DMCC

THE FUTURE OF TRADE

CONTENTS

EXECUTIVE SUMMARY

Sweeping advances in tech and finance will fuel global trade over next decade.

According to our global Future of Trade research, technology could bridge the current $1.5 trillion. trade finance gap, unlocking new opportunities for trade across borders. Meanwhile, Blockchain is ripe for adoption – not just providing faster, more secure and effective ways to handle workflows in order to move goods across international borders - but also potentially helping reduce up to 20% of the actual physical paper costs associated with global trade, currently estimated at $1.8 trillion.

The report highlights the emerging impact of digital transformation for importers and exporters, along with the ongoing shifts in global economic power.

For the last 12 months, DMCC, the world's flagship Free Zone and The Government of Dubai Authority on commodities trade and enterprise, embarked on a journey to discover what is in store for the future of trade.

We gathered 250 global industry leaders, academics, and experts in six commodity trade hubs to discuss how trade will change in the next decade and how it will drive the global economy into the next phase of growth.

This report is a synthesis of the insights gained from these discussions and lays out the conclusions.

CHAPTER SUMMARIES

CHAPTER 1

THE CHANGING NATURE OF GLOBAL TRADE

Changes can steer or veer The Future of Trade

Technological advancements and political developments are affecting the nature of how goods and services are exchanged worldwide at pace.

Global trade and trade finance are at the cusp of a digital revolution driven by fintech and blockchain. Meanwhile the world's economic centre of gravity is shifting towards Asia with new manufacturing hubs emerging.

Geopolitical factors continue to challenge traditional tradeflows and associated tariffs; from the US election, to the UK's Brexit through to China's Belt and Road mega project. How will this impact global trade, our established commodities trade hubs – and how will the industry connect and interact in the future? This research sets out to identify exactly that, and the Commodity Trade Index (CTI) evaluates 10 key commodities trading hubs based on three factors: commodity endowment, institutions, and location.

CHAPTER 2

THE IMPACT OF DIGITALISATION

The Future of Trade is Digital

While cross-border trade is still synonymous with paperwork, the development of Blockchain, advanced robotics, and the Internet of Things presents a profound shift for the future. Technological advances are rapidly streamlining business efficiency for global importers and exporters; reducing cost, increasing productivity and driving economies. Cost of trade globally is estimated at $1.8 trillion. 20% of that cost is related to paperwork.

Blockchain is seen as a game changer for the tracking of goods and shipment as well as improving trade finance. By providing a secure, decentralised record of transactions, a large degree of paper-based documentation would be eliminated resulting in simpler, automated workflows, smart contracts and cost reductions. According to estimates by the World Economic Forum, reducing supply chain barriers to trade could increase global GDP by nearly 5%, and trade volumes by 15%.

The spread of technology and data is having a significant impact on GDP. The Industry Digitalisation Index (IDI) measures four separate functions of digitalisation: 'Upstream supply chain', 'Production', 'Downstream supply chain' and 'Digital infrastructure'. The IDI tracks businesses' digitalisation progress across sectors, of which the results are also revealed in this report.

CHAPTER 3

BRIDGING THE GAP IN TRADE FINANCE

Digital trade finance could revolutionise the Future of Trade

Due to strict collateral needs and credit history checks, 50% of SME funding applications are rejected by banks. This has resulted in a $1.5 trillion gap in trade finance. A survey conducted in 2016 also found that banks had to spend more than $60 million on due diligence measures in relation to SMEs.

Digitalisation, primarily in the context of Fintech and Blockchain, has finally brought trade finance to the centre stage. There is a general consensus that Blockchain will bridge the trade finance gap. In a rapidly evolving playbook, powered by digital, alternative trade finance solutions are becoming accessible to a much larger extent than previously. In this new environment, the role of banks is up for debate.

In fact, our research shows that start-ups and SMEs are no longer as reliant on banks as before, and that new alternatives to seek finance is rapidly gaining ground. The potential to significantly reduce cost and bureaucracy with Blockchain, in addition to new alternative financing solutions becoming available is a game-changer for the future of trade.

CHAPTER 4

SHAPING THE FUTURE OF SUSTAINABILITY IN TRADE

Reduce, reuse, recycle and return, will transform the Future of Trade

With the decline of natural resources and the rise of social responsibility, consumers are increasingly demanding ethically sourced and environmentally friendly goods. Government bodies are enforcing regulation. Sustainable supply chains can reduce the impact on the environment as well as unlock opportunities to improve operational efficiencies.

To sustain a strong business in the coming decade, a sustainable supply chain is key. Industries are implementing various sustainable initiatives throughout their business model to ensure environmental consciousness, ethical compliance and sustainability. This research explores sustainable business models and how they will impact global trade.

CHAPTER 1:

THE CHANGING NATURE OF GLOBAL TRADE

The Future of Trade is anything but certain. The political and technological developments in recent years have put the trading relationships between countries and companies around the globe, as well as the nature of how goods and services are exchanged, in the spotlight once more.

On the political side, our research highlights profound changes underway with a new US administration that has promoted protectionist trade policies challenged established institutions, and disavowed multilateral trade arrangements. Meanwhile, the trading relationship between the EU and the UK is one of the central negotiating points during ongoing Brexit talks.

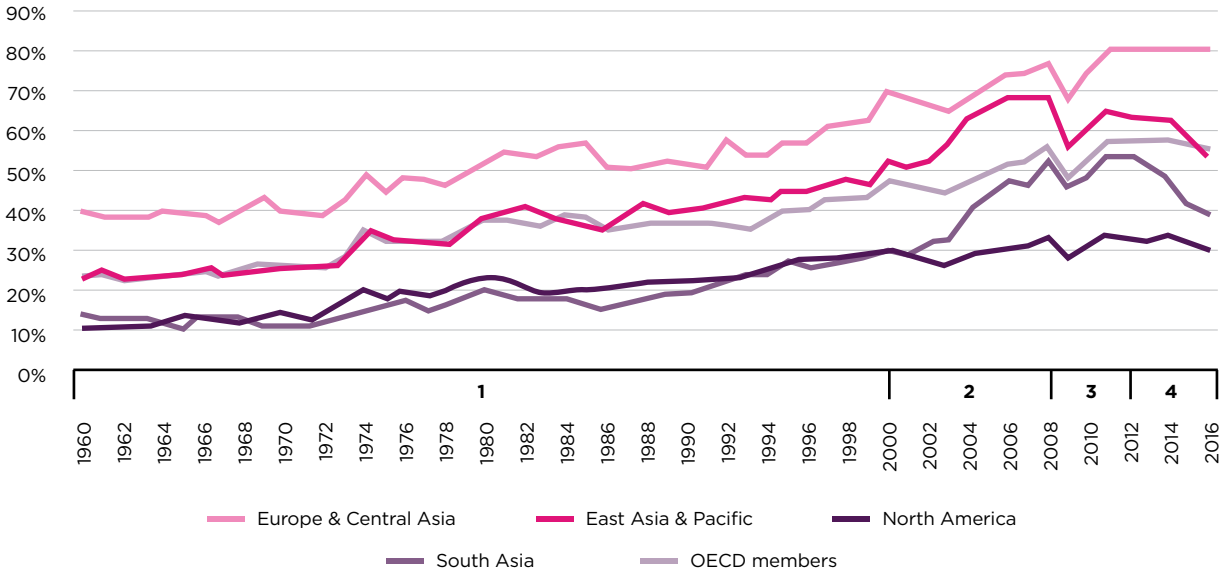
Emerging market economies, especially those in Asia are expected to play a greater role in the global trade of commodities. These major producing and consuming countries are bolstered by young workforces and rising, middle-class populations with both major producing and consuming countries located there. China's role as a global manufacturing hub may see a decline in the next decade, as many manufacturing centres could relocated to other low cost regional countries. Furthermore, China's Belt and Road initiative aims to connect millions of people in dozens of countries through large-scale infrastructure investments, with hopes of stimulating trade in the region. Although Africa and South America are yet to make a significant impact on global economy and trade, these regions have a wealth of natural resources at their disposal. This wealth makes them likely to play major roles in global trade in the next decade. In addition, a trend towards nearshoring, fuelled by automation and analytics, could result in some Latin American countries serving as manufacturing bases for the US. These views were reiterated by many industry experts who participated in the focus group discussions on "The Future of Trade", held in major commodity trade hubs around the world.

GEOPOLITICS OF TRADE

In addition to the impact of emerging technologies, the world of trade is changing rapidly in the face of geopolitics. With the election of US President Donald Trump and UK's Brexit vote, 2016 was a memorable year in global politics. A clearer picture of what these political changes mean for business and trade is now beginning to emerge.

FIGURE 1

Trade (average of imports and exports) and share of Gross Domestic Product in selected regions



Source: World Bank, Cebr analysis

Figure 1 shows a time series of the value of trade expressed as a share of GDP by region. There are four separate time periods of significant change:

- The first period, starting in the 1960s up until the early 2000s, saw slow but steady gains in trade as a percentage of GDP. This pattern implies that as economies grew throughout the second half of the 20th century, trade increased at an even faster pace, and therefore secured an increasing share of GDP.

- The following period is characterised by a rapid increase in the trade share of GDP between the early 2000s and the Great Recession of 2008. Increased trade liberalisation in goods and services and readily available lines of credit, supported the rapid growth in trade shares over this period, further spurred by a global economic boom.

- This boom proved not to be sustainable as is visible in the third period, which includes the sharp downturn in trade share across all regions as well as the subsequent recovery. Here, some regional differences become apparent with the recoveries in the trade share in South Asia and the East Asia & Pacific regions falling behind that of Europe & Central Asia and OECD member states.

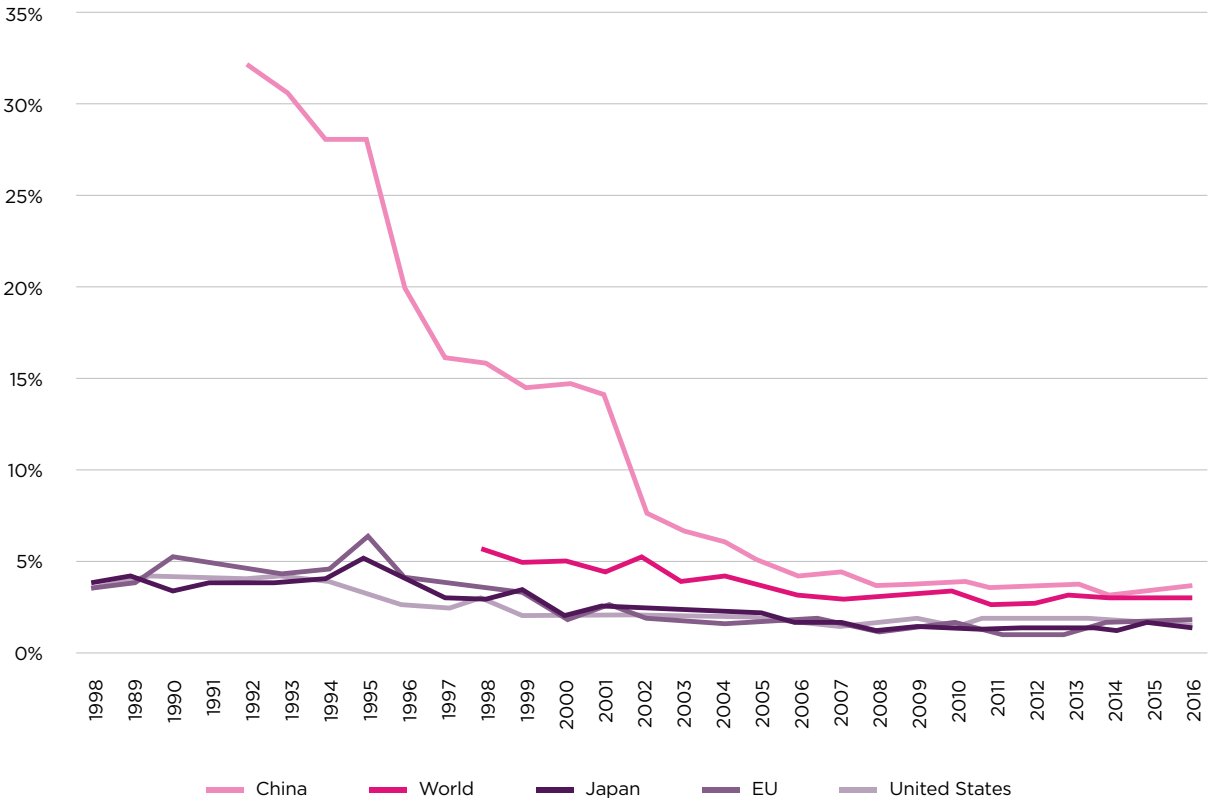
- Finally, there is a trend from 2012 onwards that is cause for concern, as the share of trade falls in most of the listed regions. This is clearly visible in South Asia and East Asia & Pacific, and to a lesser degree in North America and the OECD member states. Only the trade share of GDP in Europe & Central Asia have held steady for the past four years. The data show that the recovery in output growth following the Great Recession outpaced trade growth consistently between 2012 and 2016 in a stark contrast to the pre-crisis period when trade grew at a faster rate than output.

One reason for the slowdown in trade growth could be the stalling in further rounds of global trade talks. The Development Agenda was launched in 2001 as the ninth round of trade talks since the creation of the General Agreement on Tariffs and Trade (GATT) in 1947. The GATT evolved into the World Trade Organization (WTO), but the mission has remained the same. As such, much work remains unfinished to achieve the reduction of market distorting measures, tariffs and non-tariff barriers in world trade relationships.

Work remains to reduce market distorting measures, tariff barriers and non-tariff barriers

FIGURE 2

Weighted Mean Applied Import Tariffs, Selected Countries



Source: World Bank, Cebr analysis

Figure 2 shows average import applied tariffs weighted by product import shares for selected countries. We clearly see the progress China has made in eliminating tariff barriers over the past decades. In the early 1990s, average tariffs of 32% were levied on many Chinese imports, effectively shutting off large parts of the Chinese markets for global exporters. Subsequent reductions in the tariff burden have led to a strong decrease in trade barriers, though at a 3.6% average, Chinese tariffs are still more than double the rates seen in the US and EU (both 1.6%). Japan currently has the lowest average applied tariff at 1.4%. Generally, trade barriers in major global trading hubs have decreased over the past decade. How can this finding be squared with the sluggish world trade growth seen in recent years? One explanation is that most of the factors holding back trade growth are non-tariff barriers. These include a wide range of measures, regulations, standards, and other obstacles that a country might employ to protect domestic industries from foreign competition. Examples include: import bans, complex or discriminatory Rules of Origin, import licenses or export subsidies, quota shares, as well as sanitary measures and other technical barriers to trade.[1]

[1] http://www.tradebarriers.org/ntb/non_tariff_barriers

THE SHIFTING ROLES OF THE US AND CHINA

The global trade outlook improved in 2017, synchronised by an upswing with strong global demand supporting exporters in the US, EU and Asian countries. Air freight demand grew by 9% during 2017, the strongest rate since 2010[2]. While air freight makes up only a small fraction (1%) of global trade volumes, it is estimated that it represents more than one-third of trade by value and therefore provides a useful gauge of world trade health[3].

The US administration has taken an active and protectionist stance on trade policy matters. President Trump is an outspoken critic of multilateral institutions and agreements, and has criticised what he perceives to be unfair trade deals such as the North American Free Trade Agreement (NAFTA) with Canada and Mexico and the Trans-Pacific Partnership (TPP). As one of his first acts in office, President Trump withdrew the US from the TPP negotiations. The remaining parties, including Japan, Canada and nine other Pacific Rim economies, have since taken up negotiations to progress a TPP successor agreement without the US. More recently, the introduction of tariffs on steel and aluminium imports have raised fears about escalating tensions between the US and other countries.

While most key US allies secured a temporary exemption from the tariffs, the US targeted China with an announcement of additional punitive tariffs due to Chinese practices regarding the transfer of intellectual property. China has threatened to retaliate should the tariffs come into force. All this points towards a new era of how trade policy is conducted under the current US administration. Tariffs and other protectionist measures are seen as valid tools to pursue national interests via trade policy. Governing multilateral institutions, which long served as the champion of trade liberalisation, are being discredited as the US sees itself disadvantaged and treated unfairly by others.

Tariffs and other protectionist measures are seen as valid tools to pursue national interests via trade policy

[2] http://www.iata.org/pressroom/pr/Pages/2018-01-31-01.aspx
[3] Iata (2016) - Value of Air Cargo: Air Transport and Global Value Chains

Our London focus group weighed in: "While recent trade barriers have implications in the short term, for example in steel, the US has not historically been successful in introducing trade barriers. In 2002, the US voluntarily withdrew from trade barriers on steel under the threat of a WTO sanction. While trade wars will always be a fact of life, largely, the protectionist agenda is seen as a short term trend to save jobs, based against a national security rationale, and for short-term political gain."

Indeed, many of those interviewed feel that the US uses the threat of tariffs to bring countries to the negotiating table in order to address perceived disadvantages in bilateral talks. In an optimistic scenario, our research groups highlighted that this strategy could work to reduce trade barriers, including non-tariff barriers between countries, as well as market distorting behaviour by certain actors. This could have a beneficial net effect on trade and – given the size of the US economy – make up partially for the stalling multilateral trade talks. However, it was also noted that there are considerable downside risks in this new trade environment. Rhetoric can quickly escalate into a trade war between some of the biggest global economies – both China and the EU have announced they would respond to the unilateral imposition of tariffs by the US. This would have consequences not only for the directly affected states but also for regional trading partners. Estimates put the cost of such a trade war at up to $470 billion[4]. Moreover, the unpredictable nature of the current trade disputes creates substantial uncertainty for exporters and importers.

Rules and tariffs could change within a matter of days, making reliable business planning very difficult.

"There is going to be a shift over the next couple of decades, but neither the US nor the EU acting alone can address many of the global challenges that we are facing," said one of the members of our focus group in Dubai.

A second major geopolitical driver of future trade patterns is China's Belt and Road initiative. This initiative aims at expanding maritime routes as well as rail and road networks connecting China with Asia, Africa, and Europe. The scope of the initiative is vast, encompassing 4.8 billion people in nearly 70 countries with economies worth around $21 trillion, about 62% of the world's GDP[5].According to a Fitch report, projects worth more than $900 billion are already committed or underway[6].

$470bn

Estimated cost of trade war in current climate

[4] https://www.bloomberg.com/news/articles/2018-03-12/trump-trade-war-could-cost-470-billion-by-2020-chart
[5] http://www.ebrd.com/what-we-do/belt-and-road/overview.html
[6] Retrieved from https://www.ft.com/content/0714074a-0334-11e7-aa5b-6bb07f5c8e12

The Belt and Road initiative is arguably one of China's most important geopolitical projects as it seeks to create and connect markets as well as assert its regional influence. The initiative is not limited to infrastructure but also includes energy corridors and telecommunications. Our research revealed that the initiative could, in fact be a driving force behind more energy integration, more integrated trade routes, gas pipelines, electricity transmission, and on the whole theme of strategic energy security policies not only the Asian, but also in the Middle Eastern.

In 2018, China announced that 2017 imports from Belt and Road connected countries increased faster than its exports for the first time.

The value of China's imports from Belt and Road countries stood at $666 billion in 2017, an increase of 20% year-on-year. This accounted for 39% of China's total imports value, according to a report compiled by the State Information Center, a State Council think tank. In the same year, China's exports to those countries came in at $774 billion, a rise of 8.5% year-on-year. The growth of imports outpaced exports for the first time since the Belt and Road initiative was proposed five years ago.

What is clear, the focus groups agreed, is that Asia is taking its place on the world stage and that the world's economic centre of gravity is shifting towards Asia. For example, both Saudi Arabia and Iran's most important export market for oil and gas is now China.

In terms of trade volumes, the investments in ports and maritime routes is expected to decrease costs for maritime shipping, enabling more viable trading routes.

The Belt and Road initiative is a cornerstone of China's open foreign policy. The corridor going through Pakistan, supporting that country's economy, will create opportunities throughout the Middle East. The EU will export its industrial and regulatory standards to the rest of the world, while the US lost the opportunity to do so.

Within five to ten years, the rules of world trade previously written by the US, EU and others may disappear, rewritten by others in the international trading system.

Geopolitics are still relevant to trade, but with the Belt and Road initiative becoming a reality, new rules for international trade are on their way. These new standards will be put forth by Free Trade Agreements (FTAs), Bilateral Investment Treaties (BITs) and by regional institutions. These regulations will be quite different than those introduced and maintained by Western powers under the WTO, according to the focus groups.

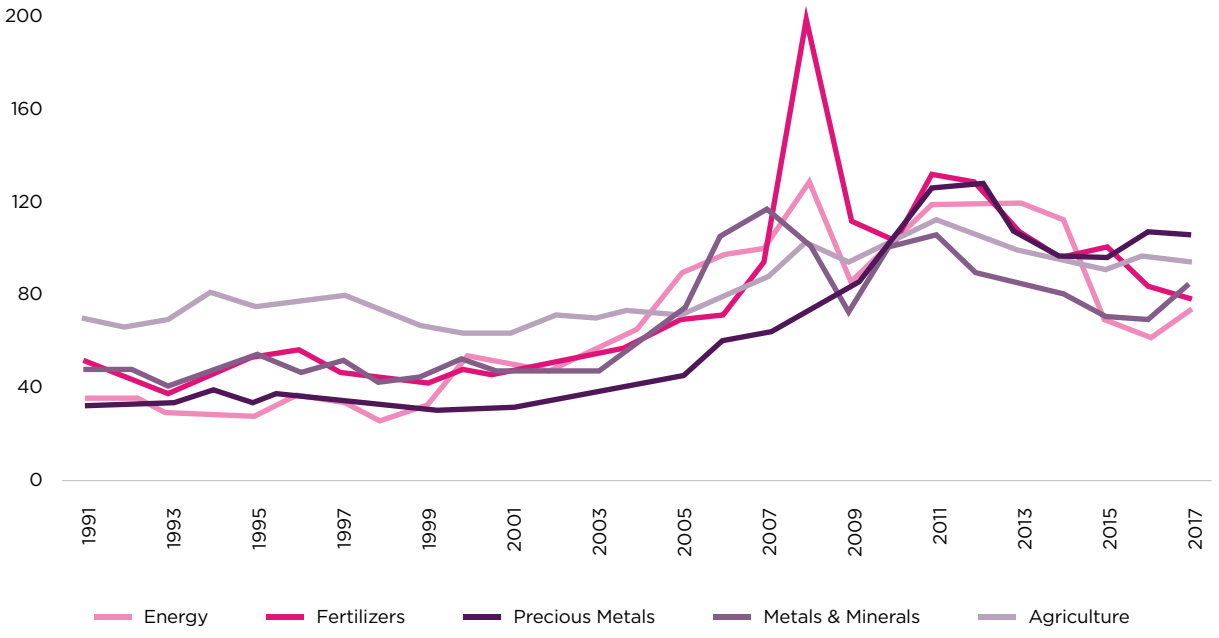
Asia is taking its place on the world stage and the world's economic centre of gravity is shifting towards Asia

GLOBAL ECONOMY: EMERGING FROM THE DOLDRUMS

The global economy saw modest growth in 2017 after two consecutive years of deceleration of investments, manufacturing, and trade activities. Improved business sentiments in both emerging and advanced economies led to a rebound in investment growth. As for trade, the increase in commodity prices, after collapsing in the three preceding years, had a positive impact on countries which export commodities.

FIGURE 3

Commodity Price Index



Source: World Bank

Historically, international trade has shared a strong correlation with economic growth, and policies such as trade liberalisation and globalisation were practised in both the developing and the developed world. Prior to the global financial crisis[7], international trade grew 1.5 times the global GDP for four decades. This indicated a steady global trade-to-GDP growth which slightly declined after the recession as the drop in economic growth also stifled international trade.

Prices of oil and other major commodities increased in the second half of 2017 owing to a favourable supply and demand scenario. This increase is likely to have a positive impact on global trade as imports of primary commodities[8] account for more than one-quarter of the total goods trade. Globally, more than $4 trillion of primary commodities are traded annually. With commodity prices forecast to improve in the short term, global trade value is likely to increase.

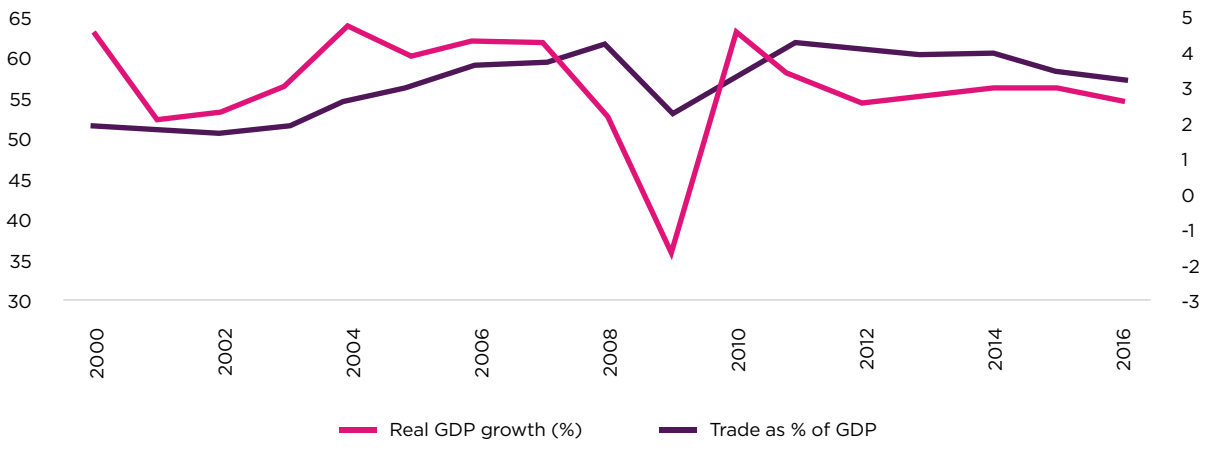
However, the global commodity sector faces significant risk. Escalating trade restrictions, rising geopolitical tensions, and a possible slowdown in China could negatively impact the sector. Weather conditions could impact supply of agri commodities, while oil may be replaced by renewable or other cleaner forms of energy. Some countries may transform from being net importers to net exporters of certain commodities. Hence, the change in trading patterns of these commodities should be monitored carefully. As new trade and manufacturing hubs emerge and old centres become less relevant, the future of commodities trade is anything but certain. However, recognising the importance of balance in the current world of trade, this chapter discusses the key commodities and trading hubs, while exploring the upcoming manufacturing hubs.

$4tn

The value of primary commodities traded annually

FIGURE 4

Trade as a % of GDP vs Real GDP Growth



Source: World Bank

[7] Refers to the financial crisis which started in 2008–09 in the subprime mortgage in the US and led to debt crisis in many advanced economies
[8] Include all foods, metals and minerals, and fuel

CRUDE OIL

Crude oil is the most commonly traded commodity. Oil, considered an engine for global growth, accounted for more than 30% of global energy consumption in 2015. Hence, any imbalance in the supply-demand scenario of crude impacts global trade and the economies of major oil-exporting and importing countries.

For decades, the US and other advanced economies, such as those in Western Europe, were the major importers of crude oil. However, with China's economic growth in the past two decades, imports have shifted towards the Chinese. This became more evident after the financial crisis in 2009, when growth in advanced economies slowed while in emerging economies such as China and India, the pace accelerated.

Advanced technologies and techniques have made it possible for the US to extract shale oil. As a result, US crude oil production increased by approximately 72% between 2010-2015. However, production declined in 2016 as high inventories caused a supply glut, resulting in a price drop to $50 in 2016 from more than $100 in 2013.

The International Energy Agency (IEA) estimates that the US will become a net exporter of crude oil by 2027, potentially reshuffling international trade flows and challenging the existing suppliers, particularly OPEC, which has controlled the oil market for the last half century.

The Middle East, accounting for approximately 35%[9] of global crude oil production, is expected to remain the largest exporting block in the next decade. However, its crude oil export volume could decrease due to rising domestic consumption and investments in new refining capacities that require crude oil as the primary raw material. Governments across the Middle East are looking to develop the downstream oil sector to diversify their economies from crude exports towards more specialised refining products. The refining sector currently consumes about one quarter of the domestic crude oil production and this is set to increase with the addition of new refining capacities. For instance, the Gulf Cooperation Council is forecast to add around 1.5 million barrels per day refining capacity between 2017-2021.[10]

The International Energy Agency (IEA) estimates that the US will become a net exporter of crude oil by 2027

The IEA estimates that there will be 50 million electric vehicles on road by 2025, up from 2 million in 2016

The global energy transition towards renewable energy will also impact crude oil flow. Although the transition towards renewable energy production is slow, it is gaining momentum as the cost of renewable energy falls to a level on a par with the energy generated from fossil fuels. The signing of the Paris Agreement could hasten this transition. British Petroleum (BP) estimates that the share of renewables in the primary energy mix could increase to 10% by 2030 and 14% by 2040 from 4% in 2016. However, most of this growth will be at the expense of coal, which is forecast to see its decline to 23% in 2030 from 28% in 2016, mainly driven by China's move towards green energy. The global oil share is expected to drop to 30% from 33% over the same period.

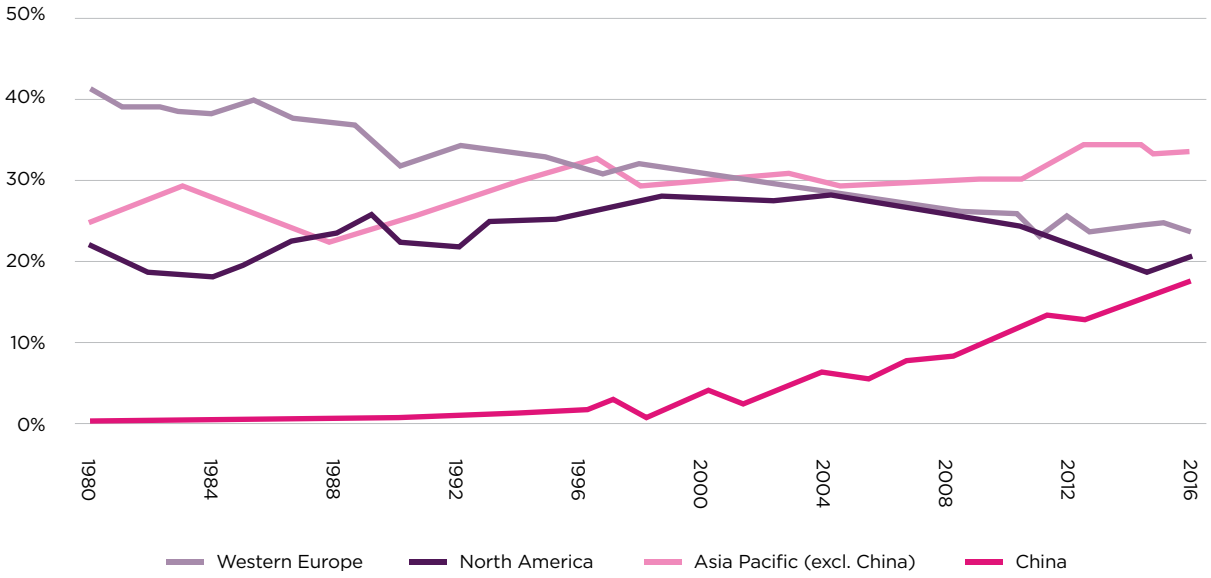
Any change in the energy mix will take a long time and developing economies such as China and India will continue to remain dependent on oil. The transportation sector accounts for 63% of global oil demand. Adoption of electric cars is still not high enough to make a significant impact on global oil demand. The IEA estimates that there will be 50 million electric vehicles on road by 2025, up from 2 million in 2016. This is expected to reduce only 2.5 million barrels per day or about 2% of global oil demand by that time.

Although oil substitution is not imminent in the next decade, the trade flow of crude oil is expected to change. The US could become a net exporter of oil. A slowdown in China's economic growth could lead to lower oil demand and demand for oil could increase from developing and emerging economies in Asia and Africa. In emerging markets, demand for oil could be high in countries along China's Belt and Road initiative as development of transport infrastructure and industrialisation pick up pace in these countries. Africa, a net exporter of crude oil, will also witness an increase in domestic demand driven by rising urbanisation, economic recovery, and a growing need for electricity.

