

SPECIAL EDITION | APRIL 2020

AGEFICOMMODITIES

A composite image of Earth and the Moon in space. The Earth is at the top, partially obscured by a bright blue light source, with a lens flare effect. The Moon is at the bottom, showing its cratered surface. The background is a dark starry sky.

**DISRUPTION IN
A DISRUPTED WORLD**

Editorial

Let's go to the moon!

“To think of disruption, one must imagine oneself already disrupted,” so aptly summed up the digital evangelist Stéphane Mallard.

Thanks to technical progress, the multiplication of connected objects and the development of the blockchain, never in our history have so many means been deployed to meet the challenges of logistics. So let us dare to disrupt as the theme of this Commodities proposes. Why not the Moon? This is the challenge proposed by EPFL: “Space is hard”, as they say, and logistics helps explain why it's hard (see page 5).

The SpaceX rocket indeed shows us to what extent the space adventure is now considered a simple logistics project. But that doesn't take away from the fun of the adventure. Finding

oil in Saudi Arabia, copper in Latin America, cotton in China... these all remain challenges as important as recovering lunar minerals.

Trading and logistics professionals are taking an important place in an increasingly disrupted world and they fully assume this role as a link between suppliers and traders. But to go to the moon, figuratively and literally, despite technological advances, the commodity trading activity continues to face global political uncertainties and the challenges of climate change. Tensions between the United States and China and turbulence in the Middle East have weighed heavily in 2019 on commodity markets. This year, the coronavirus epidemic augurs difficult times ahead with the shutdown of

the economy in China, the world's largest consumer of raw materials. The major shift to sustainability and fair trade has come early enough to enable commodities to face and overcome these challenges.

Nevertheless, demand for commodities will likely regain its strength as the rhythm of the global economy picks up, this essential activity will continue to prove its vital importance in our globalised economy. ■



Luc Petitfrère

Editor-in-Chief,
Agefi

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Disruption in a disrupted world



Ramon Esteve
President, Swiss Trading
and Shipping Association (STSA)

Disruption is why merchants exist, bridging the gap between supply and demand. Disruptions in our supply chains are viewed as business opportunities, not threats. Consumers and industry do not want to manage the fickle global supply chains that provide them with goods and services; they want their needs met at the lowest possible cost. This does not mean that our activity cannot be disrupted. Consider the coronavirus pandemic, which has sparked a global crisis, putting the movement of goods and persons substantially on hold. Or the steady rise in protectionist policies, dismantling the progress of the last 50 years that enabled trade and the greatest creation of wealth in human history. Trade flows will have to adapt to thrive in today's disrupted world. In the current uncertainties, Though certain politicians propose scaling back globalisation as a remedy to current uncertainties, this would be a huge mistake as our economies and health systems benefit greatly from diversified supply chains.

The last major disruption possibly faced by the commodities industry was the emergence of the Internet. Today, technology is set to significantly

disrupt and evolve supply chains to the evolving political-economic climate. Most merchants define themselves as "supply chain managers", and new technologies will allow transactions to happen more efficiently and with less cost. They also allow the gathering of traceability data in demand from consumers who want to ensure products are safe, sustainably manufactured, and that human rights have been respected throughout the supply chain. At the same time, they bring new challenges, such as cyber risk and a certain degree of social upheaval. Certain jobs will become obsolete, and new forms of labour will require different skillsets.

Technologies, coupled with increasing regulation, pose a particular challenge for trade finance. As banks streamline to cut cost in this environment, they must either standardise transactions to allow their automation, or reduce the number of high maintenance customers. The latter includes merchants due to their different products, supply chains, business models and compliance obligations. This is to the detriment of small and medium-sized companies, which make up the majority of commodity trading, who cannot afford massive technology investment and do not have profitable business volumes. Ironically, this takes place in a world where regulators are afraid of the "too big to fail" or market dominance by a limited number of players.

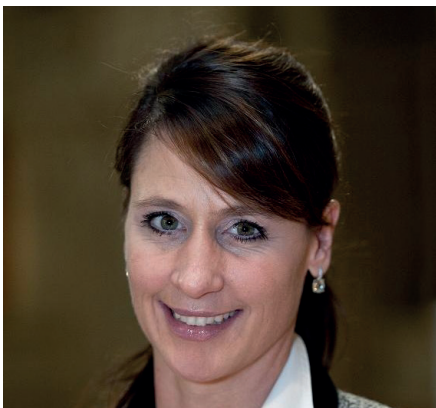
Climate change is another key disrupter. Whilst civil society no longer accepts the pol-

lution generated by fossil fuels, we continue to be more energy dependent than ever. Desalination, for example, key to ensuring the availability of clean water in many countries, requires energy. Agricultural practices must be reviewed if we are to feed 8 billion people sustainably, with crop inputs becoming more costly and the raw materials to produce them scarce. Shipping continues to suffer from increased pressures – though the implementation of IMO 2020 may be well underway, companies face the challenge of significantly cutting down on emissions to reach the IMO objectives on reduction of greenhouse gas emissions in a difficult market. The rate of technological change has led to exacerbated invocation of the precautionary principle, often leading to more damage than the imagined harm it pretends to shield us from.

As much as we fear change, they present new opportunities for mankind to disrupt in the face of disruption and use it for the greater good. In the current coronavirus crisis, a special thanks goes to hospital workers everywhere, putting their own health at risk to help fellow citizens around the world cope with the pandemic. The need to unite proves ever more compelling, and STSA also plays a key role to accompany its members through current challenges by providing a platform of exchange of expertise and best practices. We are grateful to be able to count on the continuous and valuable support of our members. ■

One on One with Florence Schurch

Meet Florence Schurch, the new
Secretary General of the Swiss
Trading and Shipping Association



Florence, you have recently started at STSA as its new Secretary General. Could you tell us a bit about your background?

Coming from the Swiss Homeland Security and diplomatic sectors, I was posted in Washington D.C. a few weeks after 9/11 and in Germany, and worked in public affairs for decision-makers and politicians at the Swiss cantonal and fede-

ral levels. I have always been passionate about geo-political strategies, the way countries defend their interests and form alliances.

My journey up to this point is definitely useful for the trading and shipping activity. Whilst our members conduct business worldwide and are subject to geo-political considerations and States' interests, they are nevertheless anchored in Switzerland, and are subject to Swiss laws, as well as international laws and regulations. Through the Association, they maintain close engagement with the Swiss authorities.

What are some of the key aspects you would like to bring to the Association?

After his election, STSA's President Ramon Esteve stated that his goal is to make Swiss citizens as proud of their traders as they are of their cheese makers.

That is exactly what I want to do. The public has little knowledge of what trading and shipping really is, and most do not realise where their morning coffee comes from. They cannot imagine that without traders, they wouldn't be able to drive their electric cars or eat pineapple for breakfast, for example. All these things have to be explained. Does the public know that over 50% of coffee traded in the world is traded from Switzerland? And that this makes up about CHF 1.2 billion in coffee exports, whereas cheese exports account for CHF 600 million?

Switzerland is proud to have a chocolate industry and to be well-known around the world for its chocolate... but without traders who provide the cocoa, there would be no chocolate in Switzerland.

It is only by giving examples to the public, and explaining the business, that Switzerland will be as proud of their traders as they are of their cheese makers.

So far, what do you see on the horizon of the commodity trading activity?

The commodity trading activity around the world is vital to the supply and consumption of essential goods. We cannot have diversity of goods in our countries without these service providers; that's a fact.

At the same time, companies owe it to all stakeholders – including consumers, NGOs, international bodies, development agencies, and state and federal authorities – to be more transparent and collaborative regarding traceability and sustainability of their supply chains and the respect of human rights. It is essential that companies' voices (small and large companies across the commodities classes) be heard, and that they be key partners for the authorities at the negotiating table. STSA has been a serious and trusted partner for its stakeholders and it is our intent to remain so. ■

Elsa Floret, Journalist at L'Agefi

Trading in a disrupted world: a whole new ball game



Pierre Galtié

Head of Commodity Trade Finance,
Member of the General Management,
Banque de Commerce et de Placements

It is no secret that disruption creates turbulence which consist of arbitrage and pricing opportunities for commodity traders. But traders also play a key role in regulating the supply chain in this uncertain and evolving environment.

Many different parameters have recently converged to slow down commodity trading, whilst also bringing demand for more sustainable and efficient supply chains to the foreground.

The US/China trade war, together with the vagaries of Brexit and the uncertainties of the outcome of future US elections, have inflicted various shock waves which have significantly impacted trade flows. We observe that this cyclical slowdown, due to geopolitical uncertainties, has also shaped the need for a more resilient and agile supply chain. When regular trading flows are distorted by exogenous factors such as the various political conflicts we have been wit-

nessing lately, market actors, both on the import and export side, turn themselves towards trading companies which have the necessary know-how and logistics capacity to play a buffer role.

In this context, the agility of trading houses is more than ever one of the cornerstones of supply chains' fluidity – either offering to open new paths where the usual ones are blocked to avoid the supply chain being drained, or able to manage stocks when the usual distribution channel is slowing down. What is at stake in distorted markets is the ability to adapt to constant and fast changes while maintaining adequate pricing and mitigating the numerous risks associated to it. This allows people to continue receiving food and industries to continue getting the raw materials they need, with a clear impact on employment and the economy. When China stops buying soybeans from the US, traders have the necessary know-how and logistics to continue supplying those beans by turning to other sources, such as Argentinian or Brazilian farmers for instance. For other products such as mining products used to produce alloys, the issue is different. In periods of Chinese slowdown, it is hard to put mines, on which

entire cities and families rely to live, purely on hold. It is also complex to substitute purchases. In such cases, traders may act as a buffer between a constant offer and a slowdown on the demand side. It would be naïve to ignore the impact on prices. At the same time, it also allows for the absorption of shocks in periods of instability.

Those cyclical geopolitical uncertainties are accompanied by more structural changes which the various trading actors have a responsibility to take into account. While climate change is driving the consumer demand towards more “green” and ethically sourced products, the rapid growth of the world's population raises the spectre of natural resources scarcity. The combined effects of those realities force actors to rethink the supply chain in a more circular economy and sustainable manner. These new trends towards renewable, sustainable, and less polluting products are essential.

Disrupted or not, the world is structurally changing. All trading actors, trading houses, and specialised banks, have to be real solution providers with a tailor-made approach to accommodate the evolving needs of the markets. ■

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Sustainable logistics in Space



Marc-André Chavy-Macdonald
Postdoctoral Researcher, Systems
EPFL Space Center

"Space is hard", as they say, and logistics helps explain why it's hard.

Sending people, materials, or delicate instruments to space means strapping them to a towering controlled explosion – a rocket – which even today has a "failure rate" of 2-10% (please take a moment to imagine this "failure"). Once up there, precisely calculated & timed engine burns send the item gliding to its assigned orbit at 7 km per second. Returning is no less arduous: special heat shields are needed to survive. And we should return what we send up! An astronaut's wrench at those speeds would annihilate a tank, let alone an exquisite satellite worth hundreds of millions. As the International Space Station enters its twilight years, the focus of government logistics moves to the Moon, which, even for grizzled space engineers, is *much* further.

A revolution is afoot in space logistics, starting with miniaturised electronics, first made for smartphones, now allowing shoe-box-sized "nanosatellites". This reduction in costs brings space within reach of aspirational students & entrepreneurs. Since SpaceX began a reusable rocketry renaissance, launching has never been cheaper. And the initially bare-bones tiny satellites have exciting new capabilities when launched in swarming, coordinated flocks, or "constellations". They can map the entire Earth in a day, or provide continuous internet access to the planet.

These developments are like Christmas every day – wonderful at first, but likely unsustainable. Sustainability is now a concern across space logistics, as access to space becomes cheaper, privatised, and continuous – more "normal". Commercial actors performed their *first* on-orbit servicing on February 25th, to refuel & repair satellites rather than discard them. Governments are keen to employ materials from the Moon itself (known as In Situ Resource Utilization (ISRU)), and eventually manufacture there. Academic researchers are focusing attention on space debris, an inevitable by-product of cheap launches and vast constellations.

The Moon: the sleeping satellite must awaken

Lunar mining marks a historic shift in space logistics, and in human civilisation: for the first time, *we seek resources from another body than Earth*. After the 2009 remote detection of water by Indian and American orbiters, several space resource exploration companies have arisen – and fallen. Some remain, e.g. the Japanese firm ispace, and United Launch Alliance (ULA), a Boeing-Lockheed Martin joint venture. Academic communities have formed, and Luxembourg is now a cluster for space resources actors, partly by offering rare legal clarity on resource ownership. Last year, the U.S. Geological Survey began evaluating Lunar regolith (soil) as resource reserves. Lunar water attracts the most attention, to support human exploration, and may be refined to oxygen and hydrogen, for breathing or rocket fuel. Billions of tonnes of ice may lie in "craters of eternal shadow", but need in situ verification to justify astronomical valuations. After government exploration, envisioned markets include fuel for satellites, and in the fullness of time, a "cis-Lunar economy" extracting metals (e.g. from ilmenite) and silicon. Titanic scientific, technological, legal, and economic uncertainties

will be tackled in the 2020s by many missions, with NASA already contracting commercial delivery services to the Moon.

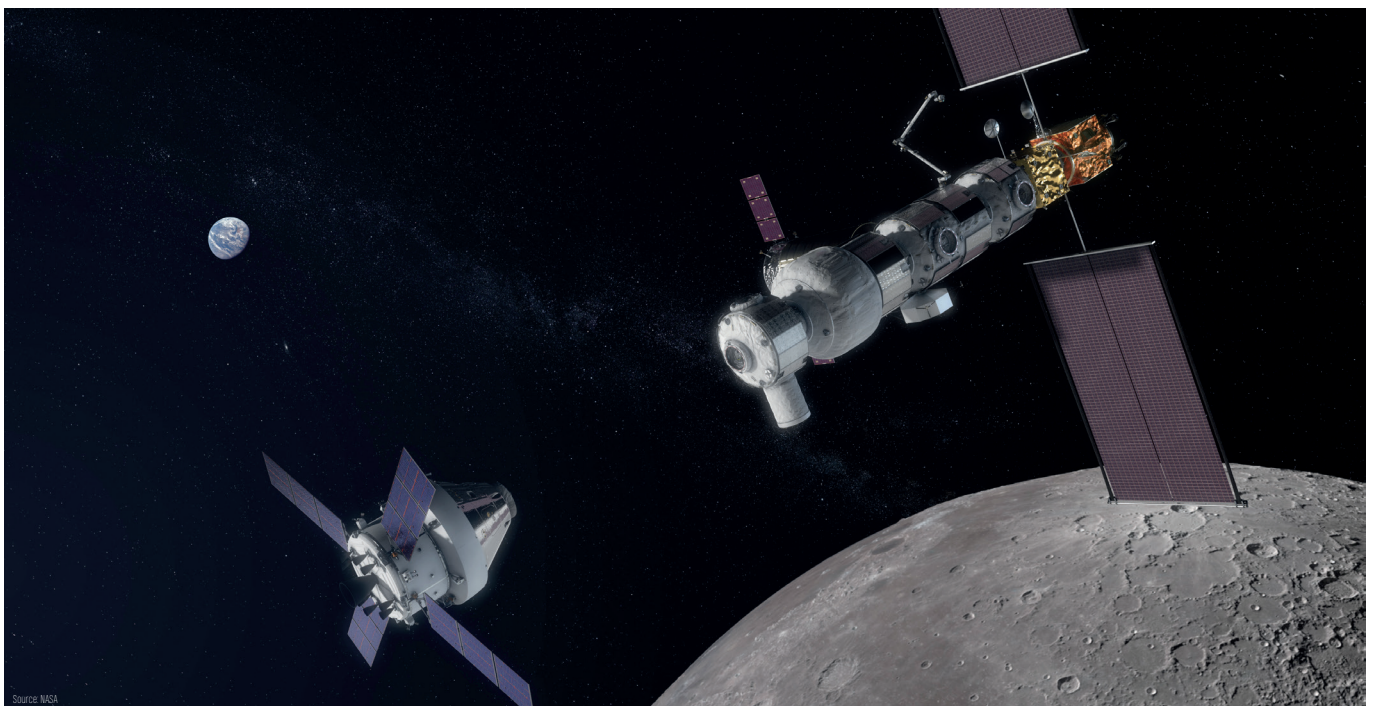
EPFL taking the lead

Few space industry actors consider all these transformations holistically, despite their shared impact on space logistics. Thus in response, the EPFL Space Center (eSpace), based in Lausanne, last year launched a research initiative called Sustainable Space Logistics. It aims to build a new community, ensuring the satellite operators talk to the R&D engineers, the NASA planners coordinate with the fast-moving entrepreneurs, and the academic researchers exchange ideas widely.

One key message of sustainability is interconnectedness: whether the telecom industry decides to shift mostly to low-flying, swarming constellations – or to high-orbit, half-billion-dollar behemoth "stations" – affects the on-orbit servicing businesses. Similarly, the business case for sourcing materials from the Moon is shaped by rapidly diminishing launch costs.

A concrete application of sustainable space logistics is the Swiss start-up ClearSpace. It was selected in November by the European Space Agency to lead an €86M programme to remove a piece of space debris, with a mission in 2025. This will be the first-ever demonstration of a solution to space debris, and of a new profession: space garbageman. Born & incubated at eSpace, ClearSpace was spun off with key personnel.

