

#### THE SCHOLAR: A NATURAL DEVELOPMENT FOR THE INDUSTRY

Professor Johan Woxenius believes that co-ordinated logistics can squeeze costs and raise the level of service for the forest industry.

#### INFRASTRUCTURE MINISTER PREFERS CLIMATE SMART EXPORTS

Sweden's Minister for Infrastructure Tomas Eneroth believes the new shipping company fits well with both climate and export goals.

#### WALLENIUS AND SOL SIGNS AGREEMENT

Read about the joint venture that is about to conquer services with vessels from Swedish and Finnish ports in the Gulf of Bothnia.

#### ENVIRONMENTALLY SMART FLEET

The new ships will be the highest ice classified RoRo vessels in the world that runs on LNG and have a dead weight of 27,000 tonnes each.



NEWS FROM **WALLENIUS SOL**

# The Enabler

Editorial. A collaborative cargo fleet

## “This is why our new shipping company will be a success”

What began as an idea in a port in Kotka has now, after ten years, resulted in a completely new Swedish shipping company. The ambition is to secure long-term infrastructure for the industry in the Gulf of Bothnia.

DAN LJUNGSVIK



The tiny seed of what is now the newly formed WALLONIUS SOL started to sprout some ten years ago. Ragnar Johansson, the then newly appointed CEO of SOL North Europe Service, started to study how transport services looked within the forestry industry. Soon he noticed a specific pattern. “When visiting Finnish Kotka,

I saw two small RoRo vessels lying side by side. They both had products from the forestry industry in the hold and the same final destination, Bilbao in northern Spain. It did not seem optimal.”

RAGNAR QUICKLY NOTED that the flows from the forestry industry in Sweden and Finland follow a clear pattern. All stakeholders ship to the same three main areas in Europe:

“What we wish to achieve now is a new efficient infrastructure for the Gulf of Bothnia and the Baltic Sea over the next few decades.”

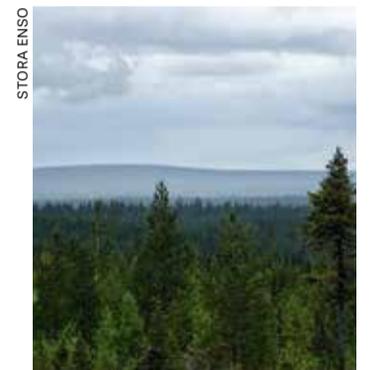
Ragnar Johansson, CEO WALLONIUS SOL

Northern Germany, the ARA area (Amsterdam, Rotterdam, Antwerp) and England, but to slightly different ports and terminals.

“I thought that this must be possible to coordinate in a better way and ever since then thoughts about developing a solution have been on my mind. A few years ago, we noted that an opportunity for change

Continue reading on page 02

#### Dialogue. The great joint action



Tough challenge. The region suffers arctic conditions four months of the year.

#### The forest industry comes together

Forest company Stora Enso is one of the companies entering into a shipping agreement.

“Our challenge to sourcing materials in the northern part of Scandinavia consists of both the distance and the conditions in the area,” says Knut Hansen, Senior Vice President at Stora Enso.

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#### The new service. Doubling of frequency



Nine initial ports. As more customers connects, more ports and vessels can be added.

#### Gulf of Bothnia gets a new infrastructure

Nine ports, of which five are in the Gulf of Bothnia, are initially included in the service. The Swedish and Finnish ports are situated adjacent to the major mills. Logistics hubs on the continent offer a combination of paper terminals and northbound exports. When fully developed, the shipping company will offer traffic with at least two departures per week to and from each port. Read more about the ports on page 04

#### The new ships. Record-breaking ice classified ships running on LNG



KNUD E. HANSEN SHIP DESIGN

#### Eco-smart giants on the way

Up to four new ships will be built at the highly regarded shipyard CIMC Raffles in China.

When the ships are ready in 2021, they will be the world's largest RoRo vessels with ice class 1A Super. They are built to give the highest environ-

mental performance with engines that basically eliminate particle emissions while also considerably reducing emissions of greenhouse gases.

Read more about the unique vessels and the challenges that naval architect Carl-Johan Söder and his colleagues faced when they took on the task of designing the ships. Page 03

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Editorial.   
Continued from page 01

## “Our many similarities match each other”

Ragnar Johansson about the companies Wallenius and SOL

will arise in 2021. Several charter and terminal contracts will expire and there is also a need to update the fleet in the Gulf of Bothnia. No vessels adapted for the forestry industry have been built for at least 15 years,” he points out.

