overcoming gender inequities is regarded as one of the main preconditions to achieving greater sustainability in small-scale gold mining (Hinton, Veiga and Beinhoff 2003).

Forced labour is a related problem in the mining sector and sometimes occurs in combination with child labour. Mining companies who invest in mining projects in countries with weak governance and unstable institutions and who fail to conduct proper due diligence risk becoming complicit in forced labour schemes (Human Rights Watch 2013).

While some evidence exists, more is needed. A gap exists in particular with regard to comprehensive impact studies which at the same time attempt to detract common features (see section 3).

b) *Community-related human rights violations*

The extractive sector has a particularly large impact on local communities (Ruggie 2013, 24). Two main types of community-related human rights violations are commonly discussed in the literature: first, violations linked to the consent and participation of local and indigenous communities, sometimes combined with instances of their forced and ill-compensated displacement; second, violations linked to corporate activities in conflict and post-conflict zones that often rely on abusive security forces (see section 4.2.4).

A persistent and recurring problem in the extractive industries is improper consultation and involvement of communities and their (forced) displacement without proper compensation. The acquisition of concessions by large extractive companies and of large tracts of land by global investors (so-called ‘land grabbing’) affects small-scale miners in the minerals and metals sector (Geenen 2014). While mining operations can benefit local communities, this does not happen automatically, but depends on the involvement and consultation of local communities as partners (Veiga, Scoble, and MacAllister 2001). However, some scholars argue that local people’s capacity to bargain or give free consent to investments is limited at the outset by their lack of access to economic and institutional alternatives (Vermeulen and Cotula 2010). As a result, community engagement can lead to problematic dependencies of

communities on mining companies (Auty 1998; Frynas 2005). For this reason, capacity building in local communities – aimed not least at the diversification of their economy – has been identified as another crucial element in the development of sustainable mining communities (Veiga, Scoble, and MacAllister 2001). Furthermore, both mining companies and governments should adopt gender-sensitive approaches to developing extractive industries. This is needed to address the problem that men in extractive communities commonly capture the greater share of extraction project benefits, whereas women and children experience the greater share of associated risks (Ward, Strongman et al. 2012). Similar patterns have been observed in the soft commodity sector when investors appropriate large areas of land for food and non-food agricultural production. The evidence gathered so far with respect to community-related human rights violations and challenges needs to be expanded. In particular, there is a need for more cross-country studies.

2.4.7 Knowledge gaps

Much academic research has studied the so-called ‘political resource curse’, that is, the relation between commodity abundance and political failures such as autocracy, corruption, tax avoidance, violence and human rights violations. The debate is although still open and evidence gathered so far needs to be expanded. With regards to the correlation between resource abundance and autocratic regimes, additional inquiries are needed to clarify causality. As to corruption, money laundering, and tax avoidance, further research should focus on the role of commodity abundance, since the findings are not necessarily related to the commodity sector. In the area of resources and conflict, evidence should be substantiated with indicators construed at the subnational level and information on low-intensity conflicts, and differentiated per commodity types.

Regarding human rights violations in general, there is a need to trace ‘responsibility chains’ in order to focus the discussion on home country duties and business-related responsibilities. Much knowledge is still needed on the construction of value chains and the flow of investments: research is still a step behind in this respect, not least due to a persistent lack of transparency of investment flows. Finally, the sector would benefit from a mapping exercise taking stock of policy interventions adopted to address resource curse scenarios and evaluating their effectiveness. In the words of Ross (2015, 253), in fact, “we have little systematic knowledge about which policies work and under what conditions. [...] The need for evidence-based policy advice is more urgent than ever.” (Ross 2015, 253).

3. Commodity-Specific Local Impacts of the Commodity Sector in Developing Countries

Commodity production is highly relevant for developing and emerging countries in the global South – particularly for commodity-dependent developing countries (CDDCs). It comes with many positive and negative externalities. The Swiss commodity sector is closely related to the commodity sectors of these countries, as the bulk of both hard and soft commodities is sourced from there. Accordingly, this section looks at local impacts resulting from commodity production in these countries. While section 2.4.6 gave an overview of literature offering general statements on local impacts relevant to human rights, this section outlines the state of research with regard to specific local impacts. We assess the availability of literature, the extent of existing knowledge, and the most pressing research needs from a sustainable development perspective. In doing so, we focus on CDDCs in particular, and mainly consider

peer-reviewed papers published as of 1995, that is, in the last two decades. The most illustrative among these papers are referenced in the text; they do not represent the full range of available literature. Soft commodities discussed include coffee, cocoa, sugar, soy, cotton, palm oil, rubber, and timber. Hard commodities examined include copper, iron, aluminium, coal, gas, oil, and gold.²⁸

The results are presented in two main sections, the first relating to soft commodities and the second relating to hard commodities. Each of these sections is further divided into four subsections: the first identifies and discusses positive and negative socio-economic (i.e. livelihood) impacts; the second identifies and discusses positive and negative environmental impacts; the third reviews existing governance mechanisms and assesses to which extent they promote positive and negative impacts of commodity extraction; and, finally, the fourth presents knowledge gaps. References in this section are numbered as a result of the systematic search approach taken.

3.1 Soft commodities and their local impacts in developing countries

Overall, we found some 150 papers dealing with local impacts of coffee, cocoa, rubber, palm oil, timber, cotton, soy, and sugar. The following subsections provide an overview of the livelihood, environmental, and governance impacts discussed.

3.1.1 Livelihood impacts

Relatively abundant information exists on how coffee [1-25], cocoa [25-43], rubber [44-65], and palm oil [44, 65-84] affect local livelihoods. The impacts discussed are mainly related to income generation, employment, and – to a lesser degree – to socio-economic differentiation, land rights, and displacement and dispossession. By comparison, we found fairly little information on local socio-economic impacts of timber [43, 85-93], soy [94-98], cotton [99-104], and sugar [105] production.

A large share of the literature evaluates mixed systems managed by small- to medium-scale farmers. A main shared finding is that these diversified systems, as a survival strategy [70, 75], have positive impacts on smallholders' livelihoods and income generation; this has been shown mainly for mixed systems of rubber cultivation [44, 46, 47, 50-52, 56-59, 62, 64], palm oil production [70, 78, 80, 84], and timber plantation [43, 89-92]. In particular, ethnic minority groups have been found to benefit from mixed rubber cultivation [58, 59] to the extent that they outperform large state-managed farms.

Much of the literature focuses on smallholders, investigating whether they have adapted their management practices and benefit from cash commodity production. Findings are ambivalent and show that the adaptation of management practices often depends on the availability of governmental support, on the market structure, and on the characteristics of smallholder's households and farms.

Whether farmers are able to realize positive impacts of rubber and palm oil plantation as part of family and community farming, for example, depends strongly on effective government support (rubber: [45-48, 53, 54, 61, 65]; palm oil: [70, 72, 74, 80, 83, 106]). Critical issues include restricted access to processing infrastructure and to subsidized capital resources,

²⁸ Annex 4 gives a detailed explanation of how we proceeded for the literature review.

limited availability of private credit for smallholder farm development, and market inefficiency [70, 80, 85, 106]. Further barriers are identified, such as informal and inequitable royalty distribution mechanisms (especially for timber revenues) or farmers' unfamiliarity with the commodity (particularly oil palm) as a crop due to lack of knowledge and skills [82, 89, 91, 107].

Regarding rubber plantations, Kenney-Lazar (2012) [49] presents a good overview of critical social, political, economic, and cultural impacts at local levels, in cases where they are based on large-scale concessions dispossessing small-scale producers of their land and common-pool resources. The resulting commodification of land and labour hardly improves the basic conditions affecting their livelihoods. Regarding palm oil cultivation, a review of winners and losers is presented by Obidzinski et al. [82]. In the case of timber production practices, adaptation depends in particular on farm size and on both the availability of household labour and the inconsistency of farm income, including the obligation to pay taxes [92]. Interestingly, in the case of Benin, the level of taxation at both the national and decentralized levels (municipalities) seemed quite affordable in the timber value chain, especially for smallholder farmers [85]. Socio-economic differentiations are also reported among cocoa- and coffee-producing households [4, 5, 7, 32]. Knudsen and Fold (2011) [32] illustrate, based on Ghana's cocoa sector, how a governmental purchasing system can secure both stable income from cocoa farming and access to land for small-scale farmers.

Cash crop production is also related to migration and disputes over land, and may conflict with the production of food crops. Regarding cocoa and coffee farming, the literature discusses related dynamic migration patterns which stimulate deforestation, struggles over land between indigenous and migrant farmers, and how adoption of these cash crops can lead to the outmigration of youth [1, 5, 7, 11, 27, 32, 39, 40]. Some studies show how the cessation of such production systems can severely alter local livelihoods. Powell (2007) [105] describes how the closure of a sugar mill is reconstructing the livelihoods of former mill worker families, leading to emigration and a reduction in income, security, and access to social assets. Competition of both rubber and palm oil with food production for self-sufficiency is a big challenge in China, Malaysia [44, 46, 47] and Indonesia [106]. Apart from these few studies, there is only little information about the effects of rubber plantation on food security, for example, in other countries.

The role of agricultural biotechnology in sustainable development and the shift of smallholder farming practices from conventional cotton to genetically modified hybrid cotton is also discussed controversially. Indeed, this is the main focus of the papers we found on cotton cultivation [100, 102-104]. Some papers maintain that modern technology adaptation among rural smallholder farmers has positive socio-economic effects, especially benefiting the poorer and more vulnerable farmers and hired female workers [103, 104]. Other authors argue that the benefits of conventional and organic cotton exceed those of systems based on genetically modified organisms (GMO) if compared under equal conditions [108]. Moreover, rapidly changing agricultural technology was also found to coincide with pests and lead to agricultural deskilling at the farm level [103].

A general worrisome trend observed for all soft commodities discussed here is that the improvement of livelihood assets is generally associated with a simultaneous increase in vulnerability to volatilities in the climate as well as in the prices of products, inputs, and labour. In addition, landowners' rights and smallholders' tenure and access to farmland often depend on unfair partnerships and corporate land deals with both commodity companies and states [49, 69, 71, 75, 77, 80, 82, 87, 89, 106].

Income and/or employment were discussed as the dominant local socio-economic impacts in five articles about soy farming [94-98], one about sugar production [105], 19 about cocoa [25-43], and 25 about coffee cultivation [1-25]. Results show a clear increase in small-scale farmers' income as a result of soy production [96, 98], cocoa cultivation [26, 29, 32, 34, 35, 37, 43], and coffee cultivation [6, 9, 10, 21, 24]. In many cases, it was not the original occupants of small-scale soy farms who became successful at profitably farming soy [96, 98], but migrants who arrived later and had both greater organizational and technical skills and better financial resources. Socio-economic differentiation, class formation, tensions, and conflicts evolved due to local ethnic change and increasingly unequal allocation of land ownership and income [95, 98].

Although soy, like other food crops such as cocoa and coffee, is considered an important livelihood asset, its profitability has been shown to largely depend on farm size, production costs, and topography, and is clearly lower on small-scale than on large-scale soy farms [96]. As a consequence, there is a tendency to shift to mechanized large-scale soy plantation, causing displacement and dispersion of rural communities and giving rise to land conflicts [94, 96-98].

3.1.2 Environmental impacts

The relatively well-documented cases of coffee [2, 5, 15, 17, 21, 22, 109-123], cocoa [26, 31, 33, 38, 40, 41, 123-135], rubber [45-48, 56, 60, 64, 135-140], and palm oil [77, 82-84, 135, 141-147] also report local environmental impacts.