With the *Sustainable Space Logistics* research initiative, the EPFL Space Center is positioned as a hub for the current revolution, ensuring long-term, sustainable thinking drives us forward. The Space Center is seeking partners, sponsors, and ideas – and know-how from logistics practitioners. ■



Data as a commodity of the future



Pierre-Edouard Dolhen
Head of Derivatives Back and Middle
Office, Louis Dreyfus Company

If there's one commodity the 4th Industrial Revolution craves, it's... data.

Machine learning and artificial intelligence – the drivers of technology's next great leap – are built on algorithms that demand and consume massive amounts of data. Little wonder, then, that the January-February 2020 issue of Harvard Business Review notes that data, if employed smartly, can create a competitive advantage for corporations. This means opportunities for the economic sector known as Data Brokerage.

Though the industrial revolution it is feeding is just now emerging, Data Brokerage itself is nothing new. Indeed, most of the leaders in data brokering, such as Acxiom, were founded in the late-1960s. To this point, brokers have primarily supported the needs of marketing departments within large corporations. And that need has been large. Though the value is difficult to estimate (something on the order of \$200 billion annually), it's clear that the data brokerage sector is already signifi-

cant and already highly regulated (such as with Europe's General Data Protection Regulation, or GDPR).

Given that the data-brokerage industry has existed for roughly 20 years now, it's no surprise that a vast supply chain already supports data-brokerage needs. That existing supply-chain, however, has had to evolve – often quickly – to meet changing demands.

At the beginning of the supply chain, a massive variety of producers are currently harvesting specialised data (from images to statistics, depending on the need) on a hyper-short cycle. For example, brokers focused on the Internet of Things market are sending data continuously to data servers. The information is stored on these servers, before being sold to users demanding specific data sets to feed into machine-learning models that, in turn, become the basis for analytical services sold to other companies.

In the middle of this process are data brokers who are buying data, cleaning it, enriching it in various ways, and then storing that enhanced data before reselling it to different end users.

However, over the last five years, the data-brokerage sector has had to evolve quickly to manage increasing appetite for data needed to feed machine-learning models at large corporations.

Brokers have had to increase not just the volumes of data they process, but the type of data they collect and provide to their customers.

Indeed, data brokers have faced fundamental changes in four economic paradigms:

- **New products:** The number of data types required by machine-learning constantly evolves and expands. In the year 2000, data collection was, effectively, email addresses. Today, it's hyper-local, real-time geo-location information.
- **Integration:** Technology is ever-changing. As new services emerge – from blockchain to the Internet of Things – data brokers have had to incorporate these expanding needs into their daily processes.
- **Short-Cycle Dimension:** Most large corporations are also looking to collect and process data gathered and produced by their own systems
- **Recycling:** Used data maintains value that another department or another client can re-use and process through Artificial Intelligence. Most of the time, data is a byproduct of a primary transaction, such as selling a product online and collecting consumer data that is then sold and resold.

Today, data has become the new commodity. It's one of the first commodities to confront the transformation of four economic paradigms (new products, new technologies, short cycle and recycling). And its evolution over the last five years should inspire traditional commodity companies to face their own evolution. ■

Trade statistics show disruption in commodity markets



John Miller
Chief Economic Analyst,
Trade Data Monitor

Commodity markets are being disrupted by slugging growth in global trade, political protectionism, saturation in China, and the move toward the green economy, according to an analysis of trade statistics from Trade Data Monitor.

Based in Geneva and Charleston, Trade Data Monitor is the world's premier source of import and export data. The company procures figures from government sources, and assembles them for a list of blue-chip clients including the UN's Food and Agriculture Organization (FAO), major law firms and corporations, and the French Ministry of Agriculture.

The U.S.- China trade war is the biggest source of disturbance in global commodity markets. As Beijing and Washington have slapped tariffs on each other's exports, it

has distorted some of their biggest markets, particularly in agriculture.

Chinese imports of soybeans from the U.S., for example, fell to USD 6.6 billion in 2019 from USD 13.9 billion in 2017. China has replaced the gap with shipments from other countries, making winners out of farmers in countries like Brazil. Shipments from the Latin American country to China increased to USD 23 billion in 2019 from USD 21 billion in 2017, according to TDM data. Soybeans are part of a wider trend. Overall, Chinese imports from the U.S. declined to USD 122.7 billion in 2019 from \$150.4 billion in 2017. Shipments from Brazil increased to USD 79.7 billion from USD 58.4 billion.

In general, the trade war is shifting trade flows away from the world's two economic superpowers and towards new export powerhouses like Vietnam, Thailand, Mexico and Brazil, hurting farmers and industrial goods makers in the U.S. and China.

As Chinese growth tapers off from its furious pace in the first decade of the century, its imports of some industrial commodities are slowing down. Imports of

copper, for example, fell to 6.5 billion kg in 2019 from 7.8 billion kg in 2018. Imports of organic chemicals declined to USD 57.5 billion in 2019 from USD 67.3 billion in 2018.

A third factor disrupting global commodity markets is the green movement, which has increased trade in biofuels and hurt coal markets. South Korea, Thailand and France all heavily shrank coal imports in 2019. Funds and banks are shying away from coal.

The question for commodity markets will be whether they can survive the end of the free-trade consensus that has reigned in ministries throughout the world since the end of World War II. The growth in world trade fell to only 1% last year, a decline from 4% in 2018 and 6% in 2017. That's the fourth worst progression in the last 40 years. That should be no surprise. The U.S. and China are the world's two great national consumer markets. With over USD 4 trillion a year in combined imports, they are juicy targets for companies around the world, and the driver of economies all the way down the supply chain from mine to store shelf. The new protectionism is bound to keep having an impact. ■

Navigating the digitisation of commodity trading



Alessandro Sanos
Director, Commodities EMEA
Refinitiv

With change increasing both in speed and complexity, the commodity trading leaders of the 2020s will be the organisations able to take informed decision faster than their peers

As we are entering the 2020s, the pace of change in commodity trading is showing no signs of slowing down. A high level of uncertainty has always dominated commodity markets. But in the last decade, the commodity trading landscape has witnessed profound change as the variety and volume data that is the essence of the commodities ecosystem has grown exponentially.

Historically, the business models of market participants revolved around superior access to information. Companies holding the physical assets and the infrastructure used to control the majority of the data, and experienced traders would gather and leverage exclusive market intelligence from their extensive network of connections. Today, technology is allowing new entrants from outside the industry, and small players with no physical assets nor proprietary data, to access granular and detailed information that was once the privilege of the global players.

In this new information-rich environment where data is widely distributed, virtually all commodity traders and analysts can access near-real-time insights that were not previously available, or affordable.

This democratisation of information, and the simultaneous exponential growth of data, is eroding the old information edge and is bringing a new level of transparency in an industry which has long been characterised by its opacity.

To remain profitable in this increasingly competitive market, and as profit margins are continuously tightening, the commodity trading industry can no longer postpone a review of the old business model. The business-as-usual investment in data and technology is no longer enough to secure a competitive advantage. To get ahead of the competition, the need to distinguish between a technology upgrade and digital transformation is becoming increasingly apparent.

This journey will rarely follow a straight line. Just like a sailboat's course where navigation requires constant adjustments, success will result from a continuous anticipation process rather than a series of distinct, disjoint, and sequential adaptations. A disruptive vision, a willingness to experiment, and the strong support and commitment from senior leadership will be paramount in navigating the choppy waters ahead and

in capturing the treasures of the uncharted coastline. Guided by the broader business strategy, the task will be to identify a match or to find a compromise between the specific business needs of the company and the available technologies that can solve those needs, have successfully moved from concept stage to reality, can scale fast, and that are within budget. At the beginning of this journey, and especially for smaller commodity companies that may lack the resources or the know-how, partnering with technology providers able to offer a holistic approach can help generate new insights without incurring the costs associated with complex technology investment.

Through our engagements with customers and partners, we know our clients are spending an enormous amount of time and resources in discovering, evaluating, ingesting, mapping, normalising, and analysing data in different formats and from multiple sources. This non-negligible task can take up to 80-90% of an analyst or data scientist's time before they can focus on extracting useful, timely, and actionable insights.

With the number and variety of new data sources deemed to increase over time, competitive advantage is evolving from being able to access additional sources of data, to how well and how quickly commodity trading companies can manage data, commingle it with proprietary information, apply technology to generate insights, seamlessly distribute them across the organisation, and then be able to make informed decisions ahead of their competitors.

The democratisation of traditional numeric data is transitioning the quest for sourcing insights from numeral values to alternative data and unstructured content. Many organisations already have access to a wealth of research reports, government filings,

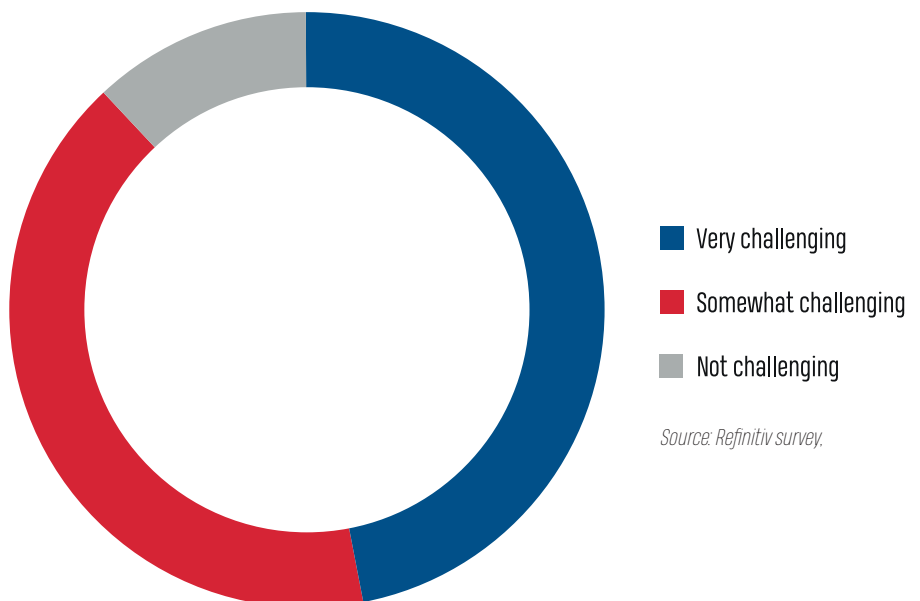
news articles, proprietary data, and other unstructured sources of information. But due to their unstructured format, most companies currently struggle to leverage at machine-speed this type of information and to turn it into meaningful and actionable insights. But the use of natural language processing, text analytics, data-mining, and other advanced technologies, combined with data management, allow to move seamlessly between numeric values and textual content and turn the big data buzzword into a single flow of information that can be used by artificial intelligence, machine learning, or predictive analytics.

Talent demographics are also evolving rapidly, and what is emerging, is a new generation of traders and analysts able to navigate this new digital world, code, and interact with data. Commodity trading houses have started competing with financial institutions and hedge funds to hire data scientists, and Chief Information Officers and Chief Technology Officers are increasingly reporting directly to CEOs as their strategic role in the evolution of their companies is crucial.

The transformation of commodity trading is bringing new challenges to the industry, but commodity players are well known for turning challenges into opportunities. With change increasing both in speed and complexity, the commodity trading companies that will emerge as the leaders of the 2020s will be the forward-thinking organisations that recognise the transformative role of technology in managing data and in generating insights, and that ultimately, will be able to take informed decisions faster than anyone else.

We have an exciting journey ahead of us. Knowledge is the most valuable commodity, and data is just the beginning. ■

HOW CHALLENGING IS IT FOR YOU TO AGGREGATE AND NORMALISE YOUR DIFFERENT INTERNAL AND EXTERNAL DATA SOURCES INTO A SINGLE INFORMATION FLOW?



We now have the opportunity to realise the huge beneficial gains that come with making use of the bright ideas from all corners of our workforce.

Empowering the industry of the future



**Despina Panayiotou
Theodosiou**

CEO, Tototheo Maritime
& President of WISTA

Gender equality and diversity policies are no longer box-ticking features in a company CSR report; they are increasingly important tools in remaining ahead of the game in a modern, competitive and rapidly changing society.

The shipping, transport and trade industries are no different – we now have the opportunity to realise the huge beneficial gains that come with making use of the bright ideas from all corners of our workforce.

There are a number of well-executed research projects that have studied the impact of the inclusion of women in all societies, of highlighting how women can bring new ideas and an increase to the wealth of a society. In a world – and in an industry like shipping – that is transforming, we need diversity to ensure we have all the ideas and get on the road to the future.

In a world – and in an industry like shipping – that is transforming, we need diversity to ensure we have all the ideas and get on the road to the future.

We have started well.

The Women's International Shipping & Trading Association (WISTA) gained consultative status at the International Maritime Organization (IMO) in 2018. The time was right – the right people were listening and were in a position to act. But it wasn't only the IMO – the whole industry was listening – for the first time, there was a common effort to highlight and to realise the positive difference that diversity brings.

There are many women involved in trade. They can be found in all parts of trade flows from artisanal manufacturing to the boardroom, but while there are roughly as many women as men on the planet, this of course far from equated in the workforce and particularly in roles of seniority.

We are building a landmark Women in Maritime survey – an important step to achieving the objectives of WISTA and the IMO and closing the gap.

The annual IMO focus theme in 2019 was “Empowering Women in the Maritime Community”. This led to a range of initiatives that helped not only increase awareness, but also opportunity. We saw the IMO Day of the Seafarer theme take a similar topic on encouraging women to choose careers at sea and ensure they are supported.

We are now building on those huge gains in 2019 and continuing our work with the IMO through a Memorandum of Understanding on Technical Cooperation.

This will help lay the basis for showing how diversity enhances businesses, markets, clusters and countries. It will also pave the way to greater gender neutrality, where the gender of an applicant, a professor, an expert or a leader is no longer a relevant factor.

We see this as being critical to the future of our industry. As I mentioned, we have the research to demonstrate how diversity creates opportunities for businesses and societies, but within shipping and maritime trade we now need to identify the concrete strategies to ensure that these developments are sustainable.

This is also why we are building a landmark Women in Maritime survey, a fact-based as-

essment of the number of women employed in the industry and where. While this is no easy task to complete – the very definition of the maritime sector varies from country to country, region to region – it is an important step to achieving the objectives of WISTA and the IMO and closing the gap.

It is by acknowledging those gaps that we can work on building sustainable strategies to bridge them. This will be no small task, but we are committed to continuing our efforts. Among them, we are creating a database of female experts that can be called upon to address any of the technological or policy related topics that are under discussion, debate and review, and we as WISTA are supporting the IMO in many of its other technical considerations at Committee meetings to ensure that the diversity discussions and benefits shine through with all the benefits they bring.

Diversity of thought and ideas is an integral part of this process and we have a wonderful opportunity to create the bedrock for an advanced, successful industry.

With our industry evolving, we all have to bear in mind the sustainability objectives that are expected of us. As shipping turns green and we strive to decarbonise, we need to collaborate to ensure that the societal benefits are delivered. The same goes with the technological advancements and how these will alter the nature of shipping as we know it today.

To achieve this, we need to have open discussions and to invest time and effort into collaboration and trust. Diversity of thought and ideas is an integral part of this process and we have a wonderful opportunity to create the bedrock for an advanced, successful industry, one that is fit for purpose in the sustainable societies we are developing. ■

In the context of global economic realignment, client expectations and the recent outbreak of coronavirus, the industry shows its professionalism in handling these evolutions, and its resilience, thanks to a strong freight forwarders community.

Today is not yesterday - nor is it tomorrow



Dr. Stéphane Graber*
Director General, International
Federation of Freight Forwarders
Associations (FIATA)

In turbulent times

Since the financial crisis of 2008 and modest expansion of international trade, the end of 2019 saw a contracted volume in container shipping while airfreight faced a 14 month decline.

These were but two of the challenges facing the international freight forwarding industry in 2020. In the context of global economic realignment, rising protectionism, client expectations, margins under pressure and the recent outbreak of coronavirus, the industry again faces great uncertainty. With environmental concerns making headlines, increasing demand for sustainability strategies, enhanced route optimisation, capacity utilisation, shifting modes to minimise emissions, and carbon neutral services or greener energy, the future remains unpredictable. Last but not least, the industry continues to face challenges in the recruitment of young talent that look for companies sharing very different values from previous generations in a declining international market.

There is a clear and present need to reassess the economic role international freight forwarders play, and how they can continue to create value in the supply chain. Traditionally, international freight forwarders have focused on arranging transport and documentation preparation. However, changing business models require a change from the traditional service delivery to a value-added service for their customers across a variety of logistics services.

The freight forwarder as the “architect of transport” is crucial to the worldwide movement of goods across borders, irrespective of the means of transport. Today, they are confronted with three natural evolutions impacting the supply chain: the rise of protectionism, the diffusion of new technologies enabling the interconnectivity of all stakeholders in global ecosystems, and worldwide demographics. Their ability to deal with these evolutions will be key for the future of this industry.

Supporting Trade Facilitation

The recent change in geo-political forces has seen the rebirth of protectionist policies wor-

ldwide, with profound implications on global supply chains. As with the commodities activity, freight forwarding has not escaped the wanton hand of trade tariffs and retaliatory action. Trade restrictions by WTO members are at historic highs, with import-restrictive measures representing an estimated USD 747 billion. Such fractures in the international trading system have profound implications for the supply chain, and a knock-on effect on economic growth and development, connectivity being today an important precondition to economic opportunity.

