University of Antwerp
TPR | Department of Transport and Regional Economics

Online webinar

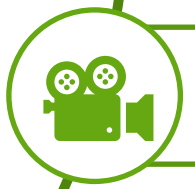
Dennie Lockefeer Chair

House rules

Participants other than speakers are **muted**.

Please write **questions** as the talk is progressing **in the Q&A**. The chair of the session will then serve as host and call upon you to ask your questions directly (allowing speaking/ microphone privileges) at the end. Do not ask the question in an anonymous mode as we will not be able to find you to give you microphone access.

If you have no microphone capabilities and still would like the question to be read out for you, please indicate this by **raising your hand**. Keep the questions short and to the point.



The session will be **recorded**. You will receive info on recording/presentation after the webinar

Technical issues: mail to katrien.storms@uantwerpen.be

Program

Timing	Speaker
4 p.m. – 4:10 p.m.	Welcome by Prof. dr. Christa Sys, promotor Dennie Lockefeer Chair
4:10 p.m. – 4:30 p.m.	Research “The future demand for containerized inland shipping on the Rhine” by Noemi Van Meir, young researcher University of Antwerp, and Katrien Storms, holder Dennie Lockefeer Chair
4:30 p.m. – 5 p.m.	Panel discussion: - Francis De Ruytter, PSA Antwerp - Tom Tuyteleers, Caterpillar - Michel van Meurs, Contargo
5 p.m.	Closing by prof. dr. Thierry Vanelslander, promotor Dennie Lockefeer Chair

Welcome

Prof. dr. Christa Sys

- Professor University of Antwerp
- Promotor Dennie Lockefeer Chair

Dennie Lockefeer Chair: Status partners

Unique ecosystem of 33 companies and ‘friends of the chair’

Dennie Lockefeer Chair: 3 pillars

Supporting container inland shipping and developing innovative inland shipping concepts

Research

- Short term:
  - Blog: “What is the impact of a disruption (read COVID-19) on the inland navigation sector”
  - Paper “The future demand for containerized inland shipping on the Rhine”
- Long term
  - Demurrage & detention

