Hochschule Worms
University of Applied Sciences

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SGR-Chain: Reshoring

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Objectives

- **What are the key objectives of this module?**

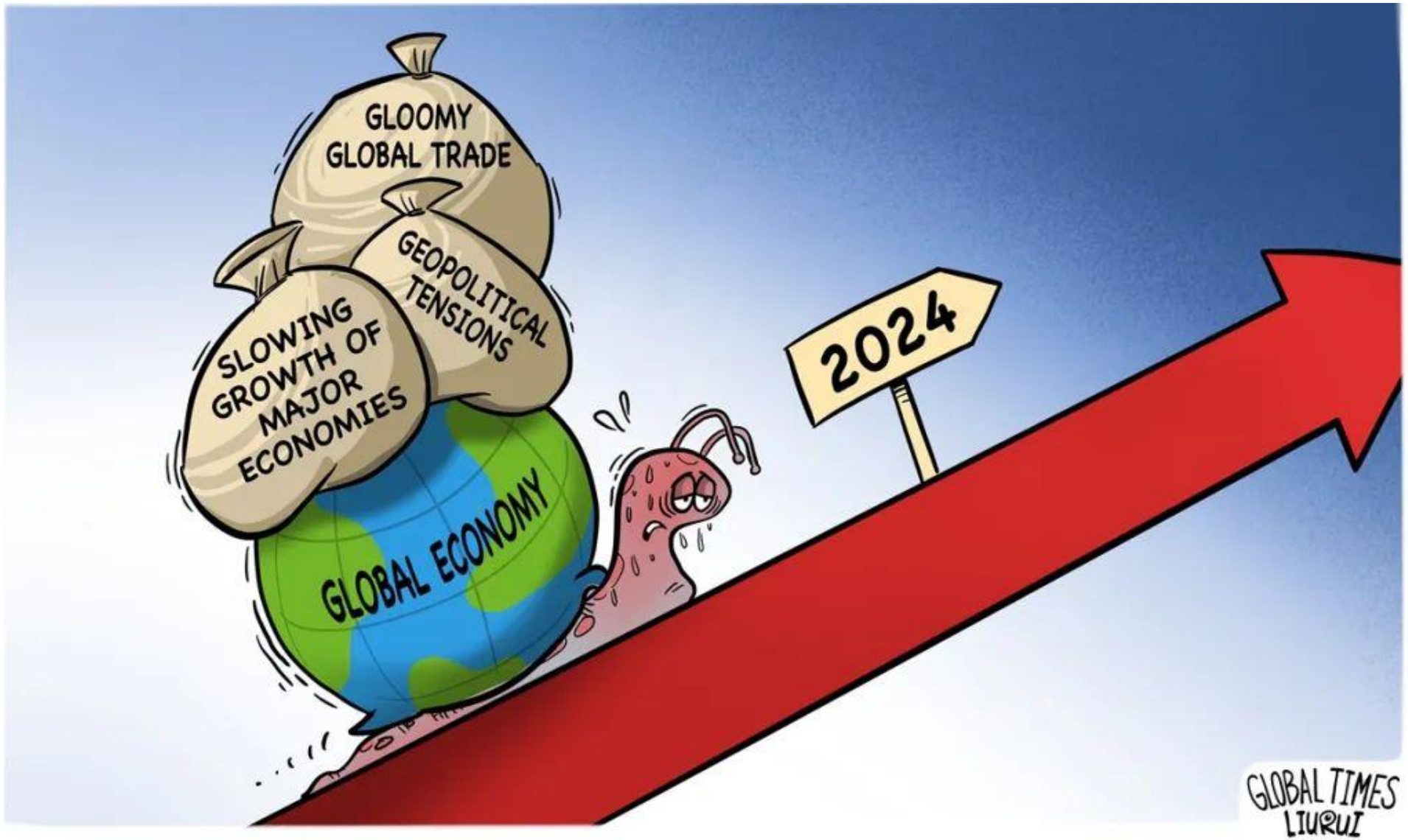
- After this module, you will be able to:
  - Understand **concepts** and **value drivers** of **shoring concepts**
  - Understand the **cost structures** that influence **global sourcing** decisions
  - Develop global **sourcing strategies** in an supply chain simulation game