Unified cooperation of stakeholders is vital to find new approaches, including the continued incorporation of technology and sustainability to grapple with changing regulation and controls. Also crucial is the opportunity for industry representative entities to work closely with international bodies, governments, and national agencies to assist in the full and effective implementation of trade facilitation reforms. Taking an inclusive and pragmatic approach to these new realities is necessary to building a stable and strong international trade system of the future. FIATA, as the largest non-governmental organisation representing service providers in international trade logistics and supply chain management, plays a key leading role in this arrangement.

Technology opening a new era of freight forwarding

With the acceleration of technological developments, of which the Blockchain is certainly the most emblematic, international trade, an activity traditionally dominated by paper documents, is facing a fundamental shift. More than ever, freight forwarders will need to understand their value proposition and adapt their business models.

Freight forwarders, as architects of the dynamics and enablers of the supply chain, need more than ever to communicate with their partners to achieve increased efficiency and timely communication between all stakeholders in the industry initiatives around interoperability and automated exchange of information. Interoperability, however, requires trust between the trade partners in the global environment that international freight forwarders operate in. The increasing complexity of the supply chain involves technology as the enabler as to increased quantity of information for data collection, analysis and processing.

While technology represents a unique opportunity to facilitate trade and optimise the activities of the industry, such is not without risks, should cartels form the new platforms. FIATA sees its role in this regard as enabling horizontal work and standards setting for the future in order to get the best of new technological applications for its members and industry.

Demography, a key factor of successful adaptation

In this era of rapid change, the international freight forwarding industry has to adapt to its new environment and bring new skills and capabilities. Training and education play a key role in these deliverables. First it is through training that an industry can attract new young talent that will bring with them diversity, new ways of thinking, and different priorities to allow the industry to evolve and thrive within this new environment. Second, training and professional development is key to maintaining talent within the industry to be at the forefront of new developments.

To respond to the shortage of workforce and to increase the diversity that is necessary for an industry to adapt to its environment, special attention needs to be given towards gender equality and diversity. Training programmes should attract women in order for the industry to increase its diversity across all hierarchical levels within companies. Making the industry more open to women doubles the recruitment pool and brings a change of business approaches.

FIATA, the leader of a strong freight forwarders community

These developments have been embraced by FIATA with confidence and conviction, and are key strategies of its work to create value for its members to strengthen the key role of international freight forwarders, increase the efficiency of their operations and focus on added value. The digitisation of the supply chain will optimise international freight forwarders' operations, increase margins, meet client expectations and move goods in a faster environmentally sustainable way. FIATA will take the lead to enhance the future of its members in freight transport. ■

With the contributions of Dr Nina Eggert, Andrea Tang, Stephen Morris, and Guy de Pourtales

Today's tech era requires a global solution



Andrea Tang

Legal & Regulatory Affairs Officer,
Swiss Trading and Shipping Association
(STSA)

In an era of rapid technological developments, heralded as game-changing answers to the prayers of many, the commodity trading activity is on the cusp of an exciting evolution. Industry players have been quick to develop aboard various technological initiatives, eager not to miss out on the next revolutionary solution to increase efficiency, enhance traceability and sustainability, and aid in compliance with mounting regulatory obligations worldwide – a tall order indeed!

Legislators and regulators worldwide are too being gradually swept up by this new wave, as the legal implications become more apparent. What is the legal effect of a smart contract, an electronic bill of lading, or other contractual obligations conducted over one of the various industry initiatives based on an underlying technology? Switzerland, for example, recently undertook a comprehensive reform of nine of its laws to incorporate blockchain

and DLT, for the purpose of increasing legal certainty, reducing the risk of abuse, and removing barriers for applications based on such technology. In addition, the Swiss authorities hosted a recent roundtable with industry stakeholders, to better understand their needs. Ensuring a favourable business environment is a key priority for many countries in today's competitive economic environment, and technological openness is becoming part and parcel to this criteria.

Nevertheless, challenges remain. In a global business that depends on so many multi-jurisdictional touchpoints, fragmented legislative and regulatory recognition in different countries may leave room for doubt or legal uncertainties in the complex commodity trading supply chain. This has ripple effects amongst the various actors, not least the trade financing providers who need certainty regarding the crucial aspects of the transactional arrangement, not least as to who holds title to the underlying collateral at each given moment. In addition, the increasing reliance on technology across every aspect of our supply chains, and indeed, the very functioning of our human societies, leads us to the very real risks of cyber-attacks and ensuring resilient cyber-security

systems. Recent cases have demonstrated the proximity of such risks, their paralytic consequences, and the crippling losses they bring. Finding optimal and effective solutions will require the concerted and unified efforts of all actors, including companies in building effective cyber resilient architecture, insurers in developing solid and pragmatic products to deal with these new realities, industry associations such as STSA in being able to consolidate the expertise across the activity, and national authorities in ensuring appropriate legislative and regulatory responses.

We are delving deeper and deeper into an exciting new world filled with ever greater possibilities to innovate across the supply chain. Though technology continues to remain somewhat mystical in that there still remains much that is undiscovered and not well understood, now is not the time to take a passive 'wait and see' stance. Now is the time to take a global approach to a global matter, working together to anticipate technology's new challenges and lay the foundation for its continued flourishing. STSA continues to work closely with the Swiss authorities, international bodies, its members, and beyond to ensure a vital platform for this dialogue. ■

Out with the old and in with the new!



Victoria Attwood-Scott

Global Head of Compliance, Mercuria

Feeding the world's growing population sustainably despite a changing climate and finite natural resources is among the world's most pressing challenges.

The commodities markets are curious beasts. We are transforming, transporting and supplying high volumes of high value products and this is still being done based on paper documents being couriered, signed and emailed around the world. In some instances, we still use carbon copy paper!

The types of products that we trade, and, in fact, the types of products the world currently relies on for fuels are products that we know are not good for our environment, nor for the future of our next generations in the longer term. It is clear that there are cleaner, greener ways of producing the energy that the world needs to consume.

So, in a world where my children are confused when they can't pause the television and wouldn't know what a CD was if they fell over it, why has our way of doing business and the type of business that we are doing not changed?

The truth is it's hard and it's expensive! In these global markets where we are producing in one location and moving to another location, possibly transforming products along the way, the system needs to work in every one of those locations. To move away from a document-based system, global laws need to validate digitalisation at each stage of the supply chain and they are just not there yet.

The energy transition, the move from dirty to cleaner fuels, presents us with similar challenges. If the cleaner fuels that we produce do not satisfy the energy needs of the population, how does the world bridge this gap? Building new renewable infrastructure is expensive so who will foot the bill for these projects, especially given most investors have lost significant amounts of money in renewable investments over the past 10 years.

Despite all of the challenges we have to overcome them.

We have to transform the industry for the sake of our environment, be it the effects of extraction of coal from the ground, the need to have full traceability of the products we consume or the mounds of paper being consumed in our paper-based world. Our markets need to find a more sustainable solution. Aside from the environmental impacts that need to be addressed, the way that we currently trade and communicate is extremely inefficient, leaves us susceptible to an ever-increasing number of fraud attempts and make compliance with international laws, such as sanction laws, dependent on people and manual processes.

We need change!

We believe that we play a very important role in this transition. After all, who better to understand and guide the transitions than the participants who understand the supply and demand requirements and challenges? Sustainability and transparency are good for our markets and the markets have benefited from an increase in both over the last 10 years but we need to go further.

No one group can do it alone. That is why we have been at the forefront of some of the industry's recent consortium approaches to moving our markets forward. Mercuria was at the inception of both VAKT and Komgo which strive to digitalise various aspects of our business.

We are actively looking for others to co-invest with us in more projects which will help us transition to a more transparent and sustainable supply chain, but attracting money for this effort is more difficult than one might imagine in this environment where everyone is pushing us for change.

It is important that companies integrate the UN Sustainable Development Goals (SDGs), Agenda 2030, into the DNA of their strategy. The business that we do and how we do it can be indexed to the SDGs on an ongoing basis. We need to work actively with external parties on how we can assist with the transitions.

Change is ultimately always a good thing, we need it, we want it and we are excited about market developments and the opportunities that these market disruptions and revolutions will bring. ■

New technologies in commodity trading: evolution or revolution?



Jean-Noël Ardouin
Associate Partner, EY



Kaïs Boubaker
Manager, EY

The SRIC Foundation, in collaboration with EY and STSA, conducted a survey to assess the impact of new technologies on the commodities trading industry.

The survey took place during spring and summer 2019 and was conducted by the Swiss Research Institute in Commodities ("SRIC") with the support of EY covering 56 companies, mainly trading companies (70% of respondents) as well as trade finance banks (11% of respondents), certification companies and insurance companies. Among the respondents, 75% have their headquarters located in Switzerland, 54% of the respondents have between 11-100 employees and 27% more than 100 employees. The results displayed in this study reflect the positions of the surveyed companies at that point in time, acknowledging that the industry is moving fast in the adoption of new technologies.

The study focused on the impact of the following technologies: artificial intelligence (AI), big data, blockchain and robotics process automation. The first element to highlight from this study is the high level of awareness of these new technologies in general. More than 60% of the respondents declared having a strong level of awareness, which we believe is the result of extensive news coverage, conferences and emerging consortiums pertaining to new technologies in the last years across all industries and the commodity trading sector specifically. Additionally, the survey shows that blockchain enjoys the highest level of awareness across respondents.

The big question mark however remains: whether new technologies will improve the execution, efficiency and profitability of the business

model of companies active in the trading sector, or will it radically transform the way business is conducted opening the path to new opportunities and market entrants?

Most of the surveyed companies believe that the highest impact will be in the support functions (IT, trade execution and operations) but also trade finance and paper trading, including improvements such as:

- digitisation of customer identity (for KYC)
- digitisation of letters of credit
- digitisation of physical post-trade processing
- automation of trade confirmation and reconciliation

With respect to front office activities, the mass collection of data, coupled with progress in the areas of AI and machine learning have opened up new operational possibilities. Complex algorithms requiring efficient data storage and structuring can learn from data and tackle complex decision-making tasks. Machine learning can complement human decision-making, such as short-term price predictions of commodity prices based on voluminous data sets.

However, surveyed companies strongly believe that new technologies will not revolutionise the commodity trading industry, but rather, help in increasing operational efficiency while decreasing risks (e.g. fraud risk, credit risk, traceability). In an industry facing erosion of margin, this would already be a big improvement.

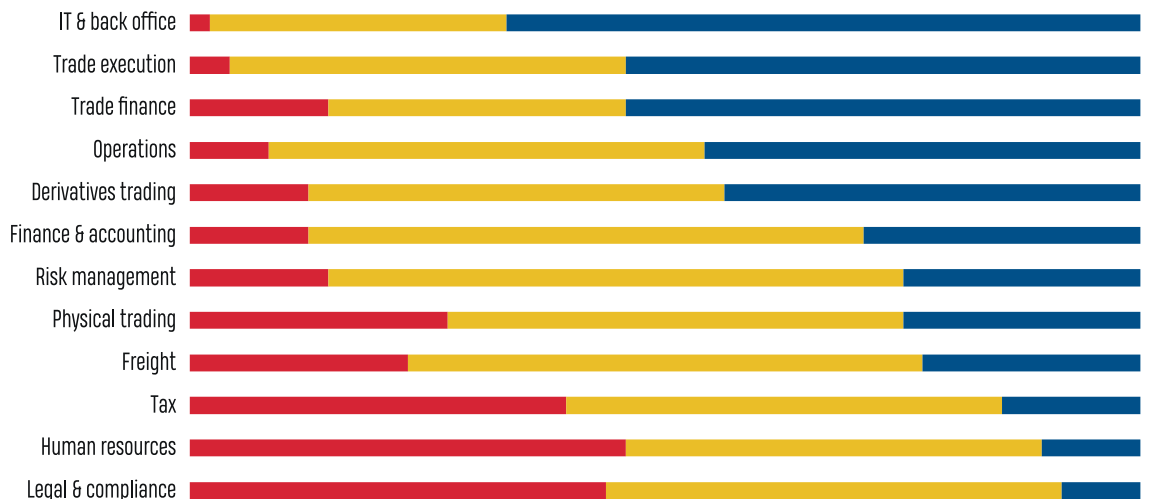
So, what are the principal challenges companies are facing with the adoption of new technologies? Firstly, aside from a few leading initiatives specifically around the use of blockchain technology, some of the respondents are still in the process of identifying tangible business cases.

In particular, small and medium sized companies (SMEs) are struggling to develop a strategic vision on how to make the most of these. One of the obstacles often quoted by respondents is also the lack of standardised technologies in the market combined with the lack of experience with these technologies. Considering this, many companies have adopted a "wait & see" approach or are just starting to test the waters. While commodity trading firms are usually very agile, resistance to change and lack of management support have also sometimes been pointed out as factors slowing the adoption of new technologies, specifically for SMEs.

As often pointed out, the commodity trading industry is about commodities, but also about having people with the right skills, mindset and experience. Therefore, trading companies are hiring more and more data scientists, change managers and business analysts to help implementing and adopting new technologies. But it also becomes more and more frequent that even through the different functions and roles in the trading industry (from traders to operators, risk managers, compliance officers, bankers, credit officers, etc.), new hires must have some experience and appetite for working with new technologies, if not programming skills. This means trading companies are looking for new types of profiles in the market, which they will need to fight for against technology companies, start-ups and other industries which are also benefiting from the adoption of new technologies. The pool of talents with the right skills is not infinite and there is a lot of competition in the market to hire these. To attract these talents, companies active in the trading sector are putting forward the opportunity to really make a significant impact to the future of their company (and the whole sector) by modernizing processes and improving efficiency through the whole value chain. An innovative work environment combined with a strong company culture encouraging people to come up with new idea is also a strong value proposition to attract these talents so that they contribute to the future of the commodity trading sector. ■

HOW WOULD YOU ASSESSE THE CHANGES IMPLIED BY THE EMERGENCE OF THE NEW TECHNOLOGIES IN THE COMMODITIES TRADING INDUSTRY

- Little/no transformation
- Medium impact
- Significant transformation



COMMODITIES TRADING FORUM

Geneva, Switzerland
September 16, 2020

Building on the success of 2019's inaugural Geneva event and reflecting increased collaboration and partnership with the Swiss Trading & Shipping Association (STSA), Global Trade Review (GTR) is delighted to announce that its newly expanded Commodities Trading Forum will be taking place at the Intercontinental Hotel Geneva on September 16, 2020.

Co-hosted and held in partnership with both the STSA and PwC and reflecting on Switzerland's role as one of the world's leading hubs for commodities, from oil and gas to metals and agribusiness products, the conference will provide a comprehensive overview of the global commodity trading and financing landscape.

Attendees will benefit from an extensive mix of industry experts and practitioners sharing ideas and offering critical market insight through interactive session formats, whilst unchallenged networking opportunities provide access to over 200 different companies across the commodity spectrum.

What to expect in 2020



"Together with our members, we look forward to building on our mutual synergies to further reinforce the strength and dynamism of the Swiss trading and shipping hub."

Swiss Trading & Shipping Association
(STSA)

For more information contact Elisabeth Spry
at espry@gtreview.com or visit www.gtreview.com

#CommoditiesTradingForum

New technologies in commodity trading



Bernhard Bollinger
Manager, PwC



Michiel Mannaerts
Partner, PwC

Key opportunities in our industry lie in increasing efficiency and extracting more value from an increasingly competitive supply chain.

What can we expect from the often-discussed new technologies and what does that look like in the market today? Based on a recent PwC Survey, Robotic Process Automation (RPA) and solutions built on Blockchain appear promising in increasing efficiency, with Data Analytics and Artificial Intelligence (AI) also offering opportunity for increased insights and improved decision making.

A key success factor for implementing any of the above-mentioned applications is to have the basics right.

Supported by the largest commodity trading houses, well-known initiatives like VAKT, Komgo or Covantis are focusing on blockchain-based transactions that will make trade processing more efficient. VAKT aims to transform the trade-lifecycle from trade confirmation, logistics to invoicing into a digital ecosystem, Komgo offers a blockchain-based trade finance platform and Covantis' objective is to modernise the execution process for international Agri bulk-commodi-

ties. Numerous other solutions have entered the market, in addition to parallel developments in the existing Commodity Trading Risk Management (CTRM) applications.

Solutions like Agridigital, Contour (formerly known as Voltron), Marco Polo Network, Open Mineral, RiceExchange, We.trade are examples using blockchain technologies that facilitate trade initiation – in combination with smart contracts – which can address the inherent inefficiencies of lengthy and costly trade initiation and document processing.

There are also a variety of solutions, such as CargoX, Essdocs, ocode, TradeLens, around logistics tracking, authenticity verification or guaranteeing the origin of goods, making use of smart packaging or codes with integrated invisible ink and blockchain technologies preventing the undesirable duplication of certificates. Integrating such procedures in trading processes enables paperless, fast and secure document handling between traders, logistics- and finance service providers.

RPA / AI modules based on Alteryx or Blueprism provide powerful techniques allowing efficiency gains while automating processes. Such applications - often used around trade settlement processes - can learn, propose or even autonomously decide and execute respective bookings. For instance, AI-based VAT coding, or cash collection and assignment to invoices, can be integrated in payment and accounting systems to minimize so far resource intensive tasks.

