



# Opportunities for a green logistics sector



Trucks at Oshikango border post. Photo: K. Schade

The logistics sector was identified as one of the four economic priority sectors in Namibia's Fourth National Development Plan (NDP4) covering the period 2012/13 to 2016/17. Namibia's good transport infrastructure including paved roads to neighbouring land-locked countries such as Botswana and Zambia as well as to larger markets in Angola and South Africa, a bridge crossing the Zambezi River connecting Namibia and Zambia and hence avoiding long waiting times for ferries to cross the river, high level of public safety, well developed financial and ICT sectors that ease payments and relatively short periods for customs clearance have among others informed the

decision to prioritise the logistics industry in NDP 4. In addition, NDP4 places strong emphasis on infrastructure development that focuses on the expansion of the Walvis Bay port and Namibia's airports, the rehabilitation of the railway network, and the maintenance of the road infrastructure, which will support the development of a logistics hub further. However, NDP4 also prioritises, among others, the protection of the environment to ensure the sustainable development of the country. There might be an inherent conflict between these objectives, since the expansion of logistics infrastructure and increased transport flows will have a potentially negative impact on the environment

and society. Moving towards a green logistics sector can mitigate possible negative impacts. This brief paper describes some of the impacts and possible mitigations.

## Definitions

Logistics goes beyond the transportation of goods from raw material producers to manufacturers and the final consumer as it includes the handling, storage and distribution of goods. The Namibian-German Centre for Logistics at the Namibian University of Science and Technology (NUST) uses the following definition: '(...) the process of strategically managing the procurement, movement and storage of materials, parts and finished inventory through the organisation and its marketing channels in such a way that current and future profitability are maximised through the cost-effective fulfilment of orders'. The definition puts profitability at the centre, but is silent on sustainability.

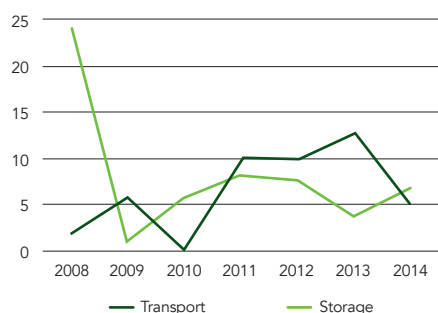
The concept of a green economy was created more than a quarter of a century ago (1989) and entered mainstream discussions five years ago during the preparation of the Rio +20 conference. It refers to a development approach that does not only focus on economic growth, but also takes social and environmental impacts into account - leading to a more sustainable development path. It is often contrasted with the brown economy that is based on natural resource extrac-

tion and the use of fossil fuels. The third concept, the blue economy, was born out of the discussions of a green economy, but focuses on the sustainable development of marine-based economies. While it includes all coastal states, its emphasis is mainly on small-island states.

## Background

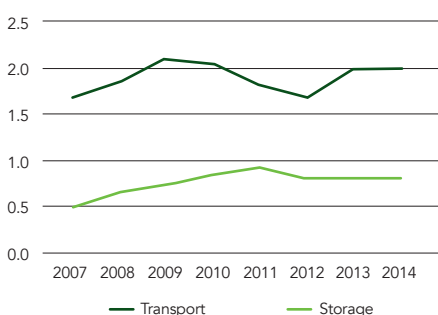
The transport sector is part of transport and communication in the National Accounts and is divided into transport and storage. It is therefore close to the logistics sector. The two sub-sectors have seen strong average growth between 2008 and 2014 of 6.5 percent for transport and 8.2 percent for storage, with strong fluctuations at times. The transport sub-sector's contribution to GDP increased from 1.7 percent (2007) to 2.0 percent (2014), while the storage sub-sector grew from 0.5 percent to 0.8 percent over the same period.

**Figure 1 Growth rates for the transport and storage sectors in percent**



Source: Namibia Statistics Agency, Annual National Accounts 2014

**Figure 2 Transport and storage sectors' contribution to Gross Domestic Product in percent**



Source: Namibia Statistics Agency, Annual National Accounts 2014

The National Accounts provide only aggregated figures for investment in the sector 'Transport and Communication'. The sector's contribution to investment is

by far larger than its contribution to GDP and averaged 13.4 per cent from 2007 to 2014. Total investment increased from NAD15.6 billion to NAD41.6 bln. The sub-sector of transport and storage is slightly more labour intensive than the Namibian economy at large. It provided 3.7 percent of all jobs in 2014, while it contributed 2.8 percent to GDP. Despite robust growth in 2013 and 2014, employment fell by more than 2,000 jobs between 2012 and 2014 from 28,753 to 26,585 employees. Job losses primarily affected women, while more men were employed in 2014 compared to 2012. The trend cemented male dominance, which increased from 80.7 percent to 89.5 percent, among employees in the sector. Out of 5,559 women employed in 2012 only 2,790 remained in the sector in 2014.

