

DEKRA Experts

Supplement nr. 2 to the book.

The New Silk Road

The BRI Project

1 - Preface

The first supplement to this book was written in March 2019.

We have decided to follow up the developments and to publish a regular update for our clients that are interested in this project.

After issuing of the book and the first supplement we were asked by various clients for an English version. That is why we decided to translate the book and the first supplement in the English language.

The version in English can be found on our website:

[marine.experts.nl@dekra.com](mailto:marine.experts.nl@dekra.com)

Furthermore we decided to write additional supplements directly in the English language.

We hope you will appreciate our regular updates.

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## 2- Introduction

Since the first supplement a number of developments came into existence. In this second supplement we have collected information with regard to the most important developments since March 2019.

First we want to draw your attention on the book “De Nieuwe Wereldorde” (“the New World Order”) by professor Rob de Wijk, published in 2019 by Uitgeverij Balans. The subtitle of his book is “how China sneakily takes power”.

Rob de Wijk is member of the “Hague Centre for Strategy Studies”. In his opinion the rise of China can be compared with the rise of the UK in the nineteenth century and the rise of the USA in the twentieth century. Furthermore, according to him, the EU is helping China with Trump, Poetin, Brexit, yellow vests and growing nationalism.

Also China has other ideas than the EU, with regard to free market economy, international jurisdiction, international institutions, democracy, human rights and civil freedom. The Dutch-China-strategy, that is developed at the moment, will, according to Rob de Wijk, not be very successful and can only be successful with the aid of the EU and the USA.

One of his main concerns is the 5 G Network of Huawei. Specially because Huawei is a company under control of the Chinese government, contrary to Cisco, Ericsson, etc. Another concern are the various Dutch Confucius institutes . in those institutes one can learn the Chinese language and culture. In the opinion of Rob de Wijk those institutes are umbrella organizations of the Chinese Communist Party.

## 3- Developments in the Netherlands

### 3.1 Rotterdam

On 7 May 2019 representatives of the Port of Guangzhou and of the Port of Rotterdam signed a partnership agreement. Both organizations want to share expertise and best practice in the field of port management. Rotterdam entered into partnership agreements with other ports before, including Shanghai, Shenzhen, Singapore, Tokyo and the Thai Port authorities.

In May 2019 the Port of Rotterdam started with the Container 42 project. Container 42 is a hyper smart container, equipped with sensors and communication equipment, that can measure changes in parameters like vibration, slope, position, sound, local air pollution, humidity and temperature. Also solar panels are fitted, which can determine how much power a container can generate during a journey by ship, train or truck. The container will travel for two years around the world, collecting various data.

In May 2019 COSCO Shipping opened her European Regional Head Office in Rotterdam. Choosing Rotterdam to locate the new office is a proof of the strong bond between the Port of Rotterdam and China. In 2019 Rotterdam and Shanghai are celebrating 40 years of city sisterhood.

On 21 May 2019 the Port of Rotterdam Authority, Tilburg multi-modal terminal operator GVT and Chengdu International Railway Port Investment & Development Group signed a declaration of intent.

The objective of the cooperation is to transport more freight via rail on the Rotterdam – Tilburg – Chengdu Express.

Currently this train runs five times a week via Kazakhstan and Moscow .

The load factor westward (China – Rotterdam) is extremely high, eastward (Rotterdam – China) there is still approx. 20 % available space. The focus is therefore on better connections with the North American market and more shortsea freight (UK, Ireland, Scandinavia and the Baltic States). The declaration was signed on the day of the 800<sup>th</sup> journey of a direct freight train between China and Rotterdam(round trip).

It is expected that in 2030 there will be 7 trains per week on this connection.

### 3.2 Amsterdam

in April 2019 an intention agreement was signed between Wuhan Asia Europe Logistics (WAE), Nunner Logistics, Samskip, TMA Logistics and the Port of Amsterdam.

The intention is to provide a regular rail freight service between Amsterdam and Wuhan, twice a week, starting 1 May 2019.

Wuhan is a city with 13 million residents, centrally located in China at crossroads of road, water and rail to the rest of China.

### 3.3 Coevorden

Graaco, the Dutch logistic provider, is, at this moment, offering a multimodal logistic solution for transport between Coevorden and several destinations in China (via Duisburg).

The connection Netherlands – Germany is transport by truck from Coevorden to Duisburg.

In the near future Graaco will offer a direct train connection between Coevorden and China (the C2C project), involving the German city Bad Bentheim (Twinport Bentheim-Coevorden).