With insights combining with a time for a possible change, SOL started to sketch out a solution. A key to changing old structures was building new ships; in order to increase efficiency large vessels are needed.

“We realized that this was not something we could solve ourselves. We therefore contacted Wallenius who have the knowledge and experience we were looking for. It is also important to find a long-time companion that we can enter partnership with, and we knew that Wallenius had previously done this. In addition, we have many similarities that mean that we match each other: both parties are privately owned, have a long-term approach and, we like industrial shipping.”

WALLENIUS AND SOL have now worked intensively together for one and a half years. April 12, 2019 was the start date for the new company WALLENIUS SOL, which is now owned in equal parts by Wallenius and SOL (Svenska Orient Linien).

“It feels really good now that we are up and running and we have quickly received very positive feedback from a lot of people in the business,” says Ragnar Johansson.

THERE IS NO DOUBT that a long-term infrastructure for the industry in the Gulf of Bothnia and the Baltic Sea region is a future investment. The forest is a raw material for the future. Wood fiber is recyclable and can soon be used for as many different purposes as oil. Forestry companies are moving further north, as the raw material is there, but they also need effective shipping solutions as it is a long way between the northern Bothnian Bay and the continent.

“What we wish to achieve now is a new efficient infrastructure for the Gulf of Bothnia and the Baltic Sea over the next few decades. No stakeholder has been able to do this alone, but this is something we create and develop together with our customers,” says Ragnar Johansson. ■

### Ragnar Johansson in brief

**Name:** Ragnar Johansson  
**Title:** CEO WALLENIUS SOL

**Age:** 58 years

**Family:** Married to Anette for thirty years. Two children, Daniel and Anna.

**Leisure time:** Is preferably devoted to being in Mollösund and the surrounding area, ideally on the water.

**Background:** Born and raised in Mollösund on the Swedish west coast. Went to sea at the age of 17, studied to sea captain and graduated in 1986.

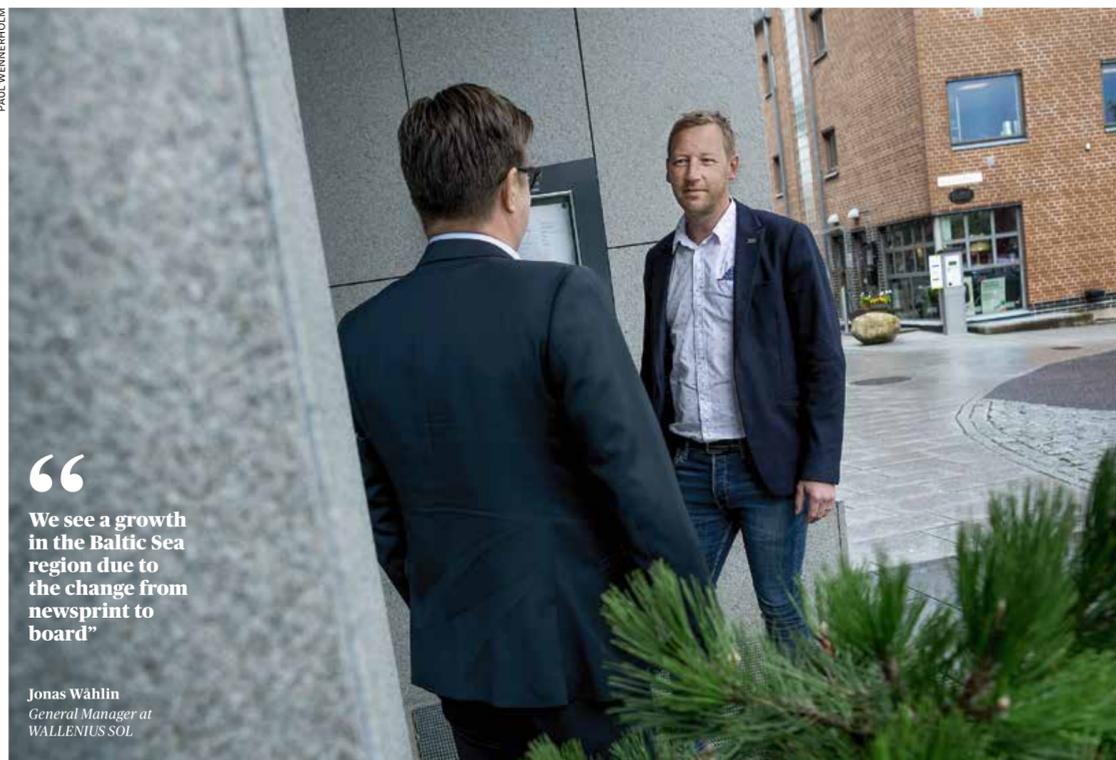
Worked as a mate for a number of years. Responsible for the construction of new port facilities for Stena Line in 1994 and then responsible for all ports and termi-

nals in Stena Line's Scandinavian ports. Continued as line director for several of Stena Line's lines between 1998 and 2008 before becoming head of Stena Line's Scandinavian Ship management. In 2009 he became CEO of SOL North Europe Service and in 2014 group managing director of Svenska Orient Linien AB.