[9] OPEC, OPEC Annual Statistical Bulletin 2017
[10] APICORP Energy Research, An uncertain outlook for the refining sector in the GCC

FIGURE 5

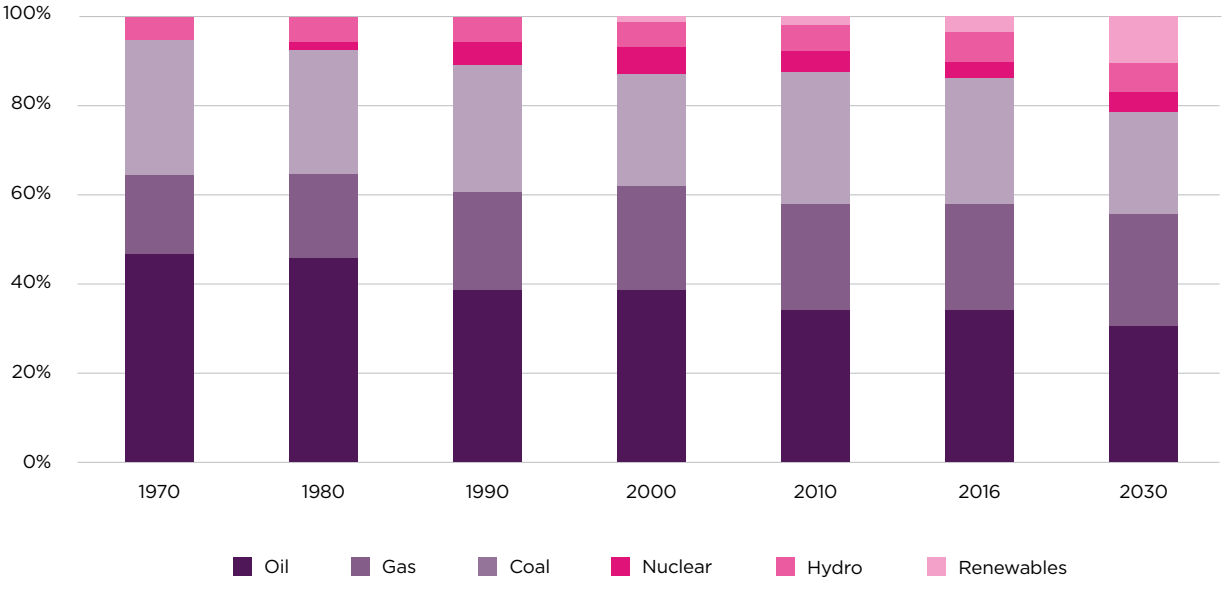
Crude Oil – Imports by Region



Source: OPEC Annual statistics

FIGURE 6

Share of Primary Energy by Fuel Type



Source: BP World Energy Outlook

IRON ORE

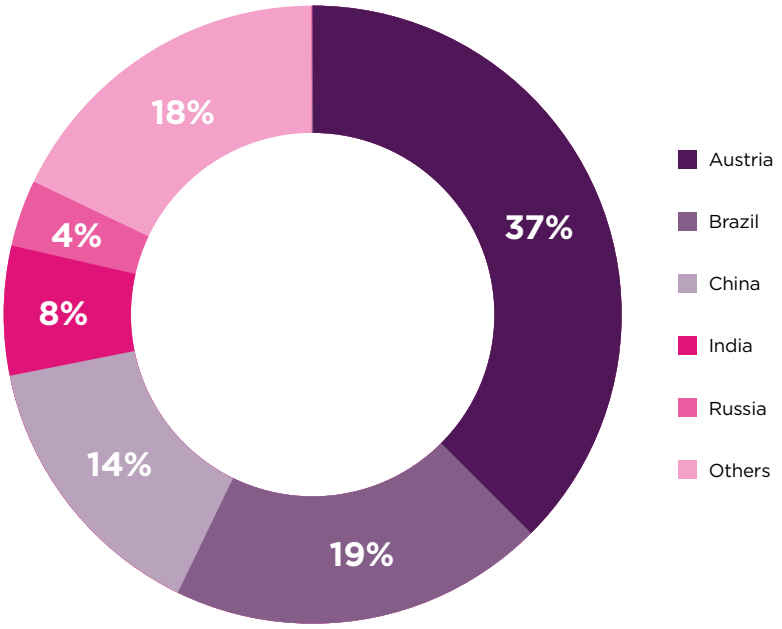
Demand for iron ore is closely linked with the global steel industry, which accounts for about 98%[11] of the world's iron ore consumption. Growth in steel consumption is observed to closely resonate with economic growth.

Australia, Brazil, and China are the three largest producers of iron ore, accounting for close to 70% of the global usable product. However, Australia and Brazil are the major exporters and together they comprise 80% of global total. The majority of these exports are directed towards steel producing countries with high domestic demand. China, despite being the third largest producer, imports iron ore as local production is unable to meet the demand of its steel companies.

The trade flow of iron ore also depends on transportation costs. Steel manufacturers prefer to buy iron ore from relatively close producers to benefit from lower transportation costs. Australia supplies more iron ore to countries in Southeast Asia and China, while Brazil mainly exports to Western European markets. However, with the growing demand from Southeast Asian countries, Brazil also exports iron ore to countries such as China and Japan.

FIGURE 7

Iron Ore Imports



Source: USGS

[11] CIRRELT, Dynamic Determinants in Global Iron Ore Supply Chain

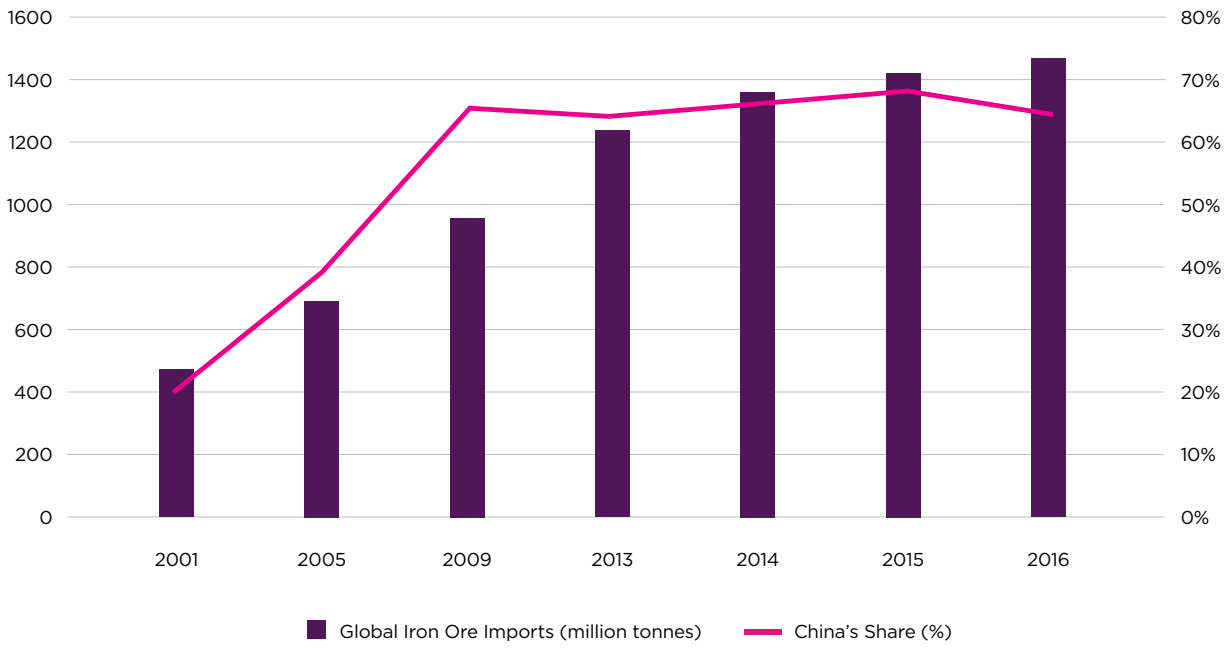
China alone accounted for approximately 70% of total global iron ore imports in 2016, rising from around 20% in 2001, owing to the country's growing steel production. Crude steel production in China soared to 808 million tonnes in 2016 from 101 million tonnes in 2001.

The steep rise in steel production resulted in an overcapacity in the industry. China's shift towards a consumer centric economy, and its slow economic growth, have reduced demand for steel in the construction sector which accounts for majority of the steel consumption. Growing environmental concerns have also led China to suspend steel production. Estimates suggest that between January 2016 and October 2017, China cut nearly 100 million tonnes of legal steel capacity and 120 million tonnes of illegal low-grade capacity[12].

Experts agree that Chinese steel production has peaked and will reach a plateau over the next decade. However, the drop in China's steel production will be offset by higher production in other Asian and Middle Eastern countries. For instance, India plans to double its capacity to 300 million tonnes a year by 2030, while Iran aims to export 20 – 25 million tonnes of steel by 2025. Demand for steel in Vietnam, the largest producer and consumer of steel in the ASEAN bloc, is expected to grow by 15 - 18% over the next decade. This will increase the import demand of iron ore as local producers are planning to raise capacity to meet demand.

FIGURE 8

Iron Ore Imports



Source: Trade Map

[12] REUTERS, Global steel recovery at risk from capacity ramp-ups outside China

FIGURE 9

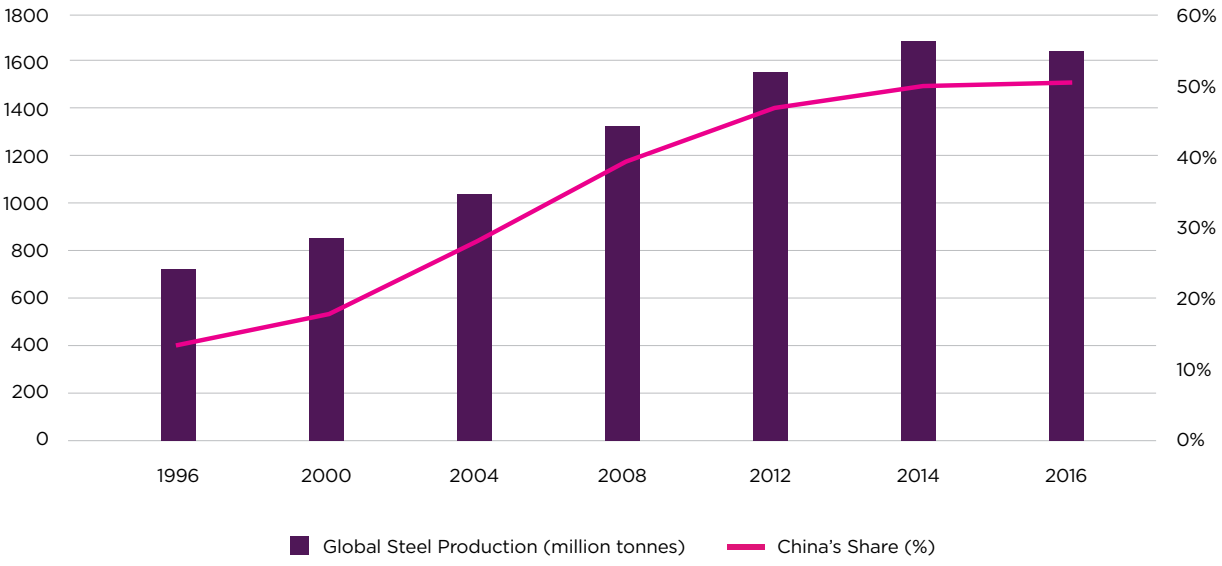
Iron Ore Trade Flows from Major Exporting Countries

Source: Trade Map

If China's Belt and Road initiative progresses according to schedule, it could require an estimated 150 million tonnes of steel, creating new consumer markets for iron and steel. This could provide an opportunity for China to export its additional steel capacity and new production to these countries. It could also encourage domestic companies to expand into these markets - thus driving iron ore demand.

FIGURE 10

China Steel Production as % of Global Production



Source: World Steel Association

GOLD

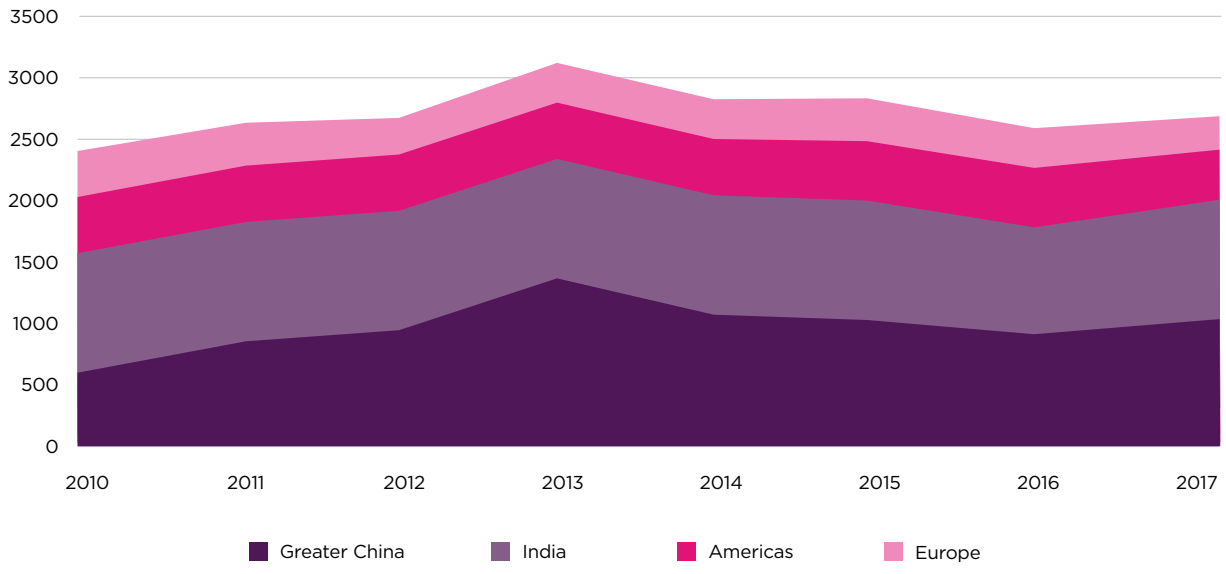
Four countries – China, Australia, Russia and the US – account for about 40% of global gold production. China is the leading producer and consumer. Gold demand in Greater China (China, Hong Kong and Taiwan) increased by nearly 50% between 2010 - 2017. In 2017, China accounted for about one third of the global gold demand.

Growing urbanisation and a rising middle class population in China will further drive the demand for gold in the next decade. Demand for gold jewellery in the country is shifting from affluent coastal areas to less affluent regions in western and central China with economic development picking up pace in these regions. India is the second largest consumer of gold, accounting for about one quarter of global demand in 2017. Demand has slowed down in recent years, mainly due to government initiatives to increase transparency in the sector. In the long run, these initiatives and policies are expected to strengthen the economy and lead to a more transparent gold industry. In addition, India has plans to establish a spot gold exchange which will enhance transparency in price setting and drive demand. India's burgeoning middle class is also expected to drive the demand for gold in the next decade.

Gold demand and consumption are also expected to significantly rise in other Southeast Asian countries such as Indonesia, Vietnam, Thailand, and Malaysia in the next decade, driven by rising incomes and economic development.

FIGURE 11

Gold Demand in Selected Countries

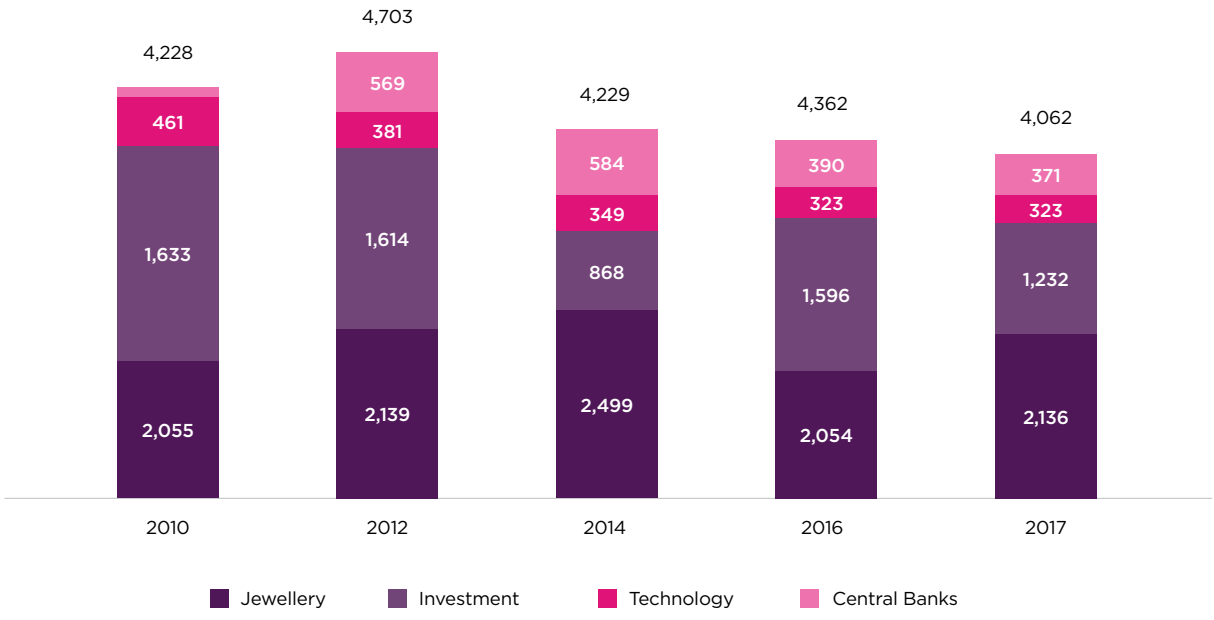


Source: World Gold Council

Gold is increasingly becoming a preferred investment commodity. As income grows in China and emerging Asian markets, the demand for gold as an investment commodity is also likely to increase. The household debt-to-GDP ratio for gold consuming countries such as India and China is also low, implying that people in those two nations tend to save and invest more compared to other advanced economies. Chinese demand for physical gold bars and coins increased by more than 70% between 2010-2017.

FIGURE 12

Gold Demand by Segment

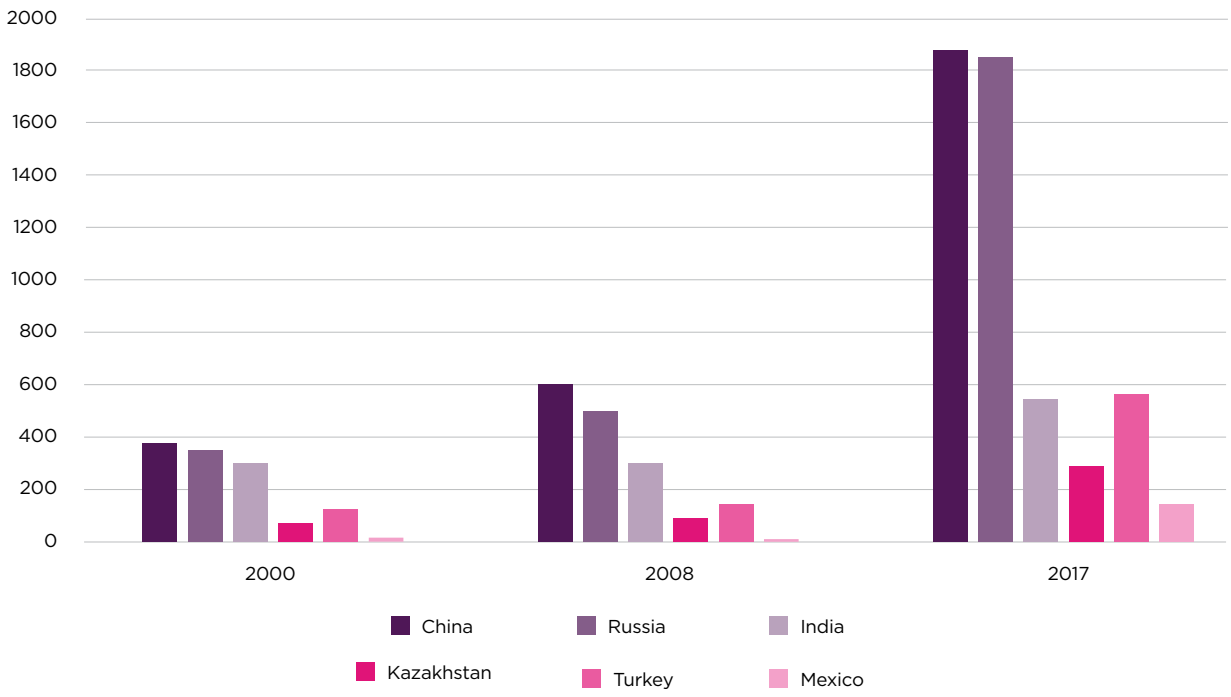


Source: World Gold Council

In 2017, China accounted for around one third of global gold demand

FIGURE 13

Increase in Gold Reserves in Select Countries



Source: World Gold Council

Central banks around the world accounted for about 10% of global gold demand in 2017, up from 2% in 2010. Their attitude towards gold has undergone a major shift since the recession in 2009. Having been large net sellers of gold for two decades, central banks in major emerging economies, such as China, India and Russia, have purchased substantial amounts of gold. This movement diversifies their reserve assets by reducing their dependence on US dollars. Major European central banks have largely stopped selling gold following the sovereign debt crisis in Europe which made gold more attractive to them than sovereign bonds.

Traditionally, gold formed a substantial share of central bank reserves in developed economies that were at the centre of trade before the gold standard ended in 1971. The trend of buying gold is expected to continue, especially in emerging economies, and central banks are expected to remain net buyers in the next decade.

Central banks around the world accounted for about 10% of global gold demand in 2017, up from 2% in 2010

GOLD TRADE HUBS

The shift in trade flow from West to East is also evident if one looks at the activity of the major gold trading hubs. Traditionally, the global gold trading hubs have been in London, Zurich and New York. Gold's close bond with the financial system has led to these centres emerging as prominent gold-trading hubs.

However, with rising demand from China and India, trading hubs are also moving towards the East. Currently, the London OTC Market, the US futures market and the Shanghai Gold Exchange (SGE) together comprise about 90% of global trading volumes. According to World Gold Council (WGC) estimates, the London OTC Market itself accounts for 70% of global trading volume.

Established in 2002, the SGE has evolved into one of the leading gold-trading hubs. In 2014, the SGE launched the Shanghai International Gold Exchange (SGEI) to provide foreign institutions and individuals access to China's precious metals market. Unlike the London and the US futures markets, which primarily depend on paper gold contracts, the SGE is a purely physical gold exchange.

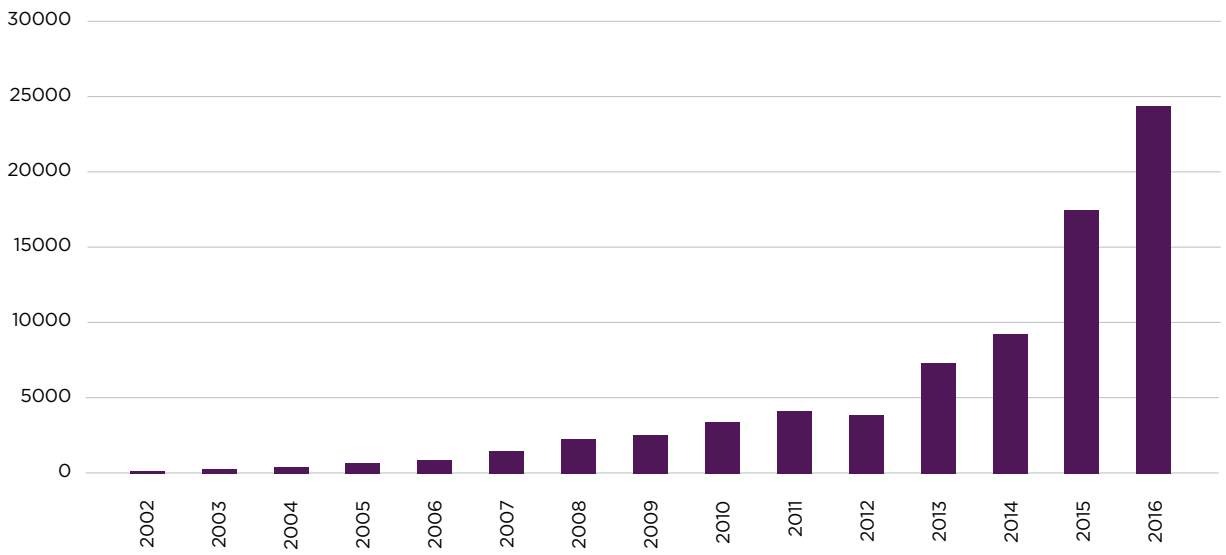
Gold trade volumes at SGE have substantially increased since its inception. It was hailed the world's largest spot physical gold exchange for ten consecutive years since 2007. In 2016, SGE introduced 'Shanghai Gold', a new pricing which cemented its position in the global gold trade market. SGE is also partnering with international exchanges such as the Dubai Gold and Commodities Exchange (DGCX) for its yuan-denominated gold futures contract.

Interestingly, the focus groups noted that SGE has started pricing gold in Renminbi, and not in US dollars. Many see this as a sign that Renminbi could become an increasingly important currency as a means of exchange for doing business with Chinese and Asian countries. The focus groups did not reach a consensus on whether the Renminbi would go international and replace the US dollar, but it was speculated on as a possible outcome of the Belt and Road initiative.

Gold trading hubs are moving East to meet growing demand

FIGURE 14

Shanghai Gold Exchange – Trading Volume (tonnes)



Source: Bullionstar

Other important gold trading hubs in Asia include Dubai, India, Singapore and Hong Kong. Exchanges in these locations offer spot trading facilities and future contracts. Some have already established themselves as a leading regional trading hubs, such as Dubai in the Middle East and Singapore in the ASEAN.

Over the next decade, demand for yuan-denominated gold contracts will increase. The Chinese Gold & Silver Exchange Society (CGSE) and Hong Kong's Gold Exchange are in talks with Singapore, Myanmar, and Dubai to establish a gold commodity corridor under China's Belt and Road initiative. Such a corridor would increase the turnover of yuan-denominated products as much as threefold.

A gold corridor including Myanmar, Singapore and Dubai, would increase Yuan-denominated products threefold

COTTON

After a decline in 2017, global cotton production improved by about 15% year-over-year[13]. The global outlook for cotton is closely linked with the dynamics of the textile and apparel industries. The low cost, light weight and multiple applications of various synthetic fibres have partly replaced demand for cotton over the past few decades. However, textile and apparel industries continue to use it exclusively and in combination with other fabrics.

Asia-Pacific accounts for close to 60% of global cotton production. China and India together account for more than 45%. The US share, formerly leading, has declined over the past few years due to low prices and the recent cancellation of subsidy on cotton farming.

China, Bangladesh and Vietnam accounted for more than 37% of cotton imports in 2017. Although India is a top producer of cotton, its imports have also increased over the past decade, owing to the growing demand from the domestic textile industry and exports to flourishing textile markets in other Asian countries.

China remains the world's leading textile market. However, in recent times, its competitiveness has been hurt by decreasing labour availability and increasing costs of production. As a result, other Asian economies, namely Bangladesh, Vietnam, Myanmar, Uzbekistan, and India, stand to benefit.

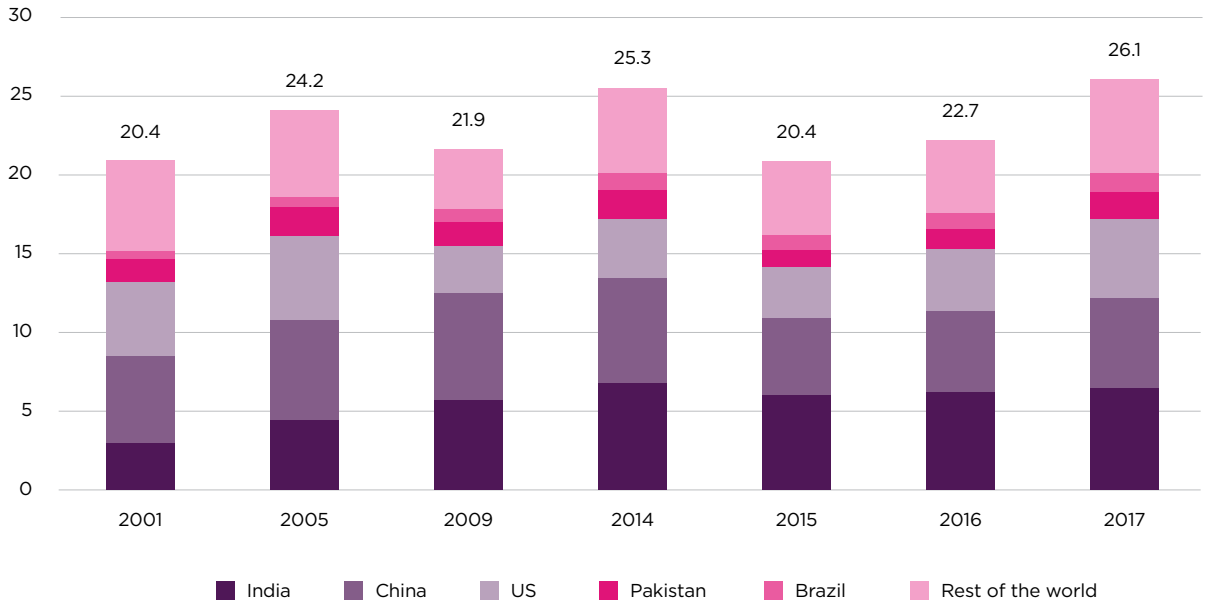
Many Taiwanese-owned factories, formerly based in China, are relocating to Vietnam. Although the Chinese government is providing manufacturing incentives to cluster textile production in central and western China, the country is gradually shifting its focus from labour intensive to high-value added sectors.

Africa, particularly East Africa, is also fast becoming a major player in the global apparel and garments sector. According to a projection by the UN, sub-Saharan Africa will have the highest growth 'in the working-age' population between 2015-2035. By 2035, the working age population in the region is expected to be as large as that of China, which is more than 900 million people today. This massive labour pool is capturing the attention of several industries, including textiles. Availability of labour, along with preferential access to the US markets and favourable government initiatives, has prompted many international companies to establish manufacturing centres in countries such as Ethiopia and Kenya.

[13] USDA, Global Cotton Production

FIGURE 15

Cotton Production (in MMT)



Source USDA

Currently, 65% of US imports and 40%[14] of EU imports of textiles are controlled by APAC countries (Australia, China, India, Japan, South Korea and New Zealand). With the probable partial shift of the textile industry to Africa over the next decade, its export share in the US and the EU will eventually increase. The signing of the African Continental Free Trade Agreement (AfCFTA) will also drive intra-regional trade in cotton as Africa strives to become a global textile manufacturing hub.

Historically, the US and Europe have been the major consumer markets for apparel, accounting for more than 40%[15] of the global apparel industry. However, Asian economies will dominate the global textile and apparel industries in the coming decade owing to a growing consuming class, rising disposable incomes and urbanisation. By 2025, the combined apparel market of China and India is expected to outgrow the current markets of the US and the EU.

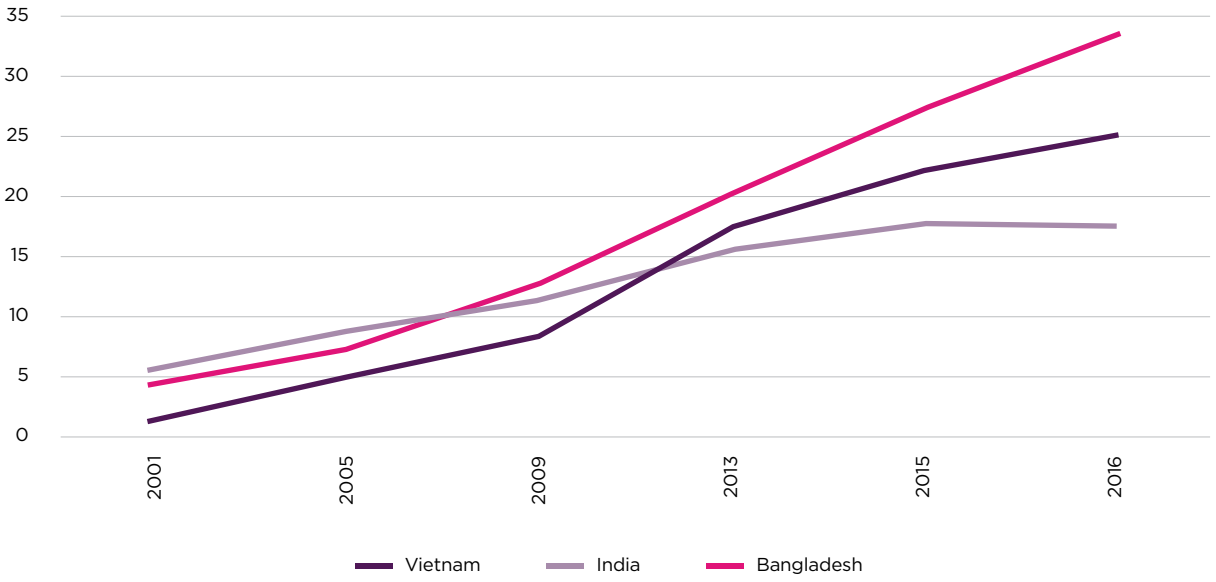
The textile industry is often considered one of the major contributors to global warming. With growing awareness regarding environmental and social sustainability, the demand for eco-friendly raw materials is gaining importance. As a result, demand for organic cotton is growing compared to that of conventional cotton.

Dependency on synthetic fibres is high in the apparel and textile industries, with polyester accounting for more than 50%[16] share of the global textile industry. Introduction of polyester from recyclable materials will further drive its adoption. Manufacturers, too, are preferring to use a mix of organic cotton and 100% recyclable polyester. Other alternatives such as regenerated fibres Monocel and Lyocell also pose a threat to cotton.

