



TOWARDS **FOSSIL**
FREE SHIPPING



REDERI AB GOTLAND

- A SUSTAINABLE LEADER IN SHIPPING

- **Sweden's oldest passenger ferry company**, founded in 1865
 - 3,000 shareholders – 2/3 on Gotland
- **Owner of RoPax-vessels** active in the charter market
- Develops and **invests in the next generation of vessels** at the cutting edge of technology
 - 2x LNG/LBG RoPax delivered 2018-2019
- Employs **785 people**, HQ in Visby, Sweden
- Revenue of SEK 2,337m



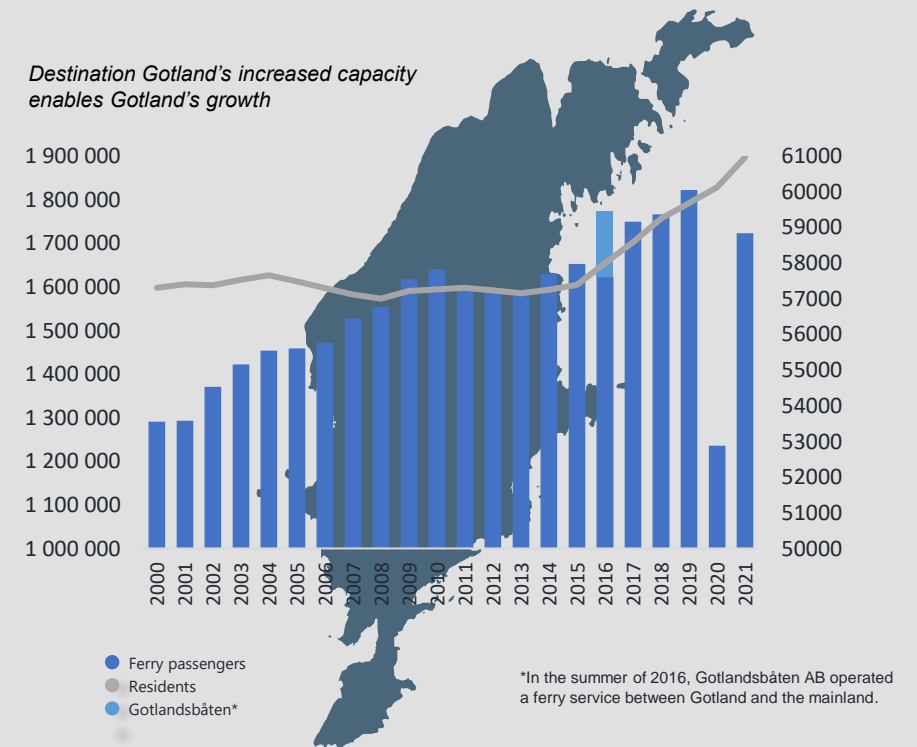
REDERI AB GOTLAND

- **Destination Gotland** – operates the ferry service between mainland Sweden and Gotland
- **Hansa Destinations** – operates the ferry service between Nynäshamn and Rostock
- **Gotland Hotels & Properties** – owns and operates several hotels on Gotland
- **Gotland Tech Development** - drives the development towards more sustainable technology solutions and a maritime transport system through partner-based projects
- **Gotland Tankers** – tanker shipping operator
- **Stockholm Repairyard**
- **Tonnage provider**