Studies on rubber and palm oil focus on the conversion of primary forests to plantations (also of other soft commodities such as cocoa and coconut). This generally has adverse impacts on biodiversity [47, 143, 145, 147] and soil fertility [82, 135, 138, 140]. Traditional and new agroforestry rubber systems are seen as the most sustainable solutions [45, 60, 135, 137, 138], although it remains unclear whether they are merely an intermediary step towards monocultures, which would call into question their long-term potentials [135, 137, 138]. The literature shows that small-scale and family farmers have a greater potential for managing diversified rubber systems [139], but the economic viability of small-scale rubber and timber systems is comparatively low compared to large-scale monoculture plantations [136, 148]. In contrast, Sabastian et al. (2014) [92] found that wealthier farmers managed timber more sustainably because they had more income and household labour available, enabling them to wait for revenue from growing trees.

In the timber sector, illegal timber logging in natural forests poses a major environmental problem. Illegal logging causes deforestation, reduces biodiversity, and accelerates climate change. In addition, these illegal activities promote corruption, undermine sustainable forest management, and result in loss of revenue [91, 93, 107].

Land-cover changes from natural or tropical forests to coffee, cocoa, soy, and sugar often have negative impacts on water quality, soil fertility, and organic carbon stocks [2, 5, 13, 22, 26, 38, 110, 111, 122, 123, 134, 135, 149]. Nutrient depletion and subsequent soil degradation implies a considerable risk of long-term economic losses for farmers [123]. In the Amazon Basin, the expansion of soy fields at the expense of tropical forests jeopardizes the hydrological balance and risks reducing water availability in the long term [149]. Diversified cocoa and coffee farming based on traditional agroforestry is increasingly viewed as a sustainable land use practice which contributes to biodiversity conservation [15, 16, 31, 33, 34, 41,

114-117, 125-130]. In addition, the high proportion of shade trees in such systems is recognized as crucial for minimizing the vulnerability of farmers' livelihoods to droughts [133].

These diversity assets are particularly relevant in view of the fact that cocoa and coffee farmers are exposed to growing volatilities, including climate change [36, 112]. However, the current trend towards cocoa and coffee intensification impacts heavily on plant diversity and biomass, and results in a loss of biodiversity [13, 17, 21, 33, 40, 109, 117, 124-126, 128, 129]. Particularly the replacement of existing cocoa with new hybrid cocoa varieties that require less shade has been shown to cause a gradual shift from shaded agroforestry to sun-grown cacao plantations, for example in Ghana [34, 40, 124]. Based on his research in Ghana, Ruf (2011) [40] suggests that the future of cocoa and timber possibly lies in "light commercial-oriented agroforests" [40].

3.1.3 Governance implications

The literature on governance implications shows that strong, participatory government involvement in the conversion of primary forests or agricultural areas into rubber and palm oil plantations has been more effective in balancing the needs of economic and social development and agro-biodiversity conservation [48, 52, 64, 82-84] than neoliberal policies giving free rein to market forces [55]. However, the effectiveness of such government involvement depends very much on how it is structured.

Some national and local government mechanisms against illegal timber logging, for example, have been assessed as inefficient [91, 93]. One study even found that governmental stakeholders actually supported illegal wood sales via informal local cooperation [107]. In the timber sector, reducing livelihood dependence on timber by providing alternative sources of livelihood, particularly during off-farm work seasons, has been shown to effectively enhance both livelihoods and forest conservation [43, 93]. The best outcomes are expected if these measures are combined with the empowerment of local communities by involving them in participatory co-management of forest areas and reserves and by strengthening alliances between local communities and state forestry agencies [90].

Studies on coffee, cocoa, and soy suggest that effective participatory governmental processes are key to further incorporating peasants and indigenous groups into local policymaking. Market-driven agricultural reforms with low government involvement are generally considered to overlook trade-offs from cocoa and coffee production, such as crop pests and diseases, or migration and possible labour shortages [4, 5, 19, 23, 27]. The strong presence of a market forcing small-scale producers to achieve high outputs increased the vulnerability of their livelihoods due to the limited degree of choice they had in the process [10]. Case studies on smallholder coffee-producing households in El Salvador, Nicaragua, and Colombia, for example, showed that even though they made a profit from their plantations, these families did not succeed in lifting themselves above the poverty line [4, 9, 15].

While some scholars view the shift to specialty coffees, such as fair trade and organic, as an opportunity for small-scale producers to cope with the coffee crisis [4, 10] – an effect that has also been documented for cocoa [29] – others found no conclusive evidence of positive outcomes of such production schemes on smallholders' livelihoods [3, 15, 16]. Case studies on soy production in Argentina, Brazil, and Paraguay found that certification programmes failed to effectively integrate social and cultural concerns of small-scale soy farmers, whereas they reinforced close relationships between large-scale producers, government soy actors, and multinational soy corporations [94, 95]. Steward (2007) [97] offers a broad review of the so-

cio-economic and environmental effects within soy agriculture perceived by Brazilian communities. Her results suggest that the winners and losers of soy development and certification schemes are largely determined by different understandings and valuations of forests and environmental degradation among stakeholders.

3.1.4 Knowledge gaps

After gaining an overview of the literature, we assessed our findings from a sustainable development perspective. This revealed a number of knowledge gaps, some of which are outlined below.

Too few studies deal with formal and informal local institutions, particularly land rights, and the question of what kinds of land rights-reforms can promote sustainable agricultural systems and sustainable commodity production. The impact of commodity production for export – and the associated rural transitions – on local people’s right to food is not sufficiently researched either. This includes the question of how local power asymmetries between small-, medium-, and large-scale land owners, but also between gender, class, and ethnic groups are affected by these transitions. Conclusive long-term information about socio-economic outcomes and environmental impacts of the shift to GMO and hybrid seeds is lacking. More balanced information on certification-based involvement in niche markets would be helpful to assess the benefits of such markets. Likewise, medium- to long-term studies on the impact of high-input agro-industrial agriculture on local agrobiodiversity (including knowledge about *in-situ* conservation) and on health issues are largely lacking. Further, in order to gain a more comprehensive picture, it would be necessary to better cover those soft commodities that have been less of a focus so far (see analysis above).

Given the pivotal role of government involvement in sustainable agricultural transformation, there is not enough literature on best practices of governmental support and optimal participatory processes from the point of view of local sustainable development impacts. Analysis is also needed to address the question of how domestic commodity markets would need to be shaped in order to promote sustainable local impacts, and how international governance – including the trade, investment, and tax regimes – would have to respond to such needs.

3.2 Hard commodities and their local impacts in developing countries

Overall, we found a fair amount of papers dealing with local impacts of copper, iron, aluminium, coal, gas, oil, and gold. The following subsections provide an overview of livelihood, environmental, and governance impacts discussed.

3.2.1 Livelihood impacts

The literature on impacts of hard commodity production on local livelihoods shows an ambivalent picture: 39 papers deal with local livelihood impacts of gold mining [150-188], mainly reporting on gains in terms of income generation and employment [151, 152, 154-156, 159, 163, 164, 166-169, 172, 175, 181, 185]. Comparatively little information exists on livelihood impacts of copper [186, 187, 189-192], coal [193-200], iron [188, 201, 202], and aluminium [24]. No suitable literature was found on local impacts of oil and gas.

In general, the literature discusses both large-scale and small-scale mining activities, and both opencast and underground techniques. Regarding copper, iron, and coal, the focus has

been slightly more on large-scale than small-scale and on opencast than underground mines. In contrast, studies on gold extraction focus predominantly on artisanal and small-scale mining, and to a lesser extent on large-scale mines.

A commonly shared finding is that mining operations increased local income via both labour and compensations. However, only a small proportion of local villagers earn high financial returns. Community members are regularly engaged in jobs of a low technical level, as the majority are not trained for specialized mining jobs [185, 191, 202]. For this reason, mining corporations increasingly promote mechanization, and local villagers find themselves replaced by better trained people coming from further away [202]. Some studies observed that the potentially positive income and employment effects can cause poverty-plagued rural communities to engage in illegal operations [151, 166-168].

Studies on gold mining in Africa [154, 155, 163, 164, 166-168, 172, 175, 185] illustrated that these self-initiated activities may have a positive downstream effect. Low-income farm households in particular are benefitting from income from gold artisanal and small-scale mining activities during the off-farm season [166, 167, 175]. These survival strategies often conflict with national and global legislation and put at risk the health and lives of miners [154, 161, 169, 180]. The coexistence of indigenous artisanal and small-scale mining groups and multinational large-scale mine operators may give rise to conflicts [169]. Creedy et al. (2006) [195] demonstrate how the replacement of artisanal and small-scale coal mining by large-scale mines, operated by responsible mining corporations in China, can achieve essential improvements in health and safety, technology, environmental protection, and economic and social benefits to local communities.

The literature shows that mining may pose a major threat to rural subsistence farmers, ethnic minorities, and forest communities relying on the natural environment for their livelihoods. Associated environmental damage (to cropland, river systems, and forests) and loss of land pose an indirect threat to local livelihoods [24, 177, 187, 189, 190]. Women in particular have reportedly lost their economic and social status as a result of resource extraction, often leading to their further marginalization and impoverishment [184, 201]. Contamination with mercury and other chemicals used in both large- and small-scale gold extraction often has considerable adverse impacts on local people's health [153, 180, 203].

One paper on iron mining in India [202] and one on coal mining in China [193] show that after the closure of a large opencast mine and small-scale mines, respectively, local communities were no longer able to sustain their livelihoods from the natural surroundings.

3.2.2 Environmental impacts

A major environmental impact of hard-commodity mining is water pollution. Water contamination from mine tailings (surface and groundwater) is frequently observed for copper [204-207], iron [205, 208], coal [198, 209], and gold [1, 2, 4, 7-9, 11, 14, 18, 19, 21, 22, 24, 28, 34, 39, 41, 50, 51, 54, 58, 62, 70-72, 75]. Another serious concern is the dispersion of surface contaminants by water and wind. This can result in elevated metal concentrations in downstream sediments, damaging lake and riverine ecosystems and water resources [204, 206, 207, 210, 211]. Likewise, the exploitation of energy commodities has been shown to have negative impacts on soil quality [212-215]. In the case of gold extraction, contamination with mercury – generally used in artisanal and small-scale mining – is one of the most serious impacts, affecting water quality, soils, and river sediments and reducing aquatic biodiversity [151, 153, 180, 203, 216-235]. Surface mining of copper [205], iron [205, 236], coal [198,

213], and gold [205, 225-227, 230, 233, 237-239], as well as gas drilling [240] cause critical levels of air pollution. Coal extraction has been shown to have negative effects on biodiversity regeneration owing to air pollution and resulting soil degradation [213, 215, 241]. Studies on indirect impacts of mining in Africa [177, 190] indicate extensive deforestation of rainforests near mines. All these elements cumulate in loss of agricultural lands [177, 187, 189, 190, 214] and forest areas, resulting in a steady decrease in subsistence production and economic loss within the affected communities.

Mishra (2009) [198], Bury (2004) [155], and Bury (2005) [156] present an exemplary discussion of how coal mining impacts on livelihood assets. Their results suggest that the positive impacts on physical and social capital are for the short term only, whereas the negative impacts on human and natural capital must be seen as long-term effects.

3.2.3 Governance implications

Quite a few studies deal with the impacts of mining on local governance mechanisms and examine conflicts arising from the clash of global and national interests with local interests in well-being [180, 189, 190, 199]. In the context of commodity extraction, endemic corruption, repression, and power asymmetries between small local elites and the majority of the local population are frequently observed phenomena. In general, strict top-down governance mechanisms tend to foment elite capture of benefits, avoiding adequate service to local needs [193, 199, 202]. The clash between national and local interests is often based on different understandings and views on nature and the use of commodities and the natural environment.

