

# Sustainable Supply Chains in a Globalised World

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16<sup>th</sup> International Symposium  
on Logistics (ISL) 2011

Berlin/Germany, 11<sup>th</sup> July 2011  
University of Nottingham/UK

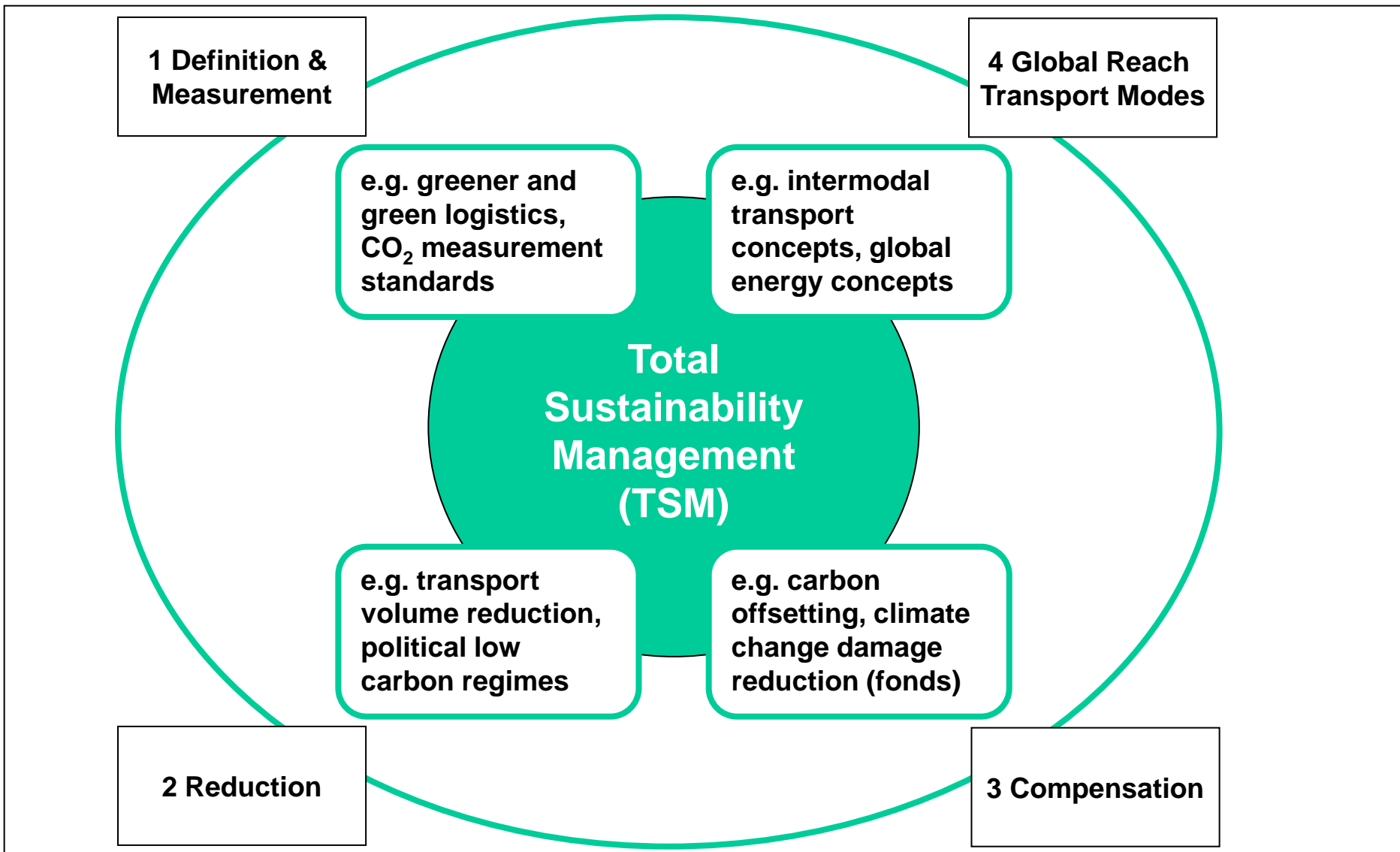


1. Introduction
2. Sustainable Logistics Concept
3. Details:
  - (a) Definition & Measurement
  - (b) Reduction
  - (c) Compensation
  - (d) Global Reach
4. Simulation
5. Outlook