### 3.4 ERTMS

The present Dutch rail safety system ATB will be replaced by the European Rail Traffic Management System (ERTMS) between 2019 and 2050. Originally the cost for the Netherlands was estimated at Euro 2.4 billion, however it is now estimated by the government that from 2030 till 2050 Euro 100 million extra is necessary to complete the system.

It is not sure what the impact of automatic train operation (ATO) on the system will be.

The start of the system will be on the railway transport corridors (TEN-T).

### 3.5 740 meter trains

We refer to paragraph 3.4 of our first supplement.

Germany and Switzerland will finish the railway network for 740 metres length trains in 2021.

The Netherlands is still in a study phase, although the transport costs will be lower, which will give an extra boost to change from road to rail. Trains of 740 metres length can transport eight to twelve containers extra, which results in 5 to 10 % cost reduction. If the Dutch network is not upgraded in time (2022), it will form a bottleneck on the Milan, Basel, Cologne – Venlo corridor.

Therefore it is a smart and much needed investment.

### 3.6 Cool Rail

On 6 May 2019 a new dedicated reefer train link between Spain and the Netherlands was opened, which can save up to 12.000 truck trips per year.

The Cool Rail service is a reefer only operation, three times a week between Valencia and Rotterdam in each direction. It is an initiative of Euro Pool System.

Each train carries 42 reefer containers.

By this initiative the reduction of CO2 will be approx. 15,000 tons per year.

Euro Pool is planning to establish new Cool Rail connections with Germany, Scandinavia and the UK.

The Euro Rail project is developed with a number of retail, fresh produce and logistic partners, including Shuttlewise, Bakker Barendrecht/Albert Heijn, Visbeen, Kloosterboer, DailyFresh, EasyFresh, Primaflor, Bollo, Agroiris, Fruveg, TobSine, Pozo Sur and Samskip.

## 4- The Silk Road by rail

### 4.1 China Railway

China Railway published in January 2019 her top ten achievements in the past years:

- *rapid increase in the amount of trains in operation.*

(in 2011 seventeen and in the first half of 2018 two thousand four hundred ninety).

- *large increase in goods transported.*

(for the outbound trips from single IT products to clothes, shoes, cars, grain, wine, timber, furniture, chemicals and mechanical equipment. For the inbound trips cars, automotive parts, mechanical equipment, daily commodities, food and timber).

- *successful establishment of the international railway cooperation mechanism.*  
(In April 2017 seven countries, China, Belarus, Kazakhstan, Mongolia, Russia, Poland and Germany, signed an agreement to deepen cooperation regarding freight rail service between China and Europe).
- *successful establishment of the domestic enterprise cooperation platform.*  
(In May 2017 this platform was launched by seven large train platform companies with as a result that those involved work more closely together).
- *Establishment of the transportation guarantee system framework.*  
(Connecting the Chinese rail network with 14 countries has been a success and transport times have been reduced in China by 24 hours and over the full length sections by 135 hours).
- *Establishment of the whole-course logistics service system.*  
(A uniform documentation centre and customer service centre were set up).
- *Big improvement in the convenience experienced by customers during the clearance process.*  
(Designated ports for specific goods, like for instance Chengdu for imported meat, were set-up. Furthermore cooperation with various Chinese administrative bodies was organised).
- *Cancelled restrictions.*  
(There are no more restrictions on parcel post. Furthermore electronic seal locks with tracking and electronic alarms were introduced).
- *Expanding the brand.*  
(in 2016 the “brand building scheme” was officially released by the body in charge of promoting the construction of the Belt and Road Initiative).
- *Operational safety has been guaranteed.*  
(Procedures were put in place to guarantee full safety management).

#### 4.2 Comparison of cost of rail versus sea transport.

The research company Drewry published in February 2019 for the first time in her maritime report the ERAI index (European Rail Alliance Index). Rail transport has achieved significant success in terms of cost reduction, compared with sea transport, although approx. 98 % of the trade volumes between Europe and China still account for sea routes. Freight charges for cargo ships will increase during 2019 and 2020, while the speed of rail traffic will increase. The forecast therefore is that rail traffic will grow the next years. A negative effect on the cost of shipping is the IMO 2020 regulation, a worldwide 0.5 % sulphur cap on fuel, lowering from the present 3.5 %. The cost for sea transport of a 20 ft. container will increase with USD 5.00/USD 20.00 and of a 40 ft. container with USD 10.00/USD70.00 depending on the destination. An advantage of rail transport is that the speed is increasing. Russian Railways is planning to reduce transit time from China to the west border

of Russia to seven days by increasing the speed from 1,150 km/day to 1,500 km/day, after completion of infrastructure projects.