In order to bring the multiple trade-offs of hard-commodity production into an acceptable balance, many authors [189] advocate participatory processes between indigenous communities, mining companies, and the state, as well as the combination of formal and informal governance arrangements [190]. The literature identifies a general need to improve governance mechanisms at all levels, as well as a need for institutional efforts to alleviate negative impacts of a possible mine closure [190, 193, 194, 202]. Instruments assessed as effective include, for example, simplified registration processes, secured land ownership, a better understanding of the local setting, and artisanal mining practices [161, 180].

Nevertheless, the negative impacts on social capital have been shown to persist even if the affected communities have secure land rights and receive compensation for lost assets. Material compensation often fails to make up for their loss, resulting in a reduced standard of living [24, 169, 177, 198]. It has been demonstrated that the availability of cash can lead to excessive habitual drinking and indebtedness in the mining communities, as observed in the context of opencast coal mining in Malaysia [197]. Negative impacts often result in persistent local resistance and community mobilization, calling into question mining policies at the regional, national, and global levels [155, 156, 182, 183, 185, 186].

3.2.4 Knowledge gaps

After gaining an overview of the literature, we assessed our findings from a sustainable development perspective. This revealed a number of knowledge gaps, some of which are outlined below.

There is a lack of evidence-based studies that give a comprehensive and comparative account of positive and negative effects of different forms of hard commodity extraction (small-scale versus large-scale, opencast versus underground, etc.). Prospective studies of this

type should take account of the different social-ecological settings in which mining is practiced. The frequent orientation of research on either benefits or damage makes it difficult to derive general statements on local impacts resulting from the trade-offs between the main dimensions of local livelihoods.

There is no doubt that hard-commodity extraction has adverse impacts on the local environment and natural resources, including biodiversity and water resources, destruction of landscapes, and increase in natural disasters. However, scientific knowledge on effective political, legal, technological and organizational measures to best cope with these environmental externalities is not available. Likewise, the question of how to integrate diverging views on mining and the distribution of benefits between the mining enterprise and local communities – who often resist imposed development projects – remains an unanswered challenge, particularly in the context of large-scale surface gold mining. Overall, there is not enough literature on optimal participatory processes.

Data availability is also insufficient with regard to concessions, fees, and taxes paid by investors; and whether this capital is invested for the benefit of local people has scarcely been analysed. Research is also needed on how domestic extractive markets and value chains would need to be shaped in order to promote sustainable local impacts, and on how international governance – including the trade, investment, and tax regime – would have to respond to such needs.

4. Rules and Regulations for Addressing Market Failures in Commodity Markets

Market failures in commodity markets are often related to human rights and/or environmental law. Direct or indirect human rights violations and disregard of environmental standards related to the commodity sector occur mainly in host states where the commodity in question is extracted or grown. The responsibility to tackle these failures, however, lies equally with the host state, the home state, international governance, and business enterprises.

This chapter provides an overview of existing hard law instruments and soft law initiatives aimed at either mitigating or preventing the occurrence of negative impacts on human rights and on the environment, which may have relevance for the commodity sector. After an account of the most significant general standards for the protection of human rights and the environment in section 4.1, section 4.2 will specifically examine existing international treaties on the protection and promotion of human rights (i.e. hard law instruments) and the wide range of voluntary initiatives and standards developed to facilitate the implementation of the benchmarks set in hard law instruments among businesses operating in the commodity sector. This will be followed by an analysis of the hard and soft law mechanisms that are relevant for increasing the environmental performance of corporations in the commodity sector. Finally, section 4.4 will explore the potential of market structures, as shaped by investment, trade, and financial market rules and policies, for creating an environment conducive to sustainable commodity extraction, production, processing and trading. The list is not intended to be exhaustive, and more ‘windows of reflection’ could be opened. Finally, the chapter identifies main knowledge gaps.

4.1 General standards for the protection of human rights and the environment

In addition to international treaties (see sections 4.2 and 4.3), there are a number of general standards which address a variety of issues in the realm of human rights and environmental protection. The UN Global Compact is a normative and aspirational standard that formulates 10 broad principles aiming at corporate responsibility in the areas of human rights, working conditions, the environment, and anti-corruption. It targets organizations from the private sector and beyond and is not specific to the commodity sector. It is a voluntary standard to which companies may commit publicly by signature. While the Global Compact is often seen as the most successful international soft law initiative, it has come under increasing criticism of late. Most notably, Sethi and Schepers (2014) lament a persistent gap between lofty promises and actual performance of the Compact, which raises serious questions about its viability, usefulness, and continued existence. Supporters of the Global Compact have countered that such criticism rests on a flawed understanding of the Compact's nature and purpose, inasmuch as it ignores, for instance, that the Compact seeks to supplement rather than replace state and non-state regulation (see e.g. Rasche 2009). Bernhagen and Mitchell (2010) attest a positive effect of the UN Global Compact on companies' propensity to develop human rights policy statements.

As mentioned in section 4.2.1, the UN Guiding Principles on Business and Human Rights are not specific to the commodity sector, but advance a due diligence standard for human rights respect applying to all companies, based on existing human rights treaties. Little can be said to date about the broad impact of the UN Guiding Principles on human rights. It appears that they have also gained considerable traction among businesses in the commodity sector, but there is little scholarly evidence to support that view. Lindsay et al. (2013) observe some progress in the implementation of the UN Guiding Principles in the oil and gas sector, but confirm that much remains to be done. To what extent the principles were successful in strengthening domestic legislation on business and human rights, particularly in CDDCs, remains to be explored.

The OECD Guidelines for Multinational Enterprises are also not specific to the commodity sector. They cover a whole range of social and environmental issues and have largely adopted the human rights provisions of the UN General Principles. Similar to the former, there is little scholarly literature on the OECD Guidelines' uptake and impact. However, as the OECD itself noted in its annual report for 2013, the update of the Guidelines afforded them a great deal of visibility, support, and uptake. The National Contact Point (NCP) review process established through the OECD Guidelines, in particular, is perceived to provide "a powerful tool to otherwise underrepresented indigenous peoples in the development context" (Bowman 2006). The OECD (2013b) observed a recent increase in complaints through NCPs and noted that a majority of such complaints relate to human rights, due diligence, supply chains, and stakeholder engagement. Further analysis of the effectiveness of the complaint mechanism as provided by the OECD Guidelines in the context of commodities would be welcome.

The new Principles for Responsible Investments in Agriculture and Food Systems (RAI) of the Committee on World Food Security (CFS) (CFS, 2014) will be highly relevant to the soft-commodity sector, as they establish a set of benchmarks for assessing whether investments in land and food are responsible and sustainable. Although they are soft law, their legitimacy

is high due to the CFS's institutional relevance and also because a range of principles are deduced from binding human rights treaties and environmental agreements. The RAI Principles state that the question of whether an investment is responsible depends on its contribution to food security and nutrition (Principle 1); its contribution to sustainable and inclusive economic development and the eradication of poverty (Principle 2); whether it fosters gender equality and women's empowerment (Principle 3); whether it engages youth (Principle 4); whether it respects tenure of land, fisheries, and forests, and access to water (Principle 5); whether natural resources are managed sustainably (Principle 6); whether cultural heritage is respected and diversity supported (Principle 7); whether safe and healthy agriculture and food systems are promoted (Principle 8); whether inclusive and transparent governance structures are incorporated (Principle 9); and whether impacts are assessed and addressed (Principle 10). Given the Principles' recent adoption, it is up to future research to assess the extent to which this set of benchmarks has shaped investment practices and policies, and to identify ways in which they might be integrated in existing regulatory regimes, such as the trade or investment regime (see section 4.4).

4.2 Enabling environment for human rights

4.2.1 Human Rights Standards and Joint Responsibility

The two international human rights covenants – the International Covenant on Civil and Political Rights²⁹ and the International Covenant on Economic, Social and Cultural Rights³⁰ – and a range of specific international human rights treaties³¹ – including the Conventions of the International Labour Organization (ILO)³² – constitute the international human rights framework. They are widely accepted, as they have been ratified by most states from the global North as well as the global South.³³ These international agreements state the duty of state parties to respect, protect, and fulfil (including remedy) human rights. The primary duty lies with the state where the violation takes place; but states that are otherwise involved must ensure that their own activities do not result in human rights violations abroad. This includes the duty to provide for a 'human-rights-enabling' environment which promotes investments that are conducive to human rights and hinders unconducive investments. This becomes

²⁹ The International Covenant on Civil and Political Rights was adopted and opened for signature, ratification and accession by UN General Assembly (UNGA) resolution 2200A (XXI) of 16 December 1966 and entered into force 23 March 1976.

³⁰ The International Covenant on Economic, Social and Cultural Rights was adopted and opened for signature, ratification and accession by UNGA resolution 2200A (XXI) of 16 December 1966 and entered into force 3 January 1976, in accordance with article 27.

³¹ Among them are, *inter alia*, the International Convention on the Elimination of All Forms of Racial Discrimination; the Convention on the Elimination of All Forms of Discrimination against Women; the Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment; the Convention on the Rights of the Child; the International Convention on the Protection of the Rights of All Migrant Workers and Members of their Families; the International Convention for the Protection of all Persons from Enforced Disappearance; and the Convention on the Rights of Persons with Disabilities. Most of these treaties come with additional Optional Protocols.

³² Eight are the so-called 'fundamental' ILO conventions covering subjects that are considered fundamental principles and rights at work: freedom of association and the effective recognition of the right to collective bargaining; the elimination of all forms of forced or compulsory labour; the effective abolition of child labour; and the elimination of discrimination in respect of employment and occupation. These principles are also covered in the ILO's Declaration on Fundamental Principles and Rights at Work of 1998. The 2008 ILO Declaration on Social Justice for a Fair Globalization also identified four 'governance' conventions relating to tripartism, employment policy and labour inspection as priority instruments (ILO 2015).

³³ According to the UN Office of the High Commissioner for Human Rights (OHCHR), the Covenant on Civil and Political Rights and the Covenant on Economic, Social and Cultural Rights, for instance, have been ratified by 168 and 164 States respectively (OHCHR 2015).

relevant, for example, when states negotiate investment, trade, and tax agreements; but it also has an impact on how development aid is implemented. The *de facto* impacts brought about by these agreements or by development aid should not result in human rights violations, but should rather promote a 'conducive' or 'enabling' environment that encourages sustainable development and the realization of human rights, thus ensuring policy coherence.

Further, both host and home states (see section 2.1) have a binding duty to protect human rights, which includes an obligation to ensure that 'their' business enterprises – companies who have a production site or headquarters within their territory – act in a way that is consistent with human rights, be it at home or abroad.³⁴ This is related to the "corporate responsibility to respect human rights" that business enterprises bear as such (Ruggie 2011, Chapter II). According to the UN Guiding Principles on Business and Human Rights (Ruggie, 2011) - which interpret existing human rights obligations included in the international human rights covenants and ILO-conventions - this responsibility entails the following foundational principle:

Business enterprises should respect human rights. This means that they should avoid infringing on the human rights of others and should address adverse human rights impacts with which they are involved. (Ruggie 2011, II.A.11)

This requires that business enterprises exercise due diligence:

In order to identify, prevent, mitigate and account for how they address their adverse human rights impacts, business enterprises should carry out human rights due diligence. (Ruggie 2011, II.A.17)

In the commodity sector, this responsibility calls for due diligence when leasing land (by taking due account of the impact a large investor's presence may have on future land reforms); when negotiating concessions with the government (by striving for balanced and transparent contracts, including fair tax contributions and employment opportunities); when resorting to security forces (by making sure that they are adequately controlled); and in many other respects. Altogether, the ensuring of human rights promoting policies also reduces the existence of reputational risks, particularly for home countries.

