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Competitive Advantage and Sustainability: The Case of the Swiss Commodity Trading Industry

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by

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Executive Summary

Switzerland is a key hub in the global trade of commodities and boasts an unparalleled concentration of firms active in the industry. In recent years, the way in which economic activity is perceived by its participants has shifted to include much stronger concern for environmental footprint. Various pressures - regulatory, financial, commercial and public - are applied on firms to reduce their emissions intensity and broader ecological impact.

The thesis aims at understanding how traders based in Switzerland can gain a competitive advantage by embracing these calls to sustainability. Eleven semi-directed interviews were conducted and are the basis for many of the claims made and insights developed in this work. Academic literature and the sustainability reports of trading firms complete this picture.

Whilst regulatory and public exposure risks do shape traders' behaviours to an extent, the pressure applied by financial lenders on firms to display environmental performance is shown to be the most potent. A survey of the available solutions and opportunities is followed by an assessment of the current level of action of major trading firms.

Embedding sustainability in one's business model is here linked to three main advantages: privileged access to financing, potential for differentiation and reputational benefits. The types of approaches which companies may adopt in response to these incentives are laid out. Concepts of game theory are then used to map the decision faced by traders and establish the presence of a potential first mover advantage in capturing these benefits. Uncertainty is demonstrated to be one of the main causes of inaction. In this context, a state's signalling of strong regulatory intent is introduced as a probable pre-condition for industry change. The notion of commitment is also explored and pointed to as a pragmatic way of aligning a company's objectives with sustainable goals as well as reducing reputational and regulatory risks.

The findings of this work confirm that commodity trading firms have the opportunity to gain a competitive advantage by embracing sustainability. A framework which can be used by firms to define their strategy regarding these issues is proposed along with a set of factors to consider.

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1. Introduction

1.1 The Swiss commodity trading industry

Efficient, landlocked and discreet, Switzerland is home to 900 commodity trading firms. The 10'000 individuals working in this global hub are responsible for arranging the trade of 60% of all grains and metals worldwide, 40% of oil, 40% of coal, 55% of coffee and 65% of cotton. This effort is underpinned and enabled by an established network of financial partners as well as trade services such as inspection and certification companies (Carbó and Bachmann, 2022, SIF, 2023, STSA, 2023).

In its GDP analyses, the Swiss National Bank accounts for the sector under "merchanting". This classification "largely comprises revenues from commodities trading" (Federal Council, 2018, p.12) and is thus a reliable estimate of the overall value generation of the industry. In 2022, it contributed a net 78'288 million CHF to the national GDP of 690'814 million CHF, amounting to 11.33% (Lang and Abebe, 2023, SNB, 2023 and OECD, 2023[1]). Notably, this input value does not take into account refining and processing activities organized by traders or broader industry revenues generated by services such as trade finance.

In the past ten years, the paradigm with which economic activity is perceived by its participants and the public has shifted to include much stronger concern for environmental footprint. This is growingly impacting the business environment in which commodity traders are evolving, including in Switzerland.

The scope of this paper is specifically restricted to commodity trading companies, which is understood here as any company which seeks to both arrange and strategize the trade of such resources. Typically, this means independent traders, trading houses and the commodity trading department of banks or integrated firms. This therefore does not include commodity producers (unless integrated), shipowners, inspection and certification companies, trade finance institutions, trading exchanges, insurance and service providers or brokers.

[1] See appendix 13 for method

1.2 Environmental impact

The environmental impact of a given company can be conceptualized in two different ways: scope and type.

1.2.1 Scope

First, we can distinguish between the footprint of direct operations and the larger impact of the business. Carbon emissions are traditionally divided in three scopes. Scope 1 concern emissions which originate from "sources owned or controlled by the company" (WBCSD, WRI, 2004, p.25), such as the emissions of a grains processing facility. Scope 2 encompasses GHGs emitted during the production of the electricity necessary for processes. Scope 3 is much wider and relates to any other emissions linked to the company.

A typical commodity trading firm tends to generate a good base of scope 1 GHGs. Notably, one's individual case is highly dependent on asset base and business model: an energy trading firm which owns and operates refineries will have a much higher emissions profile in this regard than a lightweight trading operation.

Scope 2 is the lowest of all three for most companies engaged in the industry. Indeed, the trading activity itself as performed in Switzerland only incurs the ecological cost of running a typical office. Adding in the electricity use of refineries or other long-term assets does not change the picture meaningfully.

The biggest total contributor is scope 3, consistently representing very significant emissions. Table 1 showcases the amount of GHG emissions for all three emission scopes of some of the major commodity trading firms with operations in Switzerland. Each scope's share of the total is indicated.

Table 1: GHG emissions - major commodity trading firms[2]

	Scope 1	%	Scope 2	%	Scope 3	%	Total (t CO2e)
Glencore	16'600'000	4.5%	10'400'000	2.8%	342'000'000	92.7%	369'000'000
Vitol	1'600'000	6.5%	-	0.0%	23'000'000	93.5%	24'600'000
Trafigura	1'787'242	0.5%	1'850'614	0.5%	378'661'248	99.0%	382'299'104
Gunvor	946'073	2.6%	107'567	0.3%	35'567'194	97.1%	36'620'834
Mercuria	499'698	17.0%	83'224	2.8%	2'363'680	80.2%	2'946'602
ADM	13'700'000	16.5%	2'300'000	2.8%	66'800'000	80.7%	82'800'000
Bunge	1'789'793	1.7%	1'402'799	1.3%	103'483'427	97.0%	106'676'019
Cargill	7'287'595	4.3%	4'265'746	2.5%	157'949'000	93.2%	169'502'341
COFCO International	714'483	76.6%	103'052	11.1%	114'694	12.3%	932'229
LDC	999'658	N/A	458'819	N/A	not disclosed	N/A	1'458'477

This work considers that the impact of a given firm is best understood by taking into account all three scopes as well as broader impact (see "Type"). What interests us here is the global and holistic footprint that is a consequence of the trading arrangements originating from Swiss offices. Emissions linked to the use of the processed commodity by the final buyer are not relevant for the purposes of the thesis.

1.2.2 Type

GHG emissions are a direct and important contributor to planetary warming and the ensuing climate instability (Stern, 2008, p.5). On a global level, studies have established a direct link between growth in the physical trade of commodities and a rise in C02 levels (Saeed and Ghimire, 2022). However, the effects of the trade are not only a question of emissions and a comprehensive view also encompasses other types of environmental damage.

The extraction of hard commodities can lead to environmental damage such as soil degradation, the lowering of ground and surface water quality, lowered biodiversity and air pollution (Bonanomi et al., 2015, p.36). These effects are not limited to areas neighbouring the works and have the potential to affect ecosystems long after an operation ceases. For example, water will typically flood open-surface mines after they are abandoned and thus spread chemicals to surrounding rivers (Bell, Donnelly, 2006, p.13). Different harms are reported when looking at soft commodities, including wildlife

[2] *Data is from the respective companies' sustainability reports, for the latest year available (See Bibliography). This table does not allow for comparison between firms since some account for scope 3 emissions very comprehensively (e.g., Trafigura) and others do not (e.g., COFCO Intl.). For scope 2, location-based emissions are considered.*

endangerment, deforestation, poorer soil quality due to pesticide spread, as well as land overuse (Bonanomi et al., 2015, p.33 and Baweja et al., 2020).

1.3 Calls for sustainability

These outcomes - GHG emissions and ecological damage - may have solidified the societal reputation of commodity trading as a negative force, in part bolstered by high profile disasters such as the Deepwater horizon oil spill or the Probo Koala case. The degree of concern varies significantly from region to region, depending in part on the level of development and political climate (interview 7, 2023). For companies operating from Switzerland, they are faced with increasing insistence to move to greener operations and more sustainable business models. This originates mainly from trade finance and the client base of these institutions. These pressures will be explored in depth in the first part of this thesis.

2. Objectives, methodology and literature review

2.1 Objectives

Stakeholder involvement and scrutiny are increasing and this affects both the probability and the impact of reputational risks. This is a difficult environment to evolve in for players in the commodity trade. In addition, finite resources and climate instability is a genuine concern for many categories of raw materials, one example being agricultural products. The question of industry change is made complex by the multitude of actors concerned in each physical commodity transaction, for the most part dispersed across the globe.

The challenge to the commodity trader is formidable: how can they adapt their practices to ensure the longevity of their business ? More fundamentally, how should one operate in a sector which by nature has a high impact on the environment, serving a demand which is both ever-increasing and asking for a reduction in impact?

This thesis is based on two hypotheses which I will seek to confirm. The first is that commodity trading companies in Switzerland are indeed facing increasing pressures and that this is prompting adaptations in their business models and activities. The second is that this tension can be eased productively by approaching the problem as an opportunity. The work ultimately aims at exploring the following research question:

How can Swiss commodity trading companies gain a competitive advantage by embracing calls for industry change regarding sustainability?

2.2 Methodology

My aim is to approach this inquiry as a business case: how can trading companies gain a competitive advantage by adapting their business models to changing requirements? Is there a first mover advantage to be taken a hold of? How could sustainability fit into longer term strategy? In this business environment, how to manage reputational and regulatory risks?

To answer these questions, I will first analyse the nature of the call to sustainability by stakeholders (states, banks, customers, public). A summary of the solutions which are available or foreseen will then be laid out, followed by an action review of major commodity trading companies. In the discussion, issues of competitions are explored and a game theoretical framework will be applied to real and hypothetical situations. The goal there is to model matrices which describe different decisions that a commodity

trading company in Switzerland considering sustainability in its operations could face. Finally, a strategic framework is proposed along with a set of factors to consider.

This work draws extensively on primary data in the form of eleven semi-directed interviews conducted in the context of the thesis research process. The individuals provided insight based on their specific area of expertise which included commodity trading, trading operations, trade finance, change management, decarbonization, logistics and public communications. The interviews are referenced in the annex, and in most cases a transcript is included. All of the respondents are kept anonymous in accordance with HES-SO academic writing guidelines.

When it comes to secondary data, academic papers, industry reports, company reports, and articles are used. The aim of this combination of sources is to base the work on existing knowledge whilst expanding it significantly with the use of previously inexistant primary information.

2.3 Literature review

The environmental impact of agricultural and extractive activities has been extensively researched (Bonanomi et al., 2015, p. 33-37). However, the inclusion of sustainability in commodity trading firms' considerations is relatively recent. Little research has been conducted on this subject specifically, regardless of the country of operation. Virtually no research exists on the link between sustainability and competitive advantage for trading firms.

In the past decade, the Swiss government has sporadically released reports on, and recommendations for, the commodity sector in the country (FDFA, 2013 and Federal Council 2018, 2020, 2021). The documents highlight the importance of the industry, the competitive edge of Switzerland as a hub for trading and the measures put in place to keep it so whilst complying to stricter sustainability and human rights standards. In addition, reputational issues are pointed to as an increasing concern due to both mounting pressure for international cooperation on the environment and intensified media coverage. Environmental issues are approached primarily through the risk of over-extraction and accidents (e.g., an oil spill), but the carbon footprint and broader impact of trading is not explicitly laid out as an issue.

The potential for a "green premium" to be applied to commodities has been predicted to be a significant opportunity for the sector, with advantages to be capitalized upon by "first movers" (Rechtsteiner, Schabram and Thomas, 2023). Green labelling is a recurrent subject of study, mainly related to agricultural commodities marked as fair trade, bio or

organic. The genuine business opportunity is sometimes contrasted with the difficulty to accurately monitor producers as well as the rigid aspect of standards which may not be adequate in certain areas and cultures (Lines, 2005, p. 208-209).

Gardner et al. have analysed transparency and sustainability within soft commodities. Relevant to this work, they have highlighted a difference between the volume of commitment declarations and that of follow-up action reports issued by companies (2018). On a related note, CSR reporting has been pointed to as an important part of the risk management arsenal, particularly as it pertains to stakeholder management and reputational risk (Bebbington et al., 2008).

Baines and Hager have explored the link between the typically private ownership structure of commodity trading firms and a lack of incentive for these players to embrace ESG principles (2022). More broadly, Amalric and Hauser have laid out potential "economic drivers" of sustainability decisions. Notably, they use game theory to show the decision process of companies which decide to buy into industry-wide initiatives (2005).

3. Results

3.1 Calls for sustainability

One might have difficulty pinpointing exactly when the issue of the environment and climate change started to occupy public consciousness. What is certain, however, is that in many countries it has become a significant cause for concern and has led many companies to adopt new practices and frameworks (interview 4, 2023). Whilst the world of commodities is not exempt from this, it has been said to have evolved such considerations at a different pace and intensity than other industries. Detailed in the following section are the diverse pressures applied by a set of stakeholders in calling the trade to reduce its environmental impact.

3.1.1 Regulatory

A 2016 global survey of commodity firms revealed that 27% of respondents considered an increase in regulation to be "one of the most disruptive [developments] for commodities trading in the longer term" (KPMG, 2016). Drilling down further, 13% overall estimated that new laws would push them to change their business in a consequential manner. The sentiment is likely to have grown somewhat stronger in various jurisdictions.

The Swiss government is involved in international cooperation on the subject of corporate social responsibility and also supports voluntary standards and industry initiatives. Most of these efforts are geared towards human rights issues and rarely address the ecological impact of commodity trading, with exceptions such as government support for the RSB - a think tank on biofuel development (FDFA, 2013, p.37-39). No law concerning specific aspects of environmental responsibility for trading companies are in force and no supervisory body is overseeing the industry. Some have emitted that the significant tax revenues originating from the trade incentivize a maintenance of the status quo (interview 2, 2023).

The general tone of the individuals interviewed for this work was the following: Swiss authorities have a light regulatory touch on the commodity sector, though this is somewhat likely to change. If it does change, it will be in line with what the European Union is choosing to do, with some latency (interviews 1, 5 and 6, 2023).

At the moment, the E.U. displays a broader regulatory coverage than Switzerland. It's emissions trading scheme does not cover scope 3 emissions and the only type of commodity firm affected by the system would be a trader owning and operating refineries on European territory (ICAP, 2022). However, the parliamentary adoption of the "fit for

55" regulatory update will lead to much stronger legal incentive for all European companies to have a lower carbon impact (EC, 2023). The ripple effect of this change has the potential to impact both European and Swiss commodity traders, as they face a demand bound to buy lower carbon products in order to meet standards (Cramer et al., 2022). In addition, the year 2022 saw the European Commission agree to a regulation forbidding all imports and exports of products with a link to deforestation for a set of agricultural commodities. Traders are explicitly mentioned as being within the scope of the new law which, once in force, will give players 18 months to adapt their supply chains (European Commission, 2021). Pressures to adapt practices also come from multi-actor cooperation, a good example being the International Maritime Organization (the IMO). In 2020, the U.N. body started enforcing a regulation on the sulphur content admissible in fuel oil for ships.

3.1.2 Financial

The ability to obtain financing for trades is essential for any commodity trading firm. Various sources can provide this service: usually trade finance banks and commodity trading funds, though commercial and investment banks can be involved as well. The money can be lent either on a transactional or structured basis. In the former, it covers one transaction, is provided by one source and the cargo is the collateral. In the latter, money is lent as a facility that the borrower, typically a major trader, can draw upon. Lenders join forces to provide this type of financing and they can have recourse on the borrower's balance sheet. In addition to these traditional solutions, one can observe alternative practices such as commodity trading companies lending money they have themselves borrowed, or securitization linked to a given opportunity.

In the past decade, the financial industry has had to face a societal paradigm shift regarding ESG issues. Lenders "rely on depositors, they rely on society, and they want to be seen as doing good" (interview 4, 2023). Issues of reputational risk have become a matter of strategy and some institutions have started divesting from financing activities which are viewed unfavourably by the public. A striking example is that of trade finance bank ING announcing its move aways from funding the oil and gas industry (ING, 2023).

In turn, lenders apply pressure on the trading firms they finance. For now, this usually looks like proposing voluntary measures, such as a sustainability-linked loan. This structured lending instrument allows banks to reward a commodity trader they are financing according to its performance against a set of key environmental performance indicators. Whilst it is now presented as an incentive package, many have expressed that this type of lending will become the norm (interviews 5 and 6, 2023). Then, an

increasing number of lenders adopt frameworks to screen out borrowers in the case of environmentally hazardous trades (interview 7, 2023). On the longer term, major lenders are likely to simply stop giving out loans to commodity trading firms which refuse to adapt their practices (interview 4, 2023).

The option to go to so-called alternative lenders, sometimes seen as less regarding, could be held as a solution to ease this pressure. This does not seem reasonable on a large scale for the following reasons. First, most financing is still provided by trade finance institutions and they alone are able to offer their type of service level and lending volumes. Second, alternative financing tends to be deemed as "high risk", which can be observed by looking at the significant interest rates that money carries when obtained in this way. Scaling such lending business models to the point of being a genuine threat of competition to trade finance bank is likely not realistic. Third, even an hypothetical risk-seeking lender remains accountable to a set of depositors which might also develop ESG considerations. A parallel dynamic applies to companies applying for financing with institutions based in more permissive environments such as Singapore: the overall value proposition does not justify the move (interviews 4 and 7, 2023). In sum, the pressure applied by financing partners is very potent and it is not at significant risk of being attenuated by less regarding competitors.

3.1.3 Commercial

Downstream commercial partners are also exposed to significant pressures to be more sustainable, which could then be redirected towards the commodity firm (Freidberg, p.512). For example, a food manufacturer buying agricultural commodities through a trader could start having stricter sourcing requirement: transparency ensured along the supply chain and an overall lower carbon footprint. As we will explore later in this work, this represents an opportunity. However, the trader does have to provide an enhanced service or be at risk of losing a client.

In addition, the behaviour of competitors can lead to more urgency being placed on a given company. For example, thorough climate reporting as set by the international Task Force on Climate-related Financial Disclosures (TCFD) will become mandatory in Switzerland for listed enterprises and financial institutions of a certain size (Federal Council, 2022). Despite being exempt from this obligation due to its private ownership, Trafigura decided to voluntarily subject itself to this regulation (ERM, 2023). In so doing the company raises the standard for other commodity firms.

3.1.4 Public

At the origin of many of the changes listed above lies a renewed public conscience. This is especially the case in developed economies (interview 7, 2023). Whilst commodity trading companies typically don't have any direct exposure to the general population, their lenders and downstream partners do. The pressure coming from the general population in this manner is growing (interview 6, 2023).

Media coverage of the Swiss commodity trading industry from international sources is sparse and is typically focused on major business events (e.g., Glencore-Xstrata merger) or cases of corruption. Swiss media is predictably more regarding of the industry's presence in the country, though as of 2017 articles on human rights and environmental topics rarely surpassed 10% of the overall reporting effort (Federal Council, 2018, p.49-53). In the past two years, however, supply chain bottlenecks as well as the Russia-Ukraine war have significantly raised awareness of the importance of commodity trading.

Non-governmental organizations play a significant part in this. Regarded as a valid voice by many in the industry (interview 2, 2023), Public Eye regularly reports on issues related to Swiss commodity operations. Documents on the sale of high-sulphur oil to the African continent by Geneva-based traders as well as a report on the trade of coal are notable examples.

3.2 Proposed solutions and potential opportunities

Building on this exposition of pressures faced by commodity trading companies, the following section is an exploration of the different types of tools and approaches available to the industry on the path towards more sustainable impacts, classified by type of approach.

3.2.1 Carbon footprint reduction

Carbon offsets are starting to gain traction in the commodity sector. They allow companies to account away a given volume of GHG emissions by paying for credits which feature an environmental project as an underlying. Whilst offsets cannot be used to meet science-based targets on emissions reduction, they can be useful in achieving lower carbon supply chains (interview 3, 2023). For example, SOCAR trading delivered a fully offset crude oil cargo to Taiwan with the help of carbon credits (CPC, 2022). These types of projects remain rare, in part due to the lack of a standardized and recognized process.

Another way to reduce a company's footprint is to increase the efficiency of the various elements which form in the supply chain. This is relevant both for assets the trader owns (e.g., a refinery or a grains crushing plant) or those it rents/charters (e.g., a vessel). Measures could include waste heat recapture and investment in machines with a higher energy rating. A further example is that of shipping and the IMO's aim to implement new ship efficiency reporting standards to incentivize a move towards a renewed global fleet (IMO, 2023). Then, technological development to improve processes can also help shape a company's carbon strategy. The oil industry has for instance achieved meaningful developments in lowering the footprint of extraction and refining (interview 1, 2023). As a general principle, savings made due to leaner consumption of inputs into processes often enables firms to recoup their investments (interview 3, 2023).

3.2.2 Financial

As mentioned previously, sustainability-linked loans (abbreviated SLL) allow trade finance institutions to motivate good environmental performance. If key performance indicators are respected, the borrower obtains more advantageous conditions on the loan such as a reduction on the interest rate by a few basis points. The opposite is also true and companies can see their financing get costlier as they fail to comply. The KPIs are set according to company objectives or standards specific to a given type of commodity (Linklaters, 2021). Importantly, the money can usually be used at will and does not need to be applied to green projects. If instead a trading company is investing

in assets or projects with an explicit aim to improve the environment, green loans can be entered into (Linklaters, 2018).

Decarbonization efforts are often considered as a capital expenditure, and these financing arrangements allow commodity traders to "accept longer payback periods for such investments" (interview 3, 2023). Some maintain that banks may not be able to accurately monitor the environmental performance of the companies they provide backing to (interview 10, 2023).

3.2.3 Opportunistic

The current environmental push has created a variety of opportunities for the different sectors of the industry.