Agenda

1 Global sourcing and reshoring

2 Case study: Reshoring

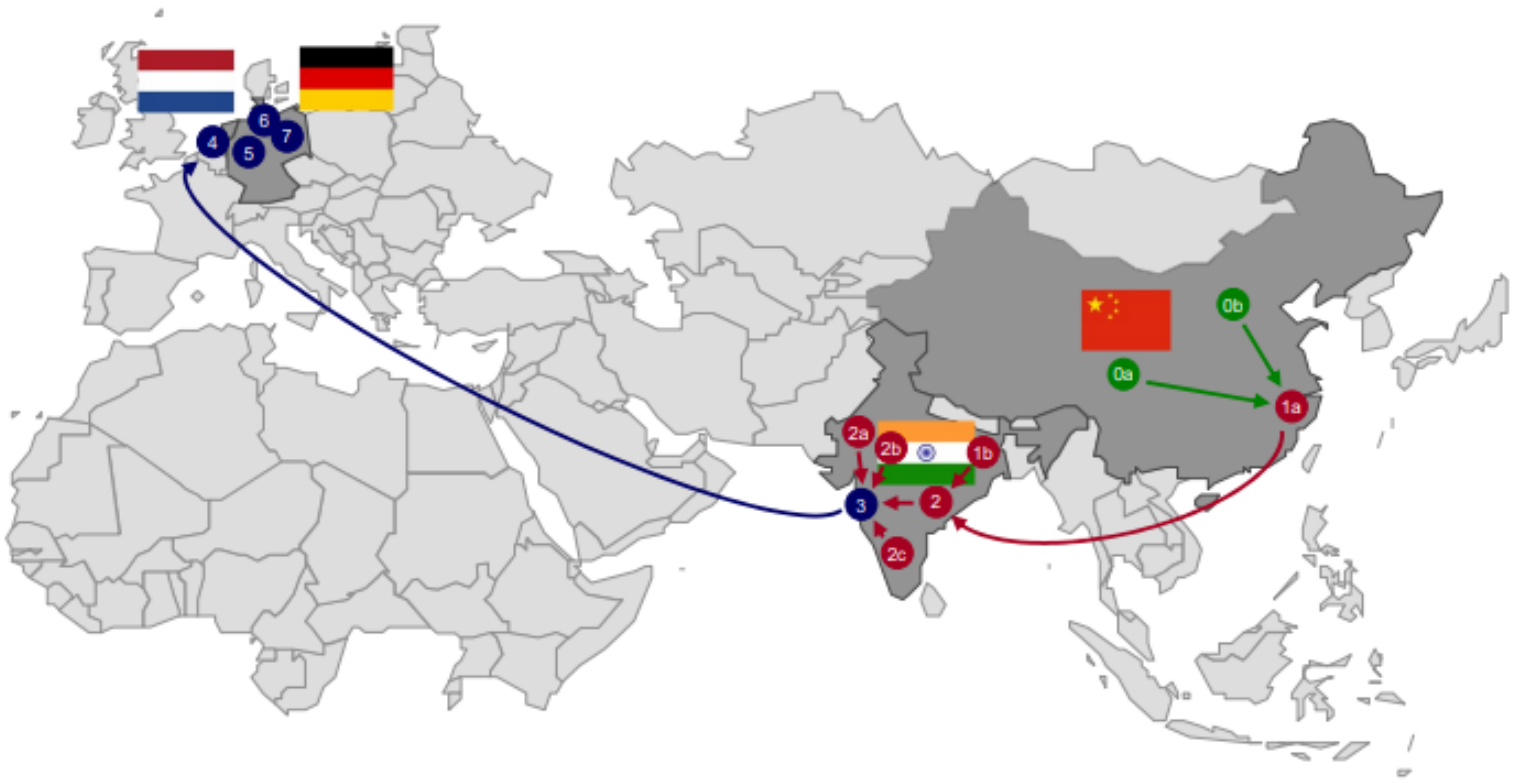
Global trade under pressure



Offshoring – political pressure

Source: The Independent

Example of a global supply chain: Generic drugs



- 0a 0b Chemical raw materials (Key starting materials)
- 1a API intermediates
- 1b Chemical raw materials
- 2 Active ingredient production (API)
- 2a Chemical raw materials
- 2b Primary packaging (e.g. blister)
- 2c Secondary packaging (e.g. carton)
- 3 Finish drug manufacturing
- 4 Importation into the EU
- 5 Distribution center
- 6 Wholesaler in Germany
- 7 Pharmacy in Germany