[14] RECP and its potential impact on textile and apparel trade
[15] Indian Textile Magazine, Global textile apparel industry fortunes to depend on five major trends
[16] Textile Excellence, Overcapacity Will Continue In The Global Polyester Market For Some Years

FIGURE 16

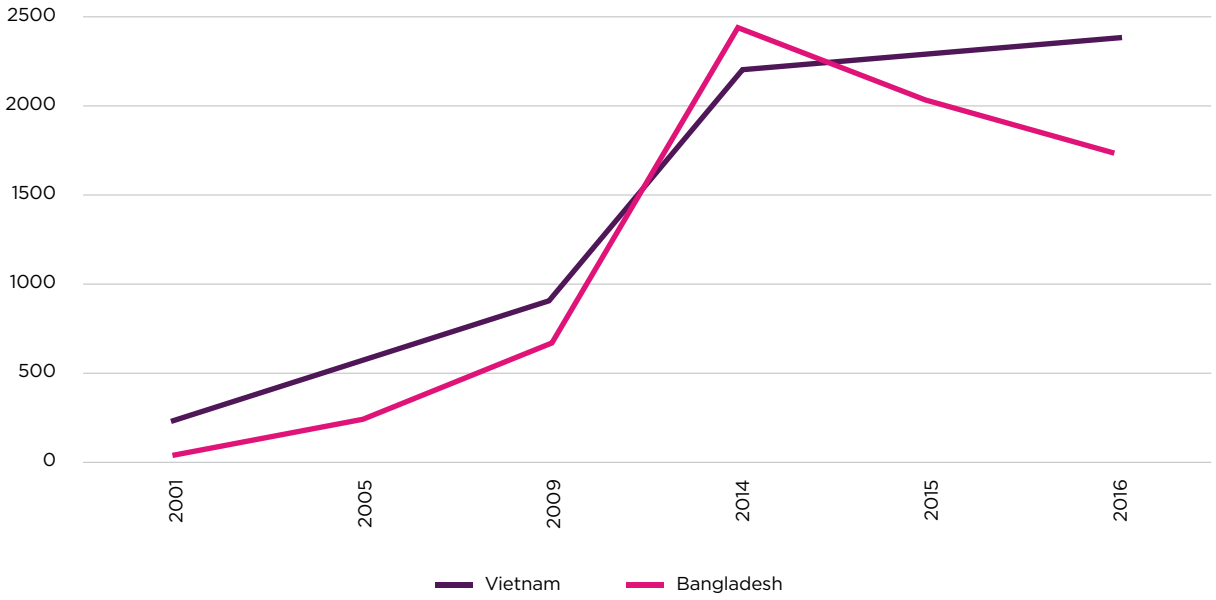
Ready-to-Wear Exports from Selected Countries (in USD billion)



Source: Trade Map

FIGURE 17

China's Cotton Exports to Bangladesh and Vietnam (in USD million)



Source: Trade Map

Currently, less than 1%[17] of the global cotton production is organic. The majority of it is concentrated in India, China, Turkey, Kyrgyzstan, US, Pakistan, Brazil and Uzbekistan. In terms of demand, Germany, US, Switzerland, Spain and Belgium are among the largest markets for organic cotton. Realising the growing importance of organic cotton, African countries such as Burkina Faso, Mali and Benin are also increasingly growing the crop.

The increase in demand for organic cotton is due to increased pressure on the textile businesses for ethical sourcing. 36% of the world's leading apparel brands have pledged to use 100% sustainable cotton by 2025 and abide by standards such as Fair Trade and the Better Cotton Initiative (BCI), or independently verifiable standards such as the Global Recycled Standard (GRS) or the Recycled Claim Standard (RCS). Some of these global apparel brands include H&M, Kering, M&S, Nike and Sainsbury's.

Demand for cotton in the next decade will shift more to countries in close proximity to major consumers and where the labour cost is. With the rise of its middle class, Asia will be at the centre of the textile industry over the next decade. There could possibly be a rise in intra-regional trade with both producing and consuming countries being in Asia. There would also be increased demand for cotton from emerging African textile markets, which would mainly serve the US and the European markets.

36% of world's leading apparel brands have pledged to use 100% sustainable cotton by 2025

[17] Textile Exchange, About Organic Cotton

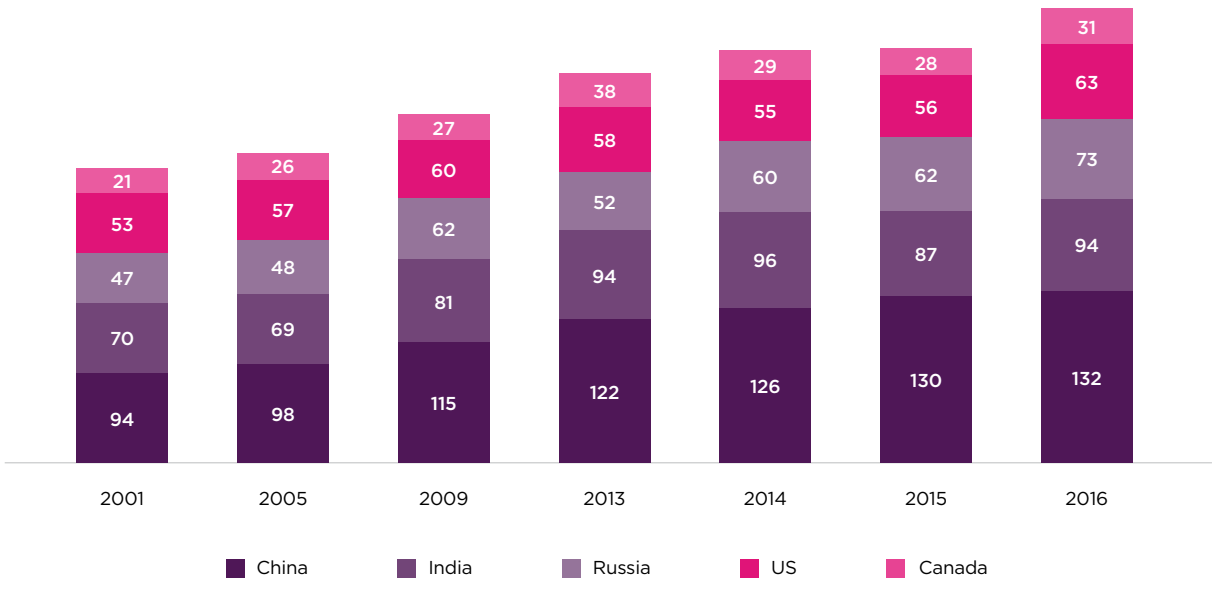
WHEAT

The global wheat market is largely driven by farm costs, efficiency of supply chains and the proximity between the producing and the consuming markets. China, India, Russia and US are the top producers, accounting for nearly 47% of the global wheat output. In terms of trade, US, Canada and Russia dominate the exports market, accounting for around 39% by value, while Indonesia, Algeria, Italy and Egypt are the major wheat importers, accounting for more than 19% by value. China and India mainly focus on attaining self-sufficiency in wheat[18] production.

Over the past two decades, the export market for wheat has shifted more towards countries in the Black Sea Region (BSR[19]). The share of these countries in global wheat export has significantly increased to more than 25% in 2016 from just under 10% in 2000. Some of the drivers for this growth are favourable climate, improved agriculture techniques, low freight rates, depreciation of local currencies and increased investments in agriculture. The BSR's major export markets include countries in the MENA bloc.

FIGURE 18

Top Wheat Producers (MMT)



Source USDA

[18] Trade Map, Global Wheat Trade
[19] Includes Russia, Ukraine, Kazakhstan, Romania, Bulgaria, Hungary and Serbia

About four decades ago, Russia was dependent on the US for its wheat imports. However, with 33 million tonnes of export in 2017, Russia has become the leading wheat exporter by volume. In 2017, the country collected 83 million tonnes, the biggest harvest in its wheat production history[20]. This bumper harvest forced wheat prices to drop, creating competitive pressures for US, Canada and Australian wheat markets.

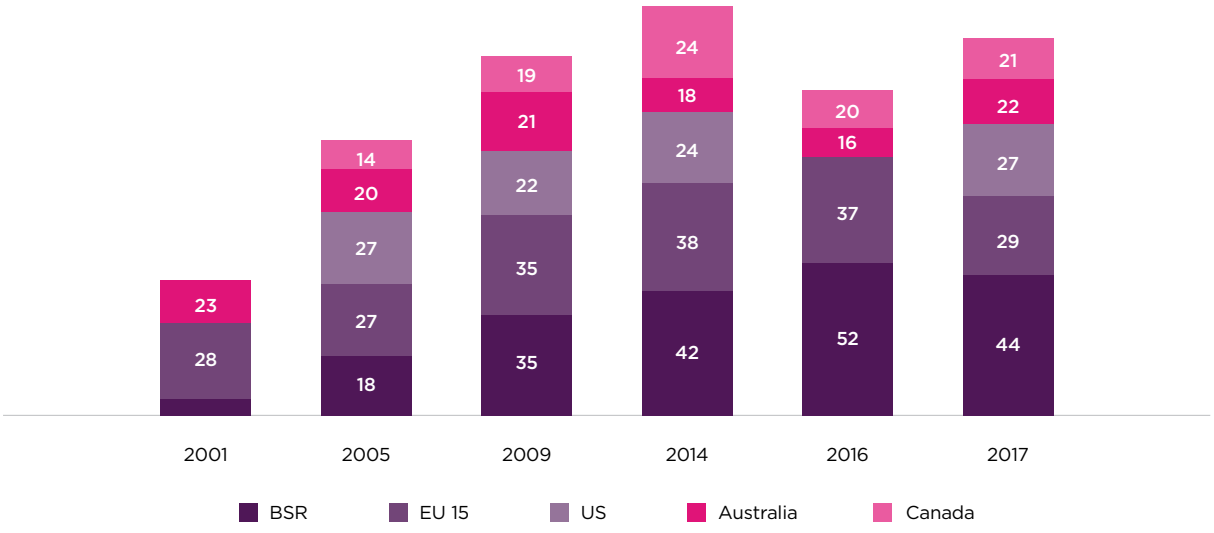
In 2017, Russia and Ukraine accounted for about 80% of the Egyptian wheat market, which has historically been the major wheat export market for US. In December 2017, the U.S. Wheat Associates announced the closure of its office in Cairo and started focusing on the Asian and Latin American markets[21].

Recently, wheat markets in US and Canada have witnessed flat growth, mainly owing to the cost advantages of wheat production in the BSR countries. The US's withdrawal from the TPP is likely to negatively impact US wheat exports to overseas markets, especially Japan. On average, Japan imports more than three million tonnes of wheat from the US, annually. The full implementation of the TPP would result in cheap wheat imports from Canada and Australia, thus putting US wheat producers at a price disadvantage of more than $200 million annually[22].

Growing wheat exports from the BSR countries also pose a threat to Australia's wheat exports to Southeast Asian markets. As per the Australian Export Grains Innovation Centre, the on-farm cost of grain production is around US$93/tonne in Russia and US$102/tonne in Ukraine. In Australia, the on-farm cost is US$166/[23]. Indonesia, the largest market for Australian wheat export over the past 15 years, is shifting towards Ukrainian wheat. The Ukrainian wheat accounted for more than 23% of Indonesian wheat imports in 2017, up from less than 1% in 2012. However, other major wheat-importing countries in Asia such as Japan and Korea are mainly dependent on Australia due to the superior quality of its produce.

FIGURE 19

Top Wheat Exporters (MMT)

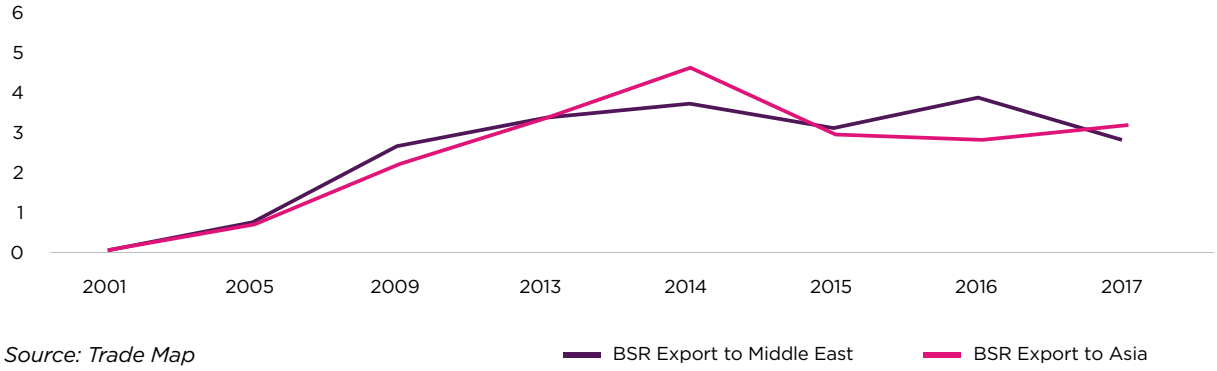


Source: Trade Map

[20] USDA Foreign Agriculture Service, Russia
[21] US Wheat Associates, U.S. Wheat Associates to Close Cairo Office, Continue Regional Market Coverage from Rotterdam, Casablanca,
[22] National Association of Wheat Growers, TPP-11 Puts U.S. Wheat Exports at Risk
[23] Australian Export Grains Innovation Centre, Russia's Wheat Industry

FIGURE 20

BSR Exports in the Middle East and Asia (USD billion)



Source: Trade Map

Wheat imports from the BSR countries are also gaining popularity in the MENA bloc countries. Owing to its water scarcity, the region is mainly dependent on wheat imports to meet its domestic consumption. Saudi Arabia, which ceased wheat production completely in 2016, is planning to become one of the leading hubs for Russian wheat exports in the Middle East. The majority of Russian wheat in MENA is used to make flatbread, which does not require specific quality parameters such as those needed for noodles or sponge and dough bread[24].

Russia is also becoming an increasingly crucial supplier for sub-Saharan Africa, which is focussed on low-priced supplies. With a rising population and an increase in urbanisation, the next decade could witness higher demand from this region which could be met by wheat imports from the BSR countries.

In Nigeria, wheat demand has surpassed the demand for local staples such as cassava, millet and yam. In Kenya, the wheat market is largely driven by expansion in milling capacity and rising population. Other potential African wheat markets include Sudan, South Africa, Ethiopia, Angola and Tanzania.

The grain market in the BSR countries has its own challenges. The quality and protein content of the wheat supplied by these countries are regarded as inferior to the wheat exported by Australia, EU, US, and Canada. Hence, the BSR's production is mostly used for feeding. For instance, around 60–65% (Kingwell, n.d.) of Ukrainian wheat met livestock consumption demands in the Philippines, South Korea and Indonesia. In addition, some countries are more aware about the protein content in wheat. For instance, Egypt's General Authority for Supply Commodities (GASC) tightened its protein content requirement for imported wheat by 0.5% for all supplying countries in May 2017[25].

Russia and Ukraine face high inland logistics costs and limited port handling capacity. Despite a great harvest, Russia could export only 33 million tonnes through its Black Sea ports, owing to its poor road and rail transport infrastructure. However, developments at its Black Sea port of Taman and the construction of a new grain terminal in the country's Far East are expected to increase grain exports by 30 million tonnes by 2022[26].

The below average global per capita wheat consumption (26 kg compared to 76 kg annually[27]) in Asia represents huge demand potential in countries such as Indonesia, Vietnam, Thailand, Philippines, and Japan, among others. A growing population, a rise in income levels, and a shift towards Western dietary patterns would further boost Southeast Asian demand for wheat in the next decade.

[24] Australian Export Grains Innovation Centre, Russia's Wheat Industry
[25] UKArgoConsult, Prospects of Black Sea wheat in the Egyptian market
[26] Reuters, Extra port capacity to boost Russia's grain exports in 5 years
[27] The Economist, Asian countries are eating more wheat

IN SEARCH OF THE NEXT MANUFACTURING HUB

CHINA

In the past two decades, China has established itself as a leading global manufacturing hub, based not only on its low labour costs, but also on increasing quality of production. The manufacturing sector has played a key role in China's economic growth by increasing productivity, creating jobs and increasing the standard of living. However, as the economy has flourished and per capita income has grown, it is becoming difficult for China to maintain its status as a low cost manufacturing base.

The Chinese economy is also undergoing a structural change. Once driven by exports, it is becoming more reliant on domestic consumption for growth. The focus of the Chinese government has also shifted more towards advanced manufacturing. This is evident from the 'Made in China 2025' strategy that focuses on upgrading the country's manufacturing sector by using advanced technologies.

As China shifts towards more advanced manufacturing, around 100 million[28] labour intensive manufacturing jobs could move to other low cost countries. Business-friendly policies, availability of the required skill set and the presence of physical infrastructure is imperative for a flourishing manufacturing sector. Recently, some of the Southeast Asian and East Asian countries have introduced business reforms and are investing in infrastructure development.

100m

Labour intensive jobs that could leave China to other low cost countries

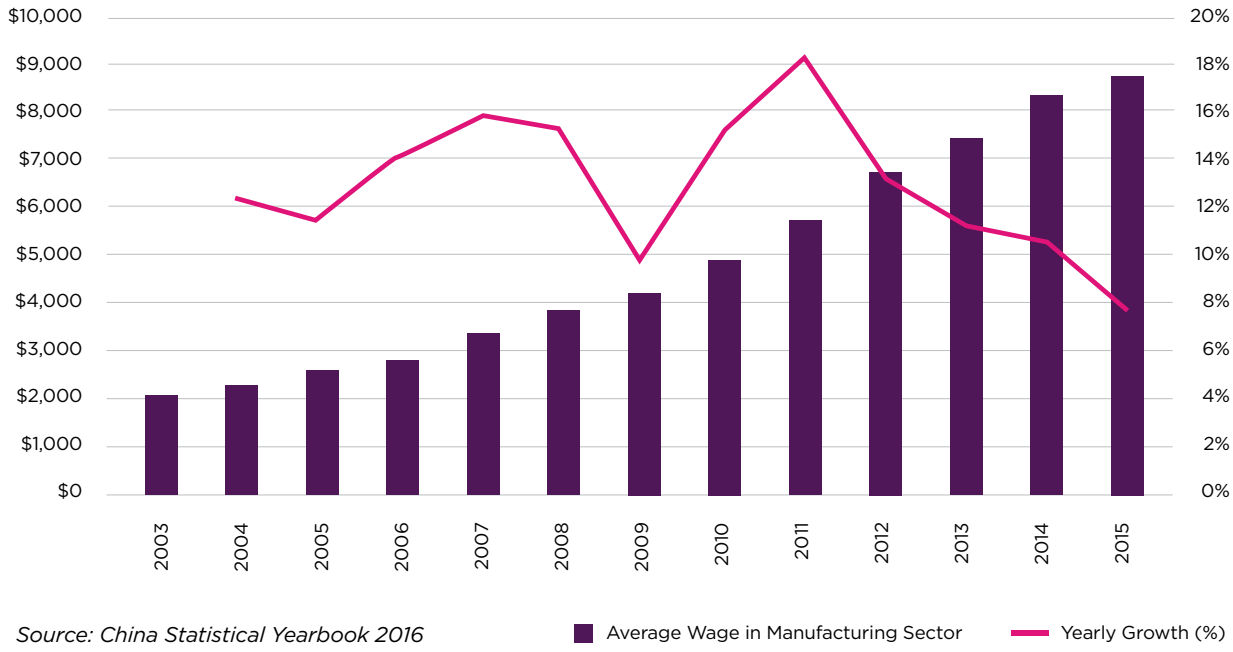
China, too, is playing an active part in infrastructure development in many of these countries through its Belt and Road initiative. This section discusses some of the countries which can strengthen their positions as low cost manufacturing bases in the next decade.

It was noted across all focus groups that China is investing heavily in countries linked to Belt and Road. In Pakistan, China has invested $65 million to build the China-Pakistan Economic Corridor, including the port of Lahore.

Not surprisingly, the power shifts in Asia have resulted in China having more trade and investment relations with the rest of the region than any other country.

FIGURE 21

China - Average Wage in the Manufacturing sector



Source: China Statistical Yearbook 2016

[28] HBR, The World's Next Great Manufacturing Center, 2017

VIETNAM

Vietnam totalled $219 billion in exports in 2016, six-fold its total in comparison with a decade ago. Vietnam has emerged as one of the most competitive, export-oriented manufacturing destinations in Asia Pacific. In addition to its strategic location close to China, Vietnam's labour cost - at about $165.3[29] per month - is less than one half that of China's $334.8 per month. This has prompted many labour intensive businesses in China, such as textiles and toys, to relocate to Vietnam.

Vietnam has a young and skilled workforce, with a median age of 30.7 years compared to 36.0 in China. About 70% of the country's population falls in the working age bracket[30]. Vietnam also scores higher than China on the English Proficiency Index. At an average of 5-6% of its GDP, the country's public spending on education is higher than the average of low and middle income global economies[31].

Vietnam has also rolled out various incentives, including tax breaks, to attract foreign investments. At 20%, Vietnam's effective corporate tax rate is the lowest in the ASEAN bloc. Government initiatives have improved the country's ranking on the ease of doing business index. For 2017, Vietnam's score of 68 put it ten points ahead of China's 78. Vietnam's signing of numerous FTAs, such as those related to the ASEAN and the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), is expected to boost its export earnings. Furthermore, agreements like the Vietnam-EU FTA and the Regional Comprehensive Economic Partnership (RCEP) will help to further liberalise its economy.

Despite its growing exports, Vietnam is dependent on imports, especially for production machinery. Research suggests the country should also develop its trade infrastructure and focus on improving the quality of education to attract advanced manufacturing sectors.

6x

Vietnam's exports increased 6x in the last decade and is currently at $219bn

[29] Emerhub, Reasons to invest in Vietnam
[30] World Bank, Population ages 15-64 (% of total)
[31] PWC, Spotlight on Vietnam

MEXICO

With wages rising in China, Mexico has the potential to become an alternative low cost manufacturing hub. About 80% of the goods manufactured in Mexico are exported to the US, making it an ideal destination for US companies looking to shift production bases to nearshore locations.

In addition to low-wage costs and the location advantage, the Mexican-manufacturing sector also benefits from the NAFTA agreement signed in the early 1990s by US, Canada and Mexico. The agreement removed tariffs on a variety of products and facilitated cross-border investment among these three countries. Regional trade increased to more than $1.1 trillion in 2016 from $290 billion in 1993, while FDI investments in Mexico from the US jumped to $100 billion from $15 billion over the same period.

Owing to increasing competition from China in the early 2000s, Mexico has shifted its focus from low cost manufacturing sectors such as textiles to more advanced industries such as automotive, electronics and aerospace. In 2016, automotive and electronics industries comprised more than 40% of Mexico's exports. Besides government incentives such as tax benefits and promotion of industry clusters, Mexico has one of the largest shares[32] of students opting for science related tertiary education across the OECD countries. A substantial number of engineering and science graduates has helped Mexico to develop as an automotive and electronics hub.

Recent wage increases in China also provide an opportunity for the development of sectors such as textile. In the early 2000s, the average compensation for Mexican workers in the manufacturing sector was nearly 60% more than their Chinese counterparts. However, in 2015, the average wage was 11%[33] less in Mexico. This has resulted in the development of textile hubs, mainly in the southern part of the country, where income is lower than that in the north.

However, Mexico remains heavily reliant on US for its manufacturing efforts. Any adverse outcome from the NAFTA renegotiation agreement could hurt Mexico's position as a manufacturing hub. Moreover, due to its location, the country can serve only as a regional manufacturing hub to North and South America.

80%

of goods manufactured in Mexico are exported to the US

[32] OECD, Mexico- Overview of Education System
[33] Boston Consulting Group, Mexico vs. China: How two manufacturing hubs stack up

MYANMAR

Myanmar's industrial sector started gaining traction following economic and political reforms in 2011. Between 2010-2016, its total exports increased at a CAGR of 7.4% to $11.6 billion in 2016, mainly driven by greater exports of textiles, mineral fuels, and food and beverages. Under the new investment law passed in April 2017, foreign firms are entitled to a tax holiday in the first three to seven years of operation along with various incentives for those investing under the Myanmar Special Economic Zone Law of 2014 (Myanmar SEZ Law). Furthermore, as part of the trade preferences programme, in 2016 Myanmar was granted the Generalized System of Preferences (GSP) by US, allowing for duty-free exports of about 5,000 products.

With an abundant pool of workers at competitive wages of about US$80 per month, Myanmar has one of the lowest manufacturing costs in Asia. This has made the country an attractive destination for labour-intensive industries, especially textiles and garments. For instance, Europe-based H&M recently shifted its sweater production facilities to Myanmar's Yangon from China. With garments accounting for nearly 16% of the country's exports in 2016, the Myanmar Garment Entrepreneurs Association has set an export revenue target of US$12 billion in 2020. However, skilled labour is a concern. Although wages are low in the country, labour productivity is weak compared to its Asian peers.

Although liberalisation efforts in Myanmar are fast transforming its manufacturing sector, its export and FDI numbers are still lagging behind the regional competitors. One of the biggest challenges facing Myanmar is the underdeveloped infrastructure across the utility and transport sectors. The challenges related to the unstable political scenario, and slow decision making by the government are major issues for prospective investors. However, the upcoming investments in Myanmar through China's Belt and Road initiative, growing trade liberalisation, and rising FDI are expected to improve the country's proposition as the next low cost manufacturing centre within the ASEAN bloc of countries.

Myanmar is expected to be the next low cost manufacturing centre within the ASEAN bloc

INDIA

As China's low cost proposition is losing its conviction, India is becoming an increasingly relevant manufacturing destination. With mega initiatives such as 'Make in India', the country aims to increase its manufacturing GDP to 25% from the current 17%. The FDI equity inflow, the launch of the 'Make in India' initiative in October 2014, was US$99.7 billion until March 2017, an increase of over 60% compared to the previous 30-month cycle. Under the initiative, the government launched a phased manufacturing programme aimed at locally manufactured smartphones, while also providing select duty and tax incentives to Indian manufacturers. In addition, to boosting manufacturing of electronics, the government will provide a capital subsidy of up to 25% for ten years.

Currently ranked at 100, India has improved its ranking on the ease-of-doing-business index. The government has launched online portals such as eBiz, providing one-stop clearance programmes for investment proposals. As a boost to the manufacturing sector, the Central Board of Direct Taxes (CBDT) has entered into advance pricing agreements (APA) to eliminate compliance restrictions and ease investment.

Furthermore, with the implementation of GST, India has become a single tax market, improving operational uniformity, competitiveness and the ease of doing business among manufacturers and traders. Corporate tax for domestic companies has also been reduced to 25% with effect from AY 2018-2019, to boost exports. Duty drawbacks and duty remission schemes are also in place.

Although not the cheapest within the ASEAN, India's labour cost is about one third that of China. Per the World Bank, more than 12 million young people ages 15-29 years, are expected to join India's labour force every two years over the next two decades. This demographic dividend as well as various skill building initiatives, such as the Skill India Mission Operation, Skills Acquisition and Knowledge Awareness Livelihood Promotion (SANKALP) scheme and the Skills Strengthening for Industrial Value Enhancement (STRIVE) scheme are the major drivers for manufacturing in India.

Infrastructural developments are boosting manufacturing and trade, as well. These include the development of industrial parks in every state, 21 new nodal industrial cities, and Special Economic Zones to promote a more liberal regime for manufacturing investment. The government is also developing various industrial corridors to foster logistics and make the country a hub for both domestic and international markets. For instance, the 1,483 km long Delhi-Mumbai Industrial Corridor is being developed as a global manufacturing and investment destination. Under this project, the government has launched eight investment regions as National Investment and Manufacturing Zones.

However, there still needs to be significant development in the structural and economic policies related to land laws, labour laws, regulatory roadblocks and other logistics challenges before India becomes a global manufacturing destination.

60%

Increase of FDI equity inflow between 2014-2017 in India

INDONESIA

Indonesia is the largest economy in the ASEAN region, accounting for more than 36% of the region's GDP[34]. As the country progresses beyond its agriculture predominance, its manufacturing sector's contribution to GDP increased to 23%[35] in 2017, showcasing a vast potential to become the next manufacturing powerhouse in Asia. In 2016, Indonesia was ranked 19th on the Global Manufacturing Competitiveness Index and by 2020, it is forecasted to rank 15th[36]. A working age population of more than 180 million, competitive wages (nearly one-third of China's) and rising foreign investments are boosting its manufacturing sector. A rapidly growing middle class and one of the highest rates of GDP per capita in the region (at US$3,570)[37] are also boosting domestic demand of its manufacturing sector. While food and beverages, and the automotive industry account for major shares in Indonesia's manufacturing sector[38], manufacturing of labour-intensive commodities such as toys, textiles and basic electronics are gaining prominence and competing with Chinese products.

Between 2015 and 2017, the Indonesian government launched more than 15 reform packages[39] to promote a conducive business environment through easy licensing, labour regulations, logistics costs and easy access, etc. For instance, the average number of annual tax payments that a firm is required to make was cut down to 43 in 2017 from 65 in 2015[40].

The government has built 70 industrial zones to provide a three hour investment express service to facilitate foreign investors with incentives of duty exemption on the import of machines and income tax reduction under specific categories[41].

In addition, various trade agreements, such as RCEP and the Indonesia-European Free Trade Association are under negotiations and expected to bring many manufacturing and trade benefits to those looking to invest in Indonesia.

Although Indonesia has been ramping up efforts to boost its manufacturing competitiveness through deregulation, the sector still faces significant challenges such as government bureaucracy, difficulties in accessing credit, regional competition, inadequate infrastructure and high logistics costs.

Indonesia is the largest economy in the ASEAN region, accounting for more than 36% of the region's GDP

[34] European Commission, Countries and Regions – Indonesia
[35] World Bank, Manufacturing, value added (% of GDP)
[36] Deloitte, Global Manufacturing Competitiveness Index: Country rankings
[37] World Bank, GDP per capita (Current US$)
[38] Oxford Business, Indonesia's industry boosted by widening markets and easing imports
[39] Indonesia Investments, Indonesia's 16th Economic Policy Package to Focus on Investment
[40] Indonesia Briefing, Indonesia's Investment Outlook for 2018
[41] Indonesia Briefing, Indonesia's Investment Outlook for 2018

AFRICAN ECONOMIES

At the cusp of graduating from its low cost manufacturing status, China is expected to free up nearly 100 million labour-intensive manufacturing jobs between 2016 - 2030, leading to opportunities for African countries as well. Our research shows that China continues to aggressively invest and build ports in Africa, particularly in Kenya, a major export hub with a stable government. Likewise, Ghana and Nigeria are becoming increasingly attractive hubs for Chinese investments and firms. The focus groups believe that in a ten-year time frame, West Africa will start seeing the benefit of China's investments.

KENYA

Kenya, the fifth largest economy in sub-Saharan Africa, has one of the largest manufacturing sectors in Eastern Africa. However, its manufacturing growth has remained flat for more than a decade. To offset this status and transform the country into an industrial hub in Africa, the government launched the industrial transformation programme (2015–2025) in 2015[42].

Leveraging Kenya's rich natural resources and easy availability of various raw materials, the government aims to boost local and export manufacturing competitiveness across agro-processing, textiles and apparels, timber, chemicals, iron and steel, and the leather industry. To achieve this, it is taking initiatives to develop industrial parks, export processing zones, (EPZs) and sector specific projects.

In 2015, Kenya launched a Special Economic Zones Act[43] offering various fiscal incentives, infrastructure capabilities and duty redemption benefits. For instance, VAT exemption on all supplies of goods and services to enterprises, and reduction in corporate tax to 10% from 30% for ten years of operation and 15% for the next ten years[44]. In addition, being a member of the East African Community (EAC)[45] and the Common Market for Eastern and Southern Africa (COMESA)[46], Kenya enjoys preferential tariff rates. Forward looking agreements such as EU-EAC EPA, Tripartite Free Trade Area (TFTA) and AfCFTA are expected to boost the country's regional and international foothold. With the garments sector accounting for more than 60%[47] of total exports and 80%[48] of employment within export-processing zones in Kenya, the country is becoming one of the major centres for apparel sourcing in East Africa. Since the renewal of AOGA in 2015, the textile apparel sector is expected to maintain its stance as a growth engine for exports by granting duty free access to the US market for more than 6,400 products[49]. Furthermore, to reduce reliance on textile imports, in early 2018 the government announced plans to launch biotechnological production of cotton by end of 2018[50].

[42] Ministry of Industrialization and Enterprise Development, Kenya's Industrial Transformation Program
[43] KPMG, Analysis of Special Economic Zones Act 2015
[44] Overseas Development Institute, Manufacturing in Kenya: features, challenges and opportunities
[45] Burundi, Kenya, Rwanda, Tanzania, and Uganda
[46] The Common Market for Eastern and Southern Africa is a free trade area with nineteen-member states stretching from Libya to Swaziland
[47] Export Processing Zones Program, Annual Performance Report 2016
[48] Export Processing Zones Program, Annual Performance Report 2016
[49] Export.gov, Namibia - Market Opportunities
[50] Strategic Intelligence Service, Kenya To Create Over 50,000 Jobs In Textile Industry Through Biotechnology Cotton Production By End Of 2018

Kenya is the third largest livestock holder in Africa and has significant prospects in developing its upstream leather industry to boost production and exports of handbags and footwear. With about 90% of Kenya's leather exports being in raw and semi processed forms, the processing of finished leather into shoe making can replace US$86 million in annual shoe imports[51]. There is also potential for high value added speciality products, targeting US and EU customers, and finished leather, targeting Chinese and EU markets[52]. However, operational issues such as the low quality of hides, scarce availability of designs, and poor labour skills continue to plague the sector.

Kenya needs to address quite a few of its shortcomings before it can become a manufacturing hub in Africa. Underdeveloped infrastructure, utilities and low education levels lead to higher cost of factory operations and labour training. This high cost of labour (US$160)[53], transport and other overheads are increasing production costs by 20% compared to low cost Asian manufacturers. Limited access to export markets and lack of pro market reforms, among others, are also challenging the potential of Kenya's manufacturing sector.