3.2.3.1 Oil & gas

Global crude oil demand is increasing and is forecasted to reach its peak no earlier than 2035 (IEA, 2022). Even so, a parallel demand for new types of fuels is also on the rise. The foremost example of this is the development of biofuels, a term which regroups three technologies. Biodiesel (or FAME) and renewable diesel (or HVO) are both made from fat sources using different methods. For use in vessels and vehicles, the former is usually blended with petroleum diesel whilst the latter is not (Gerveni and Irwin, 2023). Ethanol originating from biomass is the third type of biofuel and is typically mixed in with gasoil. Overall, demand for these fuels is predicted to grow by 20% within a 2022 to 2026 timeframe (IEA, 2023, p.84-87). In the long term, the biofuel space may share an increasing number of similarities with conventional crude oil trading through the emergence of differentiated products, recognized price indexes and liquid financial hedging instruments (Coppel, 2023).

As an additional incentive, jurisdictions such as the European Union and the United States have paired renewable fuel quota obligations with green certificate schemes, similar to Renewable Energy Certificates for electricity. These documents, called RINS (US) or POS (EU), are attributed to producers and refiners of biofuels in amounts related to actual volumes. The certificates can be "separated" from the fuel they certify and sold to actors in the oil industry which need to comply to regulatory obligations (US EPA, 2015 and European Court of Auditors, 2016). By pricing-in a financial benefit, these programs have fundamentally changed the incentive system linked to biofuel commercialization (interview 8, 2023).

Biofuel production opportunities tends to be taken on by smaller firms which rely on a specific expertise, such as knowledge of the supply environment for used cooking oils (interview 1, 2023). However, the major energy trading companies are also investing in biofuels as a complement to their main offer. The relative uncertainty as to which energy source will be dominant in the future makes high spending in these areas more difficult. Other commodities which also have a significant potential for development include hydrogen, methanol and ammonia.

Natural gas, and the ability to transport it in liquefied form, is another opportunity. Existing supply chains, availability and the fact that it is considered as a transition fuel (European Parliament, 2022) make it a prime target for commodity traders seeking to make their energy portfolio greener.

3.2.3.2 Metals and minerals

The exponential need for batteries in electrified economies is leading an array of metals to be in unusually high demand. Lithium, nickel, copper and cobalt are set to continue on this trend for next two decades, with some 2040 scenario placing these commodities as a challenger to coal in terms of revenue generation (IEA, 2021). To respond to this demand, mining projects are proliferating, including in Europe. Some have posited that the energy transition will operate a shift from "a reliance on crude products to a reliance on metal commodities" (Donnen, as cited in Etienne, 2023).

In this context, stakeholders of mining activities, such as financiers and downstream partners, are becoming increasingly demanding on the environmental aspects of extraction. Integrated trading companies which are able to provide ESG assurances - such as commitments on appropriate management of resources and carbon efficiency - have the opportunity to get a long-term edge over rivals (Mitchell, 2022).

3.2.3.3 Agriculture

In the agricultural space, the options are threefold. First, transparent supply chains paired with stakeholder engagement allow firms to certify their products through external or in-house sustainability labels. This is in place for a few commodities, mainly coffee and fruits, and has started to extend to others, namely wheat. Second, technological development such as resilient crops or soil fertilization techniques can lead to more productive area use and a reduced need for expansion into new regions. Importantly, the implementation of such projects has sometimes led to negative ecological impacts on biodiversity, defeating some of the purpose of the initial idea. Finally, the major agricultural firms are investing in "foods of the future", including soy-based protein

ingredients as a replacement to bovine meat (interview 5, 2023). Here, the potential for new sets of commodities is significant and smaller trading firms also have a chance to seize it, for example through partnerships with agricultural research start-ups.

3.2.3.4 Carbon

The regulatory push for companies to reduce emissions through compliance trading schemes has effectively established carbon emissions as a new commodity. Even as the rules and overall shape of these markets is still subject to change by regulators, companies such as SOCAR and Trafigura have launched a carbon desk to trade emissions permits (Payne, 2021). This is a good opportunity to develop expertise which will be increasingly needed as well as to portray the company as being part of the effort to reduce emissions. Voluntary carbon markets are also an option and many trading firms now offer offsets to serve the growing population of businesses seeking to obtain carbon credits.

3.2.3.5 The case of premium pricing

Many of the opportunities mentioned in this section feature the common attribute of being good candidates for premium pricing strategies. One reason for this is that efforts such as increasing the traceability of a value chain or avoiding deforestation are linked to a set of costs. The price to buyers has to reflect these in order for the activity to be economically viable (interview 5, 2023). Another reason is that the signalling value of "greener" goods is high and this means that buyers (both direct customers and final consumers) can be willing to spend more to capture it (interview 1, 2023).

Notably, the amount of the premium varies according to the price sensitivity of the final customer. In the case of baby food formulas, consumers tend to be ready to spend liberally. Commodities present in the ingredients of such products are thus prime prospects for higher margins. In more common goods such as wheat, there is less of a potential for premium because any significant price increase carries the risk of customers moving to alternatives (interview 5, 2023). One way for a commodity trading company to mitigate this is to actively communicate efforts made towards a more sustainable business, letting the reputational benefits of such marketing to compensate for some of the margin loss.

The availability of mechanisms to capture the premium is also an important factor. For example crude oil trading firms which are integrated within a larger energy business can propose carbon-offset gasoil at gas stations operated by the group. As with any value chain, the larger the number of intermediaries the lower the economic incentive will be.

3.2.4 Transparency-based

Raising the standard under which business actions are conducted and communicated is another way to direct a company toward more sustainable operations. Usually, the first step is to increase transparency through sustainability reporting. Typically, these yearly documents include assessments of GHG emissions levels and environmental risks linked to the business model, as well as a description of aims, targets, actions highlights and future projects. There are various standards which give a framework for companies to share this information with stakeholders: CDP guidelines, sector specific GRI standards and TCFD disclosure recommendations.

Research by Bachmann and Ingenhoff has shown that commodity trading companies can potentially "(re)gain legitimacy through extensive CSR disclosures" (2016). In addition, Transparency is not widespread and the differentiation benefit associated with reporting is significant. A 2017 survey of the Swiss commodities industry highlighted that 26% of respondents (themselves a small percentage of the firms that were called upon) communicated their environmental and social performance with the use of a report (IHRB, 2017, p.24).

3.2.5 Strategic

Changing the course of corporate-level strategy is another approach available to firms that want to move towards sustainability. In a sense, the options mentioned above - for example choosing to seize certain opportunities - all require a form of both mindset and business model shift. However, we can notice at least two other possible adaptations to a company.

Investment is the first, and it often highlights the direction a firm is advancing towards. If a trader seeks to align to the current momentum to create climate-change mitigation solutions, funding those is one option. This can take various forms: Neste created a new business line to research and market biofuels, Mercuria set up a 500 million USD fund aimed at nature-based projects and Gunvor established a separate entity to fund energy transition purposes (Neste, Mercuria, Nyera, 2023).

The second strategic corporate-level shift is divestiture, which here involves the cessation or sale of an activity due to its carbon intensity or ecological impacts. A typical example of this is energy trading company Gunvor phasing out of coal trading (Gunvor, 2021). The term could also be applied less literally to denote commitments to end certain practices such as deforestation and deepwater oil drilling.

3.2.6 Governmental

Various stakeholders argue that another approach, led by authorities, is needed to get the commodity industry to enact the required change. It is composed of two facets: regulation and incentives.

Different models are identified when it comes to regulating an industry in the context of the environment. Typically, European Union law aims at covering all aspects which are affected by a given activity and to enforce boundaries through taxes (interview 1, 2023). The United States has a less comprehensive approach and, depending on the administration, solve the issue by funding change efforts. For example, the 2022 inflation reduction act dedicated billions of dollars towards sustainable agricultural practices and the development of hydrogen technology (The White House, 2023, p.74 and 130). Switzerland likely falls between these two extremes, but does not directly address the environmental impact of commodity trading apart from the issuance of recommendations.

In this context, one potential solution is a supervisory authority with a mandate similar to that of FINMA with the financial markets. Public Eye put forward a project for one such regulatory body in the form of ROHMA. Its stated aim is to establish a clear legislative framework defining due diligence in ESG matters for the commodity trading industry paired with an enforcement capability (Public Eye, 2023). Interestingly, if this type of project was to be successfully established, companies which have already implemented transparency and best practices in their activities would be in a favourable position relative to their competitors. In this sense, increased regulation can lead to competitive advantage for those who have developed the capability to deliver returns under tighter constraints.

Another route which Swiss authorities could take would be to incentivize or fund change in the form of tax rebates or subsidies, respectively. Such initiatives could for example make offsetting cargos more attractive (interview 3, 2023) or spark innovation in new technological efforts such as 4.0 agriculture (interview 1, 2023).

3.3 Answer

In response to stakeholder demands on sustainability, some firms in the Swiss commodity trading industry have implemented one or many of the above-mentioned solutions. This momentum is mainly confined to large companies and started for the most part no earlier than five years ago.

The following table presents major firms' sustainability actions in three main areas: use of sustainable finance, increased transparency through reporting standards and sustainability investment portfolios[3].

Table 2: sustainability actions - major commodity trading firms

	Finance	Reporting standard	Investment							Total amount (million USD)
Glencore		TCFD		C					E	
Vitol		TCFD (in progress) + GRI	R	C	RF	AF		EV	E	> 2'200
Trafigura	SLL	TCFD	R	C	RF	AF			E	
Gunvor	SLL	TCFD + GRI	R	C	RF	AF	NBS			> 500
Mercuria		TCFD (in progress)	R	C	RF	AF	NBS	EV	E	> 500
ADM	Green bond	TCFD + GRI + SASB		C	RF		NBS			
Bunge	SLL	TCFD + GRI + SASB			RF					
Cargill	ESG time deposit	TCFD (partial) + GRI (partial) + CDP	R		RF	AF				> 220
COFCO intl.	SLL	GRI								
LDC	SLL			C			NBS			

Renewables	R
Carbon solutions	C
Renewables fuels	RF
Alternative fuels	AF
Nature-based solutions	NBS
EV infrastructure	EV
Energy storage / battery	E

A set of findings can be extracted from this data. First, sustainability-linked finance instruments appear to be predominantly called upon in the agricultural sector. Second, reporting standards are used across the board, to varying degrees. The availability of different methods of disclosure leads to a certain level of "standard shopping", with some companies using either a mixed approach or partial reporting due to the complexity inherent to their business model.

Then, both the volume and direction of investment varies significantly between companies. The extractive commodity sector is heavily funding renewable energy,

[3] Data from the latest sustainability reports of the respective companies (see Bibliography).
Abbreviations and details:
TCFD: Task Force on Climate-Related Disclosure
GRI: Global reporting Initiative
SASB: Sustainability Accounting Standards Board
"Carbon solutions": includes investment in removal and capture & storage technologies, as well as carbon credit creation projects

carbon capture, renewable fuel and alternative fuel projects to shape their future product portfolio. In addition, the ambition to be comprehensive players within the energy transition leads some firms to seek the acquisition of further capabilities (EV infrastructure, battery technology).

A disparity in the scope and intensity of sustainable expense can be noticed when comparing hard and soft commodity companies. One reason for it is that this snapshot of current investments does not consider funding dedicated to internal operational efficiency or cleaner power sourcing (e.g., PPA agreements are not accounted for in "renewables"). This matters since agricultural companies tend to focus on improving the current bio-sustainability and emissions efficiency of their current processes rather than seeking to back projects that could expand the scope of what they offer.

Then, the main actors in the industry all have emissions reduction goals. The trend for 2020-2022 (or latest available) is the following:

Table 3: GHG emissions trend - major commodity trading firms

	Scope 1	Scope 2	Scope 3
Glencore	up	neutral	down
Vitol	neutral	neutral	down
Trafigura	down	down	up
Gunvor	down	up	
Mercuria	down	up	down
ADM	down	down	
Bunge	down	down	down
Cargill	down	down	
COFCO international	down	down	up
LDC			

Areas for which data is unavailable are left blank. As highlighted above, these data are not always subject to external audit and firms use different disclosure standards to communicate emissions progress. Whilst this is a small sample of companies, the combined market share and volumes traded by these ten actors represent a significant portion of the industry and its impact as a whole.

4. Discussion - competitive advantage

The previous chapter highlighted the pressures applied on commodity trading firms by various stakeholders, listed solutions and pointed to the actions of some of the major players. This foundation being established, the work shall now move on to considerations of competition by shortly describing the playing field and its dynamics, and expanding on the potential advantages (or prizes) related to embracing sustainability, types of playing styles one might observe and decision scenarios.

The game at hand may be played differently according to the commodity of choice, but the structure remains the same. Commodity trading firms are considered as the players. In the scope of this work they are based in Switzerland, which is their playing field. One assumption is that they aim at staying in the game for the foreseeable future (going concern), and that this leads them to making rational decisions aiming at the best outcomes possible. Choices, or moves, are made both at corporate and operating level: from deciding which commodity segment to trade and market to serve, to day-to-day trading and operations. The ultimate goal of the game is to create and capture value leading to a profit. This aim is underpinned by various sub-goals such as increasing market share, gaining access to resources or developing good relationships with stakeholders.

Whilst companies in the industry are fiercely competitive, cooperation is necessary and common. Physical trading margins tend to be thin, and players do not have infinite options to optimize this. Rules are set by the industry (best practices) and by regulators. As this thesis has endeavoured to highlight so far, the societal framework within which the game is played has fundamentally changed to now encompass concerns of environmental performance. This could lead to new rules in the form of both of industry standards and laws. Adapting to this changing business environment is costly but can confer benefits for companies, which is the focus on this next section.

4.1 What competitive advantage?

Competitive advantage refers to "anything that a firm does especially well compared to rival firms" (David, 2011. p.9). If a company is able to create concrete and rare value which is difficult to imitate, it is in a good position to have a long term, so-called "sustainable", competitive advantage (Barney and Hesterly p.31-32).

Every interviewee identified sustainability as having the potential to provide benefits for their company. Firms which are able to seize these benefits most convincingly - because they are first or more competent - will have a competitive advantage over their rivals.

4.1.1 Access to financing

A company which is able to comply and answer satisfyingly to the demands of trade finance institutions in terms of sustainability will gain "safe access to quality finance" (Head, as cited in ERM, 2023). Whilst companies now obtain benefits for taking on sustainable loans, the situation will likely evolve to a point where commitment to responsible operations is mandatory. In a context of increasing industry consolidation, firms might not be able to retain their access to finance as banks then favour those with which they have an existing relationship and which are able to handle strict standards (interview 6, 2023). Being at the forefront of environmental issues also allows for companies to be part of the process to define pragmatic goals for the industry.

4.1.2 Differentiation

One typical way to achieve competitive advantage is differentiation. In most industries this can involve different approaches on many levels: branding, technological advancement or even level of service (Porter, 1980, p.37). Embracing sustainability is relatively new in the context of commodity trading, which could mean this approach is a pragmatic path to be distinct from competitors.

Upstream, a trading operation which seeks collaboration to ensure healthy levels of resource extraction on a given project has the opportunity to deepen its partnership with local stakeholders. In so doing, the company ensures sourcing and creates a barrier to entry for rivals. Downstream, proposing low carbon commodities is an opportunity for the trader to differentiate on the basis of the product itself (interview 3, 2023).

Almaric and Hauser have proposed that for a firm to a be differentiated in the long run, it has to seek the "optimal fit" of CSR activities within the business. The point here is that a company which launches projects that do not imply real change (e.g., greenwashing) also have no way of ensuring that competitors will not simply follow the same path. One

strategy to make an organization more competitive is to enact environmental initiatives which complement its regular operations (2005, p.32).

4.1.3 Reputation

A positive reputation tends to strengthen the position of companies with their various counterparties along the value chain, from resource producers and their local governments, to financing partners and customers. As Eccles et al. have pointed out, "changing beliefs and expectations" regarding which economic activity is deemed acceptable are a significant source of reputational risk (2007, p.4). The recent society-wide sentiment change towards carbon-intensive or ecologically complex products thus has the potential to bring about problematic outcomes for trading companies which desire to maintain their informal licence to operate.

The effects of a good reputational standing depend on the stakeholder involved (Cassano, 2019, p.133, Petersen and Lemke, 2015, p.501-502, interviews 3 and 5, 2023):

- Upstream partners: goodwill, decreased risk of switching to competitors, reinforcement of business relationship through trader's involvement in appropriate resource management.
- Financing partners: access to more financing, place as a preferred partner.
- Customers: greater willingness to purchase from the trader due to own sustainability and transparency commitments.
- Public: goodwill, decreased activism risk, broader recruiting talent pool.

What is here presented as series of benefits can also be approached from the opposite perspective: a company which disregards its reputation forsakes these outcomes and is at risk of losing valuable resources.

One interesting consideration is that the expectations of stakeholders do not necessarily need to be realistic to be potent. Consider that the public perceives commodity traders as being responsible for a variety of environmental ills and that they should therefore phase out rapidly from trading problematic commodities. On account of these stakeholders' viewpoint and ability to influence financing partners, this is the expectation - pragmatic or not - that is set on trading firms (interview 4, 2023). In this sense, perception of what is and should be done might matter more than actual environmental performance. This goes both ways, and projects such as the building of renewable

electricity plants can have a reputational benefit that is far outsized relative to the actual cost to the company.

Mentioned above, an often-understated benefit enjoyed by companies seen as environmentally responsible is the ability to attract and retain talent from younger generations. Some posit that the current popular sentiment could significantly reduce the hiring pool for positions in certain commodity lines such as crude oil. Trading companies which can display genuine concern for environmental issues and back this up through projects will have more opportunities in hiring (interview 8, 2023 and Turker, 2009, p.190).

4.2 Types of playing styles

Commodity companies adopt different approaches to deal with the current changes in the business environment. Here is a short exploration of the types of playing styles one is likely to see occur now and in the future.

4.2.1 First in

First movers are companies which are amongst the first wave of entrants into a new market segment. At the crossroads of commodity and sustainability, opportunities could be substitutes (biofuels), new commodities (carbon), higher standards of conduct (voluntary standards, science-based targets) or use of technology (tracking of cargos, chartering of more efficient vessels).

Companies which are ahead of the market may then be in a position to mould the shape of these new segments, tailoring it to their advantage (Cramer et al., 2022). Seeking to be ahead of the market usually involves high amounts of investment and can carry significant risks (interview 8, 2023). One way some firms are dealing with this risk is to cooperate (see "*Partner up"*), though this then poses the problem of a potential dilution of the first mover position. For companies with significant resources, multiplying investments in various areas might help increase the probability of success (Klingebiel and Joseph, 2015).

4.2.2 Find a niche

In smaller and underdeveloped markets, players with specific capabilities are able to enjoy higher margins and relatively low competition. This type of playing style requires technological lead (or at least parity), understanding of a particular demand and an established regional network. One typical example is biofuel marketers which "have carved out a niche by applying hard-to-replicate business models based on local insights, strong origination relationships, and acceptance of custom risks" (Rechtsteiner et al., 2023). This might happen in other industry segments, with disruptors capitalizing on new ways of extracting, transforming or transporting commodities.

As some of these companies prove themselves to be stable and efficient over a given timeframe, they will become interesting to large commodity trading firms looking to acquire their way into an additional capability. Notably, the integration of a niche company into a larger structure might not be possible or optimal due to the potential loss of agility and issues of employee retention (interview 1, 2023).

4.2.3 Cash pool

The recent increase in sustainable investments by large commodity trading companies is in part explained by the high profits they generated in a volatile context (interview 4, 2023). This is a pointer to a type of playing style which compartmentalizes efforts: the pure trading activity is meant to generate profits and the corporate structure uses these funds to develop green projects. This serves company interests in three ways: the business model is effectively kept intact, the investments allow for new commercial opportunities and the firm can communicate tangible environmental performance to stakeholders. One example of this strategy is Glencore's coal trading. Amounting to over half of the company's revenue in 2022 (Hook, 2023), some have argued that the business unit is informally used as a cash reserve to advance the sustainable side of the business (interview 10, 2023).

A slightly different form of this approach can be witnessed when a trading firm is a subsidiary integrated within a broader company, commonly in the energy business. Again, the trader's role is to generate cash and fund the group's environmental and renewable energy projects. In turn, the group benefits the trader in two ways. First, the cash reserves of the parent business reduce the need for external financing and the related ESG performance demands. Second, the green corporate projects shield the reputation of the trading outfit whose name is amalgamated with that of the group (Interview 8, 2023). Importantly, the client-facing aspect of the group's regular activities involves greater indirect pressure from the public which is in turn applied on the trading subsidiary.

4.2.4 Partner up

Cooperation is an increasingly common strategy, and can be observed in three distinct forms.

The push for decarbonization and efficient commodity production & transport calls for a host of different skillsets and competencies across various industries. This creates a need for trading companies to collaborate with firms specialized in developing solutions such as hydrogen, renewables energies, 4.0 agriculture or effective mine water treatment (Tauber and Bender, 2018). In these partnerships, the trader is able to perform its core tasks of arranging the trade of the commodity and the counterparty benefits from this established system to commercialize their product offering at scale (interview 6, 2023).

Another form of this type of play are industry-wide alliances to solve a specific problem, typically federating both traders and other actors in a given field. A first example is the

Sea Cargo Charter, which includes 36 signatories active in the trading and shipping scene. It sets a new standards for evaluating and communicating the climate impact of the vessels chartered by the participants (Global Maritime Forum, 2023). Another example is the International Council on Mining and Metals, whose aim is to develop sustainable practices within the metal extraction sector. One instance of this is the Council's standard on the handling of waste resulting from mining processes (ICMM, 2020).

Trading new commodities, adopting stricter guidelines or investing in green projects all imply a risk for the first mover, but the gains from this bet are enjoyed by the rest of the industry (technological advancement, new demand, better processes). These coalitions lower the risk of this dynamic playing out by having signatories share the burden. There is also a commercial aspect; as one logistics expert at an agricultural trading firm phrased it: "those partnerships are from companies understanding that the future is not only the competition, it is really joining forces in the expertise that you have to deliver something better to the customer" (interview 5, 2023).