He has also been a member of the Swedish Shipowners' Association's board since 2010, and chairman from 2016 to 2019.



## Collaboration. Two actors with unique strengths



“We see a growth in the Baltic Sea region due to the change from newsprint to board”

Jonas Wählin  
General Manager at  
WALLENIUS SOL

Left: Jonas Wählin, General Manager, WALLENIUS SOL, on his way to a meeting. Right: The new ships will be built for the highest possible environmental performance and will run on LNG.



## Two major players: “Together we are stronger”

WALLENIUS SOL operates a service with RoRo vessels from Swedish and Finnish ports in the Gulf of Bothnia to the continent and England. Behind the joint venture are Wallenius Lines and Svenska Orient Linien, SOL.

“Together we are stronger,” says Jonas Wählin, General Manager at WALLENIUS SOL.

A new shipping company has been formed. Through the venture both parties, Wallenius Lines and SOL, want to expand the infrastructure in the Baltic Sea for Swedish and Finnish base industry. Initially the newly formed shipping company has focused on customers within the forestry industry. Stora Enso, Metsä Board and BillerudKorsnäs are on the list of customers. In the Gulf of Bothnia WALLENIUS SOL is the first actor to deliver a truly industrial and commercial solution for transporting paper.

“Historically all forestry companies have had their own systems and ships. This was a good idea at a time of increasing volumes. Now that the demand for newsprint has fallen dramatically,

many have turned their focus to packaging board. As this involves lower volumes, the companies benefit from co-loads. At the same time, we have to consider the competitive situation that prevails between the different forestry companies,” says Jonas Wählin, General Manager, WALLENIUS SOL.

Jonas knows the industry well. Back in 1998 he took employment with Stora Enso to work internally with line operations. When the company transferred its operative shipping to SOL in 2009, Jonas chose to move with it.

“We see a growth in the Baltic Sea region due to the change from newsprint to board. There are very large investment plans among the forestry companies that will ensure large volumes for a long time to come. Cardboard require fibers from slowly growing trees. The northern region is optimal for the purpose. There is hardly anything up in the north but spruce trees,” says Jonas Wählin.

AS SOL HAS OPERATED line traffic in the Baltic Sea since 2009, they bring good customer relations and valuable market know-how into the new company. It is not unusual that the cold weather, with ice cover for four months of the year, disrupts the traffic. If a journey takes 48 hours in the summer, then it can take up to 60 hours in the winter.

“Since the customers are looking for a reliable service, we prepare for traffic disruptions during the winter. The forestry industry is particular in that the loads are both heavy and sensitive. We therefore create the right conditions to deliver with high quality,” says Jonas Wählin.

That WALLENIUS SOL now creates a service

“

Both SOL and Wallenius are experts on industrial shipping and we complement each other well.”



Anders Thyberg  
Senior Vice President at  
Wallenius Lines and board  
member of WALLENIUS SOL

that the customers want is no coincidence. There are many ships that will shortly exit their charter, and several agreements for terminals are about to end. At the same time large investments are being made in the region.

“In five years, it would have been too late. But we, together with our customers, have identified the right situation. However, we could not have done this on our own. We needed a partner with experience of industrial shipping that can build environmentally smart RoRo vessels. The joint venture between Wallenius and SOL is a partnership that will work out well as we have the same view of how we wish to operate,” says Jonas Wählin.

WALLENIUS HAS VAST experience of partnerships with equal ownership. Among others, they co-own Wallenius Wilhelmsen ASA together with the Norwegian maritime industry group Wilh. Wilhelmsen and also co-own United European Car Carrier together with Japanese NYK.

“We are used to long-term partnerships where collaboration creates unique strengths. The investment in WALLENIUS SOL is something we believe strongly in. We can contribute with our expertise in an extremely interesting industry,” says Anders Thyberg, Senior Vice President at Wallenius Lines and board member of WALLENIUS SOL. He continues:

“Both SOL and Wallenius are experts on industrial shipping and we complement each other well. In this collaboration SOL primarily contribute with commercial and operational knowledge. Our competence within ship design, new build-

ing, shipowning including financing, and efficient ship management will contribute to the success of WALLENIUS SOL.”