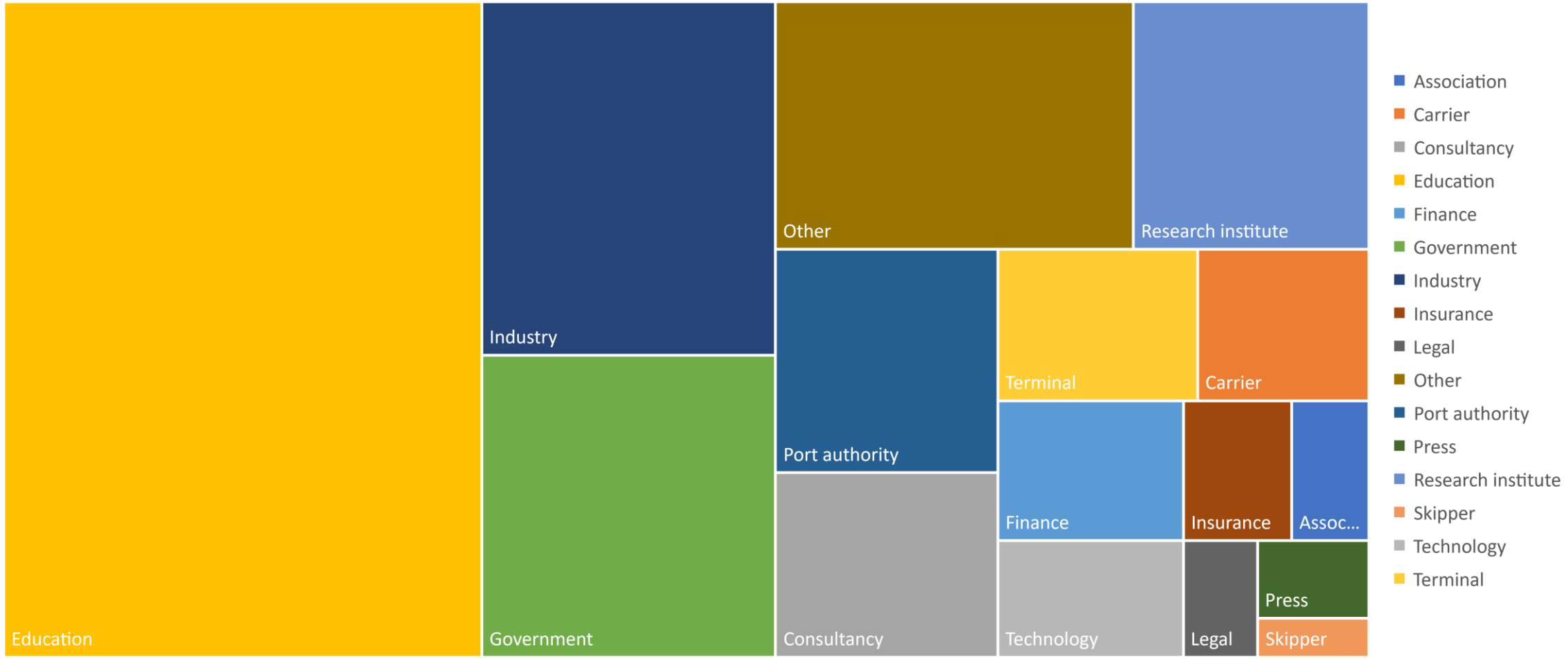
Education

- Award for best thesis (2x)
- Antwerp Inland Navigation School

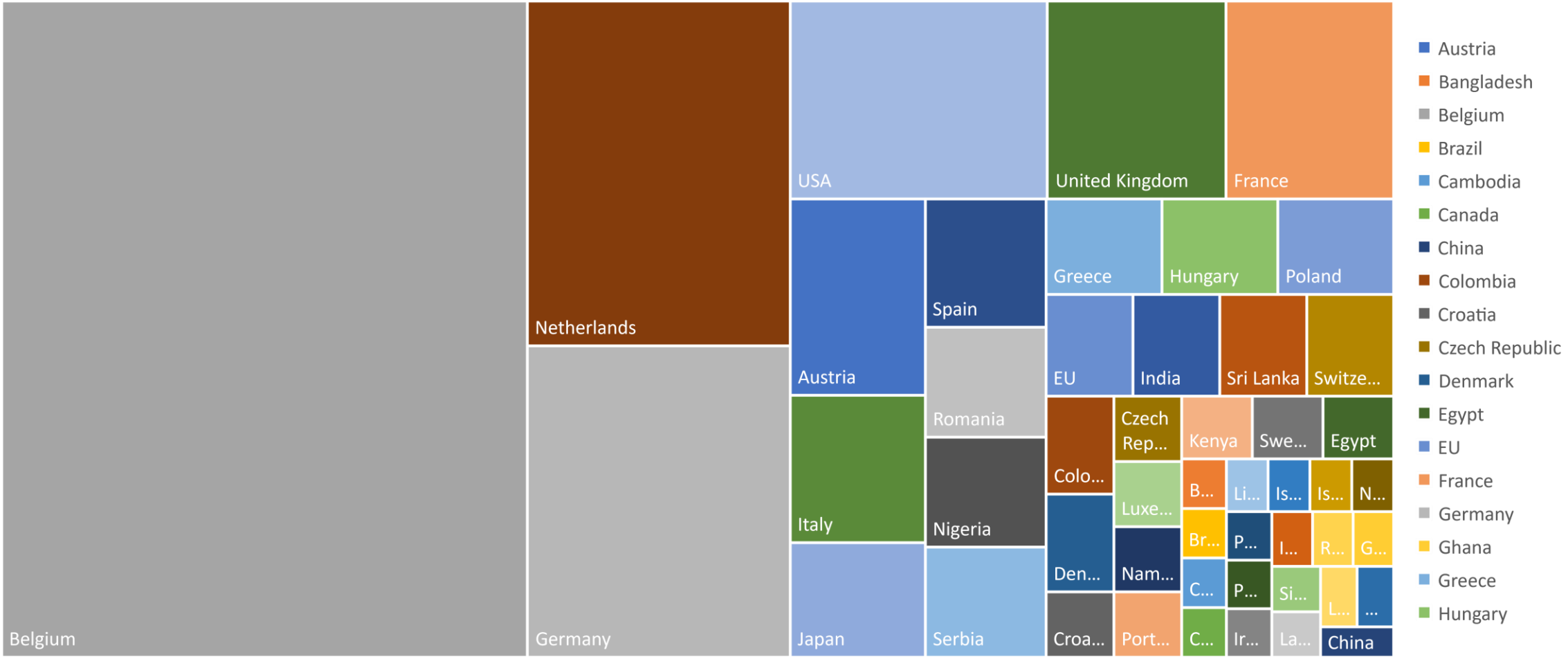
Scientific services Series of lectures:

- 20/01/2020 Inauguration Chair
- 20/01/2021 ‘Adequate data, a key step that will benefit inland shipping’ → **webinar**
- 20/01/2022 ‘Supply chain reality’

414 Registrations (12/6/2021)



Nationalities (12/6/2021)



The future demand for containerized inland shipping on the Rhine

Noemi Van Meir, Yasmine Rashed*, Katrien Storms, Christa Sys, Thierry Vanelslander and Edwin van Hassel

*Arab Academy for Science, Technology & Maritime Transport, Egypt.

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Rationale

Sustainability

2019: Green Deal

2020: Sustainable and Smart Mobility Strategy

2021: Fit for 55

COVID - 19

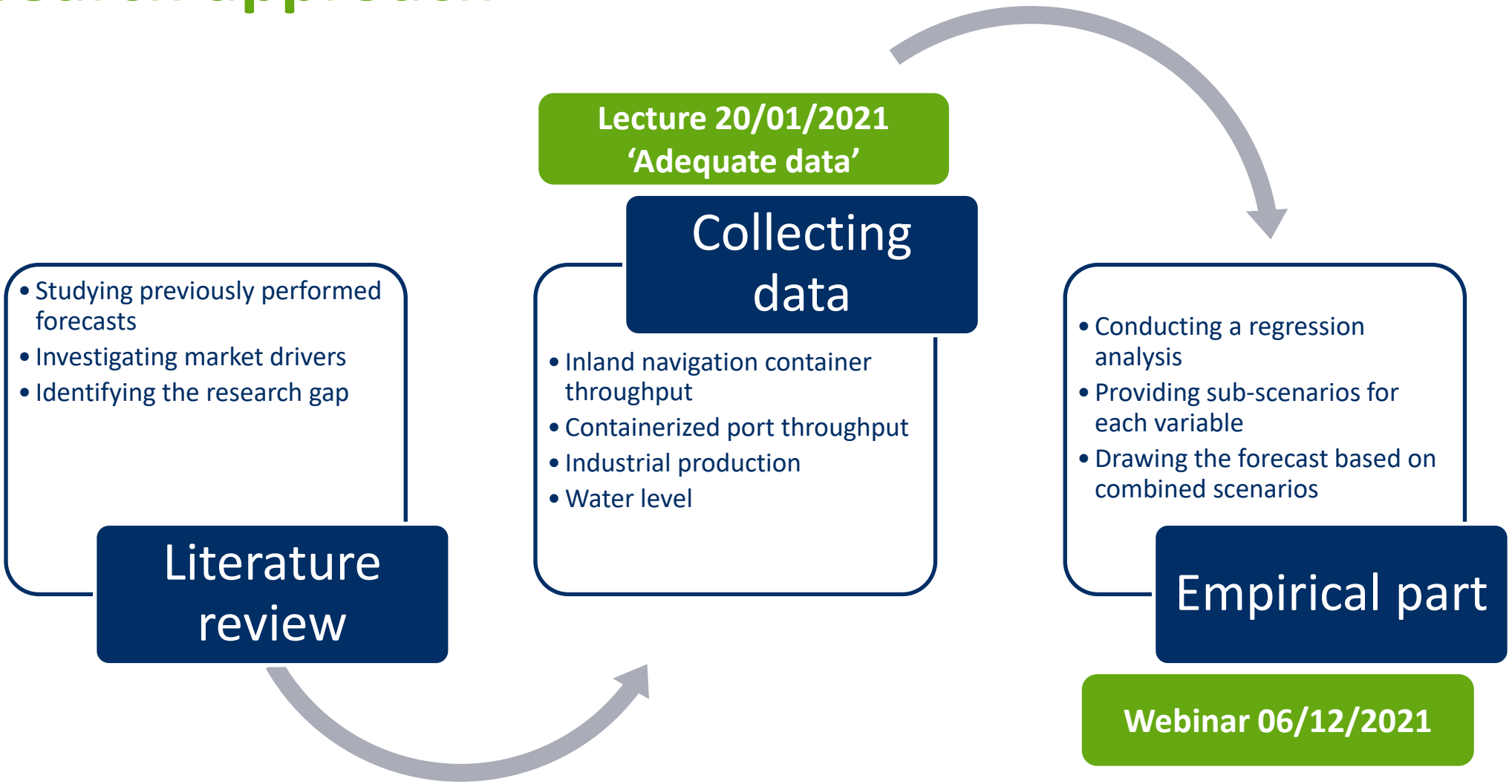
Introduction to the research

Research question & scope

- How will the inland navigation **container market** evolve until the end of 2023 on the **traditional Rhine**?