A third form of cooperation is with downstream customers. One key source of hesitation when it comes to developing greener commodities is uncertainty related to demand. To deal with this, some firms will seek to enter into offtake agreements for decarbonized or energy transition friendly cargos. This is widespread in the green steel business (World Economic Forum, 2023).

4.2.5 Fireworks

Communicating environmental performance and green projects can yield the reputational benefits highlighted in the previous section, and commodity trading companies are increasingly prone to it. This is done through the company's website and LinkedIn feed, active participation in industry events and conferences, as well as interviews given to the press. In addition, most of the major players now disclose some of their environmental impact and action through annual sustainability reports (see "Answer"), although the lack of a consistent standard can permit an uneven information quality.

One way to play this game is to get recognition for genuine change and projects. However, some players might send out signals which do not to incur a significant cost, for example a communication of intent on a net zero supply chain by a future date. Lack of scrutiny and the growing number of initiatives in the industry can render difficult the assessment of a disclosure's value. Below is a hypothetical list of potential signals,

ranked by level of credibility. To class these, the following rules are applied: cost of the cue to the company (is actual change a required follow up?), degree of transparency, level of involvement and pragmatic value of the action (Head, as in ERM, 2023, interviews 5 and 10, 2023).

Low credibility:

- Extensive communication of one part of the business (e.g., energy transition metals, biofuels, clean power) when these represent a minimal share of the actual product portfolio.
- In-house sustainability label with no third-party involvement.
- 2050 net zero targets.

Average credibility:

- Sustainability report omitting scope three emissions.
- Communication related to the purchase of a physical option, for example the purchase of a ship with the capacity (but not the obligation) to run on alternative fuels.

High credibility:

- Sustainability reporting using a recognized standard (e.g., TCFD, GRI), covering all scopes comprehensively.
- Communication related to a purchase made, project currently active or binding commitment.
- Legitimate third-party verification and label issuance for carbon neutral cargos.

The current media and public discourse might not be attuned to these types of nuances, and one could observe a growing share of the industry sharing low and average credibility signals as a way to keep up with the industry momentum. Even so, each of these moves carry with them the risk of greater scrutiny in the future. This can help companies effect change within the organization by aligning company goals with stated objectives (interview 6, 2023)

4.2.6 Head in the sand

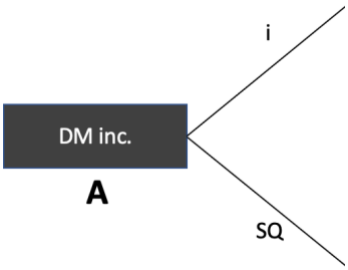
Whilst virtually all of the largest commodity trading firms are now actively implementing strategies, many in the industry have no involvement in sustainability issues (interview 10, 2023). This can come from a lack of market incentives, the relatively recent nature of a green momentum in commodity trading and business models which rely on adapting swiftly at the moment of choice. For small and mid-sized traders, inaction is also a result of a having a light balance sheet limiting the possibility of bearing the cost of investments as well as a potential lack of opportunities.

4.3 Scenarios

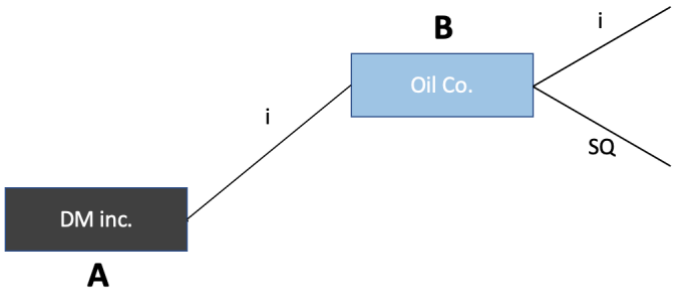
Above, the game's structure, payoffs and strategies have been laid out. To go further, this section will make use of game theory to represent the choice that trading companies are faced with when evaluating their strategy relative to that of competitors. The fundamentals of such analysis in the context of business are the following (Brickley et al., 2000):

- Firms (players) form and adapt their strategies according to their competitors' own strategies (observed or expected).
- Players are faced with decisions which have payoffs (monetary or other), and they try to maximize these payoffs.

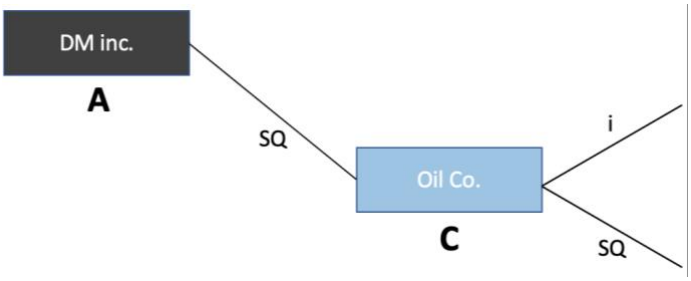
In our case, the game that is played is "sequential", meaning that players make their moves according to prior information gained from observing competitors' actions (Ross, 2021). Take the example of firm DM inc., which has to decide whether or not to implement a technology that lowers the carbon intensity of its oil refining process. The first decision point is "A" and each possible action is represented by a line; DM inc. can either implement ("i") or choose the status quo ("SQ").



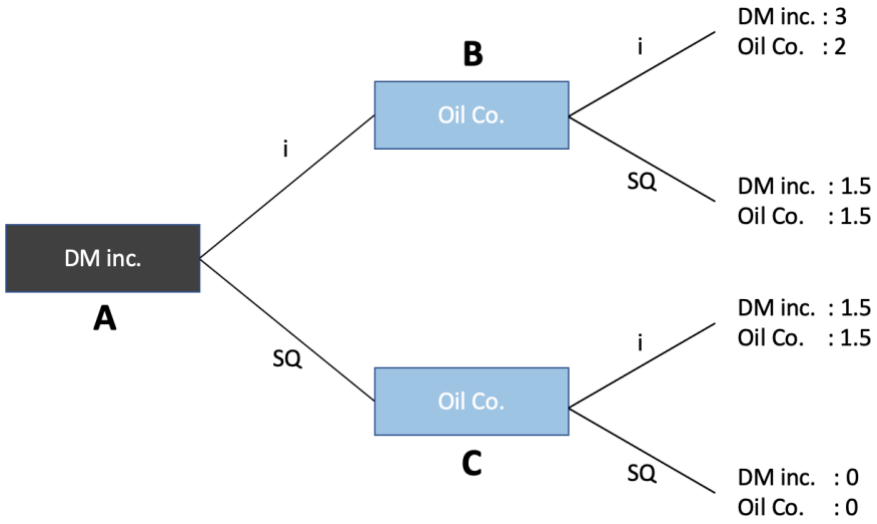
The next move belongs to the firm's competitor, Oil Co. If DM inc. has chosen to implement the new technology, then Oil Co. is at decision point "B" and can decide to follow the decision to implement or can leave its own refinery as is.



The same decision can be found at point "C", where Oil Co. has to react in the case where DM inc.'s decision is to keep the status quo.

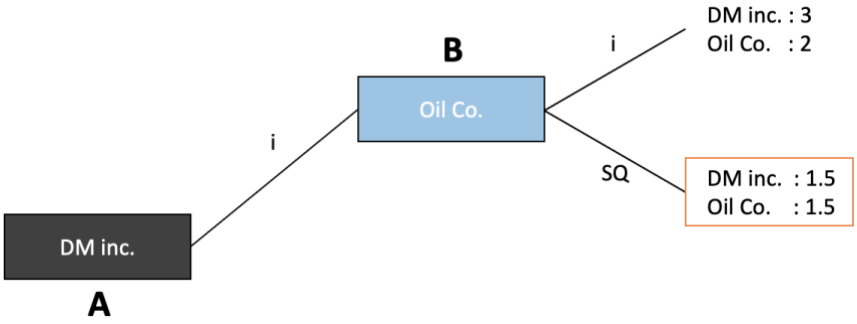


Each of the paths ultimately leads to a payoff:



These can be an actual computation of cash flows (ex: a gain of 40 million USD) or, as is the case here, an estimation of the utility of each outcome to the companies. For example, if DM inc. decides to implement the new technology and that Oil Co. follows (path <i, i>) then DM inc. has an outcome of 3 and Oil Co. of 2. This disparity exists because both receive benefits from the new technology but DM inc. moved first and is able to capitalize on this.

If Oil Co. decides not to follow (path <i, SQ>), the result is different.



DM inc. does get a positive outcome since the new technology allows the company to claim better environmental performance. However Oil Co.'s refinery is not hampered by the new process and this makes the company more productive in terms of volume per hour. In addition, Oil Co. does not have to invest. Let us assume that this leads to an equal outcome of 1.5: both players are better off than if nothing happened, but DM inc. would have had a better outcome if Oil Co. had followed.

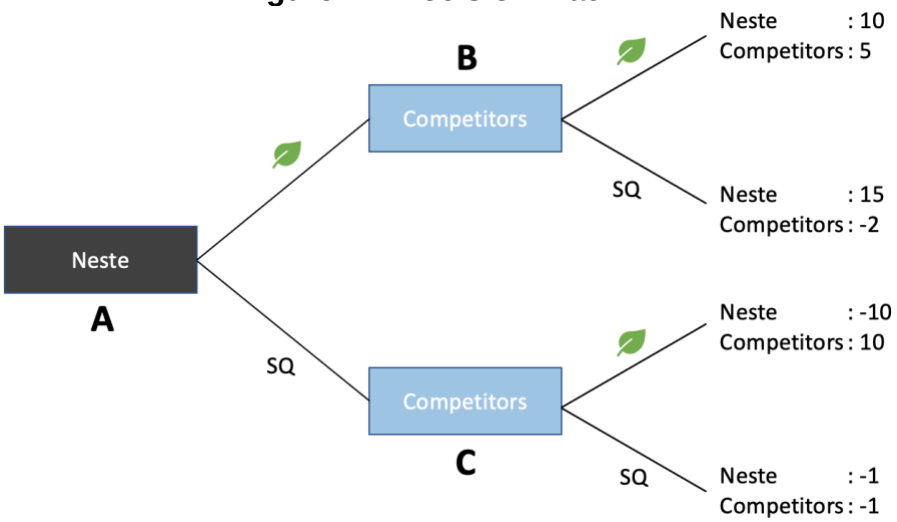
The following scenarios have been set up using these concepts and aim and representing the choice faced by trading companies in various contexts.

4.3.1 Scenario 1: Neste and the first mover advantage

In 2007, Finnish state-controlled crude oil company Neste began refining fats-based renewable diesel after over ten years of research and development (Neste, 2020). The loss-making trend which characterised the initial phase of sales was reversed in 2013, and the segment has been profitable for the firm ever since. This was to a large extent driven by a lack of competitors in serving state-led demand in countries and regions with biomandates (Neste, 2013, p.7).

Here is one way to compute the payoffs from the point of initial decision A, a matrix the company could have drawn prior to committing to selling renewable diesel. "Competitors" refers here to energy companies which have the possibility of entering the market.

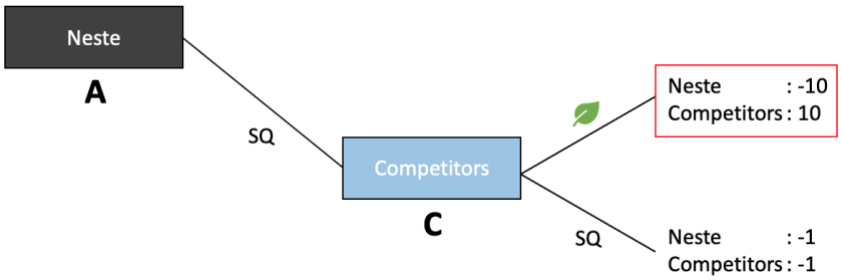
Figure 1 – Decision matrix 1



Neste chose to market biofuels (green leaf path), and for a long time was one of the few to do so: path green for Neste, then Status Quo "SQ" for competitors at decision point B. This led to the situation observed in Finland: Neste got to sell large volumes of renewable diesel to be blended with regular diesel (high payoff for Neste), cutting into the volumes of regular oil companies (negative payoff for competitors in local market).

As of today, the situation is changing, and major players such as Gunvor and Mercuria have taken the green path. This is leading to a lower payoff for Neste (path <green, green>), though still larger than that of competitors thanks to first mover advantages: initial gain from being first to serve a demand, established sourcing and offtake agreements at preferential rates (interview 1, 2023). The arrival of competitors also poses the problem of availability of production inputs, which can be sparse. To mitigate this, Neste has started acquiring suppliers (Coppel, 2023). The cost of having to compete also factors in the payoff.

Whilst this type of visualization can be used to understand market dynamics, it is initially meant to be drawn prior to a decision to determine the best course of action. This is done "in reverse": the company seeks the highest payoff and avoids the worst one, and does so with the assumption that other players will have this same behaviour (Ross, 2021). Here, the worst payoff lies at the end of path <SQ, green> (Neste does not market its renewable diesel but competitors end up doing so), where competitors cash in on the biomandate opportunity and Neste, being a smaller player, directly suffers from it.

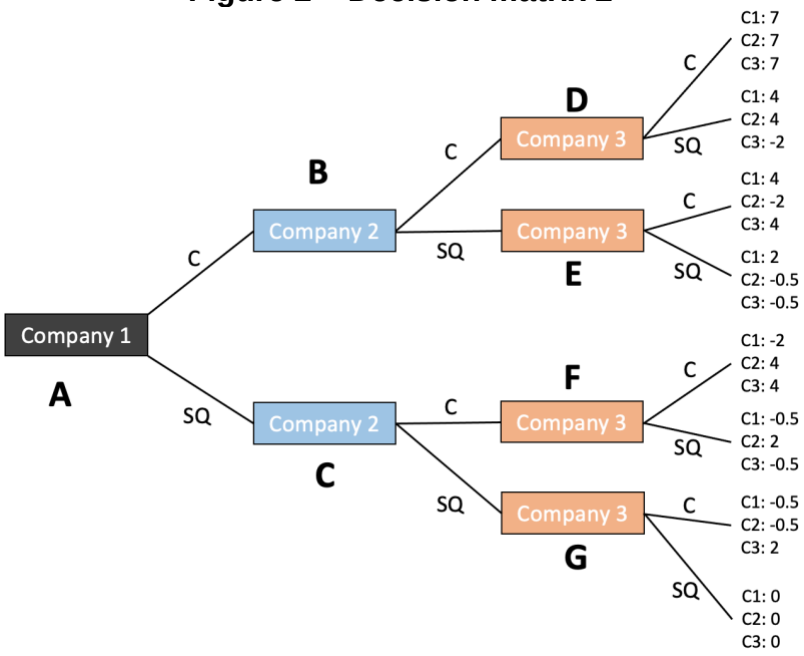


Rationally, Neste knows that if competitors are faced with decision point C, they will choose green. In order to avoid this worst-case scenario, the reasonable strategy for Neste is to choose the green path at point A. The company appears to currently be making a similar choice in the field of renewable aviation fuel, where it is the world's leading provider.

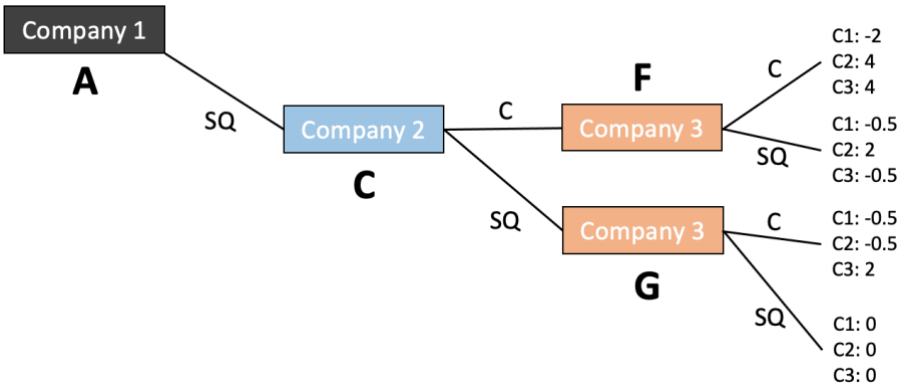
4.3.2 Scenario 2: No-deforestation commitment

In this second scenario, three Swiss-based agricultural companies are coming under increasing pressure to eliminate deforestation from their supply chain. This is costly, but doing so could help the companies prepare for new regulations (e.g., the European Commission's regulation) and provide reputational benefits. The decision matrix can be estimated as follows:

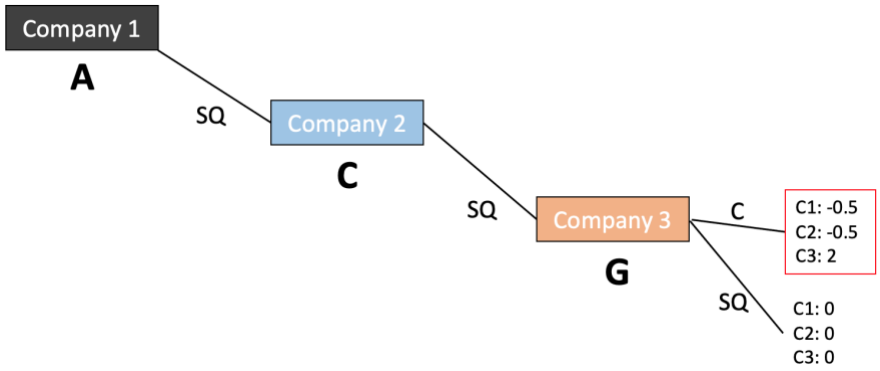
Figure 2 – Decision matrix 2



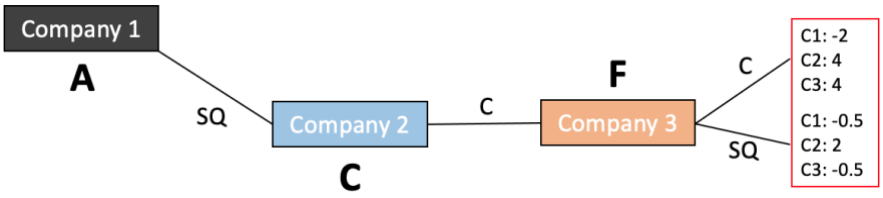
We look at this model through Company 1's perspective. It can either commit to a deforestation-free supply chain in a given timeframe ("C") or can choose the status quo ("SQ"). To understand which is best, Company 1 will go through the paths in reverse. Company 1 choosing the status quo leads to decision point C, where company 2 also must make a decision:



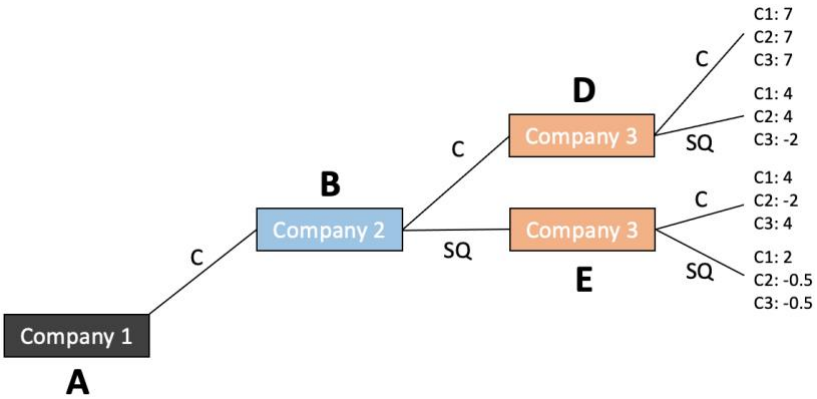
Company 2 will avoid path SQ as this leads to point G, where company 3 has a clear incentive to be the lone good actor and choose to commit. This path <SQ, SQ, C> is Company 2's worst payoff:



It is thus rational for Company 2 to commit. Company 1 understands this and sees that it leads to decision F, which carries the firm's own worst payoffs (either -2 or -0.5):



Knowing this, Company 1 will avoid the status quo altogether and commit. In other words, the commodity trading company understands that if it does not pledge to avoiding deforestation, its competitors eventually will and this is the trader's worst-case scenario. When it commits, Company 1's hope is that many competitors join the initiative. Indeed, contrary to the case of Neste, the more players follow in the same path, the greater the overall outcomes:



If only one company commits, it will get first ("only"?) mover advantages such as sourcing agreements with companies which have themselves committed to using only responsibly sourced ingredients in their products. However, the company is alone in this and has a higher cost base than the rest of the market. If two companies commit, the commitment

is more valuable and those which do not commit start to be threatened. As Almaric and Hauser have pointed to: "gains from defection may [] be lost as a result of an increase in reputation risks in the wake of the setting of new standards" (2005, p.36). If many companies pledge, the commitment is poised to become the norm and this raises payoffs: the cost base is similar for all and reputational and regulatory benefits are seized.

This sequential decision chain of pledges is observable in practice. In November 2018, Bunge committed to making all of its supply chains deforestation-free by 2025 (Bunge, 2018). Cargill echoed this decision four months later with a 2030 deadline (Cargill, 2019), followed by ADM's extension of its existing policy to all supply chains by 2030 (ADM, 2021) and by LDC with a 2025 goal (LDC, 2022).