WELL-DEVELOPED FERRY SERVICE A FOUNDATION FOR GOTLAND'S STRONG GROWTH

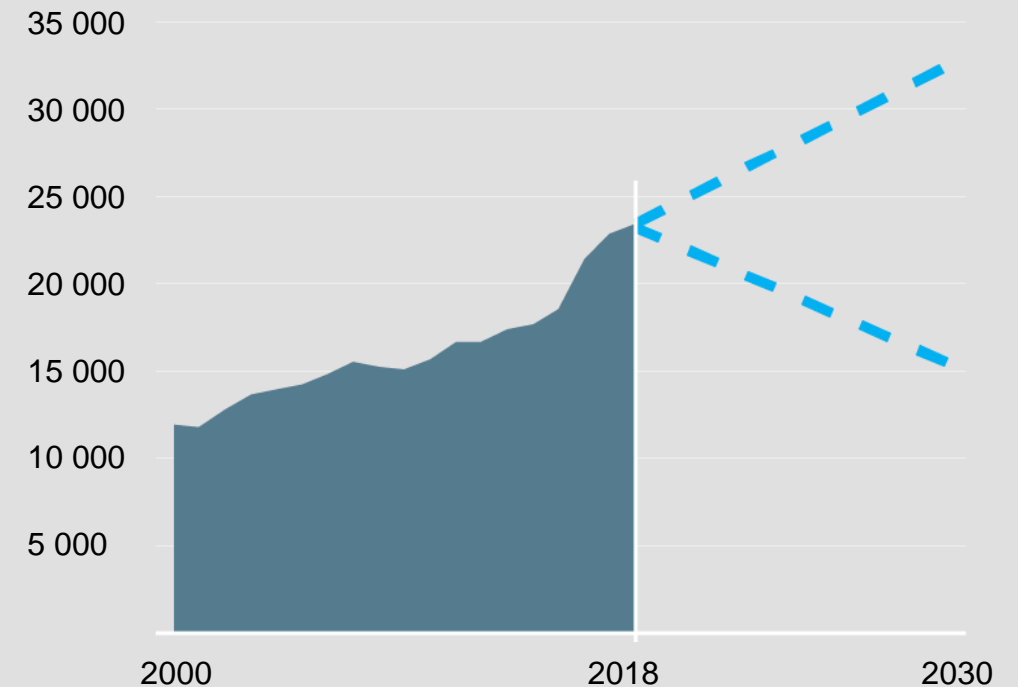
- Passenger **numbers doubled** since the '80s
 - From 900,000 to 1.8 million trips per year
- **Shorter crossings**
 - From 5–6 h (2003) to less than 3.5 h today
- More **capacity** than the contract requires
 - About 3000 crossings per year, up to 18 crossings per day during peak season



A GROWING GOTLAND REQUIRES **ACCESSIBLE, SAFE AND SUSTAINABLE CROSSINGS**

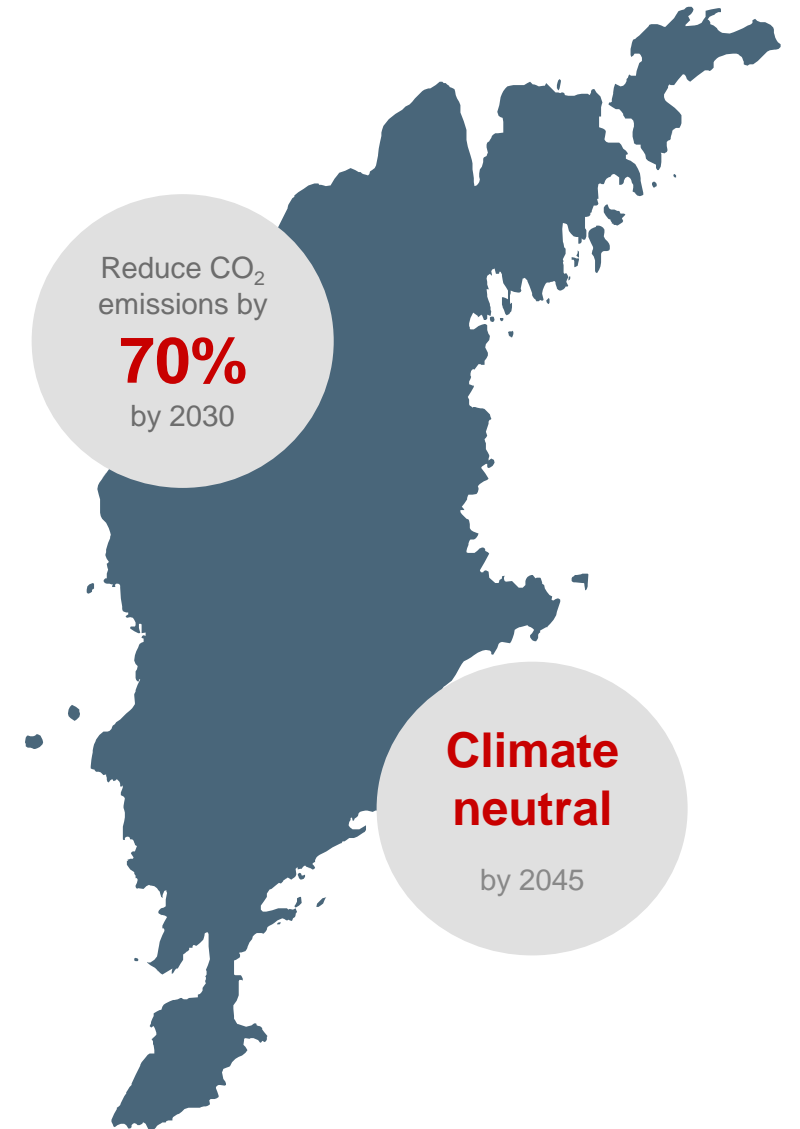
- **Twofold increase** of the region's GDP since 2000
- 61 000+ residents in 2021, expected to **increase to 65 000 residents in 2030** according to Statistics Sweden (SCB)
- **+ 70% number of overnight stays** since 2000 (1 million overnight stays in 2019)
- More than **8 out of 10 (86%)** passengers usually travel by ferry (Novus 2021)
- Continued **growth requires investments in communications and infrastructure**