Data Analytics/AI allow processing data with a complex set of rules aiming to detect

patterns. Systems like ChAI, Complete Intelligence, EnHelix, Kayrros MetalMiner, allow forecasting portfolio exposure or price moves. Such tools can combine the power of satellite imagery analyzing crop yields or scanning market assessments, using natural language processing to give real-time trading recommendations.

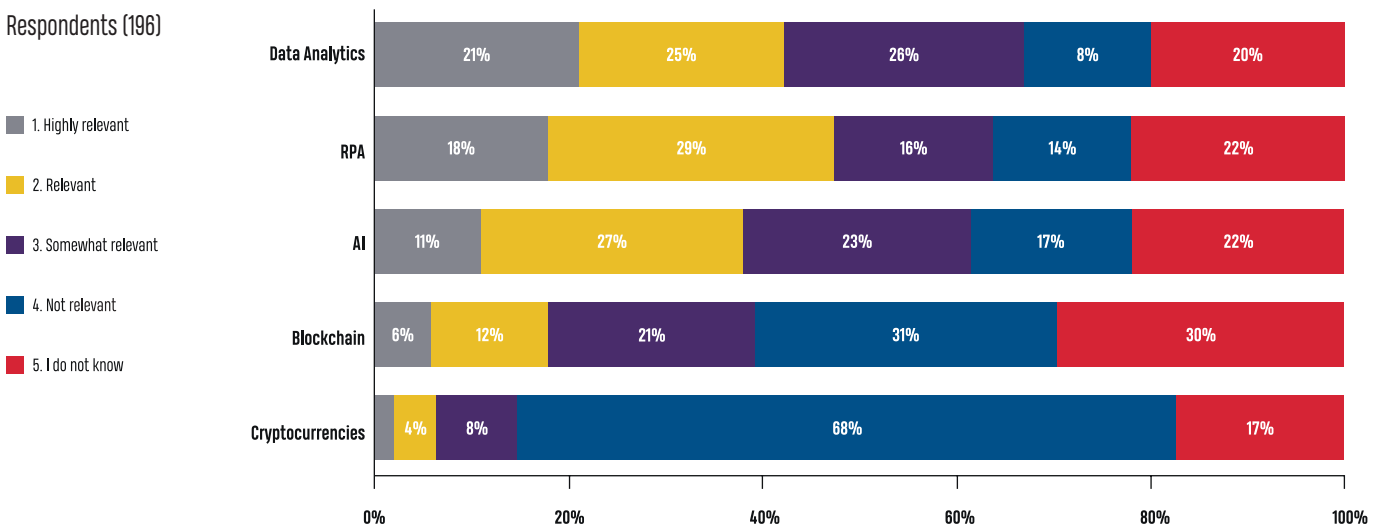
Based on our experience, a key success factor for implementing any of the above-mentioned applications is to have the basics right. This means having an appropriate CTRM and ERP fundament in place, which supports extracting the value of these

To enable the transition to these new technologies upskilling of the workforce is critical.

new technologies. Furthermore, to enable the transition to these new technologies upskilling of the workforce is critical. Another consideration is that handing decision-making power to algorithms may raise concerns on the responsibility of AI learning methods. Independent assurance providers will be required to verify code correctness of smart contracts used for autonomously entering into binding agreements. Finally, it will be important to have a clear view on the business case and drivers – revenue increase, cost reduction, process stabilisation, or trust building, a good understanding of available solutions and a structured approach supporting the choice and implementation of the technology. ■

HOW RELEVANT DO YOU CONSIDER THE USE OF THESE TECHNOLOGIES IN THE NEXT 2 TO 3 YEARS?

Respondents (196)



Pervasive digitalisation: Great possibilities and high risks



Paolo Lezzi
Founder and CEO, InTheCyber Group

Just a few years ago we could not even imagine the level of connectivity that we are experiencing in recent years.

Internet of Things (IoT) devices have become pervasive in the world of commodity trading. These detectors can be found almost everywhere in the supply chain: on ship containers, in the agriculture field in order to monitor land and production, in the oil field and inside mines. Drones and satellites are used to monitor any infections that may affect cultivations, or to know weather forecasts which allow agricultural producers to predict all those conditions that could slow down production and supply.

Supply and demand are the cornerstones of commodity trading, and goods must be shipped to the right location at the right time. IoT

enables the collection of all data needed to have real-time information. At the same time, there is a complex network of participants and regulators continuously following the process, as well as online trading platforms where these transactions take place.

The whole process utilises a very high level of technology, and compromising just a part of it can cause significant market alterations. Think about the possible repercussions if IoT devices, which provide critical information to manage supply and demand, are attacked. Even without mentioning all the types of vulnerabilities that might affect these products, it is well known that most manufacturers apply default credentials for their use. Everyone remembers the damages affected by the Mirai botnet, which took advantage of default credentials in IoT devices (cameras in that case). The pervasiveness of these tools and the constant market demands, force manufacturers to swiftly produce more & more of them without paying sufficient attention to security and without releasing updates for the oldest ones.

Another issue is the communication that takes place between the various actors of the pro-

cess - producers, wholesalers, governments and regulators. Think about the possible repercussions if a hacker were able to enter inside the communication process and manipulate, for example, the truthfulness of the exchanged information. There is also the risk that cyber-attacks reduce the product availability of a certain producer by blocking its systems or damaging them, or even affecting trading platforms. Think about the repercussions if a main supplier, such as an oil producer for example, were forced to stop the production due to a ransomware attack.

Pervasive digitalisation has brought many advantages, such as the introduction of blockchain technology which prevents the modification of bills of lading and so on, and the ability to access real time data. As always, great possibilities also bring high risks. That is why even the commodity trading world must approach cybersecurity systemically, considering every single element of the process connected to the internet as a potential weak point. It is necessary to improve security in order to cope with the constant evolution of the cyber threat, protecting processes, technologies, and training all people involved in these processes. ■



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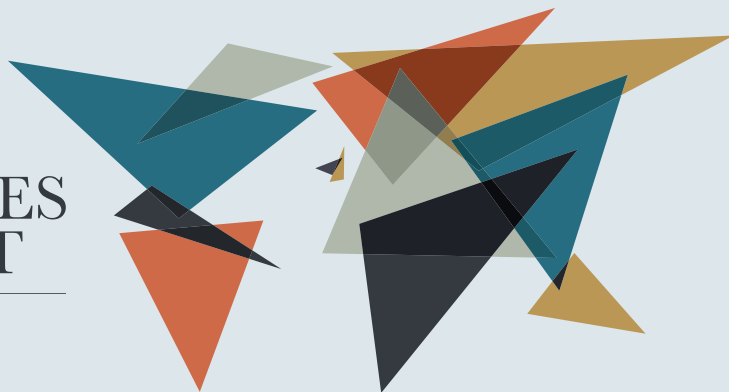
Jean-Sébastien Jacques, CEO, *Rio Tinto*

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Tackling the cyber threat to global supply chains



Anna Bordon

Thought Leadership and Product Development Manager, Innovation, Lloyd's of London

Supply chains in the modern world are highly complex, interdependent systems that control the flow of trade globally. The projected growth of connectivity and connected devices over the next decade will drive global economic growth, but at a cost. As connectivity, consolidation and efficiency increase, so do the attendant risks if not managed appropriately. For example, such hyper connectivity has the potential to turn isolated cyber events into global catastrophes.

Understanding the impact of cyber-attacks

Lloyd's report, *Bashe attack: Global infection by contagious malware*¹, produced with the University of Cambridge Centre for Risk Studies on behalf of the Cyber Risk Management (CyRiM) project², looks at the impact of a large cyber-attack in which malware in an email, when opened, encrypts all the data on every device on the network, and is automatically forwarded to all contacts. The report estimates that an attack of this size would affect the data on 30 million devices within 24 hours resulting in an economic loss ranging from USD 85bn in the least severe scenario variant, to USD 193bn in the most severe, with damages affecting up to 600,000 businesses globally.

This scenario operates much like real-world malware such as the 2017 NotPetya ransomware, which quickly spread from Russia and the Ukraine into Europe, the US and Asia Pacific, infecting everything from hospitals in Pennsylvania to a chocolate factory in Tasmania. The more recent LockerGoga ransomware attack that targeted Norsk Hydro cyber-attack cost a reported USD 52 million loss³. These are just two of many examples of indirect supply chain attacks that affect multiple suppliers, and cause millions of dollars in losses that trickle down into the economy.

Another Lloyd's report analyses the impact on another global sector – marine. Today, international shipping is responsible for 80% of world trade by volume with more than 55,000 cargo ships in active international trade providing goods, services, and jobs worldwide. It is a critical part of the global economy yet is very vulnerable to the cyber threat. The report, *'Shen attack: Cyber risk in Asia Pacific'*⁴, looked at what could happen if a computer virus were to infect IT systems in up to 15 ports in the Asia Pacific region. The report found that this could cost USD 110bn in the most severe scenario, affecting the transportation, aviation and aerospace sectors, with only 9% of losses insured. Business interruption and contingent business interruption are the most underinsured business classes. The report also found that more than half of losses in this scenario are accounted for through non-affirmative cyber – those insurance policies that do not explicitly mention cyber – which highlights the potential need for risk managers and insurers in this sector to reassess their total risk exposure.

Managing supply chain risks

As demonstrated in the *Bashe* and *Shen* attack reports, interconnected economies will suffer significantly from any catastrophic event, whether it be natural or manmade. The *Shen* attack scenario shows that many third-party organisations, including those further along the supply chain, could be affected by a cyber-attack of this nature to the tune of a fifth of the total insured losses. Almost 90% of these would be under an all risks policy (non-affirmative cyber).

As supply chains have evolved and become more complex, insuring interconnected business interruption risks has grown more challenging. Hidden Vulnerabilities⁵, a report published by Lloyd's and modelling company AIR Worldwide, shows how the failure of critical infrastructure on one side of the world can cause catastrophic supply chain losses on the other, by using the example of a hypothetical cy-

ber-attack on the suppliers of a New York-based car manufacturer.

This scenario modelled a two-week disruption to the Chinese aluminium industry which resulted in 12.2 days of contingent business interruption loss to the US engine manufacturer. This clearly shows how disruption to the primary metal manufacturing industry can impact global supply chains across the world, especially tier 1 and tier 2 producers. As China is the one of the world's leading aluminium producers and supplies the US with a quarter of its aluminium, any local disruption would have severe consequences for US and international heavy industry.

The world is unprepared

The scenarios Lloyd's has created challenge the assumption that the global economy is well prepared for a cyber-attack of this nature. It sends a clear message to organisations – companies, industry associations, markets and policymakers – that they must improve their awareness, and assessment of cyber and supply chain threats.

All the recent Lloyd's supply chain and cyber reports clearly demonstrate that both global supply chains and cyber risks have evolved rapidly, and will continue to do so, making it more challenging for insurers to underwrite business interruption and contingent business interruption risks. That means risk managers and insurers should remain wary of relying on current, more traditional, scoring platforms that could be neglecting correlation and interconnected risks, and must invest in developing new, dynamic modelling techniques. ■

1. <https://www.lloyds.com/news-and-risk-insight/risk-reports/library/technology/bashe-attack>

2. <https://irfrc.ntu.edu.sg/Research/cyrim/Pages/Home.aspx>

3. <https://www.reuters.com/article/norsk-hydro-outlook-idUSL5N22C2B>

4. <https://www.lloyds.com/news-and-risk-insight/risk-reports/library/technology/shen-attack-cyber-risk-in-asia-pacific-ports>

5. <https://www.lloyds.com/news-and-risk-insight/risk-reports/library/understanding-risk/hidden-vulnerabilities>

HOW A GLOBAL RANSOMWARE ATTACK COULD UNFOLD



Recruitment

Over six months, six programmers are vetted and recruited to carry out a global malware attack within a year.



Development

The team develop a ransomware attack designed to maximise exposure and interruption that spreads without human interaction while avoiding the pitfalls of previous attacks.



Contagion

The malware is delivered via a phishing email. A sole employee opening the attachment triggers the encryption of all network data and demand for ransom is received within minutes.



Response

Affected companies calculate the cost-benefit of paying the ransom and adopt a range of strategies including replacement of infected devices and ransom payment.



Aftermath

Servicing infected machines takes a year with critical systems receiving priority. Clean-up costs reaches billions of dollars. The media perpetuates distrust in connected devices and fears of a copycat attack.

lloyds.com/CyRiM

#CyRiM

#BasheAttack

Stock surveillance – Golden Rules to follow



Patrick Eberhardt
Partner, Eversheds Sutherland

Inventory finance is surprisingly robust, given the millions of tons of commodities that are harvested, stored, loaded onto trucks, barges, rail wagons or vessels and shipped around the globe.

However, large scale mysterious disappearances may occur. They create turmoil and can have drastic consequences for traders, banks but also for inspection companies. Following certain Golden Rules can help avoid unpleasant surprises.

1. Stock monitoring or collateral management or a hybrid: The higher the level of control, the lower the impact on the bank's capital requirements pursuant to Basel III. In stock monitoring, inspectors survey a stock (quantity and quality) held in a warehouse or a tank, either ad hoc or periodically, while in collateral management, the inspector takes physical possession and holds the stock until

ordered to release. Hybrids exist, for example where inspectors survey stock and monitor the release by the warehouse or tank operator. Finally, inspectors may also verify the storage documents.

2. Surveillance does not create a pledge: This is determined by the laws at the location of the surveyed commodities. One has to keep in mind that, a priori, neither an inspection report nor a warehouse receipt create a valid pledge or other security right.

3. Scope of work: Verify quantity and quality of a designated or the entire stock held in the warehouse? Inspect the genuineness of storage documents and cross-check against the books of the warehouse? Parties should determine up-front the desired level of services.

4. Who may rely on the inspector's advice? Surveillance agreements, inspection reports and warehouse receipts should clearly indicate who may rely on them. Inspectors are only liable to the addressee of their services and reports.

5. Multiple inspection of the same stock: It is a headache when one or several inspectors

survey the same stock for several financing banks, especially when commingled. Seek for clarity upfront, also amongst financing banks.

6. Ghost commodities and fraud: The banker's nightmare. Best avoided by full-scale inspections of the storage documents (including genuineness) and of the entire storage site. Unannounced inspections or changing inspector can burst the fraud bubble.

7. Insurance: Small quantity variations can be stomachached, but large-scale mysterious disappearances can only be covered by an appropriate insurance. Parties should check upfront if proper cover is available.

8. Jurisdictional risk: No surveillance contract without efficient dispute resolution mechanism. Swiss law and ICC or Swiss rules of arbitration have proven to be very efficient when dealing with such disputes.

In international trade, speed matters. But taking time to clearly spell out expectations, define the inspector's scope of work, and include provisions aiming at reducing exposure to losses and legal risk is in everybody's interest. ■

An easing of the documentary burden for oil traders?

The European Bulk Oil Traders' Association (EBOTA) provides a forum for its European oil trading members to consider and debate the effect of the changing regulatory landscape. 2020 will be remembered by the oil market as a turning point – dramatic changes are already expected from the new IMO 2020 low sulphur rules. Less well publicised are upcoming changes with respect to two important regulations: the Renewable Energy Directive (RED) and the Classification, Labelling and Packaging Regulation (CLP), which imposes obligations relating to hazardous substances, in addition to those contained in the Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (REACH).

RED

RED forms the cornerstone of the EU's programme for reducing greenhouse gas emissions and promoting renewable energy sources. The existing targets under RED run until the end of 2020. The recast directive (RED2) contains the EU's targets for the period 2021-2030. These include a target of 32% for total renewable energy (by consumption) and a sub-target of 14% for renewable energy consumed in road and rail transport.

RED is important for the oil trading sector due to its impact on biofuels, in particular the rules on the measurement of greenhouse gas emission saving and on sustainability certification for biofuel components. Under RED, a proof of sustainability (PoS) is a crucial document for producers and traders to evidence that their

product is sustainable. However, there is no uniform format for a PoS and Member States have imposed differing requirements, often leading to a burdensome paper trail accompanying the physical delivery of biofuels within the EU.

RED2 mandates the creation of an EU-wide database to ensure transparency and traceability of renewable fuels. This could become a powerful tool for the wider industry, simplifying the compliance burden by promoting standardisation.

It is currently unclear how the database will be designed and what is the timeframe for its set-up. In the meantime, the European Commission is expected to produce detailed implementing rules for RED2, including standards of reliability, transparency and independent auditing for the existing voluntary schemes that underpin the issuance of a PoS. Ensuring integrity and consistency across such schemes will help mitigate fragmentation of RED2 at Member State level.

CLP / REACH

In recent years, oil traders have grappled with the implications of the safety data sheet (SDS), the key document in relation to REACH, which is intended to ensure the safe supply, handling and use of chemicals.

Going forward, the implementation of new rules on harmonised information for emergency health response under CLP Annex VIII threatens to impose a new documentary burden on oil traders. This requires companies placing hazardous mixtures on the market to

provide information on their physical, chemical and toxicological properties to the relevant national body, which in turn will pass this on to Poison Centres. For CLP/REACH purposes, both gasoline and diesel can be considered mixtures, made from a variety of substances.

The European Chemicals Agency, ECHA, has developed a harmonised Poison Centre Notification format for submitting the required information to Poison Centres. Some of this information may already be included in the SDS; however, the increased documentary burden is still likely to be significant.

In an amendment to CLP Annex VIII which entered into force on 30 January 2020, the first compliance date for reporting to Poison Centres has been postponed from 1 January 2020 to 1 January 2021. Oil traders therefore have a little more time to wait to see what the impact of the new harmonised Poison Centre reporting requirements will be.