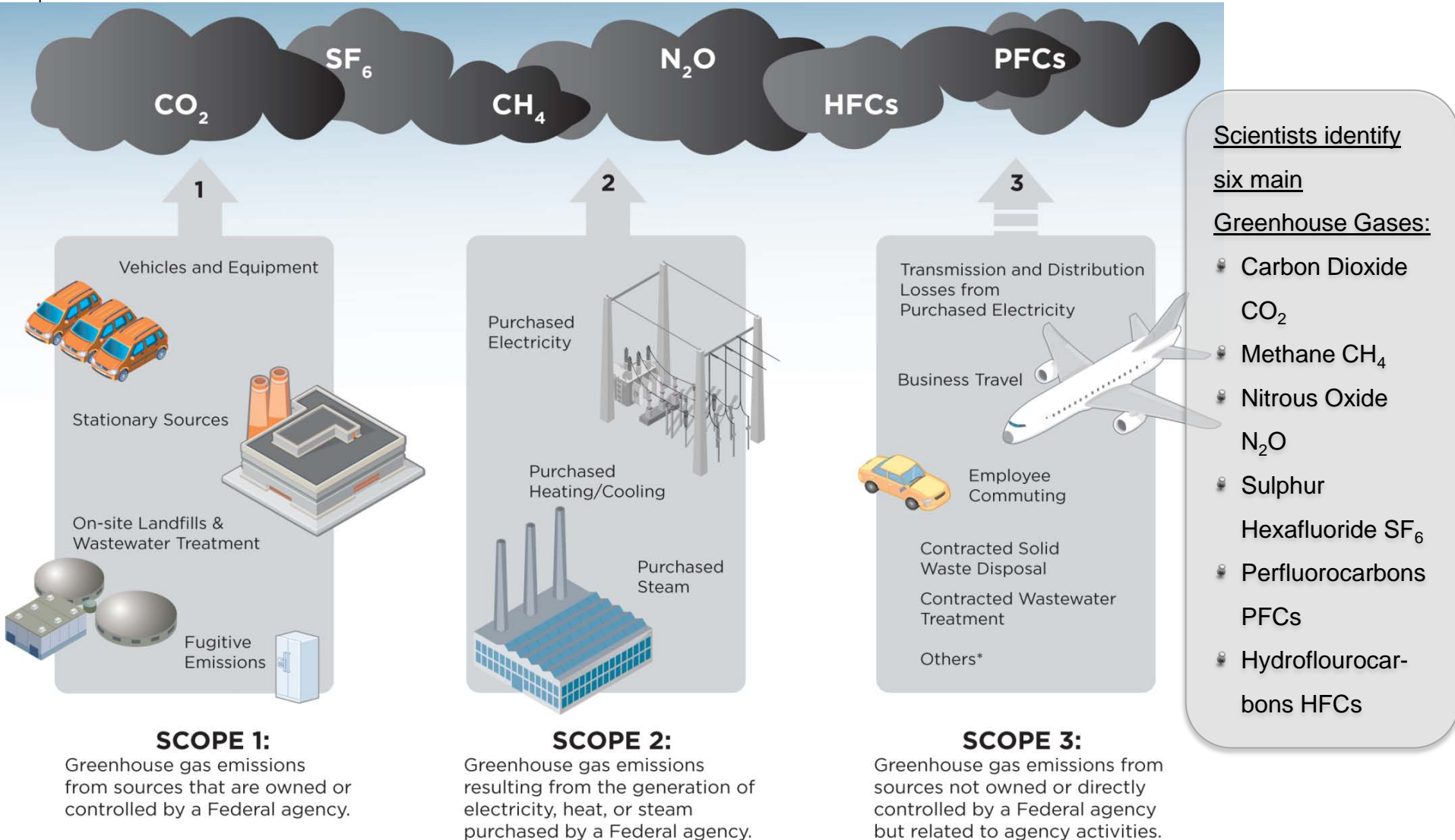
- Sustainability approaches for global supply and transport chains are an **intensively discussed topic**.
- New topics, some examples in the following questions:
  - What is a *sustainable* supply chain (greener versus green logistics)?
  - How can an overall *sustainability measurement* be developed and standardized?
  - How can CO<sub>2</sub> measurements be *standardized* globally?
  - Which *action fields* can be identified and are important for future sustainable supply chains?
  - How can standardized and effective *management methods* be applied globally to tackle the problems of greener logistics?