Source: CCNR, 2019

Research approach



Literature review

Author	Publication year	Organization/ journal	Forecasting period	Title	Sub-segment	Forecasting method	Geographical scope	Variables used
G. Legeay, N. Kriedel, A. Espenhahn, L. Fahrner, E. Arriola, M. Antoine Kraemer	2017	CCNR	Concept	Annual report 2017 (p. 138 - 142)	Container transport, econometric model	Statistical tests, log-log type, ordinary least squares method (OLS), multi-collinearity tests method (OLS), multi-collinearity tests	Rhine	GDP, container transhipment port of RTM, transport of containers by German railways, exchange rates US, exchange rates China, oil price
R. de Leeuw van Weenen, S. van der Meulen, W. van der Geest	2018	Panteia (1)	2018-2022	Medium-term forecast for inland navigation	Focus on dry bulk, liquid bulk and barges	PRISMA calculation, trend-analysis	The Netherlands	Demography, world economy, oil price, currency fluctuations, sector development, import & export of products
R. de Leeuw van Weenen, W. van der Geest, I. Hindriks, T. Grijspaardt	2020	Panteia (2)	2020-2025	Medium-term forecast for inland navigation	Focus on dry bulk, liquid bulk and barges, predictions with COVID-19 scenarios)	PRISMA-D calculation (renewal/update of PRISMA),	The Netherlands	Demography, world economy, oil price, currency fluctuations, sector development, import & export of products
E. van Hassel & Y. Rashed	2020	Elsevier	2016-2020	Analyzing the tank barge market in the ARA – Rhine region	Tank barge market	Error correction model, scenarios	ARA - Rhine region	GDP development, the growth of chemical sector, the Brent oil price, the trade fuels in the ARA ports and the low water surcharge

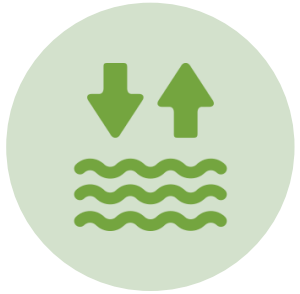
Source: own composition based on CCNR (2017), Panteia. (2018 & 2020) & van Hassel, E., & Rashed, Y. (2020)