TABLE 1

Snapshot of the Upcoming Manufacturing Countries

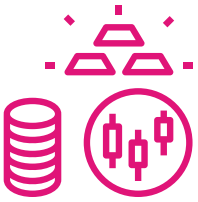
Country	Vietnam	Myanmar	Bangladesh	Indonesia	India	Kenya	Mexico
Minimum monthly wage ($)	165[55]	80[56]	65[57]	100[58]	110[59]	160[60]	280
Working age population (% of total population)[61]	70%	67%	55%	67%	66%	56%	66%
FDI Inward Flow 2016 ($ bn)[62]	12.6	2.2	2.3	2.6	44.4	0.4	26.7
Average Real GDP growth per year (2012-2017)	6.2%	7.2%	6.7%	5.1%	7.2%	5.5%	2.5%
Logistics Performance Index (Rank across 160 countries)[63]	64	113	87	63	35	42	54
Manufacturing (as % of GDP[64])	16%	23%	18%	21%	17%	10%	19%
Ease of Doing Business Ranking (Rank out of 190)[65]	68	171	177	72	100	80	49
Effective Corporate Tax Rate %[66]	20%	25%	25%	25%	35%	30%	30%
Regulatory quality score[67]	35.1	18.8	22.1	50	41.3	41.8	64.4

[51] Ministry of industrialization and Enterprise Development, Kenya's Industrial Transformation Program
[52] World Bank, Accelerating Kenya's Leather Industry
[53] Kenya Association of Manufacturers, Manufacturing Priority Agenda 2018
[54] Ministry of industrialization and Enterprise Development, Kenya's Industrial Transformation Program
[55] Vietnam Briefing, Vietnam: Minimum Wages on the Rise in 2018
[56] Asia Times, Minimum wage war in Myanmar
[57] South Asia Business News, Myanmar, Bangladesh, Cambodia, Djibouti Have World's Lowest Labour Costs
[58] Rappler, FAST FACTS: Minimum wage in ASEAN countries
[59] HKTDC, Make in India: Comparative Production Costs of Selected Indian States
[60] Kenya Association of Manufacturers, Manufacturing Priority Agenda 2018
[61] World Bank, Working age population
[62] UNCTAD, Country Factsheet
[63] World Bank, Global Rankings 2016
[64] World Bank, Manufacturing Value Added (% of GDP)
[65] World Bank, Ease of Doing Business
[66] KPMG, Corporate Tax Table
[67] World Bank, World Governance Indicators 2016

COMMODITY TRADE INDEX

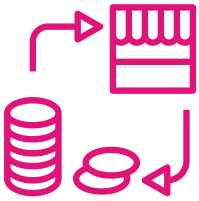
The Commodity Trade Index (CTI) is a new measurement which assesses the role of ten key commodities trading hubs within the global commodity trade. The index also looks ahead at which global locations can expect to maintain their status as trading hubs. It incorporates ten indicators to produce an index score for US, Netherlands, Singapore, UK, UAE, Switzerland, Hong Kong, China, South Africa and Nigeria.

The ten indicators analysed are:



Commodity endowment factors

4. Tonnes of oil exported annually
5. Hub's share of global commodity trade for coffee, grains, sugar, gold, diamonds, soya beans, tea, cotton, silver, animals and animal products, and plastic
6. Natural resource rents as a share of GDP



Locational and trading partner factors

1. Headquarter locations of major commodities trading houses
2. Proximity to markets (based on commodity export data)
3. Commodity trade partner tariffs on primary goods

Institutional factors

7. Financial services infrastructure
8. Attractiveness of the tax regime
9. Strength of contract enforcement
10. Ease of trading across borders

In order to create the index, the data for each indicator were standardised and scaled within the 0-100% range. Data was also adjusted for outliers and then combined to create the composite index. Each of the three sub-categories is given equal weighting. The CTI is looks at three major factors important to commodity trade via ten individual sub-indicators. The data behind the indicators are taken from renowned sources such as Comtrade – the UN's international trade statistics database – and The World Bank, ensuring the robustness of our findings.

TABLE 2

Commodity Trade Index results

Country	Commodity endowment factors	Locational and trading partner factors	Institutional factors	Index	Rank
UAE	74%	33%	64%	57%	1
US	44%	37%	86%	56%	2
UK	24%	48%	80%	50%	3
Netherlands	6%	83%	57%	49%	4
Switzerland	11%	68%	66%	48%	5
Singapore	1%	42%	87%	43%	6
Hong Kong	11%	23%	83%	39%	7
China	38%	9%	49%	32%	8
Nigeria	39%	2%	28%	23%	9
South Africa	15%	8%	31%	18%	10

The UAE ranks first on the CTI, propelled by its substantial natural resource endowment. The Middle Eastern trading hub ranks at the top for the commodity endowment sub-index, with a score of more than 70%. However, the hub does receive a weaker score for locational and trading partner factors, as well as institutional factors. The top importer of UAE commodities is India, while Switzerland, Belgium and Hong Kong also feature in the top ten export destinations of UAE commodities. These are all locations which take a considerable amount of time to reach from the Middle East. The hub's institutional sub index is also weak, relative to the other nine hubs, at 63.9%.

The next highest ranked country on the CTI is US, which has an index score of 55.9%. This high score is driven by the fact that US is

#1

The UAE ranks first on the CTI, propelled by its substantial natural resource endowment

the location of choice for the headquarters of many of the world's largest commodity trading companies, contributing to the hub's score on the locational and trading partner sub index of 37.5%. The nation also has strong financial services infrastructure, ranking at second place in the world for access to credit. US is also a major global player in exporting oil and other primary commodities.

Following just behind US, the UK has a score of 50.5% on the CTI, reflecting its attractive financial services infrastructure and low tariffs of trade partners. These strong factors represent the nation performs well on both the commodity endowment factors sub index and the locational and trading partner factors sub index, with scores of 23.9% and 47.9% respectively. The UK currently experiences no tariffs on its commodity exports to most of its top trading partners, due to its EU membership. Ranking fourth out of the ten countries analysed for the CTI, the Netherlands has a score of 48.8%. A particular strength the Netherlands can boast is that it is close to the importers of its commodities. The largest importer of Dutch commodities is neighbouring Germany, followed by Belgium and UK. Another strength of commodities trading in the Netherlands is the brief transaction times and low costs associated with the logistical process of exporting and importing goods. As a result, the hub scores 57.1% for the institutional factors subindex.

Switzerland has a CTI score of 48.5%, driven by high scoring locational and trading partner factors. The nation is headquarters of four of the world's largest commodity trading companies, and trades commodities with countries with low tariff rates. Therefore, the locational and trading partner subindex for the nation is 68.0%. Switzerland also scores 10.9% for commodity endowment and 66.4% for institutional factors.

Singapore ranks sixth, with a CTI score of 43.4%. The Southeast Asian hub benefits from an attractive tax regime, and fast and cost-effective enforcement of contracts, which makes it an appealing centre for businesses. However, Singapore cannot compete with the natural resource giants such as the UAE when it comes to commodity endowment factors. Similar to Singapore, Hong Kong is limited by its lack of natural resources available to extract. However, the region is strengthened by its institutional factors, including a highly attractive tax regime, meaning that the institutional subindex score is 83.2%.

China places eighth out of the commodity trading hubs analysed. The country is restricted by relatively weak institutional factors, with an institutions subindex of 49.1%. Also, China is a long distance from the top importers of its commodities, with the top importer of Chinese commodities being the US. China comes in the top half of the ten hubs for the commodity endowment subindex, with a score of 38.0%, reflecting its high share of global trade for key commodities, including coffee, tea and cotton. Nigeria ranks ninth, with poor scores for locational and trading partner factors (2%) and institutional factors (28%). However, the African nation does have the third highest score out of the ten hubs for commodity endowment factors. Nigeria exports a large amount of oil each year, second only to UAE out of the ten countries in the CTI. Natural resource rents made up 5% of GDP in 2015.

South Africa has the lowest score out of the ten hubs analysed, with a score of 18.1%. The country's biggest strength is its endowment of commodities, but the total score for natural commodities factors is still only 15%.

Overall, the results from the index show that the UAE is the top hub for commodities trade due to its very high score for natural resource endowments. With high scores across all three subindexes, US places second overall on the index. However, if trading companies are looking for a hub with strong institutions which facilitate businesses, then Singapore is the top location. The CTI also revealed the importance of location for commodities hubs, with European countries in particular (such as the Netherlands) benefitting from a close location to their commodities trading partners.

US is the location of choice for many of the world's largest commodity trading companies

CONCLUSION

This report has analysed the current state of global trade with a particular focus on the role of digitalisation and commodity trade. This report looks at trading hubs for commodities, focussing on which locations are best prepared to succeed in the new trading environment. The Commodity Trade Index (CTI) looks at ten countries across four continents and evaluates each state based on three large groups of factors: commodity endowment, institutions and location. The results show that UAE is the top hub for commodities trade due to its very high score for natural resource endowments. The US and the UK rank second and third, respectively, scoring highly among the institutional factors.

Commodity Trade Index (CTI) data sources

	Indicator	Summary	Source	Year
Locational and trading partner factors	Headquarter locations of major commodities trading houses	Location of global and regional headquarters of the largest commodities trading companies are analysed and used to assign points to each hub.	Various commodities trading companies websites	2018
	Proximity to markets (based on commodity export data)	The sum-product of the share of each hub's commodity exports by trading partner and distance to trading partner is calculated and then assigned an index value.	Commodities export data: Comtrade Distance data: CEPII	2016
	Commodity trade partner tariffs on primary goods	The sum-product of the share of each hub's commodity exports by trading partner and each trading partner's average tariff on primary goods is calculated and then assigned an index value.	Commodities export data: Comtrade Primary goods tariff data: World Bank	2016
Commodity endowment factors	Tons of oil exported annually	Total annual crude oil exports by weight, by hub	Comtrade	2016
	Hub's share of global soft commodity trade for key commodities	Total annual coffee, grain, sugar, gold, diamonds, soya bean, tea, cotton, silver, animals and animal products and plastic trade by value, by hub	Comtrade	2016
	Natural resource rents as a share of GDP	Total natural resources rents are the sum of oil rents, natural gas rents, coal rents (hard and soft), mineral rents, and forest rents. Estimates are calculated as the difference between the price of a commodity and the average cost of producing it.	World Bank	2015
Institutional factors	Financial services infrastructure	The strength of credit reporting systems and the effectiveness of collateral and bankruptcy laws in facilitating lending are used to analyse hubs.	The World Bank Doing Business indicators-Getting Credit	2017
	Attractiveness of the tax regime	Analyses the taxes and mandatory contributions that a medium-size company must pay or withhold in a given year, as well as measures the administrative burden in paying taxes and contributions.	The World Bank Doing Business indicators-Paying Taxes	2017
	Strength of contract enforcement	This indicator looks at the time and cost for resolving a commercial dispute through a local first-instance court, and the quality of judicial processes index.	The World Bank Doing Business indicators-Contact Enforcement	2017
	Ease of trading across boarders	Measures the time and non-tariff costs associated with documentary compliance, border compliance and domestic transport.	The World Bank Doing Business indicators-Trading across Borders	2017

CHAPTER 2:

THE IMPACT OF DIGITALISATION

At a time where digital is driving our economies, growth and productivity, our research revealed that the adoption of digital strategies by global importers and exporters presents a profound shift in the future of trade.

With more than $4 trillion in goods shipped each year, global trade has not witnessed much innovation since the introduction of the shipping container in the 1950s. Goods are still transported by sea or land. And despite a digital revolution across sectors, cross-border trade is still synonymous with paperwork, from letters of credit to product quality documentation and bureaucracy.

Furthermore, the physical movement of large volumes of paper documents leaves the window open for fraud, human error and unplanned delays.

But global trade, according to our discussions, is at the cusp of a digital revolution. Blockchain is seen as the game changer that will provide a faster, more secure and effective way to handle document approval workflows in order to move goods across international borders. In fact, experts claim the cost savings could be enormous. For example, it is estimated that the costs of trade documentation makes up 20% of the actual physical transportation costs. The adoption of Blockchain would eliminate a large degree of paper-based documentation required while driving speed and efficiency.

Still in its infancy, Maersk and IBM recently announced a joint venture to provide more efficient and secure methods for conducting global trade using Blockchain technology. The initiative aims at bringing the industry together – from manufacturers to shipping companies or government authorities – on an open global trade platform that offers a suite of digital products and integration services. This would include ability to monitor cargo in real time, as well as the speed with which cargo shipments can be processed.

THE VALUE OF DATA

Our research delved deeply into the role of data. According to McKinsey & Company's "Global Flows in a Digital Age," GDP growth could increase between $250 billion and $450 billion per annum if and when data flows freely. And countries that support cross-border data flows are reaping a 40% economic benefit over less connected countries. But the usage of data and flow of data across borders is becoming increasingly controversial.

Over the past decade, companies have seen exponential growth in the volume, variety and speed of data. Companies are becoming aware of the opportunities embedded in their enterprise data, and governments are catching up, looking to regulate usage through strengthening of data privacy controls, and enforcing enhancement of technology for management of personal data.

Google, Facebook, Amazon and Uber all know more about citizens than authorities do. Case in point, the EU General Protection Regulation (GDPR) which is being implemented this year, is considered the most important change in data privacy regulation in 20 years. Focus groups were in agreement that GDPR is one of many regulations on data to come – not just to ensure privacy of citizens, but also to nationalise data and control how it is used in terms of trade.

In fact, governments are realising that data must be viewed as a natural resource, like oil. This means data collection and analytics, servers, and transmission lines are as integral to economic interests as offshore wells, refineries, and tankers.

As more trade evolves, and virtually every company becomes a digital business, they will be navigating a world where data nationalism guides policies and requires the development of nation specific strategies.

Digital is also changing how payments are made. In a world where currency is data, businesses are seeking alternative ways such as PayPal, Swype, and Square – and crypto currencies – to complete trade transactions, while governments are struggling to keep up with regulation.

Governments are realising that data must be viewed as a natural resource, like oil

THE DIGITAL EVOLUTION

The role of the development in digital technologies as the single-most important phenomenon of the past two decades cannot be overstated. From a humble base of less than 1% of the global population, the share of Internet users has risen exponentially over the past two decades. Today, almost one half of the world's population is on the Internet.

In 2017, around 47% of the world population had access to the Internet, more than double the 21% recorded just a decade earlier. Mobile phones and other portable devices have brought Internet access into remote areas of the world where a fixed line broadband access infrastructure does not exist. This is an increase of tremendous scale – the slow pace in growth of the global GDP or global consumption per capita levels cannot even be compared on the same scale.

Ambitious projects in the private sector push for ever further increases in Internet reach. For example, 'Project Loon' aims to provide communities in underserved areas with Internet access using high altitude balloons floated in the stratosphere.[1] Given these efforts, it is reasonable to assume that the Internet coverage ratio will increase further in the coming years. This increase in Internet use means that more people will be connected to physical and virtual marketplaces around the world, thus leading to further expected growth in trade volumes.

The latest regional data, shown in Figure 2, demonstrate impressively how the relative differences in Internet coverage between world regions have shrunk over the past two decades.

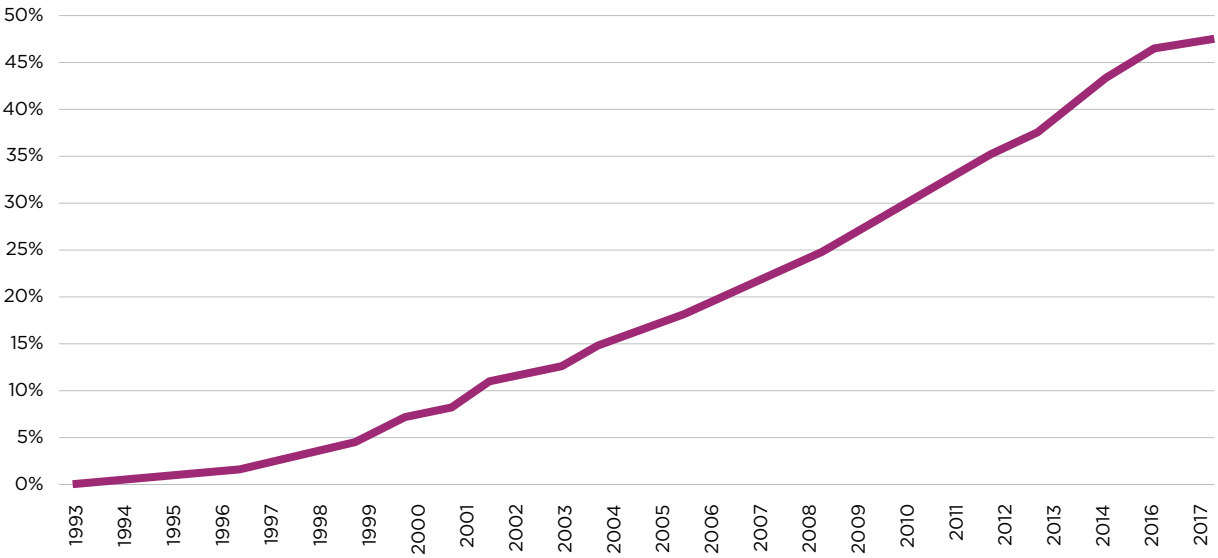
In 1996, the Internet was still in its infancy, hardly available in many parts of the world for private or commercial use, with the exception of North America, where the share of users already stood at 15%. Ten years later, however, the Internet had conquered most of the US and Canada, and a handful of other regions also had a sizeable share of their populations connected.

The increasing Internet coverage ratio will grow cross-border trade

[1] https://x.company/loon/

FIGURE 1

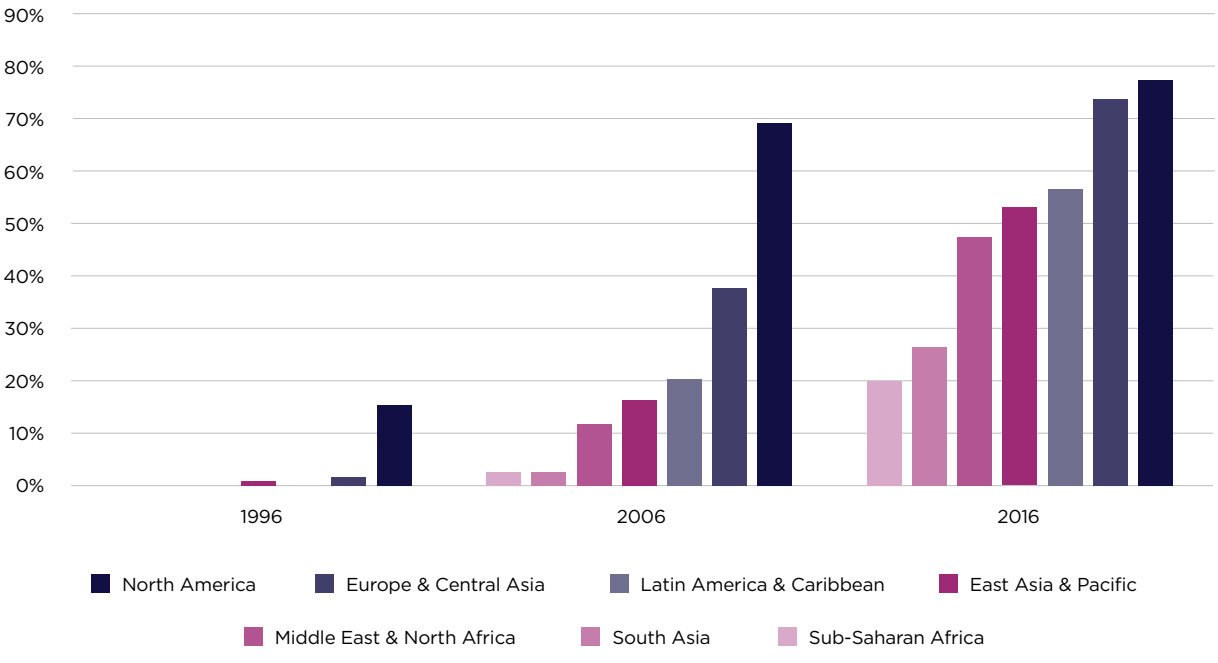
Internet Users as Share of Population



Source: World Bank World Development Indicators, Cebr analysis

FIGURE 2

Internet Users as Share of the Population by Region, Selected Years



Source: World Bank World Development Indicators, Cebr analysis

But the differences between regions were still immense, with South Asia and Sub-Saharan Africa both reporting only 3% of their population online. This had changed drastically by 2016, with the introduction and popularity of mobiles. The number of Internet users has risen almost nine-fold in South Asia, and more than seven-fold in Sub-Saharan Africa, far outstripping growth in European and American markets. Latin America and East Asia & Pacific, meanwhile, both report that more than 50% of their populations had access to the Internet in 2016. The Middle East & North Africa have seen their shares of Internet users quadruple in the decade to 2016.

This is not to say that digitalisation has run its course. To the contrary, there is still a long way to go until the world is fully digitalised. The miles covered on the road to full digitalisation vary considerably from region to region.

Going forward, we expect further growth in the number of Internet users across all regions as well as further convergence as advanced parts of the digital world catch up. At the same time, firms and governments are preparing for the launch of the next generation of mobile Internet, 5G.

Blockchains are immutable digital ledger systems implemented in a distributed fashion (i.e., without a central repository) and usually without a central authority. At the most basic level, they enable a community of users to record transactions in a ledger public to that community and no transaction can be changed once published.

4x

Internet use increase in Middle East and North Africa between 2006 and 2016

With drastically increased speeds, the industry is getting ready for the next step up in mobile connectivity, paving the way for a new generation of technical innovations ranging from autonomous connected vehicles to the Internet of Things.

Blockchain, which can be either private or public, provides a secure, decentralised record of transactions.

Focus groups agreed that digital ledger technology is making inroads into goods transport through financial instruments, such as letters of credit, and through the digitalisation of traditional trade and shipping documents. The result is that participants would benefit from the simpler, automated workflows and smart contracts.

The two main security features of Blockchain are secure data exchange and a tamperproof record of transaction, making it an extremely safe way of communicating and storing data for all participants. Blockchain can therefore be used to build trust between unknown parties and overcome the need for a central authoritative institution at unrivalled pace.

Blockchain will lead to simpler, automated workflows and smart contracts driving trade at pace

20%

of the $1.8 trillion cost of global trade is related to paperwork and documentation

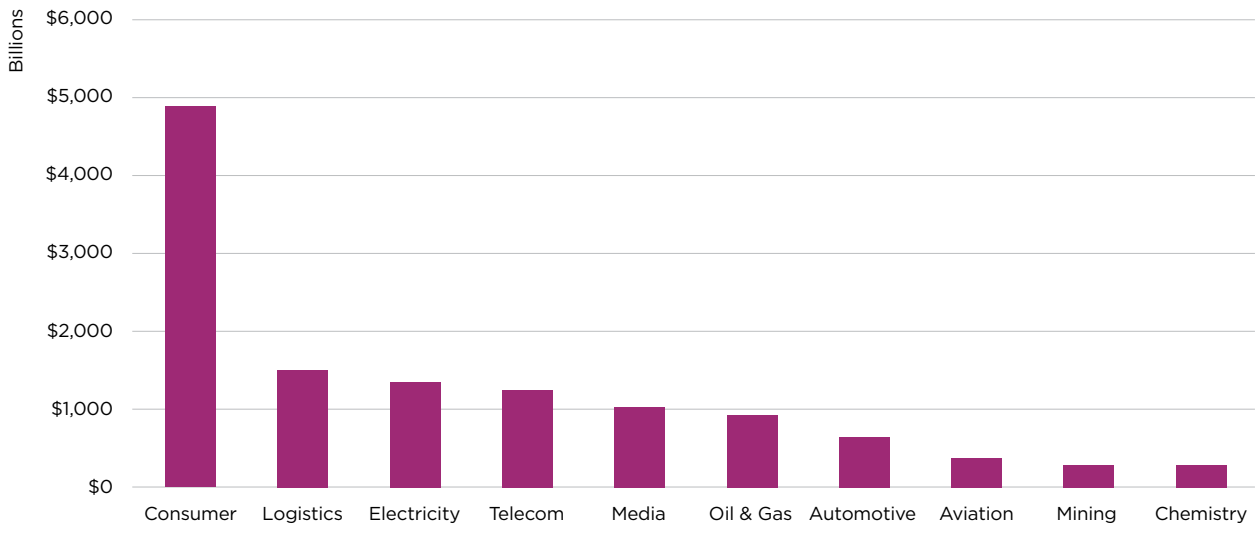
An Industry expert in one focus group highlighted that Blockchain today is where the Internet was 10 years ago, therefore making it difficult to determine the exact value its implementation would deliver to global trade.

However, a study by Maersk found that the cost of trade globally is roughly about $1.8 trillion. The study further found that 20% of that cost is related to paperwork, indicating that significant savings could be achieved. According to estimates by the World Economic Forum, reducing supply chain barriers to trade could increase global GDP by nearly 5%, and trade volumes by 15%[2].

Increased connectivity and Blockchain are just two examples showing how digital can transform global economies and, The World Economic Forum estimates that the cumulative value of digital transformation in the 10 sectors shown in Figure 3 stands at almost $13 trillion. Scaling this up across all industries, the value of digital transformation to the global economy could reach more than $45 trillion in the decade to 2025.

FIGURE 3

Cumulative Value of Digitalisation to Industries, 2016-2025



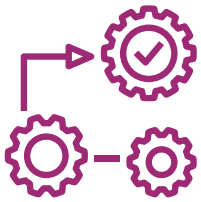
Source: World Economic Forum, Digital Transformation Initiative

[2] Enabling Trade – Valuing Growth Opportunities – World Economic Forum (2013)

THE INDUSTRY DIGITALISATION INDEX

In an increasingly connected world, the spread of technology and data is now having a significant impact on GDP. This is why we are looking at how businesses across different sectors are taking advantage of digital, as well as their progress in doing so.

The Industry Digitalisation Index (IDI), independently commissioned, which was established in 2016, tracks businesses' digitalisation progress across sectors, and spans four separate functions of digitalisation in the processes of trade and general business activities. These four functions are:

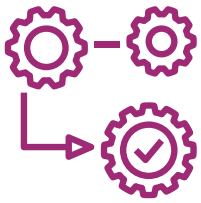


Upstream supply chain phase

This component studies how much businesses are digitalising their practises when it comes to connecting with external suppliers. Measures such as the share of enterprises purchasing online from suppliers, or the extent to which enterprises use the Internet to access external information, are included.

Production phase

This measures the extent to which businesses are digitalising their internal processes. This incorporates the share of businesses using automated exchange systems, the use of cloud computing and big data, or the share of enterprises using open source operating systems.



Downstream supply chain phase

A measure of how much businesses are digitalising their practises when it comes to connecting with their clients – be it consumers, other businesses, or governments. Examples include the share of enterprises selling online or the share of enterprises providing the option of online ordering or reservation to their customers.

Digital infrastructure

This final component looks at progress made by businesses in setting up a digital infrastructure to support the digitalisation of the production phases covered in the rest of the index. Specifically, measures of connectivity are studied, such as broadband access and the share of employees who are provided with a portable device that allows them to access the Internet.

Looking at the four different components of digitalisation in the processes of trade and general business activities, there is a high level of variability in the IDI. Digital infrastructure scores an index level of 79, where 100 is fully digitalised. In contrast, downstream supply chain scores only a 23.

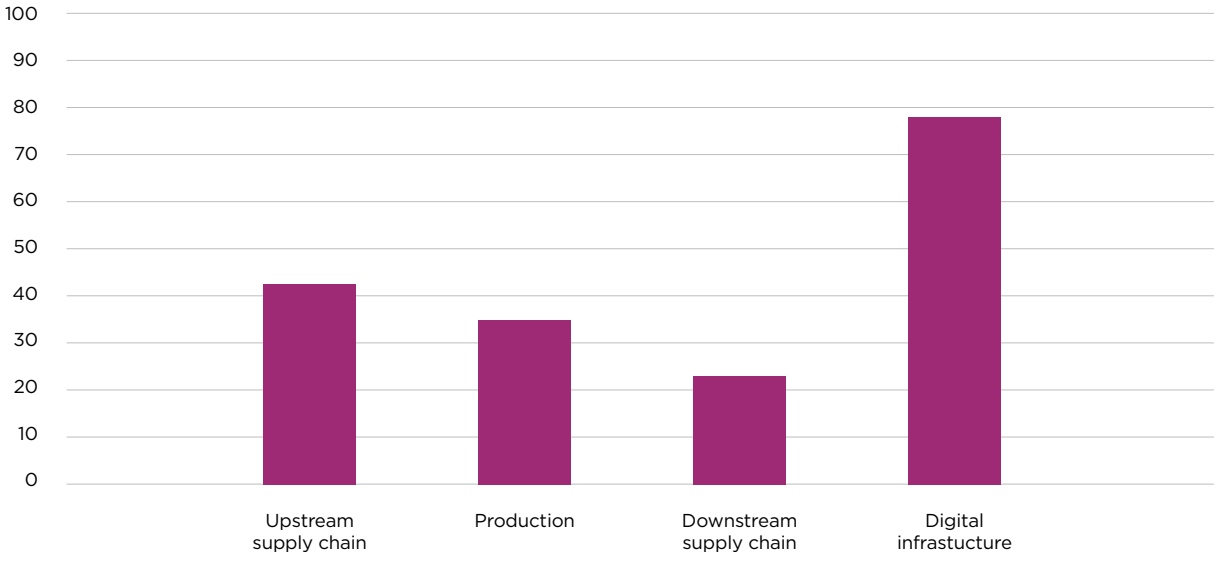
The high digital infrastructure index results from 96% of enterprises having broadband access and 94% of businesses using DSL or other fixed broadband connections in 2017. As might be expected, the information and communication sector has the leading digital infrastructure, with an index score of 89. Professional, scientific, and technical services follow in second place, with an index of 84 for digital infrastructure. In the first IDI report (published in 2016), the overall digital infrastructure index was 78, and the top two industries were the same; with digital infrastructure index scores of 89 and 83 for information and communication and professional, scientific and technical services sectors, respectively.

Upstream supply chain is the business function which scored the second highest digitalisation index score at 41. One factor which contributes to the high index score is that 78% of businesses use the internet to obtain information from public authorities. However, only 5% of enterprises purchase online from other countries. In the 2016 report, the index for upstream supply chain was only one point lower, at 40.

Production achieved a digitalisation index score of 34 in 2018, up from 32 in the inaugural 2016 report. The increase in the index score was driven by the fact that 43% of enterprises have a mobile connection to the Internet for processing (up from 33% in the 2016 report), and also a three percentage point increase in the share of businesses using Radio Frequency Identification (RFID) technologies.

FIGURE 4

Score on Industry Digitalisation Index (IDI), Average Across All Industries (1-100 Where 100 is Fully Digitalised), 2018



Source: Eurostat, Cebr analysis

The weakest performing component for the Industry Digitalisation Index is in the downstream supply chain, which has an index score of 23, up from 22 in the 2016 report. The performance of enterprises on this index is limited by the fact that very few businesses (6% on average) use electronic data interchange (EDI) messages to receive orders. The top sector for the downstream supply chain index is accommodation and food services, achieving an index score of 57.

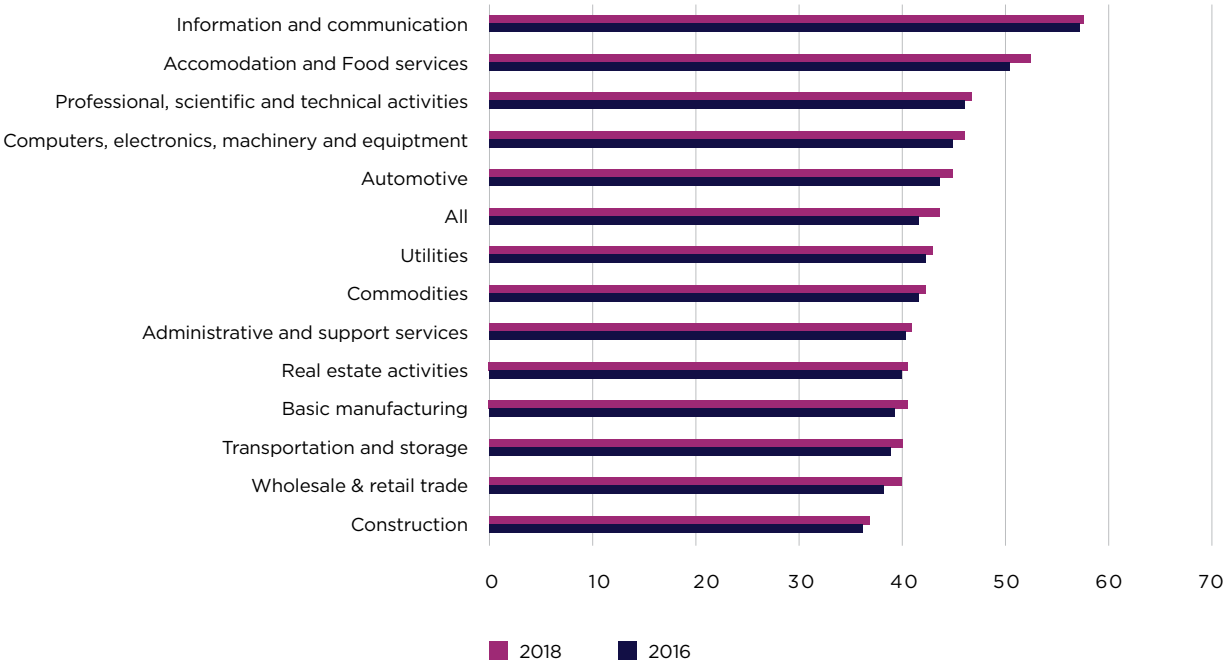
Results for the IDI vary significantly by sector. The top scoring sector on the index is information and communication, which was also the top performer in the last report. This sector has the highest index number for three of the four components of the IDI (upstream, production, and digital infrastructure), with the third-highest rating for downstream supply chain.