- Exemplary supply chain, typical especially for high-volume active ingredients, e.g. cardiovascular, pain, antibiotics, etc.
- Production of active ingredients and finished drugs in Asia

Source: Schwarz (2021). Warum wir stärkere Lieferketten bei generischen Arzneimitteln brauchen.

Offshoring – is the honeymoon over?

- **So Much for the Cheap 'China Price'**
  - "In 2005 … by the time the items had arrived at a U.S. port, Chinese-made parts were 22% cheaper on average than those produced in the U.S. By the end of 2008, however, the average price gap had dropped to 5.5% ..."

- **"The growing need for lean inventories puts China at a disadvantage"**
  - "Goods take 45 days on average to reach U.S. shores. With the recession making it more difficult to predict demand, manufacturers are being forced to stash unsold products in warehouses for longer periods. And the cost of meeting emergency supply needs is inevitably higher in China …"

- **"Due to increased demand fluctuations, sourcing closer to home wins over other lower cost options overseas"**
  - "… buy a harness from China for 15% less than in Mexico. But if a design is altered after a batch of Chinese-made harnesses is already on the boat from Shanghai, the company has to foot the bill for up to six weeks of shipping and handling of obsolete parts."

Source: Van Mieghem (2008)

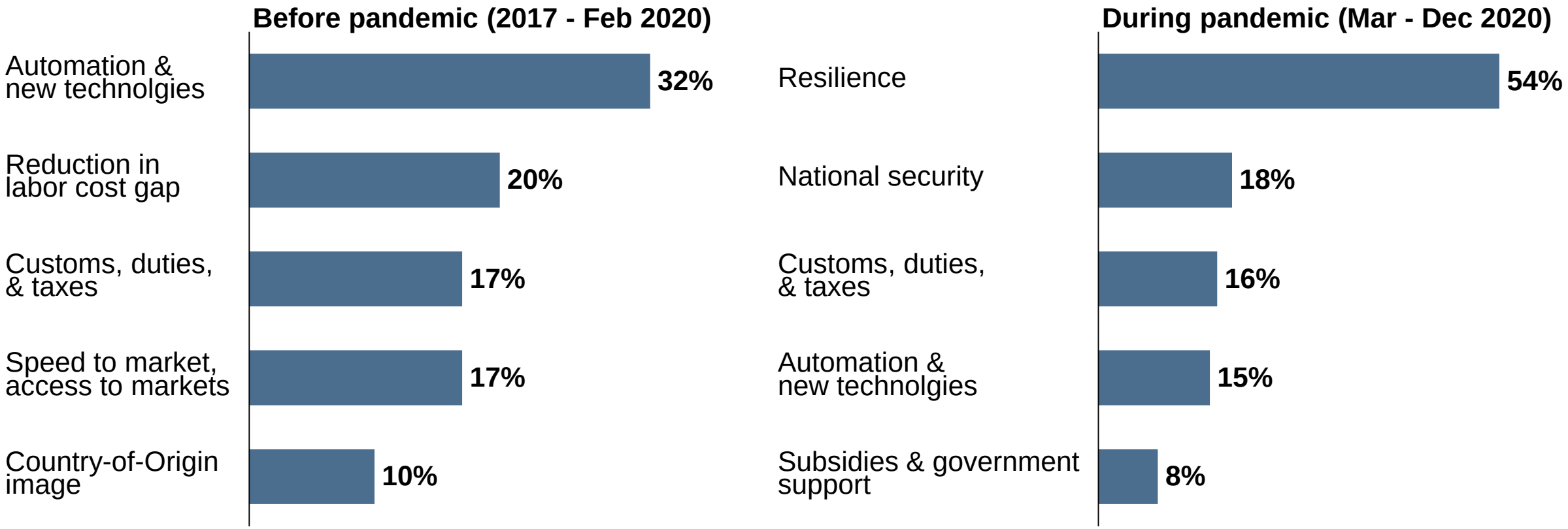
Shoring concepts

- **Offshoring:** Transferring manufacturing from HCC to BCC
- **Re-shoring:** Transferring manufacturing back from BCC to HCC
- **Near-shoring:** Transferring manufacturing back from BCC to close surrounding of HCC
- **China+1:** Duplicating manufacturing outside China
- **Regionalization:** Duplicating manufacturing in each key region (partial/full value chain) – It could happen at country level or at continental level

Note: HCC – High-cost country, BCC – Best-cost country

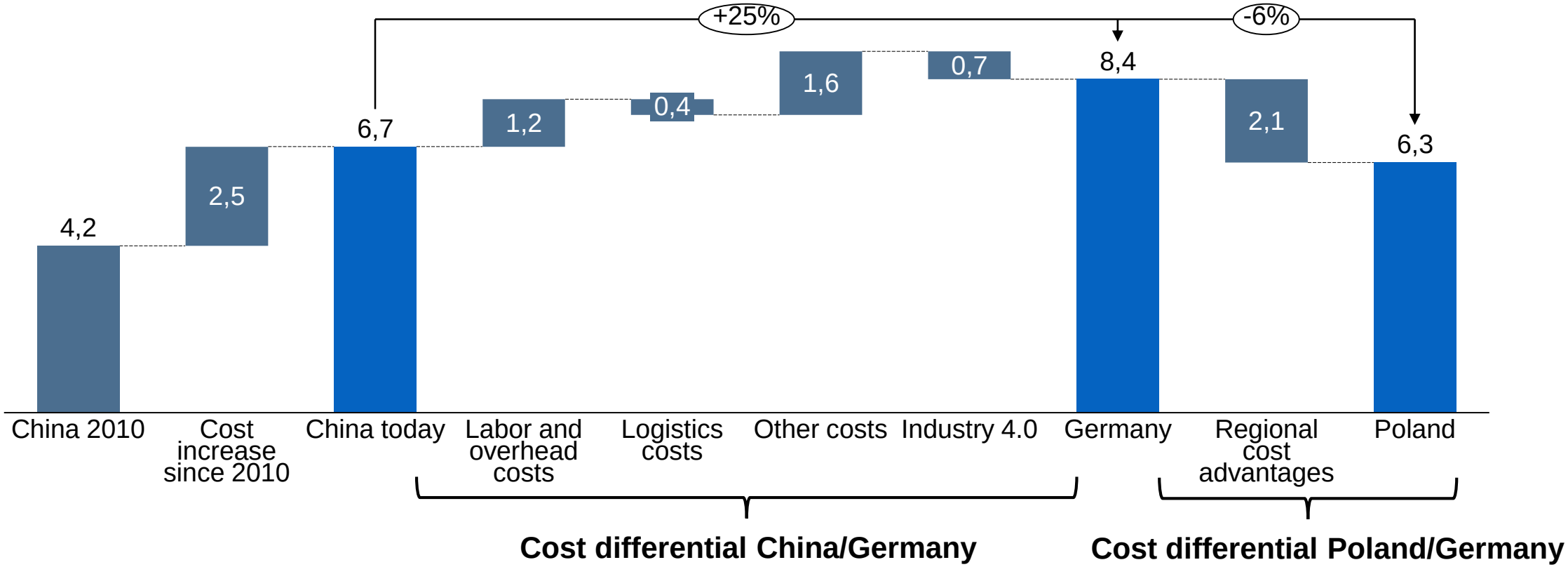
Source: Alicke, Hoberg & Mauhourat (2022). Regionalizing supply chains: how closer gets better.

Why companies want to re-shore



Source: Alicke, Hoberg & Strigel (2022). Zurück nach Europa.