Gotland's GDP growth over time Gross regional product (GRP), current prices, MSEK, Gotland County



DESTINATION ZERO TOWARDS FOSSIL FREE CROSSINGS

- **LNG/LBG vessels** M/S Visby and M/S Gotland
 - A blend of liquefied natural gas (**LNG**) and liquefied biogas (**LBG**)
 - We reduced CO₂ emissions by 30 percent compared to 2010
 - Ambition to successively increase the portion of biogas to **30 percent by 2030**
 - **Shore connection of power** during night stay in port
- **Gotland Tech Development** participates in several research projects including production of hydrogen and biogas as well as installing batteries on our existing LNG/LBG vessels



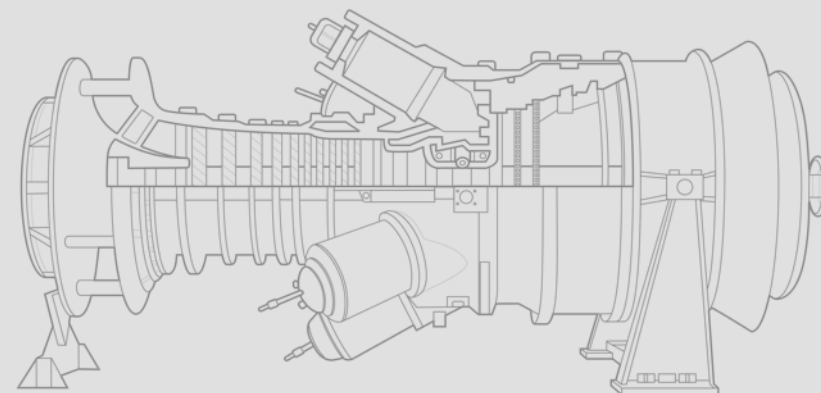
GOTLAND HORIZON

- Gotland Horizon is **Sweden's first large-scale** project for a **hydrogen powered RoPax**.
- Hydrogen causes – H_2O as main emission allowing for **climate neutral crossings**.
- **Multifuel compatibility**
- Maintaining the **same speed (28 knots)** and **capacity (1900 passengers, 600 cars/100 trucks)** as today's service to Gotland.
- The ambition is to put Gotland Horizon on the market **no later than 2030**.



GAS TURBINES COMBINED WITH STEAM TURBINES

- Gas turbines, in combination with steam turbines, enables efficient **high-speed crossings**.
- The turbines are developed to be able to be powered by 100% hydrogen.
- A typical gas turbine unit with a generator is 14 metres long, weighs about 85 tonnes and has an **output of up to 15MW**.
- A **multi-fuel function** enables the gas turbines to be powered by **different types of fossil free fuels**.
- A combined cycle increases the efficiency from **35 to 50 per cent**.