Literature review > variables

Inland navigation container throughput

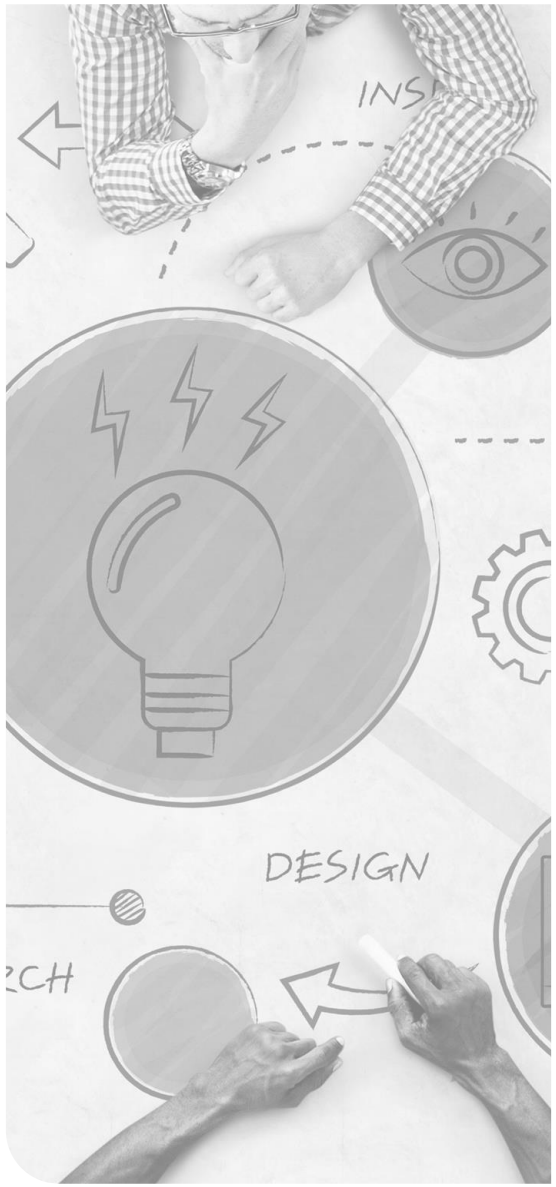
Port container throughput

Industrial production



Water level data

Scenario development

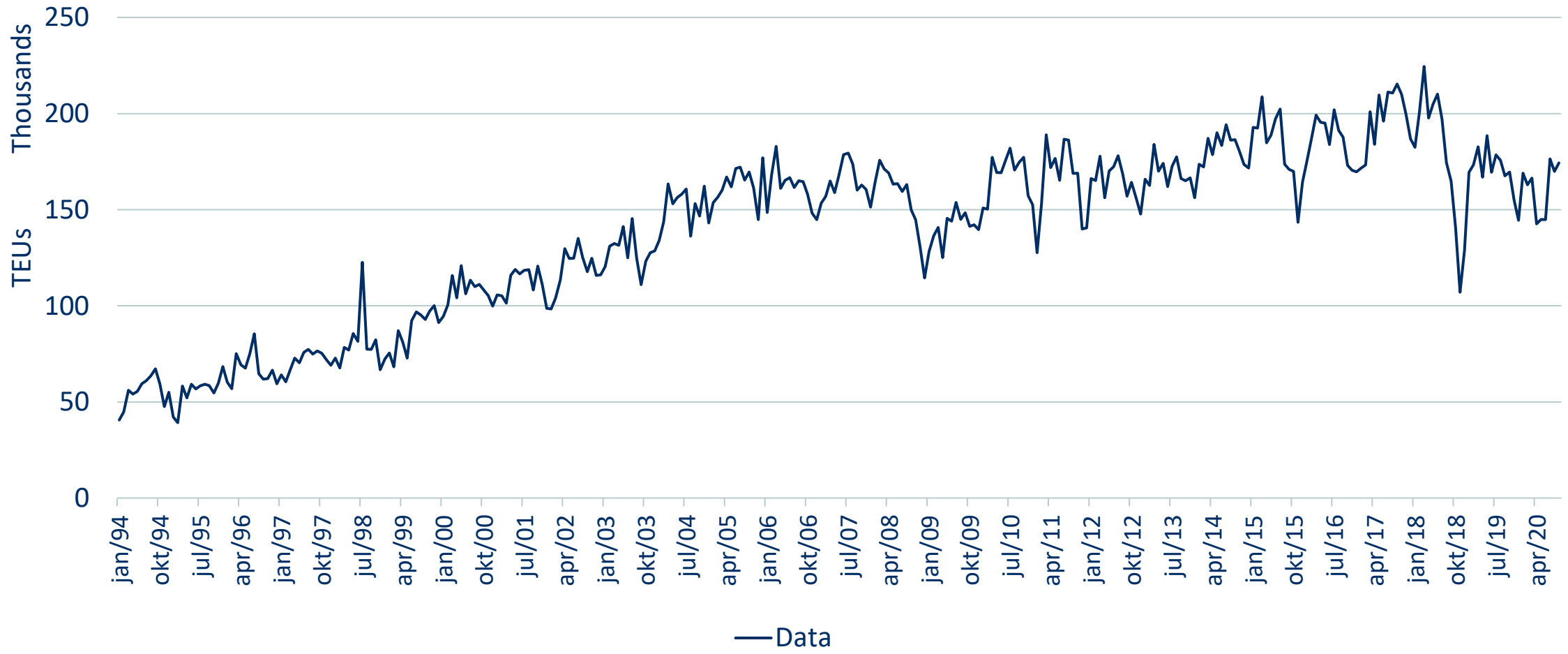


Methodology

- A time series regression analysis with combined scenarios

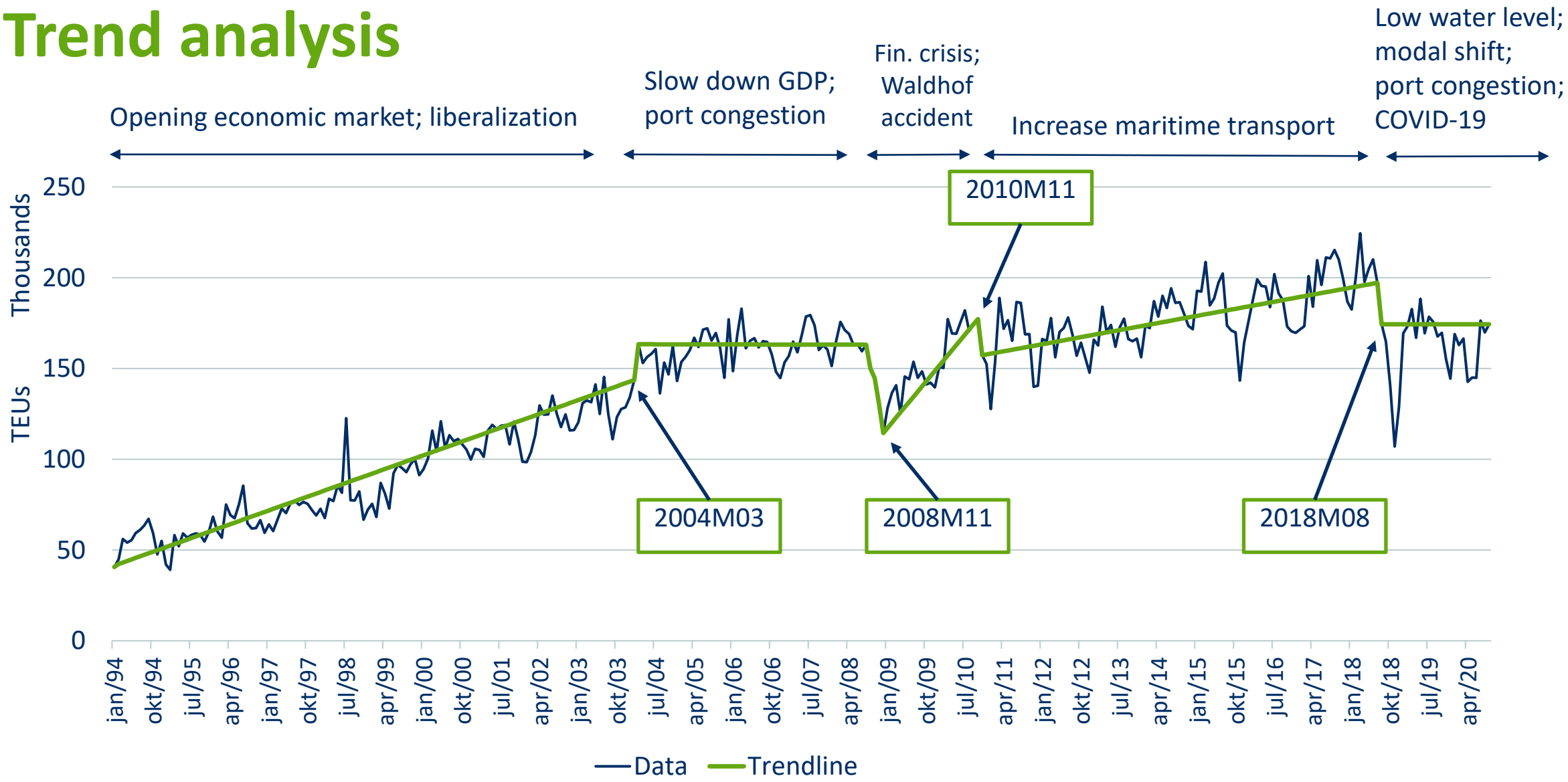
- Steps
  1. Trend analysis > breakpoint
  2. Forecast per variable
  3. Combined scenarios (low – base – high)

Inland navigation container throughput



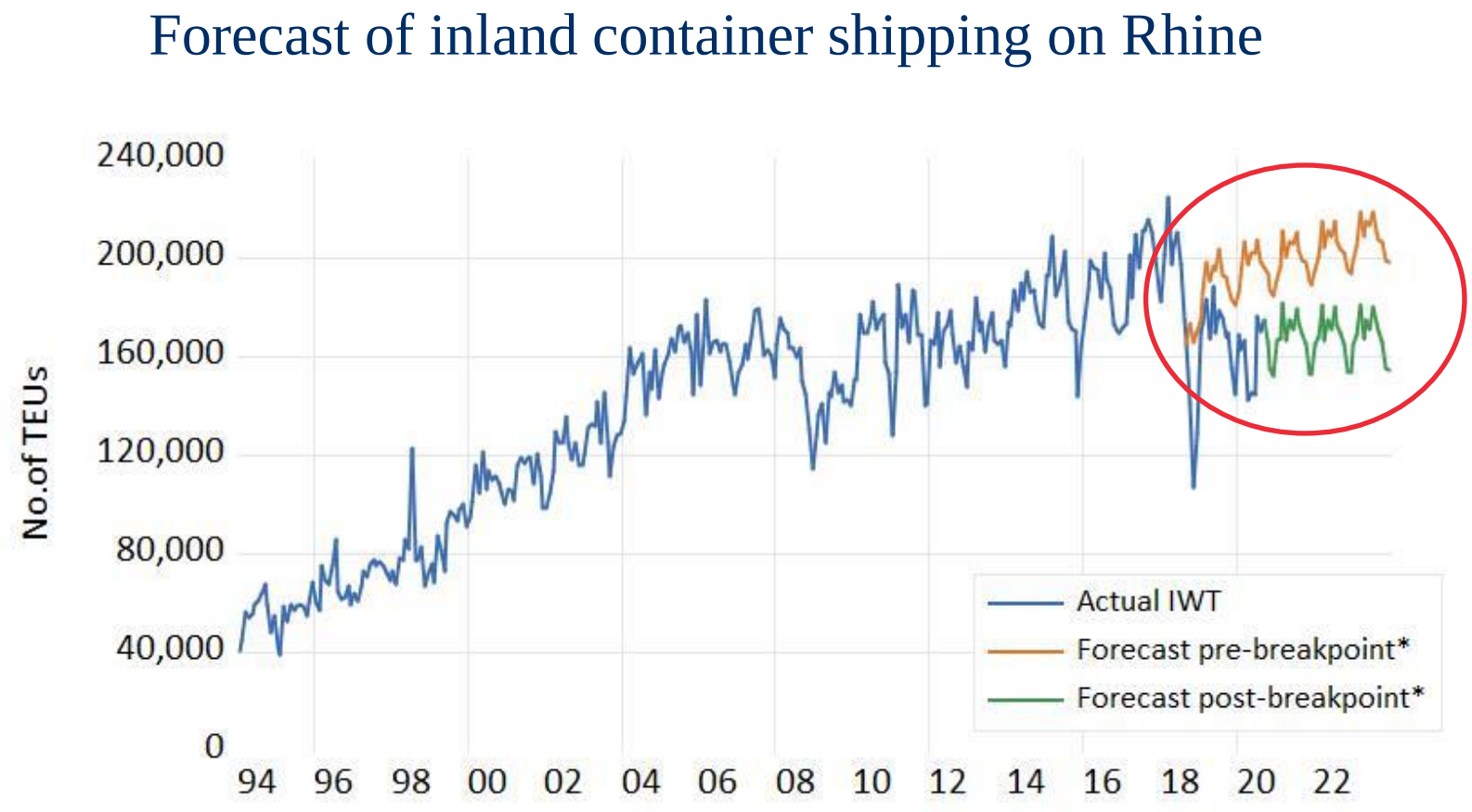
Source: own composition from Destatis (2021)