Accommodation and food services have the second-highest IDI score. This sector has the highest index score for downstream supply chain and the third-highest for upstream supply chain. This shows that in highly competitive sectors, such as hospitality, it is important to connect to clients and suppliers using technology. In this sector, it has now become commonplace for customers to book online, leading to the high downstream supply chain index.

The slowest moving sector on the IDI is construction, which has the lowest index score for production and also for the upstream and downstream supply chain. The wholesale and retail trade sector also has a long way to go before being considered fully digitalised, despite the rise in online shopping in recent years.

FIGURE 5

Score on Industry Digitalisation Index (IDI), by industry group (1-100, where 100 is fully digitalised), 2016 and 2018 scores



Source: Eurostat, Cebr analysis

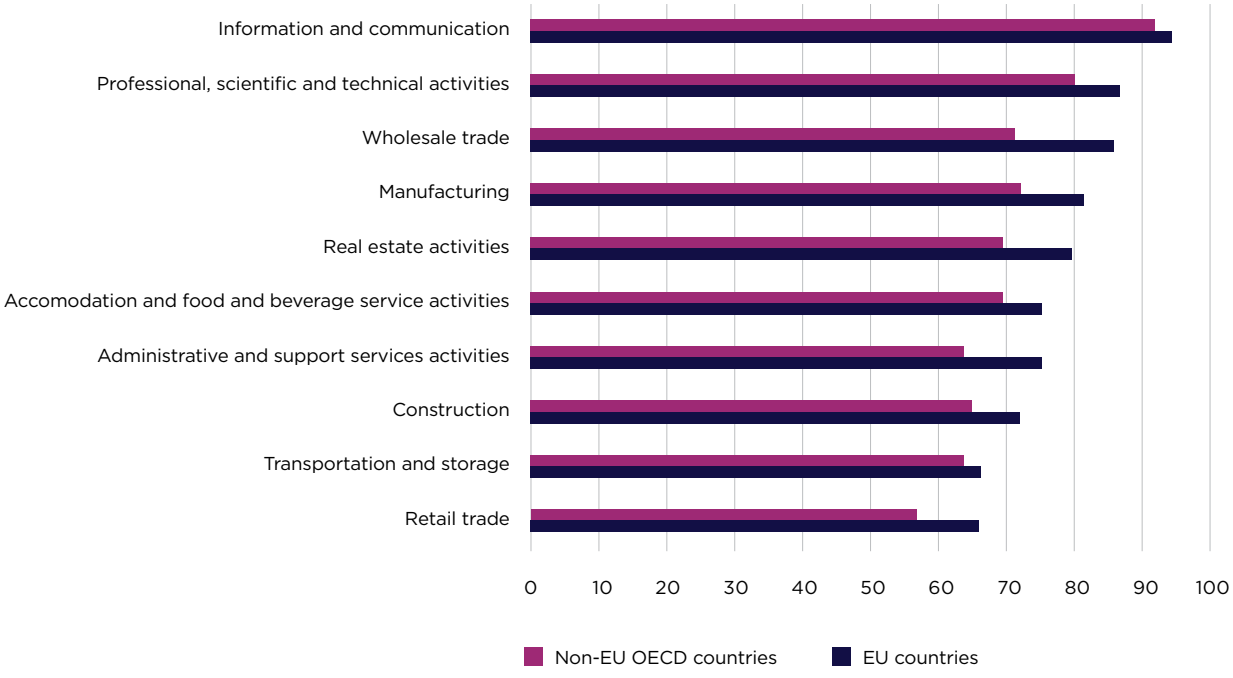
It is expected that the IDI will gradually increase towards 100 over the next decade, meaning that all four components of business are becoming further digitalised. However, it is likely that we will continue to see persistent differences across sectors and differing levels of progress towards total digitalisation among the different components.

To put the IDI (which relies on EU data) in a broader global context, OECD data for e-commerce are analysed, showing that the most digitalised industries digitalised in Europe tend to be the industries that are most digitalised in other parts of the world.

Industries that drive consumer purchase, for example in online booking, have made the biggest leaps in digital

FIGURE 6

Businesses with a Website or Home Page, 2015 (%)



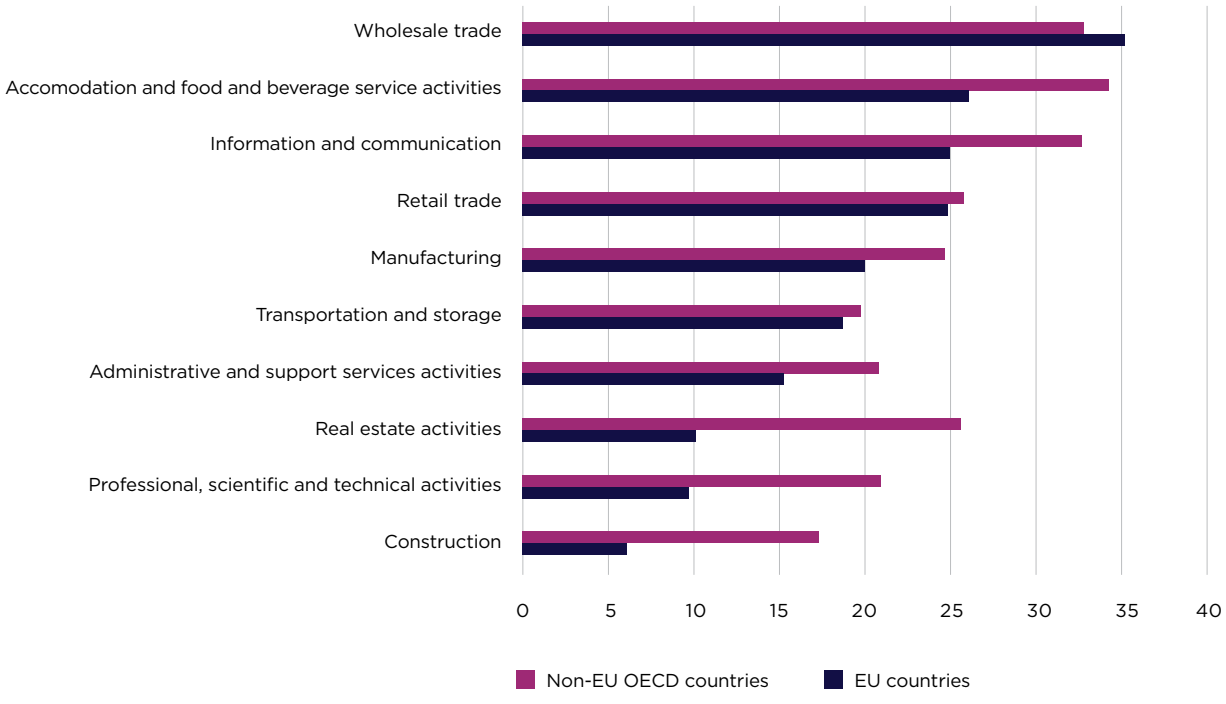
Source: Eurostat, Cebr analysis

It can be seen from Figure 6 that while EU countries are more likely to have a website or home page, the industries with the highest share of enterprises with a website are the same for EU and non-EU countries (in the OECD)[4]. Equally, retail trade is the industry for which the lowest proportion of industries have a website for both country groups: 56% of retail businesses in non-EU countries and 66% in EU countries have a website. This may be surprising, especially as nearly every large retailer has a significant online presence.

Only 66% of retail businesses in the EU have a website

FIGURE 7

Businesses Receiving Orders Over Computer Networks, 2015 (%)



Source: Eurostat, Cebr analysis

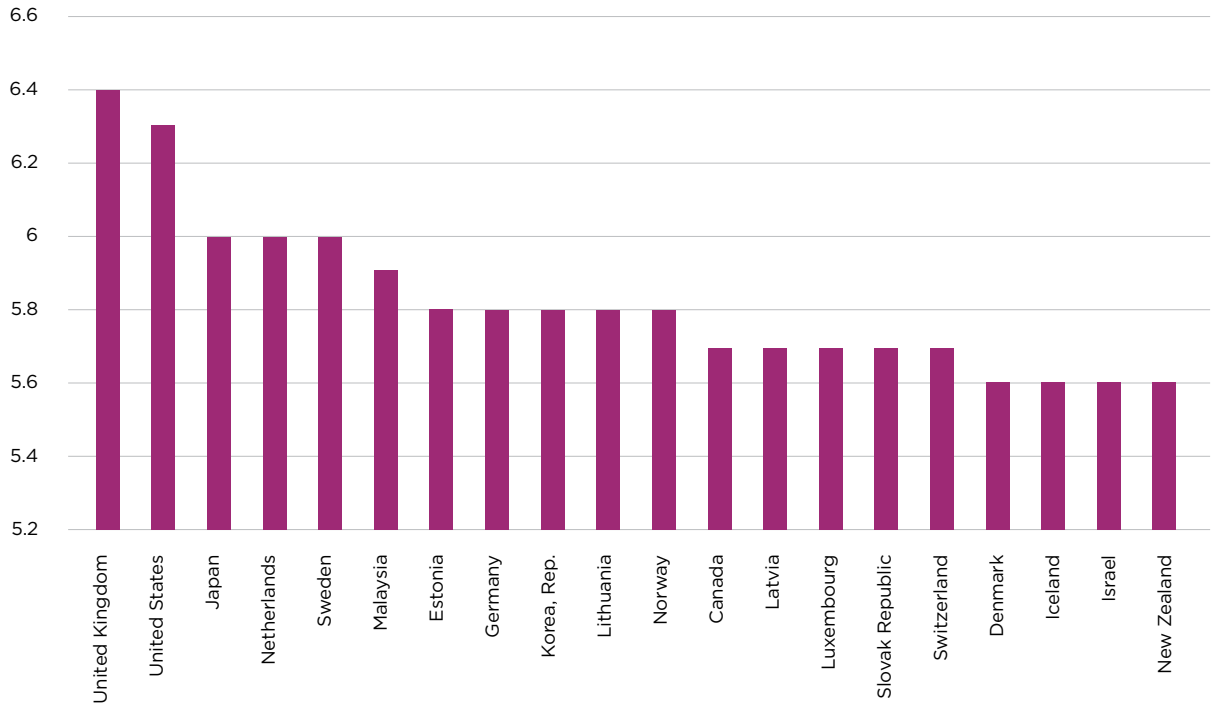
[4] Non-EU OECD countries are Australia, Colombia, Japan, Korea, Norway, Turkey and Brazil

When looking at data for businesses receiving orders over computer networks, split by industry across OECD countries, the top sectors are wholesale trade and accommodation and food services for both EU and non-EU countries. In non-EU countries, 33% of wholesale businesses receive orders over computer networks, while the figure is 35% in EU countries. Among the top 10 OECD countries that report data for the share of businesses that receive orders over computer networks, seven are in EU. However, Australia is the top country for this statistic, with 44% of businesses reporting that they receive orders over computer networks.

FIGURE 8

B2C (Business to Consumer) Internet Use, 2016 (Top 20)

Average survey response to question: In your country, to what extent do businesses use the Internet for selling their goods and services to consumers? [1 = not at all; 7 = to a great extent]



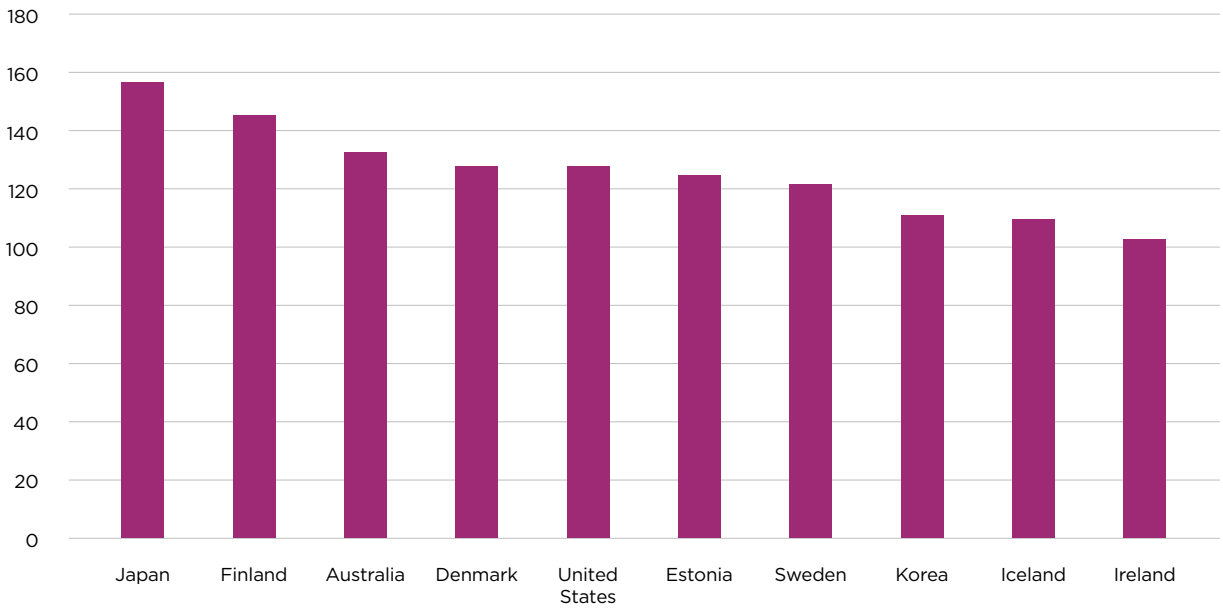
Source: The World Bank - TCdata360

Figure 8 shows the top 20 countries in the world for businesses making goods and services available to clients over the internet. UK comes out on top. Other developed countries, including US, Japan and the Netherlands, also perform well. Overall, EU countries tend to sell goods and services over the Internet slightly more than the rest of the world, with the average EU score being 5.2 and the non-EU score standing at 4.3.

There are several non-EU countries in the top 10 for the number of active mobile broadband subscriptions per 100 inhabitants. Finland has the most broadband subscriptions per 100 people at 144 (some people have more than one subscription), with Singapore and Kuwait following closely behind. On average, in EU, there are 77 active mobile broadband subscriptions per 100 inhabitants while there are 44 on average in non-EU countries.

FIGURE 9

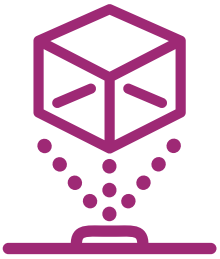
Active mobile broadband subscriptions per 100 inhabitants, 2017 (top 10)



Source: OECD, Broadband Portal

ASSESSING THE IMPACT OF DIGITALISATION ON TRADE

We measure the impact of digitalisation to identify and discuss the ways in which digitalisation is transforming global trade.



Digital tracking of physical goods

Technology is playing a significant role in changing the way global supply chains are set up, managed, and monitored. Digitalisation benefits businesses by increasing efficiency and widening access to markets as well as increasing transparency in terms of consignment location tracking and cost of shipment. This enables businesses to raise productivity and lower risk.

One of the more established methods of digital tracking is Radio Frequency Identification (RFID), which was used by 13% of EU businesses in 2017[5]. This technology uses electromagnetic fields to automatically identify and track tags attached to objects. Unlike barcodes, the tags do not need to be visible to the scanner. RFID is commonly used, for example, to track cars through the assembly line and the tags are often implanted in livestock.

Blockchain has the potential to improve global supply chain efficiency and reduce risk as it allows a secure and linked list of records to be created. JD.com, one of China's largest e-commerce sites, uses the technology to track the production of Black Angus beef through the various parties in its supply chain[6]. The information offered by Blockchain means that Chinese consumers of the beef can trust in its safety for consumption. The ability to track who and what has come into contact with the product means businesses are better able to mitigate any potential risks concerning food hygiene and safety.

In the future, it is estimated that consumers will be able to scan meat products with their smartphone and tell the animal's birth date, vaccination history, and farming location.

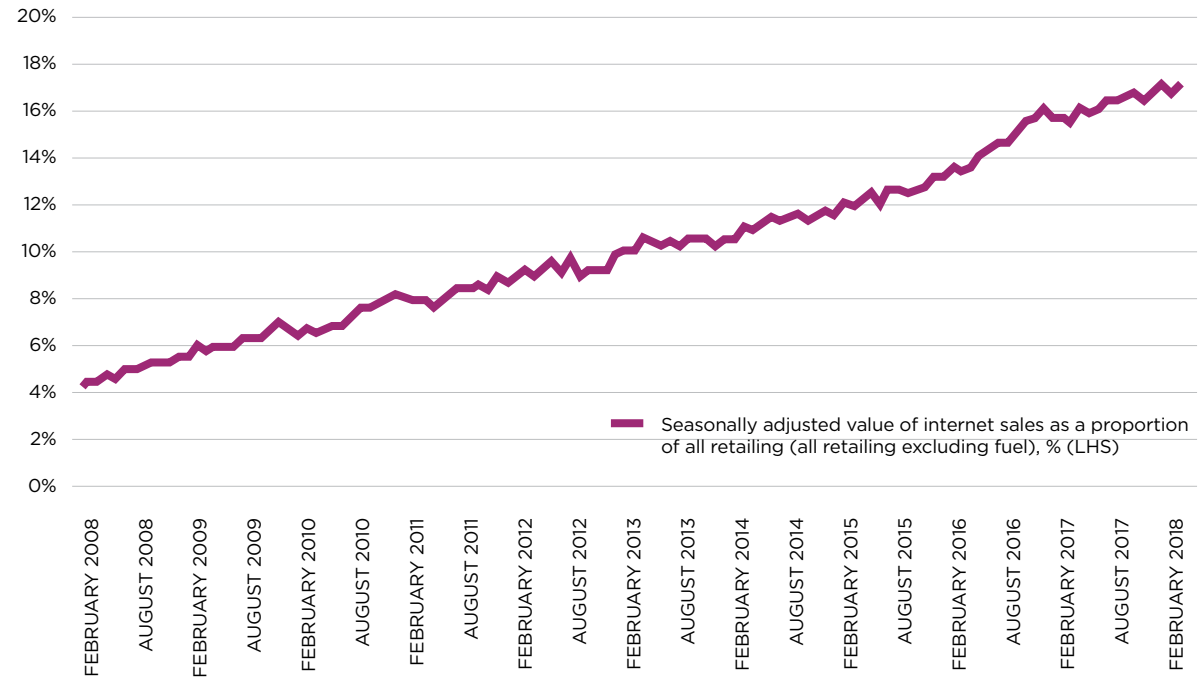
[5] OECD: ICT Access and USge by Businesses dataset
[6] https://qz.com/1223228/jd-is-using-blockchain-to-track-how-meat-gets-from-australian-farms-to-chinese-tables/

Advancement of e-commerce platforms

The advancement of e-commerce platforms is also transforming global trade. Over the past decade, the share of online sales as a proportion of all retail has been increasing globally. E-commerce is becoming an integral part of the business model of enterprises, complementing conventional commercial activities for sales and enhancing performance. In UK, e-commerce reached 17.2% of total retail sales in February 2018.

FIGURE 10

UK E-commerce, as % of Total Retail Sales (LHS) and £ bn (RHS)



Source: ONS, Cebr analysis

Figure 11 shows that across all major world regions, the share of e-commerce sales has been growing in recent years. East Asia and Pacific has the highest share of e-commerce sales, at 11% in 2018, followed by Europe and Central Asia at 9%.

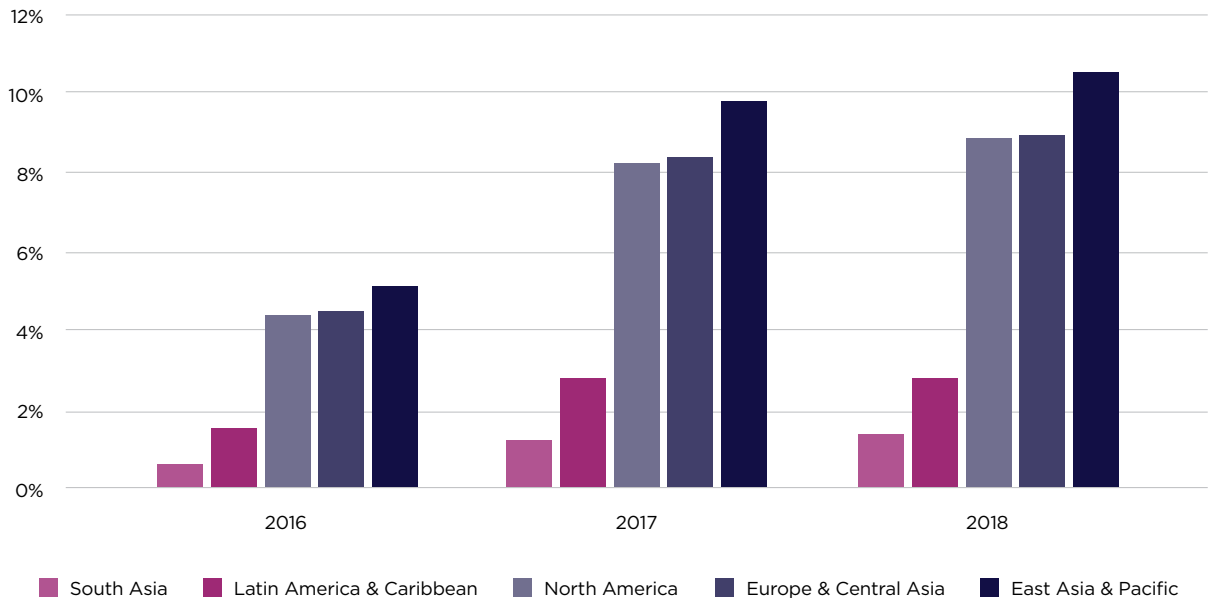
In looking at how e-commerce drives cross-border international trade, business to business e-commerce makes up the largest share of global e-commerce. It also is likely to be the most important component of cross-border sales online[7].

PayPal has conducted a study across six of the world's largest e-commerce markets (China, US, UK, Germany, Australia and Brazil) and found that $307 billion will be spent on cross border business to consumer transactions in 2018, with 130 million shoppers using overseas websites[8].

This illustrates how important e-commerce is to driving international trade and global economic growth.

FIGURE 11

E-commerce Sales as % of Total Retail Sales, by Region (Baseline Scenario)



Source: E-Marketer, World Bank, Cebr analysis

[7] UNCTAD, In search of cross-border e-commerce trade data (2016)
[8] https://www.ebayinc.com/stories/news/paypal-unveils-modern-spice-routes/

CONCLUSION

This section analyses the current state of global trade with a particular focus on the role of digitalisation. Building up on our previous report, the current research updates the latest analysis on the state of world trade and the progress countries are making towards digitalisation.

Technological progress presently seems unstoppable with new breakthroughs in AI, autonomously driving vehicles, and distributed ledger technology bringing digital advances ever closer to our daily lives.

A key recent innovation has been the further development of Blockchain – a system of immutable digital ledgers without the need for a central controlling authority.

Applications for Blockchain are versatile, but it seems clear that logistics and trade are sectors that stand to benefit tremendously from this technology. Further digital trends that will shape the world of trade over the next years include artificial intelligence, 3D printing, autonomous vehicles, the Internet of Things, drones and advanced robotics. The economic value of these technologies is estimated to stand at around $45 trillion in the decade to 2025[9].

Since the publication of our last report, the new geopolitics of trade have started to emerge. The US imposition of tariffs on steel and aluminium, its trade dispute with China, as well as the start of the UK-EU negotiating regarding their post-Brexit trade relations show that politics remain highly influential in the world of international trade. Looking at average applied import tariffs, it may seem like the world has made further progress in terms of eliminating trade barriers over recent years. The reality, however, is that many non-tariff trade barriers remain in place, reducing the volume of global trade flows. US and China meanwhile pursue national interests in their own way – US by imposing tariffs and trade penalties as a measure of forcing trade partners to renegotiate trade barriers; and China by leading one of humankind's largest infrastructure and public investment programmes, the Belt and Road Initiative, aiming to connect the economies of more than 70 countries, covering 62% of the world's GDP.

The latest instalment of our Industry Digitalisation Index shows which sectors and which business processes made the largest advancements towards further digitalisation.

Between the 2016 and 2018 edition of the index, the biggest gains were recorded in the accommodation and food services industry, which is boosted by a large share of orders and bookings being done online as well as increased automation and implementation of AI. Other industries with large increases in their progress towards full digitalisation are automotive and wholesale & retail trade. Looking ahead, it is expected that the IDI will gradually increase towards 100 over the next decade, meaning that all four components of business are fully digitalised. However, it is likely that we will continue to see persistent differences across sectors.

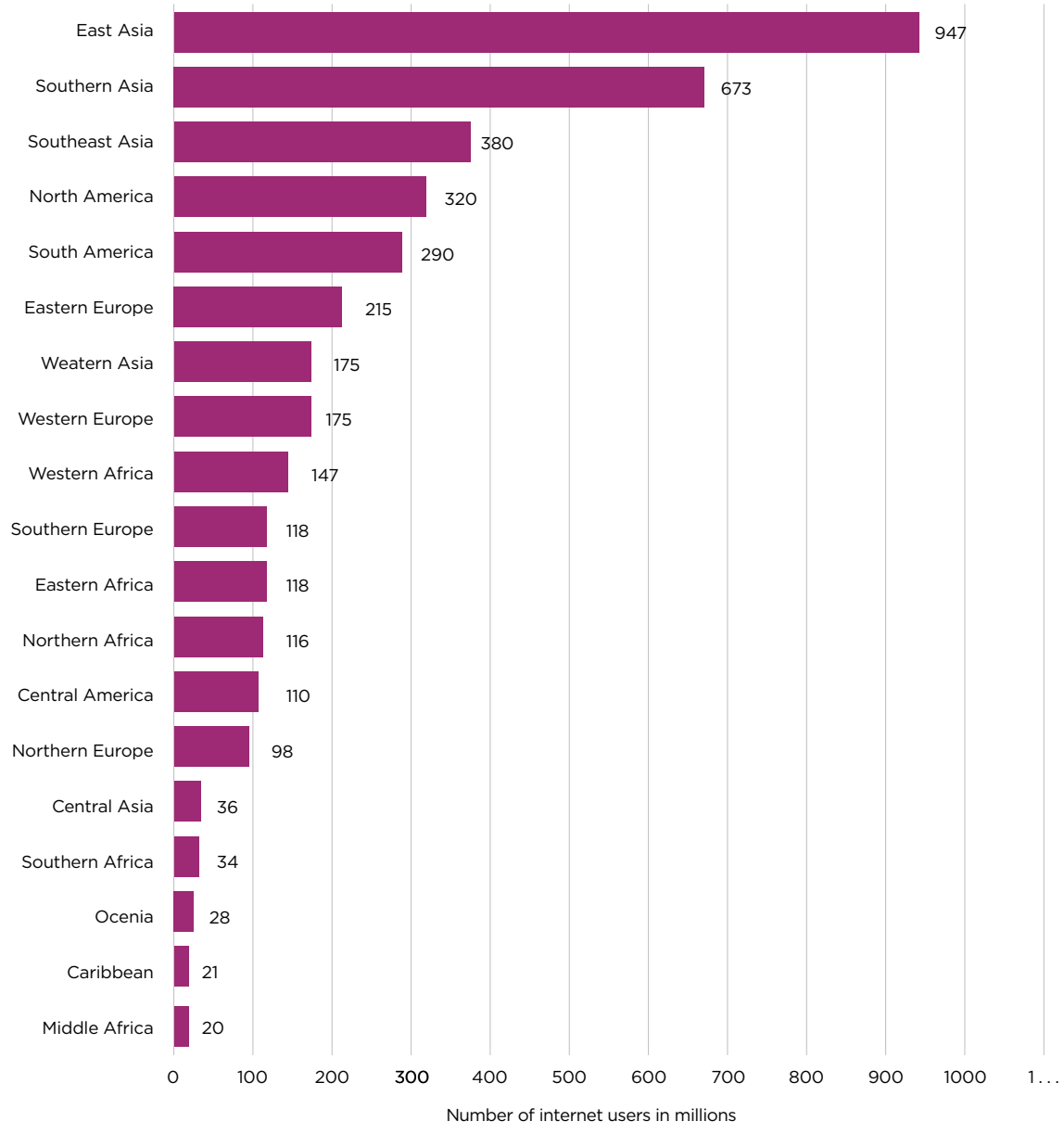
[9] World Economic Forum, Digital Transformation Initiative

CHAPTER 2:

THE IMPACT OF DIGITALISATION (ADDENDUM)

FIGURE 1

Number of worldwide internet users by region as of January 2018 (in millions)

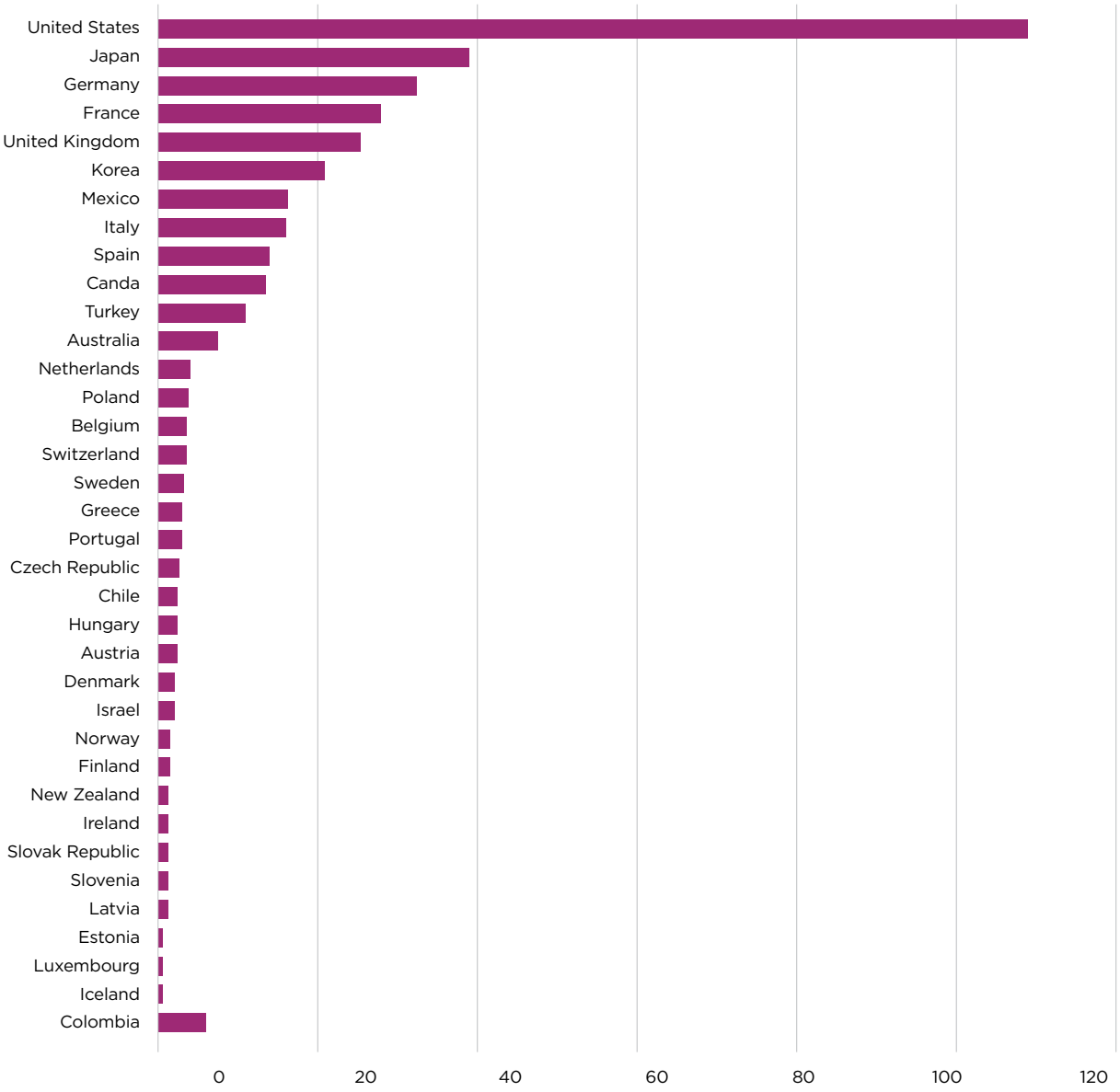


Sources:
Internet World Stats; We Are Social; Wikipedia; Internet Live Stats
© Statista 2018
https://www.statista.com/statistics/249562/number-of-worldwide-internet-users-by-region/

Additional information:
Worldwide; Internet World Stats; We Are Social; Wikipedia; Internet Live Stats; January 2018

FIGURE 2

1.1.1. Total fixed broadband subcriptions, by country, millions, June 2017



Notes:
Colombia is in the process of accession to the OECD
Israel, Switzerland and United States : Data are estimates

Source: OECD, Broadband Portal, www.oecd.org/sti/broadband/oecdbroadbandportal.htm
Information on data for Israel:

FIGURE 3

Enterprises with a website or home page, by firm size, 2016
As a percentage of enterprises in each employment size class