This speed can be increased further by the use of faster border crossing, digital technologies, a unified regulatory framework with smart contracts, and the use of blockchain.

#### 4.3 Poland.

Research firm Roland Berger recently studied the New Silk Road and concluded that the main route is still via Brest – Malaszewicze, with a share of over 90 %. Due to the bottlenecks at the Malaszewicze border there are new alternatives emerging, but only a few of them are fully operational.

The city of Łódź in the centre of Poland, 310 km distance from the coast (Gdansk) and 300 km distance from the German border, will be a potential future Central and East European hub for logistics. Approx. 20 million people are living within a distance of 200 km from this city and the labour costs are low.

The Polish PKP Cargo is planning to establish a rail terminal in Łódź, which will be the largest terminal in Central and East Europe. One of the main reasons is that it is cheaper to transport a container, over a distance of 400 km, by train then by truck. Development of an underground rail system is already underway and a number of major companies are financing parts of the plans (a.o. DHL, General Electric, Philips, Bosch, Whirlpool).

Depending on the destinations in Europe, alternative entry points make a lot of sense. Furthermore Poland is investing in upgrades of its rail infrastructure. The Ukraine is an alternative, but as a result of the tension between Russia and the Ukraine, traffic via the Ukraine to the Slovak Republic has very low volumes. Many shippers and operators fear for delays and other problems on the route from Russia, via Ukraine to Slovakia. Also the customs handling between Ukraine and Slovakia has to improve. Although the volume of transport via Ukraine was growing till 2013, (32,000 TEU) it was going down very fast (8,000 TEU) in 2018.

Container traffic to Central and South-east Europe is shorter and cheaper via Ukraine. It is questionable if Ukraine can grow again as part of the main route to Europe, or not.

The Malaszewicze border can, at this moment, handle 14 trains per day. As soon as the improvements are finished (the main improvement is a bridge over the Bug River between Poland and Belarus, which is planned to be opened in 2025) the border crossing can handle 55 trains per day, according PKP Cargo.

#### 4.4 Kazakhstan

The border station between China and Kazakhstan is the Altynkol Station in Khorgos. From Khorgos there are rail connections to the south (Uzbekistan), to the Caspian Sea (the port of Aktau) and to Russia.

After the Chinese president Xi Jinping outlined his BRI plans in a speech during his visit to Kazakhstan in 2013, the infrastructure development programme Nurly Zhol started in Kazakhstan.

The steppe in Khorgos was transformed in a fully furnished border area, with

custom offices, container yards with modern cranes, terminals, reefer installations, warehouses, grain silo's and a new city, Nurkent, where employees and their families can live for free.

By using a digital system, the handling time for a train was reduced from 10 hours to 3 hours and 55 minutes.

Close to the station there is a special economic zone, a logistic zone and an industrial zone.

Investors do not have to pay taxes till 2035 and can lease land for free.

It is expected that the 600 permanent jobs at the moment will grow to 10,000 jobs in 2030.

#### 4.5 New Routes

##### 4.5.1 China – Europe via Rostock

In begin June 2019, the Italian terminal at Verona, the German port of Rostock and operator UTLC ERA, signed a memorandum of understanding, outlining the intension to cooperate on a multi modal route between China and Europe.

Containers will be transported from Verona to Rostock by rail and after that on a short sea route to the Russian Baltic port Kaliningrad. The containers will then continue on the main rail route to China.

The advantage is a shorter delivery time, because various bottlenecks are avoided.

##### 4.5.2 Vietnam – Belarus

In begin May 2019 Ratraco, a logistic subsidiary of Vietnam Railways and Belintrans (a subsidiary of Belarus Railways), agreed to launch a new rail freight link from Vietnam to Europe (and to Belarus in particular). All trains run via the Russian – Chinese border station Zabaykalsk.

##### 4.5.3 Central Europe - China

Rail Cargo Group from Austria tries to launch shorter connections from China to Central European countries, bypassing Duisport, the intermodal terminal at Duisburg, the most important hub for Europe at this moment.

The main route from China to Duisburg crosses the territory of Kazakhstan, Russia, Belarus, Poland and Germany. Rail Cargo Group (RCG) proposes new rail freight connections that bypass Belarus, Poland and Germany and run via Ukraine, Slovakia and other countries instead. This will allow the company to launch new, shorter routes to Austria, Hungary and even to Italy and Romania.