WALLENIUS HAS, for some time, been on the leading edge in terms of designing and building environmentally smart vessels. During the last 25 years they have built some 70 RoRo vessels.

“Of course, everyone claims to think about the environment. The fact is that Wallenius was early with the insight that environmental sustainability also benefited financials,” says Anders Thyberg.

Initially the service will traffic the Gulf of Bothnia with five vessels, but within a few years up to four of these will be replaced by newly built vessels. To minimise the risks of traffic disruptions even during difficult ice conditions, the vessels will have the highest Swedish-Finnish ice class 1A Super. The vessels will be 240 metres long and will be built to the highest possible environmental performance with LNG operation. They will be as efficient and adapted to the environmental requirements that prevail today as in 35 years from now. They will be prepared to run on fossil-free fuels, such as biogas. The new vessels have double the capacity compared with today, with less environmental impact.

Fully developed, WALLENIUS SOL's service will offer traffic with at least two departures per week to and from each port.

“For individual customers this will mean strengthened competitiveness and we hope that many more will follow. Together we facilitate each other's success,” says Jonas Wählin. ■



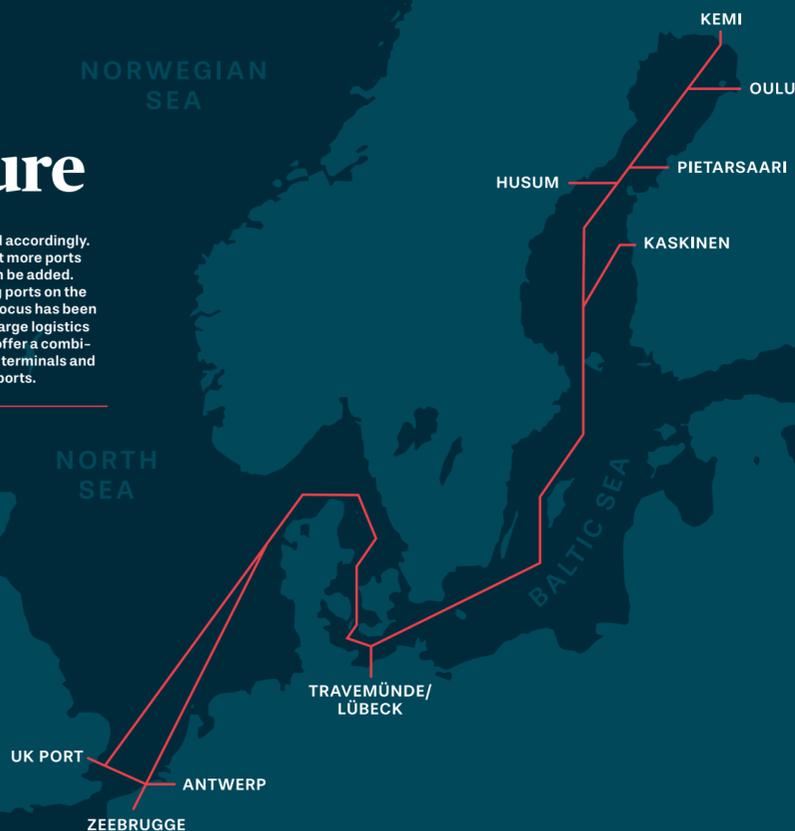
THE NINE PORTS

# A scalable infrastructure

WALLENIUS SOL's new service initially encompasses nine ports, of which five are in the Gulf of Bothnia. Today, the ports serve the Swedish and Finnish forest industry and are situated adjacent to the major mills. As more customers connect to the infrastructure the capacity

will be adjusted accordingly. This means that more ports and vessels can be added. When choosing ports on the continent, the focus has been on identifying large logistics hubs that also offer a combination of paper terminals and northbound exports.

