International studies have shown that more than 14% of CO₂ emissions¹ are the direct result of logistics processes in global business. This is a significant proportion and indicates that an environmentally focused optimisation of logistics processes would represent a valuable contribution to sustainability.

In Germany, the transport sector – and hence transport logistics – is responsible for approximately 20% of all emissions². Of these, about one third can be attributed purely to the transport sector and some two-thirds to passenger traffic and personal forms of transportation. The fact is that, in contrast to developments in industry, business and the private sector, there has been no reduction in CO₂ emissions in the transport industry since 1991. The reason for this is that road-based transport services and their logistics divisions have tended towards using more powerful vehicles, a trend that has eaten up any economies achieved by reducing the number of empty runs.

Today, anyone concerned about these issues must make extra efforts to find solutions that make clear and radical changes to the situation as it stands – inevitably a new mindset is required. The classical model for evaluating logistics chains assumes that the primary aim is to minimise total costs, regardless of emissions levels. However, these days both costs and emissions need to be optimised in equal measure. Simply minimising total costs is no longer enough; what is needed is a thorough rethink and a minimisation of emissions levels throughout the logistics chain in tandem with costs reductions. This is the new approach and one that must be applied to all global and European projects. It is crucial now not only to develop a new mentality that takes emissions into consideration but also to design appropriate planning tools in line with these emissions-based criteria.

Examples of globalisation in logistics chains

I will use two examples to make it clear how ecological ideas about logistics processes are in urgent need of change. This change will require decisions to be made at the political level on the globalising of logistics chains both in Europe and internationally.

Airbus A380 production in Europe. The first example is the distribution of Airbus A380 production locations across Europe. This project has been feted as a European venture and represents first and foremost a project to challenge the overwhelming might of US competitor Boeing. It is reasona-

² Sustainability in Logistics Chains – Hochschule Osnabrück (University of Applied Sciences) – LOGIS. NET
What I am referring to here are “physical traces”, or, in modern parlance, an „ecological footprint”. If we look at a person’s lifestyle, we can see that it has a major impact on the size of the footprint. At this point, I do not want to go into the immense problem of water wastage in the agricultural sector. However, I would like to discuss the worldwide trade network that links producers across the globe with private consumers. There can be no question that our eating patterns and habitual consumption of luxury foodstuffs require that what we eat must travel immense distances before reaching our tables; permanent intercontinental transport routes and logistics chains have been established to meet this need. What is also clear is that the size of the intercontinental logistics chains leads to an ever-greater environmental impact. International measurements have shown that the CO₂ load as a result of air transport stresses the environment 80 times more than transportation by ship and up to 300 times more than when domestic products are used.

Our consumption in Europe of strawberries from Chile, perch from Tanzania or apples from New Zealand is extremely detrimental for the environment. It is difficult to conceive of a greater environmental absurdity in terms of the logistical processes involved, and this cannot be justified until one examines the particular conditions that accompany it. To understand this, I would now like to look at the question of New Zealand apples in more detail.

A New Zealand apple has absolutely no chance – from a logistical point of view – of competing with an apple harvested in Poland. If the Polish apple is picked at the right moment, it has an unsurpassable advantage in environmental terms. However, the New Zealand apple’s ecological profile starts to look rather good when pitted against a storage-quality Polish apple that only reaches the Polish market in March or April. You may well ask yourself why this is so.

Since being picked in August, the Polish apple has spent several months in a refrigerated warehouse. This month-long period of cold storage has caused the complexion of its ecological scorecard to deteriorate to such an extent that the logistically untenable prospect of transporting an apple from New Zealand to Poland suddenly becomes the better option environmentally speaking. In the seven months that it has had to spend in storage, the Polish apple has taken on such a negative ecological load that the New Zealand apple now performs better in environmental-logistical terms in the „Green Logistics balance”.

We can see from this that it does not always make sense to reject globalisation outright and view it as a negative for the „Green Logistics” movement. However, we need to learn to design our business and logistical processes along more sustainable, „greener” lines. This conclusion is quite clear-cut: „Green Logistics” offers operational guidelines for the planning and implementation of logistical processes in Germany and Poland, and by extension in Europe.
Recommendations for implementing „Green Logistics“

What lessons do I think we should learn from this for our Logistics Congress?

- First, I think that it is necessary to raise awareness about „Green Logistics“ in the university system and to design it into the educational process. Perhaps a specialist department of „Green Logistics“ should be set up. I would favour making the study of the many negative examples of international logistical processes part of the university curriculum. Students should learn to modify these „poor“ logistical solutions and complete their studies with what you might call a „light bulb moment“.

- There is no question that student awareness also needs to be developed since, in the end, students are also consumers. And it is never too early to train these end-users and make them sensitive to sustainability issues in the logistical processes of the future.

- It is vital that an immediate ruling is made, stipulating that a „Green Logistics“-style ecological balance sheet is made an essential part of every logistics project. No project should be implemented at international level unless it has been awarded a „green seal“.

- „Green Logistics“ is not directed against globalisation; it is rather a trading mentality that is opposed to the establishment of seemingly absurd transport routes and logistics chains without it being first verified that there is no better and more efficient way of doing things from an environmental standpoint.

- It is our task to develop „Green Logistics Tools“ to evaluate logistical processes and introduce this way of thinking into university education.

- „Green Logistics“ is like mountain climbing. The ascent is difficult but with every metre of height gained, you can see further and more sustainable solutions become apparent. So, let’s get to it and design logistics in a „greener“ way.

As a final picture I want to show an aerial view of a very popular holiday destination (both for Germans and Poles). It is of the Maldives and provides a dramatic image of the rising sea level there. As we all have a responsibility for the planet, we should have this in our consciousness.

Summary

Globalisation is placing completely new demands on all logistical processes and on all logistics providers. It is no longer enough to let economic considerations hold sway in the organisation of logistical processes – a new mindset is required, one that focuses on both economic and ecological concerns. Therefore, the economy needs to be informed by new ways of thinking developed by our research institutes, using objective evidence drawn from environmental logistics and supported by practical logistical tools.

Both the examples discussed above show that political decisions are required to set compulsory standards for logistical processes in the Europe of the future; at the same time, engineers need to remain aware of their responsibilities and explore ways to develop a logistics that is based on sound, ecological principles. Moreover, although we can expect no change in the globalisation of our relationships worldwide, to be in harmony with the spirit of the times we need to work consciously towards designing and developing logistical processes that make greater sense from an environmental standpoint.

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Fig. 4: Malé airport on the Maldives.