China, Germany or Poland?



- China is no longer the unbeatably cheapest production location in the world. Wages are rising, the high-tech sector is gaining importance: Other, and closer locations might be cheaper.
- The chart shows a cost comparison for the production of a car seat motor in China, Germany, and Poland.

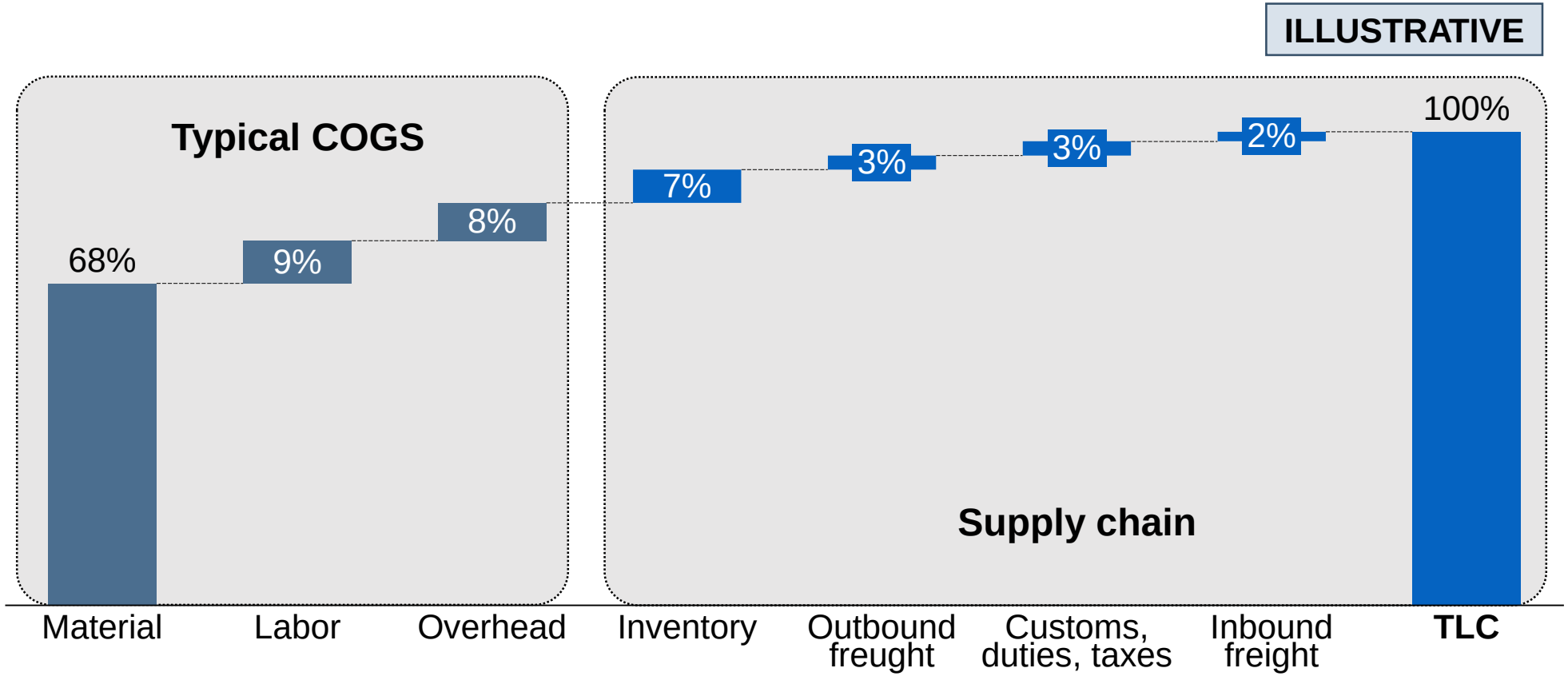
Source: Alicke, Hoberg & Strigel (2022). Zurück nach Europa.

Single versus multiple sourcing

- **Single sourcing:** Items are sourced from a single supplier, allowing for economies of scale and more efficiency.

