HYSTER

WHITEPAPER

WHAT GOING GREEN MEANS TO PORTS AND TERMINALS IN THE MIDDLE EAST AND AFRICA.

Sustainability has increasingly become the subject of much discussion with regards to the operation of ports and terminals worldwide, including those in Africa. As the continent faces significant environmental challenges, the logistics and shipping industries have an important role to play in mitigating climate change.

This white paper explores various strategies for decarbonisation in African ports and terminals, emphasising that sustainability can extend beyond just electrification of fleets. So, how green are your operations now? And what steps can you take to become greener?

NAVIGATING THE REGULATORY LANDSCAPE

Government regulations and policies play a significant role in driving the adoption of green practices. Across Africa, regulatory frameworks for sustainability vary widely.

For instance, South Africa has established comprehensive environmental regulations and incentives for green technologies while countries like Egypt, Ethiopia, Kenya, and Morocco have shown firm commitment towards accelerated use of modern renewable energy.

Ports must navigate these varying regulatory landscapes to achieve compliance and benefit from potential incentives. Understanding and adhering to local regulations not only ensures legal compliance but also enhances the port's reputation and competitiveness.

LIFT TRUCK POWER SOLUTIONS

BATTERY ELECTRIC VEHICLES

Battery electric vehicles (BEVs) are a cornerstone of the move towards greener operations. These vehicles produce zero exhaust emissions, having the potential to significantly reduce the carbon footprint of port and terminal activities. BEVs are particularly effective in reducing air pollution, which is a major concern in densely populated areas.

Some North African countries appear to be leading the charge towards greener port operations, largely due to their close economic ties with Europe. Collaborative initiatives and technological transfers from European partners are accelerating the adoption of green technologies.

For example, Morocco and Egypt are implementing advanced electrification and renewable energy projects. These efforts are supported by European funding and expertise, demonstrating the benefits of international collaboration in achieving sustainability goals.

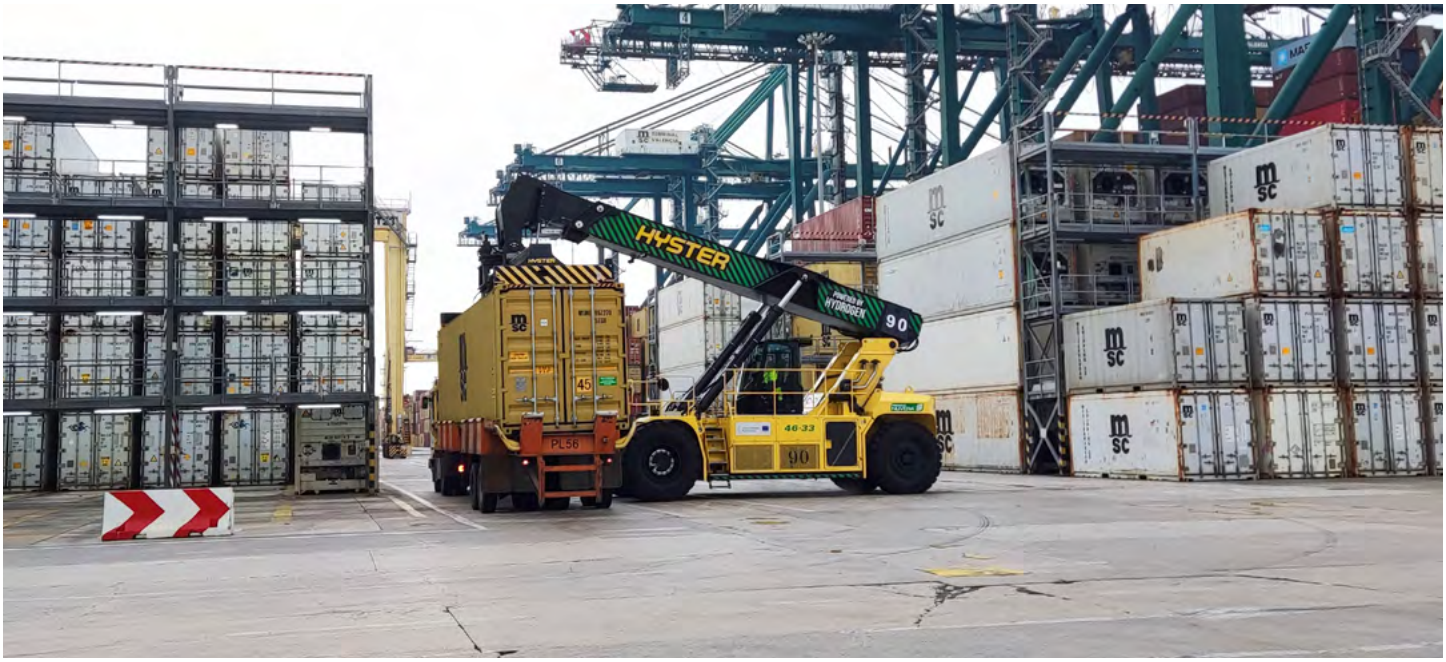
However, the adoption of BEVs in African ports faces several challenges. These include the high initial costs, the need for extensive charging infrastructure and the reliability of electricity supply in some regions, which can affect battery performance. Despite these hurdles, the long-term benefits of reduced fuel costs and lower emissions make BEVs a viable option for many African operations.

In addition, while many African countries have made strides in legislating for better quality fuels, BEVs could circumvent this issue as they do not rely on diesel fuel, offering a more sustainable alternative in regions where fuel quality is a significant barrier.

HYDROGEN FUEL CELLS

Hydrogen fuel cell (HFC) technology is gaining traction due to its potential for addressing key limitations of BEVs, namely range limitations and long recharging times. While HFCs boast a longer range and quicker refuelling, they also emit only water vapor, making them an extremely clean power source for port operations.