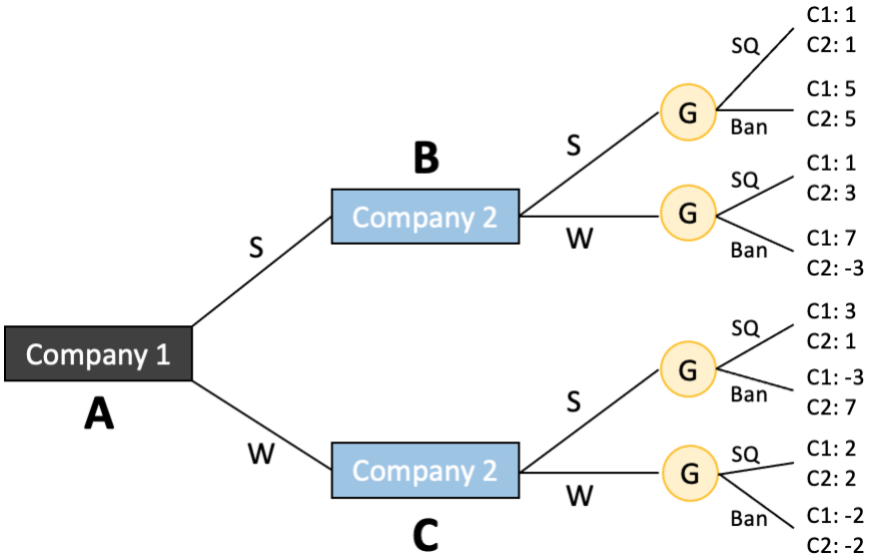
Going further, game theory advances that market signals such as promises which are not accompanied by proof of change or investment can be deceptive since the player making them has no actual obligation to follow through. This is coined as "cheap talk" (Ross, 2021). In this situation players have no way of assessing whether a promise is going to be carried out, and the incentive system presented in the matrix above is not actionable. In their study of game theory's implication for businesses, Brickley and al. propose that companies can avoid this problem by making their commitments more "credible" (2000, p.95).

Ways to achieve this include public statements (increase of potential reputational cost), announcing sourcing and purchasing agreements linked to the commitment (contractual pressure to follow through), or pledging to an industry initiative (see "*Partner up*"). One example of this is Trafigura's recent carbon removal pledge (Trafigura, 2023). In a public statement, it commits to buying a set amount of carbon credits (the equivalent of 50'000 tons of carbon), by a given date (end of 2030) and within the context of its implication in an industry alliance (First Movers Coalition).

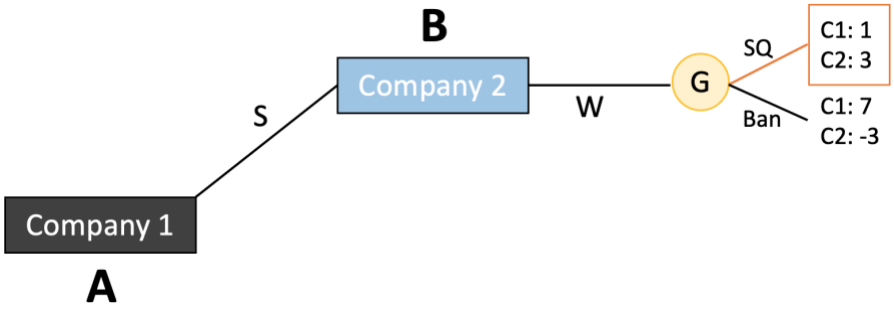
4.3.3 Scenario 3: Regulation

The scenarios this far have modelled environments which are mostly stable. However, many situations can involve an aspect of randomness which further complicates decisions. This is accounted for by introducing a new player, "nature" or its equivalent, which does not have a stake in the players payoffs (Slantchev, 2009, p.3). Here, a typical government is considered as being in this category since it does not compete with commodity traders. In the present matrix, it is represented by the letter "G" and its move can either be to ban a hypothetical unsustainable practice ("Ban") or to keep the status quo ("SQ"). Company 1 and Company 2 know that the ban option is on the table, but do not know when or if it will be voted in; they can stop now ("S") or wait and see ("W"). Other competitors in the market are not shown but assumed.

Figure 3 – Decision matrix 3



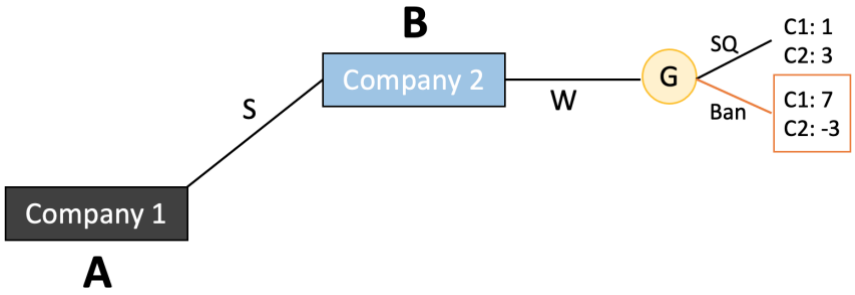
Companies get a payoff of 1 when they stop and the government keeps the status quo, for example when Company 1 stops, Company 2 does not and the law is not passed:



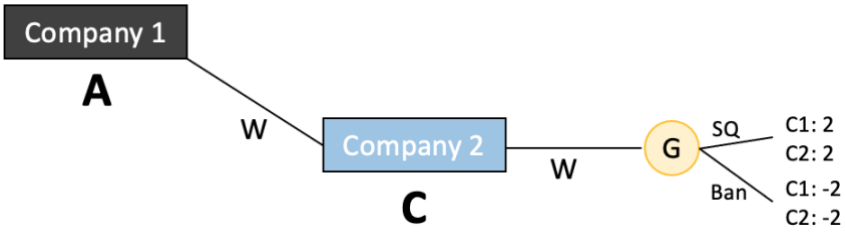
Company 1 has made the bet to stop the unsustainable practice, but is one of the few to have done it. However, one key assumption here is that if a law is being considered at all, there is a likelihood of a similar law appearing in the future if the current version is not approved. Therefore, this is a repeated game and Company 1 gets a positive payoff

from being prepared for a potential upcoming regulation as well as a positive reputational benefit in the present. Company 2 gets its second-best payoff for the whole matrix (3) since it is now pursuing its normal course of business with one less competitor.

If instead the government does enforce a ban, Company 1 has already changed its practice, adapted to obtain margins with a different approach and has a first mover advantage. Company 2 is behind the curve of adoption:



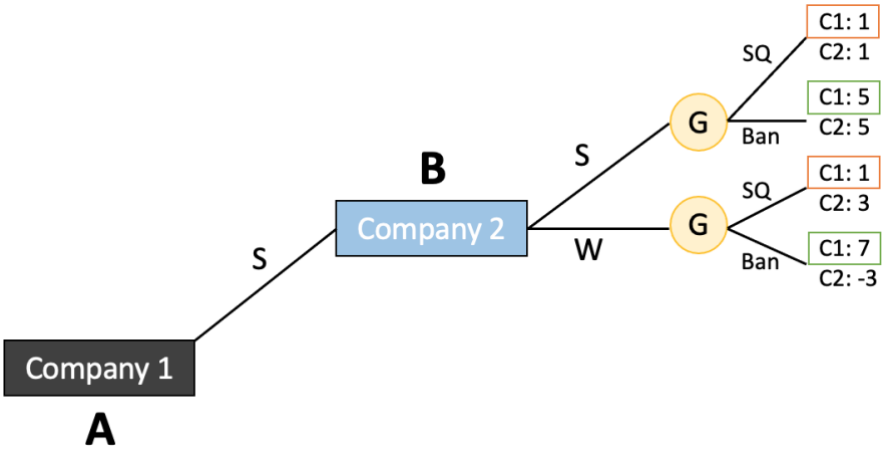
If both companies wait (path <W, W>) they are both similarly affected by a ban or by the status quo (-2 or 2). The gain from waiting and being correct in doing so (<W, W, SQ>) is higher than 1 since companies keep a practice which allows for opportunities (expanded operations, cut in costs).



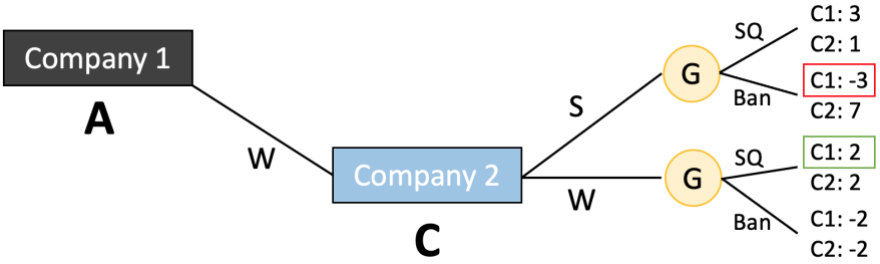
At the other end, if both companies divest (path <S, S>), they get a positive payoff whether the law is voted in (each get 5 from being co-first movers) or not (payoff of 1 as explained above). In either of the cases where the two firms make the same decision (S or W), regulation does not affect the competitive dynamic.

In this structure, Company 1's choice is the following:

Stop now, running the risk of having stopped too soon (<S, W, SQ> or <S, S, SQ>) but allowing the possibility of the seizing of its best outcome (<S, W, Ban>) or its second best (<S, S, Ban>). This is rational if the probability of the law passing is high.



Wait, running the risk of obtaining the worst payoff (<W, S, Ban>), but allowing a potential payoff of 2 (<W, W, SQ>) without changing anything. This is rational if the probability of the law passing is low.



This highlights the importance of a firm's evaluation of risk: the probability that Company 2 attaches to the government's actions will dictate its own decision. Company 1 knows this, but does not know the risk appetite of Company 2. It therefore has to evaluate the probability of a new law *and* the probability of Company 2 matching that assessment. At the core, the problem at hand is one of imperfect information.

According to this set of payoffs, two elements are needed to maximize the level of self-regulation in the industry. First, the state has to communicate strong intent of regulation to increase the probability of the "Ban" event and thus making path "S" the most optimal one. Second, competitors must signal the possibility that they might stop the behaviour so as to make potent the threat of them gaining a first mover advantage and to make the "W" decision riskier.

There are a few elements which nuance the scenario. A government's decision to regulate can be more complex than what is represented here and is typically influenced by the level of cooperation of the targeted industry as well as the associated tax revenues. One strategy that competitors could select is to cooperate in voluntarily raising the overall standard of the trade in a specific aspect so as to reduce the risk of a state-led change (Almaric and Hauser, 2005, p.30).

Then, the scenario is not applicable in the case of a state which commercializes the commodities present on its territory through state-owned enterprises, given that such a government would have a stake in the payoffs. However, this type of matrix translates well to a situation where the random event is instead a lender considering halting finance to certain activities, which is getting increasingly likely in the European context (interview 6, 2023).

5. Discussion - embracing sustainability

Scenarios and the ways in which sustainability issues provide new payoffs are important elements to better understand the type of decision a trading company might face. Once a company has made a decision to include sustainability in its business model, it then needs to formulate a coherent strategy.

In their book "Playing to Win", Lafley and Martin propose that firms can do so by defining a clear aim, choosing a playing field and a way to win, and determining the competencies and resources required (2013). The following section expands on this model by adding an initial step of assessment.

5.1 Strategy creation

5.1.1 Assessment

5.1.1.1 Pressures

As laid out in the first part of this thesis, commodity trading companies are facing increasing pressures to adopt sustainable practices and reduce impact. The initial step in phrasing out the urgency of change is to establish which of these apply to the specific case of the company.

In terms of regulation, this involves identifying the current and potential legal burden in the country of incorporation and areas of operations. This type of analysis is the norm for major trading companies. For example, the response of Cargill to a disclosure request classified the risk of emergent regulation as "relevant and always included" in climate risk mapping protocols (CDP, 2022, p.7). Establishing the probability of one's lenders becoming stricter in their requirements is equally important. This might require dialogue with said partners and the seeking of assurances in exchange for commitments. The risk of a lack of funds due to poor environmental performance is particularly relevant for smaller and mid-sized trading firms which are more likely to be entirely reliant on lenders to fund operations.

Reputational risk varies greatly between companies due to size, practices and exposure in negatively perceived commodities. These pressures can come from upstream partners (e.g., farmers), supporting stakeholders, downstream customers or the public and may be harder to assess. An additional force to consider is the way climate deregulation might affect physical operations and the origination of commodities (interview 5, 2023). For instance, a metals trader could investigate the processes of the

mines they source from and discover poor water management. This may lead to serious delays and additional costs in a situation of warmer temperatures and draughts.

5.1.1.2 Business environment

Having placed an estimate on the sustainability pressures' relevance and importance for the business, the company may then map out its business environment. A fair assumption is that most firms already have done this to some extent, and the only required step might be to apply an additional filter on the existing understanding.

Beginning with industry segmentation, the company can assess the impact of environmental considerations on the value of each segment. For example in the energy sector, the benefit of expanding the coal business might be severely reduced by considerations of reputation. The green momentum has also led to new segments being considered, such as biofuels, carbon trading and carbon neutral commodities.

Current and future customer demand should also be assessed to see if the trader's product offering can be adapted. Here, the aim is to figure out what the company's existing and potential downstream partners value. For instance, most of Singapore's electricity is generated using liquefied natural gas and the state recently issued a tender for this commodity with one of the selection metrics being low carbon intensity. When considering answering a new type of demand, a company also has to establish how it fares in relation to its competitors. In the context of the example, this would mean determining the competitiveness of its cost structure in making a bid for the LNG contract.

5.1.2 Decision 1: ambition

Having made an initial assessment, the firm can then move on to decide what it wants to achieve within this new context. A good starting point is to use the benefits of sustainability as set out in the corresponding section as broad categories: financing, differentiation and reputation.

Depending on its need for external finance and the related risks assessed previously, a firm can lay out what is needed to reinforce its partnership with lenders. If increased transparency and a commitment to emissions reduction is valued by these stakeholders, the firm now has a sensible point aim to. The timing aspect should be considered if one estimates that conditions for green borrowing will become stricter in the future.

A trader may also seek to capture opportunities such as establishing a desk for a growing market, adapting the commodities they deal with to grow the demand base or being a

first mover in new technologies. A precise aim can be placed, such as with a firm looking to become a cost-leader in carbon offset crude oil cargos.

As established, reputational benefits can be valuable along the entire value chain. Whilst a firm may have little exposure to the public, reaching "sustainable" status in the eyes of direct customers and lenders could be of worth.

As a general rule, the fast-moving context of the industry makes the setting of precise goals beyond 5 years less relevant (interview 6, 2023). In addition, the level of ambition can vary: it might not be relevant for a mid-sized trading operation to create a carbon business at scale, but becoming one of the very few smaller players which embraces transparency through a sustainability report can make sense.

5.1.3 Decision 2: where?

The segmentation carried out in the assessment phase should have yielded distinct business lines which the company can now choose to compete in. The aim that has been selected informs this decision. For example, a company seeking to develop its biofuel activity could start by targeting countries with strong biomandates on fuels (e.g., RED II mandate in Europe).

5.1.4 Decision 3: how?

The next choice is to decide the way in which the aim will be achieved within the relevant segment, be it a style of play (e.g., "*Partner up*", "*Fireworks*") or a specific approach (See "Proposed solutions and potential opportunities"). This phase is also the opportunity to establish practical steps. If a trading company has decided to reduce the emissions intensity of its cargos in order to be able to market lower carbon commodities, a probable first move is to set a baseline for action by reviewing the environmental performance of its upstream partners.

5.1.5 Decision 4: resources and capabilities

The firm can then assess the resources and capabilities required to achieve the aim in this manner and take inventory of what needs to be acquired. For example, an agricultural company which wants to sell deforestation-free commodities to its European customers may need to invest in tracking software which allows to monitor producer compliance to agreements (interview 5, 2023). In this phase, the potential for partnerships with specialized companies, competitors and other industry partners should be considered.

5.2 Factors at play

A commodity trading company's ability to embrace sustainability and the type of strategy it might formulate is dependent on a variety of factors.

5.2.1 Country

The country from which operations are conducted can have a large impact on firms' decision-making through the regulatory environment, state-led incentives and the availability of services. This is here approached within the context of Switzerland.

Swiss-based trading companies face little regulatory pressure from their country of establishment as it relates to environmental performance. As explored in the third scenario, this makes keeping a form of status quo the most rational choice for companies. The indirect legal pressure applied on traders through their clients in the European Union does nuance the situation (interview 6, 2023). Traders in Switzerland are likely to be increasingly keen to propose sustainable solutions to serve this market.

The Swiss government does not incentivize sustainability through any significant tax-based or investment scheme. One key point raised by many of the interviewees is that uncertainty tends to lend to a posture of waiting in an industry which can adapt quickly. The assurances that a state is willing to provide through regulation and incitement can help traders make the move to new commodities. One strong example of what is achievable with greater involvement is the case of Finland's biomandate on road fuels, which was the determining factor in making Neste's biofuel business profitable (Neste, 2013, p.7).

Another important factor is the degree of involvement of a country's financial sector in environmental issues. Lenders within Switzerland are becoming more and more concerned with ESG aspects, and this is likely to develop a significant momentum towards higher standards of conduct and increased environmental action.

5.2.2 Commodity

The type of natural resources that a trading company deals in partly dictates the strategy it will opt for. As highlighted in table 2, energy trading companies are significantly invested in seeking out new types of commodities to broaden their business model. Agricultural companies tend to invest less outside of the scope of technology and internal efficiency. This may stem from the fact that the core business offer of agricultural traders is not perceived negatively by the public.

The levers of action that are available are also different depending on the commodity: grains and metals value chains can have industrial characteristics which make them prime candidates for efficiency improvements. Oil products might contrast in that regard, as the potential for creating differentiated goods may lead to an approach of "blending in" greenness (interview 8, 2023).

5.2.3 Demand

The willingness of consumers to pay a green premium for certain products positively impacts the viability of additional sustainable measures along the supply chain. If it is low, the trader has little leeway to implement changes unless the action can be communicated efficiently so as to reap reputational benefits. Then, direct customers' ability to enter into off-take agreements can help reduce the risk of investment into sustainable practices and new commodities (WEF, 2023, p.16). Finally, the presence of stricter sourcing requirements (e.g., only fully offset cargos are accepted) can help traders justify more consequential strategies (interview 3, 2023).

5.2.4 Type of company

A larger trading firm may be able to achieve much faster at-scale adaptation to new commodities than smaller traders. In addition, companies are not uniformly subject to the same pressures. For example, trading operations which are part of a larger structure (e.g., banks or fully integrated companies) have a different set of incentives than independent traders who might be more reliant on external financing.

One of the major barriers to entry in the production of new commodities is the high level of required capital investment, and firms which already have assets may thus be uniquely positioned to switch to new commodities. In addition to the classical example of crude oil refineries being repurposed to produce biofuels, one can witness this dynamic by considering Glencore's projected conversion of a large metals processing asset into a battery recycling plant (Glencore, 2023).

5.2.5 Timing

The level of maturity of a new market impacts the capacity of firms to enter it in accordance with their risk policy. In the case of commodities such as steel or electricity, the current cost premium between green and traditional solutions is predicted to get lower in the next few years due to economies of scale, a growing availability of cleaner power, state subsidies and innovation (WEF, 2023, p.5-6). The rate of new entrants will increase as these changes take place.

In addition, players tend to act in informal coordination with each other and moving faster than competitors might be unnecessarily risky. As one interviewee expressed: "I do not think that the advantages are enough today to sustain a big push towards being a lot more sustainable than peers" (interview 6, 2023). In cases where technological advancement and demand formation are uncertain or slow, involvement from companies may remain low except for those pursuing a first mover strategy.

6. Concluding remarks

This thesis was structured to answer the following research questions:

How can Swiss commodity trading companies gain a competitive advantage by embracing calls for industry change regarding sustainability?

To do so, two hypotheses were to be confirmed. The first is that commodity trading companies in Switzerland are facing growing pressures to be reduce their impact and that this is prompting adaptations in their business models and activities.

This work has highlighted that four main forces are indeed behind a form of push - regulatory, financial, commercial, public - and that their impact and degree of relevance varies. In virtually all of the interviews that were conducted, the heightened expectations of lenders was pointed to as being of genuine concern for traders in the context of Switzerland and the European Union. Regulation appears to be less pressing at the present time, but international commitments to climate change action are expected to lead to a stronger body of laws in the near future. Commercial partners are shown to have a growing demand for sustainable products to fulfil their own requirements, though this is considered as an opportunity rather than a threat. Public pressure is most relevant for higher profile companies, and is best understood as being indirectly applied through lenders which do have significant reputational exposure.

The actions of companies in response to calls for sustainability depend on their visibility to the public, reliance on financing, location and involvement in certain commodities. Serious levels of engagement and investment by major trading companies were highlighted, but this is likely not representative of the industry as whole. These elements allow for the first hypothesis to be to partially confirmed.

The second hypothesis is that the tension between what is expected of traders and their actions can be eased productively by considering the situation as an opportunity. Part of the answer is given through the exploration of a set of solutions that can be implemented by trading firms followed by a list of the existing drivers which incentivize companies to embrace sustainability. The potential for competitive advantage is shown to be present. Three forms are identified: privileged access to financing, potential for differentiation and reputational benefits. These elements allow for the second hypothesis to be confirmed.

The last step was to establish the way in which companies can seize this competitive advantage. A strategic framework is proposed as a starting point. Its practical application

depends on various factors: country of operations, commodity of choice, level and composition of demand, type of company and timing.

6.1 Additional findings

Shifts in the business and regulatory environment call for adaptation by companies, and the thesis presents some of the approaches which are likely to be witnessed in the future: early adoption of new commodities, specialization in specific markets, forming of partnerships, sustained communication and inaction.

The use of game theory introduces higher visibility to outcomes which are sensed but not formally considered. Scenario n°1 underscores that first mover strategies may allow for outsized outcomes, but this dynamic gets weaker as new entrants come in. In contrast, scenario n°2 shows that higher standards of conduct grow in their utility to a company when many competitors follow. The credibility of commitments made by firms is introduced as a key component required to reduce uncertainty and encourage this type of momentum towards sustainability.