- **Areas** of an integrated sustainability concept:
  - (1) The basis is provided by **definitions and measurement** standards e.g. regarding global CO<sub>2</sub> measurement.
  - (2) Green logistics management concepts have to include **reduction instruments** regarding energy consumption and emissions for example by avoiding transport or using new motor and energy concepts (hybrid drives, sky sails etc.).
  - (3) Future sustainable concepts have to include **compensation** concepts regarding e.g. carbon offsetting and even possible damage control funds in order to support areas and countries which undergo severe problems due to climate change.
  - (4) Concepts and measures have to be implemented on a **global scale** in order to be suitable for global supply chains. This may require new global standards or even institutions.

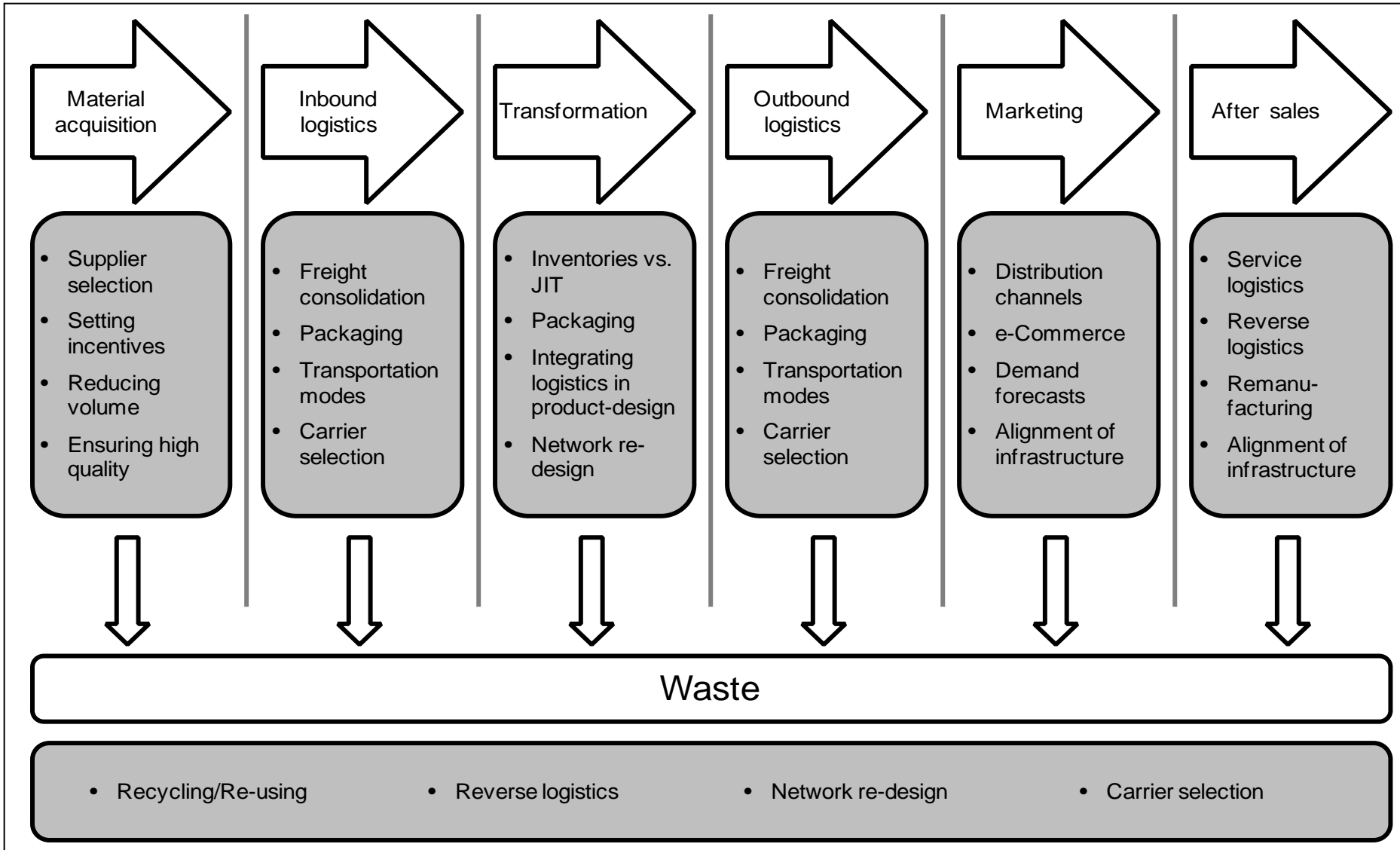
# 2. SL Concept



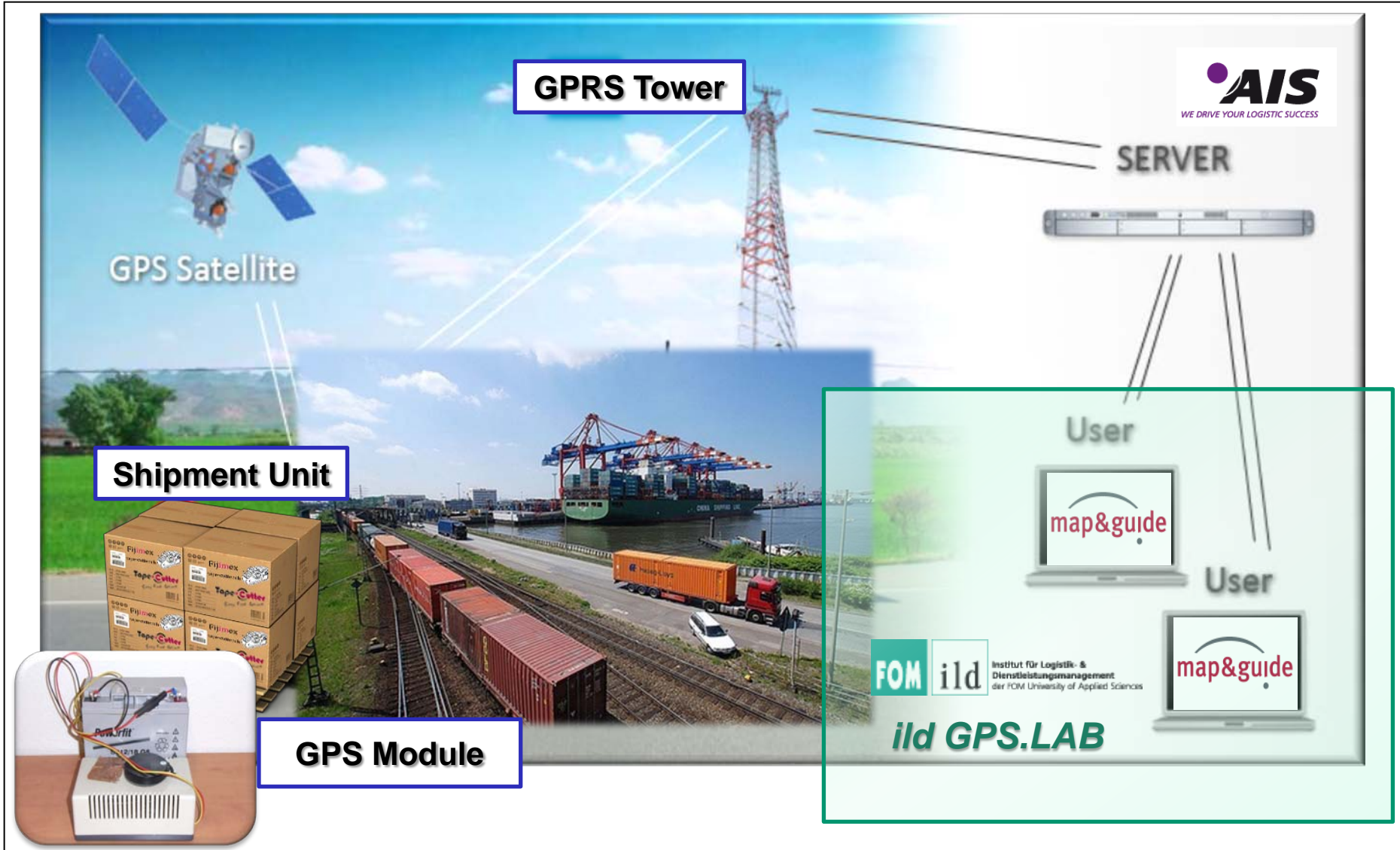
# 3. Detail: (a) Definition (CO<sub>2</sub>)