#### 4.6 Fully automated rail terminals

At this moment the fully automated rail terminal does not exist in Europe yet. According to Nils Kemme, director simulation to Hamburg Port Consulting (HPC), within 5 to 10 years several inland terminals will be fully automated.

In the USA there are already a number of those terminals, mainly because trains and terminals are much bigger then the ones in Europe.

Various manual operations can change in automatic operations, such as:

- full automation of rail cranes;
- automated gate operations, which is already in use for trucks.

The system has to register the container number, the position on the wagon and damages, if any.

In Italy (Busto Arsizio – Gallarate terminal), Austria (Wiencont terminal) and Germany (Duisport terminal) automation of various processes is already tested.

A very crucial factor is the governmental approval of automation of rail terminals, because safety

plays a big role. In fully automated terminals people are still walking around and if a person is not detected correctly by a machine, this can have fatal consequences.

#### 4.7 Paperless freight traffic

On 12 March 2019 the European Parliament proposed a new regulation for the digitalisation of electronic freight transport information.

The reason for this is the unclarity with regard to the recognition of the electronic consignment in the courts of individual member states.

The exchange of electronic information has to result in faster transit times, lower costs and more flexibility in rail freight transport. An electronic consignment note can be used through a centralised data bank, managed by Raildata, an international organisation of European Railway Undertakings, a special group of the International Union of Railways (UIC).

The electronic freight document applies within the jurisdiction of the region covered by the Convention concerning International Carriage by Rail (COTIF). This includes Europe, part of North Africa (Algeria, Tunisia, Morocco, Mauritania and Libya) and the Middle East.

The International Rail Transport Committee (CIT) is currently expanding its reach to also cover transportation between China and Europe.

#### 4.8 One uniform legal regime

At this moment there are two different legal regimes on the silk route:

- the CIM Uniform Rules in Europe;
- the SMGS Convention Rules in Russia, China and other Asian countries.

In order to avoid interruption of movement, delays, additional costs and administrative burdens, a uniform body of law for freight traffic by rail between Europe and Asia has to be constructed.

A political declaration on establishing a unified Eurasian railway transport law was signed in February 2013 by 37 countries.

An e-consignment note CIM/SMGS will be published in 2019, after which the participating countries have to study the documents and try to find an agreement. The CIT is playing the main role in this important process.

#### 4.9 Liability of combined transport

CIT, representing rail and IRU (International Road Transport Union), representing road transport, want to link the respective legal regimes on a contractual and legal level.

This should contribute to the reduction of legal and administrative obstacles in the multimodal transport and logistics chain.

Since 2017 CIT and IRU have been working on a comparison table as a working foundation for the harmonisation of road and railway transport law.

The aim of the final guidelines is to produce a coherent legal comparison between the international carriage of goods by rail and ditto by road.

Currently these modes of transport are covered by the legal frameworks of COTIF/CIM and SMGS for rail and CMR for road transport.

#### 4.10 Hydrogen as alternative fuel

Roland Berger Consultancy has investigated the market potential and barriers of hydrogen technology.

Trains with hydrogen propulsion are equipped with fuelcells producing electricity by a combination of hydrogen and oxygen.

It is expected that in 2030 approx. 30 % of all diesel driven trains can be replaced by hydrogen driven trains.

In various countries in Europe, Asia and North America this type of trains are already tested.

The main advantages of hydrogen as fuel are:

- the CO<sub>2</sub> reduction (zero);
- the costs;
- the efficiency.

Possible disadvantages are:

- the space necessary for the propulsion unit (30 % more);
- safety requirements (hydrogen is highly flammable);
- charging facilities;
- financing of new systems.

According to DNV-GL by 2050 18 % of the energy demand for ships will be hydrogen, starting with ferries and other vessels on routes where infrastructure is available.

A lot of investigation to safe and fast bunkering has to be carried out.

#### 4.11 User pays, polluter pays, principle

The European Commission has issued a new report on transport cost internalisation in 2019.

This report shows that rail transport excels in covering the variable infrastructure costs and externalities like air pollution, CO<sub>2</sub> and noise.

The internalisation of external costs is done in rail with smaller cost – coverage gaps in Euro per ton – km than in other modes, as it also is in passenger – km.

The Community of European Railway and Infrastructure Companies (CER) suggest a shift to rail would benefit citizens in Europe, because rail has a leading role in

externalities in general and special in carbon footprint, but also in infrastructure costs, noise and energy efficiency.