Broad regulations such as RED2 and CLP/REACH can have a large impact on commodity markets in ways that are not always intended by legislators. Trade Associations such as EBOTA play a useful role in helping oil market participants stay in touch with regulatory change and lobby to protect their interests as the legislation is implemented. ■



Transitioning to electronic bills of lading: a legal challenge in the shipping and trading world



Michael Buisset

Partner and Geneva Office Head
Solicitor England & Wales / Avocat
au Barreau de Paris, HFW

Recent years have seen concerted efforts to streamline shipping transactions into more efficient and secure processes through the use of electronic bills of lading (eB/Ls), which attempt to replicate the legal functionality of a paper B/L. However, without an established legal framework, eB/Ls remain largely unused and raise complex legal obstacles.

Key issues

Crucially, eB/Ls may not be recognised as a transferrable document of title in most jurisdictions. This is because they may not qualify as “documents” under the relevant legislation. Without such legal recognition, an endorsement attempt would fail, leaving the endorsee with no title to sue the carrier, nor to sell the cargo during transit. This has serious implications for the commodities and shipping business, where goods are often sold during transit and can be delivered in discrepant quantities and conditions. Problems also arise when a third party, such as a creditor or a bank, claims rights over traded goods. Such third parties would understandably be reluctant to agree to such electronic documents in the transaction chain if these fail to provide the relevant rights of title, security or suit.

The lack of jurisdictional recognition of eB/Ls as legally equivalent to paper B/Ls is highly problematic in international commodities transactions. To date, only the USA expressly recognises eB/Ls in its legislation. While the Rotterdam Rules provide such recognition, they require wider adoption by signatories to provide certainty to traders. Further, the UNCITRAL Model Law on Electronic Transferable Records is yet to be ratified by all signatories. For an eB/L to achieve the same legal functions as a paper B/L, all parties in the chain need to reach express agreement on the terms traded. This leaves open the possibility of jurisdictional inconsistencies and non-recognition.

Theft and cyberattack are also key risks as highlighted in *Glencore International AG v MSC Mediterranean Shipping Co SA* [2017] EWCA Civ 365. In 69 successful shipments, a PIN code “Release Note” was used by the receivers to take delivery of the goods against presentation of the B/L. However in two subsequent shipments, the receivers found that the containers had been taken, assumedly by

fraudsters who had obtained the PIN codes. *Glencore* successfully sued *MSC* for breach of contract, and *MSC* appealed. The English Court of Appeal ruled that delivery of PIN codes did not count as “symbolic delivery”, and that the Electronic Release Note was not a delivery order within the meaning of English law, as it did not contain an undertaking to deliver as required by the B/L regime. The rise of new technology in the shipping industry is designed to reduce fraud and production of counterfeit B/Ls. However, if a carrier allows an unauthorised third party to access the goods, the carrier cannot be said to have complied with the undertaking in a ship’s delivery order in accordance with the fundamental purpose of a B/L.

This case highlights increasingly common port practice where containers are retrieved by reference to computer codes rather than presentation of physical documents. Ports and terminals are uniquely vulnerable to cyberattacks and theft, due to the prevalence of legacy IT systems in sprawling networks with several different users, many with different cybersecurity policies. The prevalence of digitisation will increase the risk of cyberattacks on physical trades in the form of theft or damage. The Court of Appeal’s decision arguably transfers the risk of theft and damage to goods from the receiver to the carrier. It is to be expected that carriers will attempt to shift this risk onto traders where possible and to change their procedures/standard documents and/or look to additional insurance to address this issue.

Developments and solutions P&I Club systems

Various P&I Club-developed systems are seeking to provide certainty and protection via standardised processes for certain approved eB/L systems. This “Club” system seeks to set out contractually agreed arrangements between parties to a shipping transaction in advance, to cover liabilities arising from the carriage of cargo under the system and to provide certainty for all parties involved. The system’s legal framework facilitates the transfer and endorsement of eB/Ls, theoretically removing the need for paper B/Ls, while retaining scope for reversion to paper when necessary. The International Group of P&I Clubs has extended cover for liabilities arising in respect of shipments under eB/Ls, a sign of the industry moving ahead of legal developments. However, ordinary exclusions of cover apply, just as with paper B/Ls. For example, discharge at a port other than as provided for in the contract will not be covered, nor an ante- / post-dated eB/L, nor the delivery of cargo without production of the negotiable eB/L. Such

exclusions will often be written expressly into the rules of the electronic trading system itself.

These systems could restore the confidence of banks regarding trades with eB/Ls being handled by third parties. *Bolero*, for example, circumvents the paper B/Ls privity of contract between carrier and shipper by novating the contract. This extinguishes the existing contract between the carrier and shipper on notification of an “endorsement” of the eB/L, and creates a new contract on identical terms between the carrier and the named consignee. The endorsee obtains control of the goods and the title vests in the endorsee. Although the Rotterdam Rules attempted to unify such electronic practices, they have not been as widely ratified and enacted as perhaps expected. However, digital systems provide some legal certainty and a clearer framework that will be binding on the system users. These systems could provide a viable alternative to paper, whilst safeguarding the interests of the parties.

Blockchain

Another noteworthy development is the use of blockchain protocol systems to give users more control and security over transactions. Still, legal hurdles come with the emergence of blockchain-based processes in commercial dealings, such as legal recognition of the status of smart contracts and jurisdictional issues. Most smart contracts are incorporated into wider and established traditional contractual frameworks, rather than forming the entirety of the contractual agreement. Some legal aspects are simply too complex for smart systems to integrate with current technologies, such as providing for potential relief from exclusion or limitation clauses, or interpreting phrases with specific legal meanings. In what circumstances can a smart contract give rise to binding legal obligations that are enforceable in accordance with its terms? It will be important to monitor legal developments, because smart contracts are likely to play an increasingly common role in blockchain and eB/L technologies, as the efficiencies and security they offer increase.

Conclusion

While the benefits from digitisation are well established – security, speed, cost efficiencies – legitimate concerns remain over the legal implications regarding the status of eB/Ls. A number of digital systems allow parties to carry out trades without paper B/Ls, but once a party outside the digital framework needs to enter the chain, that party either has to contract on the exact terms of that system or rely on what is a mismatched and incomplete legal framework. ■

One field of technology development that doesn't often receive much attention is SafetyTech, which can improve Occupational Health & Safety (OHS) outcomes.

SafetyTech – Solving Safety Challenges With New Technology



Chris Hughes
Global Lead, Shipping Markets,
Lloyd's Register

There is no doubt that technology will transform the shipping industry over the next decade. New regulations to reduce shipping's GHG emissions by at least half by 2050 will drive the adoption of new zero carbon fuels, and the new technologies that will be required to produce, supply, and consume those fuels onboard ships. In parallel, advances in satellite communications are enabling ships to become increasingly digital and data driven. Indeed, the technology required for unmanned ships exists today; it's the business case that is not yet mature. There are already many promising new technologies that can help ship operators to reduce fuel consumption, reduce GHG emissions, and to mitigate various risks; however there are also many that are more akin to "solutions looking for a problem to solve". Since opening the Lloyd's Register office in Geneva 6 months ago, a lot of my time has been spent helping clients to understand which technologies can deliver a return on investment; and how to successfully integrate them into their business for maximum impact.

One field of technology development that doesn't often receive much attention is

SafetyTech – where the application of data science, wearable devices, and other innovative "tech" is being used to improve Occupational Health & Safety (OHS) outcomes. Across many organisations, safety performance has plateaued. Whilst most companies continue to amass more and more OHS data in the form of incident reports, this data is often of limited value as it is stored in isolated silos of disparate for-

AI has been able to predict OHS incidents, and the leading indicators that cause them, with an accuracy in excess of 90%.

mats, and the textual descriptions of the incident and associated factors are typically unstructured and inconsistent. Natural Language Processing (NLP), a form of AI, is now being used to read between the lines of accident data contained in any format (including hand written reports or voice recordings) to transform this otherwise stranded data into meaningful insights as to causal factors. Advanced analytics can then be applied to the NLP outputs to accurately assess the effectiveness of different interventions or investments (e.g. training), and also to predict

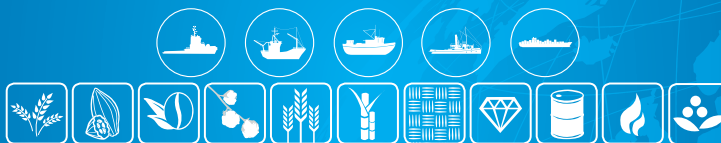
when a particular type of accident is likely to happen: in recent projects, once trained with enough data, the AI has been able to predict OHS incidents, and the leading indicators that cause them, with an accuracy in excess of 90%!

To encourage further growth of the SafetyTech industry, we have set up the Lloyd's Register Safety Accelerator, a programme that matches corporates that have a Safety or Risk Challenge, with start-ups that have the "tech" to solve the challenge supported by seed funding from the LR Foundation to develop a prototype. This award winning programme is now on its 6th round of Innovation Challenges, having received 400 applications from start-ups, and has produced some truly innovative solutions. For example, Senseye, a computational Neuroscience company, worked with Pacific International Lines to develop a system that uses high resolution video to scan ship crew member's eyes to determine in real-time whether they are fit for duty, or impaired by fatigue, alcohol or drugs, or psychological factors such as stress or depression.

The Safety Accelerator programme is always on the lookout for new Safety/Risk Challenges across the Commodities, Trading and Shipping industries. If you have a problem that is looking for a solution (rather than a solution looking for a problem!) we want to hear from you. ■



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- Hull and P&I

November 2018 marked a key milestone with the publication of the Guidance on implementing the UN Guiding Principles for Business and Human Rights in Commodity Trading following an extensive multi-stakeholder process. Since then, what has been done, and what's next on the agenda?

Following up on the pioneering work in Business and Human Rights



Nina Eggert (NE): The publication of the Guidance is the result of a continuous dialogue of STSA and its members with all stakeholders (NGOs, Swiss authorities). It responds to a key priority for companies in the field of human rights, namely understanding the expectations towards companies and examples of UNGP's implementation. In today's increasingly challenging international context, companies have continued to further develop their risk management systems with a particular focus on human rights.

What activities have been undertaken/carried out to promote the Guidance across the commodity trading activity?

KML: At this stage, the Swiss Government, together with cantons and business representatives, has disseminated about 2,000 copies of the Guidance, and about 200 people from the trading sector have been trained on its content. International dissemination of the Guidance has taken place during conferences organized by the OECD, the Voluntary Principles on Security and Human Rights or the UN Forum on Business and Human Rights, among others. Our network of Swiss representations abroad also presented it in trading hubs such as London, Dubai and Singapore. In order to test the Guidance and to learn lessons on key implementation challenges and successes, a selected number of companies participate currently in a pilot implementation initiative.

NE: STSA has been supporting the UNGPs since 2014 as evidenced by its support for the 2014 parliamentary motion (14.3671) proposing mandatory due diligence according to UNGPs. Shortly afterwards it embarked on the journey to develop the Guidance and has updated its Code of Conduct accordingly. The association's Code of Conduct explicitly mentions the UNGPs and the OECD Guidelines, which apply to the activities of all member companies. The Association launched the STSA Business & Human Rights Certificate, which is now part of its regular training offer, allowing companies to remain at the cutting edge of the latest developments and expectations in the area. It collaborates with twentyfifty in organising workshops focused on specific commodities classes, gathering companies across the supply chain. As a trade association, STSA offers its members expertise and a platform to exchange on best practices and challenges in the implementation of the UNGPs.

What were the challenges in promoting the Guidance?

KML: The Guidance has been developed by a multi-stakeholder group, including NGOs, business representatives and cantons, which ensured a balanced and usable document. It remains a challenge to keep all actors committed, as NGOs are currently prioritising their resources for the establishment of binding instruments for human rights due diligence.

NE: The Guidance has been developed in Switzerland, an important hub for commodity trading but also for human rights, and must now find its way at the international level. Today, although the hub is under constant pressure due to the attractiveness of Singapore, Dubai or London, it must ensure good framework conditions as well as a sustainable approach. In this context, the real challenge is to diffuse Swiss best practices worldwide and support a level-playing field. It has been encouraging to see the interest taken at an international level in the work done so far by the commodity actors in Switzerland. This is essential because an isolated action of Switzerland will not help to meet the objectives of improving the integrity of global supply chains.

Moving forward, what are the next steps in the area of business and human rights?

KML: Our plan is to continue engaging with business and NGOs for the promotion and the implementation of the Guidance, and also to get feedback from users. Based on these feedbacks, we may plan some adaptations, and maybe also a web designed version. We also want to focus on the promotion at an international level, in order to reach a level-playing field. We are currently working on this with the OECD.

NE: STSA will continue its work on the promotion of the Guidance, as well as on the development of tools to assist members in addressing human rights challenges. The Guidance is a living document that will need to evolve in line with the latest developments in the field of Business and Human Rights and as long as NGOs are interested in continuing the dialogue initiated in 2014. The future of the Guidance can only be achieved by continuing the multi-stakeholder dialogue and providing pragmatic and effective guidance to companies. ■

Krystyna Marty Lang, Federal Department of Foreign Affairs (FDFA) and **Nina Eggert**, Swiss Trading and Shipping Association (STSA) tell us more.

Following the publication of the Guidance in November 2018, what have been the expectations of the different stakeholders involved?

Krystyna Marty Lang (KML): The Federal Council expects companies based in or operating from Switzerland to fulfil their responsibility to respect human rights in all of their business activities. This expectation has been set out in the National Action Plan for the implementation of the United Nations Guiding Principles on Business and Human Rights (UNGPs), updated by the Federal Council in January 2020, as well as in the Guidance specifically addressed to companies in commodity trading to help them implement the UNGPs. We expect companies to be aware of the Guidance and foster effective implementation. This will involve a range of efforts by the industry, like including pilot implementation, training and reporting. We are committed to working with all actors to support broad dissemination and implementation.

Actions carried out by Sofitex as part of the fight against child labour in cotton growing in Burkina Faso



Lassama Kargougou
Commercial Director of the Burkina
Textile Fibers Society (SOFITEX)

In Burkina Faso, the cotton sector is of major economic and social importance, contributing around 4% to the national GDP and over 28% to agricultural GDP. More than three million people derive their income from cotton activities. Several other upstream and downstream economic sectors (trade, hydrocarbons, banking, processing industry, transport, etc.) are also involved. Cotton also contributes significantly to the activities of the State through the collection of taxes and duties and is a source of financing for economic and social development policies.

In 2005/2006 and 2014/2015 Burkina Faso achieved a record production level of 700,000 tonnes of seed cotton with an average yield of one tonne per hectare. For more than a decade, Burkina Faso has been the leading African cotton-producing country.

However, cotton cultivation in Burkina Faso faces negative publicity by national

and international actors related to the perceived existence of child labour. For example, in 2011, the United States Bureau of International Labour Affairs (based on reports from 2009 and 2010) published a list of countries “producing goods from child labour and forced child labour”, which led to a response from the Government of Burkina Faso in 2012 through a Memorandum on the fight against child labour in Burkina Faso. In January 2019, new serious accusations were made against the cotton sector in Burkina Faso by the NGO SOLIDAR Switzerland in its report stating that “Burkina Faso uses children to work in the cotton fields”.

Since liberalisation in 2004, Burkina Faso's cotton sector has been managed under an Integrated Sector approach, made up of two professional families, the Union Nationale des sociétés coopératives de Producteurs de Coton (UNPCB) and the Association Professionnelles des Sociétés Cotonnières du Burkina (APROCOB), comprising SOFITEX, SOCOMA and FASO COTTON.

Actions taken by the Government of Burkina Faso in the fight against child labour and its worst forms

In order to combat child labour, the Government has set up a legal framework

comprising international and national legal instruments through the ratification of international conventions and treaties and the drafting of implementing laws and decrees. This legal mechanism includes monitoring of the implementation of these provisions in the field by Ministry officials responsible for labour.

Some of the actions undertaken and implemented by SOFITEX and the other players in the cotton sector to combat child labour

- The development and implementation since 2012 of an action plan in collaboration with the UNPCB and its branches in the field (Provincial and Departmental Unions of Cotton Producers).
- The training of SOFITEX's supervisory staff in the fight against the worst forms of child labour in the cotton fields.
- Training and awareness-raising for cotton producers through films, radio programmes (national and community radio), workshops, and advertisements, produced in French and the main local languages, Mooré and Dioula.
- Awareness-raising of the prohibition against child labour in fora at the beginning

SOFITEX'S CONTRIBUTION TO THE ECONOMY OF BURKINA FASO

COTTON CAMPAIGNS

VARIABLE	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	VOLUME	%
1 COTTON SEED PRODUCTION (TONS)	3849100	320939	284085	330616	464381	508277	566105	489688	544348	450000	4343349	
2 COTTON SEED PURCHASE PRICE (F CFA/KG)	165	168	210	274	253	245	225	235	235	245		
3 FIBRE PRODUCTION (TONS)	164155	133485	120920	138065	196944	216526	242578	209461	231503	191700	1845337	
4 FIBRE SALE (MILLIONS F CFA)	106269	113584	110714	121860	166750	188184	183047	170339	209017	180916	1550679	100%
5 RETURNS TO PRODUCERS (MILLIONS F CFA)	63458	53887	59614	90588	117563	124279	127191	114846	127809	110250	989485	63.8%
6 TRANSPORTERS (MILLIONS F CFA)	11922	10515	9314	10293	14731	16460	17707	15641	17364	14379	138326	8.9%
7 BANKS	8970	8896	8394	7644	9052	9847	9094	7723	7563	5869	83052	5.4%
8 NATIONAL ELECTRICITY COMPANY OF BURKINA FASO	1174	1021	958	1511	1923	2054	2292	1969	2532	2396	17830	1.1%
9 FUEL (MILLION F CFA)	4265	4061	4423	3470	5257	5846	6605	5841	5985	5102	50855	3.3%
10 SALARIES AND SOCIAL SECURITY CHARGES (MILLIONS F CFA)	9352	9219	9888	10280	13977	14079	16312	13200	16817	13907	127051	8.2%
11 BUFFER FUNDS (MILLIONS F CFA)									13703	9067	22770	1.5%
12 VARIOUS (PACKAGING, SPARE PARTS, MISCELLANEOUS CONSUMABLES) (MILLIONS F CFA)	7475	7241	8014	7648	10639	13265	13552	11879	13125	11002	103840	6.7%
13 TAXES AND DUTIES (MILLIONS F CFA)	1548	1659	1449	1547	1808	2110	2346	3452	4942	4889	24750	1.6%

of the agricultural season and the primary cotton commercialisation season.