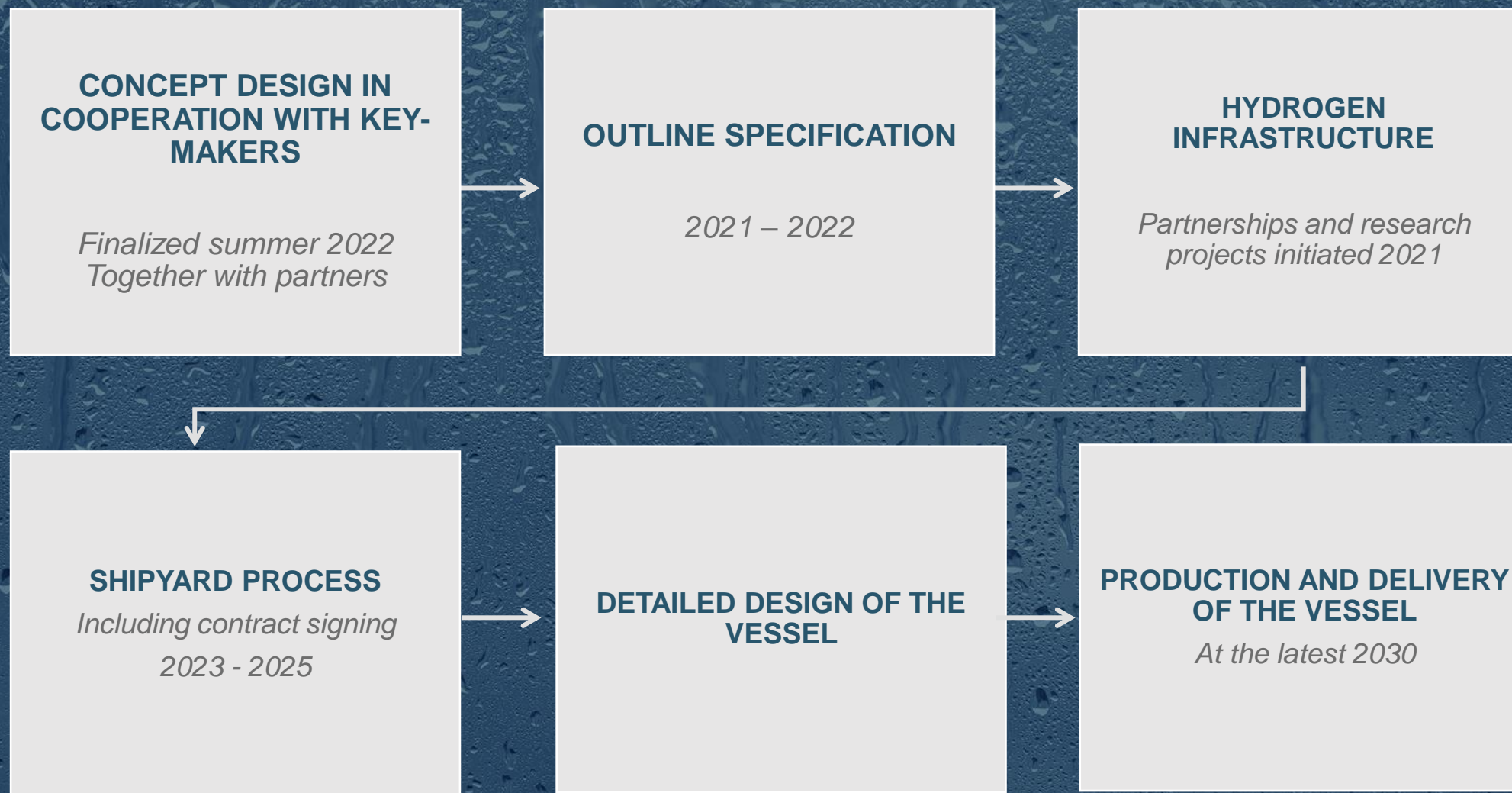


HIGHLIGHTS FROM DNV MARITIME ADVISORY

- **DNV Maritime Advisory** has reviewed the **concept** to assure that the conclusions and recommendations rest on firm ground
- **Technology is available today**
- **Competitive efficiency** in combination with steam turbines
- **High fuel flexibility** – likely possible to run on 100% hydrogen

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We assess the concept to be exciting, forward looking and a potential flagship project for Sweden and Gotland in the work to decarbonize shipping.



APPROVED RESEARCH PROJECT

– HYDROGEN POWERED SHIPPING

- The project aims to **evaluate the possibility** to use green hydrogen as a fossil free maritime fuel. Gotland Horizon is used as a **case study**.
- **Technological solutions** on-board the vessel, complete supply systems, including production of renewable energy in a sea-based wind farm.
- The goal is to present a complete, sustainable and reliable fuel system to be **implemented by 2030**.

Uppsala University is the project owner, Gotland Tech Development, Rederi AB Gotland, Bassoe Technology, Energicentrum Gotland, IVL, Lighthouse, Linde gas, OX2, Uniper and Region Gotland participate in this project.



- **Cargo Capacity:** 600 cars / 100 trucks
- **Passenger Capacity:** 1900 passengers
- **Speed:** up to 28 knots
- **Multi-fuel engine:** allows for shift and blending fuels
- **Combined Cycle:** Increased efficiency with gas turbines and steam turbines in combination (from 30 to 50% efficiency)
- **Cleaner engine room with less vibrations** thanks to gas and turbines (compared to oil)



THANK YOU!

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