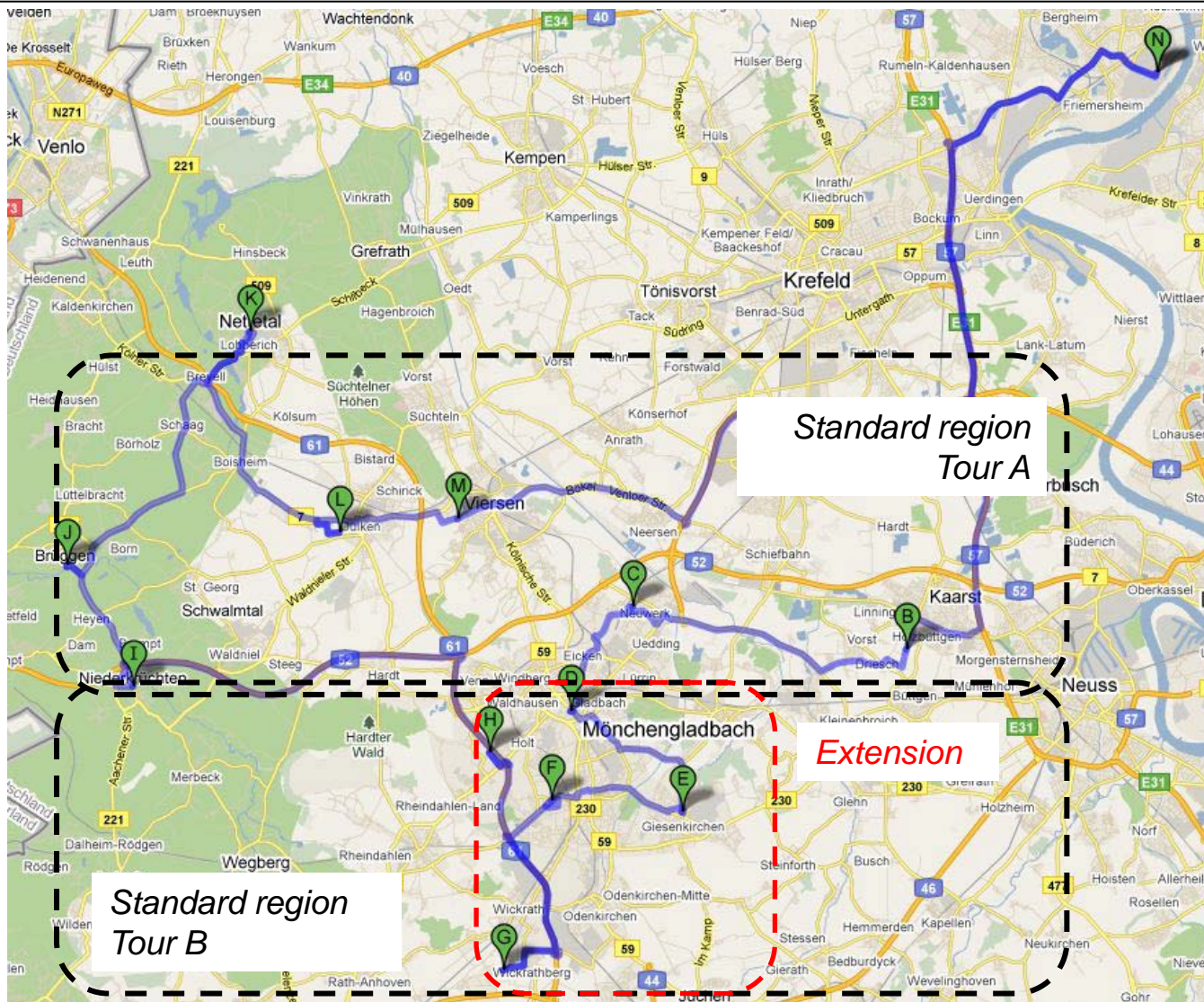
# 3. Detail: (b) Reduction



# 3. Detail: (b) Reduction



# 3. Detail: (b) Reduction



# 3. Detail: (c) Compensation



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**2** Calculate

First, let's take a look at your building and office space. Just fill in the boxes below. You may skip any stage.