According to CER the climate action is a top priority for citizens, as recent elections in Europe have shown.

Policymakers should make development of rail transport a priority, so that more persons and goods can move in a sensible way.

#### 4.12 Postal transport

As a result of E-commerce there is a rising volume of packages between the continents and especially from China to Europe.

Those packages are postal items that used to be transported by ship or airplane. CIT initiated a pilot project on carriage of postal items from China to Europe by rail, in concert with the Coordinating Council on Trans-Siberian Transportation (CCTT) and the Universal Postal Union (UPU), in 2019. Together they introduced the use of the common consignment note for transcontinental carriage of postal items. This common CIM/SGMS consignment note is the first step towards a uniform body of law for Eurasian freight traffic by rail.

This has to result in less interruption of movements, entailing delays, additional costs and administrative burdens.

The common consignment note for general cargo is still far away, but this pilot project shall be continued for projects with regard to general cargo.

However, to ensure that the business model of carriage of postal items by rail succeeds, close cooperation between the states, postal offices and the railway companies involved will be necessary.

#### 4.13 Train delays reduction and reporting

The Rhine-Alpine corridor is the most frequented rail freight corridor in Europe. In 2018 there were almost a million minutes of delayed freight trains per month. For this reason the ELETA project was started, in order to calculate more precise data by using algorithms. All information is collected by the TIS platform from which the section can draw on the experiences of previous train journeys and delays from the past. With an increase of data also the accuracy of the ETA (expected time of arrival) data increases.

Although it will not reduce the delay of trains, it makes reporting the delays more accurate.

The main reasons of delays are scheduled infrastructure works, a lack of locomotive drivers, the delay of a previous train, technical problems, terminal issues or force majeure.

Five intermodal carriers have started to link information about the ETA of the train journey to their messages about the subsequent road transport. The projects include terminals in the Netherlands, Belgium, Germany, Switzerland, France, Austria and Italy. Twelve intermodal trains are now sharing their ETA figures on this basis, most of them on the Rhine Alpine Corridor.

#### 4.14 Safety of rail transport

PRIME, the platform for European infrastructure managers and the EU have published in 2019 their details for 2017.

Since 2012 the UK was the safest rail transport country in Europe and the majority of accidents were reported in Lithuania and Latvia.

In 2017 the Netherlands had the lowest number of train accidents like collisions of trains, derailments, accidents on road crossings and fires, in Europe.

According to the Union of Railways (UIC) the Netherlands, Switzerland and the UK are the safest countries. Although the Netherlands is the safest country, ProRail wants to replace rail-road crossings as much as possible by bridges or tunnels.

#### 4.15 European Union

The European Rail Agency (ERA) will be responsible for type approval of trains, safety certificates and certification of ERTMS. This was decided in June 2019 by the European Union. Also Switzerland as non EU member will follow this decision. This decision will stimulate the transport by rail. Another necessary step is of course harmonisation of legislation in all countries involved (as mentioned in paragraph 4.8).

#### 4.16 Dangerous goods

The rail transport of dangerous goods between China and Europe will be permitted before 1 January 2020.

The Chinese government is reconsidering the restrictions, with the aim of enabling export as well as import. This information was given in May 2019 by DB Schenker and the Chinese carrier BTE.

This is specially interesting for the transport of electric car batteries and other batteries to and from China.

### 5- The Maritime Silk Road

#### 5.1 Ports

##### 5.1.1. Gdansk

The port of Gdansk has announced in May 2019 that it wants to become the main gateway to central and eastern Europe. The central and eastern Europe region is expected to grow in GDP almost 50 % until 2030.

The natural hinterland of Gdansk is the Czech Republic, Slovakia, Ukraine, Belarus and Poland.

Approx. 33 % of container handling in Gdansk goes by rail (2017), which can increase to 50 %. In 2017 the rail transport to competitive ports was 46 % Bremerhaven, 43 % Hamburg, 33 % Willemshaven and only 10 % Rotterdam. The role of Gdansk as a European gateway is gaining importance again as a result of the BRI project and the Brexit problems.

At this moment a direct railway to Minsk (Belarus) is under investigation, because Klaipeda (Lithuania) is the largest competitor of Gdansk in the Baltic area.

Furthermore a direct railway to Zilina (Slovakia) is under investigation.

In Poland a total of 18,000 km of railway will be modernised in 2023 to improve the allowed speed (now 30 km/hour, EU average 40 km/hour, Germany 50 km/hour) and the allowed length of trains.