The transport sector is globally the third largest contributor to Greenhouse Gas (GHG) emissions, mainly carbon dioxide and to a lesser extent methane. It is estimated that 95 percent of the transport sector's energy is derived from petroleum-based fuels. Globally, the transport sector contributed 14 percent to GHG emissions in 2010, trailing the energy sector (25 percent) and agricultural and forestry sector with 24 percent. According to other studies, road transportation accounts for 70 percent of total transport. Road transportation is dominated by passenger transportation, while freight transportation accounts for between 30 and 40 percent of road transport. Based on these figures, freight transport by road contributes about five percent to global GHG emissions. A recent World Economic Forum report, published in January 2016, estimated the contribution of logistics to total emissions at 13 percent if other modes of transport are included (such as railway and maritime transport) as well as warehousing and other components of logistics. It is assumed that the share is higher in Namibia because of long transportation distances, a less motorised population and a lower degree of industrialisation.

Beyond GHG emissions, the logistics sector impacts on the environment, among others, through land use for trans-

port infrastructure (roads, railway lines, sea ports and airports) and the logistics infrastructure (warehouses, distribution centres, etc.), through noise pollution, energy consumption and use of packaging material including pallets. Social impacts include, among others, injuries and deaths from accidents – road accidents, accidents by other modes of transport, and other work-related accidents. Based on statistics from the Motor Vehicle Accident Fund, 241 accidents in 2014 involved trucks that resulted in 376 injured persons and 71 deaths. Accidents involving trucks usually cause more harm than other road accidents because of the severity of the impacts.

The impacts or externalities of the logistics sector need to be taken into account when assessing its sustainability and when considering the total costs of providing logistical services. Globally, businesses making use of logistical services are becoming more aware of their carbon footprint caused by the supply chain development and are demanding more environmentally friendly solutions. The increasing awareness resulted in the addition of a question in the World Bank's Logistics Performance Index survey regarding the demand for these solutions. On a scale of 1 to 5, where 1 indicates that there is almost no demand and 5 that there is always the demand for environmentally-friendly supply-chain solutions, the unweighted global average stood at 2.14 in 2014. There is apparently less awareness about the environmental impact in Namibia than in neighbouring countries since Namibia's score was 1.9, compared to 2.9 in South Africa, 2.4 for Botswana and 2.3 for Lesotho. The score is supported by a survey of Namibian stakeholders in the logistics sector in 2012 that revealed that while commercial sustainability was seen as vital, environmental sustainability was "often regarded as a 'luxury'"<sup>1</sup>. The findings suggest that the demand for sustainable supply chain solutions will pick up in Namibia and that logistics companies should not only be prepared for it, but could actively drive the process.

1 Savage, C.J., Fransman, L. & Jenkins, A.K., 2013, 'Logistics in Namibia: Issues and challenges', *Journal of Transport and Supply Chain Management*.

## The Sustainable Development Goals and the Logistics Sector

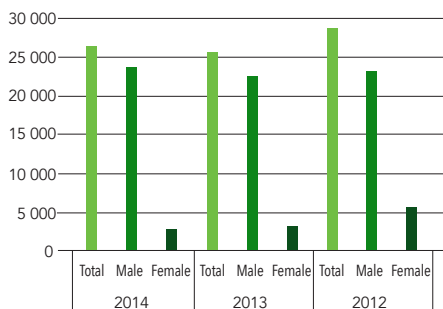
The United Nations General Assembly adopted the Sustainable Development Goals on 25 September 2015. They follow on the Millennium Development Goals and cover the period 2015 to 2030. A set of 17 goals with a total of 169 targets to be achieved by 2030 were agreed. There are a number of targets under various Goals that have an impact on the logistics sector.