In order to improve systems, target, and transformation knowledge (Messerli et al. 2013) concerning the relationship between commodity operations in countries of the global South and human rights, it is important to understand whether general and specific local impacts as summarized in sections 2 and 3 amount to human rights violations, whether effective legal instruments to protect populations from such violations exist, whether they are implemented effectively, and whether victims successfully make use of them by means of adjudication. Both country-specific studies and comprehensive comparative studies assessing these questions in a systematic way are lacking. We refrain from referring to specific international and national jurisprudence in this respect, as this would require more in-depth investigations. While the hard law standards reflected in the diverse international agreements provide the needed benchmarks, many soft law (voluntary) and private standards have been developed

³⁴ See De Schutter et al. (2012, Maastricht Principle 24, Commentary 2): "The duty of the state to protect human rights by regulating the conduct of private actors extends to situations where such conduct may lead to violations of human rights in the territory of another state." Ruggie, in his guiding principles, has formulated it more cautiously: "States should set out clearly the expectation that all business enterprises domiciled in their territory and/or jurisdiction respect human rights throughout their operations." (Ruggie 2011, para. 2).

to promote the implementation of these benchmarks. This section focuses on both, by highlighting (and assessing the effectiveness of) existing initiatives and standards aimed at either mitigating or preventing the occurrence of negative impacts on human rights and on the environment.

This human rights reasoning is close to the debate on policy coherence for development (PCD) – resp. policy coherence for sustainable development (PCSD) – which is gaining momentum in OECD countries, not least due to the forthcoming Sustainable Development Goals (SDGs). Many questions regarding PCD are still unresolved, particularly the question of how compliance with PCD standards can best be measured and monitored. Different European countries have engaged in designing such monitoring systems, including Switzerland (Van Seters et al. 2015). However, in-depth academic literature on PCD-methodology is still lacking³⁵.

Finally, inasmuch as the protection of fundamental human rights amounts to a Common Concern, and given the lack of appropriate institutions at the global or regional level in this area, it has been argued that States should bear as a matter of principle an obligation to act beyond the scope of territorial application of their national laws to ensure protection of fundamental human rights (Cottier et al. 2009; 2012; 2014). The emerging principle of Common Concern would assist in explaining and defining the scope and limits of extraterritorial application of national laws in the pursuit of solutions to shared problems such as the protection of human rights, thereby generating appropriate incentives for others to join an international effort of co-operation in the long run (ibid.).

4.2.2 Creating a human-rights-friendly environment: existing initiatives and standards

A regulatory environment which is conducive to human rights ensures, among other things, that good governance principles, including principles of inclusive participation (e.g., free, informed and prior consent in the context of relocations), are respected; that revenues from commodity production or extraction are shared fairly so that local people enjoy appropriate levels of income; and that local people are sufficiently and adequately involved. The following standards point in this direction.³⁶

a) Transparency

A major governance challenge regularly experienced in relation to commodity production and extraction is corruption and bribery. Investors and host governments are often directly involved in these practices (see section 2.4.2). It is nowadays widely accepted that the home states of investors and financial capital, as well as the international community, are called on counteracting this problem.

Recent efforts to combat corruption and bribery have focused on increasing transparency regarding payments to home and host governments, government agencies, and state-owned companies. There are a number of regulatory approaches as well as voluntary standards and initiatives which address the problem of transparency of financial flows. The authoritative

³⁵ For an account of PCD and soft commodities with relation to Switzerland, see Lein, de Roquefeuil and Van Seters (2014).

³⁶ While primarily human rights related, it is still not clear to what extent these standards may also be used to protect the environment.

standards with regard to transparency of payments are currently the US Dodd-Frank Act, the more recent EU legislation, and the Extractive Industry Transparency Initiative (EITI).

EITI, the pre-eminent 'soft law' measure for securing transparency, has mainly received positive appraisals. However, there are also critical reactions pointing out that EITI, though effective in harnessing transparency, might be limited in its capacity to promote accountability (Caspary 2012; Short 2014). Kolstad and Wiig (2009) argued that EITI's emphasis on revenues rather than on expenditures seems misplaced. Further, it has been suggested that some governments adhering to EITI have not allowed civil society to participate fully in the process or have not consistently provided civil society with the information it would need to hold its government accountable (Aaronson 2011). A further objection has been that EITI primarily works to create the illusion that the West is 'helping', masking the fact that the pressing problems of the commodity sector persist (Bracking 2009). Perhaps the most systematic overview of the effectiveness of EITI was provided by Corrigan (2014). Her study suggests that the EITI strengthens economic development, government effectiveness, and regulation quality, but only feebly contributes to controlling corruption, and thus fostering democracy-building and political stability. Regarding the 'environmental potential' of EITIs, see section 4.3.2.

The Global Reporting Initiative (GRI), also a voluntary initiative aimed at increasing the transparency of corporations, NGOs as well as public agencies through reporting, has received mixed evaluations. Contributions range from more critical assessments which consider the GRI mainly as a means to camouflage corporations' bad conduct (Moneva et al. 2006) to those who regard it as a rather successful, albeit not perfect, initiative (Levy et al. 2010). These inconclusive assessments suggest that further research is needed to advance understanding of whether and how the GRI is able to prevent specific issues such as corruption or child labour. This plea can be extended to voluntary principles such as the Business Principles for Countering Bribery developed by Transparency International, which have not yet been investigated scientifically.

As to relevant hard law instruments, both the USA (i.e. Section 1504 of the Dodd-Frank Act) and the EU (i.e. EU Accounting and Transparency directives) have stepped up the home country transparency requirements for extractive companies. Many studies conceive Dodd-Frank as a pertinent means to increase transparency in the global supply chain (Matfess 2012; Reilkoff 2014). Though seen by many as a first step in the right direction, critical commentators have warned that the influence of Dodd-Frank is limited due to its geographical focus on the US context, its tendency to hamper the competitive advantage of firms due to social and human rights disclosure (Sarfaty 2013) and the partial inability of the U.S. Securities and Exchange Commission to implement Dodd-Frank (and its amendments) in a timely, effective and efficient manner (Matfess 2012).

The EU accounting and transparency directives regulate the disclosure of payments such as taxes on profits, license fees, and royalties. Critical comments hold that these directives will not remedy the resource curse and will not provide adequate transparency on revenues (Rees, 2014). While the academic debate is still nascent, there are numerous articles by NGOs as well as government departments and officials which address the potential and pitfalls of the EU directives in the Swiss context (McNeil and Drye 2013). Among other things, it has been suggested that political decision-makers have been too reluctant in developing binding transparency regulations, notably as concerns transparency of financial flows between commodity traders and purchasers in developed countries and government authorities

in developing countries (Foraus 2014). On the other hand, Ethos and Transparency International contend that Switzerland has taken strong measures to combat corruption, even though it is acknowledged that much is still to be done before corruption is effectively inhibited (see e.g. Rybi and Lonchamp 2014). Future research is needed to put these divergent viewpoints into perspective.

b) *Illicit financial flows*

Another governance challenge frequently related to commodity production and extraction is that revenues are not shared fairly between the investor, the host state, the local community, and the home state. Besides the above-mentioned transparency standards, measures to combat illicit financial flows, for example due to tax avoidance or money laundering, aim at improving this situation (see section 1.2.4, Box 2). This section is not intended to be exhaustive; extensive overviews of the problem of illicit financial flows have been provided elsewhere, for example by Thut (2014).

c) *Tax avoidance*

As the international common principles to share tax jurisdiction have not kept pace with the changing business environment (OECD 2013), several measures have been developed to prevent tax avoidance (and tax evasion). The OECD has spearheaded this process. The OECD Guidelines for Multinational Companies admonish enterprises to commit themselves to cooperation, transparency, and tax compliance. Despite being seen by some as an effective means for guaranteeing tax justice (Santer 2011), the OECD Guidelines are also criticized for their non-binding nature, the vagueness of their suggestions, and the lack of enforcement mechanisms (Oshionebo 2013).

The OECD Base Erosion and Profit Shifting Initiative (BEPS) has been designed as a comprehensive global action plan to realign international standards with the current global business environment. Some scholars see the BEPS as a valuable initiative for transforming the transfer policies for governments (Ashley 2013). However, it has also been suggested that the BEPS does not propose concrete solutions. Hence, despite its being ambitious, commentators have taken issue with the actual impact the BEPS has on international tax regimes (Ross and Herrinton 2013).

The OECD Transfer Pricing Guidelines for Multinational Corporations and Tax Administration are another measure designed to create a level playing field between different types of companies and help prevent taxable profits from being shifted out of the appropriate jurisdiction. So far, there is no scientific research on the impact and effectiveness of the Transfer Pricing Guidelines. The Tax Justice Network, together with the Association for Accountancy and Business Affairs (AABA), has developed its own Code of Conduct for Taxation (cf. Murphy 2007), which, however, has not been subject to academic inquiry.

While multilateral binding tax agreements – which would improve tax transparency and limit international tax competition – are (still) lacking, states often regulate tax issues on a bilateral level by concluding double taxation agreements (DTAs). In doing so, they often follow OECD and UNCTAD recommendations. The potential of DTAs is not yet fully exploited. Regarding the commodity sector, investors often operate in countries with which their home state has no DTA or a fragmented or unbalanced DTA in place. This is also true of Swiss-based investors. Comprehensive literature on best practices regarding DTAs and on how to use their full

potential is lacking (for a comprehensive study on Swiss DTAs and developing countries, see Bürgi Bonanomi and Meyer-Nandi 2014).

d) Money laundering

A further, related challenge that is often linked to the commodity sector is money laundering (see section 2.4.2). A common instrument in the fight against money laundering is the criminalization of such acts by means of laws and guidelines. Le Billon (2011) points out that most initiatives designed to address governance issues in the extractive industry have failed to take into account the problem of illicit financial flows such as money laundering. Tsingou (2005) further mentions that existing regimes against money laundering do not necessarily reduce the risk of money laundering, but rather serve the aim of relieving competitive pressures from financial centres.

The initiative against money laundering published by the Financial Action Task Force (FATF) seeks to identify countries that have deficient or non-existent laws against money laundering, as well as to support countries in implementing measures against money laundering. Albert (2014) maintains that FATF's recommendations might help Switzerland fix the problems related to its financial-centre policy, including the laws made for regulating money laundering cases. One of the main problems related to FATF's recommendations is that many national jurisdictions are not compliant with them. This could lead to the undesired result of regulatory arbitrage, which among other things increases the likelihood of money laundering activities (Choo 2014). However, an evaluation by the FATF (2009) concludes that Switzerland has taken adequate steps in the fight against money laundering.

A key regulatory mechanism in the fight against money laundering is the Swiss Anti-Money Laundering Act. While seen by many as a worthwhile endeavour (Belleyguier 2003), the Anti-Money Laundering Act is limited in its scope as it is not applicable to proprietary trading. A conspicuous feature of existing research is that it has not yet addressed the Act's effectiveness in preventing money laundering in a systematic way. The same applies to Art. 305bis of the Swiss Criminal Code, another hard law instrument in the fight against money laundering.

4.2.3 Workplace-related human rights violations

International employment standards are mainly provided by the various ILO Conventions, along with the related human rights standards as included in human rights treaties. The respective knowledge gaps were discussed in section 2.4.6.

Most corporate responsibility standards, such as the UN Global Compact, the OECD Guidelines for Multinational Companies, or SA8000, also address the problem of child and forced labour. However, little specific information is available on their impact in the commodity sector. The ILO (2014) has reported that child labour was generally reduced by 30% worldwide between 2000 and 2012. The impact of the two ILO child labour conventions³⁷ is perceived as significant but insufficient to actually eliminate child labour completely (ILO 2014). Despite the prevalence of child and forced labour in the commodity sector, studies investigating this problem specifically in the commodity sector and scientific assessments of the impact of different standards addressing it remain scarce.