In the port of Gdansk three rail mounted gantry cranes were installed (2019), to replace the two rubber tired gantry cranes, the number of tracks will be extended from 4 to 7 (2020) and the maximum length of the tracks will be increased from 650 to 750 metres (2020).

In June 2019 the port of Gdansk announced a partnership with the port of Rotterdam.

A result of this partnership is the introduction of Navigate, a digital system developed by the port of Rotterdam. This online system allows customers to find the most convenient and fast rail, truck or sea connection to and from the port of Gdansk.

Currently, the Navigate solution provides information about connections for container traffic. The port of Gdansk offers customers a well-developed network of sea links all over the world.

In Europe, the harbour is connected with all states in the Baltic region as well as with Germany, the Netherlands, Belgium, the United Kingdom, Spain and Greece. In Asia, the port of Gdansk has eight links with China, two routes to South Korea and one link to Singapore and Malaysia. It is expected that the Navigate service will be extended for other types of cargo as well.

According to the port of Rotterdam this is a good opportunity in strengthening its position as the smartest port in the world.

Furthermore it optimises the potential of digital solutions; the more ports use the system, the more valuable the application becomes. The leading role in digital transformation will make the port of Rotterdam more efficient, reliable and competitive.

#### 5.1.2 Varna

The port infrastructure of the Bulgarian port of Varna (at the Black Sea) will be developed by China Machinery Engineering Corp. (CMEC) after a USD 135.5 million contract was signed with logistic Center Varna EAD in April 2019.

Varna will become the first modern port equipped with warehouse facilities in Bulgaria.

The overall project construction period will be 36 months.

#### 5.1.3 Southern European Ports

Southern European ports as Piraeus, Koper, Trieste and Barcelona have been growing significantly. In some cases, it can be explained by the investments made by the Chinese government (part of its BRI initiative). Due to such investments, these ports could become strong alternative gateways into Europe.

The ports of Hamburg and Rotterdam do not consider those ports as a threat, because of the better hinterland connections.

The main volumes enter Europe via the northern European ports, including Gdansk.

## 5.2 Increase in scale of containerships

The largest containerships sailing in 2019 were:

No.	Name	Capacity (TEU)
1.	OOCL Hong Kong	21,413
2.	COSCO Shipping Universe	21,237
3.	CMA CGM Antoine De Saint Exupery	20,954
4.	Madrid Maersk	20,568
5.	Ever Golden	20,000

In September 2017 MSC ordered a 23,000 TEU vessel, to be completed end 2019, begin 2020.

In the meantime COSCO has completed the design for a 25,000 TEU vessel. This design was inspired by the Made in China 2025 Strategy of the Chinese government.

The present generation of ultra large containerships have a length of 400 metres and a width of 59 metres.

The new COSCO design has a length of 435 metres and a width of 60 metres.

CMA CGM also ordered new vessels, nine 22,000 TEU newbuildings, with engines that can use LNG as fuel.

The environmental benefits of LNG compared to heavy fuel oil are:

- 25 % less CO2 emissions;
- 99 % less fine particles and sulphur emissions;
- 85 % less nitrogen oxides emissions.

The big question is: Is there a limit on how big container vessels can be?

At this moment some industry experts are of opinion that 50,000 TEU vessels will be sailing in 2067 or even sooner.

From a technical and naval architecture point of view there is no limit.

The present limits are:

- terminal infrastructure limits (longer waiting times for loading/discharging);
- loading/discharging cranes will have to have wide enough outreach and height;
- the maximum draft allowed at the terminal;
- the maximum length a terminal can handle;
- the restrictions of the Panama Canal and Suez Canal (width);
- torsion problems (increased length, with same width);
- more complex operational processes (placement, distribution and handling of the containers);
- price reduction as a result of increased cargo space;
- grounding as a result of larger drafts;
- fire fighting problems (fire is still one of the largest risks of container vessels).

In our opinion technically there is indeed no limit, but practically it has to be seriously investigated what the ceiling of this economy of scales is.

### 5.3 Shipping losses

The 2019 Safety and Shipping Review of Allianz Global Corporate and Speciality (AGCS) reported:

- Asia Pacific waters remain the top shipping loss region, accounting for 45 % of losses globally in 2018;
- 67 % of those losses were the result of submerging/sinking;
- There were 425 collision or contact incidents with the average costs of collision claims on container vessels (USD 840,000);
- Fires also continue to be an issue with 34 reported incidents over 4 years at a total cost of USD 50 million;
- There has been an increase in cargo fires on containerships, with a number of notable losses in 2018 and the first half of 2019;
- Machinery damage is a major cause, accounting for more than 33 % of the 26,000 incidents over the past decade and is one of the most expensive causes of marine insurance claims, over USD 1 billion in five years;
- Political risk has increased globally and poses a big threat to shipping security, trade and supply chains through conflicts, territorial disputes, cyber-attacks, sanctions, piracy and even sabotage;
- Piracy in Asia decreased but seriously increased in Nigerian waters.