- **Multiple (dual) sourcing:** Items are sourced from multiple (two) suppliers, allowing for risk diversification in the supplier base.

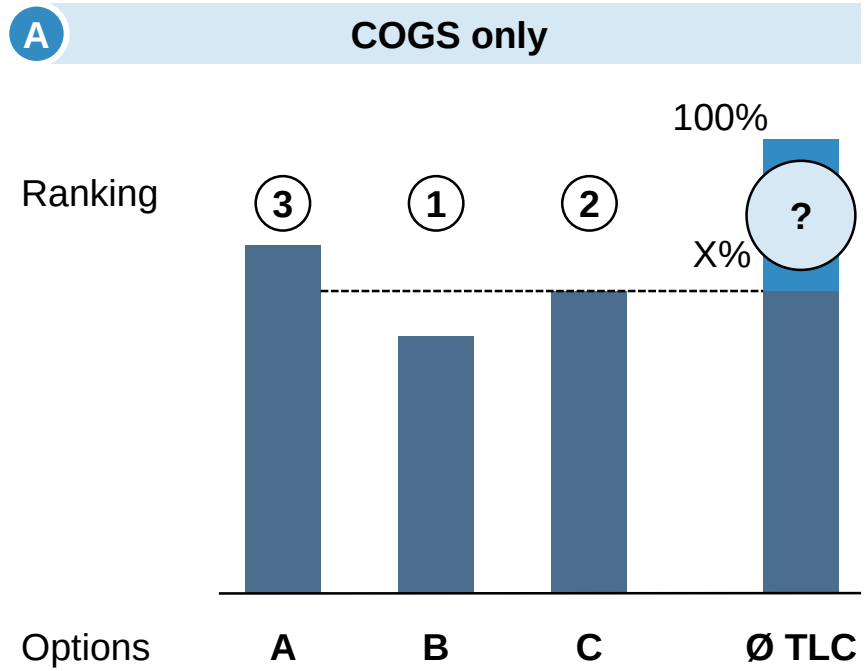
Total Landed Cost (TLC) is the Total Cost incurred from source to destination

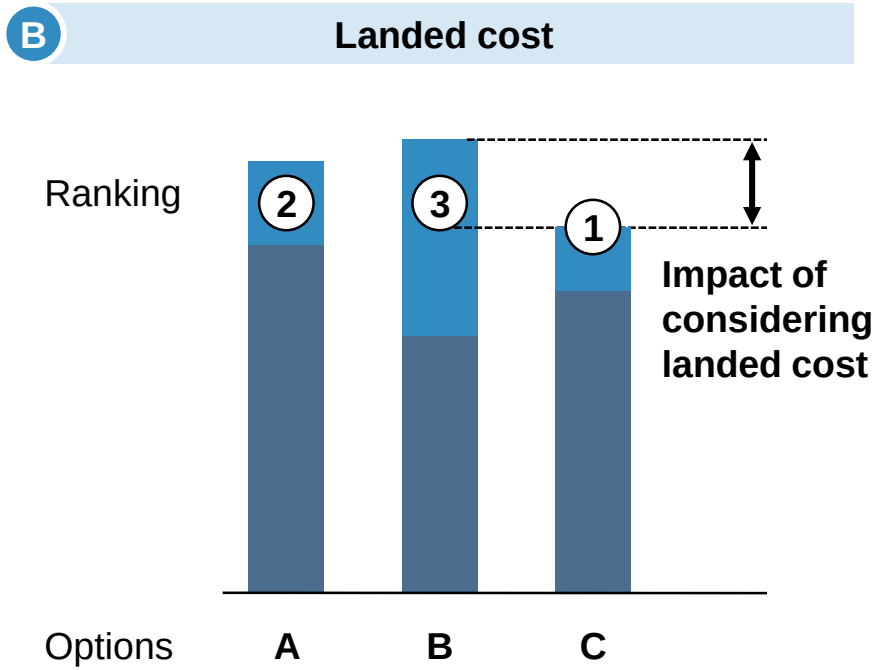


- **COGS (Cost of Goods Sold)** is the sum of all direct costs that went into producing or purchasing a product
- **TLC** includes cost + supply chain related costs

Source: Allon & Van Mieghem (2010). The Mexico-China Sourcing Game: Teaching Global Dual Sourcing.