³⁷ These are the Convention No. 138 on the Minimum Age for Admission to Employment of 1973 and the Convention No. 182 on the Worst Forms of Child Labour of 1999. At the end of 2010, these Conventions had been ratified by, respectively, 168 and 179 member States of the ILO.

4.2.4 Security forces and conflicts

The use of potentially abusive private and public security forces, according to McBeth (2008: 129) leads to “the most common form of serious human rights violation in the course of multinational extractive industries” and, accordingly, has been under increasingly heavy scrutiny by civil society (Freeman et al. 2001). In 2000, the Voluntary Principles for Security and Human Rights (VPs), an operational and detailed standard (Freeman et al. 2001) that deals with the security arrangements of extractive companies, were established as a multi-stakeholder effort to address such human rights violations. While their actual impact is difficult to measure, scholars have stated that, for example in Colombia, the VPs have contributed significantly to foster an understanding of the need for human rights controls on security forces as well as to facilitate a dialogue between companies and human rights NGOs (Guáqueta 2013). Guáqueta (2013) asserts that “although corporations are not single-handedly reducing overall nationwide human rights violations in Colombia, their actions are important” for advancing the process of democratization and peace-building. Furthermore, irrespective of its impact on reducing abuse, the very process of developing the Code, as Freeman et al. (2001) point out, was important to generate a shared understanding of the actual problems and issues the companies are dealing with.

The issue of armed and violent conflicts in the commodities sector has frequently led to discussions about the relative benefits and effectiveness of voluntary and mandatory traceability and due diligence standards. The assessment of recently implemented hard law approaches yields mixed results. For example, Section 1502 of the Dodd-Frank consumer protection act addresses the issue of conflict minerals. Specifically, it requires American companies to report to the Securities and Exchange Commission (SEC) on whether any minerals used for their products were sourced in the Democratic Republic of the Congo (DRC) or its neighbouring countries, and on what measures they are taking to trace the origin of these minerals. Companies which can show that their sourcing practices do not directly or indirectly benefit or finance armed groups can use the ‘DRC conflict free’ label for their products. Vermeulen (2014) asserts that the provision has caused both companies and consumers to become more critical about sourcing practices and has led to tangible reforms in Africa’s Great Lakes region. Others lament that the effects of Dodd-Frank 1502 have been devastating, especially for Congolese artisanal miners and their families (see Seay 2012).

In the diamond industry, the Kimberly process is a much-discussed voluntary initiative. It covers 98% of trade in diamonds and is commonly positively received. There is broad agreement that the initiative has reduced the amount of conflict minerals in the world market (see e.g. De Voe 2011). However, the success of the certification scheme has never been entirely uncontested, and especially the structure of the process as well as its non-binding character – that is, its lack of enforcement – has been subject to ongoing critique (Durnovich 2014). As Grant (2011) shows in the examples of Angola and Sierra Leone, active engagement with the initiative (Sierra Leone) can go a long way in improving governance as well as bolstering exports of rough diamonds, while a passive approach (Angola) may have a stagnating effect in such regards. Although the relationship between commodities and conflict is overall not under-researched, there is scope for deepening the existing knowledge.

4.2.5 Land appropriation

Another heated debate focuses on the issue of land appropriation. Land appropriation by foreign direct investors in the global South – be it through lease or ownership – has in-

creased over the past years (see the Landmatrix database), particularly due to an increased demand for soft commodities, including biofuels. The debate is conducted under the labels of 'large-scale land acquisition' (LSLA) or 'land grabbing', and centres on challenges regarding land rights, inclusive participation, and inclusive investment. While existing human rights treaties cover a range of related questions, implementation is often very weak (Golay and Biglino 2013). The recently adopted FAO Voluntary Guidelines on Land Tenure (FAO 2012), despite their voluntary character, assembles standards which are partly related to binding human rights, by interpreting them as relevant in such contexts. There are quite a few case studies on LSLA (see section 3.1), but comparative cross-country studies on the effectiveness of the Voluntary Guidelines are still lacking. The same is true of studies assessing the relations between LSLAs and underlying market structures (see section 4.4).

4.3 Protection of the environment

In addition to the above-mentioned human rights challenges, a regulatory environment conducive to sustainable development must ensure that environmental resources are protected to the largest possible extent. As discussed in section 3, many of the negative environmental impacts currently discussed in conjunction with the commodity sector are related to resource extraction or production. It would be wrong, however, to conceive of negative environmental impacts as the sole problem and responsibility of host states and corporations who are directly involved in extractive or productive activities. Corporations involved in commodity trading and logistics, including their home states, also bear responsibility for negative environmental impacts, as their supply chain links them with activities pertaining to commodity extraction and production. The same goes for the human rights area, moreover, the principle of Common Concern also applies to environmental governance (see section 4.2.1).

Existing initiatives aimed at mitigating or eradicating the negative environmental impacts of the commodity sector encompass both soft law and hard law mechanisms. They address a host of different environmental issues, such as water pollution, natural hazards air quality, deforestation, biodiversity, and the use of toxic substances. Many environmental initiatives also tackle social issues related, for example, to people's health and livelihoods, soil fertility in farmers' land, and public consultation of local communities. This dual focus acknowledges that the commodity sector's social and environmental impacts are inextricably intertwined. Key areas of concern can be clustered as: (1) air, soil, and water pollution, natural hazards and related harmful effects on natural habitats, biodiversity, and the climate; (2) noise and visual impacts on landscapes; (3) destruction of sites of cultural, recreational, and social value; and (4) impairment of public health, safety, and the livelihoods of local (indigenous) communities.

There is a range of widely accepted multilateral environmental agreements (MEAs) and soft law standards which may become relevant in a given case. However, to date there are no comprehensive, universally accepted hard law mechanisms for tackling the specific (negative) environmental impacts of the commodity sector.³⁸ Besides international treaties, initiatives include a host of different – and at times conflicting – soft law recommendations, industry-specific codes, national regulations, environmental management systems, as well as labelling and certification initiatives. This fragmentation has prevented the development of

³⁸ There are some specific commodity agreements, such as the International Cocoa Agreement of 2010. Their effect on sustainability parameters still needs to be examined.

more concerted and effective ways of dealing with the commodity sector's negative environmental impacts. On a more positive note, recent tendencies towards convergence and international harmonization have become palpable (Holzinger et al., 2008). The following two subsections focus exclusively on those soft and hard law mechanisms that, theoretically speaking, are directly relevant for increasing the environmental performance of corporations in the commodity sector.

4.3.1 Hard law mechanisms for tackling negative environmental impacts

Hard law involves mechanisms on both the international and national level. As mentioned, the former encompass MEAs, general principles, statutes, as well as customary law which stipulate environmentally motivated hortatory provisions with regards to the sustainable management of natural resources and, sometimes, recommendations to conduct environmental impact assessments (Espoo, 1991).

The United National Environmental Programme (UNEP), and in particular its Division of Environmental Law and Conventions (DELIC), has spearheaded the development of environmental law. DELIC's main objective consists of implementing environmental law across different sectors and levels of governance. Widely accepted multilateral treaties that may become relevant in a commodity context include the Convention on Biological Diversity (CBD), the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, and the Aarhus Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters. However, there is a lack of meta-analytical studies assessing to what extent the diverse international environmental law regimes affect the environmental performance of corporations in the commodity sector. This includes the question to what extent the legal instruments provided under these regimes can be used in an effective way by victims seeking redress.

On the national level, hard law mechanisms mainly involve laws and regulations which, if breached, lead to sanctions. Among the countries that have adopted national environmental laws specifically targeting the commodity sector are Canada, Norway and Australia. Most CDDCs may also have more or less stringent environmental regulations in place, whereas implementation of these laws is often a major challenge. Current discussions concerning hard law mechanisms have thus focused on the enforceability of existing standards (Blondiau & Rousseau, 2009). An alternative mechanism for motivating corporations towards more environmentally friendly behaviours is the establishment of incentive systems that reward ecological initiatives, improvements, or investments. However, it will be the task of prospective research to establish how national and transnational hard law mechanisms affect the sustainability performance of corporations in the commodity sector.

4.3.2 Soft law mechanisms for tackling negative environmental impacts

Several generic soft law mechanisms bear significance for commodity firms: among them are the International Finance Corporation (IFC) Performances Standards, the OECD Guidelines for Multinational Enterprises, the Global Compact, and the Equator Principles.

The International Finance Corporation (IFC), an international financial institution that encourages private sector development in developing countries and a member of the World Bank Group, addresses, via its Performance Standards (IFC, 2012), various environmental issues.

Specifically, Performance Standards 1, 3, 6, and 7 call on commodity firms to carry out assessments of their projects' environmental impacts and risks, to engage with local communities on environmental issues, to manage the environmental performance of their projects throughout the entire lifecycle, to employ environmentally friendly technologies, to use resources sustainably, to secure biological diversity, and to protect indigenous peoples from exposure to hazardous materials. Despite their considerable popularity, the IFC Performance Standards have not yet been studied with regard to their effectiveness in promoting commodity corporations' ecological sustainability.

The OECD Guidelines stipulate that corporations should contribute to "environmental progress with a view to achieving sustainable development" (OECD 2011, 14). To accomplish sustainable development, corporations are supposed to apply sound standards of disclosure, accounting, and audit. Although the level of adherence to the OECD Guidelines has been evaluated (Bussler and Fonari, 2005), there is no evidence so far as to whether and how the OECD guidelines influence the environmental performance of corporations in the commodity sector.

Environmental considerations form one of the four pillars of the Global Compact. In its Principles 7, 8 and 9, the Global Compact obliges corporations to endorse a precautionary approach towards environmental challenges, to promote environmental responsibility, and to develop and use environmentally friendly technologies. Research on the impact of the Global Compact, which mainly addresses national governments, on corporations operating in the commodity sector has so far been missing.

The Equator Principles (2006, 2012, 2013) address commodity firms, albeit not directly, through the financial institutions which fund commodity firms' projects. Financial institutions that endorse the Equator Principles commit themselves to ensuring that the projects they finance are environmentally sound. This essentially means that the projects being financed recognize the importance of climate change and biodiversity, and thus actively try to avoid or at least mitigate negative impacts on the ecosystem and the climate. Assessments of the effectiveness of the Equator Principles are rather positive (e.g. Ong 2010). However, critical appraisals also exist. Wright (2012), for instance, points out that the Equator Principles have not stopped the financing of projects with high environmental costs. Further, it has been contended that a precise assessment of the Equator Principles is difficult to attain as it is hardly possible to determine whether banks changed their lending practices due to the Equator Principles or due to their own environmental strategies (Macve and Chen, 2010). The direct linkage between the Equator Principles and the sustainability performances of commodity corporations has not been studied scientifically.

Apart from these generic mechanisms, there are various standards which directly address the environmental impacts of the commodity sector or, more precisely, of particular subindustries of the commodity sector. An exhaustive overview of the different standards and labelling initiatives is beyond the scope of this document. Suffice to say that IPIECA, the global oil and gas industry association for environmental and social issues, offers an exemplary model of a specific environmental standard. Specifically, IPIECA offers corporations in the oil and gas industry guidance in improving their sustainability performance, notably by means of a consistent approach to estimating their greenhouse emissions (Ritter 2004). The available literature is still mainly concerned with technical and managerial issues. Thus, whether IPIECA might eventually increase the ecological performance of corporations in the oil and gas industry still needs to be established by means of empirical research. The same applies to

most other environmental standards designed for specific subindustries of the commodity sector. There are thus only very few investigations that testify to the effectiveness of voluntary standards. One example includes research on various standards, including the Forest Stewardship Council or the Common Code for the Coffee Community, which did reveal a positive effect on the protection of natural resources (as stipulated by the Millennium Development Goal No. 7; cf. BMZ 2008).