### 5.3 Chinese dredgers

Two trailing suction hopper dredgers, Hang Jun 6008 and Hang Jun 6009, equipped with the most automatic dredging control system in the world, were delivered in May 2019 at Qidong. The vessels can work intelligently in different working conditions, improving the operation efficiency by 15 % compared with manual operation.

The vessels contribute to the development of the BRI Initiative and are part of the “Made in China 2025” strategy.

### 5.4 The Northern Sea Route

In Finland a self propelled removable ice breaking bow is designed by ILS. The first one will be built for the tug CALYPSO, owned by Alfons Håkans in Turku.

The ice cover in the Bering Sea is shrinking very fast (566,000 km<sup>2</sup> on 27.01.2019 to 193,000 km<sup>2</sup> on 03.03.2019). According to the national Snow and Ice Data Centre in Colorado the ice extent in the Bering Sea was at the seventh lowest on record.

The Russian shipping major Sovcomflot and gas producer Novatek, the Chinese COSCO Shipping and the Silk Road Fund, signed on 7 June 2019 an agreement related to transport hydrocarbons.

The parties established a long term partnership providing for the joint development, financing and implementing year-round logistic arrangements for cargo shipping from the Russian Arctic zone to the Asia Pacific region.

The companies will also organize transit cargo traffic along the Northern Sea Route between Asia and West Europe.

Maersk Line is reconsidering her decision made after the VENTA MAERSK test and is now exploring the cooperation with the Russian ice breaking company Atomflot, as a result of the growing demand of transport from the Far East to West Russia.

In her article on the Arctic Shipping Route, Mia Bennet wrote on 8 May 2019:

“Whilst of the world buries its collective head in the sand when it comes to climate change, there is one country that is preparing – paradoxically, somehow both ominously and optimistically – for a future that is several degrees hotter: China. The world’s largest nation sees a planet that is inevitably getting much, much warmer.

Even if the planet was to stop emitting all greenhouse gases today, those that already have been emitted into the atmosphere will still induce warming effects for years to come. Since we don’t appear to be doing much to limit our emissions, we are headed for a warmer world – one where the Arctic ice cap may be gone in summer by 2050, and possibly even sooner.

The only country that seems to be ready for that reality is China. In its Arctic Policy, released in January 2018, China calls the trans-Arctic passage the “Central Passage”. It is not referenced in any dramatic way. In that matter-of-fact, this-is-how-the-world is tone characteristic of Chinese policy documents, the policy notes, “The Arctic shipping routes comprise the Northeast Passage, Northwest Passage, and the Central Passage”. The strategy also mentions the Polar Silk Road, which is often viewed as synonymous with the Northern Sea Route. But keep in mind that the strategy notes that by cooperating with other stakeholders, China aims to “build a ‘Polar Silk Road’ through developing the Arctic shipping routes “- plural likely intentional”.

For the full text of China’s Arctic Policy 2018 in the English language we refer to:

[http://english.gov.cn/archive/white\\_paper/2018/01/26/content\\_281476026660336.htm](http://english.gov.cn/archive/white_paper/2018/01/26/content_281476026660336.htm)

The conclusion of this 10 page document is: “China is ready to cooperate with all relevant parties to seize the historic opportunity in the development of the Arctic”.

## 5.5 Autonomous Shipping

In the period 5 – 14 June 2019 the 101 st Maritime Safety Committee (MSC) of IMO took place.

During this meeting a set of guidelines for the conduct of autonomous ship trials (MASS) was approved.

The guidelines say that trials should be conducted in a manner that provides at least the same degree of safety, security and protection of the environment as provided by the relevant instruments.

Risks associated with the trials should be appropriately identified and measures to reduce the risks, to as low as reasonably practicable and acceptable, should be put in place.

Furthermore MASS gives guidelines for:

- qualification of personnel involved;
- cyber risk management;
- safety of ships in polar waters;
- piracy;
- E-navigation.

MASS (Maritime Autonomous Surface Ships) is only an initial set of guidelines, specially for safety, security and protection of the environment.