- Since 2016, the conduct of cotton production activities under the Cotton Made in Africa “CmiA Cotton” standard, one of the main criteria of which is the fight against the worst forms of child labour in the sector. As one of the exclusion criteria, SOFITEX has always undergone certification checks in a positive manner.
- Training and awareness-raising for opinion leaders, customary chiefs and decentralised administration officials/authorities.
- The design, adaptation and use of innovative awareness-raising and communication tools for producers, such as image boxes designed with the support of Aid by Trade Foundation (AbTF) which supports the Cotton CmiA label.
- SOFITEX’s commitment to combating the worst forms of child labour in its quality policy.
- The support and construction of schools and health infrastructures by the players in the cotton sector (cotton companies, producers’ associations).
- The inclusion of the clause prohibiting dangerous child labour in contracts with

producers (conventional cotton, organic cotton, seed producers, etc.).

- The monitoring of producers’ activities and private transporters through monitoring committees for the agricultural and marketing years
- The signing of agreements between SOFITEX, CmiA and Cotton Expert House Africa (CHA) for sustainable cotton production (training in 2018/2019 of 304 agents and 30,662 producers on good production practices and the fight against child labour in cotton fields).
- Obtaining CmiA Certification (BCI equivalent) by SOFITEX.
- Involvement of SOFITEX, SOCOMA, FASO COTTON, UNPCB, AICB and SP/FCL in the “Clear Cotton Project” co-financed by the EU and ILO (implemented by ILO

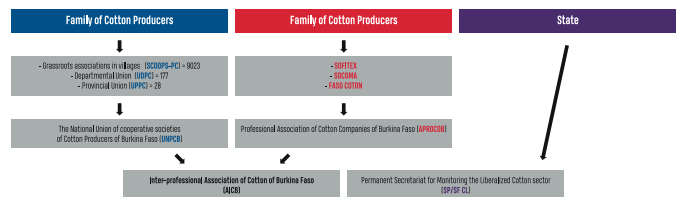
and FAO). This project concerns Burkina Faso, Mali, Pakistan and Peru and has as its theme: “Elimination of Child Labour and Forced Labour in the Cotton, Textile and Clothing Value Chains: An Integrated Approach”. An action programme and implementation agreements have been drawn up for the period 2018-2022.

Conclusion

In view of the socio-economic importance of cotton for Burkina Faso, the fight against child labour in its worst forms is a major concern for the Burkina Faso authorities, as well as for the players in the cotton sector, including SOFITEX.

In this respect, several efforts have been made for years and will be continued, in partnership with the other players, including NGOs, civil society, EU, ILO, and the FAO, to eradicate child labour in agriculture and particularly in the cotton sector. ■

THE ORGANISATION OF THE COTTON SECTOR IN BURKINA FASO



Workshops provide practical insight into implementing new human rights guidance



Luke Wilde
Chief Executive, Twentyfifty

Three workshops offer businesses the chance to explore the opportunities and challenges in implementing the Swiss Government’s Commodity Trading Sector Guidance on Implementing the UN Guiding Principles on Business and Human Rights.

By publishing the Guidance in November 2018, the Federal Department of Foreign Affairs (FDFA) and the State Secretary for Economic Affairs (SECO) have taken a step forward in promoting responsible business conduct within commodity trading. For an activity often criticised for its opacity and the potential social and environmental impacts of its operations, this is an opportunity to prepare for forthcoming legislation, whether in Switzerland or elsewhere. The guide is not intended to be left gathering dust; the Swiss government is committed to keeping it alive and seeing it applied. To further awareness and knowledge of implementation, it has commissioned

three workshops for 2020, led by business consultancy twentyfifty and STSA, in partnership with other trade associations.

The workshops have been designed to offer participants practical insight into the opportunities and challenges of putting the Guidance into practice, learning from peers and other actors across the value chain. One

For an activity often criticised for its opacity and the potential social and environmental impacts of its operations, this is an opportunity to prepare for forthcoming legislation, whether in Switzerland or elsewhere.

of the key value-add comes from gathering large and small commodity trading firms with processors, manufacturers, retailers and financiers in the same room.

The first session on 16 January 2020 focused on coffee and cocoa, organised in partnership with the Swiss Coffee Trade Association. After a rich panel debate between representatives of Nestlé, Barry Callebaut, Louis Dreyfus Company and Rabobank, the 40 participants explored questions such as “what is the scope of my responsibility to address human rights impacts?”, “what measures do I need to take to remediate human rights impacts in the supply chain?”, and “how to communicate how impacts are being addressed?”

The second workshop on 8 June 2020 will focus on (precious) metals and minerals, in partnership with the Responsible Mining Foundation, Swiss Better Gold Association, Fondation de la Haute Horlogerie and the Association des fabricants et commerçants de métaux précieux. The third event targets energy commodities (date TBD). ■

Founded in 2004, twentyfifty Ltd is a management consultancy specialised in responsible business conduct and human rights with offices in the UK, Germany, Switzerland and India. It is known for working alongside multinational enterprises from various industries, including commodity trading. In Switzerland, twentyfifty has also been mandated by the SECO and the FDFA to support in the promotion and implementation of the Commodity Trading Sector Guidance as well as the Swiss National Action Plan on Business and Human Rights.

ECOM research into global warming and its effect on suitability for cocoa production



Dr. Juan Beltran
ECOM Research Department



Richard Puddifoot
ECOM Research Department

The climatic suitability for cocoa around the world is expected to decrease in the coming decades, potentially affecting thousands of local farmers around the world. ECOM, a global commodity merchant and the world's third largest supplier of cocoa, has conducted research concerning the impacts of global warming for cocoa. Assessing future cocoa suitability is critical and accurate models are needed. This will help to develop and implement better plans to mitigate the possible consequences of climate change. The most complete suitability model so far was produced by Schroth et al. in 2016¹. However, the data sampling was made using random points in the areas described as suitable for cocoa in ECOWAS atlas². This approach does not necessarily represent the current farms' location, nor their density resulting in a less accurate model. Therefore, a more accurate model is needed. The main 3 goals of the current study are: (1) to build an accurate model, using the latest machine learning techniques, to evaluate cocoa suitability using data from current and past farms which are enrolled in ECOM SMS programmes (Sustainable Management Systems), (2) to assess the risk of these farms under climate change by 2050, and (3) to produce recommendations to mitigate the effects of climate change on cocoa suitability. The focus is specifically on the Ivory Coast, Ghana and Ecuador which in 2018-2019 were responsible for more than 70% of the global market. Therefore, changes in suitability for these countries will have a potential effect on the global market and the livelihoods of thousands of farmers.

32,447 georeferenced farms from Ivory Coast, Ghana, Ecuador, Indonesia, Nigeria, Peru and Brazil were used to build and assess the model. 22 climatic variables were extracted for each farm for the current conditions (1950-2000) and predictions for 2050. The model predicts a suitability index, defined as a number between 0 to 1 where 1 represents 100% suitability. The model was built using 3,147 farms and it was assessed using the 29,300 farms from Ivory Coast and Ghana. The model had an accuracy of 93.69% for 0.9 or above suitability index. All of the farms had a suitability index higher than 0.67. There are significant changes in cocoa suitability by 2050 (Fig. 1). Under the future scenario, by 2050 only 1.37% of current farms will have a suitability higher than 0.90; 19.92% of current farms showed a suitability above 0.75. 80.08% of the cocoa plantations analysed in the present study would experience a reduction of their suitability by 2050. Cameroon

is the only country which will increase cocoa suitability by 2050 (Fig. 1B). Figure 1A shows the distribution of the maximum temperature of the warmest month and the minimum temperature of the coldest month. Ghana and Ivory Coast show higher current temperatures than other origins, which make them already more vulnerable to global warming. Changes in temperature have significant physiological effects in cocoa plants³. For example, an increase in temperature below the physiological limit promotes vegetative growth and this can potentially compete with reproductive growth. Maturation rate of the cocoa pods increases with temperature which reduces pod and bean size. The saturated fatty acid content and the melting point also increases, reducing the quality of the cocoa beans. Higher temperatures are also correlated with a higher rate of cherville wilt, a physiological condition where the fruits are not fully developed.

The model assumes that the plants rely entirely on the weather (no irrigation), this is the case for 98% of the farms in West Africa. The predicted suitability could change with the right intervention. We recommend enhanced focus on precision agriculture in West Africa and the implementation of further shade tree programmes.

ECOM has begun to implement precision agriculture in Ecuador to make better use of inputs, improve yields, and reduce vulnerability. Precision agriculture is often described as using the right inputs, in the right amounts, at the right time. The precision farming techniques will be accompanied by drone surveillance and satellite imaging to collect data, efficiently monitor farms, and track changes in crop health over time. To mobilize credit for farmers, the project will make use of blended finance and a risk sharing structure. This financing will unlock credit to at least 200 farmers in Ecuador who are early adopters of the technology. Once the financing structure has been successfully piloted, it will be scaled to additional farmers in ECOM's supply chain such as Ivory Coast and Ghana. Global warming will have a significant effect on cocoa farms and thousands of local farmers around the world. Therefore, investigating global warming is key to developing accurate actions and sustainability programmes which will mitigate the negative effects of global warming in cocoa producing regions. ■

"ARL Commodities (the ECOM research department) specialises in fundamental research relating to agricultural commodity markets, with particular focus on cocoa, coffee & cotton. ARL offer tailored, high tech services within this sector."

References:

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COCOA SUITABILITY COMPARISON

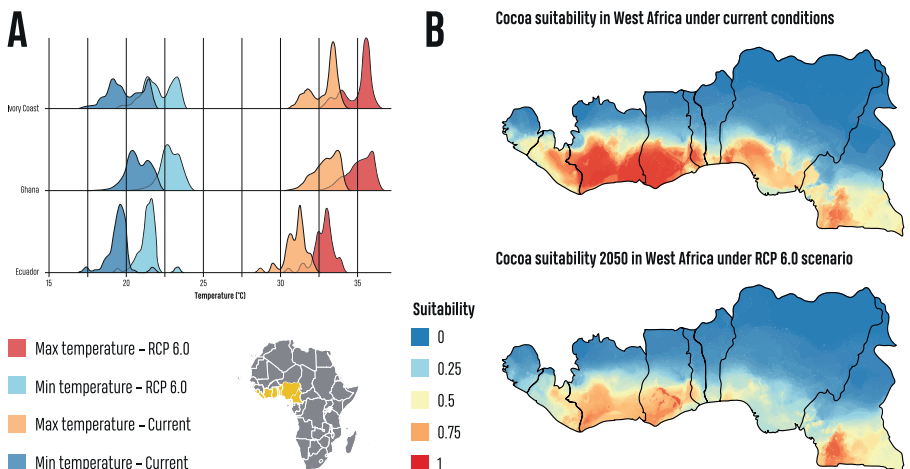


Figure 1. (A) Distribution of the minimum temperature of the coldest month and the maximum temperature of the warmest month for Ivory Coast, Ghana, and Ecuador for present and future climatic scenarios. The future scenario assumes that the CO2 emissions are likely to peak around the late 2080's and then substantially decline. The temperature ranges for Ghana and Ivory Coast are higher than Ecuador (and any other origin except some parts of Indonesia), therefore Ivory Coast and Ghana are more likely to experience reduction in suitability due to climate change. (B) Cocoa suitability for current and future conditions using 19 bioclimatic variables from WorldClim in addition to elevation, diffuse radiation and direct radiation. According to the model, the suitability of cocoa will be highly affected by 2050 where more than 80% of the farms assessed will significantly decline in suitability. Cameroon shows an increase in suitability by 2050. The suitability is based on weather conditions and do not take into account implementation of good agricultural practices such as precision agriculture.

Building an ecosystem of trust in the palm oil industry with Blockchain technology



Kamales Lardi

Managing Partner,
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Palm oil is everywhere. It is used in about 50% of packaged consumer goods. Production has risen to unprecedented levels in the past decade to meet global consumption demand. Today, palm oil accounts for 35% of world edible vegetable oil production, with 85% sourced from Indonesia and Malaysia. However, it faces growing scrutiny into its environmental impact, and the sustainability of its supply chain.

Significant efforts have been made to address these concerns, such as implementation of best practices by the Roundtable on Sustainable Palm Oil (RSPO), and commitment from leading brands to utilise 100% RSPO-certified palm oil. National efforts have also been made. For example, Malaysia has mandated all growers and processing facilities to obtain Malaysian Sustainable Palm Oil (MSPO) certification by the end of 2020. Despite this, lack of transparency in the supply chain proves challenging for regulatory bodies and consumers to determine whether production is truly sustainable and ethical. Existing certification processes are perceived with scepticism and still depend on manual Chain of Custody (CoC) systems, posing doubts related to human intervention and paper-based processes that may be subject to errors or malicious activities. Additionally, end consumers remain poorly informed and unable to distinguish responsibly-produced palm oil.

The palm oil industry is a key source of income and poverty eradication for millions of people in 42 developing nations. It cannot simply be banned or eliminated. In addition, over 5% of the earth's surface is currently covered by palm oil plantations, which will turn into waste land if production is forced to halt. The best solution is to drive sustainable production in existing plantations and prevent new deforestation activities. The application of blockchain technology has the potential to alleviate doubts by creating greater transparency and auditability across the entire supply chain.

Blockchain technology to drive sustainable supply chain

The key to building a sustainable supply chain starts from the point of origin. One of the biggest challenges is to be able to unequivocally prove that the fresh fruit bunches were harvested from a plantation that is certified sustainable, and that no de-

forestation has been carried out. With the combination of blockchain and sensor technology, several data entry elements could prove the provenance of the harvest, as well as the accuracy and credibility of the data. In addition, the harvest could be tracked as it moves through the supply chain, ensuring the end consumer receives trusted information about the palm oil source.

This not only provides an unprecedented level of trust in the supply chain, but also contributes to protecting the working conditions and legal employment of field workers, gives plantations rich data on crop harvesting. With the use of geolocation features, farmers, governments, certification authorities, and producers can maintain digital inventories of the plantations, track land concessions and implement sustainable land usage planning policies. In combination with sensor technology, a blockchain-based solution could minimise spoilage by monitoring temperature and humidity during processing, storage, and transport, as well as integrating this data on a single, shared platform to create an auditable and traceable

The palm oil industry is a key source of income and poverty eradication... blockchain technology has the potential to alleviate doubts by creating greater transparency and auditability across the entire supply chain.

end-to-end supply chain. Imagine a customer looking to buy a bottle of shampoo that has 'deforestation-free' label. With a simple mobile app, the customer is able to see where the palm oil used in the shampoo originates, including a video that shows the plantation and how exactly it ended up in the shampoo production.

In 2019, the Malaysian Palm Oil Council (MPOC) carried out an explorative initiative using blockchain in the palm oil industry, supported by Lardi & Partner Consulting, a leading digital transformation firm located in Switzerland. The initiative included development of a proof of concept (development of a blockchain solution design for traceability in the palm oil industry), as well as a mobile app and web interface based on Hyperledger blockchain technology. The objective was to design

and develop a blockchain-based solution to track the palm oil harvest from palm to plate. Using a smartphone app, plantation owners are able to record harvests at each tree, including worker information, and track the harvest as it moves through the supply chain. This information is made available to all key stakeholders including regulators, reducing the costs and efforts required for manual interventions for sustainability certification.

The app automatically creates an end-to-end digital ledger, providing irrefutable transparency, accuracy and credibility for stakeholders and end customers. Now tested on a pilot scale and shown to work as designed, the app will be made available through a user agreement to all Malaysian oil palm growers and processors. The venture demonstrates a commitment to maintaining the industry-wide sustainability and credibility. As a result, Lardi & Partner Consulting launched BloomBloc Sdn. Bhd., a strategic advisory and Blockchain development company focused on sustainable supply chains in Malaysia. The BloomBloc® palm oil solution could enable palm oil stakeholders such as plantations owners, smallholders and producers to gain more control over their processes. These efficiencies could lead to increased sustainable production while reducing costs. Palm oil sustainability is a major priority for Malaysia, and this new blockchain app is in addition to an available supply chain certification that links the sustainable palm oil from the mill to the final product, proving near real-time provenance and ensuring the value of certification right through the value chain to the customer.