MORE INFO: WALLENIUS-SOL.COM



## The ports in brief

- **KEMI**  
Stora Enso and Metsä Board have two large mills here. This is also a port for the mining and steel industries. To the north there are other industries that are reached via Kemi, which makes it a hub north of the Arctic Circle.
- **OULU**  
In Oulu Stora Enso has a paper mill where large investments in board production have been made for the future. Oulu is a large university town, with a number of chemical and plastic industries in the immediate area.
- **PIETARSAARI**  
In Pietarsaari there is a large pulp mill and a paper mill that belongs to BillerudKorsnäs, both located in the area. The region is home to a large number of other industries within plastics, chemicals and steel.
- **KASKINEN**  
Metsä Board has a pulp mill in Kaskinen, which actually is Finland's smallest town. In time there may be other types of cargo in Kaskinen, as there are several larger towns within the catchment area to the south.
- **HUSUM**  
In Husum there is a mill port that exports paper and board. Metsä Board has invested in a new paper mill to convert from fine paper to board. The long-term ambition is to bring together a combination of forestry products and other goods in the cargo.
- **TRAVEMÜNDE/LÜBECK**  
A major shipping hub. Historically Travemünde/Lübeck has been the primary port for Sweden and Finland for transport further into Europe. Transloading to road or rail for continued transports to the east and south occurs here.
- **ANTWERP**  
Historically a large forest distribution to Benelux, France and Spain. One of the largest ports in Europe for goods that are destined for Asia. Large parts of the world can be reached from the port in Antwerp.
- **ZEEBRUGGE**  
A major paper hub. Stora Enso built its terminal in Zeebrugge in 2000. Zeebrugge is situated close to the sea, which gives a short approach to the port. Many trailers and containers go from Zeebrugge to England and Denmark. There are also rail connections here.
- **UK PORT**  
England is generally a large paper importer. Stora Enso, BillerudKorsnäs and Metsä Board have volumes destined for the English market. A large part of the paper consumption occurs in southern and central parts of England.



SHUTTERSTOCK

# Collaboration on solid ground

The type of constellation that WALLENIUS SOL represents is a natural further development in shipping, according to **Johan Woxenius**, professor at the Gothenburg School of Business, Economics and Law. Demands on new technology and improved economy result in collaborations and long contracts.

Photo: Carina Gran



The shipping company WALLENIUS SOL and its agreements with several suppliers constitutes a new chapter in the history of shipping on the Baltic sea. This forms a solid foundation, according to Johan Woxenius, professor of Maritime Transport Management and Logistics at Gothenburg School of Business, Economics and Law. "The previous collaboration between Stora Enso and SOL is well established and based on good relations. It would have felt

more uncertain if it had been a completely new player who attempted to establish themselves," says Johan Woxenius. HE BELIEVES THE fact that the forestry industry is now coordinating its logistics in this way is a natural stage of development, pointing out: "In earlier years forestry companies did not have many opportunities to compete on product price. Instead, they had to distinguish themselves from their competitors with the help of logistics solutions."

“In earlier years forestry companies did not have many opportunities to compete on product price. Instead, they had to distinguish themselves from their competitors with the help of logistics solutions.”



Johan Woxenius Professor at the Gothenburg School of Business, Economics and Law

Another factor that may have had an effect, according to Johan Woxenius, is the Competition Act. Forestry is a very concentrated industry, and there may have been restrictions to how close companies actually could collaborate. "However, it is expensive to have your own transport systems, and new demands on for example sustainability require long time horizons and major investments in new technology. Collaboration and writing long contracts open the door for new investments while simultaneously pressing costs and raising the level of service," says Johan Woxenius.

LONG CONTRACTS WITH purchasers and sellers are common within shipping. This usually results in a win-win situation for both parties, not least by making it easier to predict the actual costs. "For logisticians, long contracts with large flows are the dream. Partly by being able to lower unit prices, but also by reducing the risks," concludes Johan Woxenius. ■

The politicians. A welcome alternative

## A boost for Sweden

From a political perspective, on both regional and national levels, the new shipping company WALLENIUS SOL is a welcome addition to the transport industry. The investment in traffic between the Gulf of Bothnia and European ports fits well with both climate and export goals.

“I am passionate about the development of Swedish shipping and the industry players have already set ambitious goals for themselves.”

Tomas Eneroth Minister for Infrastructure



KRISTIAN POHL/REGERINGSKANSLIET

The shipping and export initiative that the new shipping company WALLENIUS SOL has started is a boost for both the region around Gulf of Bothnia and for Sweden as a whole. "A new shipping company is welcome. There is a positive development within Swedish shipping, with an increased number of vessels under the Swedish flag. This is fully in line with the government's ambition to increase the share of goods transported by sea. We are an export dependent country, and exports must take place in a climate smart way," says Minister for Infrastructure Tomas Eneroth (The Social Democrats). He believes that more options for transport to global

“If we can get more stops and other companies to choose shipping this would of course be positive.”



Anna-Britta Åkerlind City councillor in Örnsköldsvik

markets, and access to ports for the whole country, are important factors for successful exports. To reach climate targets is also important. "I am passionate about the development of Swedish shipping and the industry players have already set ambitious goals for themselves. In terms of new investments, we see that LNG and increased electrification are in focus. We will multiply navigable channels, and double research and development funds to strengthen Swedish shipping," adds Tomas Eneroth.