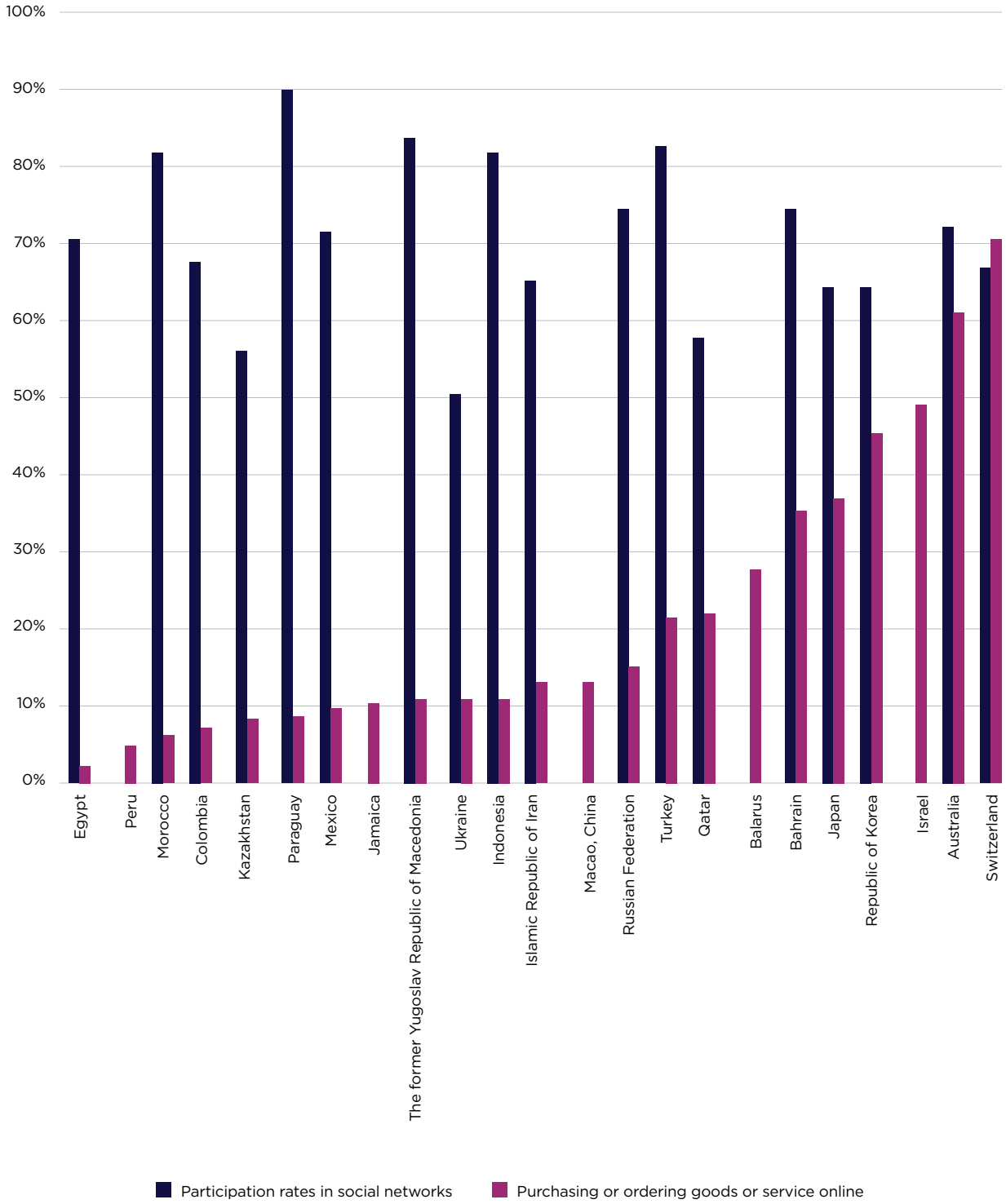
	All enterprises	10-49	50-249	250+	All enterprises, 2010
Finland	95.3	94.4	99.7	100.0	87.3
Denmark	93.3	92.6	96.4	98.2	87.8
Switzerland	91.7	90.5	95.7	99.1	90.1
Sweden	89.7	88.7	95.0	97.4	88.7
Germany	88.9	87.7	93.5	96.9	81.4
Netherlands	88.7	87.4	93.5	96.3	81.5
Japan	88.6	#N/A	85.9	94.3	91.5
Austria	88.1	86.7	95.3	98.6	80.2
Iceland	84.7	72.9	89.7	92.2	77.2
United Kingdom	83.0	80.6	94.2	97.2	75.7
Slovenia	82.6	79.8	94.1	100.0	72.8
New Zealand	82.2	80.5	90.4	97.8	68.8
Czech Republic	82.1	79.2	92.8	95.1	73.6
Luxembourg	81.3	78.7	90.7	98.3	70.2
Belgium	81.0	78.9	90.4	96.3	78.5
Norway	80.4	78.2	92.5	96.3	78.4
Slovak Republic	78.3	76.8	83.0	85.6	74.1
Estonia	77.9	75.1	89.6	95.8	70.0
Canada	77.5	73.7	88.8	91.5	69.7
Lithuania	77.0	73.4	90.6	98.8	65.0
OECD	77.0	73.9	88.2	94.0	69.6
Ireland	76.1	82.1	95.0	100.0	68.0
Spain	75.0	72.3	88.1	95.0	61.6
Australia	74.5	73.0	82.1	93.5	66.1
United States	72.9	70.7	#N/A	#N/A	61.9
Italy	71.3	69.5	84.2	89.7	61.3
France	68.5	64.9	87.9	94.6	57.7
Hungary	67.8	65.7	77.7	83.9	56.6
Poland	67.0	62.3	86.1	91.8	65.5
Colombia	66.5	58.1	81.9	90.9	54.0
Turkey	66.0	62.4	79.0	89.7	52.5
Greece	65.9	62.9	85.4	90.8	57.9
Portugal	64.2	60.8	80.1	95.2	51.9
Latvia	63.5	58.8	84.2	96.3	48.4
Korea	60.1	57.4	73.4	87.9	59.7
Brazil	60.0	57.1	78.9	88.7	55.6
Mexico	41.5	35.9	69.8	78.6	49.8

Notes: Except where otherwise stated, the sector coverage consists of all activities in manufacturing and non-financial market services. Only enterprises with ten or more employees are considered. Size classes are defined as: small (10-49 employees), medium (50-249 employees), large (250 employees and more). OECD data are based on a simple average of the available countries. For country exceptions, see note [i] below.
Source: ICT Access and Usage by Businesses (database), http://oe.cd/bus (accessed June 2017).

[i].
For Australia and New Zealand, data refer to the fiscal years 2010/11, ending 30 June, instead of 2010 and respectively to the fiscal year 2014/15 and the fiscal year 2015/16, ending 30 June, instead of 2016. For industrial classification, ANZSIC06 division is used instead of ISIC Rev.4 division.
For Australia, data include agriculture, forestry and fishing.
For Canada, data refer to 2013 instead of 2016 and to 2007 instead of 2010; medium-sized enterprises have 50-299 employees and large ones 300 or more. For industrial classification, the North American Industry Classification System (NAICS) was used instead of ISIC Rev.4.
For Brazil, Colombia, Japan and Korea, data refer to 2015.
For Japan, data refer to businesses with 100 or more employees instead of 10 or more; medium-sized enterprises have 100-299 employees and large ones 300 or more. For industrial classification, JSIC Rev.13 division is used instead of ISIC Rev.4.
For Mexico, data refer to 2008 and 2012 instead of 2010 and 2016.
For Switzerland, data refer to 2011 instead of 2016.

FIGURE 4

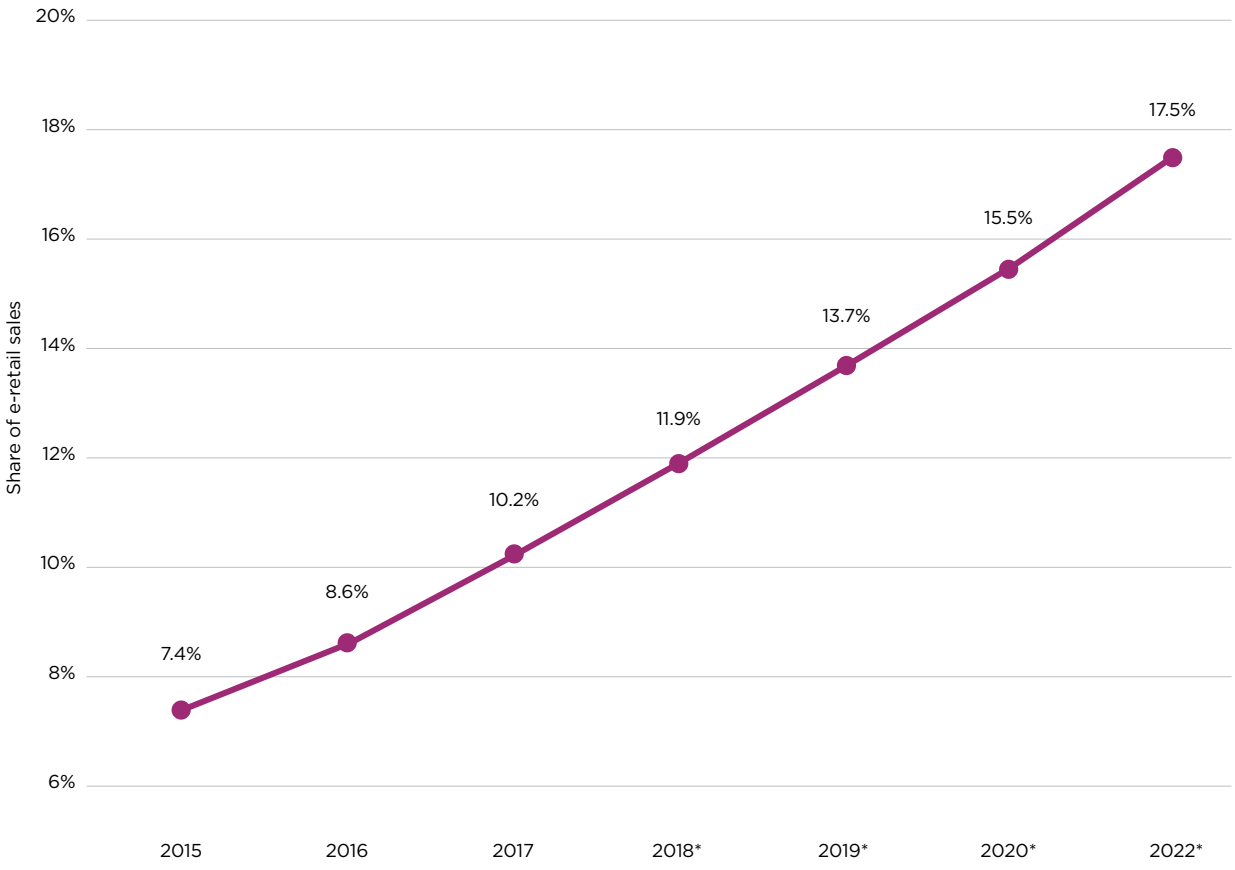
Proportion of internet users purchasing online and participating in social networks, selected countries, 2015 (%)



Source: https://www.opengovasia.com/articles/unctad-policy-brief-calls-for-holistic-policy-approach-towards-digitalisation-and-trade

FIGURE 5

E-commerce sales as % of total retail sales

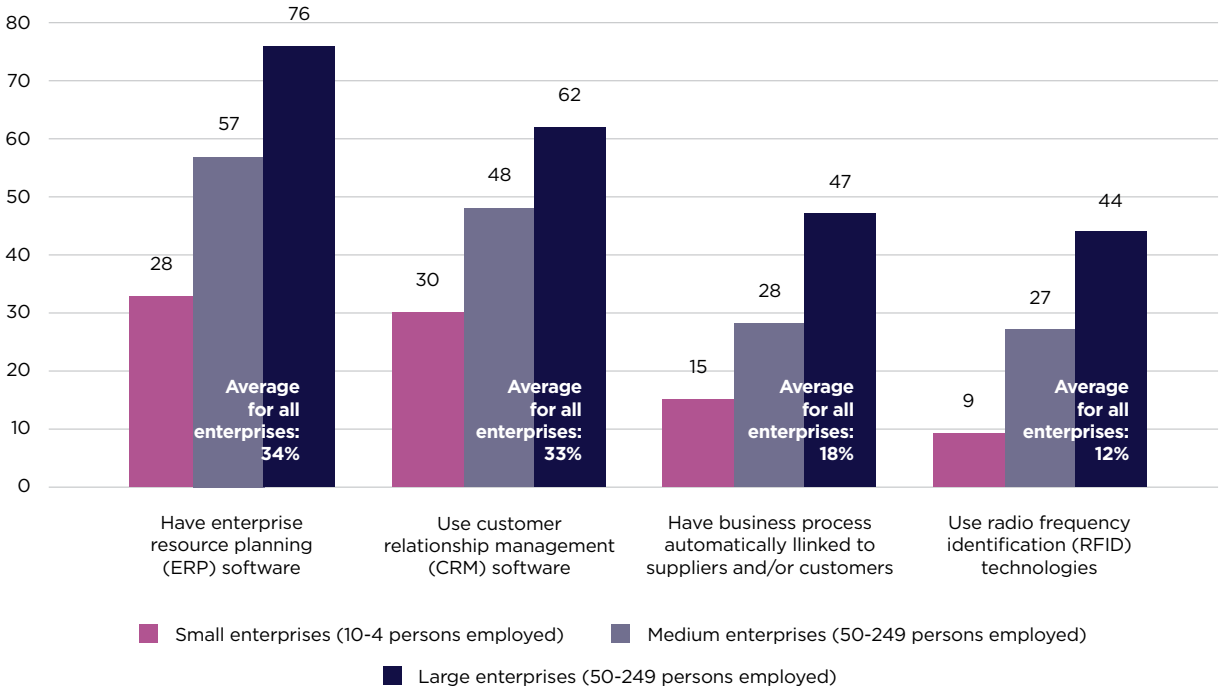


Source: eMarketer; Website (retailtechnews.com) © Statista 2018
https://www.statista.com/statistics/534123/e-commerce-share-of-retail-sales-worldwide/

Additional information: Worldwide; eMarketer; 2015 to 2017

FIGURE 6

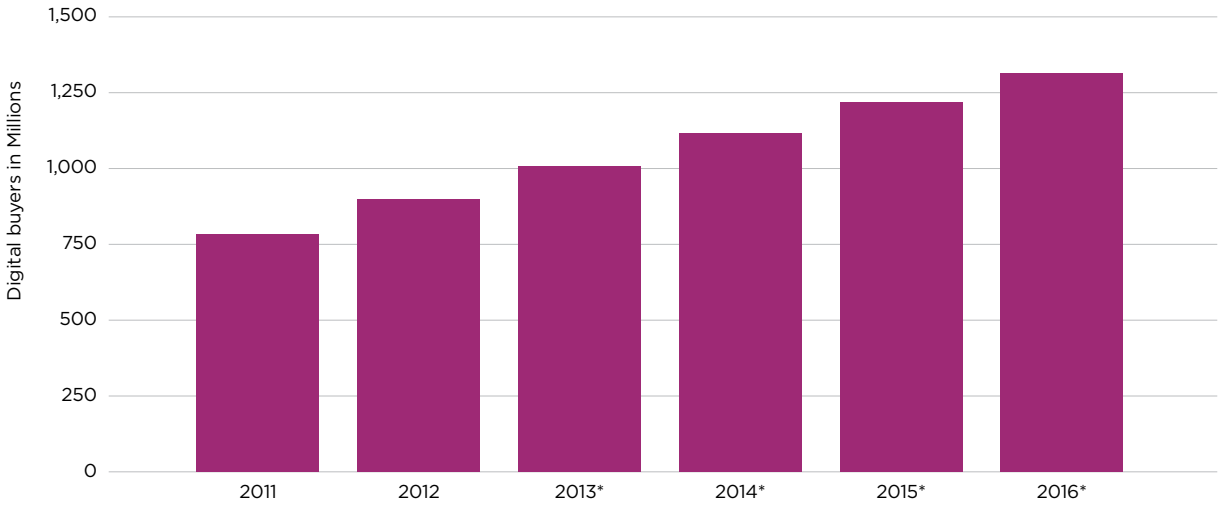
Enterprises adopting technologies for e-business, by enterprise size, eu-28, 2017 (% of enterprises)



Source: Eurostat data: isoc_eb_iip and isoc_eb_ics
http://ec.europa.eu/eurostat/statistics-explained/index.php/Digital_economy_and_society_statistics_-_enterprises

FIGURE 7

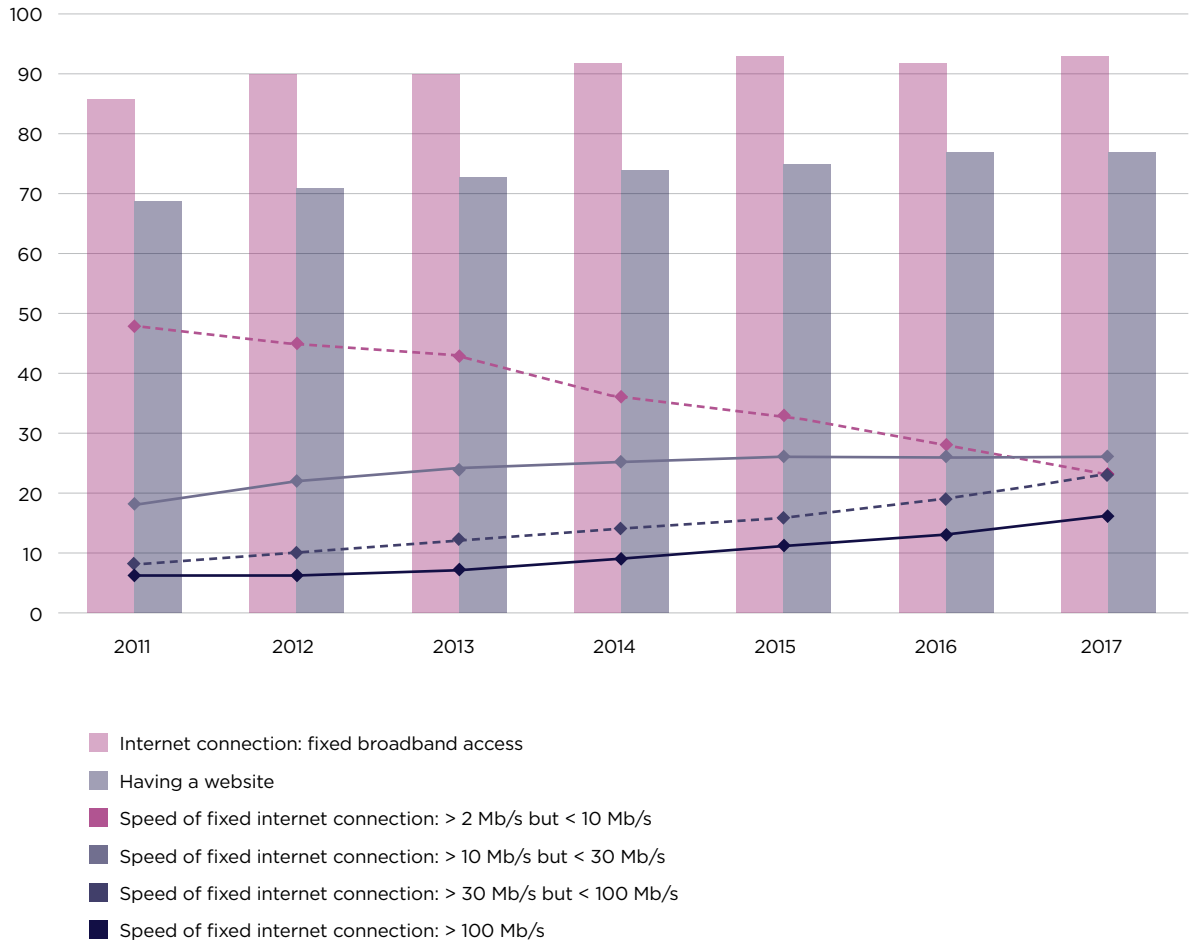
Number of digital buyers worldwide from 2011 to 2016 (in millions usd)



https://codeable.io/e-commerce-market-share-how-much-cost/

FIGURE 8

Enterprises connecting to the internet via fixed broadband and enterprises having a website, eu-28, 2011-2017 (% of enterprises)



Source: Eurostat (online data codes: isoc ci it en2 and isoc ciweb)
http://ec.europa.eu/eurostat/statistics-explained/index.php/Digital_economy_and_society_statistics_-_enterprises

eurostat

CHAPTER 3:

BRIDGING THE GAP IN TRADE FINANCE

Outside the universe of financial publications, the term 'trade finance' is not one that has created bold headlines unless under the premise of a scandal or major regulatory change. Nor has trade finance been the topic of conversation outside of major financial institutions. The reason is simple. There was no need.

But the stark reality is that banks reject 50% of SMEs applications for funding, and it has created a $1.5 trillion trade finance gap that is preventing global trade to evolve at pace.

Digitalisation, primarily in the context of Fintech and Blockchain, has finally brought trade finance to the centre stage. At the cusp of what is being described as a revolution in global trade, there is general consensus that Blockchain will bridge the trade finance gap.

In a rapidly evolving playbook, powered by digital, alternative trade finance solutions are becoming accessible to a much larger extent than previously. In this new environment, the role of banks is up for debate. In fact, our research shows that start-ups and SMEs are no longer as reliant on banks as before, and that new alternatives to seek finance is rapidly gaining ground.

The potential to significantly reduce cost and bureaucracy with Blockchain, in addition to new alternative financing solutions becoming available is a game changer for the future of trade.

The view was echoed by market participants across focus groups with C-suite executives held in London, Singapore, Zurich, Dubai, Johannesburg and Hong Kong; Blockchain is the big disruptor and banks will have to re-discover their role in a decentralised digitalised economy. Likewise, regulators will need to accept that fundamental change is on the horizon, and play catch-up.

However, as the rules of engagement are changing, new market dynamics are still crystalising and there are many questions left unanswered. As alternative finance solutions are becoming increasingly available, businesses will need to gain deeper understanding to stay ahead, and to understand to what extent data will be regulated and by whom.

San Francisco-based, Ripple, a payments-focused Blockchain technology that could be about to disrupt the banks, is a relevant example of an organisation that has embraced this space. According to CNBC's special report on 'The Fintech Effect', Ripple has raised $93.6 million so far.

Starting out as a payment protocol offering retail payment, foreign exchange (FX) and other end uses, it now wants to grow into a global network that can serve corporates, banks and others that need to transfer money globally. Not surprisingly, it uses Blockchain.

As Blockchain adoption takes off and matures, the applications and opportunities are numerous including settlement, data storage for insurance claims, diamond authentication purposes, trade finance and payments.

The ledger can be public, open source and available to all, as per the original bitcoin (BTC) cypto-currency ledger, or it can be a private "permissioned" chain that enforces standards and vets and manages invited participants. It is even thought that fintechs like Ripple could eventually rival SWIFT for international cross-border payments.

And with broad consensus that Blockchain will be a game-changer for trade finance in the next decade, supported by fintech, WTO is at the same time forecasting trade volumes to rise 3.2% by the end of 2018, and that trade finance volume is expected to rise at a CAGR of 3.7% between 2016 and 2020.

So with demand established, the question is no longer if the trade finance gap will be bridged, but rather, when this will happen?

3.7%

Expected CAGR of trade finance volume 2016 - 2020

TRADE FINANCE ACCESS – CHALLENGING FOR SMES

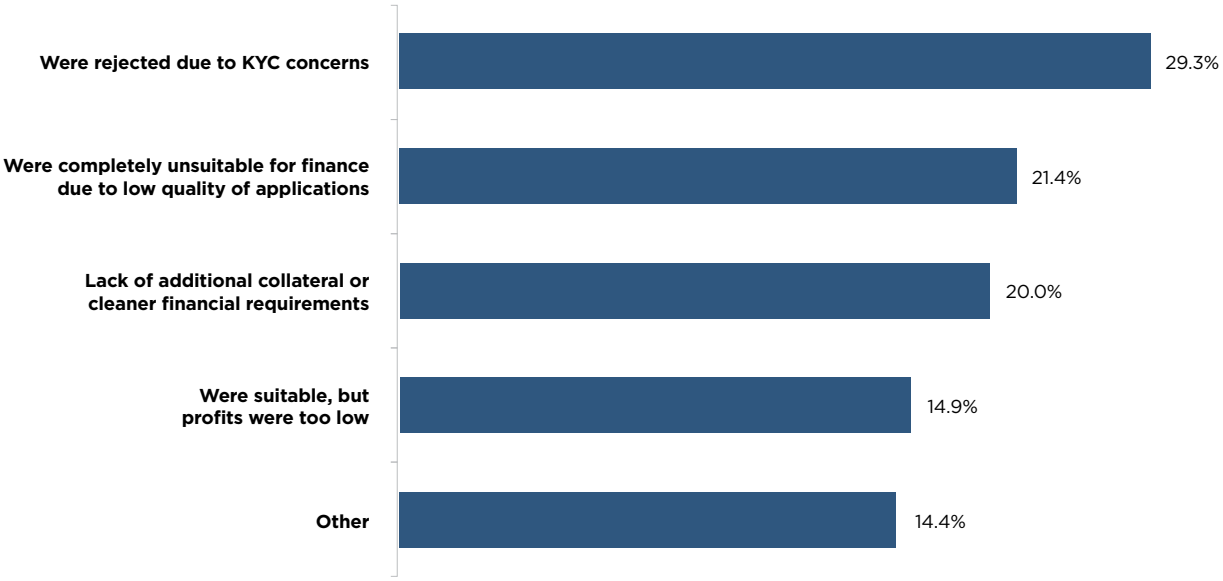
Trade finance has been a catalyst for expanding global trade. Traditional debt finance - bank loans, overdrafts, Letter of Credits (LCs), export credit and insurance, account for roughly 80% of financing for world trade.

However, for the majority of SMEs, access to trade finance has been a challenge due to strict collateral needs and credit history checks. Following the 2008 financial crisis, banks were reluctant to SME lending. Mandatory processes, such as Know-Your-Customer (KYC) and Anti-Money Laundering (AML) requirements, have further increased cost and due diligence time for banks. A survey conducted by Thomson Reuters in 2016, found that banks had to spend more than $60 million on due diligence measures. Given the increased cost and competition, banks prefer high net worth clients over SMEs.

In its 2017 survey, Asian Development Bank (ADB) quantified the market gap for trade finance at $1.5 trillion in 2016. While Western Europe, China and Advanced Asia accounted for 45% of global demand for trade finance, 40% of this gap originates from the APAC region. Also, 74% of dismissed trade finance transactions came from SMEs and midcap firms, which form the backbone of global trade. Within Asia, developing Asia had 15% rejection rates, compared to 8% in China and advanced Asian countries[1].

FIGURE 1

Reasons for Rejecting Trade Finance Transactions



Source: ICC Banking Commission, 2017 Survey

FINTECHS PROVIDE AN ALTERNATIVE TO TRADITIONAL TRADE FINANCE

Fintechs have enjoyed phenomenal growth since the 2008 financial crisis, and global investments in fintech farms amounted to approximately $122 billion between 2013- 2016. Fintechs have already revolutionised the payments industry, and have ventured into the trade finance space through digital lending platforms. The ability to evaluate a borrower's credit score in real time, along with information symmetry, efficiency, scalability, and reduced cost of due diligence have boosted the growth of alternative finance globally.

For instance, obtaining trade finance solutions via traditional routes used to take months. In comparison, invoice trading platforms have reduced this to just two weeks, and some lending platforms, such as peer-to-peer (P2P) and crowdfunding, take just a few days. Lenders such as OnDeck, Funding Circle, Kabbage, Fundera, Lendix and Afluenta have recognised this and provide SME-tailored solutions to bridge the trade finance gap.

Fintechs also play a pivotal role in developing platforms that foster supply chain financing for SMEs. For instance, Culum Capital, a Singapore-based fintech, recently launched its online lending marketplace where institutional investors can bid to fund the working capital (invoices or other forms of receivables) for various SMEs. Similarly, Fundbox offers advances on outstanding invoices to small businesses. Currently, more than 12% of all Supply Chain Finance programmes in Europe are channelled through fintech platforms. Alternative finance platforms have reached maturity in Western economies, especially in the UK. Data released by the Cambridge Centre for Alternative Finance (CCAF) in 2016, revealed that online alternative finance market volumes in Europe grew to 9.5 billion in 2016 from 6.7 billion in 2015, a 42% increase year on year. SME funding remained strong, accounting for 40% of the market, led by P2P business lending, invoice trading, and equity-based crowdfunding.

Within Europe, UK's regional share fell by 7% in 2016, however it still accounted for 73% of the total alternative finance market in Europe, amounting to around $6.9 billion. Going forward, the UK's share in the alternative finance market could decline further due to uncertainties associated with Brexit, prompting fintech farms to open offices elsewhere in Europe. In addition to the UK, France, Germany and the Netherlands are the leading hubs in alternative finance in Europe.

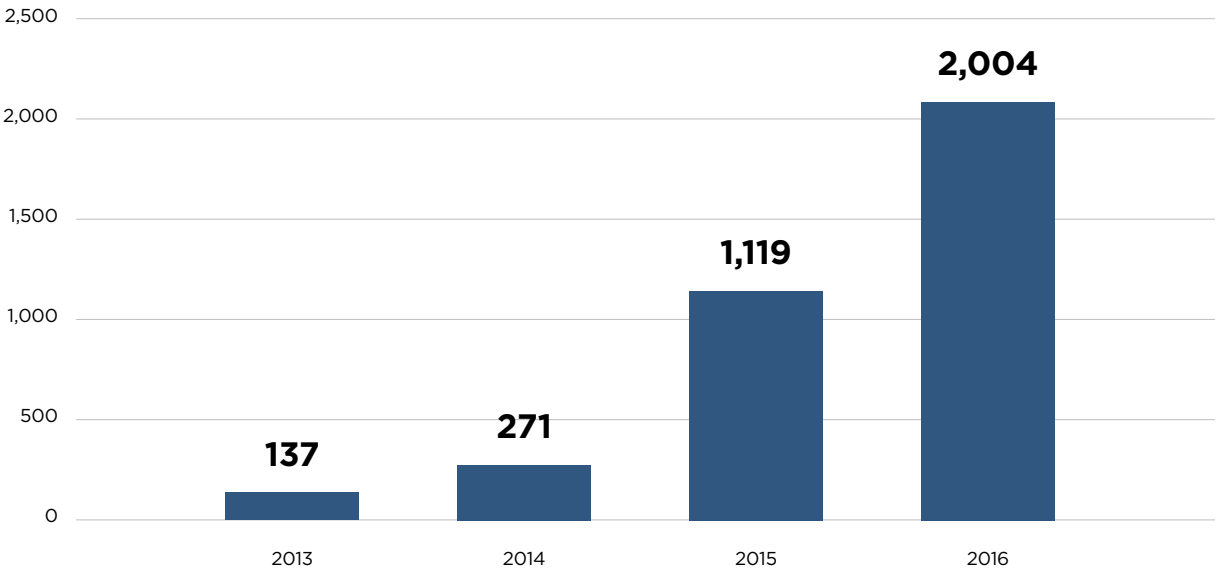
The alternative finance market in the APAC region more than doubled between 2015 and 2016 to the total value of $245.2 billion. China is in pole position with a market share of 99.2%. Factors such as low penetration of banks, the promise of higher returns above bank deposit rates, higher smartphone penetration and a pro-growth government have promoted the development of alternative finance market in China. Other key markets in the region include Hong Kong, Indonesia, Malaysia, Philippines, and India.

$245.2bn

Value of China's alternative finance market in 2016, double that of previous year

FIGURE 2

APAC Alt Finance Volume, excl. China (US$ Million)



Source: Cambridge Centre for Alternative Finance

That said, there are also lessons to be learned. Further to a number of fraudulent activities taking place in China, such as the $7.6 billion Ezubao fraud, the authorities introduced regulatory standards in 2016[1].

Global powerhouses like Amazon, are also investing in fintechs in India. Further to its BankBazaar investment in 2015, it is planning to invest $5 - $10 million in Capital Float, a technology-led platform providing small businesses with working capital. Singapore, on the other hand, with a total of $163.7 million in funds raised through online lending, was ranked as the sixth largest market in APAC in 2016. This ranking was spearheaded by three major fintechs (Funding Societies, MoolahSense and Capital Match) working in the SME lending space in Singapore.

Several players, including e-commerce and technology companies, have entered the alternative finance market in the last five years. The growth potential of the market has also attracted major logistics companies in the space. The logistics companies track data around physical movement of merchandise and typically use the merchandise as a collateral for providing short term loan requirements for its clients.

A good example is UPS, which provides funds against traders' inventory held at its distribution centre, and offers in-transit cargo finance, up to 100% of its value. Similarly, Maersk, the Danish shipping giant, offers finance shipments by taking security over goods shipped through any shipping line under it where a seller's container is the only collateral against the funds to be repaid upon the release of their purchase order.

[1] Reuters, China's $7.6 billion Ponzi scam highlights growing online risks

Banks Adopting Different Strategies to Collaborate with Fintechs

ACQUISITION	Some banks are acquiring the technology platforms from the fintechs to be white-labelled as their offerings. For instance RBS signed a deal with Ezbob, the UK-based SME business funding firm, to leverage the fintech's technology in developing the "Esme Loans"
PARTNERSHIP	Some banks like Bank of America, JP Morgan Chase and ING are partnering with fintechs to improve their tech capabilities and offerings. For instance, Dutch-bank ING, has partnered with Kabbage, a leading fintech in data platform to expand its lending capabilities for SMEs
INCUBATORS AND ORGANIC DEVELOPMENT	Some banks are developing in-house capabilities to compete in the space. For instance, Santender has launch incubator programmes for fintech Barclays Bank, launched a mobile business lending service app, to providing instant business loans to the UK SMEs

BANKS NAVIGATING FINTECH DISRUPTION TO BOOST TRADE FINANCE INCLUSION

Currently, the alternative trade finance market is mainly accessed by SMEs or companies with urgent fund requirements. Big companies still depend on banks for their trade financing needs largely due to trust and expertise. However, as alternative finance solutions go mainstream, banks are addressing the challenge posed by fintechs. A report by McKinsey predicts that the banking industry's return on equity (ROE) could fall to 5% by 2025, from the current 8 - 10%, if the banking customers shift to fintechs at the current rate[2].