Considering total landed costs allows for better purchasing decisions





- The procurement decisions are often made with incomplete cost transparency.
- By including landed cost in procurement decisions, landed cost can be improved.

References

- Alicke, K., Hoberg K., and, Mauhourat J. (2022). Regionalizing supply chains: how closer gets better, Preprint, August 2022.
- Allon, G., and Van Mieghem, J. A. (2010). The Mexico-China sourcing game: Teaching global dual sourcing. INFORMS Transactions on Education, 10(3), 105-112.
- Hoberg, K., Alicke, K., and Strigel, A. (2021). Zurück nach Europa. Harvard Business Manager 1/2022.
- Van Mieghem, J. A. (2008). Operations Strategy. Dynamic Ideas.

Agenda

1 Global sourcing and reshoring

2 Case study: Reshoring

Interactive case study: Global sourcing at Parts Inc.

Case Background

- Global sourcing is a key challenge for companies. In this case, you will evaluate different sourcing strategies. Parts Inc. is selling mechanical parts to customers in Europe. Over the past decade, Asia has become the main sourcing destination for one of their business units. However, managers became worried about their current sourcing practices, considering cost changes as well as the growing need for more sustainability and resilience.
- Parts Inc. operates four warehouses across Europe (Gdansk, Hamburg, Marseille, and Genoa), each located close to a port. Sourcing strategies have to ensure meeting required volumes at the warehouses ("demand"). The current model is as follows: All items are sourced from Asia, delivered to the port of Gdansk, and from there shipped to the warehouses.
- Your task is to review this sourcing model. In addition, Parts Inc. has found a supplier in Europe that would be able to ship up to 500 units to one of their warehouses. Could this be beneficial for Parts Inc., also considering the need for more sustainability and resilience raised by top management?

Acknowledgments: This interactive case is heavily inspired by Wu (2022). Case—integrating network design models for a Global Supply Network. The development of the concept has greatly benefited from a master's thesis written by Peer Westerhaus at Frankfurt School of Finance and Management.

The reshoring app (1/2)

The **data** tab provides all cost parameters and network constants.

Sourcing strategies are evaluated based on landed cost, summing up costs for production, sea and road freight, inventory holding, CO2 cost for sea and road transport.

SGR-CHAIN

Reshoring

Reshoring Case | Data

Landed cost

Results	
Production:	231,796 €
Sea Freight:	23,727 €
Road Freight:	28,580 €
Holding:	5,239 €
Sea CO2:	1,042 €
Road CO2:	1,196 €
Total Costs:	291,581 €
CO2 tons:	22.38