**Office Emissions Calculator**

Business Name

State (abbr) or Zip (5 digit)

How would you like to calculate?

Utility bills  # of employees  Office Space (SqFt)

--- Do you have servers? ---

Yes we do  No we don't

Your Office Footprint (tonnes CO2): 0.00

Cost to Offset: \$0.00

[Select and Next Step](#)

**3** Offset your Footprint.

To qualify as a CarbonFree® Partner you must offset at least your Office, Fleet and Travel. Min. \$350 donation.

**Shopping List**

Emission Source	Tons CO <sub>2</sub>	Offset Cost
<b>Total</b>	0.00	\$0.00

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# 3. Detail: (c) Compensation



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**carbon calculator**


**flight emissions**

Flying from:  
LHR London Heathrow Apt United Ki

Going to:  
SYD Sydney Kingsford Smith Apt Aus

Via (longhaul flights):

Passengers:  Flight type:  Return  One way

**carbon emissions**

**5,62** tonnes of CO<sub>2</sub>      **£42,12** cost to offset

**21140** miles travelled

[add to basket](#)    [buy offsets](#)

[0 offset\(s\) in basket](#)

currency: [GBP](#)    distance: [miles](#)

**basket summary**

**carbon offsets explained**

Each time we heat our homes, take a flight or drive the car, fossil fuels are burnt and CO<sub>2</sub> is released into the atmosphere, causing climate change. We all need to take steps to reduce our CO<sub>2</sub> emissions and there are many ways to reduce your carbon footprint: we now have a special [low carbon living](#) section to help you.

[Take Action...](#)

**The Reduce and Offset Approach**

For the greenhouse gases we cannot avoid emitting, you can buy carbon offsets. In our experience nearly every company and individual treats the offsets they buy as part of their 'reduce and offset' approach. The 'myth of carbon indulgences', as it has been named, is largely that – a myth.

Carbon offsetting enables you to take responsibility for the carbon emissions your activities create by paying someone to reduce CO<sub>2</sub> in the atmosphere on your behalf. Have a look at some of the [projects your money can fund](#) through ClimateCare. Who should you buy from? It's important to understand what quality offsets are about. Read some independent research on what to look for in your carbon offset provider: the [Clean Air, Cool Planet](#) offset provider assessment.

Still unsure? Read Forum for the Futures report ["Offset Positive"](#) for an overview of the positive benefits of carbon offsetting.