FOR THE MUNICIPALITIES along the Norrland coast a new shipping company will strengthen the region. "Metsä Board is an extremely important company for the

municipality and an important base for employment. Operations are based in the old MODO Group, which is something of an emotional core for us," says Anna-Britta Åkerlind (The Center Party), city councillor in Örnsköldsvik. "A stable owner who invests long-term in the business is a good initiative for Örnsköldsvik. Long agreements signal persistence from both purchasers and sellers. The bio-economic cluster we are building in the municipality is a part of the future industry, with products from the forest that will be important for the fossil-free society. It is also positive to strengthen shipping, as we have the aim of moving as much as possible of transport by road to railway and shipping."



Metsä Board Husum mill site in Sweden.

ANNA-BRITTA ÅKERLIND is happy to see the further development of both shipping and ports along the Norrland coast. "If we can get more stops and other companies to choose shipping this would of course be positive." ■

METSÄ BOARD

# “We compete with our products, not our logistics”

The renewable materials company **Stora Enso** has been working with Svenska Orient Linien (SOL) for over ten years. The new WALLENIUS SOL shipping company enables a more sustainable and economic way of shipping, from the Baltic sea and the Gulf of Bothnia.

Photo: Stora Enso, BillerudKorsnäs & Shutterstock

**S**tora Enso Senior Vice President **Knut Hansen** welcomes the new constellation on the market. He sees the advantages of combining the experience from SOL with the muscle and technical expertise of Wallenius, and believes that by cooperating in transport the companies can reduce the fluctuations in the demand for transport – thereby achieving a more even logistics chain.

Knut Hansen looks forward to cooperating with competitors: “We compete with our products, not with our logistics. This is a situation where everyone wins”.

The economies of scale with larger, flexible ships in combination with LNG propulsion contribute to the triple bottom line and Stora Enso's sustainability goals.

**STORA ENSO IS A** global company, operating in renewable materials such as pulp, paper, packaging and wood.

The company produces over 15 million tonnes of pulp, paper and board annually and their own mills and production facilities produce roughly

“**Stora Enso's challenge to sourcing materials in the northern part of Scandinavia consists of both the distance and the conditions in the area.**”



**Knut Hansen,**  
Senior Vice President  
at Stora Enso



five and a half million cubic metres of sawn wood-en products every year.

Knut Hansen knows there are big challenges facing operations in this area.

“Stora Enso's challenge to sourcing materials in the northern part of Scandinavia consists of both the distance and the conditions in the area,” he says, continuing:

“Not many people know this, but the shipping distance from the Gulf of Bothnia to Great Britain is the same as from Canada to Great Britain.”

To make matters worse the area suffers arctic

conditions four months of the year. But the transports still need to be on time, and shipping stands for the majority of these transports, especially those from the Finnish forests.

**THE NEW VESSELS**, with ice class 1A Super, can traffic the area all year round, and the scale of the vessels enables the possibility of sharing a sustainable transport solution for both the paper and the pulp industries, as well as the rest of the raw-material based industries, for a long time to come. ■

## Forestry companies in brief



### Stora Enso

Stora Enso is a renewable materials company, developing and producing solutions based on wood and biomass for a wide range of industries and applications all over the world. Its solutions are found in segments such as building, retail, food and beverages, manufacturing, publishing, pharmaceuticals, cosmetics, confectionary, hygiene and textiles.

■ 26,000 employees in over 30 countries  
■ Sales in 2018: EUR 10.5 billion



### BillerudKorsnäs

BillerudKorsnäs is a Swedish forest industry company established in November 2012 through the fusion of Billerud AB and Korsnäs AB. It develops and sells cardboard for food and consumer packaging. It also sells kraft liner for the manufacturing of corrugated cardboard and develops, designs and manufactures new fibre based kraft and sack paper.

■ 4,400 employees  
■ Sales in 2018: EUR 2.3 billion



### Metsä Board

Metsä Board is a leading European producer of premium paperboards, including folding boxboards, food service boards and white kraft liners. Its light-weight paperboards are based on pure fresh fibres and are developed for consumer goods, retail-ready and food service packaging. It focuses on creating even lighter and better paper-board solutions for brands of the future.

■ 2,350 employees  
■ Sales in 2018: EUR 1.9 billion

The forest. In the region and in the world

## Regional and national impact of the Forest Industry

Industries based on raw materials is **essential for the Nordic economy**. It provides both employment and development, especially outside the major cities and urban regions. The forests are also a major contributor to reducing carbon dioxide in the atmosphere.

**T**he Swedish and Finnish forest industry exports paper, pulp, and timber products at the combined value of approximately €26 billion annually. Together they are the largest exporter of paper, pulp, and timber in the world.