## 6 - Hyperloop

The Dutch province Noord Holland has decided to cooperate with Hardt Hyperloop and will investigate the possibilities of the system and the feasibility of the system within the existing infrastructure.

In the meantime Hardt has a 380 metres test-tube in Hilversum (NL), realised by Voestalpine RailPro, Strukton and ProRail.

On 21 July 2019 the new hyperloop capsule Atlas 2 of Hardt will be tested in Los Angeles in the Space X Hyperloop Pod Competition and will try to achieve a new speed record (present world record 467 km/hour).

## 7 - Blockchain

Norwegian G2 Ocean (Gearbulk and Grieg Star), conducted a successful pilot of a blockchain based solution in April 2019.

According to the two companies the time of paper bills of lading is over.

Shipments from China to Peru using Cargo X blockchain improved data security and cost optimisation .

The Smart B/L system of Cargo X is an open, neutral smart bill of lading platform for shipping and runs as a decentralised system for sending documentation.

Cargo X said: "The system stores documents and data encrypted on a public globally accessible blockchain, and companies don't have to implement new infrastructure. The network offers the benefit of data and document transactional history, so analytical tools and online archives are always available. This new approach prevents delays and business damage or loss, demurrage and other costs, it provides a level of safety and reliability never seen before in the business world".

Also according to G2 Ocean this new approach prevents delays and business damage or loss, demurrage and other costs. In addition, it provides safety and reliability for users.

TradeLens, a blockchain-enabled digital shipping platform, developed by Maersk and IBM, is now joined by CMA CGM and MSC (May 2019).

On 6 June 2019 a Memorandum of Understanding was signed by Maersk and the Russian government to launch blockchain in Russia, with a pilot plan in the Port of St. Petersburg, Russia's main container port.

A digital platform DCSA (Digital Container Shipping Association), is studying on standardised data.

Members are all deep sea carriers, except COSCO/OOCL (source Loadstar 20.06.2019).

Chain manager blockchain at RDM Knowledge Centre Sustainable Port City Rotterdam, Klara Paardenkooper, is considering blockchain technology, as a realistic solution for rail freight, as she explained during a workshop on 28 March 2019 at the Freight and Terminal Forum in Utrecht.

According to her the power of blockchain is that it can create trust between parties through the security of the transactions and it is therefore extremely suitable for the rail sector, specially the New Silk Road, where many parties have to work together, and where there is a lot to gain in terms of efficiency, speed, safety and costs. For some problems there are better solutions than blockchain. Various frameworks have been developed to investigate whether people need it or not, and if so, which type is required. Blockchain is primarily a solution for data exchange, document digitalisation, tracking and tracing, smart contracts and supply chain finance.

Maritime Blockchains Labs (MBL), founded by BLOC and LRF explore the use of blockchain in tackling the significant risks and challenges associated with the declaration and handling of dangerous goods. According to the Cargo Incident Notification System (CINS) almost 25 % of all serious incidents on board of containerships were attributable to misdeclared cargo.

MBL explores the use of digital tools for traceability of dangerous goods, with the ultimate goal: reducing incidents.

A prototype to assess the potential for distributed ledger technology (DLT) will be build and tested.

The test project will run until September 2019 (source: World Maritime News – 26.06.2019).

## 8 - Concluding Remarks

During a two day top meeting regarding BRI, in the presence of various government leaders (Poetin, the premiers of Italy and Greece etc.) president Xi Jinping stated:

- that BRI will comply with the highest financial and environmental requirements;
- that China is helping third world countries with the debts to China.

During this top meeting China signed contracts for a value of USD 64 billion with various countries.

During a three day visit to Italy, starting 22 March 2019, president Xi Jinping signed a large number of contracts with the Italian Government and Italian private companies.

The European Union and the USA are not happy with this because it can drive a wedge between Italy and other EU countries and between the EU and USA.

China and Italy signed a Memorandum of Agreement regarding BRI.

Also Luxembourg signed an agreement with China end March 2019, with regard to the BRI project.

A new study by global economic consultants Centre for Economics and Business Research (CEBR) in the U.K. estimates that the global economic impact of the Belt and Road Initiative is likely to boost the world GDP by USD 7.1 trillion per year by 2040.

China will be the largest economy in 2040. The next large impacts of the GDP are in the USA, Russia, Japan, Indonesia, Korea, UK, India , the Netherlands and Pakistan (Source Mar Ex 30 May 2019).

How the USA and EU (or what is left of it) will react in future is very interesting to follow.