**What you'll receive**

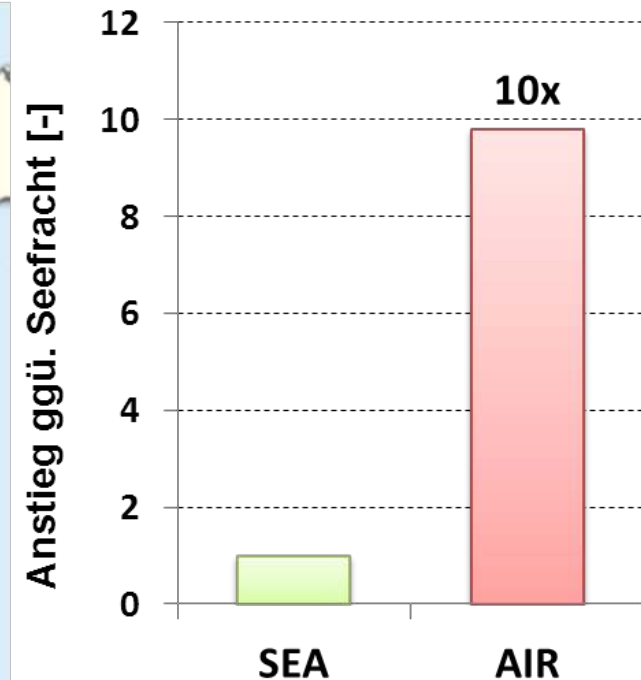
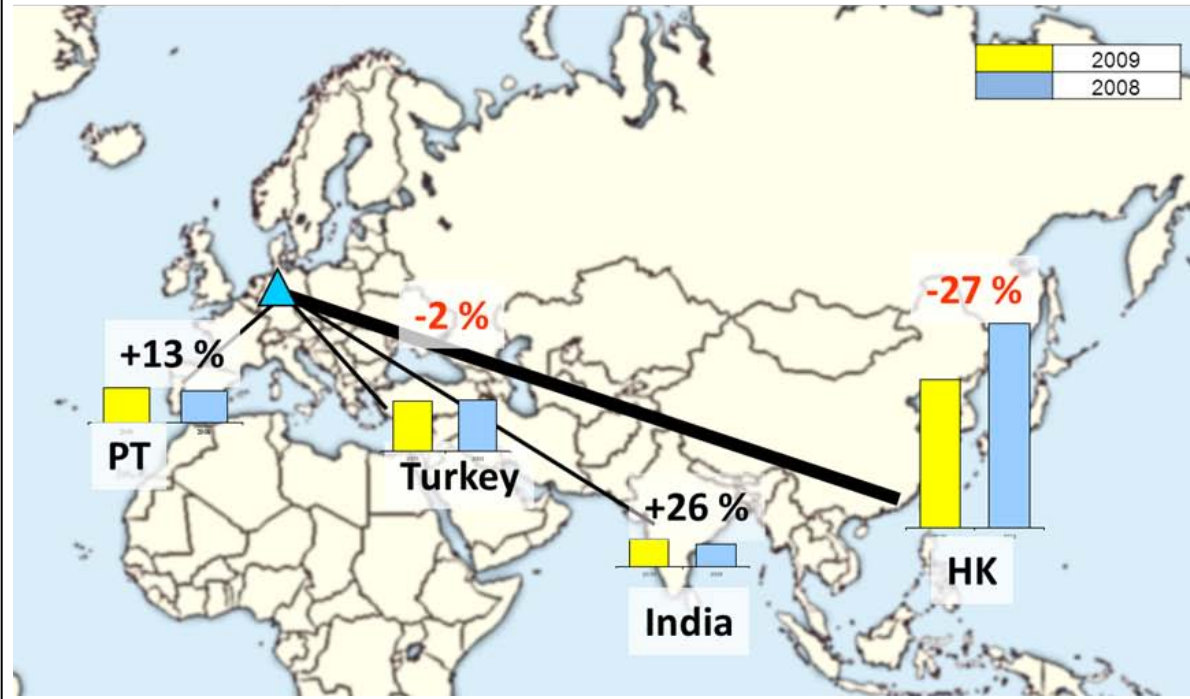
When you offset with us you'll get a [ClimateCare certificate](#) showing your emission reductions, as well as [reduction tips](#) to help you continue reducing where possible.

[Making it easy for you...](#)