Scenario n°3 puts forth that when companies consider consequential events such as a new regulation or a cut in financing, they must estimate both the probability of the event and of competitors sharing their assessment. Since this might not be feasible, firms tend to keep the status quo unless moved by strong certainty. The proposed solution to this situation is for the state to provide additional assurances that it will regulate certain practices and for competitors to make binding commitments.

6.2 Recommendations

The outcomes of the research process provide the following recommendations. Commodity trading companies based in Switzerland may:

1) Conduct a thorough assessment of sustainability-linked risks on the business: regulatory, financial, commercial, reputational, climate-related.

2) Define a clear and relevant strategic framework to address these risks and capitalize on the potential to be an early mover.

3) If action is not yet pragmatic, make commitments to sustainability so as to align internal objectives with stated aims, seize reputational benefits and reduce reputational and regulatory risks.

In this, concepts of game theory can be useful in representing the decisions at hand. Firms are in a unique position to define what they consider as valuable and to set up meaningful payoff structures.

6.3 Limitations and future research

Although the entire Swiss commodity trading industry is within the scope of analysis of this thesis, small and mid-sized companies are somewhat underrepresented in various aspects due to a lack of access to these firms. Further research could focus on these players to develop a more precise understanding of their incentive structure and challenges.

Many more scenarios illustrating potential decision situations could be devised. The use of mathematical (as opposed to schematic) game theory may allow for more accurate payoff structures.

Insights by interviewees do not entirely bridge the gap of understanding with the external perspective that is the researcher's. Observation of the practical costs and benefits of a sustainability strategy would be of interest. Overall, a similar research process could also be relevant for firms operating from areas with different environmental considerations such as commodity traders based in Singapore.

6.4 Conclusion

The commodity trading industry is essential to the Swiss economy and to the trade of goods worldwide. It bears key responsibilities in the current environmental situation, and is likewise placed at a pivotal point to effect change. In the context of Europe and Switzerland, various pressures are applied on traders and this has started to prompt momentum towards increased sustainability. Whilst many solutions are being implemented, the rate of buy-in within the trade is still low due to uncertainty and a demand which asks for its ever growing needs to be met. This thesis has made the case that those which have taken inventory of the current opportunities and work towards a positive impact may have the chance to gain a truly sustainable competitive advantage.

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7. Appendix

7.1 Appendix 1: Interview n°1

07.03.2023 - Interview with a director in the commodities segment of a major financial institution.

So to start, how does sustainability affect day-to-day operations? do you have a framework to look at certain trades? If you enter into a partnership with an oil provider, what's the process to assess if it is within the company's guidelines?

There's a company-wide policy on decarbonization, on energy transition, on net-zero. And of course we're part of a lot of initiatives on that side, like [program name] is a good one because that's about renewable electricity for all of our businesses. So you have a business operational sustainability. And then you have the trading side. The trading side is more dictated by what the national rules are and the international rules. And at the moment, there aren't a huge number of international rules on what can or can't be traded.

What's starting to happen is companies are becoming more aware of what we're doing, but we haven't really seen that creep into the trading of raw commodities. We have seen new markets established such as the voluntary carbon credit market. And of course there is the regulated markets like the European ETS market. But that's more on the principle of the polluter pays, if you see what I mean. So whoever's using that commodity at the end is the one paying. Going up and down the supply chain, we're starting to see changes, but we haven't seen changes yet.

And that's for CO2. And I think it's worth thinking about, if you look at some of the other regulations - say around sulphur - we have seen that change. We have seen a desulphurization of road fuels, we've seen lead come out of road fuels, we've seen all sorts of environmental improvements to fuels. We just haven't addressed CO2, and I think the reason for that is that you can see acid rain, or you can see the impact of acid rain on the forest. So, that's a sulphur thing. You can see the impact of lead on people's health. You know it's not a good thing. But CO2 is a slightly longer discussion because it's a sort of indirect impact. There's this causality of greenhouse, and gases and the warming of the environment, but it's not something that people appreciate necessarily as a cause-and-effect day to day. So now we're, we are getting to, not to the end stages, but a more advanced environmental understanding, if that makes sense.

With the sulphur issue, what was the driving factor for it changing? was there an institution that launched that? is it companies that followed guidelines association? where did the impetus come from for change?

I think it's, it's always good to look at history and see how things changed previously. And I think the drivers for sulphur were in part the European Union. And obviously you had some countries which were badly affected, like Scandinavia was badly affected by acid rain. And so Europe introduced Euro regulations, which really was about engine technology and desulphurization of the fuels. And then we've seen more of a global lobby, I guess probably driven by the UN more than anybody, on de-sulphurising of fuels. But it's not really been, there's not been a global holistic approach. It's been country by country. And so you still see different qualities of fuels in different countries. And different specifications - Europe has quite tight specifications. What's good to see is China has actually tightened up as well. So we've managed to get sulphur out of most fuels.

And in the shipping industry there was something called IMO 2020. Which came in on the 1st of January 2020. That was a big decrease in the sulphur that the ships were allowed to burn. That was driven by the International Maritime Organization, IMO, which is a UN body. So there you had a more coordinated approach, but that's because shipping doesn't really belong to any individual country. So countries can control what shipping does in their territorial waters, but obviously when you are sailing across the ocean you need a more global regulation. And we see that in the airline industry as well with ATA. But to a large extent, we've managed to get sulphur out of fuels, which is a great story. And now we need to move on to CO2.

I see. Looking at the incentives. Do you feel that for commodity traders - and I'm looking especially from those operating from Switzerland within those regulations and that business environment - are there actual incentives to be kind of best in class or to perform well environmentally? Or is mostly for investors and maybe to obtain financing? Because since it's not really under the focus of the public, there's much less incentives to perform environmentally than let's say for Nestlé or other major companies.

I would argue that it is under the focus of the public. But we are currently at a situation where, obviously, there's a benefit to companies in terms of their ESG policies to decarbonize. And that benefit at the moment is large. We're kind of at a tipping point. I think that benefit at the moment is largely still image, but you do attract certain classes of investors that say "I will only invest in green companies". And so some investors have thresholds in terms of which companies they will invest in.

There are starting to be products such as green bonds and green loans, where you pay less interest if you decarbonize or you meet certain environmental thresholds. So those are the incentives for the company. You get access to more capital. Your shareholders generally are, are happier - although there is a pressure with returns and that's something that's being discussed I think in the media at the moment. And potentially you do get access to cheaper forms of capital. Now on the other side, you are starting to see things like the Poseidon principle, where lenders say they won't do certain types of business. And you are starting to see activist investors, saying "okay, we don't want to invest in these types of companies and we will actively try and change them". So that again is from a company perspective.

Now when you go to fuels, you are in a situation where there's a regulation as in the minimum quality of the fuel. But you're starting to see people willing to pay more for green products. And now that is absolutely key. And in a way what we all do as individuals is we outsource being green to the government. I think if you ask people, "do you want to be green?", the majority of people would say yes. "Do you want to pay more for being green?" that majority gets a bit lower. And then if you start quoting numbers, you know, "would you be willing to pay two times as much for flying on a holiday or three times as much?" those numbers go down and down. And so what people do and, and what we do as a society is we kind of push being green onto the government.

And this kind of relates back to Switzerland, in a minute, but there are some cases where people are willing to pay more for green products. And we already see that in foods where people pay more for organic food and they don't pay a lot more, but they pay a bit more. And we're starting to see that some products like high-end fashion. Where people will pay because they're already spending a lot of money. Making it green for maybe five dollars more or something is quite a small marginal cost and people are willing to pay that.

And by having trainers which got shipped with zero CO2 there is an increasing willingness for people to pay slightly more for these products. But that has a dramatic impact because that means that the shipping of those trainers and the shipping of those clothes, for example - furniture whatever it is - is able to pay for the greener fuel.

So the cost is passed down to the customer then?

Yes.

And do you reckon it could pass down to another area of the value chain? or is the customer always the most flexible?

Well, if a customer is willing to pay it makes everything easier. And really for high value goods, that works very well. The problem becomes low value goods, because the customer would have to pay a lot more for low value goods to make them green effectively. And we see this in shipping: there are customers who want to pay more for green goods and so the shippers provide those services, they go and buy the greener fuels. And those fuels, in some cases, are two or three times more expensive than the conventional fuel. So it's a substantial cost difference, but the impact of that is that people are incentivized to be first movers and they're incentivized to go and develop the supply chain for these green fuels.

So you've got government regulation, which is the minimum, and then you've got this "what extra value can I go and capture". And we've seen companies do very well by focusing on these green things, be that greener biofuels or methanol for shipping. But it's not the whole industry. It's certain segments of the industry specialising.

Now, you can divide the world into three parts. One is Europe, which is quite environmentally sensitive and has a lot of policies which are much more holistic around the Environmental side, but also taxes a lot. So Europe's approach to being green is "if you're not, we will tax you". That's a way of raising money. In the US we have, I would argue, a less holistic approach to being green but they subsidize. And so you have this inflation reduction act which is billions and billions of dollars the government has provided. And that is going into industry and it's making industry more competitive because now they're going to go and develop green hydrogen. They're going to develop battery technologies. But the government is funding then. And then the rest of the part of the world is, in a way, the poorer parts. And you can look at China as an example. and China's not especially poor anymore, but there's higher social pressure. And you've got these social pressures you give up some of that environmental wishlist? Your hierarchy of needs is "I've got to feed my people and then they've got to be safe. And then we'll try and be green afterwards". And the perfect example of that in Europe of course it's Germany, which now burns coal for electricity because it doesn't want people to freeze. Now going back to China, they have a choice. Do they want to go green? Well, they want clear skies, but that doesn't necessarily mean CO2.

A large reason why they're looking at green in China is that they want energy security and independence. And so having a solar panel that produces your electricity is lot better from a country security point of view than importing cargos of oil. And so it's almost being green by accident, you can have green policies but they're really driven by other needs. So I think you've got the US where you've got the government giving you money for doing good things, you've got Europe where you get taxed for doing bad things, and then you've got the general commercial advantage of becoming green.

So coming down to Switzerland, I think the thing you have to look at is why do trading companies base themselves in a country? And it comes down to: you want the country to have good relationships with the rest of the world, you want to be able to trade with as many people as possible and you want a relatively good economic regime - so you need other companies, specialists - not crazy high taxes, the ability pulling resources when you need them.

And then the third reason why companies base themselves in a specific country they want strong law. So when we have commercial disputes, we want a regulation mechanism that we can agree on and which will settle disputes. Because if you're trading, you are always going to have disputes and you always think you're right. So you want a strong court where you can take your complaints and resolve them. And that's why Switzerland, why Singapore, have become trading hubs, because pretty safe. They're friends with everyone. They've got strong economic and industrial relationships, and you've got this strong rule of law as well which is really important.

So in Switzerland we're in the middle of Europe, and Europe is this huge demand centre for being green. And Switzerland itself is not doing badly because it has a lot of hydro, trains, it's got a lot of positives from the environmental side. But it's really a question of how the government manages that carrot and the stick, the carrot being the incentives as we have in the U.S. And you do need incentives because to kickstart things you do have to put money in.

And typically it's an investment. Companies will make some investment, but they want some kind of guarantee that things will be okay. And then you also need the stick, which is saying to companies "we have a minimum standard behaviour". And that can be either you as an industry self-regulate, or you have an external body that regulates it, or the government regulates you and it says "this is the standard behaviour that we expect, which is the minimum". Now, why do you need incentives?

So typically we see this in offshore wind development. And so the way that countries subsidize it is they say, "if you build a wind farm I will help with the permits and I will guarantee you a price for the offtake over 10 or 20 years". And then this makes an economic decision for the company "I can build a wind farm for this much, and I get this guarantee from the government that if I produce that electricity, they'll pay me back". And that enables the construction. Then what happens, of course, the price of that guarantee goes down and down. It gets shorter over time, gets more competitive. But you've kickstarted that industry.

And so government initiatives, and we've seen a few in Switzerland, there's been a good one on road transport with hydrogen; the Denner lorries, the Migros lorries. And those are good examples. And it's a subsidy by the country but it's also a benefit to the country. Because we build up the technology, we show the world that we're doing the right thing. And then hopefully if you've already got hydrogen refuelling centres, then other people can use them and we can leverage on that. Eventually someone will go "well commercially I'm going to put a hydrogen refuelling station in Geneva" for example. Because there's value to it now, there's this fleet. So it helps a lot if you have some kind of government funding or regulation catalyst.

So would a hybrid system work well? Maybe you kickstart it with government investment in the American fashion as you mentioned, and then after a 10-year it period becomes ingrained into low and then the standard is just higher. So you raise the standard by paying for it.

I think so. And I think that's what happens pretty much in every other industry. If you look at cars, we subsidize EVs through zero tax or through tax rebates, and yet if a car is too bad we say it can't be on the road. So you do have this hybrid solution, right? You're saying "this is the direction I want you to go in, I want you to go through to the EV side". And initially it's quite blatant: "I'll give you money or won't tax you for an EV, and yet if you have a really dirty 40-year-old diesel you can't drive out on the roads". So you have this kind of direction. And gradually there are enough EVs. What's the problem? The problem is the charging infrastructure. And so now we're going to invest in the charging infrastructure. And that will make buying an EV a better experience. You got to remember that people adjust when the technology is better, not necessarily cause it's cheaper.

So we used to have audio tapes for music, right? they're making a comeback but that was a terrible technology. It would mess up, you'd have tape everywhere you could, if you wanted to skip to the next track you had to fast forward, et cetera. And that got replaced by CDs. Now CDs at the time, I remember it well, were four times as expensive

but you got much better quality. You got perfect sound effectively, and you got the ability to skip tracks. It was a much stronger medium, it didn't get damaged as hard, it was easier to store. So people started moving to CD. And there was a point where we were then making so many CDs and not making that many tapes that CDs got cheaper and cheaper and eventually the shops stopped selling tapes. But people didn't change to CDs because it was cheaper, they changed because it was a better technology. And I think we will see that with EVs and that's because EVs have fewer moving parts and so they don't break. And of course with the EVs you get better acceleration, you get the ability to regenerate electricity through braking. So it's a better technology for certain people if you're commuting to work.

And they were more expensive, now they're getting cheaper. And you'll get to a point where - and we're not that far from this point - an EV will be cheaper than a petrol diesel car. Not because of government subsidy, just because we don't have to put all that technology into the engine and battery technology is getting cheaper and cheaper.

So within commodities then, well the commodity is the commodity, right? steel is going to remain the same composition, oil is oil.

Yes.

And so the technology aspect will be kind of the green commodity and label and making it so that certain companies only buy from that. And so it's not like the product's going to work differently, but it would be sort of a set apart product.

It's an interesting point on the commodity side. The technology's really helped us extract oil. And now we're able to get oil out of places and environments we would never have been able to get oil out of before. And now they're able to drill much more accurately. They're able to use technologies like fracking, which is controversial but it's given us access to a lot more oil, which makes it cheaper. And it allows us to choose what types of oil we go for. We've now looked at a lot of that processing of the oil and so they've reduced the CO2 that comes out of that processing. We've improved the quality of that oil, so we've gone from very high sulphur oil to better quality oil. But the supply chain, you're right, hasn't really changed. We've just made it much, much more efficient. But that technology means it costs less and the quality of the oil that you're burning is much, much better. It's not got lead in it, it's not got sulphur in it, all these nasty chemicals. And the engine technology's got a lot better in the cars with filters and catalytic converters. So you get to a point where the improvements are, are smaller and smaller but technology has absolutely helped us improve.

If you look at the history of fuels and what we were burning 20, 30 years ago, we were burning coal in the house - still happens obviously across Europe. But increasingly we are moving to electrification. And that means that the electricity has been coming from the grid. Now how green is the grid is one question, but we can put hydro into the grid, we can put wind into the grid, all of these things.

And so oil is now basically used for two things. It's used for transport and it's used for plastics. As much as we hate plastics - mostly because the one thing you can't do with plastics is put them into the ocean but it happens a lot - they have given us access to much better building materials that make cars lighter, which means they're more environmentally efficient. So it's very difficult to go back on plastics. Now if you look at the transport side, the reason why oil is so successful is it's relatively easy to move around. We've got very good technology in terms of burning, producing, refining it now, and it's got a very high energy density. And so if you look at aircraft for example, it's very difficult to have a hydrogen or electricity powered aircraft. Especially when you do long haul over a thousand kilometres. And so that's where replacing oil is going to be a real challenge. And that's also where we are looking at biofuels and sustainable aircraft fuel.

So what we're doing there is we are generating oil-like fuels, but trying to use the best possible feed stocks, trying to absorb CO2 from the atmosphere. But that's very expensive, so how do we get that cost down? And this is where the technology comes in... but technology is fantastic. I mean, if we're incentivized to develop it improves dramatically. And we see this in everything. Computers being one thing, but batteries being the current example, solar panels being the current example, those things have improved dramatically over the years and there's no reason why the technology to make biofuels or to capture carbon from the atmosphere are not going to improve dramatically as well.

Moving on, there's this dynamic I want to have your feedback on. It feels like, uh, if there's more regulations, let's say within the next 15 years as countries start approaching their 2050 commitments. And there's going to be more and more pressure to regulate trading companies and maybe more pressure from the public as well. Within that it feels like the major companies are going to have enough of war chest to sustain that. But then all of the mid-size trader are probably going to have difficulties adapting - so either going to be acquired or finish operations. And there may be some niche players within very specific markets that are going to be able to survive because of their capabilities. So I was wondering if I'm completely

off base or if it makes sense. And if it does, how could regulations avoid this kind of consolidation?

So I think it's a really valid statement, but there's a few things to highlight or disagree with. One is the niche players, and this is where the government subsidies should go because that's about developing new technologies. You've only got to look at the biggest companies today, like Google and Apple. These were small companies to start with and they invested in technology and then they got bigger and bigger. And this is the key message here I want to kind of impart is that we've lived in a world of oil for a hundred years. And we've built up some very big companies, but now we are going to move away from that oil world, and that means that new players can come in. It's a massive disruption to the industry. So do not be surprised when small companies disrupt the market. And they'll find some technology angle, maybe they'll get a bit of government subsidy, and they'll win. Now the big players, yes they have a war chest, but these are companies which have become experts in the production, the refining, the distribution of oil, and they do that really well. And you want them to do it really well because if something goes wrong, you want to be able to call on the resources of these big companies.

And the thing that people forget is that you don't want small companies doing oil, in the sense that if there's a problem they're not able to respond. You want the expertise but the problem is the market for them is now changing dramatically. I mentioned Google and I mentioned Apple, but you can look at an IBM, which went off in one direction, was going to be the biggest company in the world, and then people started having computers at home and not in the office and it all kind of changed and they found a new path now. But it's different to the one that they would've envisioned a while ago. So these big companies find it really difficult to adapt and I'll give you an example.

Used cooking oil, collected from restaurants. That's one of our biofuels that we're going for. Now, that business model is really difficult for a big oil major to do. Going around to restaurants and collecting oil, it's not what they do. They're used to drilling billion-dollar oil fields and processing them, and so they find it really hard to adapt to that business model. And then the other thing they find it really hard to adapt to is the different supply chains. We've talked about EVs. You can charge at home, you can charge at a cinema, you can charge at a restaurant, you can charge them at a car park. You don't need a petrol station anymore. You don't need to truck highly flammable liquids from a refinery to a petrol station. And so that whole model is going to change. We'll probably still have some form of petrol or supercharging stations on motorway. But that whole model for

them is getting disrupted. And so they absolutely have a war chest and they're dominant in that space at the moment but we're going through one of the biggest changes in energy transition that we're ever going to see. Look at Kodak, right? They used to make film cameras, they invented the digital camera and it killed them. So we are going through these big changes and I wouldn't worry too much about the war chest.

I mean, the best thing about war chests is that these companies will invest in green technologies because they have to. And what these companies are really good at is big projects where the payoffs are over 20 years and they feel comfortable with that and the countries they're in feel comfortable because they know they've got the technological expertise. But the shift is a big one for them. You'll get these niche companies and specialists per country. So people that know the local market, who know the restaurants and pick up the used cooking oil.

So you end up with your three types of players. One is the niche tech specialists, the Teslas. The second are the local players who know how it works in their region, have the contacts or have the local language expertise. And the third are the "we are gonna do it big and because we're doing it big it'll be cheaper on a per barrel basis". So you see what I'm saying, I kind of disagree that you'll get this consolidation. And we have seen a lot of consolidation because the big companies have gone "okay, well I need to go green so I'll buy a wind farm". But it doesn't integrate well. And what we actually see is, again, much like tech. A Facebook will go and buy a tech team, they'll buy the technology, and in two years' time everybody's left. Because they don't want to work for a Facebook, they want to work for a small tech team developing stuff. And so this is what we're seeing a lot with the big players; they're buying assets, with the people, and then the people leave and go and develop new assets. The big energy companies are not necessarily good at running some of these assets, so it's an interesting market.

And so there's a space for someone who's developing capabilities within that market.

Yes, a hundred percent. And I think if you're going to subsidize anyone, that's who you subsidize. Because you don't need to write big check and you'll get these mini projects and some of them become really interesting.

Your ESG report mentions climate change within risk management. I was wondering if you saw the effects of that?

I think we are quite an innovative company and what is good for us is change. And so the worst possible thing is for us to stick with the old fuels and nothing changes. But

we're now in this energy transition phase and there's a huge amount of opportunity. What we've really tried to focus on is not just being better, but also making use of those opportunities. And so what I think is increasingly happening is people are thinking about "how can we do this better, but also what's the opportunity for us?"