Critical next steps that define the future of palm oil

The palm oil industry has been a saving grace for many small farming families in developing countries. In addition, growing palm trees requires less land and results in higher yield than other vegetable oils. A study by researchers from Imperial College London in 2018 revealed challenges faced by companies in guaranteeing products labelled as "deforestation-free", a key reason being the complexity of supply chains. However, the study notes that simply banning palm oil is not the answer – rather, solutions need to be found to ensure commitments can be implemented more effectively. Establishing sustainable practices in the palm oil industry needs to strike a balance between human rights, environmental impact and economical contributions. Blockchain could enable producers to utilise existing palm oil infrastructures and guarantee sustainable practices are implemented and continuously tracked. ■

New options for green shipping finance



Michael Adams
Founder and CEO,
Ocean Assets Institute

Climate change is a major threat to operations and profitability in the shipping industry. Intense storms, rising sea levels and changing routes are forcing the industry to understand climate risk and take action. Risks to financial stability will be minimised if the transition begins early and follows a predictable path, thereby helping the market anticipate the transition to a well-below 2°C world¹.

A ship has a lifespan of 20-30 years, so meeting the IMO's 2050 target of at least 50% less GHG means that Zero Emission Ship Technologies (ZEST) must enter the global fleet by 2030². A major deterrent to the transition is the lack of affordable finance.

Bank debt remains the shipping industry's primary source of funding. Non-bank sources have filled some of the void left by exiting banks since 2008. But capital needs are growing and the case for green finance is strong, along with demand for green investment vehicles by institutional investors.

ZEST retrofits and new builds are the top priority for sustainable investors, as these are the only technologies to be approved under the new green bond standards of Climate Bonds Initiative (CBI).

Green bonds have begun to debut in the shipping sector, under the more lenient Green Bond Standards whilst the development of the CBI standards were in process. In 2018, two green bonds were issued by Nippon Yusen Kaisha (NYK) and Mitsui OSK Lines (MOL). Proceeds from NYK's first green bond will be used to finance and refinance LNG-fuelled ships, LNG-bunkering ships, ballast water management systems and SOx scrubber systems. The second green bond was issued to support investments in methanol-fuelled ships.

Shipping needs to make a radical shift to zero carbon energy sources. From now until 2050, the shipping sector must reduce total greenhouse gas emissions by at least 50%. This transition requires significant infrastructure investments in new fuel production, supply chains, and fleets.

Ship-owners are not alone in this transition. Land-based investments make up most of the capital needed. About 87% of the total investment is needed in infrastructure and production facilities for low carbon fuels. Only 13% of the in-

vestments needed are related to the ships themselves, and include machinery and on-board storage required for a ship to run on low carbon fuels in new-builds and retrofits. Ship-related investments also include investments in improving energy efficiency, which are estimated to grow due to the higher cost of low carbon fuels compared to traditional marine fuels.

Depending on the production method, the cumulative investment needed between 2030 and 2050 to halve shipping emissions amounts to approximately USD 1-1.4 trillion, an average of USD 50-70 billion annually for 20 years. If shipping is to fully decarbonise by 2050, this will require further investments of some USD 400 billion over 20 years, bringing the total to USD 1.4-1.9 trillion.

Capital markets are lining up behind the sustainability priorities for the shipping sector, as they already have for the energy and transportation sectors broadly. New players and new instruments are part of the changing financial picture. This is an opportunity for all segments of the industry - not just the leaders - to secure new capital sources on more favourable terms. ■

1. Climate Bonds Initiative - Shipping Standards. Summary by Prof. Tristan Smith, UMAS (University Maritime Advisory Services). 2019
2. Zero Emission Vessels: Transition Pathways. 2018. Lloyd's Register and UMAS

Improving the living conditions of underprivileged persons depending on the resources of the Ocean

The Building a Future Foundation (BAFF) is very grateful towards the STSA for its significant gift collected at the occasion of the STSA Commodity Dinner last November.

The BAFF is a non-profit organisation which aims at improving the living conditions of underprivileged population depending on the resources of the ocean through capacity building, empowerment and economic self-sufficiency with an environmental, social and sustainable approach.

Created in 2006, the Foundation is a long-term extension of a post tsunami reconstruction program that was initiated by Mr. Pierre Pringiers, Honorary Consul of Belgium in Sri Lanka and his Sri Lankan business associates in the tyre industry. This programme could directly help 15 000 beneficiaries through construction of boats and houses.

The BAFF is a training centre located on the Southern coast of Sri Lanka that proposes multi-skilled training to underprivileged youth such as boat building, sail and mast making, mechanical and electrical engineering, plumbing, carpentry and welding. At comple-

tion of the training, the centre delivers a certificate that is locally recognised by the NAITA (National Apprenticeship and Industrial Training Authority under Tertiary and Vocational Education Commission of Sri Lanka).

BAFF trains between 60 and 100 students per year. All have subsequently found employment, mainly in the boat building industry and in boat chartering, a new economic activity in Sri Lanka, but also in the hotel and tourism sector where their skills and motivation at work are very highly sought after.

Today, the Foundation aims at creating a training centre for disadvantaged Tamil youth in Northern Sri Lanka, a region that was severely affected by the civil war from 1983 to 2009. The objective is to develop in these youths skills to help them find a stable job in the growing yachting industry in the country. This project aims at accommodating 30 young Tamils per year from end 2020.

Through its gift the STSA contributed to the purchase of a land that was acquired in August 2019 to build the training centre. The plans for a building were recently defined by a local architect and were validated by BAFF for the construction of the

classrooms and the workshops. So far, eight people from the Tamil community began a 12-month theoretical and practical training in mechanical engineering and boat building in the existing BAFF facilities on the Southern coast of Sri Lanka. By the end of 2020, tools, equipment and material will be purchased to equip the workshops. ■

More information on the Building a Future Foundation can be found on www.bafflk.org



Meeting industry and market demands for decarbonisation and cost reduction in shipping



Per Marius Berrefjord
MSc. Senior Vice President,
DNV GL - Maritime

The shipping industry is expected to act urgently on decarbonisation and cost reduction in an environment with significant uncertainties and business risks.

Through DNVGL's work and interactions with cargo owners and charterers, financiers, ship owners, ship yards and suppliers of essential systems and equipment, it is apparent that the maritime industry in the next few years will collectively need to meet the call for rapid decarbonisation of shipping. Significant decarbonisation will, in general, lead to increased costs and smart solutions are needed to keep costs down.

The International Maritime Organization's (IMO) trajectory towards low or zero carbon shipping is very ambitious. Simulations of how the targets can be met indicate that rapid and wide deployment of alternative fuels such as LNG, radical energy efficiency measures, and operational measures such as speed reduction are needed. In 15 years, this needs to be followed by the introduction of carbon-neutral fuels, e.g. biofuels, synthetic fuels or ammonia. The challenge and need to call for action can be understood when looking through a historical lens at LNG as a fuel for ships – the first sizeable R&D programs were initiated 30-40 years ago, and it is only today that we have orders for large cargo vessels running on LNG. Considering that the commercial challenge, land-based requirements and technical complexity of future fuels may be higher than for LNG, the process of commercial deployment at scale must be accelerated. If the industry fails to solve the challenge, authorities will likely react with strict regulations that could drive a cost increase for ships not complying with the regulation. Failing to implement solutions for meeting public expectations to decarbonisations may also lead to significant brand risk.

As a means to quantify emissions, and as preparation for regulatory measures, the IMO has also introduced mandatory annual and standardised reporting (Data Collection System - DCS) of the CO₂ performance of every ship, stated as (CO₂ emission)/(nautical miles x dead weight tons). The performance of individual ships may be required by charterers before selecting ships for charter, and by financiers before granting financing. This will drive transparency for GHG related decisions. The

DCS will reflect the aggregated performance of the five elements shown in the figure. It should be noted that the utilisation of the ships, an important GHG aspect that is normally controlled by the cargo owner, is not covered.

The cargo owner or a designated party normally controls the first two circles from top-left in the figure, i.e. logistics and commercial operations. We conservatively estimate that the difference between the best and worst performers for these elements corresponds to more than 10 % of the fuel bill and CO₂ emissions. Optimised commercial operations and new information management infrastructures can therefore enable significant savings and emission reductions.

Technical management is normally carried out by the ship owner or a designated third party manager. The difference between the best and worst performers is again conservatively estimated at 10 %, measured by fuel consumption or CO₂ emissions. It is essential to note that the best performers are increasingly deploying a philosophy of centralised

Considering that the commercial challenge, land-based requirements and technical complexity of future fuels may be higher than for LNG, the process of commercial deployment at scale must be accelerated.

operation supported by digitalisation to reduce costs and enhance performance in all areas. Cargo owners will benefit from this, as enhanced information management capabilities are necessary to respond to increasingly detailed ship management practice requirements and calls for more detailed on-charter information reporting.

Cargo owners are increasingly involving themselves directly in the identification, qualification and full scale on-board testing of technologies aimed at reducing fuel consumption and CO₂ emissions. Efficient hull lines, optimisation of main engine and propeller, retrofitting of bows and LNG as fuel are examples of technologies that are now well-developed with existing high or accelerating technology uptake on board through retrofits or new-builds. A combination of such technologies can offer CO₂

reduction of at least 20%. Other technologies such as wind-assisted propulsion, air lubrication of hull, fuel cells, and ammonia as an energy source for propulsion are in the making and can potentially lead to even more substantial CO₂ reductions. The speed of development and uptake on board is hampered by a lack of accurate technology qualification and verification methodologies which makes it hard to establish reliable business cases. Cargo owners are also taking more control of the development of new building specifications.

The adoption of novel energy efficiency and carbon neutral fuel technologies to reduce CO₂ footprints will normally increase the CAPEX, sometimes significantly. Energy efficiency technologies will lead to OPEX reductions, whereas novel fuels will in most cases lead to OPEX increases, which are difficult to predict in terms of future development with respect to fuel prices. The resulting business cases are therefore often negative and subject to large uncertainties. Turning a negative business case into a positive one depends on the positioning of the assets in the market in terms of CO₂ footprint reduction versus that of competing vessels if they all comply with regulations. It is technically possible to accomplish large CO₂ emission reductions, all the way down to zero emission ships when carbon neutral fuels become available, but it would come at a large cost and there are few or no mechanisms available to share the costs between different parties. No one knows for sure what the society at large will demand, what the trajectory driven by IMO in the end will look like or how the market will react if ships with a better CO₂ performance than IMO minimum is available. The latter aspect may look different from a charterer and a ship owner perspective, as the charterer has an incentive to consider the CO₂ footprint within the duration of a charter party while the owner needs to consider the expected life time of the vessel. In the worst case, if the ship is no longer attractive in the market due to poor efficiency or high emissions, the owner risks having a stranded asset on its hands.

GHG positioning combined with the pursuit of significant cost reductions, two very important drivers for shipping in the next decade, are associated with significant uncertainties and in some cases, subject to contradicting considerations. However, due to the urgency of the matter, a 'wait and see' strategy is not an option. It is therefore likely that forward leaning companies successfully building a comprehensive understanding of the issues and then breaking this understanding down into actionable measures will have a significant market advantage in the future. ■

The need for stakeholders to work together

Due to the complexity of the commodity trading activity, the role of independent traders and trade finance remains poorly understood. Elsa Floret talks to Catherine Anderson, OECD (CA) and Odile Roy de Puyfontaine, Vitol (ORP) on the importance of all parties working together to ensure that initiatives in this field can achieve what they set out to accomplish.



Catherine, the OECD is currently working on the topic of transparency in first sales in oil to state-owned enterprises. Could you tell us a bit more about the objectives and approach of this study?

CA: There is growing concern amongst OECD countries about the distortionary effects and adverse impacts of Illicit Financial Flows (IFFs) on development, a concern that is accompanied by a growing body of evidence linking globalised financial capital to illicit commercial practices, and public and corporate corruption. At the same time, a number of recent high-profile cases linking IFFs and the commodity-trading sector have fuelled a growing interest in the sector; and the industry has responded in turn by increasing company disclosures. Despite these inroads, data on the sector are scarce and, for the most part, the role of independent traders and trade finance remains poorly understood, due to the complexity and opacity of the industry. The OECD is working to fill some of those gaps.

Launched early last year, the work of the OECD aims at generating new, foundational knowledge on IFF risks arising from oil commodity trading activities, particularly in the area of first trade transactions. The goal is to better understand the nature of IFF risks in the oil and gas commodity sector, and to identify effective remedial measures that could be taken by OECD and non-OECD member countries, while remaining sensitive to the complexity and diverse nature of the industry. The program of work centres around three particular stages of the sale process: i) the selection of buyers and allocation of buyers' rights; ii) the negotiation of terms of sale; and iii) the collection and transfer of revenues into national spending systems.



What do you see as the main challenges of this project?

CA: In terms of particular challenges surrounding this work, two things stand out. First, oil and gas commodity trading involves a diverse set of interests and actors. Bringing together this disparate group, many of whom are not accustomed to working together, to reach a common understanding, will be hard to do, particularly as each come to these issues with different perspectives and experiences. Yet, soliciting broad-based insights is central both to understand how the industry works, and to formulate effective responses. The second challenge is having an impact, while avoiding any unintended consequences for the producer countries we aim to help. In a highly dynamic sector that is already subject to a growing body of transparency and due diligence, we need to ask ourselves, what has worked and where? And how do we productively engage in the sector to reduce IFF risks without creating market inefficiencies or administrative log-jams

Odile, due diligence processes play a huge role in companies today. Could you explain how the topics covered in this study are addressed?

ORP: Many companies began enhancing their due diligence procedures well before the OECD work began, with due diligence processes evolving significantly in the last decade. Many traders have also benefitted from hiring compliance professionals with a background in regulated financial companies who have brought with them a wealth of experience.

Notwithstanding, the OECD process has been invaluable in the way it has brought the whole spectrum of stakeholders together. This has increased the flow of information and understanding of underlying issues. At the same time, working collaboratively,

stakeholders have been able to devise solutions which are not just aspirational, but also practical and effective.

For example, in a tender process, it is reasonable for a State Owned Enterprise (SOE) to ask for a proportion of 'local content' in the performance of the contract. However, when this is asked for is key. If at the outset, it is a legitimate part of the process. If after the tender has been awarded, it is an immediate red flag from a compliance perspective. By increasing understanding of this across the stakeholder group, it is possible to devise processes which achieve the objectives of the SOE, but are robust from a compliance perspective.

What do you see as being the main challenges for companies today?

ORP: The trading activity has made huge changes to its working practices in recent years and worked hard to align its compliance procedures with best practice. Regrettably, misconceptions about the industry remain and it is important that all parties take the time to understand what can really make a difference.

How do you both see the role and interactions of the different stakeholders going forward?

ORP: The above illustrates the needs for stakeholders to work together. Governments, the ultimate owners of SOEs are extremely influential. Only they can determine the tender processes and oblige the disclosure of key information, such as the implementation early this year of the register of ultimate beneficial ownership by EITI member countries, and of which Vitol is a strong supporter.

These initiatives will only be effective if there is a level playing field. It is imperative to ensure that they do not produce unintended consequences, such as that companies with less governance win tenders because it is easier, thereby undermining the work of the OECD.

It is also critical to ensure consistency across the various international initiatives in this space, and that all benefit from sharing experiences and lessons learned along the way. The OECD forum has been extremely valuable in this respect and we very much hope that the practice of shared learning will continue.

CA: Again, as I've mentioned, a key role for different stakeholder inputs will be to assist us to better understand the industry works and the potential for taking effective remedial actions to reduce emerging IFF risks. The experience of EITI also suggests that as we further our engagement with the diverse group of actors working in this sector mutual trust and productive collaboration will grow. That, for us, would be an optimal result. ■

Whenever commodity bankers are asked to give a view, our first thoughts are generally “whatever I say is likely to be rapidly overtaken by future events” and “I’m bound to be wrong”.

Current Trends in Commodity Finance



Andrew Robison
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Structured Trade Finance, HSBC

Commodities markets are still volatile as we enter 2020, but three major and converging trends will likely shape the year ahead: the impact and pace of technology, the rapid rise of Environmental Social and Governance (ESG) criteria, and the perennial favourite - commodity prices.

The impact and pace of technology

Emerging platforms trading in oil, metals and grains are deploying the efficiencies of blockchain in the contractual buying and selling process. As they develop, traders and end users will increasingly demand the ability to interface directly with the front end, such as access to facilities for Letters of Credit (LC) and other risk management and financing products.

Commodity trade and finance are intrinsically linked with logistics and transportation infrastructure. New players - technology providers, freight companies, shippers and warehouse owners - are seeking to digitise their data and enable greater transparency as to location, quality and delivery times. Such data allows logistics players to provide trade finance secured on the commodities they are moving. The likely reduction in transaction costs for smaller trades will enable more global trade. Data analytics, management information, Machine Learning (ML) and Artificial Intelligence (AI) will provide valuable insight into these flows. A developing theme at HSBC is the 'co-creation' of solutions in partnership with its clients. This is not distant futurology. HSBC, in conjunction with Quantexa, is already using ML to screen vast amounts of data in search of suspicious transactions.

Subject to appropriate governance and controls, these technologies will generate business opportunities through predictive finance. How do physical commodity flows react to price fluctuations, trade tariffs, changes in freight rates, tweets or geopolitical events? How quickly can clients and financiers react and be ready to transact, providing finance along changing supply chains by analysing data streams? If LCs can be settled in hours instead of days through blockchain, why should the timescale and ability to provide credit

lines not improve? Various blockchain-based trading platforms will evolve, consolidate and change over time, but capital will be deployed, repaid and redeployed at an accelerating pace.