A small body of research deals with the effectiveness of environmental management systems and norms, such as relevant International Standardization Organization (ISO) standards or the Eco-Management and Audit Scheme (EMAS) developed by the European Commission. For instance, a study in the copper mining industry revealed that adoption of ISO 140011 did in fact improve the eco-efficiency of certain companies (Tole & Koop, 2013). Yet, it has been suggested that organizations adopting such management systems are often exclusively concerned with waste reduction and hence miss out on increasing the overall sustainability of their production processes.

Regarding transparency standards such as EITI (see section 4.2.2), the extent to which such standards could be used to ensure systematic disclosure of environmental information, such as environmental impact assessments of enterprises and governments, still remains an open question. The same holds true for other, primarily human rights-related, soft law standards discussed in section 4.2.2.

4.4 Market regulation as an entry point: investment, financial market, trade

The relationship between market-related regulation and sustainable commodity production is an underexplored field of research. Its underlying assumption is that, to be sustainable (and hence sound in terms of human rights and environmental protection), commodity extraction, production, processing, and trading require well-targeted market regulation and policies, including investment, trade and financial market rules, conducive to creating an enabling environment for sustainable development.

Investment regulation, for example, should provide incentives for responsible investments and hinder irresponsible investments. In this respect, there is a need to discuss the role of bilateral investment treaties (BITs) and other international investment treaties. Discussion on how to better balance rights and duties as laid down in these agreements is ongoing (e.g. UNCTAD 2012c). Generally, BITs have focused on the protection of investors' rights in host states. However, there are a number of real concerns in relation to commodity extraction and trade. As it has been understood since Vernon's (1971) discussion of the 'obsolescing bargain', host governments have an incentive to renegotiate contract terms once an investor has begun operations. This is especially true in relation to hard commodity extraction activities, but also applies to soft commodity investments. The threat of legal action under international investment agreements (IIAs) may discourage this. Only relatively recent IIAs have begun to address the right of host countries to regulate on environmental, labour, and social issues, which are omnipresent in commodity investments (Vinuales 2012). In most existing IIAs, including those of Switzerland, regulation in these areas ran the risk of sparking a dispute with investors. Even very recent IIAs do not envisage an active role for home states in enforcing domestic transparency standards on outward-investing firms in relation to tax payments or government contracts. A home country might take this up under the rubric of expanded co-

operation between home and host governments, where it is commonly identified as a treaty objective albeit seldom implemented. Treaties negotiated in the future represent an opportunity to step up current disciplines in this respect. Future treaties could also incorporate or refer to benchmarks of responsible investments as set out for example by the RAI Principles (see section 4.1). Best regulation and practices still need to be identified.

Regarding financial markets regulation, the extent and impact of derivatives trading related to commodities is a matter of debate. It very much relates to the question of whether and, if so, to what extent speculation may become harmful and increase price volatility (see section 2.3.4). Bass (2013) suggests that, in order to take a precautionary approach, speculation must be limited via hard law. A hard law measure aimed at combating speculation is, for instance, the Volcker rule in the Dodd-Frank Act. Yet, researchers have pointed out that the Dodd-Frank Act will not have a significant impact on commodity firms because it focuses exclusively on banks (Barth and McCarthy 2013). In Switzerland, a particularly powerful means of fighting speculation has been proposed in an initiative launched by the Social Democratic Party youth wing. If successful, the initiative would prohibit speculative activities of Swiss-based commodity companies. An overview of discussed measures can be found in Mugglin (2014) and in Lein, de Roquefeuil and Van Seters (2014). While the political debate in this area is still under way, research will have to assess – *ex ante* and *ex post* – the effectiveness of anti-corruption measures taken by the government.

The discussion on how trade regulation and sustainable development – including sustainable investment – relate to each other is ongoing. It centres on questions such as the following: to what extent does existing trade regulation allow for sustainability market incentives (de Schutter, forthcoming)? How could the trade regime incorporate standards of responsible investment such as those incorporated into the RAI Principles? What is the optimal degree of commodity export dependence? How can the trade regime ensure adequate domestic policy space? (de Schutter 2009)? To what extent are market incentives applied which relate to the value chain (e.g. tariff escalation) and do they affect where processing of commodities takes place (see section 1.2)? How can the impacts of trade rules on human rights and the environment in commodity contexts be assessed in an optimal way, either *ex ante* or *ex post* (Bürgi Bonanomi 2014; regarding the challenges related to the WTO Agreement on Agriculture, see Bürgi Bonanomi 2015)? Literature examining such ‘linkages’ is still fairly scarce, and much interdisciplinary research is still required (see e.g. the SNF funded R4D “Sustainable Governance of Food Systems”).

A prominent example of the difficulty to find a balance between trade regulation and sustainable development is the case of export restrictions in relation to extractive industries. Under certain conditions, the use of measures restricting the exportation of hard commodities may alleviate the negative externalities linked to extractive activities by slowing the pace of extraction and exploitation and, consequently, reducing the rate of depletion of finite resources and the detrimental environmental impacts of mining and drilling operations (Fung and Korinek 2014). Yet, countries purporting to use export restraints to address sustainable development concerns often experience an increase in the domestic consumption of the restricted – and therefore cheaper (Piermartini 2004) – extractive resources by local downstream industries (Fung and Korinek 2014). In these cases, the desired environmental objective is frustrated and export restrictions fulfil industrial purposes inasmuch as they *de facto* subsidize domestic downstream producers to the detriment of foreign competitors (Espa 2015). The question therefore lies in how to calibrate trade rules in a way that creates a transparent and predicta-

ble environment, thus preventing beggar-thy-neighbour export restrictions, and still ensures that countries maintain sufficient policy space to use export restrictions for sustainable development needs under legitimate circumstances (Espa 2015b). Possible avenues for designing more balanced trade disciplines on export restrictions are discussed in Espa (2015b).

Further studies on innovative, better balanced trade rules with respect to commodity trade are needed. Such studies should adequately take into account that, while issues related to the soft commodity and the hard commodity sectors may sometimes converge, the very distinct characteristics of renewable resources and the different modes of production and regulation, particularly regarding agricultural products, may require sector-specific analyses.

4.5 Knowledge gaps

A wide range of hard law instruments and soft law initiatives aimed at mitigating and/or preventing the occurrence of negative impacts on human rights and on the environment exist to date, which are relevant for commodity investment and trading. Yet, as they do not normally address the commodity sector specifically, their impact on the performance of commodity corporations has not been consistently and systematically assessed so far. Both country-specific studies and comprehensive comparative studies evaluating the effectiveness of international as well as national instruments are lacking. This holds true for both hard law (e.g. MEAs, DTAs,...) and soft law (e.g. IFC Performance Standards, Global Compact, Equator Principles,...) mechanisms. Even in those cases where standards are directly conceived for the commodity sector or, more precisely, for particular subindustries of the commodity sector, the available literature is still mainly concerned with technical and managerial issues and has not adequately investigated the linkages between the standards and the sustainability performances of commodity corporations. Finally, the relationship between market-related regulation and sustainable commodity investment and trading is an underexplored field of research. In this respect, there is a need to discuss the role of bilateral investment treaties (BITs) and other international investment treaties in promoting responsible investments, to assess the impact of speculation in derivatives commodity trading, and to explore avenues for making trade rules more conducive to sustainable trade in commodities.

Conclusion

Commodity production and trade is high on the political agenda – not least in Switzerland, which is a major hub for commodity traders worldwide. The debate centres on costs and benefits of the sector, including (reputational) risks, causalities and responsibility chains, data availability and transparency, policy coherence for (sustainable) development, and related policy options. While the debate has been creating a considerable stir, our review of existing academic literature clearly shows that not enough knowledge is available yet. Overall data are weak and nexuses as well as relationships unclear. Policy options are only just emerging or not yet available. If assessed against the benchmark of sustainable development, comparative regulatory analysis is weak, and the effectiveness of already existing standards and regulations is not yet established. In view of these gaps, more interdisciplinary and transdisciplinary research efforts – particularly with a link to Switzerland – are needed to advance the policy debate. Prospective researchers will need to consider that issues related to soft commodities and hard commodities may sometimes converge, but are more often disparate giv-

en the very distinct characteristics of renewable resources and the different modes of production and regulation, particularly regarding agricultural products.

Annexes

Annex 1: Economic data

Sector / type	Import (weight and value)	Export (weight and value)	Fiscal revenues	Number of companies and employees associated with the sector	Domestic consumption	Source
Hard commodities						
Oil	12.43 million tonnes (4.89 raw oil and 7.54 finished products) CHF 10.78 billion (3.80 raw oil)	1.14 kilotonnes	CHF 6.37 billion (sales of raw oil products); corresponds to 4.7% of federal fiscal revenue	27 companies associated to the "Erdöl-Vereinigung" (account for 95% of imports)	503,540 TJ (43.8% of total energy consumption)	Erdöl-Vereinigung. Jahresbericht 2013.
Gas	39.8 TWh	N.A.	N.A.	N.A.	40 TWh (13.5% of total energy consumption)	VSG. Erdgas in Zahlen 2014.
Coal	N.A.	N.A.	N.A.	N.A.		
Base metals (iron, aluminium, copper, etc.)	N.A.	N.A.	N.A.	N.A.		
Precious metals: Gold	3.1 tonnes CHF 109.8 billion	2.8 tonnes CHF 117.7 billion	N.A.	N.A.		Swiss-Impex 2013.
Precious metals: Silver	1.8 tonnes CHF 1.4 billion	2.4 tonnes CHF 1.7 billion	N.A.	N.A.		Swiss-Impex 2013.
Soft commodities						
Cocoa	40,900 tonnes (cocoa beans) CHF 119 million	109,662 tonnes (processed products) CHF 792 million	N.A.	18 members of chocosuisse with 4,412 employees	65,000 tonnes	Chocosuisse. Schweizer Schokoladenindustrie im Jahr 2013; Swiss-Impex 2013.
Coffee	131,000 tonnes (not roasted coffee) CHF 500 million	131,000 tonnes CHF 660 million	N.A.	60–80 roast houses with 1,050 employees	69,399 tonnes (CHF 891 million, processed products)	Procafé. Positionspapier: Die wirtschaftliche Bedeutung des Kaffees für die Schweiz. 2013.

Sugar	N.A.	149,875 tonnes	N.A.	2 production houses (217,155 tonnes sugar production) 3,000 employees		Schweizer Zucker AG. Statistik. 2013
Cereals	784,000 tonnes CHF 326 million	17,100 tonnes CHF 2.80 million	N.A.	N.A.		Swiss-Impex 2013.
Cotton (linters)	1.4 kilotonnes CHF 2.6 million	315 kg CHF 3,057	N.A.	N.A.		Swiss-Impex 2013.
Wood	N.A.	N.A.	N.A.	N.A.		