But all trading houses are thinking, "what's the opportunity?" And some of them have got it and some haven't yet. The ones that have got it are thinking "if I produce the biofuels, I can sell them for two times as much". And a great example is Neste. They made a decision about 10 years ago to invest heavily in biofuels. And now they are quite large in the market, they've got a competitive advantage. Of course, everybody's now making the same investment they made. But it gave them a competitive advantage for five, maybe 10 years. And their margins are huge; in a typical refinery margins might be 30 dollars a barrel. In the case of Neste, their margins for biofuels are over 100 dollars a barrel.

So you have to be brave and make that investment, but then of course it could all go wrong. And the easiest way it could have gone wrong is actually during COVID. If the European government said "screw this whole environmental thing, we're just getting rid of it". But actually we saw the commitment to environmental policies - if anything - get stronger. But also Europe is now thinking about energy independence, and it doesn't come from gas and from oil. It comes from wind farms, PV, biomass and used cooking oil and recycling. Obviously it leads to corporate goals for investors and there's this huge commercial opportunity behind the energy transition. You'll get oil traders who are in denial about this and they always want to trade oil. But then they see the margins available on biofuels and they start to think "well, maybe I should be in biofuels". And so you do get this sort of entrepreneurial, opportunistic type of approach to decarbonization, which is great.

Then with the whole energy transition, gas is a big thing. We're going to use gas, get rid of coal. I think France and Germany were quite heavy into that. Then within last year the level of volatility led to really profitable quarters.

Gas is still a fantastic transition fuel because it's clean. The idea of a transition is that it's better than it was before, but it's not the end state. And you know, that's how I see gas. And in a way there are other fuels which are transition fuels. Methanol is probably going to be better than gas, but it's going to be a transition fuel as well. We don't really know what the end state is. It's probably a combination of everything. In the "end world", there's probably still someone burning petrol in a car but someone is sucking the CO2 out of the air somewhere else.

But there's definitely an opportunity for companies to kind of focus on that future and place themselves strategically.

Yeah, absolutely. And the great thing about this energy transition is, because we're going to use everything for a bit, you're probably going to be okay if you make a decision on a certain fuel - especially if you have a certainty around your local demand. Where you're not going to be okay is if you say "the world is going to move to hydrogen next week", right? Because it probably won't. There'll be little segments which move to hydrogen. There'll be segments which move to small nuclear power stations. There'll be segments that move to methanol, ammonia, all of these different fuels that we are looking at. So you don't want to bet on one of those fuels, but you want to look at that local environment. "For my community, this is the best possible solution, and that's what we're going to supply". But you know, that's the exciting part of what's happening. It's a huge opportunity. And I think that what's starting to change now is people are realizing that the energy transition is not a bad thing.

It's a good thing from a commercial perspective, because it's an opportunity. It's a chance for you to displace as a smaller company. It's a chance for you to displace the BP, Shell, Exxon - you name it, big companies - because the market is changing completely. It's like that going from those tapes to CDs, it's like a technological change. And not only that, but the government is happy if you become greener. People are generally happy if you become greener. So aside from the commercial advantages of getting something right and decarbonizing, there's also a social aspect as well.

So is there a question of timing as well? Because obviously if you're the first or one of the first trading companies to say "we're only doing 25% oil" or "we're putting an internal carbon price on all of our transactions". So something quite ahead of the market, is it possible to go too far, too quickly? And if that's the case, maybe it's a more strategic bet to wait a few companies and then be first adopters or something similar.

I mean, it's always dangerous being first. And I think that's the danger with individual technologies. And this is why I think potentially the role for government subsidy is still very important. If you're a small company and you are betting on a technology, having the government help you out is not a bad thing. I think where it gets safer is to not necessarily bet on the individual technologies, but to look at the whole transition. Because if you say, look hydrogen or ammonia, I don't know which one is going to be successful. I think they're all going to have a role to play.

And the one thing we haven't talked about is, um, energy efficiency. And that's a huge thing, because you don't need the fuel, right? So are we being efficient in terms of our energy use? But yes if you bet on individual technologies, it's high risk. You need to look at it across the whole business. And you need to say, "we're going to see a theme. Our clients are going to ask us for these products. They're going to ask for biofuels, they're going to ask for alternative fuels". So we need to start thinking about which ones we want to invest in. We need to decarbonize our business. There's no reason we can't buy green electricity. There's no reason why we can't offset our emissions. There's no reason why we can't become more efficient. And so it's just good business, and I think you need to look at that as well.

And within that product offering of clients asking for these different fuels, almost like sustainable commodities, I suppose it's a fine line between making sure you're able to respond to the demand when it's there, but also moving in sync with it? Or would you say it's good to just drive ahead, go for it, and then the demand will follow and by that point you'll have a much superior product or a whole infrastructure?

I think you want to do a bit of both. The analogy I would use for our industry at the moment is a bit like going to the tram station and there's two trams. And what you don't want to do is get on the wrong one and see all your friends get on the other one and that one leaves first, and then you realize your tram is the second one and it leaves in 10 minutes. So there is that risk. And so we see a large part of industry that sort of bands together. We see this in the shipping industry, in the transport industry generally. They feel comfortable once other people have made that decision. It's the herd mentality. But you do need people to then also take a risk.

And think the answer is, you don't want to take a risk on everything. There are things that you'll feel confident about and you'll say "I will bet a small amount of investment or time on this fuel" for example. But again, as an industry you look at everybody else and you say "well, how are we? What's that comparison?" And Neste is an interesting one where they did take that risk and it could have gone horribly wrong, but they've proven to be correct. Now everybody else is looking at what Neste has done. And in a couple of years' time, I think we will have lots of refineries coming online, which we'll be doing biofuels. But you needed someone to take a risk initially.

It feels like it moves from being one matrix of decision looking at what the competition is going to do and how to react, to a variety of different matrixes. One for each technology, let's say, or maybe were going to take the risk on offsets and

developing those capabilities, maybe we'll wait for clean fuels. So there is multiple games to be played.

Yes, and again I've used the analogy a few times, but it's like the CDs. You've got the early adopters, the person who says "I absolutely must listen to the best quality music available, and I don't care if it cost me a thousand dollars". And then Walkman's gradually got a bit cheaper and then people started going "well actually I'm not willing to spend a thousand, but I'll spend a hundred". And then they bought the kit and by that time everyone was changing. And the herd is moving over, but you do need those early adopters. To your point on the matrix, you do have the early adopters and the people who are sort of legacy people that don't want to change. And that becomes a really interesting matrix, because the biggest environmental impact is not by one person buying an EV. It's by improving by a couple of percent, the CO2 efficiency of petrol diesel cars. And over time, when we get more in EVs in the market, then that will change. So you want the early adopters, they're the trailblazers. They're the ones that would test out the technology and tell you, this works and this doesn't. But the real benefits are from the herd.

Then the problem you face is the CAPEX investments. If you think about oil, we've invested for a hundred years, let's say. There's oil storage everywhere. There's the ability to move oil everywhere. And when you look at, say, gas - and this is one of the problems we had with Ukraine - there's gas pipelines but we haven't got LNG infrastructure. And so now you have to build out all this infrastructure and when you build it, you are always looking for a return on that construction. And so that costs more. Whereas the oil infrastructure is already there, it's already depreciated, so it doesn't cost anything. If I need storage for oil in Germany there's a facility. If I need storage for LNG in Germany, I'll probably have to build it, and then I have to PV the cost and I need a return in 20 years, etc.

So that's what stops technologies really pushing ahead historically, it's all this CAPEX investment. But what it does mean is by investing in biofuels - which is similar to oil - I can reuse both facilities. And so this is going be ultimately the tension between EVs and conventional cars, is that there's so much infrastructure already for oil, uh, and we need to build out the whole EV infrastructure. I think this will be the challenge going forward.

7.2 Appendix 2: interview n°2

09.03.2023 - Interview with a journalist specialized in the coverage of commodity trading.

The interviewee has expressed the need that no transcript of the conversation be made.

The subjects covered included:

- the role of the media and NGOs in highlighting the industry's shortcomings;
- the effects of voluntary measures;
- future trends in the business models of traders.

7.3 Appendix 3: Interview n°3

16.03.2022 - Email exchange with a carbon markets specialist at an agricultural commodity trading firm

In the context of the energy transition and the drive to lower emissions, what do you see as the main opportunities and risks for commodity trading companies?

For agricultural commodity traders main opportunity is from selling low-carbon agricultural ingredients. Low carbon products can be achieved by reducing emissions of the agricultural processing facilities and from logistics and shipping. The main risks for agricultural commodity traders are linked to deforestation in the agricultural-supply chains such as soy, palm oil, beef. Another important risk is from physical climate change impacts on processing and logistics facilities (extreme events, sea level rise etc) as well as changing trading flows of agricultural commodities due to climate impacts. Finally there are transition risks from governments imposing carbon prices in jurisdictions we operate.

Your company has made commitments to reducing its environmental impact along a set of KPIs: how has this affected the company's operations and opportunities? How economically viable was this course of action?

Our year-on-year reduction targets for emissions and electricity were driving energy efficiency measures which were implemented at [company name] owned assets (e.g., grains crushing and processing plants, palm oil refineries, logistics sites, port terminals etc). The vast majority of these measures were economically viable thanks to fuel and electricity cost savings.

How does [company name] go about establishing meaningful and pragmatic emissions targets? What parts do carbon credits play in the solution?

We are working on announcing our new Scope 1-2 emission reduction target in line with the Science Based Target initiative 1.5 degrees scenario. Carbon credits cannot be used to meet a reduction target, it has to be met with internal reduction measures. We build a portfolio of carbon credits (avoidance and removals) to meet our clients' demand and to compensate for some residual emissions that we cannot avoid, such as our biofuels trial on one of our juice carriers.

More generally, what advantage does a commodity trading company obtain from being "best in class" in terms of environmental efforts? How could incentives be intensified to promote this type of behaviour?

Main advantage is to gain customer share and diversify ourselves from our competitors both on the supply side (e.g. engaging long term with farmers on regenerative agriculture makes our supply chain more resilient) and on the demand side (e.g. buyers of our products are increasingly under pressure to reduce their Scope 3 emissions and the agricultural commodity traders' share the same emissions with these companies so they are selecting lower carbon products when they are available)

What could help make offsetting commodity cargos more attractive to companies?

At the moment the main question is who pays for the additional costs of carbon compensated cargos. Any monetary incentive would make them more viable (fiscal or other). Another driver could come from commodity buyers who can decide to accept only carbon-compensated cargos and pass on the additional cost to their final customers. A widely recognised framework defining the rules and process for carbon neutral cargos for the entire industry would also be beneficial.

Let's say that [company name] launches a renewed initiative to further decarbonize its operations and competitors do not follow suit, placing them at a cost advantage. For how long would this situation be viable? What would help turn the initiative into a competitive advantage?

It depends on what additional costs the decarbonization initiative would entail, there is a level which is still acceptable by a company management especially if we are coming from a positive economic cycle. Many decarbonization measures are not OPEX but CAPEX investments with a payback period (cost savings come from fuel savings or additional revenues are obtained from premiums on low-carbon products). The banks play an important role here by offering discounted lending terms linked to decarbonization targets, so that we can accept longer payback periods for such investments.

7.4 Appendix 4: Interview n°4

16.03.2023 - Interview with an individual specialized in trade finance issues

How has the discussion around sustainability within trade finance evolved in the past decade?

Even just a few years ago, it was certainly not considered by even investors. And gradually the world has changed. The world is changing significantly these days. We are in the transition between an old and new world, to me that is obvious. I think that you're going to be working in a world which has very little to do with the general dynamics of our world. One of the reasons for that is that gradually some very simple concepts have been challenged. The reliability of earth resources, the ever-growing population. When I was born, world population was 2.7 billion and the middle class were 300 million roughly, Europe, plus Japan, plus North America. And today we are over 8 billion and probably the middle class has risen to almost half of this. So that of course is a massive game changer, this demography is a massive game changer.

Then, we have entered into a world of climate change and environmental turmoil which gradually change the mindset of both the consumers, the citizens and the politics in a significant fashion. So now when you talk about sustainability, you're talking about something which was nowhere part of the DNA of any company 15 years ago. But now, it is part of everybody's DNA; every single company, every single citizen, every single consumer, every single government which has a responsibility over the fate of a population, knows what sustainability is about and which are the risk. So you can't afford to be in denial anymore, the denial period is over. Probably back five years ago most people were denial and then greenwashing and all these things appeared.

But now I think that any company considering its future in any sector cannot disregard sustainability and ESG challenges, it's no longer affordable, it's now part of everybody's activity. So back to commodity trading. By definition is the nimblest of the activities, and yet the most strategic. Exports are probably around 18 to 20 trillion worth of goods. Not services, goods. You can cut the pie different ways, but I would say that it's a reasonable assumption that 25% of this 18 to 20 trillion are about commodities. But the interesting thing is that how much. Let's put it this way, 4.5 trillion. How much of the remaining trade of good would be possible without them? So commodity trading is the most paradoxical sector in the world. So strategic, so key for geographies, for economies, for the standards of living, etc. And yet so misunderstood and left in the hands of probably 50 large companies worldwide, then a handful of hundreds of small companies. You don't have this type of situation in any other industry now.

The interesting thing, of course, is that the world has decided that the transition towards a safer world from an energy standpoint, for the sake of the resources of the earth, is absolutely necessary. And we have engaged collectively. So we are moving into a huge transition. The question is the pace of that transition. And the pace of that transition is the whole challenge today because we can say that we don't want fossil fuels as spoiled consumers in developed countries. But we know deep in our heart that it's easier said than done and that transition doesn't mean stopping what we've been doing overnight and starting a new world. So we are in a very stressful situation worldwide where the consumer citizen at large wants to move out of fossil fuels. The reality is that we still need them, and we will be needing them for quite a long time.

Trading houses are therefore between the rock and the hard place. They are absolutely critical in supplying this key resources: energy, food, metals, etc. so they are of course critical. And yet they have to embrace the fact that the world is changing and that the DNA of the dynamics of the world are changing. How they adapt to that situation is of course creating a huge challenge for them. Why is it a challenge? Because by nature trading houses provide the necessary supply to consumers. Come rain or shine, come war or peace, come environmental dislocation or sunny weather, they have to supply these strategic goods, and they are the only ones to not only have all the necessary optionalities to find the sources which are the most adapted to that supply everywhere in the world.

They have to take a huge risk, because on the consumer side we want to buy market price or less. On the selling side, we want to sell market price or more. And the difference these two market prices is huge because you have a lot of timing differences, transit of good, etc. So they are in a huge challenge, but by nature their business is shorter. By nature they do that every day. So putting the onus on these companies to say "what are you doing with regards to this sustainability issues?", is in a way misplaced. But however misplaced it is, the reality is that all the supporting players around these of commodities will not tolerate for a minute that these trading companies be in denial and say "we will not adapt". No, "you have to adapt now or else I will stop financing you".

This is how the dynamics have been built. So yes, commodity traders will be indeed extremely affected by sustainability issues and by the energy transition that they will have to embrace. The question is how do they embrace it? What do they embrace? Can they afford and can this sustain their model? As of today, the jury is still out. Yes, jury is out because of course, nobody knows what are going to be the winning energies of the future. Nobody knows what is going to be the next goods to be traded with sufficiently

large talent and markets to help these traders optimize the trade flows, fathom the risk and of course make profit in doing so.

Nobody knows that. And yet if any company in this sector was to say to society at large "look, we will adapt, but for now there is only one thing to trade, which are the, the goods that we've been trading forever", they would be taking an immense risk. As we know, they are functioning largely on other people's money and basically banks money. So this is the biggest challenge for these guys, and it's a complicated one to carry.

There are good news however, because first of all we have seen new commodities appearing, so new sources of business. LNG has become a new commodity, lithium is about to come, and carbon credits are definitely going to be a highly traded instrument. The second good news is that because of the unfortunate situation the world is in which is the major geopolitical turmoil post pandemic - so two shocks one after the other - the commodity markets have become extremely profitable. This is because as I said earlier the key differentiating factor for commodity traders is to be able to, whatever the situations are, supply the strategic goods. And that comes at times of turmoil with significant markups and significant commercial margins on top of the normal trading model. So the good news of the of the bad news for the world is that commodity traders had never been so profitable. And that is very helpful when you have to demonstrate that you are embracing the change to a sustainable world. It means that you can afford investments for which you have no clue about their future profitability.

I'm insisting on that. When [company name] is moving to wind farms or to solar, and [company name] likewise, do they know that they have something to trade at the end of the day? They don't. Can they afford not to do it? Can they afford to pay for that without jeopardizing their business and their working capital? They are able to do it, because of these massive profits they've been doing. So the interesting thing here is that these companies are playing the game, frankly, without any certainty that they're doing the right thing or not for their future business. With a massive question mark on whether this will and how much this will affect their model going forward.

The difficulty for these trading companies is the following. Yes, they can afford, yes, they're investing, but what are they doing? They're investing in things which for now are not tradeable and they're investing in assets. So fundamentally we are asking from commodity traders which are nimble to get less nimble. To get more asset-heavy, and with assets which we have no clue about their ability to generate large profits. So this is the biggest risk but for now it's an affordable one financially and it's a required one vis-à-vis their stakeholders, amongst which are the banks. And the banks are very keen, not

because the banks are very keen about the transition, but the banks rely on other people's money themselves. They rely on depositors, they rely on society, and they want to be seen as doing good. So no coal financing, ugly, dirty. No project financing fossil fuels. These knee jerk reactions are absolutely necessary from the banker's perspective, and therefore they have to be seen as being very demanding vis-à-vis the customers and chiefly the commodity traders. So we are in this world where we say yes to the transition, to Sustainability. We say "Let's do it. Do what? Oh, we do what we can, we are muddling through and, well, no matter we can afford the mistakes." It is true, they can afford the mistakes.

You mentioned that banks are one of the major pressures on commodity trading companies to adapt their practices. But then we've also seen alternative lenders: for example trading houses sharing their financing. Could this competition this competition affect the competitiveness of trade finance institutions?

I would say that you have to think in terms of the weight of things. Banks are financing the bulk of commodity trading in the world. And even in the United States where banks normally banks are financing working capital capabilities, and usually capital markets are doing most of the of the game. There is an opposite relation between Europe and the States, whereby in Europe most of the financing is effectively from banks and a little bit from capital markets, and where and in the States most of the financing is done by capital markets and banks are doing little financing.

So by very large margin, let's say 90%, financing is directly by banks. And so you are talking of this 10% of emerging alternatives, but these guys are not a competition for banks. They are doing for now what banks do not do because of risk perception. It's risk within a broader sense, not only credit risk, but reputational risk, compliance risk, et cetera. And I think this explains why alternative finance is so expensive, because they're taking bigger risk than the banks, number one. And number two because it's alternative, from an investor perspective. Maybe the weight of banks will decrease over time, but I absolutely do not anticipate that alternative finance is taking over a big chunk of the business from banks. Because investors don't understand. You have to understand the dynamic of a business. You are putting money in, and intuitively one knows that if you get a 10% return on one thing, it's because the risks are massive in an environment of 2% interest.

And so it's not really a safe haven for trading companies who want to keep conducting operations in a less environmentally friendly way?

No. And for the reasons I mentioned, which is that it's marginal and expensive, and the second reason, as we said initially, the world DNA changing, and this is affecting the investors as well. You might have some mavericks that are able to take very big risks, but they're very marginal. The bulk of investors have a reputation to maintain. They have lenders. Usually they are leveraged. You're not only tapping on very large money from private investors.

The more money you have, the more visible you are, and therefore your reputation is at stake. So everybody is affected by sustainability and the big changes that are upon us and the big challenges which are ahead for the world. Everybody's aware.

So what you've described, i.e. alternative finance financing the things that banks do not finance because it's ugly. It would be too much risk for the financier, too much risk for the companies themselves. Imagine a trading house doing that and the banks then realizing that they have a huge exposure on very dirty commodities. The banks would be scared from a reputational perspective. They would say "we cannot finance these guys because we cannot afford to be seen as supporting these things even though this is not our money, which is invested".

7.5 Appendix 5: Interview n°5

17.03.2023 - Interview with a sustainability analyst (speaker 1 or S1) and a logistics expert (speaker 2 or S2) at an agricultural commodity firm.

How important is sustainability to your business?

S1: I think when you are talking about commodity trading companies, it's important to separate those that are publicly listed from those which aren't. Meaning that there is a growing interest from investors. You have much more of a preference for the sustainability side when you are quoted on public markets than when you are private where you don't have all this pressure regarding investment. You have a lot of ESG funds that are rating companies on those new investment criteria. With many brokers, you will have an ESG rating and an ESG risk ratio, which is the sensitiveness of the investor regarding this topic.

Freight operations is a small fraction of what we do as a company. So much more effort is putting on deforestation, decarbonization of supply chain and energy sourcing. So it is a very broad subject when you are talking about sustainability the type of environment that we are in today.

You have chosen Switzerland as the centre for many of your operations, and keep growing your presence in the country. What regulatory and business dynamics do you see play out in the country?

S2: In Switzerland, I think from next year, there will be whole new demanding terms on how we report. This new accountability of sustainability will impact the reporting in most companies. We know some companies in Switzerland which are working in environments that are very challenging environments and countries that are very challenging and they have been suffering public news on this front. So I think those companies will have much more work than companies like us that are really on the agriculture front. If you go to our website, we have a no-deforestation target by [redacted] - meaning that we can only originate from farms that are not in new deforested areas. We have different satellite systems working for tracking the extraction of the goods.

One of the things you maybe want to look at is that the European Parliament has been working on rules about full traceability of the cargo. And it looks like mass balance will not be tolerated. So that's also going to be a big change to the supply chains that are coming to Europe.

You mentioned no deforestation. Is there a commercial advantage to it? for example could you sell products which are green at a premium or is it a strategic stake as well?