Trend analysis



Source: own composition from Destatis (2021); CCNR (2005, 2011, 2016, 2019)

Forecast of inland navigation shipping on the Rhine based on historical evolution



Source: own composition based on Destatis (2021)

Scenario development

- **Port container throughput**

  Source: Port of Antwerp (2021); Port of Rotterdam (2021)

- **Industrial production**

  Source: OECD (2021)

- **Water level**

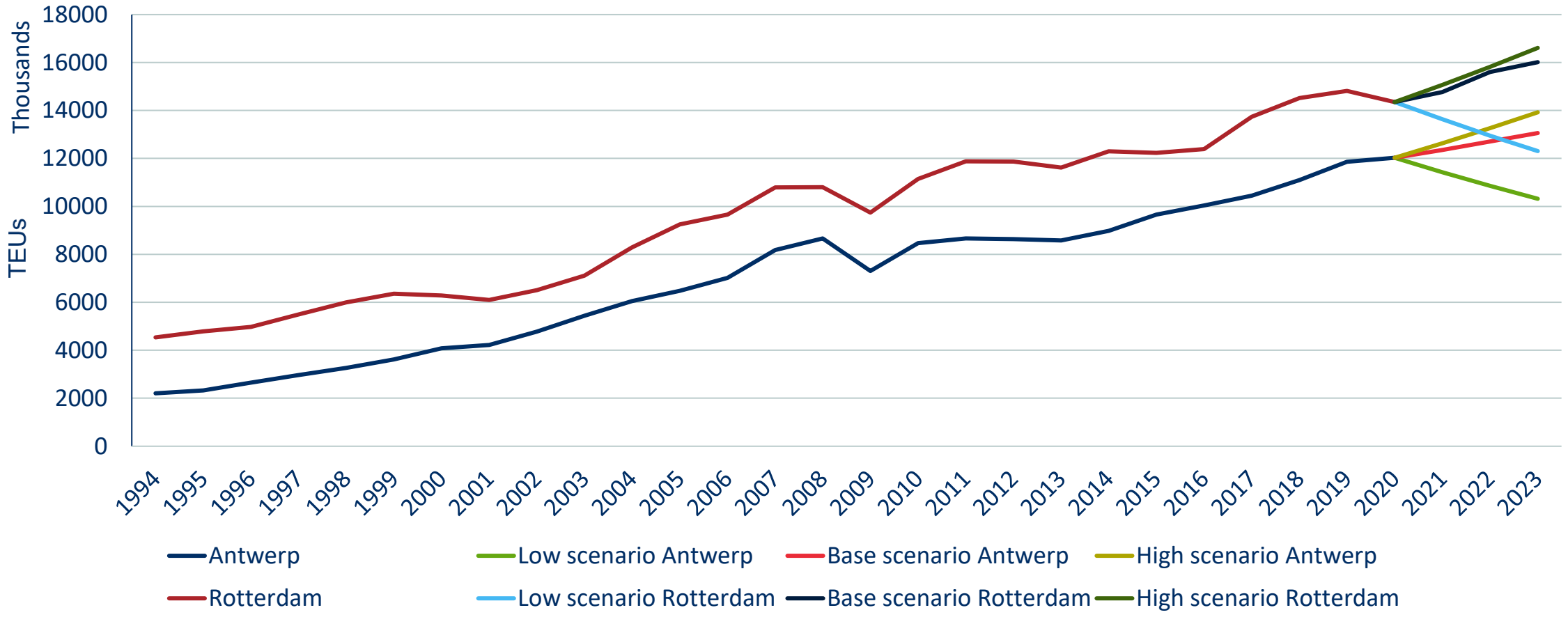
  Source: WSV, Rhineforecast.com (2021)

Scenarios port throughput Annual % △		
Low	Base	High
-5%	2.8%-3.7%	+5%

Scenarios Industrial production Monthly % △		
Low	Base	High
-5%	Pre-break & post-break	+5%

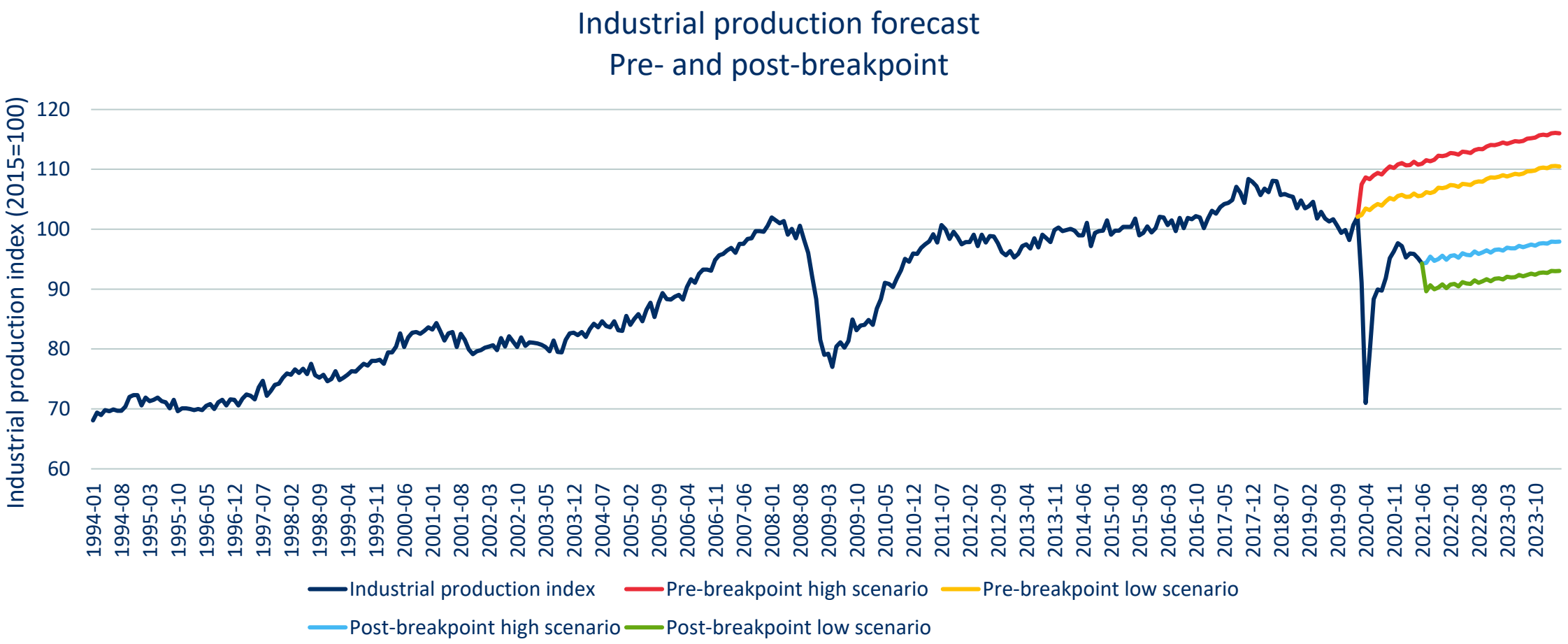
Scenarios water level @Kaub Monthly % △		
Low	Base	High
-20%	2%	+20%