Selection of relevant economic data for Swiss physical cross-border commodity trade. Data for 2013, different sources. Enumeration not conclusive. (N.A. = not available)

Annex 2: Actors

Sector / type	Organisation name	Number of members or affiliated companies	Sector	Activities
Lobbying				
Commodity trading sector	Verband Schweizerischer Transit- und Welthandelsfirmen	N.A.	N.A.	Period of existence: 1934–2003
Commodity trading sector	Swiss Trading and Shipping Association (STSA)	150 diverse commodity companies	Interest group (finance, trading, shipping, logistics, transport)	Representation of commodity trading houses' interests at the national level (regional associations GTSA, LCTA, ZCA).
Commodity trading sector	Geneva Trading and Shipping Association (GTSA)	N.A.	Interest group (finance, trading, shipping, logistics, transport)	Platform for the commodity industry, education, training, organization of events, networking, lobbying, economic promotion, communication
Commodity trading sector	Lugano Commodity Trading Association (LCTA)	40	Interest group (finance, trading, shipping, logistics, transport)	Platform for the commodity industry, education, training, organization of events, networking, lobbying, economic promotion, communication
Commodity trading sector	Zug Commodity Association (ZCA)	N.A.	Interest group (finance, trading, shipping, logistics, transport)	Platform for the commodity industry, education, training, organization of events, networking, lobbying, economic promotion, communication
Whole commodity sector	Commodity Club – Center of Competence	N.A.	Networking (trading and finance)	Building a network of personal interactions, education, exchange and combination of know-how, representation of interests, information

Shipping and transport				
No	Cargo Forum Schweiz	6	Interest group for goods transport	Lobbying
No	Swiss Shippers' Council	N.A.	Shipping, logistics, transport	Lobbying, events, education, training, networking
No	SpedLogSwiss – Swiss Freight Forwarding and Logistics Association	> 300	Shipping, logistics, transport	Lobbying, events, education, training, networking
Hard commodities				
Oil	Erdöl Vereinigung	27	Interest group of importers of raw oil and processed oil	Interest group, lobbying and communication for the oil economy
Gas	erdgas. Verband der Schweizerischen Gasindustrie (VSG)	92	Interest group of importers of natural gas as well as for marketing and heating with gas	Interest group, lobbying and communication for the gas economy
Metals	Swissmem	1,018	Interest group of the industry	
Metals	Schweizerische Metall-Union	1,800 (17,000 employees)	Interest group of the industry	
Metals	Verband Schweizer Metall Zulieferer (SMZ)	119	Interest group of the industry	
Gold	N.A.	N.A.	N.A.	
Soft commodities				
Cocoa	Chocosuisse – Verband Schweizerischer Schokoladefabrikanten	18 (4,412 employees)	Interest group of the chocolate industry	Union of chocolate producers
Coffee	Sucafina	N.A.	N.A.	Production and marketing of green and soluble coffee
Coffee	Schweizerische Kaffeehandler Vereinigung – Swiss Coffee Traders Association	N.A.	Interest group of coffee traders	Sub-entities of the international coffee organization
Coffee	Procafé – Vereinigung zur Förderung von Kaffee	57	Interest group for coffee promotion	Promotion, education, information, communication
Sugar	Schweizer Zucker AG	N.A.	Company, production of sugar	Only company active in sugar production from sugar beet in Switzerland
Cereal	Verband des Schweizerischen Getreide- und Futtermittelhandels	27	Interest group of cereal traders	Import of cereals and animal feed, representation of interests
Textile	Swiss Textiles – Textilverband Schweiz	200	Interest group of the textile sector (including cotton)	Interest group
Wood	Holzindustrie Schweiz	400	Interest group of the wood industry	Production, interest group
Livestock	Schweizerischer Viehhändler Verband SVV	900	Interest group of cattle traders	Interest group

Tobacco	Swiss Tobacco – Vereinigung des schweizerischen Tabakwarenhandels	25 (4,000 employees)	Interest group of the entire tobacco industry, including tobacco trade	Interest group
Tobacco	Swiss Cigarette	3	Interest group tobacco industry (cigarette producers)	Interest group
Tobacco	Verband Schweizerischer Zigarrenfabrikanten VSZ	2	Interest group (cigars producers)	Interest group
Research and Education				
	SEN-Plattform „Nachhaltige Nutzung kritischer Rohstoffe“	F&E-Konsortium “Sustainable Engineering Network Switzerland” (SEN)	Research, project development	Bringing together entrepreneurs and scientists to promote a sustainable and efficient use of critical raw materials through projects and contacts
	CAS Certificate of Advanced Studies Commodity Professional	Hochschule Luzern – Lucerne University of Applied Sciences and Arts	Education	Education on commodity industry, markets and trading for employees and professionals
	DAS Diploma of Advanced Studies in Commodity Trading	University of Geneva	Education	Education on commodity industry, markets and trading for employees and professionals
	Master in International Trading, Commodity Finance and Shipping	University of Geneva	Education	Broad business education on commodity trading (executive master’s)
	Executive Master in International Oil and Gas Leadership (IOG)	Graduate Institute Geneva (IHEID) in collaboration with IFP School Energies nouvelles	Education	Broad business education on commodity trading (executive master’s)
	Institut Suisse de recherche sur les matières premières – Swiss Research Institute on Commodities	University of Geneva	Education and research	To be established in 2015
Swiss-based NGOs				
	Erklärung von Bern		Trade, agriculture and biodiversity, finance, corporate regulation, consumption, human rights	
	Nouvelle Planète		Development	
	Multiwatch		Human rights	

	Brot für alle		Agriculture, climate and development, fair trade, human rights	
	Alliance Sud		Development issues, commodity trade, agriculture, and climate	

Selection of relevant Swiss actors active in the commodity sector. The list is not exhaustive.

Annex 3: Political Initiatives

Political initiatives				
Swiss Parliament				
Submission Date	Title	Type and Classification Number	Party	Status and Federal Council stance
15.04.2013	Aufsichtsbehörde für den Handel mit Rohstoffen und Nahrungsmitteln	Postulate 13.3288	Green Party	Not yet taken up in plenary – Federal Council proposes to reject it
16.04.2013	Rohstoffabbau und -handel. Korruption und Steuerbefreiung von Unternehmen bekämpfen	Interpellation 13.3307	Green Party	Not yet taken up in plenary – Answer from Federal Council with references to Background Report
12.06.2013	Aktionsplan Transparenz im Rohstoffhandel	Interpellation 13.3422	Christian Democrat/EPP group	Not yet taken up in plenary – Federal Council proposes to reject it
12.06.2013	Rohstoffbericht. Unternehmensverantwortung als freiwillige Selbstbindung oder verbindliche Vorschrift	Interpellation 13.3423	Christian Democrat/EPP group	Not yet taken up in plenary – Answer from Federal Council with references to EITI and CSR
17.04.2013	Steueraufkommen und Steuerregimes der Rohstoffhandelsfirmen in der Schweiz	Interpellation 13.3309	Socialist Party	Not yet taken up in plenary – Answer from Federal Council with references to Background Report
29.04.2013	Mehr Transparenz im Schweizer Rohstoffsektor	Postulate 13.3365	Foreign Affairs Committees (FAC)	Approved – Federal Council proposes to accept it
19.03.2014	Zusammenarbeit von Schweizer Rohstofffirmen mit der peruanischen Nationalpolizei	Interpellation 14.3146	Social Democratic Party	Not yet taken up in plenary – Answer from Federal Council on 21.05.2014
21.03.2014	Internationales Rohstoffabkommen. Rolle der Schweiz in den Verhandlungen	Interpellation 14.3256	Green-Liberal Party	Not yet taken up in plenary – Answer from Federal Council with references to Background Report and Action-plan Green Economy
20.06.2014	Transparenzlücke im Rohstoffhandel rasch schliessen	Interpellation 14.3595	Social Democratic Party	Answered by Federal Council
01.09.2014	Umsetzung des rechtsvergleichenden Berichtes des Bundesrates über die Verantwortung von Unternehmen bezüglich	Motion 14.3671	Foreign Affairs Committees (FAC)	Rejected – Federal Council proposes to reject it

	lich Menschenrechten und Umwelt		(12.3980)	
25.09.2014	Massnahmen gegen den „Rohstoff-Fluch“	Postulate 14.3897	Social Democratic Party	Not yet taken up in plenary – Federal Council proposes to reject it
10.12.2014	Glencore Xstrata. Ölbohrungen im von Marokko besetzten Gebiet der Westsahara	Interpellation 14.4148	Social Democratic Party	Answered by Federal Council
12.12.2014	Blutgold aus Burkina Faso bei Metalor in der Schweiz?	Interpellation 14.4238	Social Democratic Party	Answered by Federal Council
19.03.2015	Nationales Forschungsprogramm zur Rolle der Schweiz bei der Abwicklung unlauterer und unrechtmässiger Finanzflüsse	Motion 15.3266	Social Democratic Party	Not yet taken up in plenary
Swiss Federal Council and Swiss Administration				
Submission Date	Title			
27.03.2013	Background Report: Commodities		Federal Council affair	
26.03.2014	Background report on commodities: Status report on the implementation of recommendations.		Federal Council affair	
08.03.2013	Report to the Federal Council “Green Economy: Report and Action Plan”		Federal Council affair	
2.05.2014	Rechtsvergleichender Bericht – Sorgfaltsprüfung bezüglich Menschenrechten und Umwelt im Zusammenhang mit den Auslandaktivitäten von Schweizer Konzernen. Bericht in Erfüllung des Postulates 12.3980.		-	
16.05.2014	Bericht in Erfüllung der Empfehlung 8 des Grundlagenberichts Rohstoffe und des Postulats 13.3365 „Mehr Transparenz im Schweizer Rohstoffsektor“		Federal Council affair	
3.09.2014	Botschaft zum Finanzmarktinfrastrukturgesetz (FinfraG)		Federal Council affair	
28.11.2014	Revision des Aktienrechts – Vorentwurf geschickt in die Vernehmlassung		Federal Council affair	
1.04.2015	Positionspapier und Aktionsplan des Bundesrates zur Verantwortung der Unternehmen für Gesellschaft und Umwelt		Federal Council affair	

Civil Society – Popular Initiatives				
Signatures collection begin	Title		Submitted by	Status and Federal Council stance
08.03.2011	Popular initiative: Grüne Wirtschaft Eidgenössische Volksinitiative 'Für eine nachhaltige und ressourceneffiziente Wirtschaft'		Green Party	Federal Council through the message of 12.02.2014 recommends rejecting the initiative and proposes a direct counter-proposal with an amendment of the "Federal Act on the Protection of the Environment".
25.09.2012	Popular initiative: Nahrungsmittelinitiative Eidgenössische Volksinitiative 'Keine Spekulation mit Nahrungsmitteln!'		JUSO Schweiz	Federal Council through the message of 18.02.2015 recommends rejecting the initiative. The Federal council is proposing an Amendment of the Financial Markets Law in the Parliament in order to regulate the speculation in agricultural commodities.
21.04.2015	Popular initiative: Konzernverantwortungsinitiative: Eidgenössische Volksinitiative 'Für verantwortungsvolle Unternehmen – zum Schutz von Mensch und Umwelt'		66 NGOs	Signatures' collection deadline: 21.10.2016.

Selection of political initiatives concerning the commodity sector by the Swiss Parliament, the Federal Council, and the Federal Administration. Enumeration is not conclusive. The list includes initiatives launched as of 2013 that are strictly related to commodities (search criteria: "Rohstoff, Rohstoffe, Gold, Öl") other related political initiatives may be missing. Section 1.2.4 provides an analysis of the commodity related political agenda. Sources: Websites of the Swiss Parliament (www.parlament.ch) and the Federal Authorities (www.admin.ch). Accessed: 04.02.2015.

Annex 4: Literature on local impacts of hard and soft commodities on livelihoods, the environment, and governance in developing countries

This annex explains how the literature for **Section 3** was selected.

First we defined eight soft and seven hard commodities according to their developmental and economic relevance for Switzerland.

Relevance of commodities for Switzerland

Commodity group	Commodity	Developmental relevance	Economic relevance
Hard	Mineral commodities (copper, aluminium, iron)	X	X
	Energy commodities (oil, gas, coal)	X	X
	Precious metals (gold)	X	X
Soft	Cocoa, coffee, sugar	X	X
	Soy	X	X
	Timber	X	?
	Cotton	X	?
	Palm oil	X	X
	Rubber	X	?

For each commodity, only those papers reporting on impacts on the local scale were considered.

Next, we developed a list of keywords for literature research and analysis of a case study. These keywords covered three impact dimensions: the socio-economic, the environmental, and the governance dimension.