Goal 3 envisages a healthy life and well-being for all at all ages. In order to achieve this goal nine targets are set of which one has a direct link to the logistics sector. Target 3.6 aims at halving the number of global deaths and injuries from road traffic accidents. According to statistics from the Motor Vehicle Accident Fund (MVA), trucks were involved in six percent of all road accidents in 2012, which increased to seven percent in 2015 with fluctuations in between. Additional statistics reveal that a larger share of all registered heavy vehicles were involved in accidents than of other vehicles, 1.8 percent of registered heavy load vehicles compared to 1.2 percent of other registered vehicles. Furthermore, the share of trucks involved in fatal accidents is higher than the share of trucks involved in total accidents implying that accidents involving trucks are usually more severe.

It is estimated that the MVA incurred costs of at least N\$10 million in 2014 through accidents involving trucks. The economic costs are substantially higher from the loss of lives, assets and goods. The logistics sector therefore plays an important role in improving road safety. The transport industry intends to establish a self-appraisal/regulation system that will certify members that adhere to set industry norms including driving and resting times, speed limits and maximum loads. There is a need to review safety features of vehicles, such as the protection of fuel tanks against impacts, compulsory fire extinguishers on board. Furthermore, basic vehicle checks at road blocks by trained officials, such as controlling overloading, use of seat belts, lights and depth of the tyres' grooves as well as road safety campaigns throughout the year could help to

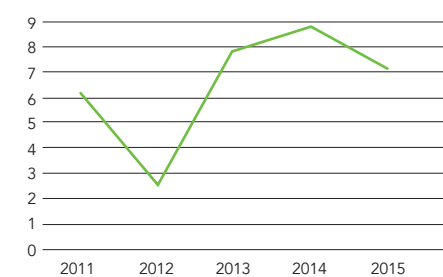
reduce the number of road accidents and the costs incurred.

**Figure 3 Employment in the transport and storage sector, 2012 to 2014**



Source: Namibia Statistics Agency, The Namibia Labour Force Survey 2014 Report

**Figure 4 Trucks' involvement in road accidents as percent of total accidents**



Source: Authors' own calculation based on Motor Vehicle Accident Fund Accidents Statistics

Target 3.9 aims at reducing the number of death and illnesses from hazardous chemicals and air, water and soil pollution and contamination. The railway accident near Walvis Bay at the end of 2015 involving hazardous chemicals indicates that the safe transportation of hazardous goods needs more attention in order to minimise the impact on humans and the environment in case of accidents. While there are strict international regulations in place concerning maritime and air transport of hazardous goods the enforcement of regulations on the road needs to be improved. The Ministry therefore plans to finalise the development of a Plan of Action for the implementation of regulations for the road and railway sector in 2016.

As stated above, the logistics sector is a major contributor to air pollution through GHG emissions. In addition, maritime transport contributes to water pollution not only through operating vessels, but also through the illegal discarding of waste ranging from packaging material to waste water and oil on sea. In order to

mitigate the potentially negative impact of increased sea transportation to and from Namibia after completion of the port expansion, sufficient facilities need to be in place to deal with the waste on board of vessels, not only but in particular waste water and fuels. As far as possible, materials could be recycled.

SDG 9 focuses on building resilient infrastructure, promoting inclusive and sustainable industrialisation and fostering innovation. Target 9.1 subsequently encourages countries to develop quality, sustainable and resilient infrastructure, including regional and trans-border infrastructure. This is in the interest of the logistics sector as well since quality infrastructure reduces transportation costs and increases the competitiveness of Namibia as a logistics location. Moreover, it will reduce carbon emissions by cutting travel time as well as waiting time at border posts and hence benefit the environment.

In addition, SDG 12 aims at ensuring sustainable consumption and production patterns. The logistics sector, through the creation of an efficient transport and logistics infrastructure, plays a crucial role in achieving target 12.3, namely to halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses. It will therefore contribute to a more efficient use of scarce resources.

Last but not least SDG 13 commits all countries to take urgent action to combat climate change and its impact. As stated above, the transport sector is globally the third largest contributor to GHG emissions and therefore can play an important role in combatting climate change. All vehicles in Namibia are imported, mainly from South Africa which follows the global trends of cleaner and more efficient vehicles. Large companies replace their vehicles about every three years and hence continuously increase the efficiency of their fleet. Newer trucks are more fuel-efficient and therefore contributing less to GHG emissions. More advanced technology increases road safety as well and assists in detecting wear and tear before damage is done. Smaller companies, however, since they

lack capital often use older vehicles that are less environmentally friendly and have therefore a greater negative impact on the environment. Furthermore, these vehicles are often less regularly maintained, which could result in accidents.