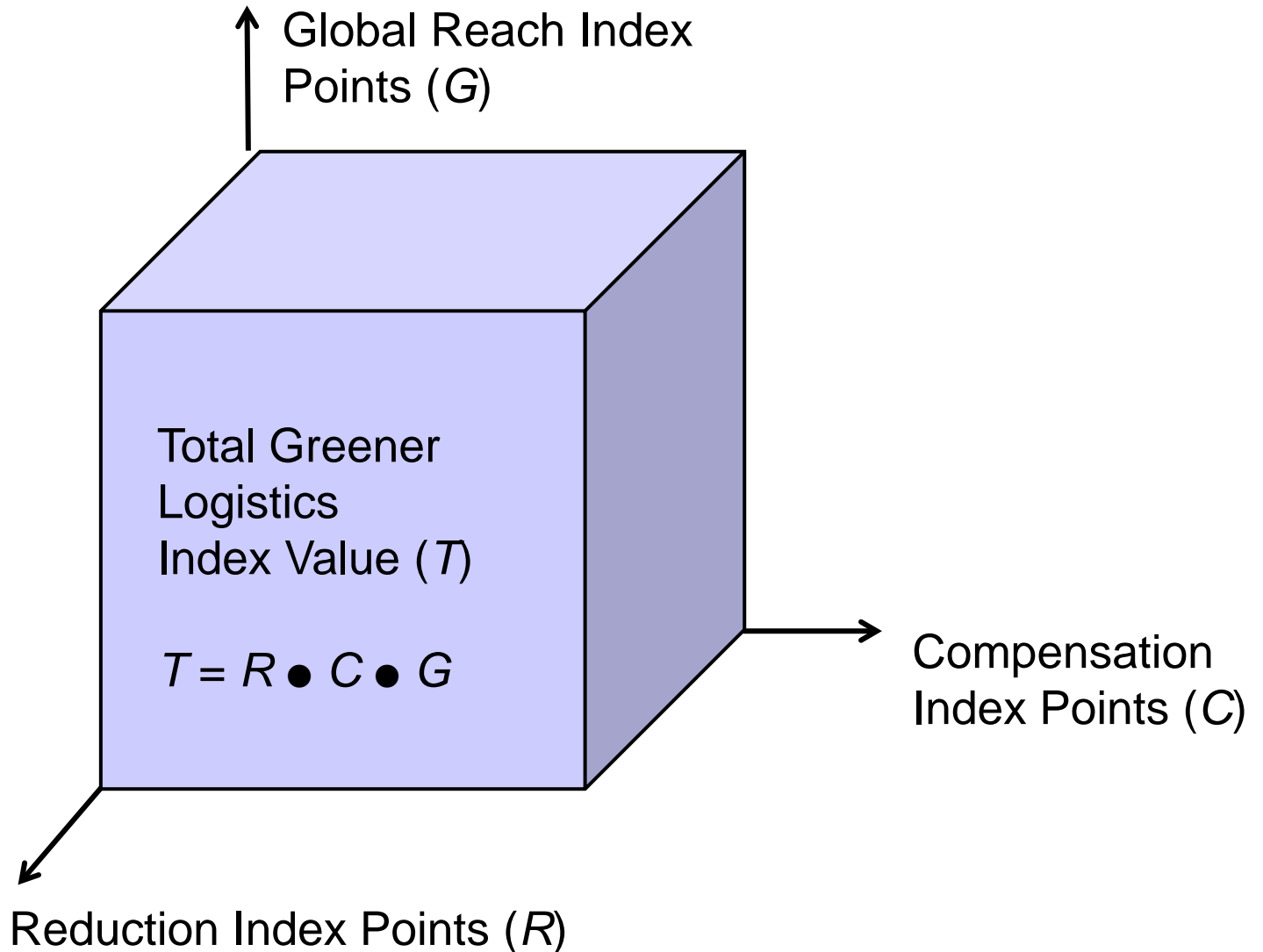
After using the offsets calculator to work out how many tonnes of CO<sub>2</sub> your activities produce, you can pay ClimateCare to reduce the equivalent amount of CO<sub>2</sub> in another part of the world by investing that money into emission reduction projects. So when you buy a tonne of carbon from ClimateCare's emission reduction portfolio, a tonne will be reduced through our projects. The money is used to replace fuel-hungry inefficient technologies with low carbon efficient technologies in developing countries. It's a fantastic investment because not only does it reduce

# 3. Detail: (d) Global Reach

- **Example ESPRIT** (Ratingen/Germany & Hong Kong)
- Traditional sourcing in Asia (China)
- Sourcing shift to Mediterranean (India)
- > Greener supply chain



- **Basis:** Given calculation definition (carbon) e.g. by ISO DIN EN 16258:2011 is used as common ground.
- The three other *perspectives* “reduction”, “compensation” and “global reach” are **multiplied as an index value**.
- If a company/SC would reach 100 points this would indicate that
  - *first* of all the technically possible reduction of environmental impact has been reached (technological production frontier, total resource efficiency per output parameter as e.g. ton-kilometre),
  - *second*, the environmentally negative influences left are compensated by matching measures to a full extend and
  - *third*, this is reached on a fully global scale for the whole company or supply chain (ubiquitous approach).
- Therefore this **total greener logistics (TGL)** index value could enable logistics companies to measure & compare their efforts.



- The presented **total sustainability model** provides a basic concept and gives greener logistics programs and concepts in companies and supply chains a theoretical and integrated basis.
- **Further Research** is needed in order to link an increasing number of single measures and concepts regarding greener logistics to the suggested TSM model.
- The suggested **TGL index value should be tested in practice** by case study measurement research application with several pilot companies and supply chains.
- The proposed concept structure with four perspectives should be checked against other sustainability concepts (e.g. TBL, ISO).
- An **integrated approach** regarding sustainability in logistics may be possible and fruitful for research as well as business practice.

# Sustainable Supply Chains in a Globalised World

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**Thank you for your attention.**

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