The forest industry in the two countries employs about 280,000 people, directly and indirectly. Together with other raw material-based industries they are major employers in sparsely populated areas otherwise threatened by

unemployment and depopulation. They contribute to a vitalization of a large part of the northern rural areas in both Sweden and Finland. Tax revenue from these industries helps to finance local social services and infrastructure for the inhabitants.

**THE FOREST INDUSTRY** is a very important part of the Nordic economy, especially considering that the net export is higher than the net export of the manufacturing industry, in that the raw

**70%**  
of Sweden's land area consists of forests.

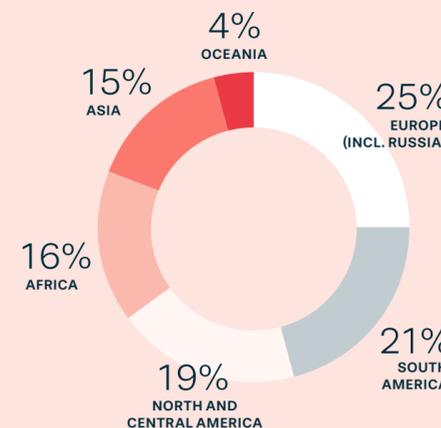
materials grows in the area. The forest industry is literally a “growing” industry and an industry looking towards the future with new bioeconomy products in the form of bioenergy, biofuels, biochemicals and textiles.

**THE NORDIC FORESTS** also act as a carbon dioxide sink. 70 percent of Sweden's land area consists of forests. 80 percent of that area is intended for forestry and the remainder is protected. Only 1 percent of the forests intended for forestry is harvested each year, and for every tree removed at least two new trees are planted to preserve the forests. This reforestation is contributing to a massive reduction in atmospheric carbon.

The Swedish forests grow by an average of 120 million cubic metres every year. This contributes to storing 140 million tonnes of carbon dioxide every year, which is twice the total carbon dioxide emissions from Sweden. ■

## The world's forests in numbers

The total forest area in the world:  
4 billion hectares



## World leading exporters 2017 Pulp, paper and sawn timber products

Legend: Pulp (red), Paper (orange), Sawn timber (white). (Converted: factor 2 m<sup>3</sup>= 1 tonne has been used)