Impact dimensions	Keywords	Description, area of impact
Spatial focus	Geographic context	Country
	Local scale	Focus of study, e.g. village, community, municipality, settlement, farm, mining town, city area, mining site/area, project, field, lake, river basin, dam area, study sites, ethnic group
Socio-economic impacts: livelihoods	Nutrition	Dietary use of natural resources, quality of natural resources which serve as a source of nutrition/alimentation
	Subsistence	Use of commodities for self-sufficiency
	Social behaviour patterns	e.g. violation, resentment, envy, fear, suicide
	Internal and external group relationships	Regional relationships in and between communities (e.g. commodity production leading to social tensions between groups)
	Community coherence	Position and local attitude towards resource extraction and operating corporations: homogenous (cohesion) vs. heterogeneous, initiatives, resistance vs. acceptance, social mobilization
	Repression (towards community)	Presence of state and corporation: military/police presence (e.g. where armed resistance to the government already exists, private/state police), coercive actions towards local population
	Employment	Job creation, quantity of employment opportunities (e.g. transformation from subsistence to plantation work, pastoralism), contract

		work
	Working conditions	Quality of employment opportunities: minimum wages, labour rights such as free association of workers (unions), health and safety in the workplace, illegal work
	Gender	Differences in access to employment, income, roles
	Land	Commodification, land tenure (e.g. shift from communal ownership to individual ownership), land shortage
	Land rights	Ownership (e.g. loss of rights)
	Displacement	Freedom of movement, resettlement/allocation of communities
	Rights	Rights of local populations in general, local knowledge about rights and opportunities vis-à-vis corporations and state
	Training	Training in production/extraction practices, knowledge/information about farming system
	Traditional lifestyle/culture	Respect for tradition, beliefs, ceremonies, customs, stories, language, traditional activities such as hunting, fishing, gathering
	Worldview	Understanding/perception of world/life (e.g. meaning of commodities, understanding of production/extraction), meaning and relationship to land
	Traditional practice	Traditional processing/traditional use of commodities
	Income	Levels of income/wage, difference of local income between traditional and resource industry, source and use of financial opportunities and resources
	Socio-economic differentiation	Disparate wealth/inequalities (measurement e.g. using gini coefficient/index)
	Certification	Certification criteria, e.g. fair trade, organic
	Genetic (soft commodities)	Genetically modified commodity, e.g. <i>Bacillus thuringiensis</i> (Bt) cotton in India
	Infrastructure (hard commodities: provided by corporations; soft commodities: provided by state for production)	Provided by mining corporations (e.g. health care, education, transport, housing, roads, power/electricity)
	Development programmes (of corporations)	Employment and training opportunities (e.g. community development employment programme, educational programmes, alcohol interventions)
	Demographic change/transition	e.g. increase of population/male workers due to labour migration, out-migration of young people
	Ethnic change	e.g. influx of non-indigenous people/Europeans into the region due to labour migration
Environmental impacts	Water	Availability and quality of water (e.g. regional water shortages and decline of water quality), groundwater, surface water, drinking water, irrigation
	Soil (land)	Availability and quality of land/soil (e.g. decline of soil fertility, degradation of arable land)
	Forests	Existence of forest areas, type of forests (e.g. reduction of forest areas, forest resources)
	Air (atmosphere)	e.g. pollution near mining areas, greenhouse gas emissions, aerial carbon contribution
	Biodiversity	e.g. loss/conservation of natural habitats and genetic resources, ecosystem services, species variation
Governance impacts	Existing and governmental mechanisms	Impacts of national laws and agreements between local (and national) stakeholders
	Governmental programmes	Supporting local population in commodity production/extraction
	Tax	Fiscal revenues for (local) governments and business groups and civil society organizations

	Governmental policies	Impacts of policies regarding commodity production/extraction
	Voluntary guidelines/CSR	Impacts of CSR policies, FPIC, voluntary guidelines
	Existing local collaboration	Collaboration between local population and other stakeholders, e.g. extension agents, middlemen

Subsequently, an overview of the keywords and the number of papers found corresponding to these impacts was compiled for both soft and hard commodities (see graphs at this end of this Annex). Literature was examined via *metasearch*. This enabled searching by combinations of a commodity and one or several keywords as subjects. Databases primarily used included *Web of Science* and *ScienceDirect*. We looked for journal articles published in the last 20 years (since 1995), while giving priority to the most recent publications. A paper was considered relevant for the study if the required commodity was mentioned in its title, keywords, or abstract. If the search by commodity resulted in a relatively low number of papers, it was then complemented with some book sections.

In the first step of this research process, 500 articles were imported into the database. In the second step, the papers were reviewed regarding the geographical scale of the study area in order to ensure that reported impacts really referred to the local level. The local scale included records such as villages, communities, municipalities, settlements, farms, mining towns, city areas, mining sites or areas, plantation fields, lakes, river basins, and dam areas. At the same time, the list of keywords was related to the three impact dimensions covered by this section. Keywords were assigned based on the abstract and the conclusion of the imported articles. A paper was excluded if its research setting was not local or if its abstract and conclusion contained no relevant information. After this step, 260 articles remained in the reference managing software database. Given that some articles address more than one commodity or more than one country, the total number of articles does not match the total number of commodities discussed in the papers.

In a subsequent step, the keywords given to each paper were evaluated: the impacts discussed were assessed as being either positive or negative based on the article's conclusion. If an impact consisted of both positive and negative effects, it was considered controversial. An impact was considered neutral if it had no effect at all on the local level.

Quantitative data were reproduced and presented in a table according to the classification and assessment criteria defined above. These data were then discussed as costs and benefits presenting the picture emerging from the literature found.

Soft commodities

Number of papers addressing local impacts of soft commodities in the livelihood, environmental, and governance dimensions

Local impacts	Non-food commodities				Food commodities			
	Rubber	Palm oil	Cotton	Timber	Soy	Sugar	Cocoa	Coffee
Total	29	29	7	12	7	2	32	41
<i>Livelihood Dimension</i>	22	21	5	10	5	1	19	25
Income	14	17	1	9	3	0	13	21
Employment	6	10	1	2	0	1	3	3
Socio-economic differentiation	2	3	2	0	2	0	2	3
Land rights/ tenure/access	2	7	0	3	3	0	4	4
Displacement	0	0	0	0	3	0	0	3
<i>Environmental Dimension</i>	13	12	0	2	5	1	19	21
Water	0	2	0	0	2	1	3	4
Soil	3	5	0	0	1	1	8	10
Forest	8	7	0	2	3	0	7	7
Biodiversity	3	5	0	0	0	0	12	12
Air	1	2	0	0	0	0	0	2
<i>Governance Dimension</i>	8	10	1	8	4	0	1	5
Taxes	0	1	0	2	0	0	0	1

Government policies	8	6	1	6	3	0	1	3
Government mechanisms	3	4	0	3	2	0	0	4
<i>Certification</i>	2	3	2	0	3	0	1	11
<i>Hybrids</i>	0	1	5	0	0	0	3	1

Number of papers discussing geographical context of local impacts of soft commodities

Geographical context	Non-food commodities				Food commodities			
	Rubber	Palm oil	Cotton	Timber	Soy	Sugar	Cocoa	Coffee
<i>Africa</i>	CMR – 2 GHA – 1	BEN – 1 GHA – 1	MLI – 2	GHA – 1			GHA – 9 CMR – 6 NGA – 3 CIV – 2	KEN – 2 ETH – 1 UGA – 1
<i>Asia</i>	IDN – 9 CHN – 7 LAO – 5 LKA – 2 MYS – 1	IND – 11 MYS – 9 PNG – 2 PHL – 1 SLB – 1 THA – 1	IND – 4 CHN – 1	IDN – 2 PAK – 1 PNG – 1 PHL – 1			IDN – 5 VNM – 1	IDN – 4 IND – 2 LAO – 1 PNG – 1 VNM – 5
<i>America</i>	BRA – 4	BRA – 1 CRI – 1		BRA – 3 BOL – 1 PAN – 1	BRA – 5 ARG – 1 ECU – 1 PRY – 1	ECU – 1 MEX – 1	BLZ – 1 BRA – 1 COL – 1 ECU – 1 PAN – 1 PER – 1	MEX – 9 GTM – 6 SLV – 4 NIC – 3 BRA – 2 CRI – 2 COL – 1 ECU – 1 HND – 1
Total countries	8	10	3	8	4	2	12	17

Hard Commodities

Number of papers addressing local impacts of hard commodities in the livelihood, environmental, and governance dimensions

Local impacts	Minerals			Energy			Precious
	Aluminium	Copper	Iron ore	Coal	Crude oil	Gas	Gold
Total	1	13	8	13	2	1	79
<i>Livelihood Dimension</i>	1	6	3	7	0	0	39
Income	1	0	1	6	0	0	16
Employment	0	1	3	7	0	0	18
Socio-economic differentiation	0	0	0	1	0	0	1
Working conditions	0	1	0	2	0	0	5
Land rights/ tenure/access	1	3	2	0	0	0	11
Displacement	1	0	0	1	0	0	8
<i>Environmental Dimension</i>	0	6	5	5	2	2	46
Water	0	5	2	3	0	0	35
Soil	0	3	2	4	2	0	20
Forest	0	1	0	0	0	0	4
Biodiversity	0	2	1	4	0	0	2
Air	0	1	2	2	0	1	9
<i>Governance Dimension</i>	0	3	1	5	0	0	21
Taxes	0	1	0	2	0	0	4
Government policies	0	2	1	2	0	0	6
Government mechanisms	0	1	0	4	0	0	3

Number of papers discussing geographical context of local impacts of hard commodities

Geographical context	Minerals			Energy			Precious
	Aluminium	Copper	Iron ore	Coal	Crude oil	Gas	Gold
<i>Africa</i>		ZMB – 5 DRC – 2	ZAF – 1	ZAF – 3	NGA – 2	DZA – 1	GHA – 25 TZA – 7 ZAF – 5 ZWE – 3 ETH – 1 GUF – 1 KEN – 1 MLI – 1 MOZ – 1 SUR – 1
<i>Asia</i>	LAO – 1	PNG – 3 MEX – 1 IRN – 1	IND – 5 IRN – 1	CHN – 6 IND – 2 MYS – 1			IDN – 3 PHL – 3 CHN – 1 IRN – 1 KGZ – 1 SAU – 1
<i>America</i>		CHL – 1 PER – 1 ECU – 1	BRA – 1	BRA – 1			PER – 8 ECU – 4 GTM – 3 ARG – 1 BRA – 1 CHL – 1 VEN – 1
Total countries	1	8	4	5	1	1	23

Key to country abbreviations

ARG: Argentina	LKA: Sri Lanka
BEN: Republic of Benin	MEX: Mexico
BLZ: Belize	MLI: Mali
BOL: Bolivia	MOZ: Mozambique
BRA: Brazil	MYS: Malaysia
CHL: Chile	NGA: Nigeria
CHN: China	NIC: Nicaragua
CIV: Côte d'Ivoire	PAK: Pakistan
CMR: Cameroon	PAN: Panama
COL: Colombia	PER: Peru
CRI: Costa Rica	PHL: Philippines
DRC: Democratic Republic of the Congo	PNG: Papua New Guinea
DZA: Algeria	PRY: Paraguay
ECU: Ecuador	UGA: Uganda
ETH: Ethiopia	SAU: Saudi Arabia
GHA: Ghana	SLB: Solomon Islands
GTM: Guatemala	SLV: El Salvador
GUF: French Guiana	SUR: Suriname
HND: Honduras	THA: Thailand
IDN: Indonesia	TZA: Tanzania
IND: India	VEN: Venezuela
IRN: Iran	VNM: Vietnam
KEN: Kenya	ZAF: South Africa
KGZ: Kyrgyz Republic	ZMB: Zambia
LAO: Lao PDR	ZWE: Zimbabwe

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