Port container throughput



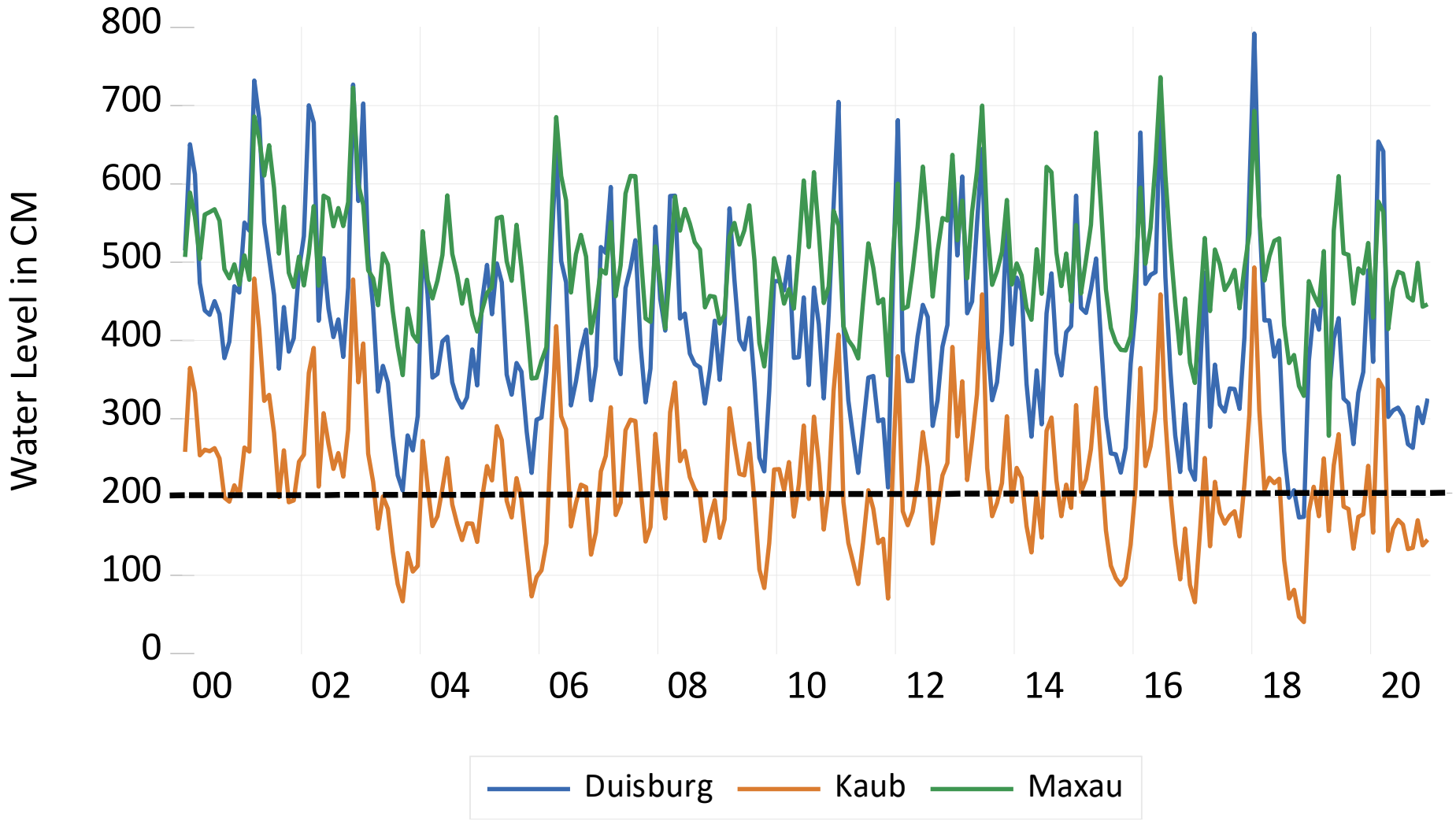
Source: own composition based on Port of Antwerp (2021) and Port of Rotterdam (2021)

Industrial production forecast



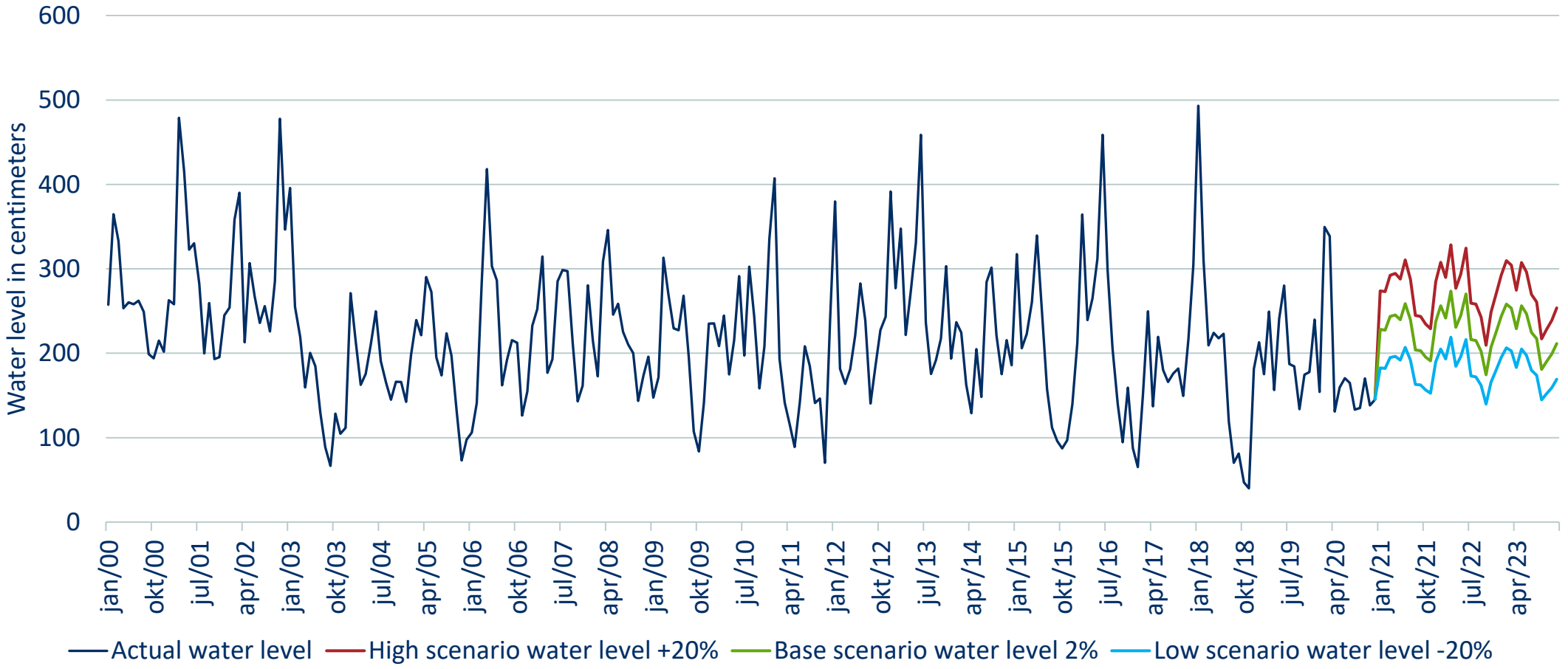
Source: own composition based on OECD (2021)