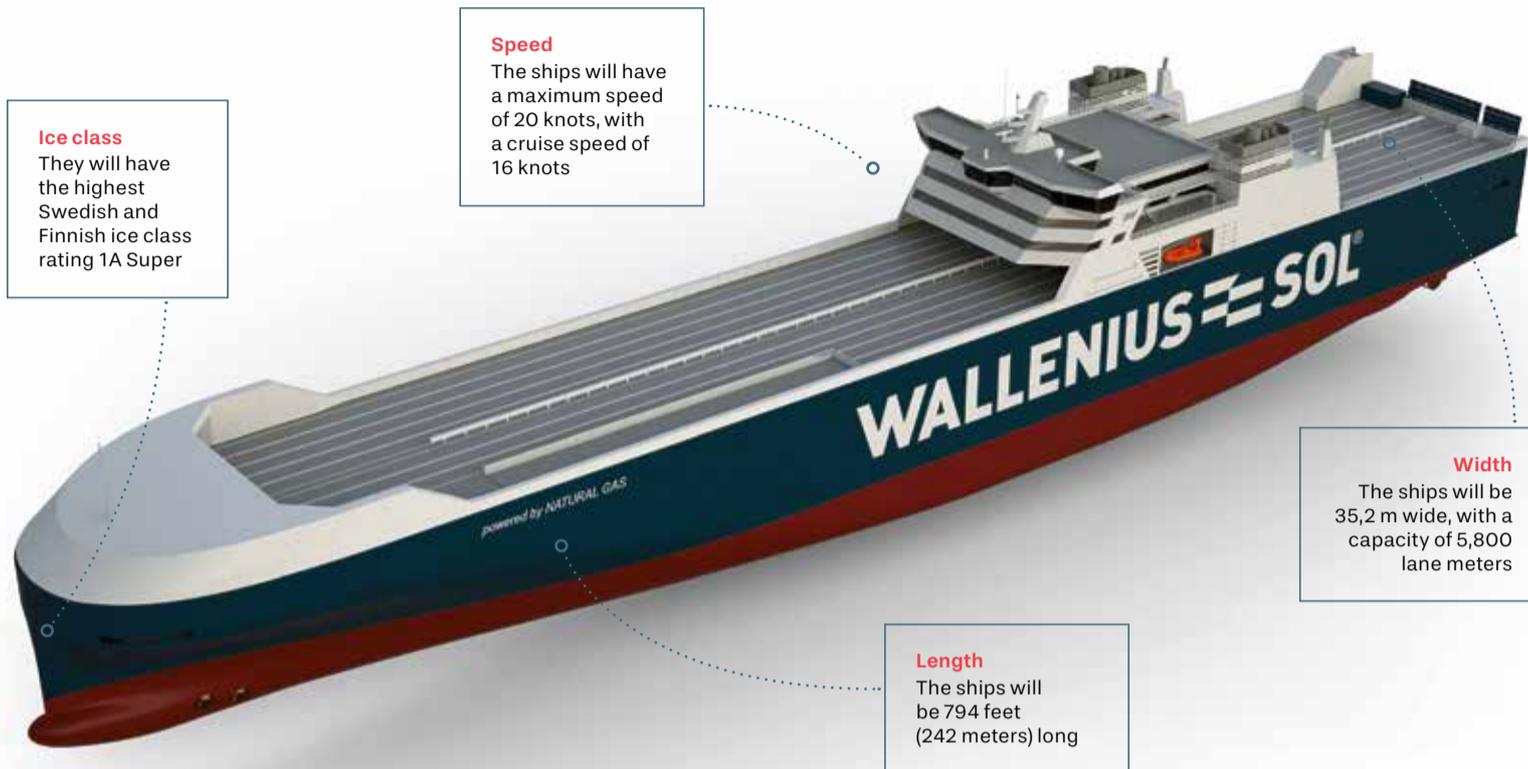


Source: Swedish Forest Industries Federation, CEPI, Fastmarkets RISI, FAO, National Associations

## The new ships. Environmentally smart giants

08

The new vessels. In numbers



# The world's biggest RoRo with LNG and ice class 1A Super

Wallenius Marine are planning for a unique kind of green RoRo ships. When the ships are **launched in 2021**, they will be the world's first mega RoRo with ice class 1A Super and eco-smart LNG. The engines, which basically eliminate particle emissions, also considerably reduce emissions of greenhouse gases.

Photo: Olof Holdar Illustration: Knud E. Hansen Ship Design

The starting point was a brainstorming session to discuss size, machinery and ramp systems. "We drafted up different concepts in CAD at an early stage. But we also used simpler methods. We built a model of the ships' loading ramps with pieces from a shoebox," says Carl-Johan Söder, Naval Architect at Wallenius Marine.

WALLENIUS SOL'S OPERATIVE team, led by Jonas Wählin and Martin Carlweitz, listed the prerequisites. How much

should the ships be able to carry? What would the weather conditions be on route? It turned out that everything about the new ships – which would transport standard paper cassettes, containers and the extra-large containers of the pulp industry – was unique.

IN THE WINTER the temperature in the Gulf of Bothnia can drop to minus 35 degrees Celsius and produce troublesome ice banks.

"The cold and the ice put extreme demands on the hull, propellers and indoor climate, which have to work



Carl-Johan Söder,  
Naval Architect at  
Wallenius Marine

in the, at times, arctic climate," says Carl-Johan Söder.

The job of preparing the initial design to ensure the optimum performance of the ship, and in particular the fuel consumption, took about six months.

As the concept matured the ship designers at Knud E. Hansen got involved and contributed with specifications for the shipbuilding tenders.

AFTER VISITING SEVERAL shipyards all over the world the choice finally fell on CIMC Raffles, which is one of the highest ranked shipyards in China.

"It will take them two and a half years to build the ships. We will take part in the entire process and follow up the building with ten persons stationed in China," says Carl-Johan Söder, who is eagerly waiting for the final result.

"I just want to fast-forward to the autumn of 2021 when the ships will be ready." ■

### Environmental advantages of the new ships

50%

reduction in fuel consumption per transported unit

60%

reduction in emissions of greenhouse gases per transported unit

98%

reduction in sulfur dioxides (SO<sub>x</sub>)

85%

reduction in nitrogen oxides (NO<sub>x</sub>)

95%

reduction in emissions of particles

Source: Report U6059, Swedish Environmental Research Institute

### The ships in detail

Up to four new ships will be built in China. They are designed to transport forest products, but can also be used for other loads. They will be built for the highest possible environmental performance and will run on LNG, though powered by cable-fed electricity when in port.

To minimise the risks of disturbance to traffic in the severe ice conditions in the Gulf of Bothnia they will have the highest Swedish and Finnish ice class rating 1A Super. They will in fact be the highest ice classified RoRo ships in the world, with a dead weight of 27,000 tonnes each.

WALLENIUS SOL

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