S2: There are both elements. There is a strategic stake in depending on what you are selling the product for. If you are selling an agricultural product for baby food, you are going to get a premium. And there are some premiums you can write about when talking about traceability, sustainability and so on. But I think the angle is not what premium you're going to get but it's the right to play. If you're not doing it, you'll be out completely. So of course there, there will be a cost to this today and there will be a premium that you need to account for. The challenge is that this premium is not an extra price for the same. There is a huge work on for traceability and to avoid deforestation. So this premium is just the recognition that the supply chain has been working a lot to deliver the products much cleaner than before. So it's not really an increment on the P&L of the company and the resource of the company, but the recognition for the effort on the supply chain. And companies that will not be doing that most probably will not be able to participate in major flows like Europe.

Is there a way in which a company could go too fast and price themselves out of the market? Or is it a good strategy to be the first to move towards more sustainable?

S1: I think you need to be careful about the words that are used to market something. I will tell just an example, if tomorrow we say to the public that we order ammonia fuel. We will seem to be ahead of the market, but we can run this vessel with basic fuel oil. Maybe we will not run it under this new type of fuel because it's commercial. So we need to be very careful when reading something on this subject; is it something that you made an investment and you could do it in the future? Or is it something that you are doing right now to improve the near future?

S2: I agree. There is always the curve of late starters. And when you are talking about being ahead of the competition, it is a risk that you're going to be investing something that eventually everybody will profit from. What you are seeing naturally is companies working through associations in aligning the targets instead of trying to understand the commercial advantage for each one. Perhaps it's more that this is an obligation of everybody and working through associations to leverage the size of our organizations together to create common goals. Of course, there are some niches that you may take, and you may be ahead or less ahead and that may impact your competitiveness. But I don't think it's a competition for sustainability.

There will be opportunities that you're going to create because you are aiming at sustainability aspects you can make some value from that as well. But in general those partnerships are from companies understanding that the future is not only the competition, it's really joint forces in the expertise that you have to deliver something better to the customer.

Which side of the value chains is going to have the hardest time adapting to the transition?

S2: I would love to have the answer. I think it will depend on the markets that are more regulated like Europe, where you have no other choice than to comply. Where markets have more the freedom of choice like Asia, you see growing interest but not at the level that regulators in Europe are doing. In the end, I think the push will come from different sides depending on the geography you are. Europe has been leading the way in terms of imposing regulations that will trigger changes on the supply chain. Most of the time, or if not every time, Switzerland winds up aligning with the European Union, mostly because when you need to import goods these goods have to go through countries like Holland or any other that will be impacted by those regulations. So we will end up following the same regulations because when you're producing, transporting, storing, and putting cargo on a ship, you cannot really segregate goods saying "this is less regulated, this is more regulated".

If you organize your supply chain to very strict calculation as we are seeing, then the other countries will have also to pay for that cost, right? Europe is trying to force a new way of consumption that is greener. This is a very good thing because they are stimulating this decarbonization for the whole chain. But it's tricky on another side because we know that a lot of person are already suffering from inflation and from a lot of other things, they struggle to buy food from themselves. Obviously if you pay these "taxes", it'll be extra cost all along the supply chain that will go to the customer. We believe that as soon as the whole European system will be set up, the rule will be clear and we can expect more countries to follow the same path.

So with the energy transition and, and also climate change in general, there's obviously a variety of risks. There's reputation risk, regulatory risks. What is the process to manage those risks?

S2: There are two different processes: acute and systemic. Acute is how you see the future playing, how your assets may be impacted by the weather and climate change:

oceans levels, lack of water in rivers. So we try to evaluate all these risks and how they would impact our supply chains and assets.

S1: The other way is systemic, including low extended period of dryness. I'm sure you've noticed that in January and beginning of February we've not faced any rain during one month and a half. It was crazy. And already in March we had some restriction over water, and it is a risk because if you don't have any water then it can be more difficult to produce things as well as to facilitate barges transiting through Europe. If there is not enough water because it does not rain, maybe you will load less goods in your barge because there is not enough drafts to sail. So there are the systemic risks that are coming. We know that as well as individuals we are seeing systemic risks amplifying every year.

S2: You ask how those things are embedded in today's decisions. I think there is not many companies today that will invest in any new asset or even in maintaining assets without thinking what's the cost of the environment on it. So everything we do today, there is a CO2 cost on it, there is an environment cost on it, there is a consideration of impact of use of land and of water. We imagine a cost of this CO2 on the environment and this has to be part of the payback of the investment.

So it is a sort of internal carbon price?

Exactly, and I think most are doing that. You would be naive if to think that you see Europe going after high taxes on CO2 and that other regions will not go for it. Things like the IMO on ships or the EU ETS for shipping are impacting shipping in Europe. I'm sure other regions will see the how much tax this is providing and most probably you're going to see Japan, northern Europe, US, Canada start their own kind of tax. So everything you do today, you have to imagine a cost of carbon on your payback.

Where do you see in the agricultural business are some of the biggest opportunities in terms of product offering that go along with the transition?

S2: I think more in 4.0 farming, carbon sequestration, how future cities will be run, how you can have more seed, how you can help the farmers to increase yield with less input of fertilizers. So all those things in terms of how you produce will be important and will be probably a differentiator in your relationship with the farmer because you have to think the farmer is not a seller that is selling something to someone. The farmer is our customer as well. We see a farmer as a customer, you have to partner with a farmer and help him to be better in what he does and his supply chain. So I believe that proximity to our customer, that is the farmer because we have customers in the two ends of the supply chain, is important.

Also, the new technology is in supply chain, right? We are going to see more and more push on domestic transportation, electrification, hydrogen or who knows what's going to be there. Shipping is already having big discussion. Of course, the transition in shipping is long, painful and very risky to some companies in terms of betting the on the wrong asset.

There is another angle that I'm not the best one to talk about that is the food of the future. I think there are huge opportunities for development and for how sustainability will impact the price of meat, and how a customer shift will happen as well. Again, we are sitting in the middle of those new supply chains. We are the ones that link a customer to the end consumer. We are a part of the more core value chain and I think there will be a lot of things going on this new technology for food as well.

7.6 Appendix 6: Interview n°6

21.03.2023 - Interview with a sustainability director at an energy trading firm.

Let's start with the work you're doing. I have seen far-reaching goals to reduce scope one into emissions in addition to many commitments. On a general level, how does this affect the operations and opportunities of [company name] and how economically viable is this?

I think it's a balance you need to find if you operate in a European context. So when you're in Switzerland, you are not in the European Union, but you are in the middle of the European Union. And the big actors you're going to work with are going to be heavily impacted by what is going on in the European Union. So there are many things that are going to be expected of you; not formally, but informally. And there is a lot of things that your main stakeholders will ask for which will put you in a situation where you might have a lot of hurdles to perform some type of business which could be, if you only look at economics, very, very profitable. But that being said, I think we are also in an industry where there's a lot of consolidation, there's a lot of issues with trust as well, and your relationship with your main banking partners is really relying on those sustainability elements. So it's never black and white, it's always a fine balance. It's always a conversation you need to have on a midterm basis.

And that's also why, in a context that evolves a lot these days related to sustainability, we are approaching things five years for five years. You've never seen in our communication that will be carbon neutral by a 2050 basis. Because we do not believe that. I mean, we can say that and we probably will be, but we do not believe that we're in a position where we can actually say it with having a real plan in mind. So basically you do make specific choices and trade-offs on a day-to-day basis to provide by your commitments. In the long term. I do not think it has an impact on the overall profitability of the company. I think it is beneficial and that's why sustainability is talked about, right, left and corner as well.

And I suppose there's also opportunities to be taken hold of if there's a transition and there's a "new world" or a new way of doing things in let's say 20 years. Then in a way companies better be ready to match the demand.

Yes. I mean, one thing you can have a look is who has actually embraced the LNG business, for example. And this is a very good example of what could actually happen in the future with all those different new types of energy. Having a company that is actually able to embrace the next big thing when it actually is becoming the next big thing. The

problem we are facing right now is that we're not very sure what the next big thing is in terms of physical trading. Electricity is one thing, obviously, but it's definitely very, very different from the other types of commodities that [company name] would actually trade. So it is a very interesting situation and I think what is also crucial is getting the timing right between the needs of the current society and coming needs, and what regulations will force in the different geographies. And that's also a situation that we need to take into account because this is being forced right now by regulation, political views, and the speed is not the same depending on where you are. So then you, you end up different approaches depending on where you are actually focusing or different approaches depending on your areas of activity.

Within Switzerland what pressure is felt as a commodity trading company operating under Swiss law?

When you're in Switzerland, it's a light version of the European pressure. So you are going to be in a situation where you'll have more time to adapt to the requirements of the European Union because you're in Switzerland. On sustainability, it's a lot more demanding than, let's say, Singapore. Conversations are way more advanced here. The expectations, the regulations are way more advanced here on the subjects of sustainability than they are in Asia. And then you have the United States, which is a very different animal because the European Union have an approach of defining how you get there. The United States do not define how you get there. They just say, we want to get there, and this is money. You do whatever you want to get there. So the approach is very different. And in Switzerland, you have a lighter version of this method that is in place in the European Union.

And so for [company name], being in Switzerland remains the most appropriate place from which to hold many operations.

I mean, we do have three big offices: we have Switzerland, which is the biggest with Geneva. Then we have [location] and we have [location]. The biggest is definitely Switzerland. It is central. You can work with time zones as well, which is very important. And it allows good coordination between the other offices as well. But [company name] is a company that today is truly global. But yes, the situation in Europe is critical and in the continent of Europe, Switzerland is definitely the best place to be geographically. It's the best place to, because you have known partners and you have resources. So you are in that environment, but it's very prone to high performing traders and high performing supporting functions because there's a culture around it as well, Geneva especially.

You mentioned earlier about the difficulty of knowing what the next big thing would be in terms of energy or in terms of commodities, just in general. In another interview, my interlocutor was saying that according to them, one of the best ways to reduce risk was to go the joint venture route, let's say for different renewable projects. I was wondering if [company name] is also involved in these kinds of joint projects or plants?

Basically we are never going solo on those things, as this person said. Today what we're doing is trying a lot of different things, but trying to figure out what works and what makes sense for us. And so we are partnering with actors of those different industries, partnering with experienced partners in hydrogen. We're working also on fuels, we're working on ammonia, we're working on nature-based solutions as well. Obviously we're not doing it ourselves, we're not the experts there where we have a steep learning curve around it. One thing we know how to do is to transport it and trade it. But we do not know very well how to produce it, the resources you need to produce it, et cetera. So this is something definitely that we are approaching through joint ventures. We do have our assets in Europe that are a very good opportunity to partner with experts on the different products and try things and transition from a traditional refinery to those new types of products becoming a hydrogen hub rather than an oil hub.

On that one as well, it seems that one of the big risks in producing biofuels is the capital investment that's required if one was to start from zero. And so as a company who has quite a well-developed infrastructural network for oil, I was wondering how you strategize that advantage of having infrastructure that can be converted to make other fuels needed in the transition?

So we have two very different assets. We have one that is a very critical refinery in [location], and you have one that is in the [location], a very different type of animal that is not refining crude oil anymore. So those two assets are very different in nature. And for each of them we are definitely looking at how we can leverage what exists already to be a big actor of the next thing being hydrogen or biofuels. Also, it's a fine line between diversification because we don't know what is the next thing that we are trying quite a lot of different projects. But there's also being able to choose at some point and scale up on what actually makes sense for the asset as well. So the two assets have a lot of opportunities on all the different aspects of energy transition. And today the challenge is defining what would it take to produce and distribute those different things, leveraging our assets. But both of them are quite well positioned to look into those new processes. One is very landlocked, has limited access to renewable energy, which is completely

different from the one that is in Rotterdam that has actually easy access to renewable energy and marine activity. So Rotterdam would be easier to transform today, also because it's not a critical asset.

And so in terms of timeline how do you consider the product offering is going to evolve? Is there always going to be a part of crude oil?

That's a very difficult question, obviously. I do think the portfolio will evolve towards lower carbon products quicker than 20 years. But lower carbon can also be synthetic fuels. So I think the importance of crude based products will reduce. Beyond 2030 the thing that will happen is that there's going to be parallel activities. So you'll have a transition to lower carbon product. You'll also have an improvement in the carbon intensity of the products that remain crude-based, and I really believe that eventually, even if it's crude based, it's going to be left neutral. And those things are going to go in parallel. Obviously that percentage of crude oil is going to reduce, I don't think we're in a situation where the volumes of oil-based products are going to reduce, but the percentage of it is going to reduce.

It's not moving away from but maybe more of a shift with other products coming into the offering.

I think so. And eventually moving away from it, but it's going to be more of an increase of other products, less carbon intensity, et cetera.

On reputational risk, which I'm assuming you are involved with at [company name]. How is it managed?

So we have a governance structure. Basically what we do is that we go through risk assessment cycles that are two years. So that actually identifies what are the main risks to the business. You have seen in the two last cycles that reputational risk related to energy transition is actually getting higher and higher in the priority list of the company. And what happens is that on those elements we have different committees that will actually define what the potential impact on the reputation is. And then the executive committee makes a call on reputational risks. So it's quite a structured process that we have on the risks that we identify. It could be transactional or it could be for a project or at a corporate level. This is how it is approached and the reputational risk and that the potential severity of that risk is obviously growing because the expectations are growing as well. And we have little exposure to the public. We have exposure to the NGOs and we have exposure to the banks. And the banks themselves have a lot of exposure to the

public. So it's an indirect pressure that actually applies on us, and that pressure is growing.

I think we can clearly say that some of the things that we would've considered four years ago would not be considered to date, typically. Because the world is evolving and the commitments are also changing. You've seen that [bank name] was stepping down from financing oil-based activities in the next [number] years. It's going take some time but you see that things are evolving that way.

And on that topic of financing, you have a facility that's linked to environmental sustainability. How does that fit into the strategy? if the company is constraining itself or being "stricter" than it needs to there must be some kind of a reward. My hypothesis was that it sort of demonstrates that [company name] is able to handle stricter requirements in terms of financing. And so that secures further financing along the road.

I think you're right. I think there are different aspects to it. So there's the reputational aspects for sure. One of the thing that a commitment like this brings is that it forces the company to follow through. So that's one of the big aspect of it as well, because the moment you take those public commitments and you need to grade it into a financing facility, then you are going to have a company that will focus on this as well as all the other things, but it will become the focus. So it actually changes the approach to those issues, and in a company that lives on very short cycles it's actually helpful to have longer term commitments that are really critical for the company as well impact the traders in their day-to-day life.

That is one of the elements that actually are important, it helps you prepare for the more constraining phase as well, where all those things are going to become law. You're going to have no choice anyway, so you are preparing yourself if you are saying, okay, I will be ready because I will have been doing it for four years, five years, whatever. So then you gain a lot more confidence from your banking partners. You see when you have a market that is consolidating it's the ones that they trust the most that they're going to continue supporting anyway. So this is also part of a longer-term plan where you build that relationship with the bank, and as we are evolving together, it actually allows to work on defining what is the next phase of commitment. So it's really a partnership you create on those. And obviously there is some financial impact because you will attract more banks, so you will actually have a bigger facility. And you can have a little bit of financial impact if you meet your objectives as well. Remains a small part of the whole process, but that will probably grow in time as well.

And do you reckon the reward side will evolve towards with greater benefits?

No, I think eventually it's going to be a must have. So there will not be any reward, you have to have those KPIs in and you have to meet them. Here we're talking about Europe, we're talking about Switzerland. Very quickly, we're going to get in a situation where banks will not enter those facilities if there are no sustainability linked elements. It's going to be, I think in the next few years, five years tops. If you look at Asia today they're happy to have those elements in, but they don't push for them yet. I think they are going to in the coming years. In the United States as well you don't have a lot of pressure to have those in your facilities and it would probably come as well. So you're not on the same timeframe depending on where you're actually working. But if you're looking at Europe exactly as you were saying, we're not going to get more reward. This will have to be present, otherwise you don't have access to financing in Europe.

And is the decision different when it comes to the size of the trading company? Because major companies are able to sustain the evolution they need to make, but maybe mid-size traders are in a more precarious situation.

Depending on the profile of the company, you're going to commit on different things. So we are committing on assets, and transforming an asset is capital heavy. This type of capital investment will not be possible for a smaller trader. But then those smaller traders do not have those assets, but they're going to commit on other things. They're going to commit on improving the carbon intensity throughout the supply chain, they're going to commit on human rights elements. They're going to commit on expanding their portfolios. They're going to commit on different thinking, basically. So I believe that today the banks are flexible on what commitment you are making, as long as it's aligned with your business model and it's ambitious within that business model. Being a bigger-sized trader and being able to put in place those type of approaches is definitely an advantage. I think it's an advantage because then it will allow to actually switch straight away to the new commodities. The journey is going to be different for smaller traders.

What role does the government play in this? If the government wants to evolve towards more sustainable economy then maybe incentives, be it tax or help with investment, could be part of the picture. What kind of government involvement would help currently trading companies in Switzerland?

In Switzerland the government has a very light touch on the trading industry. What type of regulation would help? I think you're going to look at incentives, like tax reductions. Because what is happening is that the assets are not in Switzerland. So then it's about

finding a way to support the trade in Switzerland actually making a difference through Swiss regulation. The activities themselves are going to be elsewhere, so it's a difficult one. I think it's more related to tax reductions and facilitating for those traders to actually reinvest in greener technologies. Seeing the situation we're in, we rely on European partners quite a lot within Switzerland and we're impacted by the European regulations and tax investment incentives. Indirectly it impacts the Swiss trader.

Going back to we go [investment vehicle]. What is this working towards? Where is it headed as part of the strategy?

I think it's going to become the investment arm of [company name] period, and eventually all investments by are going to be sustainability linked. If you look at what we're looking at in our pipeline today, there's many investments that are related to the energy transition. For the moment it is looking at a lot of very different things, but eventually it will become the investment arm.

It seems that this is quite unique amongst the major players.

I think the way we have structured is centralized, that's true. I think other companies would actually have different parts that would focus on different technologies. Does it make a lot of difference at the end of the day? For now, I'm not convinced, but I think eventually it's important to build a brand around that energy transition investment. So I think that is how we actually built it.

If you are in a situation where you start a new initiative, let's say decarbonization of shipments or maybe investment into a renewable project, that costs a lot to the company and other companies don't follow suit and this place you at a cost disadvantage. Would this situation actually exist? how would that impact the company?

We're approaching it the same way we would approach traditional investments. You put projects on clear expectations for returns and for long-term perspectives. So today I do not see us investing massively in something that would put us at disadvantage compared to the competition, because we're still at small size projects. Eventually would we massively invest in projects that support technology that will not provide the return that we thought they would provide? I don't think we have that profile of innovative movers. It's early days, but then it's still quite standard between us and our peers, the things we're looking into.

I suppose what I was getting at the timing aspect of it. If a company was sort of advancing at a different pace than the markets would that be sustainable?

I do not think, to be completely frank, that the advantages are enough today to sustain a big push towards being a lot more sustainable than peers. I think you're right saying that it would actually be not unsustainable, but they would put the company in a situation where the market would take quite a lot of time to catch up and then there would be a risk for the company.

7.7 Appendix 7: Interview n°7

28.03.2023 - interview with a trade finance specialist at a bank offering trade finance services.

Has your ESG filtering criteria changed the composition of your clientele? We have been sensitive to these issues for a long time, but they haven't changed the composition of our client based. We had already filtered the bad actors, but not for ESG reasons. There is a real correlation between a company's poor commercial reputation and their environmental performance. This is where compliance aspects meet ESG aspect. Companies which have compliance problems also usually have ESG problems. Our client based is of high quality. We do have clients which are exposed by the nature of their industry: most major commodity groups have in the past had problems but these risks are not mitigated.

Speaking of environmental risks, would the mere fact that a trader is dealing in crude oil flag them as high risk in you model?

In terms of exposure, yes, but it depends. If the trader is buying FOB and selling FOB there is no environmental risk for the trader since they're not in charge of the transport. So these are operational risks which have environmental effects. Let's take the example of a company which refines crude oil. There, you can talk about emissions, pipelines passing through large natural lands and so a greater overall environmental risk.

We consider two axes: the client's business model and the commodity that is traded. If we take the example of a coal plant, emissions will be high. By nature the traded commodity raises the exposure of the producer to environmental risk.

Have you ever had a case of a client who adapted their practices to maintain their financing?

Not specifically because of us, it's more of a trend. Ten years ago clients knew nothing of ESG issues. We have contributed to the movement, but it's the bigger banks who set up major facilities that really make a difference.

Is this industry movement a good thing for financing institutions? does this represent new opportunities?

It's different for structured and bilateral financing. In bilateral there is no impact on pricing and there is a universal approach to interest rate. And again, if a client has poor ESG performance we don't even consider them. ESG compliance is an onboarding question. And then if we have an existing client which does not improve we start to ask questions.

In terms of structured finance there is an advantage for traders, not for banks. Sustainability linked loans have incentives linked to KPIs and this is an additional cost for the banks. They provide the incentive. In the end, banks fund the greenness of their clients.

And is there an benefit for banks?

Some banks communicate a lot on the facilities they provide. Other go further and in lieu of giving a discount to clients they allocate the funds coming from KPI compliance to a green fund. And here the benefit for both partners is communication.

A trend I'm expecting is that what is now voluntary compliance will become the informal or even legal norm in a few years. Do you agree?

This trend is the one we should tend towards. We'll have the same thing with environmental impact disclosures which is going to become imbedded in the new US GAAP and IFRS rules. As soon as you have this in place in the financial statements of all companies, you'll have an indicator that you can use to make comparisons. And then this will lead to new objectives.

How could the existence of alternative lenders lessen the ability of a trade finance bank to be stricter with their screening process?