As a result, the banking industry, historically cautious adopters of digital disruption, is taking measures to see whether or not this evolution of tech is viable to be able to compete effectively. A survey conducted by PwC in 2017 found that 82% of banks, insurers and asset managers intend to increase partnerships with fintech firms in the next five years[3].

Banks are also focusing on acquiring fintech companies and launching in-house incubator programmes to develop own capabilities. Irrespective of the path taken, our research points to the next decade with expectations of banks taking a much more active role in the fintech space.

-5%

Predicted reduced return of equity for banks if customers shift to fintech

[2] Mckinsey, Remaking the bank for an ecosystem world
[3] PwC, Global Fintech Survey

BLOCKCHAIN SET TO TRANSFORM GLOBAL TRADE FINANCE

Blockchain, the technology behind cryptocurrencies such as Bitcoin, is now more than a tech novelty. It is important to remind ourselves that the concept of ledger has actually seen little innovation since it was introduced in the 15th century. Every participant in a supply chain network would maintain its own records. Regulators also participate to monitor the integrity of the business networks as there was little trust between the participants. As every participant maintained their own ledger, there would be volumes of paper moving across the supply chain which involved high cost, time consuming processes, in addition to transparency and security challenges.

Since supply chains have relied on the physical movement of large volumes of paper documents, the window has been left open for fraud, human error, and unplanned delays. Meanwhile, Blockchain acts as the middle man for decreasing such bureaucracy. It records transactions in sequential blocks by creating encrypted data that can be shared among several parties through the supply chain, updating instantly without risk of fraud.

Digital ledger technology is making inroads into goods transport through financial instruments, such as letters of credit, and through the digitalisation of traditional trade and shipping documents. In cross-border trade and for SMEs, participants will benefit from the simpler, automated workflows and smart contracts once Blockchain is embraced in full.

Maersk is taking this to the test. According to its research, the cost of trade globally is about $1.8 trillion where paper accounts for about 20% of that cost.

$1.8tn

The cost of global trade. Paper accounts for 20% of that cost

ADOPTION OF SMART CONTRACTS COULD TRANSFORM THE USAGE OF LCs

Trade Finance Through Smart Contracts

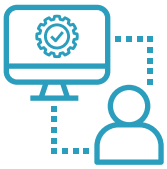
The trade agreement between the importer and exporter is shared with the import bank using smart contract on Blockchain

The import bank will be able to review a trade agreement in real-time and create obligation to pay export bank

Export bank will review the payment agreement, and upon consent a small contract will be generated on Blockchain, locking-in specified terms and conditions

The exporter digitally signs the electronic LC on Blockchain within the smart contract to initiate shipment

Upon acknowledgement Blockchain will self-execute payment from importer to exporter via smart contract



Upon delivery, the importer will digitally acknowledge goods receipt and approve for payment

Real-time tracking of goods in transit

Post the inspection of goods by third parties and custom agents in the exporting country, they will digitally sign the smart contract on the Blockchain

A 2017 survey by the International Chamber of Commerce (ICC), supports Maersk's observations in that commercial Letters of Credit (LCs) account for around 40% of the trade finance product mix. Though LCs have been a long-used mode of facilitating global trade, their application is limited by growing costs, contractual delays, and process complexities. Moreover, instances of delayed or denied payments due to data discrepancies between the LC contract and the underlying trade documents can further create rejection of applications, leading to losses. Blockchain technology prevents this scenario in that it creates real-time value through smart contracts.

Smart contracts are rule based self-executing contracts that create automated execution, as and when the terms of the contract are met, moving away from human intervention entirely. Using Blockchain technology to execute LCs can therefore streamline the manual processing of trade documentation and make companies' working capital requirement more predictable.

Letters of Credit account for 40% of the trade finance product mix

REAL TIME SHIPMENT THROUGH ASSET TOKENIZATION

Until the actual delivery of shipment, buyers often lack visibility of the status of goods in transit. As a result, they run into the risk of delays and cargo damages. A bill of lading is also required for the physical ownership of the goods. Blockchain addresses this area by digitalising trade assets (asset tokenization) and by linking its transfer across trade participants on the Blockchain network with the physical movement of goods, enabling real-time tracking and reducing delay in cargo delivery.

DIGITALISATION OF TRADE FINANCING INSTRUMENTS TO IMPROVE SME CREDIT FUNDING

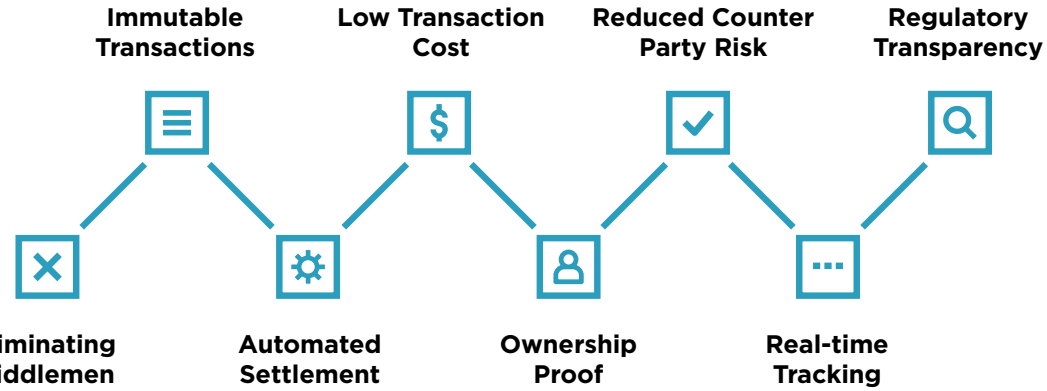
Most suppliers generate working capital through sale of various payment instruments such as promissory notes, checks, drafts or bills of exchange to banks and other financial intermediates through discounting. However, banks face risks due to limited access to trade information, sole reliance on documentary proofs, and the high cost of manual screening. These trade instruments can be directly created on Blockchain networks as financial contracts between the issuing and redeeming parties. This could avoid discrepancies and fraud which in turn will improve SME financing options.

BANKS BETTING BIG ON BLOCKCHAIN

While most banks have steered clear of cryptocurrencies, they have not shied away from experimenting with Blockchain. Blockchain usage is not confined only to trade finance, rather it finds application across different banking operations from payments to compliance management. Nothing illustrates the Blockchain frenzy among banks more clearly than the $107 million financing for R3, the Blockchain consortium formed by major banks and technology firms. R3 is already testing a Blockchain pilot project to develop post-shipment trade finance solutions. Some of the leading banks that have joined R3 include SBI Group, Bank of America Merrill Lynch, HSBC, Intel and Temasek. More banks are expected to join R3 by the end of 2018. Having successfully achieved the first proof of concept, the R3 consortia has begun to test Blockchain for enabling connectivity among trade participants on a single information page, simplifying access to credit, offering real time visibility in the supply chain and risk mitigation in trade lifecycle. Other major Blockchain projects underway include the IBM-backed Hyperledger Fabric project and the Utility Settlement Coin project[4].

While the pilot run for Blockchain is on, some banks have already begun deploying the technology. For instance, BBVA, in collaboration with Wave, carried out the first Blockchain-based international trade transaction that automated the electronic submission of documents between Europe and Latin America. BBVA could reduce the time required to send, verify, and authorise an international trade transaction, which normally takes from seven to ten days, to just 2.5 hours.

Blockchain Benefits



[4] r3cev, r3 partners with Monetary Authority of Singapore to launch Asia blockchain centre of excellence

REGULATORY, PRIVACY AND SCALABILITY CONCERNS LOOM LARGE IN BLOCKCHAIN DEPLOYMENT

As in many other technologies, regulation has often played catchup with innovation. The rules governing documentary credit or letters of credit were devised in the early 1930s. They now need to be thought of in the context of Blockchain. The rapid evolution of Blockchain technology is already outpacing regulators' ability to keep pace.

The financial sector, being one of the most highly regulated industries, must come up with laws to regulate the information sharing feature of the distributed ledger. Blockchains used in the financial services industry will have to be built on entirely different foundations. Banks need to comply with rules regarding verification of the identity of customers to prevent money laundering, making security a key requirement. Unlike cryptocurrencies, which use a public Blockchain, a private Blockchain is more suitable for the financial services industry.

There are also issues regarding the scalability of the Blockchain platform. Compared to 115 and 2,000 transactions per second (tps) under PayPal and Visa respectively, a Bitcoin network, on average, can process only 7-10 tps. As the number of Blockchain transactions increases, the Blockchain begins to grow rapidly, leading to higher time per transaction numbers. Blockchain technology today is only applicable for high value, low volume transactions. Efforts to increase transaction speeds are still at a conceptual stage.

Another challenge is the consensus among participants regarding Blockchain. For instance, in the traditional system, a bank can cancel a fraudulent transaction and does not need to seek permission from a network of other banks or third parties. However, in a Blockchain, members must reach a consensus before arriving at a decision to cancel a transaction.

Blockchain technology will not gain mainstream adoption overnight. Blockchain technology undoubtedly has the potential to become an integral part of the global banking industry in the future. But there are challenges that need to be addressed before it goes mainstream.

For now, Blockchain technology today is only applicable for high value, low volume transactions

BEYOND THE HYPE OF THE BLOCKCHAIN BANDWAGON

Mainstream adoption does not take place overnight. It took more than 50 years for the telephone to captivate consumers, and almost 10 years for the smartphone, so how long until Blockchain technology captivates the banking industry?

It is estimated that Blockchain today accounts for less than 0.1% of global trade. However, the technology behind it is progressing quickly.

In 2016, many companies were focused on assessing the viability of Blockchain. In 2017, companies like Maersk focussed on commercialising the technology. Maersk has formed a joint venture with IBM for this purpose. According to a PwC global survey report, 77% of financial institution respondents say they are expected to adopt Blockchain as a part of their processes by 2022[5].

Gartner expressed similar views. In 2017, Gartner's Hype Circle predicted that it will take another five to ten years for Blockchain technology to become commercially viable and sustainable over the long term.

It was just three years ago, in early 2015, that banks started to see the potential of Blockchain. Since then, banks have been experimenting and collaborating with technology providers to check the viability of Blockchain. This is expected to continue for the next two to three years before we see new regulations introduced by the central banks. In light of these observations, it is likely that Blockchain technology will see early adoption in the latter half of the next decade.

77%

Amount of financial institutions expected to adopt Blockchain by 2022

From increasing access to finance through to visibility into lenders' credit history and providing real-time trade flow visibility, Blockchain has the potential to cut banking infrastructure costs by $15 - $20 billion by 2022. However, Blockchain is still at a nascent stage and it will require huge investments and commitment from the banks to replace their current legacy systems as well as train the workforce for Blockchain implementation.

There will also be an opportunity for non-bank players to provide trade finance to sectors that are typically overlooked by banks. For instance, providing micro loans to SMEs.

$15-20bn

Cost cuts in bank infrastructure that could be enabled with Blockchain

[5] PwC, Global Fintech Survey

CRYPTOCURRENCIES IN GLOBAL TRADE

From an era of barter to commodity money, metals and coins, gold and silver, to the introduction of fiat money, currency as a medium of exchange could undergo another revolution – digital currency underpinned by cryptographic coding and blockchain technology. The legality of the usage of cryptocurrencies for international payments is still widely debated. Nevertheless, like Blockchain, cryptocurrencies could also transform cross-border trade. Currently, there are more than 700 cryptocurrencies in use, an indicator of its growing popularity. Some of the most popular ones are bitcoin, Ethereum, Ripple, Litecoin, and IOTA.

Cryptocurrencies such as bitcoin continue to make steady headlines, due to their value appreciation. Trading at about $950 at the end of 2016, the value of bitcoin jumped to more than $17,000 in December 2017, prompting some central banks to take a more cautious approach.

Apart from the security of transactions, cryptocurrency usage for international payments brings a wide array of benefits. Cross-border trade involves the usage of various currencies, the exchange rates for which are subject to global volatility. Using bitcoin means that all the market participants are dealing in the same currency with the same value, doing away with the hassle of monetary exchange.

Usage of cryptocurrency could also bring speed and efficiency in B2B transactions through disintermediation. Unlike traditional means of trading, which involves paperwork, brokerage fees, commissions, and a number of other conditions which may apply, cryptocurrency transactions are held on a peer-to-peer network.

However, bitcoin is not widely accepted and central banks are wary of using it as a medium of exchange. Unlike paper currencies, which are issued based on demand and supply, cryptocurrencies follow a technology protocol and are heavily susceptible to speculation. So, its mainstream adoption as payment for businesses remains limited.

+700

The number of crypto currencies in use today

A rising tide of regulations has weighed upon the crypto market since its appearance in the global economy. China, one of the global powerhouses in international trade, has banned cryptocurrency trading. South Korea issued regulations to curb speculation in bitcoin, and is considering issuing capital gains tax on crypto trading. The European Central Bank and the US Federal Reserve have also issued cautionary advice for investment and trading in cryptocurrencies.

For cryptocurrencies to succeed in cross-border payments, the entire value chain must rely on Blockchain. If any participant is not able, or is not willing, to use cryptocurrency, there should be an alternative mode of settlement in conventional currencies. Considering the price volatility of cryptocurrencies, it may pose a serious risk for both the importer and the exporter.

Most cross-border trade is financed via credit provided by banks. However, bitcoin works on a pre-funded basis, meaning that the payer must have cash on hand to pay for purchases. There are very few credit providers in the cryptocurrency world, so obtaining trade finance could be a problem. The solution is to borrow physical cash and exchange it for cryptocurrency. However, in such a case, the borrower is exposed to the volatility of the exchange rate.

While some countries have taken a prohibitive stance on cryptocurrencies, others such as Venezuela, France, Switzerland and Japan have taken a proactive approach and are drafting laws for proper usage of cryptocurrencies. The central banks of countries such as Sweden, Estonia, and Venezuela are contemplating the introduction of digital currencies. However, it remains to be seen whether the digital currencies issued by central banks are decentralised or are totally issuance controlled by central banks.

Regardless of the future of cryptocurrencies, it is likely that Blockchain technology will be central as an enabler of cross-border trade finance over the next decade.

It remains to be seen whether digital currencies issued by central banks will be de-centralized

DEVELOPMENTS ACROSS TRADING HUBS

Major trading hubs are making significant inroads in experimenting and deploying Blockchain, collaborating with fintechs, and testing cryptocurrencies.

Singapore becoming hotbed for Blockchain deployment

The Monetary Authority of Singapore (MAS) has undertaken Project Ubin, in collaboration with banks and tech companies, to develop ways in deploying Blockchain on payment and securities clearing. The consortium involved in Project Ubin include local banks (e.g. DBS etc.), foreign banks (e.g. Bank of America, HSBC, Merrill Lynch etc.), and the Singapore Exchange. The project is expected to be carried out in five phases, with two phases complete in 2018[6].

In late 2016, financial innovation firm R3 collaborated with MAS to launch its first dedicated distributed ledger technology (DLT) Center of Excellence in Asia, called R3 Asia Lab.

Singapore-based fintech, Cites Gestion, has entered into partnership with Prudential Singapore and StarHub to launch Fasttrack Trade (FTT). It will be Singapore's first Blockchain based digital trade platform for SME to facilitate trade transactions and access to the capital[7].

Hong Kong ramping up Blockchain powered trade finance offerings

The Hong Kong Monetary Authority (HKMA), together with Deloitte and five regional banks (HSBC, Bank of China, Bank of East Asia, Hang Seng Bank and Standard Chartered), launched a Blockchain platform for trade finance after conducting a proof of concept for lending, issuing LCs, factoring, export credit and insurance functions[8]. The platform aims to increase efficiency, transparency, and security in trade finance while eliminating the possibility of fraudulent activities by process automating.

London eyes SME funding opportunity through smart contracts

Populous, a UK-based fintech start-up is exploring the invoice financing space through its launch of smart contracts, underpinned by Blockchain technology. It uses custom created tokens called Pokens that are pegged to fiat currencies to remove the risk of volatility. The platform is being funded from the $10mn procured through initial coin offerings (ICOs)[9].

To unlock the huge opportunity for millions of SMEs, the UK-based ModulTrade has raised $7 million through the issue of ICOs in a bid to launch Blockchain-enabled smart contracts replacing the letter of credit. The company is using its own crypto token, MTRc, which is based on Ethereum and enables transactions at reduced cost and high speed[10].

Zurich foraying into the fintech lending space

The SME lending space in Zurich is growing quickly with the expansion of fintechs within the business lending sector. Recently, Tradeplus24, a Zurich-based fintech, collaborated with Trade Ledger to launch its trade finance platform for the Australian SME sector. The range of solutions offered includes invoice lending and receivables finance while automating the credit risk assessment process.

Dubai experimenting with state-powered cryptocurrencies

With the aim of making Dubai the first Blockchain-powered government in the world by 2020, the country has launched emCash, the first state-sponsored cryptocurrency[11]. emPay would allow UAE residents to make varied payments, using near field communication (NFC). The users will have the option of a secure digital currency, and merchants will receive payments in real time without going through intermediaries. The Dubai International Blockchain Summit held in January 2018 was one of the first of its kind held in the Middle East, aimed at unlocking Blockchain opportunities in the region.

[6] Monetary Authority of Singapore, Project Ubin: Central Bank Digital Money using Distributed Ledger Technology
[7] r3cev, r3 partners with Monetary Authority of Singapore to launch Asia blockchain centre of excellence
[8] Deloitte, Deloitte, HKMA and leading trade finance banks in Hong Kong have developed a Distributed Ledger Technology proof of concept for Trade Finance
[9] Pymnts.com, Blockchain Startup Populous Opens Its Doors With New Funding
[10] Crypto Currency News, ModulTrade ICO Raises $7 Million, A Revolutionary Digital Marketplace For Small Businesses To Trade Globally
[11] Cointelligence, The United Arab Emirates recently made history by releasing the first-ever governmental cryptocurrency, emCash

CHAPTER 4:

SHAPING THE FUTURE OF SUSTAINABILITY IN TRADE

Does sustainability equal 'good for business'? And why does it appear increasingly on the agendas in boardrooms around the world?

What is clear is that there is increasing pressure on companies to operate in a manner that is socially and environmentally responsible.

The modern customer is increasingly empowered and digitally vocal, while product quality and safety have become tightly integrated with traceability and supplier scorecards.

Meanwhile, many businesses are challenged by the dual demands of the internal economic drivers of an organisation and the external customer requirements for quality and efficiency.

OPTIMISING TRADE VALUE THROUGH ADOPTING SUSTAINABLE SUPPLY CHAINS

In the early years of sustainability, its application was largely confined to tree-planting or cheque-writing for charities. That has fundamentally changed.

Sustainability is a process whereby companies integrate social, environmental, and ethical issues into their business operations and strategy. Companies are the pioneers. They voluntarily pursue social and environmental initiatives that go further than laws or other models, because it is in their interest to do so, but also because of increasing pressure from media, government, and groups of consumers who are actively vocal, especially across digital channels.

The scope of sustainability is multi-dimensional, covering areas including the following:

- Human rights, labour, and employment practices
- Environmental issues
- Combating bribery and corruption
- Community involvement and development
- Consumer interests
- Responsibility through the supply chain
- Disclosure of non-financial information

It might seem tempting to discard sustainability as an add-on, an offset, or a risk management tool rather than an important contributor to reputation and, ultimately, profit. A key misconception is that it is only about philanthropy or charitable giving.

But sustainability is not just about being politically correct and socially conscious.

Research shows, sustainable business models can lead to long-term benefits for business including increased profit – a connection many companies have not yet made.

So can sustainability, in reality, grow business? The answer is yes. A 2014 Nielsen Global Survey on sustainability revealed that 64%of consumers in Asia-Pacific were inclined to buy from socially responsible brands.

A global average of 55% of respondents in Nielsen's corporate social responsibility survey said they were open to paying a premium when companies are committed to positive social and environmental impact.

And in the global war of attracting and retaining talent, the impact is noticeable; the 2015 Deloitte Millennial Survey, which polled 7,800 people across 29 countries, found that millennials prefer to work for a business with a heart and expect businesses to have a positive impact on wider society.

Goldman Sachs, Deloitte, and Harvard Business Review, have furthermore published reports that prove the business case for sustainability. Conclusively, they say that companies that are the leaders in sustainable, social, and good governance policies have 25% higher stock value than their less-sustainable competitors.

While sustainability is certainly not the only way to increase profits, achieve growth, and foster innovation, it by no means is a hindrance.

With data showing that the average lifespan of a business has fallen from 67 years to 17 years in a few decades – it is worth considering the following: If you want a long-term sustainable business, it makes sense to have a sustainable business model.

For companies that see sustainability as an opportunity to strengthen the business, the big challenge is execution and developing an approach that can truly deliver.

And if the question remains: "Should companies use their profit to make a difference or should they profit by making a difference?" Our research implies that the answer could be "both."

Companies that are the leaders in sustainable, social, and good governance policies have 25% higher stock value

RESPONSIBLE SOURCING AND SUSTAINABLE SUPPLY CHAIN MANAGEMENT GAINING TRACTION

Declining natural resources and rising social awareness among certain consumer groups regarding environmental issues has turned the spotlight on sustainability. Amidst changing weather patterns and raw material shortages, companies have come to realise that placing ethics over profits, especially when it comes to supply chain, is imperative for a competitive advantage.

Traditionally, supply chain management was aimed at reducing costs and improving the on-shelf availability of products. With sustainability taking centre stage, functional areas such as sustainable logistics, reverse logistics, sustainable supplier and vendor management, and internal sustainable operation management are gaining prominence. The aim is to conserve natural resources, ensure efficient energy and water usage, reduce CO2 emissions, and offer better traceability.

Governments and companies are working in alliance to replace the linear 'take, make and dispose' model with a circular 'reduce, reuse, recycle and return' model. This has turned companies' focus towards reviewing their supply-chain and operations from an environmental perspective. Focus on sustainable supply chains is not only reducing the impact on the environment, but is also unlocking opportunities for improving operational efficiencies and logistics costs.

A small step in the form of optimisation of transportation routes can help reduce mileage, which, in turn, will have a great impact on carbon emissions. The impact of sustainability can also be seen in quantifiable terms in the form of reduced costs, particularly in logistics. For instance, simply switching from road to barge transportation helped Auchan Retail, a leading French international retail group, achieve twin benefits; first in the form of reduced logistics spend and second, in the form of a simplified administrative process and a social contribution by ensuring that there are fewer trucks on the road.

It's not just about environmental impact. Focus on sustainable supply chains is also unlocking operational efficiencies and logistics cost savings

Some of the initiatives taken by Unilever include - replacing the one litre Omo dilute bottles with a flexible film doypacks leading to an annual cost savings of around €2 million, and a 73% reduction in plastic. Similarly use of innovation in packaging for its RIN laundry powder pouches and the VIM dishwash bars resulted in cost savings of €3 million owing to a 850 metric tonne reduction in use of polymer[1].

CDP, an environmental organisation that collects carbon data from companies, reported that more than 4,300 suppliers reduced their CO2 emissions by 434 million tonnes, resulting in cost savings of $12.4 billion in 2016[2].

A growing segment of younger consumers, especially millenials, want to be sure that their purchases have been produced under conditions that respect human rights. For example, in order to tackle trust issues in the gold industry, the World Gold Council developed the Conflict-Free Standard, which provides an assurance to consumers that gold has been extracted in a way that does not support unlawful armed conflict. Similarly, companies such as Unilever and Tata Global Beverages have announced plans to achieve 100% sustainable sourcing by 2020.

SHIFT IN CONSUMER PREFERENCES TOWARDS RESPONSIBLE BRANDS AND PRODUCTS

With consumers, becoming increasingly aware about the impact of their purchases of goods and services on the environment, green purchasing is gradually taking precedence.

With the increasing consumer sentiment for sustainable products, various companies across the globe have started to realise the need for creating greener products, and have started working towards minimising the harmful impact of their business operations on the environment. This has also fostered eco-innovation within companies, which focuses on incorporating environmentally sustainability practices at each stage of its production, be it goods or services.

An international study conducted by Unilever[3] in 2017 covering 20,000 respondents from five countries revealed that one-third of consumers are now buying from brands based on their social and environmental impact. The survey

$12.4bn

cost savings achieved by reducing carbon emissions across 4,300 companies 2016

[1] Unilever company website
[2] CDP Global Supply Chain Report 2017
[3] Unilever survey

also revealed that 21% of the respondents would actively prefer green products and brands if they made their sustainability credentials clearer on the product packaging or in their product promotions. The study also revealed that purpose-led purchasing is greater among consumers in emerging economies than in developed markets. Purpose-led purchasing is defined as consideration of environmental and social impact before buying any goods or service.

An online global survey conducted by Nielsen in 2015 found that consumers are increasingly willing to pay more for socially responsible products. 66% of the respondents said they're willing to pay more for products and services that come from companies that are committed to positive social and environmental impact, up from 55% in 2014 and 50% in 2013. The same survey also revealed that consumers in Latin America, Asia, the Middle East and Africa are 23-29% more willing to pay a premium for sustainable offerings than developed countries are.

66%

Amount of consumers willing to pay more for sustainable products and services

Consumers in Latin America, Asia, the Middle East and Africa are 23-29% more willing to pay a premium for sustainable offerings than developed countries

GOVERNMENTS UNDER PRESSURE TO MEET SUSTAINABLE MANUFACTURING STANDARDS

A few vocal consumers groups, especially activists and NGOs, are keeping a tab on businesses and exerting pressure on them to become more environment friendly and socially responsible. Media has played a central role in elevating the agenda. For instance, throughout the 1990s Nike, a leading sports apparel manufacturer was targeted by labour activists and anti-globalisation forces for allowing its suppliers in poor countries to abuse and exploit workers. As a result, Nike eventually set up an extensive and expensive system for monitoring and remedying factory conditions in its supply chain, which the rest of the footwear and apparel industry followed. Today, Nike is a perceived leader in sustainable practices.

Changes are also taking place at the policy levels as a response to the increasing pressure to ensure sustainable production and consumption practices. As a result, various governments across the world are enforcing greater efficiency in the usage of energy and resources and promoting products that save energy and use renewable energy sources. Governments have been earmarking greater resources for R&D in environmentally friendly technologies, enforcing the usage of renewable natural resources and the introduction of sustainable products. South Korea was among the first countries to include green initiatives in its national development plan. During the global financial crisis in 2008, the country allocated 80% of its fiscal stimulus plan in green projects, particularly in infrastructure and transportation. In 2009, it announced plans to invest $85 billion in clean energy technologies and implement its green growth plan, which aims to reduce greenhouse gas emissions by 30% by 2020 and increase the country's renewable energy dependency to 11% of energy supplies by 2030.

Through awareness campaigns, governments have been helping individuals and households to make sustainable purchase decisions. Governments, in association with industry and other relevant groups, are encouraging environmental labelling and other environment-related product information programmes (PIP) developed to support consumers in making informed choices. For example, EU has issued a directive for energy labelling of all household electrical appliances including refrigerators, washing machines, tumble dryers, dishwashers, lamps, air conditioners, and electric ovens. EU member states have the responsibility to ensure that the labelling schemes are accompanied by educational and promotional information campaigns aimed at encouraging more responsible choice of products and use of energy by consumers.

IMPACT OF SUSTAINABLE DEMAND ON MAJOR COMMODITIES

With the shift in demand for more sustainable goods, the production and trading of major commodities like cotton, iron ore, gold, crude oil, and wheat are expected to be impacted in the coming years.

Cotton

Cotton, used in hundreds of everyday items, is a key raw material for the textile industry and represents about 30% of all fibre used in the sector. Globally, cotton is planted on more than 30 million hectares of land, which produces approximately 25 million metric tonnes of cotton annually. More than 100 million households across 80 countries are directly engaged in cotton cultivation and depend on it for their income[4].

Consumers have been demanding sustainable cotton mainly due to the amount of pesticides being used to grow conventional cotton, which is more than any other crop. Cotton also requires substantial amounts of water, chemicals, energy, and land for cultivating conventional cotton that threaten the sustainability of the sector. In 2016, the cultivation of more sustainable cotton reached 2.6 million tonnes, which was around 12% of the global cotton supply. For 2017, it was estimated that the cultivation of more sustainable cotton accounted for about 15% of the global cotton production. However, only just greater than one-fifth of this amount is estimated to be actively sourced as sustainable cotton, with the remainder being traded as conventional cotton.

12%

of global cotton supply is sustainable

100%

The amount of sustainable cotton Bestseller, Decathlon, and Tesco have committed to source by 2020

Companies heavily dependent on cotton as a raw material play a critical part in securing the future of sustainable cotton industry. Some of the companies such as Patagonia, a US-based outdoor clothing company have committed to more sustainable, cotton sourcing and report steady progress in actual uptake of sustainable cotton. In 2017, at least 16 large companies including Bestseller, Decathlon, and Tesco had committed to sourcing 100%

[4] WWF, Sustainable Cotton Ranking 2017 Report

sustainable cotton by 2020. However, still there are many of the world's largest companies that use cotton as a key raw material, but do not consider or address the negative impacts of its production.

A number of global initiatives have been introduced to promote cultivation of sustainable cotton. Sustainability standards and programmes aim to address the challenges associated with conventional cotton cultivation. They provide guidance for farmers on more sustainable farming practices and assure buyers that the product meets specified requirements. Although not the only way to increase sustainability, such standards provide an immediate first step that all companies can take. The Better Cotton Initiative is one such step, and is backed by companies such as Levi Strauss, Marks & Spencer, IKEA, H&M, and Adidas. The initiative's goals are to make global cotton production better for the people who produce it, better for the environment it grows in, and better for the sector's future, by developing Better Cotton as a sustainable mainstream commodity.

With increasing emphasis on sustainability, recycled cotton is also gaining importance. Cotton is currently recycled mostly through mechanical fibre recycling which downgrades fibre length and quality and requires blending with virgin fibres for further use. Emerging technologies offer some hope for chemical cotton fibre recycling that would allow production of recycled fibre equal in quality to virgin fibre.

Thanks to these and other efforts to drive the adoption of more sustainable cotton, the gap between supply and uptake is slowly narrowing. However, in recent years, some manufacturers such as Germany-based Rudolf Group have started to produce ecologically-optimised regenerated fibres as a substitute for cotton in more sustainable ways. They rely completely on raw materials from certified sustainable forestry. Marketed varieties include Monocel, Lyocell, Modal Edelweiss, Cupro, Acetate and, Triacetate. The fibre yields per hectare of forests, measured by kilograms per year are up to four times higher than those of cotton. Also, there are companies such as Taiwan-based Singtex that produce fibres from coffee grounds, which are completely harmless to the environment.

The clothing industry places a lot of faith on these improved regenerated fibres. Thanks to their wearability, these fibres are also becoming increasingly popular with consumers.

Iron ore

The steel manufacturing industry, being the dominant consumer of iron ore, is the largest energy consuming manufacturing sector and the second-largest industrial consumer of energy, after the chemical sector. The industry accounts for about one-fourth of direct CO2 emissions from the industrial sector. The CO2 emissions are quite high due to a large share of coal and oil in the energy mix.

In 2017, steel production reached 1,691 million tonnes (Mt). By 2050, the demand for steel is expected to increase by 1.5 times that of current levels, to meet the need for buildings, infrastructure and transport in a sustainable way. Steel is an essential commodity which is needed in both developed and developing economies in applications that support sustainable development, resulting in a green economy.

Steel is crucial for the sectors and technologies that enable and drive a green economy. Renewable energy, energy-efficient buildings, low-carbon transport, infrastructure for fuel efficient and clean energy vehicles, and recycling facilities are completely dependent on steel.

According to the World Steel Association, in addition to providing employment and steel products that support a green economy, the global steel industry is taking steps to make improvements in its own sustainability performance. The efforts include:

- Reduce carbon footprint of steel manufacturing
- Ensure world-class safety performance
- Full support for the application of steel in products that reduce CO2 emissions, such as Advanced High-Strength Steel (AHSS) in vehicles
- Promote life-cycle thinking and intelligent product design to allow for dematerialisation and increased reuse
- Improve end-of-life steel product recovery and recycling rates

25%

of the emissions from the industrial sector come from steel manufacturing

1.5x

The expected increase in steel supply to meet demand for new buildings, infrastructure and transport by 2050

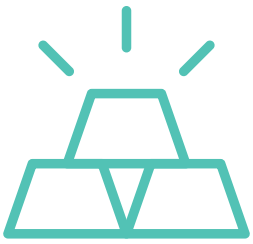
[5] World Steel, Energy use in the steel industry Factsheet

Recycling steel saves energy and natural resources, with an energy savings equivalent that can power 18 million households per year. In addition, for every metric tonne of steel recycled, 1,250kg of iron ore, 700kg of coal, and 60kg of limestone are saved[6].

For instance, ArcelorMittal, a leading producer of steel has committed itself to make a progressive reduction in the amount of CO2 emitted in the steel-making process in the coming years. The company has set a target of reducing emissions by 170kg per tonne of steel produced by 2020. As part of the company's long-term strategy to achieve sustainability, it is also working to develop breakthrough technologies to recycle steel. Being a part of the Ultra-low CO2 Steelmaking (ULCOS) project, the company is developing a technology that combines CO2 capture through top gas recycling and possible storage later on. Similar initiatives are being adopted by other steel manufacturers to reduce emissions, conserve resources, and develop new ways to reduce GHGs in the steel making process the raw material.