Water levels of 3 stations



Source: own composition based on WSV and Rhineforecast.com (2021)

Forecast of water level scenarios at KAUB scenarios



Source: own composition based on WSV and Rhineforecast.com (2021)

Impact each variable

Port container throughput

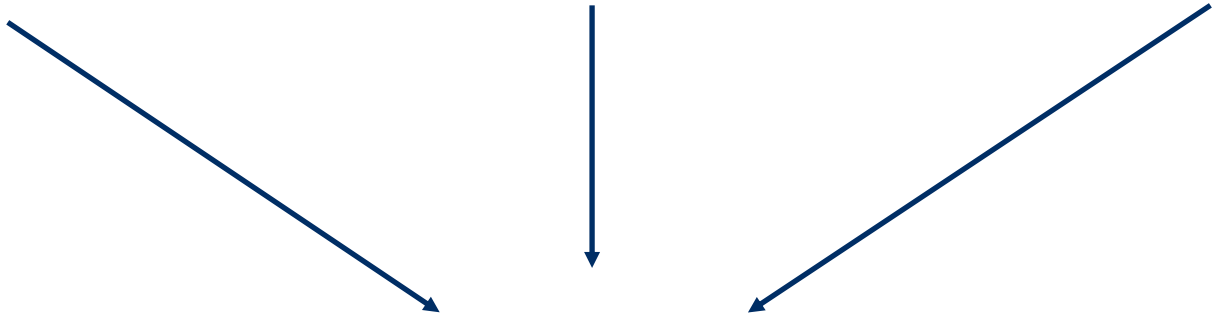
Antwerp: 0.8%
Rotterdam: 0.7%

Industrial production

2.7% (4 months lagged)

Water level data

0.03%



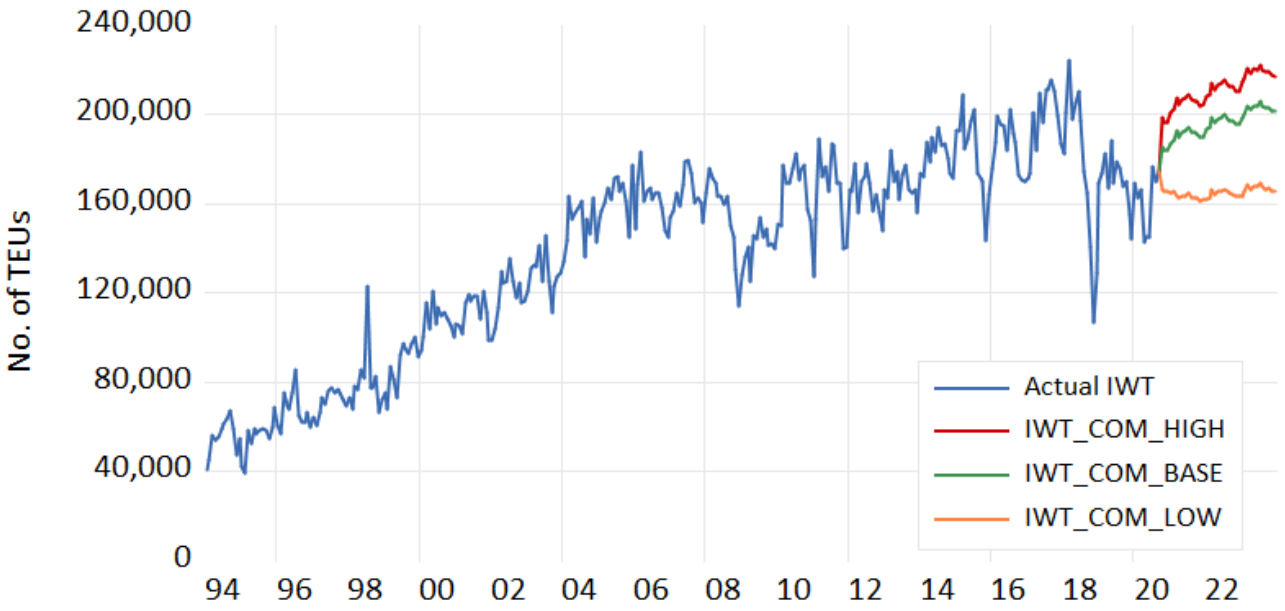
Inland navigation container throughput

Combined scenarios and forecasts

Combined scenario 1: pre-breakpoint

	Combined S1		
	Low	**Base**	**high**
Inland navigation container throughput	-15%	SARIMA pre-breakpoint	+15%
Port container throughput	-5%	2.8%-3.7%	+5%
Industrial production	-5%	SARIMA pre-breakpoint	+5%
Water level	-20%	2%	+20%