The increase in fuel efficiency has resulted in the number of vehicles increasing at a faster pace than the consumption of fuel in Namibia. Furthermore, Namibia has moved to cleaner fuels over the years, discontinuing for instance the availability of Petrol 93 Octane and moving towards Diesel 50 ppm from Diesel 500 ppm. The Ministry of Mines and Energy could consider supporting the move to cleaner diesel through price incentives. Currently Diesel 50 ppm is N\$0.10 per litre more expensive than Diesel 500ppm. Reducing the price of cleaner diesel and increasing the price of the environmentally more harmful diesel could support the shift towards cleaner fuels. However, it is not only more fuel-efficient engines that reduce the carbon footprint, but also a more efficient transport system. It is estimated that up to 45 percent of journeys include an empty leg, meaning that the truck drives one way empty. The establishment of load boards for instance could optimise the transport sector through sharing of information about available cargo on the route. In addition, in order to reduce the carbon footprint of the transport and logistics sectors, Namibia needs to establish an efficient and functioning railway system that absorbs more of the increasing cargo moved within and through the country. This not only implies upgrading the railway system in keeping with SADC commitments, but also developing a medium-to long-term vision for the railway sector. This vision needs to include a discussion of the gauge to be used in future, whether the current narrow Cape gauge suits the country's needs or whether we need to move to the Standard gauge. These decisions have to be taken before the government commits itself to

major investments such as the Kalahari Railway link that would connect Walvis Bay to Botswana and the Johannesburg area in South Africa.

Warehouses and distribution centres leave carbon footprints through land use and use of energy. Namibian companies have proven already that the impact on climate change can be reduced through the use of battery-powered forklift trucks that are recharged from renewable energy sources such as solar panels. The impact of land use for new logistics infrastructure can be mitigated in the case of buildings for instance through application of green building standards.

Besides the SDGs, other policy documents cover some of the aspects mentioned above, but are often not implemented and or are not specific. The Logistics Master Plan 2015 refers to environmental and social considerations, but these are limited to road safety and a transport infrastructure that minimises negative effects. The Southern African Development Community (SADC) Protocol on Transport, Communication and Meteorology calls, among others, for the harmonisation of fitness levels of vehicles, safety standards including roadworthy certification and minimum standards for driving hours. Although signed in August 1996 by Heads of State or Government of Member States there has not been much progress with its implementation.

## Conclusion

The setting of industry norms and industry self-appraisals are a first step in mitigating some of the negative impacts of the transport sector, but also in increasing the competitiveness of the industry since adherence to the norms will eventually result in cost reductions for companies and the economy at large. However, if Namibia is to become the logistics hub of the region and become part of regional and global supply chains the demand by international

companies for sustainable supply solutions and logistic services will increase. Pro-actively pursuing the move to a more sustainable, greener, logistics industry with lower impacts on society and the environment will provide industry stakeholders and the economy with a competitive edge.

## Main recommendations

- Implement an industry self-appraisal/regulation system based on industry norms that are agreed upon with the relevant authorities. Adherence should be audited for member companies to reap benefits.
- Review safety features of vehicles including trucks and consider for instance making fire extinguishers compulsory in all vehicles.
- Conduct basic vehicle checks regularly at road blocks by trained officials and conduct road safety campaigns throughout the year.
- Assist SMEs operating in the logistics sector to implement industry norms and standards.
- Finalise the development of a Plan of Action for the implementation of regulations for the road and railway sector
- Set up sufficient facilities at seaports to deal with the waste on board of vessels and provide incentives for the use of these facilities.
- Promote the reuse and recycling of materials used in the logistics sector including scrap metal from old vehicles and the safe disposal of old tyres.
- Support the move to cleaner fuels through price incentives.
- Establish load boards to optimise the transport sector, reduce carbon emissions and reduce transportation costs.
- Establish an efficient and functioning railway system that absorbs more of the increasing cargo moved within and through the country.
- Apply green building standards to logistics centres and move to renewable energy sources.

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March 2016

This brief is produced as part of the IPPR's Democracy Report project and funded by the Embassy of Finland.