18m

households that could be powered per year by recycling steel



Gold

Today, consumers, retailers and industrial players expect to see documented evidence of compliance with ethical and legal standards of production and traceability across the supply chain. To address these issues, suitable legislations have already been laid, such as the Dodd-Frank Act in US and the European Market Infrastructure Regulation (EMIR) in EU. Also, the World Gold Council released its Conflict-Free Gold Standard in 2012 to raise industry standards and set best practices for others to follow. The standard aims to stop gold mining from funding wars in conflict states encompassing the entire supply chain.

Also, gold mining companies have been launching several initiatives to impact the society and environment. Mining companies have been building community development programs that have a wider impact on the societies they operate in, apart from the jobs and investments brought to the communities. These community development programmes mostly aim at investments in education, entrepreneurship, and healthcare. For instance, Newmont Mining Corp., a Colorado, US-based mining company, is working in collaboration with the national Ministry of People's Housing to build and improve houses for low income communities in the West Sumbawa Regency region of Indonesia. Similar, initiatives are also being driven by other mining companies such as Anglo American and Goldcorp Inc.

These mining companies have also started implementing an array of new initiatives to adopt renewable energy sources to run their routine operations, as a measure to cut

[6] ArcelorMittal, Sustainability of Steel

down their carbon footprint and achieve sustainability in the gold mining industry. Harmony Gold, a South African mining company, has built two solar parks at one of its sites to help the company reduce pressure on peak energy usage. The company is also growing biocrops in the form of giant king grass and sugar beet, which are used as feedstock to generate natural gas as a fossil fuel substitute.

Other sustainability initiatives implemented by some of the major gold mining companies include transparency in the system, respect for human rights, and proper reclamation of mining sites post mining. In the coming years, with consumers becoming more aware of sustainability, the remaining gold mining companies are also expected to shift their focus towards environmental and social welfare.

Crude oil

Due to depleting oil resources, increasing oil prices, and negative impact on the environment, consumers and industries across the globe have slowly started adopting sustainable or renewable energy resources. As a result, governments of both developed and developing countries have been making significant investments in developing infrastructure for producing alternative or renewable energy such as wind, solar, geothermal, and electric batteries. India has planned to increase its renewable power capacity to 175GW by 2022 from the current 61GW, mainly consisting of wind and solar units.

With government subsidies for new energy sources on the agenda, interest is expected to increase in the generation of alternative or renewable energy sources.

Wind and solar energy have been catching the most attention of governments due to their potential availability and minimal effect on the environment. For instance, it is estimated that the US saved between $35 - $220 billion between 2007 -2015 due to government subsidies for the increased adoption of renewable energy sources. This step avoided deaths, fewer sick days, and helped mitigate climate change[7].

Wind energy demands large investments in infrastructure, which includes wind turbines, collection, and transmission centres. Additionally, these wind parks require huge land areas to become economically viable. Solar energy also faces the same barrier of high costs, combined with an additional factor of low yield. In comparison to conventional energy sources, energy generated by solar units cost 3-to-6 times more. However, with the development of further innovations and technologies in this space, the initial capital cost of constructing wind and solar power plants are expected to come down in the coming years.

Electric batteries have been developed to replace the conventional engine vehicles in order to reduce toxic emissions. However, the technology has its own challenges and opportunities. Like wind and solar energy, its cost is still higher in comparison with other conventional energy sources. The penetration rate of electric batteries is currently low in vehicles, and so is the infrastructure to use them. The disposal of used batteries remains a challenge, as they carry a risk of giving off toxic gases and ingredients such as lithium and cobalt can lead to water pollution and depletion. Carmakers, recyclers and tech startups are working to solve the question of how to deal with worn out lithium-ion batteries. However, with the growing implementation of smart grids and intelligent energy transmission systems, the use of electric batteries is likely to increase.

[7] Quartz Media, One of the biggest criticisms against wind and solar energy has been quashed

CASE STUDY:

Nokia – a leader in responsible sourcing

Scandinavian countries and companies are very well-known worldwide for their focus on sustainability. It is not a surprise for Finland-based Nokia, a Microsoft company, to be one of the sustainable business practice leaders. The importance of sustainability is well reflected in various processes followed by the organisation and embodied within Nokia's leadership team that approves sustainability and related KPIs as part of the company's strategic planning process.

The company has been manufacturing environmental friendly products by sourcing raw materials that are either biodegradable or made from recycled materials. Since 2007, Nokia has been striving to make "sustainable devices". In fact, 100% of the materials used in these devices can be and are used again through collection of e-waste.

To achieve sustainability, all suppliers defined in the company's supplier base management process must comply with its robust requirements which are based on international standards. In addition, Nokia expects its suppliers to have a code of conduct in place and policies related to ethical behaviour, human rights, fair employment, health and safety, environment, and conflict minerals. To promote sustainable improvements throughout the supply chain, Nokia expects its suppliers to put in place similar sustainability requirements for their own suppliers, which include vendors, subcontractors, service providers, partners, etc. As of result of all these efforts, Nokia was ranked in the top 10% of the 2,500 largest companies that lead in sustainability in 2017 by Dow Jones Sustainability Indices (DJSI).

Nokia is one of the first telecom vendors to set out long-term energy and GHG reduction targets under the independent Science Based Targets initiative. The initiative set up by various non-governmental organisations, encourages and independently verifies companies' long-term targets to help the world move to a low-carbon economy. Under this initiative, Nokia aims to reduce the energy usage in its offices, factories, vehicles, and other facilities by 41% by 2030. It has also set an ambitious target to reduce the GHGs emitted by the usage of its products by 75% by 2030 against 2014 levels.

Nokia aims to reduce the energy usage in its offices, factories, vehicles, and other facilities by 41% by 2030

ADOPTION OF GREEN SOLUTIONS TO REDUCE CARBON FOOTPRINT IN TRANSPORTATION

With companies aiming to shrink their carbon footprints, the supply chain often plays a key role in achieving this. To reach their green targets, companies are slowly shifting towards the adoption of advanced technologies and use of less polluting fuels in their supply chain.

ADVANCED TECHNOLOGIES ADOPTED TO ACHIEVE SUSTAINABILITY

New technologies are being implemented in the supply chain to enhance its efficiency and achieve sustainability. Some of the latest technologies adopted include transportation management software, Radio Frequency Identification (RFID), big data & analytics, Internet of Things (IoT), and telematics. These technologies help simplify supply chain management by enabling businesses to operate efficiently, providing high visibility and control over inventory, and reducing operational costs. In the long run, this helps companies curb their carbon.

The use of shipping and tracking software helps integrate all the supply chain operations into a single panel. Also, this panel can be viewed and managed through a mobile device, meaning a company can control its inventory data, manage shipping, monitor distribution, settle payments, etc. while on the go. This could result in reduction in errors in the entire supply chain process and enhance customer experience.

RFID has been gaining popularity within the manufacturing supply chain for management of assets, inventory, and materials transportation. Also, as RFID enables more accurate inventory tracking, it can be used to reduce unnecessary truck deliveries, resulting in reduced fuel consumption.

1tn

The amount of sensors estimated connected to the Internet by 2022

Transportation is being transformed through data-driven insights. An unprecedented amount of data can be captured at various points along the supply chain. The analysis of this big data offers a massive potential to optimize capacity utilisation and routes, improve customer experience, reduce risk, and achieve sustainability by curbing fuel consumption.

IoT is enabling supply chain managers to achieve greater accuracy and visibility in all processes. It also notifies any possible faults throughout every supply chain

operation including transportation and logistics. The shipping element of the supply chain is already leveraging sensors to track temperature, battery, and fuel levels, and potential errors that could affect goods and vehicles. According to research by the World Economic Forum, by 2022, 1 trillion sensors are estimated to be connected to the internet.

Telematics is also revolutionising the transportation and logistics sector, especially fleet management. It provides supply chain managers the access to data, such as timings of routes and how vehicles are driven, to allow them to make intelligent decisions about fleet and reasons for breakdown, training, fuel consumption, component failure rates, and so forth.

The future of logistics and transportation will not only include autonomous trucks on the roads, but also autonomous vessels traversing across oceans. UK-based Rolls Royce has set a target to deploy remotely controlled autonomous vessels in international waters by 2025. All these advanced technologies will help in the reduction of the carbon footprint of various companies in the long run, resulting in sustainability.

USAGE OF ALTERNATIVE FUELS

With concerns over energy security and stricter emission regulations, transportation and logistics providers, mainly in US and Europe have been shifting towards alternative fuel vehicles (AFVs). The AFVs mainly use fuels including compressed natural gas (CNG), liquefied natural gas (LNG), biofuels, hybrids, etc. The benefits offered by AFVs include lower initial costs, smaller carbon footprints, and reduced emissions.

Transportation is a major source of carbon pollution, accounting for about 24% of greenhouse gas (GHG) emissions worldwide. According to the European Environment Agency, the transport sector is the second-largest source of carbon pollution in Europe, accounting for about 20% of GHG emissions. Looking specifically at road transportation emissions, it is estimated that the emissions from vehicles could be cut by 29% by 2030 through a combination of low-carbon fuels, AFVs and improved fuel efficiencies. An early adaptor of AFVs was States Logistics Services, Inc., a third-party logistics solutions provider based out of California, US. The logistics provider runs its entire California fleet using B99 biodiesel fuel, a blend of 1% diesel with 99% biodiesel that can be used in diesel engines with little to no modifications. This shift to biodiesel was based on the request of a customer and due to the benefits biofuels offer.

24%

The amount of greenhouse gas emissions stemming from transportation

29%

Reduction of emissions estimated by 2030

In a recent development with respect to curbing of carbon emissions, the Finnish capital is aiming to ensure that all commercial vehicles and machinery operated by Helsinki as well as the bus services commissioned by Helsinki Region Transport (HSL) will completely shift to renewable fuels by 2020. Also, some of the major logistics service providers such as DHL and UPS have shifted towards alternative fuels to power their fleets and offices across the world with the aim of reducing their carbon footprint. Similar trends are further expected to continue in the transportation and logistics sector in the coming years, as emission regulations would get more stringent.

CASE STUDY:

DHL – environmental protection programme

Since 2008, the DHL Group has been focusing its efforts towards climate protection, mainly through the cutting down of carbon dioxide (CO_2) emissions. The company set a clear carbon emission target and launched the "Go Green" sustainability program in 2008. Under the program, the group had set a target to reduce its carbon emission levels by 30% by 2020 (based on 2007 levels) and increase transparency on company's carbon emission levels. It was a first of its kind move in an industry that has a business model that extensively relies on carbon emissions to survive.

At the end of 2016, the group had managed to reach its 2020 climate protection goal early, by achieving 30% carbon efficiency between 2008 - 2016. To realise a more sustainable future, in 2017, the company set a new climate protection target to reduce all logistics related emissions to zero by 2050.

To realise the vision of zero emission logistics, the group has set several interim goals across the key action areas of its sustainability strategy. By the end of 2025, the group aims to increase carbon efficiency by 50% compared to 2007 levels.

The group is also aiming to develop environment friendly logistics solutions and bring the group's divisions together to commercialise these solutions. These initiatives not only strengthen the group's market position, but also benefit its customers, society, and the environment, which is the crux of the group's shared value approach.

UPS, a US-based logistics services provider, followed the footsteps of DHL and deepened its commitment to alternative fuels in 2012 when it set a goal of reaching 1 billion miles driven by AFVs by the end of 2017. However, UPS achieved this target in 2016, a full year ahead of the original target date. In the long term, the company seeks to transform commercial transportation and logistics, spurring growth in the adoption of alternative fuels.

INCREASING DEMAND FOR SUSTAINABLE PACKAGING ACROSS THE VALUE CHAIN

Consumer demand for green packaging is continuing to increase, as consumers are becoming more aware about the environmental impact of products they purchase and use. This has resulted in sustainability and green efficiencies playing a key role in consumer purchasing decisions, which has consequently driven demand for sustainable packaging.

At the manufacturing end, companies are taking efforts towards achieving long-term sustainability goals such as optimisation of resource utilisation and wastage in packaging and efficient disposal and recycling. The packaging manufacturers are responding to consumer demand for green packaging solutions by using environment-friendly packaging materials and emphasising efficiencies throughout the entire manufacturing process.

The materials used in green or sustainable packaging can be easily bent or moulded as required and can also return to their original form once released. One of the major advantages of green packaging is the low toxic emissions it produces, once discarded after use. Due to the increasing environmental concerns worldwide and the growing need to reduce toxic emissions, green packaging is widely being adopted by the food & beverage, healthcare, and personal care industries.

The market for such packaging is expected to reach $203 billion by the end of 2021, growing at a CAGR of about 6%. US is the largest market for green packaging. US and Europe are considered more mature markets for green packaging due to their already extensive use of eco-friendly products, while the Asia-Pacific region is the fastest growing market.

$203bn

Estimated market value for sustainable packaging in 2021

The most common trends in sustainable packaging are:

- reduction in weight of packaging
- increase in recyclability and re-use
- increase in use of recycled materials
- increase in use of naturally-sourced or biodegradable materials
- improvements in packaging and logistical efficiency
- decrease in usage of non-renewable sources of energy and raw materials

According to a study by Smithers Pira, the issue of sustainable packaging will continue to grow in importance over the coming years and is predicted to become the top challenge faced by companies by 2023, because of consumer conscience, government regulations, and improved profitability to companies due to the usage of biodegradable and recyclable materials.

Sustainable packaging is predicted to be a top challenge for businesses by 2023

CASE STUDY:

PepsiCo – Sustainability achieved through innovative packaging

In 2014, PepsiCo identified a range of materials issues including innovating its packaging to make it more sustainable. This stood as the key material issue given the company's commitment to strive for the minimal possible carbon footprint while still exceeding the value, cost, and performance expected by customers. Packaging materials account for a significant share of PepsiCo's supply chain spend. The reduction in packaging materials in the company's products not only reduced the cost for the company, but also decreased the amount of wastage. The company is also constantly working towards designing more recyclable packaging to achieve sustainability.

In the same year, PepsiCo saved more than $11 million and $29 million pounds of film and corrugated packaging respectively from its global food and snacks packaging, resulting in a total savings of $20 million. In its beverage business, the company eliminated 46 million pounds of packaging, which consisted of 20 million fewer pounds of plastic, 23 million fewer pounds of paper-based packaging, and 3 million fewer pounds of aluminium as compared to 2013. These were mainly the result of light weighting, film down-gauging, bag optimisation, carton size reduction, and increase in the recycled content and recyclability of PepsiCo's packaging.

PepsiCo's environmental sustainability initiatives launched in 2010 resulted in cost savings of $600 million in the six years to 2016. The company also announced its 2025 Sustainable Agenda in 2016 aimed at increasing the company's efforts to protect the planet. In a move to reduce waste and warehousing costs, the company has also been installing automated storage and retrieval system (AS/RS) and warehouse control system at its plants.

$600m

Cost savings achieved by PepsiCo in six years realised by sustainability initiatives

SUSTAINABLE WAREHOUSES

With increasing utilities and warehousing costs and stringent certification requirements, companies have been slowly shifting towards sustainable warehousing. It mitigates harmful effects to the environment, encourages worker safety and comfort, and earns the respect of customers and society overall. From a critical business perspective, sustainable warehousing also lowers operating costs, resulting in improved financial performance of any company. Sustainability is now an essential component of a Class A warehouse. Companies are investing in sustainable warehousing mainly due to:

- Location and transportation – the warehouse is near public transportation spots and does not damage habitats of humans or endangered species
- Sustainable sites – no damages caused to vegetation during the construction of the warehouse; placement of rainwater mitigation programs, etc.
- Water efficiency – minimal usage of water for landscaping purposes and inside the warehouse building
- Energy and atmosphere – usage of energy efficiency equipment; efficient usage of energy and utilisation of sustainable energy sources for various operations
- Materials and resources – usage of sustainable materials to build the warehouse facility; purchasing of materials with recycled content for packaging; and usage of energy-efficient lights
- Indoor environment quality– establishment of a safe and clean environment for employees to work

Other key certifications obtained for sustainable warehousing facilities include the Net Zero certification, where the facility can produce as much energy as it uses. Also, various digital technologies such as cloud, big data and analytics, mobility etc. are playing a key role in achieving sustainability in different warehouse operations.

Sustainable warehousing lowers operating costs and improves financial performance

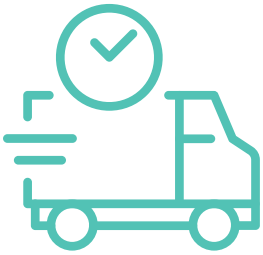
ROLE OF TECHNOLOGY IN SUSTAINABLE WAREHOUSES

Due to rising cost pressures and increasingly stringent emission regulations, supply chain and warehouse operators have been adopting various digital technologies to contain operational costs and reduce their carbon footprint. Cloud, mobile, and other digital technologies have already made a significant impact on supply chain and warehousing. Digital technologies, powered by mobile devices, help make the supply chain efficient and accurate, thereby reducing costs.

Cloud-based warehouse management systems (WMS), accessible from any location helps maintain optimal stock levels and avoids wastage of goods. It is estimated that by 2020, 3 out of 4 WMSs will be on the cloud, with enterprises adopting cloud first or cloud only approaches to their supply chain management. Application of predictive analytics is expected to rise as it improves forecasting accuracy. A lean organisation could use predictive analytics to enable just in time (JIT) inventory model, with optimised inventory levels at every point of their supply chain. The result is improved productivity, revenue gain, and reduced carbon footprint in the medium to long-term.

Also, companies have been partnering with suitable players to leverage the synergies and forge innovations to optimise their supply chain and warehousing operations. For instance, a company could select a warehousing partner depending on volume, season, and other conditions. A collaborative platform to distribute fulfilment orders based on predicted fleet movements could reduce operational costs for both the partners and reduce their impact on the environment.

It is estimated that by 2020, 3 out of 4 warehouse management systems will be on the cloud



CASE STUDY:

Amazon.com – Early adopter of sustainable warehousing solutions

Automation of supply chain and warehousing operations has been gaining importance due to the growing need for efficiency in various associated processes. Machine vision and robotics that are already widely used in industrial applications are poised to enter supply chain and logistics.

E-commerce player, Amazon.com has been at the forefront in the adoption of various digital and automation solutions to optimise and streamline its supply chain and warehousing operations. For example, Amazon's Kiva Robotics is one of the innovative automated warehouse solution adopted by the company. By the end of 2016, Amazon had deployed 45,000 robots across 20 of its warehouses. These robots helped cut about 20% of the company's operating expenses. This move also helped the company increase its inventory space significantly by smarter use of space by discarding several material handling systems. As of January 2018, Amazon had roughly 100,000 such robots in use across the world. In the short term, the continued addition and usage of robotics in its warehouses can save up to $2 million in operating costs for every automated warehouse.

The increasing focus on reduction of environmental and social footprints of warehouse facilities has been driving the leadership of various warehousing partners to adopt sustainable solutions. These solutions mainly include sustainable technologies such as cloud, big data and analytics, optimised design of warehouses, and sustained use of energy.

100K

Robots deployed in Amazon warehouses

$2m

Estimated saving in operating cost for every robot-automated warehouse

GREENER WAYS TO CUT THROUGH SUPPLY CHAIN COMPLEXITY

CHANGING DYNAMICS ACROSS THE VALUE CHAIN

Transparent supply chains for sustainable economies

An ethical supply chain is no longer a trend, but has become a cornerstone for businesses. Lack of transparency creates grounds for economic, environmental, and human rights violations within an organisation's supply chain. Consumers are increasingly conscious about sustainability and prefer products that are grown and harvested using environmentally and socially responsible practices. This is a critical factor pressurising corporations to incorporate traceability and transparency across the value chain.

REGULATORY PRESSURES ACCELERATING THE PACE OF TRANSPARENCY IN SUPPLY CHAINS

Regulators across the globe are of the opinion that an opaque supply chain is the biggest barrier to achieving sustainability.

The 2016 United Nations (UN) Climate Change Conference held in Marrakech witnessed the launch of TRASE (Transparency for Sustainable Economies), a revolutionary platform for tracking the commodity supply chain. The platform, developed by Stockholm Environment Institute (SEI) and UK-based Global Canopy Programme (GCP), was launched with a primary goal of achieving deforestation-free commodity trade through improvements in commodity production, procurement, and investment strategies[8]. By tracking commodity flows from production landscapes to consumer markets, TRASE can help detect problem areas and act as a catalyst in bringing about improvements across the board.

The UN, through various other initiatives such as Sustainable Development Goals and the UN Guiding Principles on Business and Human Rights, has been laying down the foundation for tackling sustainability issues.
Market regulators across the globe are also playing a pivotal role in global trade by promoting a culture of transparency in supply chain operations. Various legislative frameworks have been enacted which require multinational companies to trace their supply chains and be transparent about their environmental, social, and governance initiatives.

Some of the notable regulations include the Dutch Child Labour Due Diligence Law, UK Modern Slavery Act, French Corporate Duty of Vigilance Law, California Transparency in Supply Chains Act, and the EU Conflict Minerals Regulation.

Regulators are playing a pivotal role in global trade by promoting transparency across the supply chain

[8] EUREDD Facility: Global supply-chain transparency

SUPPLY CHAIN TRACEABILITY AUGMENTING REVENUE AND PROFITS

Implementing traceability can help companies gain more visibility of supply chain processes, which in turn, could heighten operational efficiencies through the elimination of unnecessary middlemen and redundant processes, logistics tracking, and reduced inventory management costs. Another benefit to businesses could be enhanced reputation and a strong brand recall. A survey conducted at the end of 2016 by GT Nexus, a commerce network provider, concluded that 46% of millennials switched from their favourite brands because the brand was not eco-friendly or the brand did not pay or treat its workers well[9]. Companies that have adopted the practice of transparency could be in a better position to acquire customer loyalty by curbing their concerns about the ingredients used, production method, labour standards implemented, and the environmental impact of production.

For instance, H&M, a clothing retailer publishes names and addresses of its suppliers, which ensures that H&M can be held accountable for the conduct of their suppliers. Anyone can verify if their suppliers are living up to the standards set by the company. In addition, H&M has announced a goal of using only recycled or sustainably sourced materials by 2030.

100%

The amount of sustainability sourced or recycled materials H&M has committed to use by 2030

BENEFITS TO THE ENVIRONMENT

Traceability systems provide a means of monitoring impacts on the environment and can be used as a tool to support the conservation of natural resources. For instance, a huge demand for palm oil has been causing mass deforestation and eating away the habitats of endangered species in the tropical region.

In response to this, companies such as Unilever and L'Oreal have set a goal of sourcing 100% of its palm oil needs from responsible and sustainable sources by 2020.

[9] GT Nexus Commerce Network

LEVERAGING TECHNOLOGY

Consumers' inquisitiveness to understand the supply chain has long been met through traceability systems such as RFID and Quick Response (QR) codes, which are the dominant identification and traceability technologies.

Blockchain, as discussed in this report, creates a permanent record of transactions, enabling transparent knowledge sharing between stakeholders in the value chain. This technology is also expected to result in reduced costs and delays from paperwork, easy identification of bottlenecks, improved inventory management, increased compliance, a secure audit trail, and reduced potential of risk from supply chain malpractices.

Companies across industries are trying their hand at Blockchain. Capitalising on blockchain principles, Walmart has developed an app which allows customers to track the origin of products and also helps its employees streamline the restocking process. Similarly, Maersk, the world's largest shipping company, through various tests, concluded that Blockchain can simplify logistics tracking by remotely accessing data about the shipped cargo.

The use of Blockchain in diamond trading is also expected to substantially enhance transparency.

De Beers has announced that it tracked 100 high-value diamonds from the mine to the retailer using Blockchain technology. According to the company, this is the first time a diamond's journey has been digitally tracked from mine to retail. De Beers are developing a new Blockchain platform called Tracr with five other diamond manufacturers that will be open to the entire diamond industry, and help avoid imposters and conflict minerals.

Everledger, a global startup that uses the best of emerging technology including Blockchain, smart contracts and machine vision to assist in the reduction of risk and fraud for banks, insurers and open marketplaces, is developing Blockchain-based solutions for provenance tracking and certification and is focused particularly on the diamond and jewellery industry.

EVOLVING ROLE OF CHIEF PROCUREMENT AND SUSTAINABILITY OFFICERS

The role of a Chief Procurement Office (CPO) is no longer confined to achieving cost efficiencies. The need to conserve natural resources has placed sustainable procurement at the top of their agendas, with most companies framing policies for responsible sourcing. Pressure from consumers and regulators to achieve supply chain transparency has put the onus on CPOs to set up new procurement systems and processes by leveraging technology such as Blockchain.

These challenges have been driving innovation in organisations including Anheuser-Busch InBev, Mars, and McDonald's, which have created dedicated sustainable sourcing/supply chain sustainability teams, work in close collaboration with internal operational teams and external suppliers, and brainstorm new ways of recycling and reusing materials. The CPOs and CSOs are playing key roles in furthering sustainability goals of organisations and are acting as catalysts in leading the organisations towards a revolution in supply chain management.

INCENTIVISING SUPPLIERS FOR ADHERENCE TO ENVIRONMENTAL GUIDELINES

Apart from accommodating internal processes, companies have come up with a unique solution to motivate their suppliers to follow environmental standards. Companies have started to tie financial terms not only to the supplier's credit rating, but also to their environmental and social scores. Per this metric, suppliers adhering to the sustainability objectives laid down by the buyer are offered better financing.

This affordable source of financing enables suppliers to expand the scope and width of business operations, and at the same time encourages them to consider environmental aspects of their activities.

Levi's pioneered this programme in 2014 in collaboration with the International Finance Corporation (IFC). The better the supplier is at assuming responsibilities towards the environment and its workers, the better the rate provided as part of the tiered supply chain financing, thereby creating a win-win situation for the suppliers, the workers, and the environment. PUMA and Nike are some of the other companies who have followed in Levi's footsteps.

"In the last few years, companies that perhaps didn't take sustainability as seriously before, now see it as one of the primary risks to their business and there is a greater realisation that financing and sustainability need to be more closely linked in order to achieve better results" says Farzin Mirmotahari, Senior Operations Officer, IFC.

Together with garnering support from IFC, this innovative method of financing has also been embraced by global banks. With its participation in PUMA's 'variable financing program', BNP Paribas became the first market listed bank in the world to accept a sustainability-based interest rate grid for supply chain finance.

COMPETITORS: FROM FOES TO FRIENDS

"As an industry, we need to make sustainability a top priority, and this means coming together to tackle the big social and environmental issues of our time," says Chip Bergh, President and CEO, Levi Strauss. Trade has made the world a smaller place and has acted as a stimulant in promoting efficiencies in production through technology transfer and enhanced competition. Companies have come to realise that horizontal and vertical collaboration is crucial for success in achieving traceability. Collaborations also aid in the pooling of best practices and resources; thus, expediting the adoption of sustainability in supply chains.

A notable example is the horisontal logistics coalition between PepsiCo and Nestlé, where they bundled their warehousing, packaging, and outbound distribution functions in Belgium to address the problem of low truck fill rates. This coalition led to a range of benefits to Nestlé in the form of better service levels, a 44% reduction in transportation costs, together with spiralling benefits to the society in the form of reduced traffic and 55% reduction in carbon emissions[10].

Nestle partnered with Coca-Cola, Danone, Ford, Heinz, Nike, P&G, and Unilever to form a Bioplastics Feedstock Alliance, aimed at encouraging the use of plant matter for manufacturing plastics.

Nike, the global clothing and footwear brand, is the founding member of the Sustainable Apparel Coalition and the Zero Discharge Hazardous Chemicals and is working closely with H&M and Zara in its bid to eliminate the use of hazardous chemicals in textile production by 2020[11].

CONCLUSION:

Embracing sustainability as a major business driver, partnering with sustainable suppliers, and ensuring traceability to enable transparency are all expected to pave the way for a truly sustainable world.

[10] Beyond Supply Chains: Empowering Responsible Value Chains report by Accenture
[11] Network for Business Sustainability

FUTURE OF TRADE CONCLUSION

At the outset of our journey to understand how the future of trade will evolve over the next decade, we asked ourselves: Will the sweeping advance in tech and finance fuel global trade? Or will rising protectionism and the threat of trade wars keep markets in a state of flux?

When it comes to global trade, technological advancements and political developments can affect the nature of how goods and services are exchanged. Political adjustments and protectionist polices can strain relationships, resulting in disavowed multilateral trade agreements, fluctuating commodity prices, and the fall of manufacturing hubs. Although changes may be unpredictable, new challenges will create opportunity and steer the landscape within which trade will operate over the next decade.

For example, as highlighted in this report:

Geopolitics challenge the Future of Trade

In the last decade, barriers in major trading hubs have decreased. However global trade has been sluggish. Stalled trade negotiations and non-tariff barriers could be hindering global trade growth. Political changes such as the election of US President Donald Trump and Brexit have also had significant effects on businesses and trade.

The world's economic centre of gravity is shifting towards Asia

China is seen as the emerging champion of globalisation. The Belt and Road initiative aims to connect markets across Asia, Africa, and Europe by expanding maritime, rail and road networks, and infrastructure. The initiative also includes energy corridors and telecommunications.

New manufacturing hubs are emerging

As China's economy becomes more reliant on domestic consumption and technologically-led manufacturing, around 100 million labour-intensive manufacturing jobs will move to other low cost countries including Vietnam, Mexico, Myanmar, India, Indonesia, and Kenya. Although Africa and South America are yet to make a significant impact on global economy and trade, these regions have a wealth of natural resources at their disposal. This wealth makes them likely to play major roles in global trade in the next decade.

Global trade is at the cusp of a digital revolution

Against a backdrop of a synchronised upswing in 2017, primary commodities account for more than one-quarter of total goods traded, and global trade value is likely to increase. The development of blockchain, advanced robotics, and the Internet of Things presents a profound shift for the future. Blockchain, while still not deployed at an industrialised scale, will begin to streamline business efficiency for global importers and exporters; reducing costs, increasing productivity, and driving economies over the next decade.

Digital trade finance could revolutionise the Future of Trade

Technological advances are putting trade finance in the spotlight. Traditional debt finance - bank loans, overdrafts, Letter of Credits, export credit, and insurance - accounts for roughly 80% of financing for world trade. However, due to strict collateral needs and credit history checks, 50% of SME funding applications are rejected by banks. This has resulted in a $1.5 trillion gap in trade finance. As digital trade finance becomes a sought-after alternative, start-ups and SMEs are no longer as reliant on banks as before. After revolutionising the payments industry, FinTechs are venturing into the trade finance space through digital lending platforms. Predictably, blockchain is seen as the big disruptor and enabler.

Reduce, reuse, recycle and return will transform the Future of Trade

With the decline of natural resources and the rise of social responsibility, more and more consumers are demanding ethically sourced and environmentally friendly goods. Sustainable supply chains will increasingly reduce the impact on the environment as well as unlock opportunities to improve operational efficiencies. As various governments around the world enforce energy and resource efficiency policies, sustainable business practices will have the competitive advantage in years to come.

Trade wants to be free

There is no question that digital will help drive global trade forward. But it's impossible not to highlight the current global world order and protectionism rising when discussing the future of trade.

From our research, it is clear that some predict the world will transition from a globalised system where countries are interconnected through trade, moving to a more multipolar system with several regional centers. Some also argue that globalisation has powered a growing crisis of inequality in the West.

But equally, our research reveals that globalisation remains a predominant economic, strategic, and political force that has narrowed the wealth gap between rich and developing countries.

Put in context, we are witnessing the most rapid expansion of the middle class the world has ever seen. Experts estimate that around 2020, the middle class will become a majority of the global population for the first time. This will drive a surge in consumer demand. Much of this new consumer demand will come from emerging urban clusters in Asia, particularly in China and India, and to a lesser degree in Europe and US.

As an emerging middle class applies its buying power, a connected world of trade will ensure that Ethiopian coffee, Chinese mobile phones, and sweaters made in Myanmar will make their way to end users in all corners of the world.

Although changes may be unpredictable, new challenges will create opportunity and steer the industry over the next decade. But there is one thing about global trade that does not change: people.

Global trade is, at the end of the day, initiated by individuals connecting with one another. Like people, the goal of trade is to connect and build relationships. Regardless of geopolitical uncertainty or policies, trade will seek new routes and ways to flow.

In the 1960s, American writer Stewart Brand coined the term, "Information wants to be free" which emphasised that people should be able to access information freely. This term seems acutely relevant now that we see an exponential growth in volume, variety, and speed of data.

In a time where global trade is increasingly digital, data driven, and more transparent, protectionism and trade barriers can be seen as obstacles. But trade, like information, wants to be free.

Yesterday, today, and tomorrow, free trade begins with a handshake. In the future, that handshake will indisputably and increasingly be taking place in a digital universe.

Indeed, the future of trade is digital. But our research keeps us optimistic with certainty that the future of trade will also remain ever global.

About DMCC

Headquartered in Dubai, DMCC is the world's most interconnected Free Zone, and the leading trade and enterprise hub for commodities. Whether developing vibrant neighbourhoods with world-class property like Jumeirah Lakes Towers and the much anticipated Uptown Dubai, or delivering high performance business services, DMCC provides everything its dynamic community needs to live, work and thrive. Made for Trade, DMCC is proud to sustain and grow Dubai's position as the place to be for global trade today and long into the future.

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