Before talking about new types of lender, you could just go to another country. Europe has some momentum but the US and Asia aren't there yet. It's always the same thing, environmental issues are a concern for wealthy countries. But others will catch up. Our clients broaden their banking pool but they don't really go to other countries. One big reason for this is that they understand there are advantages to being with us. Commodity trade finance regroups a lot of different services which depend on the banks, and major banks deliver those with much better quality. So in the end companies are stuck with first- or second-rate banks. And these are the lenders which have ESG requirements so in the end no one will really be able to go around it.

7.8 Appendix 8: Interview n°8

30.03.2023 - Interview with a trading and shipping legal expert (speaker 1 or S1) and an operational manager (speaker 2 or S2) for the trading arm of an integrated energy company. Thesis supervisor Mr. Richard Watts was involved in the interview process.

Speaker 1: We're an energy company, formerly an oil and gas company, and I think your question embraces all sorts of wider commodity trading as well. So most of our observations will be from the point of view of an energy company.

Speaker 2: I am interested in your questions, because as an energy company like we are, there's a lot of things you can do. But as an energy trader, as an oil trader there's much less you can do. We are happy to be part of a big group where they can invest in alternative energies and they can have a lot of cash to invest in such things. As we are part of this [cash generation], we feel like this is our contribution to climate change mitigation. But if you would take away this big family around us and only look at trading and shipping here in Geneva, then it becomes much more difficult.

Dubath: Let's start with new potential disclosure frameworks and rules regarding the efficiency of ships (IMO 2023). How does this impact operations?

S1: This came in the 1st of January. And at the moment there's actually quite a lot of fights between owners and charterers about how these clauses and new rules get implemented into contract. As you know, some of the efficiency in operating ships is on owners and some of it is on us.

The fuels we consider in shipping is terribly important, and a lot of the ships we now have are what we call dual fuel ships. So they use the conventional hydrocarbons like fuel oil, they can also burn LNG. There's less carbon emissions from the LNG so this is something we're interested in doing.

S2: but now we're talking very much shipping. We happen to have an internal shipping department, but it could very well be separate. The shippers as the suppliers of the means of transport are doing something [for the environment]. We of course are pushing them, but in the end the impact it has on us as a trader is quite neutral. The shipping companies will just charge higher prices for the freight to the trading companies. It doesn't change much to our operation. We're still going to be bunkering in Rotterdam or in Singapore or in Malta or in these places. And it's just a different kind of fuel.

S1: We've done quite a lot of research on these things. You've mentioned things like the Sea Cargo Charter. Another example is the Poseidon principles. The idea is that bankers

and insurers require customers to have certain environmental standards. If you can meet those, sometimes you can get a slightly better rate of interest. Or even just get the business, I suppose, because money's going to be tighter in the banking world. Interestingly, we've just had [number] new LNG tankers built, the first of which has just been delivered. The owners of the ships satisfied the Poseidon principles and the bank syndicate said this was very good. So there's a slightly better loan interest rate, which is interesting for us. It gives us advantages if we do these things.

And then another example I was going to give that might have more of an impact on our trading is a concept called Blue Visby. Have you heard Blue Visby? It's a sort of repeat of what BP actually came up with called Virtual Arrival, and it's to do with demurrage. When [company name] came up with the idea they said what we suggest we do is instead of having ships go as fast as possible and then waiting to discharge, you can effectively eco speed. And you then introduce a concept called virtual arrival, which is when the ship would've arrived if the ship had sailed with utmost dispatch. There is then a saving which translates into bunkers saved and presumably there's a difference on the time when the ship would've arrived as well.

And you sort of find a way of allocating that amongst the owner and the charterer. We found 10 years ago, this didn't really work very well because in trading companies we like to be quite secretive and not share details of who we are buying and selling from and what time the ship has to be there. So it didn't really catch on 10 years ago. I think the whole world has moved and now people are much more interested in concepts like the environment and sustainability. So there's a new push of this Blue Visby project and the idea is to schedule ship arrivals.

It's great if everything goes as planned. Which is a concept that does not exist in our world. 20 years ago there's a lot of voyages that would do port A to port B and everything was okay. Today this doesn't exist anymore. Today you go from port A, you go to port B, you do a discharge reload. Then you go to port C, you do a little blend there, then you have three different receivers. So this concept of trying to adapt your speed with, with your, it, I think it's not applicable in a lot of cases.

Watts: I think the problem we have at the moment is that we don't actually take the true cost of the shipping. And so we are saying it makes commercial sense to do all these back load but if you actually take the true cost it's not. This is why Argentina was so heavy against the new regulations of the IMO because they knew that these regulations are going to make the true cost of shipping grain from Argentina more expensive and it's going to make them less competitive.

You mentioned at the very beginning the different commodities. It would be very relevant just to have your point of view on whether you think that the agricultural companies and the mineral companies are looking at the equation very differently?

S:2 I think so because they're more industrial. In oil trading you have the possibility to blend and to upgrade or downgrade the quality, which we do all the time especially on products. On crude not so much, crude is probably more comparable to the grains and the metals business. But the product business is completely different.

Watts: If you look at a company that's trading metals, maybe [company name]. They're all looking at essentially the same problem from start to finish. And so I wonder to what extent there is a collaboration in terms of how to approach this, or if different areas of the industry tend to be looking at these things separately.

S2: There are commodity-specific initiatives, but clearly some other initiatives can apply across the board. Ship design, technology and improvements, biofuels, frankly, it's all the same. I think that the solution is simple, it's the same to what is done on biofuels with the proof of sustainability where every Kilometre that the product is traveling is incorporated in this POS. So if you would apply this to any commodity in the world , that would work because that then the cost, like you say, would be taken into account in the trading equation, in the economics of the trader. He would say "okay financially with my hedge, this is what I gained, but if I do this, then my cost is going to reduce in value by that". Today it's not taken into account. But then the problem is the worldwide adoption. And is China ever going to adopt something like that?

Watts: that brings it to what are the drivers for companies? There is the legal drivers, there's pressure from financing, but there's also pressure from the consumer.

S2: In terms of the oil, we are not close to the consumer at all. [Energy group name] is close to the consumer but I don't think there will be pressure from consumers.

Dubath: And how about the influence of consumers on the banks who are then financing operations?

S2: We are a cash rich company and not dependent on banks. I think one of the drivers of adoption for a trading company is money. We all know what the trading company is after, right? It's money. We want to play volatility. And we have seen the creation of these

sustainability certificates in Europe and of RINs in the US. These have made the whole trading of biofuels super attractive not because of the physical trading of biofuels, but because the most money is made off of the certificate. So if you're going to introduce this on a worldwide basis, you're really going to make the carbon market trading market super liquid and maybe the profits will move away from being made from the pure commodity itself to how you trade the carbon.

And that would be super interesting because then there is a lot of leverage also from governments to influence and as high enterprise goes, super bullish for the climate because then people are going to move cargo even less. I think that's the incentive for traders because it would create a new worldwide global market where there is a lot of volatility.

S1: As a trading company, we don't get direct pressure. However, there is pressure on the rest of the company. For us the pressure is that we are a part of a big company and we want to be part of the future. So I think the rest of the company really puts pressure on us to provide what our customers want for the future, and this is a real driver for us to try and do the best thing. That brings in the whole biofuel piece, and the brand-new business we're doing here which is renewable electricity. So we want to be one of the top five renewable electricity in the world, and you can see the number of people we are now recruiting to trade electricity and the money we're spending on these renewable products.

S2: If you look at the big picture, what is most interesting about these biofuels is this whole sustainability card. Because again, if you look in terms of volume, it's a super small market. It is really ridiculously small, like 1-5% of the volumes. What I like about biofuels 20 years is the mechanism they, the mechanism that they developed with POS and RINs, that is where the future lays. There is no super national government, no government that can impose these kind of rules to everyone. So you have to go through a market mechanism to make it work. So the government could be at the basis of how these certificates are generated, but then the price setting of has to go through market.

To your point on the product offering and the way it's shifting. Is there any actual changes in the departments? Is the volume of oil traded lessening or are you trading more of the alternatives?

S1: I think we're looking to, looking to grow. Corporate strategy is by what, 2035 to be 50% LNG and to keep growing our renewable electricity business. And then by 2050 to be 50% renewable electricity and only 20% oil products and gas. You can see LNG as

the transition fuel while we try and build up renewable electricity. What does that mean here? The LNG team keeps growing and growing. We're sort of bursting at the seams trying to find space. And it's a bit the same with electricity in the legal department. So you notice that yes, we're growing these desks. It's the same, I think, on biofuels where suddenly we're doing wood chips or we use cooking or palm oil. The strategy is to change the sources of our energy and you can see how that's already having an effect on the personnel in the office, but are we going to be reducing our share of oil? it's more of an attempt to grow the business, I think.

And you know, clever engineers are quite interested in getting into the trading business, which is quite a glamorous part of an energy company. The matter is to figure out what the actual opportunities are because there are an awful lot of costs, there are a lot of burdens of moving towards more sustainability. But then the question is what are the opportunities, and I guess one is the ability to hire people from schools who would naturally move away from this type of business. That is something that we really need to focus on as a business is more the opportunities as opposed to the cost. We need to turn this into something that's actually something we want to move towards instead of something that we're being pushed towards with no choice in the matter. New markets, I would say is almost top of the list. Things like electricity wasn't something we did 10 years ago.

Watts: So that's something where looking at public image, it's something you're probably being quite active in terms of publicizing your activities.

S1: Most of us are family people. We are invested in the future in the same way that anybody is. And I don't think we're unreasonable people in that regard. So you can ignore the problems or you can be engaged in society. I think it's very easy to say what is wrong, but it's much more difficult to propose how we can change things. It's a bit of a cliche, but I'm pretty sure this is corporate strategy too. We want to be here in 2050, 2060 and beyond. And we want our customers to think we're doing the right thing.

Dubath: Is there a question of timing with this as well? Because a company could move, as you mentioned, too slowly, and so be behind the curve, let's say on a new biofuel or maybe on regulations are coming in. But then a company could also maybe go too fast.

S1: The point you've described is the sort of first mover problem. A good example, Industry is on ships and scrubber technology. One of the ways of controlling your emissions was to put like a giant filter on the funnel of the ship and try to extract the

sulphur out of your emissions dump. There's two systems basically, it's what they call an open-loop and a closed-loop system. And some shipowners took the view that open was better, some said closed loop. These decisions been made five, six years ago. Now you see a lot of ports and marine authorities saying "we don't want open loop in our waters". So you made the first move to go for open loop, which has plenty of advantages. Perfectly rational. You've now got these ships. Now it's difficult to use the scrubbers, so you made a bad investment decision in value. You're getting a form of punishment. To be a first mover can have its problems. What's the right way of doing it? You sort of want to see which way the market's moving and currently a lot of the market movement is towards dual fuel.

But then you can have global events that just throw a big expand on the works because the IMO 2020 came in and then we had COVID. Plans could be perfect, and then suddenly something happens like the Ukraine invasion. Today, we've done quite a lot of sort of research projects, even within our of trading position on new ideas. One is called [name], it's a software you put on onboard a ship to monitor how the engine's performing, what the weather conditions are and it tries to optimize performance during the voyage and that leads to its own efficiencies as well.

S2: To take another example, many trading companies and then many trading companies are decarbonizing shipments. These companies - [company name], [company name], [company name] - are not integrated and they don't have any other means to show that they do something for the climate. For them, it is their public relations, it's super important to do it. For us, [as an integrated company] we have a lot of levers to act through the shipping and the things which have nothing to do with trading, but which are part of our group. So it depends on how you're positioned. For independent traders, it may be important to do it because they don't have many other possibilities for us, we have a lot of other possibilities.

So then the incentive system is different for an integrated trader. In the sense that the group can take the burden for the company.

S2: Yes.

S1: That's true. But it, but it's also true that quite a lot of the trading companies have become more integrated over time. [company name] has loads of mining resource. But the part you see is the trading business. That's the sort of cash machine value. I think we're going to be seeing that more and more. I mean, take [state-owned company name] for example. These companies which are national companies and they're moving into

the trading field and then they're going to be moving into buying up assets. Because it's the only way for them to actually secure that position as well. If you can optimize your portfolio plays by trading that can generate cash, you can convert that into the rest of the business, invest on sustainable projects or on whatever you want, really. Whatever the company strategy is. Good trading is a good way to bring in cash.

S2: That's our biggest contribution, the cash we generate can be invested in sustainable projects.

Dubath: the way you're doing it is quite interesting. So keeping the volume or maybe even growing the volume of oil, but then developing cap capabilities in other markets and other energies so that in 20, 30 years you're able to respond to demand. So I think that's a pragmatic solution to the problem in the sense that we're not asking the company to stop trading. But the company is making that shift on the side, and then that side business gets bigger and bigger. So I think that's, that's one option that's quite interesting.

S2: I want to come back on that first point on developing other commodities such as biofuels and that could be a pragmatic way to react to the problem. I don't agree with that. It's easy if something has a bad impact on the environment, to just say "I don't do it anymore". I do something else. This is not solving the problem. The need for oil trading is not going to reduce. If we step out, it's just going to be another trader somewhere that is going to pick it up and that it is going to do the same with probably even less sympathy and less engagement towards this goal than what we have. So it's not a solution.

What we try to say here is that we want to be present in all these different markets, but we are not substituting the oil trading by something else. We're not doing that. The oil trading stays there. And I think what we need to look for is how, if we want to stay in this business, can we while staying find a solution and contribute to reducing climate change?

S1: Because really the question of your thesis is how can a commodity trading operating from Switzerland gain a competitive advantage by embracing calls for an industry change. It's not by running away from it, you know? Because it's not by saying, now we're going to invest in bio fuels and it's going to be all good now. The other business still exists. It's not that. It can't be replaced every now and then. The group strategy is to keep our oil in, especially our oil business, because we know that in 30 years there's still going to be a demand for gasoil and gasoline. But we are trying to focus on new projects which have a lower technical cost for extraction. So we're trying to improve our portfolio instead of having projects where the cost of extraction of oil is very expensive, we're trying to

reduce that average cost of extraction. If your fixed costs are cheaper as a group, and probably as a trading company, this helps you.

7.9 Appendix 9: Interview n°9

30.03.2023 - Interview with a decarbonization specialist working for a major Swiss energy trading company.

The interviewee has expressed the need that no transcript of the conversation be made.

The conversation covered many elements:

- the importance of sustainable goals and commitments and their potential to help federate a company towards action;
- the impact of climate change on the availability of commodities and the subsequent need for a balanced approach which includes concerns for sustainability;
- labelling and its impact on the viability of green supply chains. Examples of success stories in the interviewee's company;
- communication and the benefits of a proactive approach in this aspect;
- the evolution of decarbonization measures and its link to the rate of technological adoption.

7.10 Appendix 10: Interview n°10

05.04.2023 - Interview with an analyst at an NGO specialized in covering the ESG issues linked to commodity trading and international business.

The interviewee has expressed the need that no transcript of the conversation be made.

The conversation covered the following elements:

- the state of the commodity trading industry in regard to sustainability;
- the "trading as a cash pool for sustainability" dynamic;
- inaction by many companies and the causes for this: lack of incentives and absent regulation;
- credibility of sustainability reporting, shortcomings related to a perceived lack of transparency within the industry;
- presence of cheap talk and weak signals used to gain reputational benefits;
- efforts by trade finance to monitor the environmental performance of commodity traders;
- the need for more regulation of the industry and what this could look like.

7.11 Appendix 11: Interview n°11

03.05.2023 - interview with a specialist in carbon neutral commodities

How have you seen the commodity trading industry evolve in the past 10 years in terms of environmental issues?

Back in the day there was less pressure from the public. It was a time where companies were beginning to asl questions related to this and in regard to their communication. Behind this there was also often regulation which were expected et industries often preferred to anticipate rather than being behind faced with a regulation they're not ready for. Now, a commodity trading company exists to make money. Some sell crude oil to respond to a demand. Since a few years, in part due to looming regulations, traders are starting to present a more sustainable offer. It's a topic that increasingly at the forefront. Governments are putting regulations in place, but there are also pressures coming from a paradigm shift operated by individuals which ask for more sustainable goods as well as from financing. Banks are under pressure, for example with actions from activists which came into the local branches of certain banks. These institutions cannot have that. A growing number of players are looking for goods which are more ecological and respectful of ESG criteria.

Traders respond to demand. More and more, they are realising that their clients are engaged in a reduction plan and so they're starting to offer the corresponding services. It's still marginal, but it's something which is going to grow, I'm convinced of this. One prime reason for this are the Paris accords, which were signed by about 80% of the world GDP for a net zero world in 2050. To do this you must first assess the carbon footprint, reduce it and offset what you can't reduce.

If I understand correctly, these carbon credits can't be used to diminish all of a company's emissions?

There are many ways to deal with emissions. You can measure them at the corporate level. For a trading company, you can measure Scope 1, which are low, and Scope 2, which are equally low. In contrast, Scope 3 are more difficult to measure and the company does not control them. [company name], for example, has ambitions to be carbon neutral. In the case of coffee, the company can reduce the emissions of its factories but it does not produce coffee. So they have to make sure that their producer has done a good job in order for the company to reach its objectives. So pressure passes from one company to another and traders have to adapt. Fortunately, trading is an industry which adapts very fast.

In the future there will be many types of commodities. There will be different types of products depending on the customers need. For example with fair trade coffee, we notice that the consumer is ready to pay more for something they consider "clean". Traders develop sustainable offers when there is a willingness to pay for it. When talking about carbon compensation, if you take the example of crude oil that's a lot of CO2 and a trader is forced to offset emissions through the voluntary carbon markets.

As of today, there are clients - like Singapore which burns LNG to create electricity - which issue tenders where the carbon footprint of the cargo is part of the selection criteria. Another example is battery makers and car manufacturers. Today, we're starting to hear about low carbon aluminium or copper because these companies are under pressure. When they sell a car, they want to put forward the fact that they are aiming for carbon neutrality. So increasingly they're asking their producers to deliver low carbon metals because it's part of their scope 3.

To come back to the Singapore tender, or other similar examples, a trader whose offer is certified by a label would be in a position to be more competitive?

One thing that we must be aware of and that is very important in this day and age is communication. A few years ago, one could afford to claim that their products were "clean" and there wasn't really anyone to go and investigate to see what was behind these claims. Imagine a company which sells coffee produced in a fair manner, same example again. It can either brand it like any other coffee, brand it with an in-house label or show the sustainable effort with a label. The label offers credibility, and it carries a standard and protocol which should always be publicly available to consult.

But labels are also linked to risks. If a trader decides to put together a carbon neutral crude oil cargo, they know that many NGOs will scrutinize these actions and attack the trader on these points. So what happens is for example what is happening with [oil company name]: they offer carbon neutral products but they do not communicate about it. The reasoning is that if they don't offer these products they are in trouble and if they communicate they are in trouble. The only option is to perform well but to not communicate

Another example is [other oil company name], which responded to a low carbon crude oil tender from China. For that transaction, the scope of decarbonization was from production to delivery and this transaction was certified. If a company decides to offer low carbon products, there's little chance that it won't use a certification process. And this is simply for the sake of

credibility, it's good risk management. The company in this example would have been attacked if they didn't have a certification. So now if someone decides to criticize the transaction, the company can defend that it acted transparently and turn and point to the label. The third party is essential for credibility and communication.

7.12 Appendix 12: ERM's TCFD conference

Transcript from ERM's publicly available webinar "Leveraging TCFD in your organization: Preparing for the Swiss Ordinance on Climate Disclosures", dated 29.03.2023 (see Bibliography). The excerpt is taken from a questions and answers segment with Richard Head, Global Head of HSEC at Trafigura

Do you reckon that voluntary compliance to TCFD and the implementation of science-based targets could lead to a competitive advantage for commodity trading companies?

Head: Yes. If you think climate change is important and is going change the way the world works, then you need a strategy to respond to that situation. If you don't think climate change is important, then you don't think it's going to work, then obviously you don't need to manage this issue. But I think everyone in this call think that climate change is the big issue for a generation. It's going to change the way companies work, the way the world works, society works. It's going to have impacts that we can't even imagine. You need a strategy to address that. The sooner you get an effective strategy in place, the better. So, if you are a few years ahead of your competitors thinking about what this is going to mean to you, then yes it's a competitive advantage.

And where would you feel that competitiveness? Is it when you try to sell goods or is it rather when you try to get some financial or access to, to financial means, for example, from banks or other financial institutions?

Head: Everything. From our perspective it's a safe access to quality finance is, which is absolutely essential to our business model. The banks are at the forefront of a lot of this so they're asking questions of us and they are expecting us to have coherent answers. Having the TCF framework by which we've adapted our adapted the climate strategy is a good answer to the good questions that are being asked. So that's one aspect of it for us. And again, for us where we sit, we supply the commodities that are essential for the energy transition: nickel, cobalt, lead, copper, aluminium, galvanized steel. We're all over that. So the transition is a huge part of what we do. But that's only one aspect, because that is just market forecast around the demand for these metals, but everybody can do that. What is it that could differentiate Trafigura? What's the market need?

And that's where we got to transparency. You need to understand the carbon footprint of this stuff that's coming into the market. And if we can bring low carbon commodities to market, they'll be more attractive for those companies that are trying to manage their

impacts than high carbon commodities. So that's where you start differentiating yourself from others, and transparency is the key that unlocks all of that.

7.13 Appendix 13: Commodity trading, share of Swiss GDP

a) Merchanting, net transaction amount for 2022: 78'288 million CHF (SNB, 2023)

b) Swiss GDP for 2022: 723'517 million USD (OECD, 2023)

c) average USD to CHF conversion rate in 2022: 1 USD = 0.9548 CHF

d) Swiss GDP for 2022 in CHF: 690'814 million CHF

e) commodity trading share of GDP: 78'288 * 100 / 690'814 = 11.33%