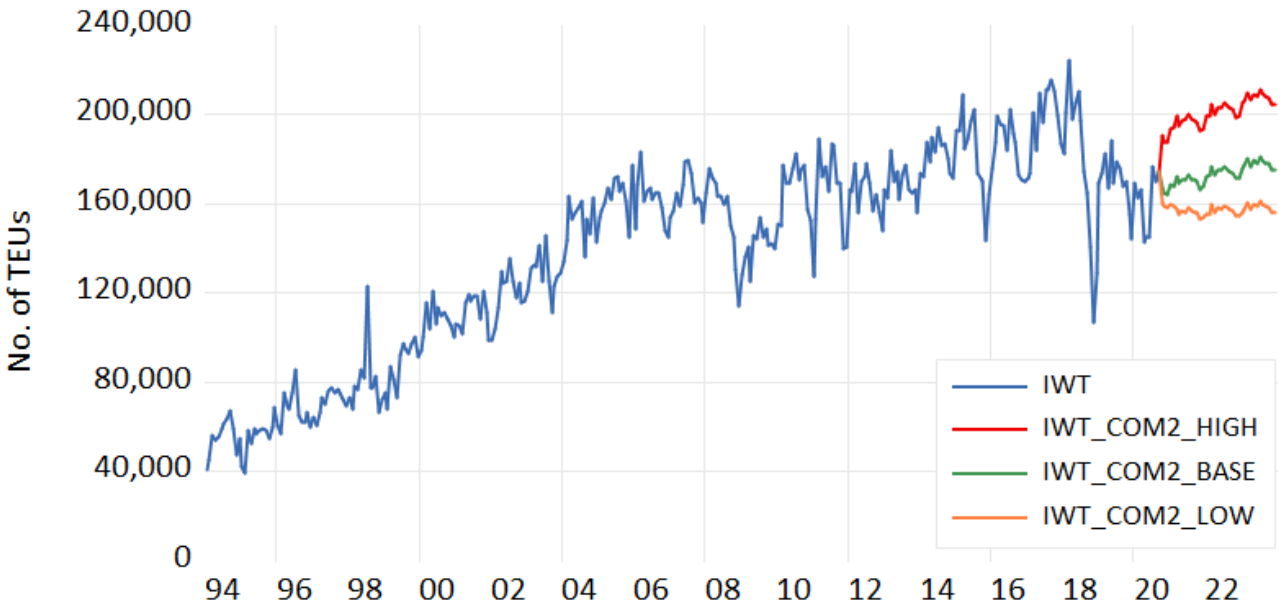
Scen. 1 forecast: inland container throughput



Combined scenario 2: post-breakpoint

	Combined S2		
	Low	**Base**	**high**
Inland navigation container throughput	-15%	SARIMA post-breakpoint	+15%
Port container throughput	-5%	2.8%-3.7%	+5%
Industrial production	-5%	ARIMA post-breakpoint	+5%
Water level	-20%	2%	+20%

Scen. 2 forecast: inland container throughput



Comparison two scenarios by the end of 2023

- **In thousand TEUs/month**

	Scenario 1: pre – breakpoint	Scenario 2: post – breakpoint
High	217	205
Base	201	175
Low	165	156
Range	+8% & -18%	+ 18% & -10%

52

49

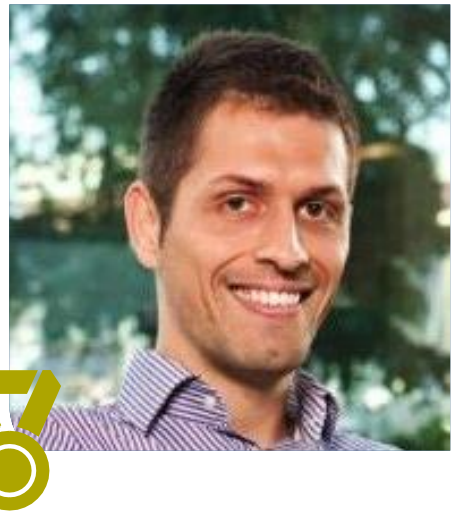
Conclusion

Key takeaways

- **Identify market variables > impact of each variable**
  - Container port throughput: Antwerp: 0.8% / Rotterdam: 0.7%
  - Industrial production: 2.7% (4 months lagged)
  - Water level: 0.03%
- **Generate possible forecasts**
  - Scenario per market driver
  - Two combined scenarios: Pre-breakpoint/post-breakpoint:
    - Scenario 1: 165 – 217 thousand TEUs/month (spread: 52 thousand TEUs)
    - Scenario 2: 156 – 205 thousand TEUs/month (spread: 49 thousand TEUs)

    ➔ Scenario 2 (post-breakpoint) is lower than scenario 1 (pre-breakpoint)
- **Full impact of COVID-19 is too early to estimate in this paper**

Panel



Francis De Ruytter

- Regional Head Data Management & Sustainability EMA region, PSA Antwerp

Michel van Meurs

- Regional Sales Manager Western Ports, Contargo

Tom Tuyteleers

- Transport & Supply Chain Operations Manager, Caterpillar

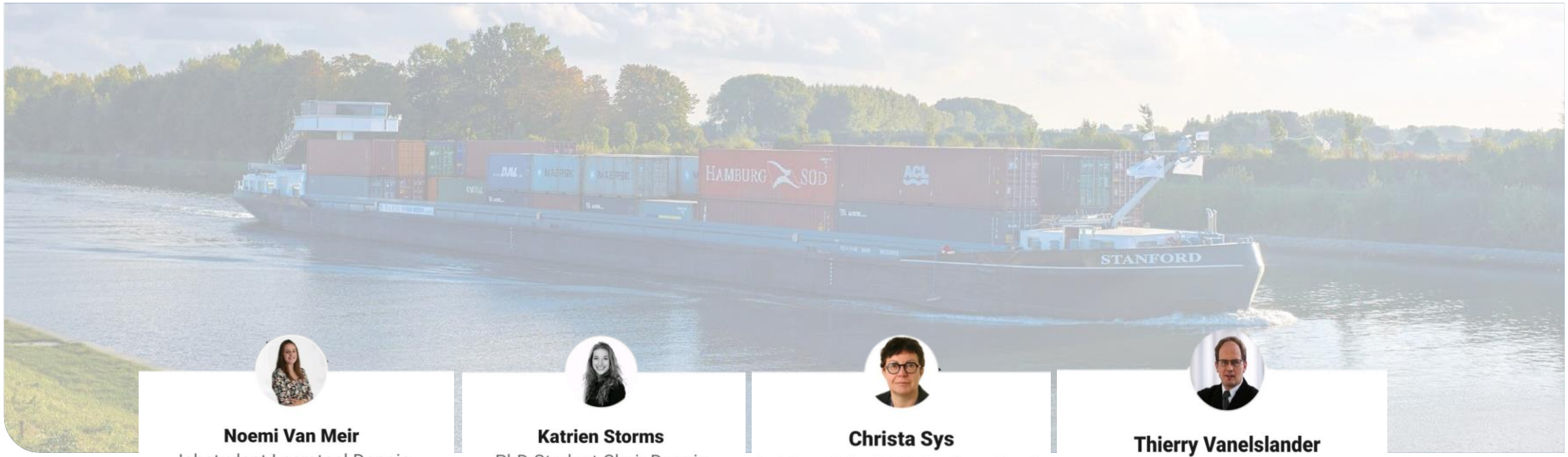

Questions?

Closing

Prof. dr. Thierry Vanelslander

- Professor University of Antwerp
- Copromotor Dennie Lockefeer Chair

Thank you for your attention



Noemi Van Meir
Jobstudent Leerstoel Dennie Lockefeer (binnenvaart) bij Univer...

Katrien Storms
PhD Student Chair Dennie Lockefeer

Christa Sys
holder of the BNP Paribas Fortis chair on transport, logistics an...

Thierry Vanelslander
Professor at University of Antwerp - Faculty of Business and...

Dennie Lockefeer Chair

Dennie Lockefeer Thesis Prize 2022
Inland Antwerp Navigation School 2022

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