For tomorrow's markets, 'disintermediation' is commonly raised, i.e. that fintechs, challenger banks and specialised funds may replace traditional commodity trade banks, providing billions in working capital lines and facilities almost overnight. At HSBC, we welcome additional players and liquidity to the activity, not least because the USD 1.5trn annual trade finance gap is a constraint on growth and jobs. But the 'zero sum game' view greatly understates the complexity of commodity trade, its associated logistics and financing needs, capital requirements, and the importance of relationships. Today, our commodity trading clients, particularly at the smaller end of the market, are receiving less liquidity due to perceived risks - both real and imaginary.

Though there's no room for complacency, as a traditional commodity banker I see long-term value in both knowing market cycles and your clients. Increasingly important, Application Programming Interfaces (APIs) are also helping to cement relationships by allowing clients into their financial service providers' systems to track their transactions, providing real time efficiencies and cost savings to treasury teams. Banks will need to maintain their ability to deliver solutions whilst evolving their channels to meet client expectations of functionality and transparency.

The rapid rise of ESG criteria

ESG criteria, particularly relating to climate change and hydrocarbons, are becoming a key focus for investors and employees alike. Corporate efforts are being scrutinised with increasing vigour by NGOs, climate action groups and regulators. Certain sectors, notably coal and cobalt, are restricted or completely off limits for some financiers, with public opinion proving an increasingly powerful force in moulding corporate thinking. Introducing sustainable criteria into commodity trade finance requires careful analysis to ensure it is sufficiently robust that a 'green' label can't simply be slapped on or washed off.

Within the automotive and energy sectors the move to lower carbon emissions, especially in fuel and power markets, is presenting new challenges and opportunities. The rapid rise of Electrical Vehicles (EVs) has led to increased focus on cobalt, lithium and nickel supply chains, given their composition in battery

technology. European automotive manufacturers are focused on expanding their nascent EV fleet as they face significant penalties of EUR95 per car gram of CO² when emissions exceed 95g CO² per km - the 2018 average was 120g CO² per km. Cobalt's price rise at the end of 2017, and the supply chain response, placed the provenance of such material under an ESG spotlight. If projections on future demand for cobalt in the EV space are accurate¹, how will supply keep up? Meanwhile, interest in hydrogen, ethanol, LPG or LNG as a fuel source is increasing. Keele University is piloting the introduction of a 20% hydrogen mix into a private gas network to reduce CO² emissions. However, ethanol's potential resurgence as a fuel additive would reignite the 'food versus fuel' debate. Many still remember the rush to buy sugar and ethanol mills at the start of this millennium.

For physical commodities, attempts are being made to link the physical commodity to the electronic transaction to meet ESG criteria. Having warehouse receipts on a blockchain to remove fraud risks, and developing the use of tokens to accompany purchase orders, are among the initiatives being developed to boost transparency and confidence in the sourcing and delivery of goods.

And finally... commodity prices

Perhaps the most visible trend is the apparent resilience of the oil market and its reaction to geopolitical events. Today, actual or potential supply chain disruptions trigger large price movements, which are often swiftly erased or muted. Is this a consequence of reduced underlying speculation in the financial markets, or because physical traders have greater sight of physical flows? Commodity traders' margins are inherently low, driving continual focus on optimising trade flows and cost efficiencies.

Current trends in commodity finance point to the convergence of technology and ESG polices. The first could greatly improve transaction speeds and capital efficiency, the second to improve transparency and ensure implementation of environmentally responsible practices. These are increasingly important components in commodity finance to provide safe, sustainable, profitable trade. Commodity finance is likely to change and evolve at an ever quicker pace. Managing all those risks inherent in the business remains important, but even more so, those caused by simply standing still. ■

¹ requiring some 300,000 mts pa of co by 2030 vs 100,000 mts pa

Trade Register affirms export finance's low credit risk profile



David Bischof

Deputy Director,
Finance for Development,
International Chamber of Commerce

Since the turn of the millennium, global trade flows have trebled from USD 6.2 trillion to a peak of USD 18.5 trillion in 2018. This has been fuelled by the adoption of trade finance products – offering liquidity and risk mitigation to importers and exporters alike.

Some may question the need to regularly collect information pertaining to the default and credit-risk profile of trade and export finance products. However, these figures are especially important when it comes to engaging in discussions with regulators and standard-setters, and helping further promote the widespread use of such products.

The International Chamber of Commerce's (ICC) Trade Register is an authoritative, data-driven source and benchmark for trade finance and export finance-related credit-risk data. Now in its 10th year, a decade

of data – including over USD 12 trillion of trade, export and supply chain finance transactions – collection confirms the long-held belief that both trade finance and export finance exhibit low credit-risk characteristics. This is driven by a combination of low probability of default, high recovery rates, and in the case of trade finance, shorter time to recovery.

The Trade Register is a continually developing project. Its objectives – vital to the report's ongoing efficacy – include adapting and evolving its content and methodologies, whilst also staying relevant and aligned with industry trends. For example, to recognise the growing role in financing global trade of export credit agencies (ECA) outside the OECD Arrangement, the latest edition of the report has expanded its scope to include non-OECD ECAs.

Overall, the latest figures indicate that export finance saw an increase in default rates and associated expected losses in 2017, though this growth was not consistent across asset classes. While the corporate asset class witnessed the largest increase, spe-

cialised assets – which include commodities finance – saw a decrease in defaults.

Export credit finance risk for banks remains very low, driven by ECA backing which typically stands at around 95%. Despite the overall increase in default rates, the expected loss for ECA completed, accelerated and partially completed ECA cases from 2007-2017 stood at 0.036%. Meanwhile, expected losses for Commodities Finance average 0.16%. These compare to 0.44% for small and medium-sized enterprises, and 0.07% for banks and other financial institutions. This, again, corroborates the low risk nature of export finance.

This ability to act as a uniform and objective source of data for the industry enables the Trade Register to further strengthen its role in putting forward advocacy messages to the Basel Committee and other regulatory bodies. And as their latest published rules are translated into local jurisdiction regulations, industry advocacy – through the use of the Trade Register – will be increasingly critical to ensure the appropriate capital treatment of trade and export finance products. ■

One on One with Komgo

**Souleïma Baddi, CEO
and Guy de Pourtales, CTO.**

In a nutshell, could you tell us a bit about Komgo and what it seeks to address in the commodities space?

Komgo is a Geneva-based blockchain software company. We offer a fully functional, secure and integrated trade finance platform that streamlines trade finance transactions using digital technologies. We are driven by the need to deliver new value by eliminating the inefficiencies inherent in trade finance.

Komgo and TRAFEC have just concluded an exciting merger. Could you tell us a bit more about this and the value that you see TRAFEC bringing to the Komgo family?

The merger brings alignment on long-term strategic goals: Komgo is developing products to streamline trade finance, and the established track-record of the TRAFEC platform provides key building blocks to support that objective. A larger user base amounts to a stronger product offering, and this acquisition will help us to quickly scale up our network of users in key geographical markets. We are also excited by the unique functionalities enabled by the

new joint offering, which will answer the needs of a wide-range of industry users. Last but not least, both teams are driven by the same values and they are very excited to join forces to continue building the future together.

Going forward, how do you see the evolution of this interaction?

This successful acquisition ensures the long-term future of TRAFEC is secure. Komgo is fully committed to delivering the same high-quality of service to TRAFEC customers, while from a user perspective it will be very much business as usual. TRAFEC will also benefit from the investment, new technologies and expansion opportunities

offered by Komgo. We are now engineering how we are going to offer users the best of both worlds.

Looking into the future, what's next on the horizon for Komgo?

With an established community of users across Europe and the UK, and growing adoption in Asia and the US, global expansion of the newly merged platform is imminent with the right stimulus and institutional support. Above all else, at Komgo we will continue to strive to deliver business value to our clients and users through the use of digital technologies. ■

Elsa Floret, Journalist at L'Agefi



One on One with **Steven Beck**

Head of Trade and Supply Chain Finance at the Asian Development Bank.

How has the regulatory environment for trade financing banks evolved over the past 10 years?

The story started with 9/11 when the financial world suddenly woke up to the dangers of terrorism and the challenges of dealing with the financing of terrorism. Shortly after this horrific event, we started to see a major change in thinking. As far as finance was concerned, the focus drastically moved from an almost exclusive focus on credit risk to also considering money laundering and terrorist financing risks. More recently, environmental and social risks are also being taken seriously.

In the years prior to 9/11, people didn't really consider anti-money laundering (AML) and the risks associated with inadvertently financing terrorism (CFT). In order to identify crime in the financial system and to prevent them from happening in the financial system, a whole range of AML requirements were put into place by bank regulators in different jurisdictions. These requirements were developed and implemented in a way that was completely disjointed, with little coordination between the different jurisdictions. What we have now is therefore a mumbo jumbo spaghetti bowl of well-intentioned regulations that have unintended associated consequences.

What have been the consequences for companies, and in particular, small and medium-sized enterprises?

Asian Development Bank (ADB) did a study last September, identifying a market gap of USD 1.5 trillion in unmet demand for trade finance, particularly from small and medium sized companies (SMEs). The problem is even more acute among women-led businesses.

As a financial institution you may be asked to consider providing a USD 10m loan to a well-known listed company, and a USD 100,000 loan to an SME. When you consider the amount of effort you will need to exert in conducting due diligence and Know Your Customer (KYC) on that SME compared to the large listed company which has all the information readily available, as well as the financial returns, there is no comparison. AML/CFT requirements add a great deal of burden, cost and effort for financial institutions to support SMEs. That's why people rightly say that AML requirements are adding to the market gaps.

How do you see the implications for commodity trade finance in the medium and long term?

It is really important that the trade ecosystem as a whole, including traders in the commodity space, coordinate and cooperate. This includes all component parts, including exporters, shipping companies, port operators, customs, warehouses, logisticians, banks and importers, working together across the industry.

AML and CFT involve each component part of the trading ecosystem. Continuing to work independently and in siloes will not address the issue. It's only by working together that we can do better in preventing the bad guys from committing crime, allowing us to have more confidence in the financial system and to be able to address the trade finance gaps.



Coordination is critical. We are working with regulators and banks to propose streamlining AML and CFT processes. By streamlining processes, we hope to reduce the degree to which they are onerous, burdensome and costly. This will reduce gaps and, through streamlining the process, enable stakeholders to identify what works and what doesn't. For example, banks have to gage if the pricing of an underlying transaction is appropriate and submit information to regulators identifying suspicious transactions. A number of these requirements are onerous and costly, yet result in few prosecutions. So, not only do some of these procedures do little to fight crime, they unintentionally contribute to market gaps. That's why we're proposing to streamline the AML process. In addition to streamlining, we're proposing a feedback loop from law enforcement to regulators to banks and the private sector, so that we understand what information flowing through AML/CFT processes is effective and which ones we should consider doing away with. This will enable us to focus on materiality, and rationalise resources in the private and public sector.

How do you see the role of traders in promoting development?

A lot of coordination is required. One good example is the Legal Entity Identifier (LEI), which is a harmonised digital identity for legal entities and identifies who is who, who owns who, and soon will verify who owns what.

If companies working with SMEs in emerging markets get LEIs, it will streamline the process, make it more efficient, and address the gaps. We did a study to see if a company in emerging markets such as

Cambodia, Samoa and Uzbekistan can obtain these numbers at reasonable cost and effort. The study shows they can. Whilst it is not a silver bullet, if all importing and exporting companies acquired an LEI, it would go a long way to driving transparency throughout the global economy and be a major benefit to emerging markets where a lack of reliable information is often an impediment to growth.

The other thing traders can do is to ensure transparency across the supply chain so that financiers can look at it and see that each component is doing what it should regarding sustainability, AML, CFT, labour and environment. Use of LEIs can enhance transparency in the supply chain on a whole host of issues. Traders can ensure all parties in the supply chain have a certain degree of transparency so that people understand the final product is clean and something that the consumer can feel good about buying.

Moving forward, what do you see as the most critical factor to address the trade finance gap?

Digitalisation. Trade is traditionally a very paper-intensive, inefficient activity, ripe for disruption. ADB is working with the Singaporean government to create a new entity housed under the International Chamber of Commerce in Singapore that will create standards and protocols for digitisation in trade. These standards and protocols for digitisation will enable interoperability. If we can address a lack of inter-operability in systems, we'll unlock the full potential for digitisation to reduce financing gaps, increase productivity and drive economic growth and job creation. ■

Elsa Floret, Journalist at L'Agefi

The challenges of Millennials hiring and talent retention



Michèle Sormani-Nielsen
Board Member & Independent
Consultant in organisational changes

The right talent sourcing plays a key role in the design of any employer branding, therefore, finding the right talent is without a doubt one of the most challenging parts in the life-cycle of a company looking to secure long term sustainability. In addition to being able to attract and retain new generations of talent, this challenging exercise is exacerbated by the evolving business environment, which seeks new and differentiated skillsets from the traditional profile.

Usually, depending on the sector, employers will prioritise highly educated candidates with long studies and with some additional experience acquired during studies. In other sectors, experience is what is regarded as immediate value rather than diplomas. Those two approaches mean different employees and inevitably some different expectations.

Now, the challenge is finding the profile that strikes the right balance with the new knowledge needed for the business of the present and the future. Today, managers and directors of businesses grapple with a maze of new realities, which they must strive to meet if they are to survive and thrive. They must therefore not only recognise the importance of, but also on-board talents capable of integrating geo-political evolutions, increasing regulatory requirements, tech-

nological changes, to name but a few as well as Corporate Social Responsibility (CSR) and environmental value.

In parallel, there are a lot of theories on expectations and behaviours of Millennials coming to the labour market. Some studies will show they are more volatile, being more “fussy” or demanding, others suggesting that they are less mobile than previous generations. The reality is probably a mix of all these factors. However, what they have in common is that for the Millennials, a job is not only a job. It is part of overall life satisfaction and working for the same employer during one’s whole career is no longer the end goal.

Employers must challenge and rethink their environments to attract and retain talents. The expectations are not for the workplace to become a playground, to the contrary, it must absolutely reflect a reciprocity in respect of goals and achievements. Unfortunately, still too many leaders appear not ready to challenge the status quo. It is not surprising that some great brand names not willing to challenge and change are today no longer able to attract and retain their future leaders.

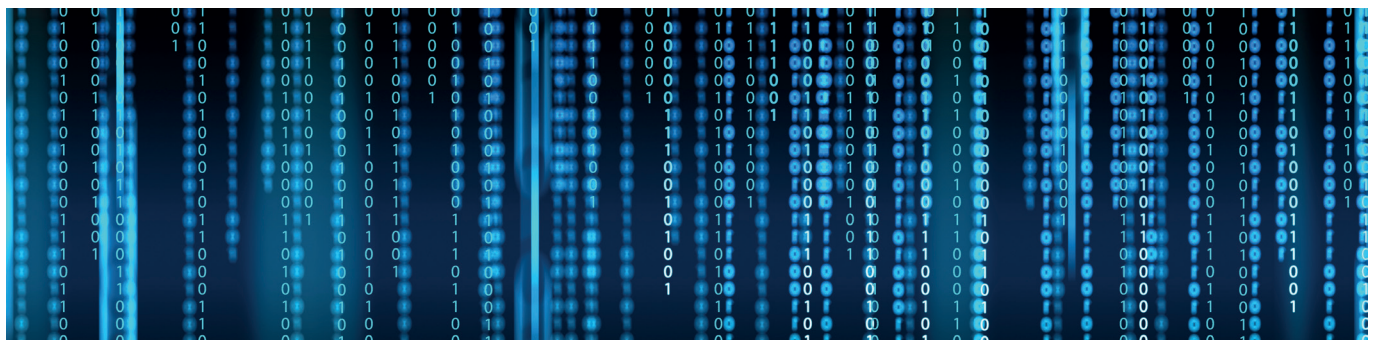
A company willing to retain its talent must create an identity to generate emotional attachment. Studies show that the key items for attracting talents are the values and the culture, image and reputation. The new generation of talents come with substantial qualifications and educational accolades, together with practical experience acquired next to their studies. The hard work to achieve these first steps into professional life set their expectations. They will choose interesting

content and challenging learning curves as top priorities, together with the right financial return and fringe benefits.

What can companies do to attract these essential talents? In the top 10 list of decision-making factors, training and development is key. It enables deepening existing expertise, or adapting digital competences. Millennials are looking for interest and meaning in their job which requires ongoing development and translates mainly via external courses (technical skills), mentoring (soft skills and experience sharing) and mobility within the company.

In addition, fostering the right working environment is important. Flexible working hours and homebased work is perceived as reflecting the employer’s trust in the employee’s work integrity, and in some areas has now become the norm. Autonomy, transparency and work atmosphere counts, as seen with the demise of open space working that, once considered the solution for a great workplace, is no longer the trend.

The importance of innovating workplace culture and development practices is crucial across company functions. It is noteworthy that employees in what are commonly called support functions will have more opportunities in the marketplace as they can work across various industries and from various locations. These talents will be more difficult to retain if the right environment is not in place. Replacement can be very costly and expose the company to risks that shall not be underestimated. It is therefore essential for companies to continuously challenge the existing to attract and retain talents for today and for its future. ■



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