Sourcing strategy

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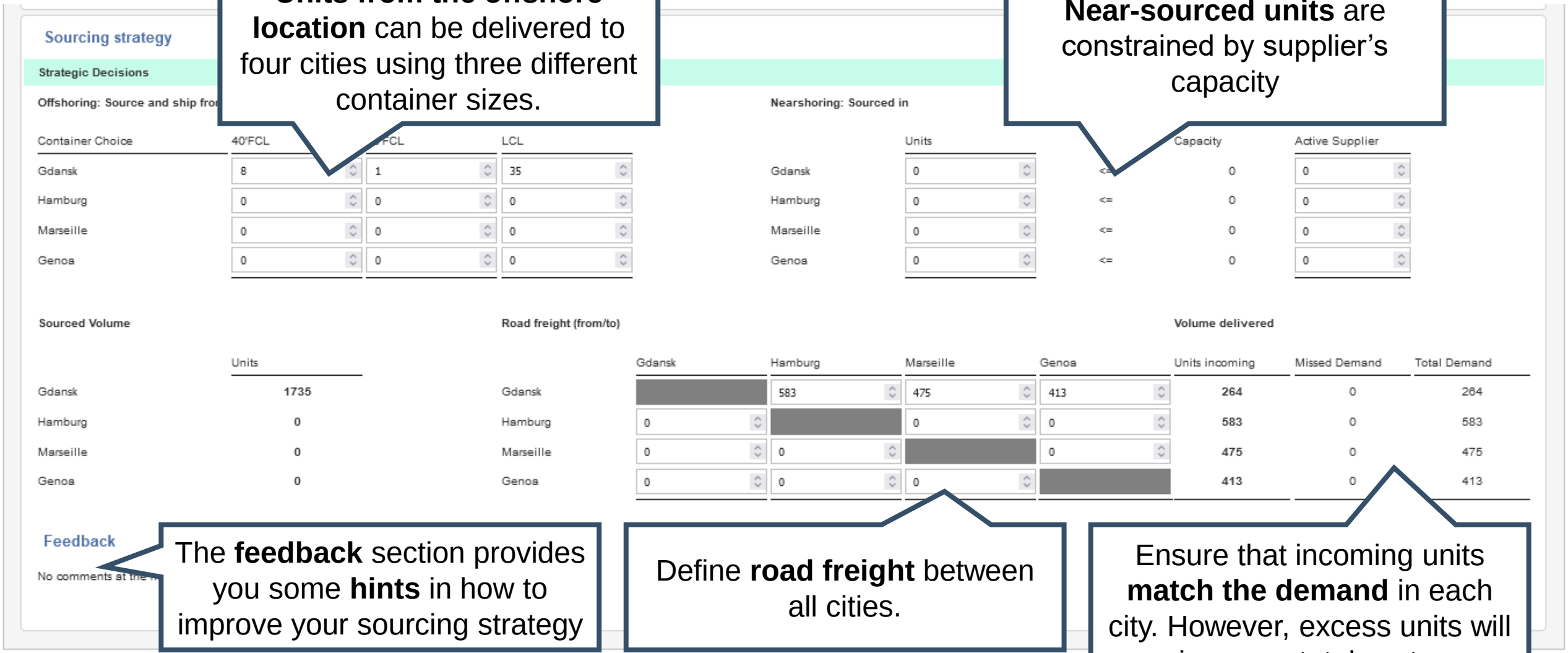
The reshoring app (2/2)

Units from the offshore location can be delivered to four cities using three different container sizes.

Near-sourced units are constrained by supplier's capacity



Sourcing strategy

Strategic Decisions

Offshoring: Source and ship fro

Container Choice	40'FCL	FCL	LCL
Gdansk	8	1	35
Hamburg	0	0	0
Marseille	0	0	0
Genoa	0	0	0

Nearshoring: Sourced in

	Units		Capacity	Active Supplier
Gdansk	0	<=	0	0
Hamburg	0	<=	0	0
Marseille	0	<=	0	0
Genoa	0	<=	0	0

Sourced Volume

	Units
Gdansk	1735
Hamburg	0
Marseille	0
Genoa	0

Road freight (from/to)

	Gdansk	Hamburg	Marseille	Genoa
Gdansk		583	475	413
Hamburg	0		0	0
Marseille	0	0		0
Genoa	0	0	0	

Volume delivered

	Units incoming	Missed Demand	Total Demand
Gdansk	264	0	264
Hamburg	583	0	583
Marseille	475	0	475
Genoa	413	0	413

Feedback

No comments at the

The **feedback** section provides you some **hints** in how to improve your sourcing strategy

Define **road freight** between all cities.

Ensure that incoming units **match the demand** in each city. However, excess units will increase total costs.

Global sourcing at Parts Inc.: Tasks

Develop sourcing strategies and assess their cost impact

- Can you enhance the offshore sourcing strategy by shipping to locations beyond Gdansk?
- Is it beneficial to source everything from onshore locations? *(Hint: Increase domestic capacity to a value that exceeds total demand)*
- Develop a strategy that combines both onshore and offshore sourcing, considering a maximum of 500 units for domestic capacity.

Evaluate the impact of changing business environments

- What is the impact of higher CO2 certificate prices on global sourcing strategies?

Note: default parameters are: Interest Rate (in percent): 25, Domestic Capacity: 500, Certificate Price: 100.