However, the widespread adoption of HFC technology faces a significant hurdle: immature infrastructure. While the technology itself is promising, the infrastructure for hydrogen production and refuelling stations remains in its early stages of development, not just in Africa, but worldwide.



However, with its abundant renewable energy resources, particularly solar and wind, Africa is uniquely positioned to become a major producer of green hydrogen – hydrogen produced through electrolysis using renewable electricity – with the Moroccan government already announcing plans to allocate 1 million hectares to green hydrogen projects in an effort to attract investors. This not only addresses environmental concerns but also offers economic benefits.

Locally produced hydrogen can lessen dependence on imported fossil fuels, enhancing energy security for African nations, while the development of a hydrogen economy can also stimulate economic growth by creating new jobs in areas like hydrogen production, storage, and infrastructure development.

Investing in hydrogen infrastructure – production, storage, and refuelling facilities – can unlock long-term environmental and economic benefits for Africa. While challenges remain, the potential rewards make hydrogen a technology worth keeping a close eye on for the future of green ports in Africa.

HVO100 AS A DIESEL ALTERNATIVE

As with electrification and hydrogen technologies, biofuels hold promise. Options like HVO 100 (Hydrotreated Vegetable Oil) are emerging as a compelling alternative for immediate emission reduction.

HVO100 is a renewable diesel alternative that can achieve up to a 90% reduction in CO2 emissions, particularly when used with Stage IIIA engines. Unlike conventional biodiesel, HVO100 is chemically identical to fossil diesel, which allows it to be used in existing diesel engines without extensive modification and with no reduction in equipment performance.

Using HVO100 offers a straightforward transition to greener operations, especially in regions where electrification and hydrogen infrastructure are not yet fully developed. African ports and terminals can benefit from the immediate reduction in greenhouse gas emissions while maintaining efficiency. Additionally, HVO100's compatibility with current diesel engines means that ports can implement this green solution with minimal disruption to their operations. This makes HVO100 an attractive option for ports looking to improve their environmental footprint quickly and cost-effectively, without the need to replace fleets.

ADVANCING PORT PERFORMANCE

THE DOUBLE HANDLING ADVANTAGE

Double handling, the practice of lifting two empty containers simultaneously, can significantly enhance productivity while reducing fuel consumption per container moved. By minimising the number of lifts required, port and terminal operations can lower operational costs and can also reduce emissions.

This technique not only speeds up container handling but also decreases wear and tear on equipment, contributing to longer equipment lifespans, further cost savings, and less operational waste.

However, before implementing double handling, African ports must consider local infrastructure limitations. Height restrictions on container stacks due to existing facilities and equipment can pose challenges. Some ports may have older infrastructure that is not designed to accommodate the increased height and weight of double-stacked containers. Despite these challenges, properly planned double handling, with the right equipment, can be a valuable strategy for improving efficiency and sustainability.

STAYING POWER

Improving the infrastructure and working surfaces in ports and terminals is a key factor in optimising sustainability.

Better infrastructure supports more efficient operations. Well-designed layouts can minimise travel distances within the port, reducing fuel consumption and emissions.

Uneven surfaces can cause vehicles and equipment to work harder, leading to higher fuel consumption and, consequently, greater greenhouse gas emissions. Rough terrain can also slow down the movement of cargo and equipment, potentially increasing engine idling times, or battery usage in the case of BEVs, reducing efficiency and further contributing to emissions.

Smooth, well-maintained surfaces can reduce the likelihood of damage to trucks and other equipment, leading to fewer repairs, lower maintenance costs, and less waste materials.

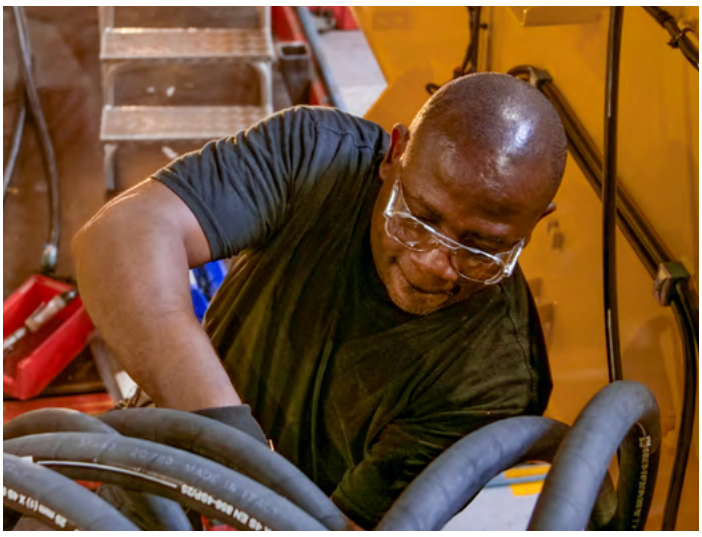
Investing in durable trucks that are easy to repair and highly reliable can also impact sustainable port operations. Reliable trucks minimise downtime and reduce the need for frequent repairs. This approach not only supports sustainability but can enhance the overall efficiency and profitability of port operations.

ALLIES FOR GREENER OPERATIONS

Regular maintenance of fleets helps maintain optimal performance and longevity of materials handling equipment. This not only can prevent breakdowns and reduce downtime but also allows equipment to operate at peak efficiency, leading to lower emissions and reduced fuel consumption. To realise this advantage, ports need ready access to maintenance and service support.

Port operations should evaluate service contracts from authorised equipment suppliers, which include scheduled inspections, preventative maintenance, and prompt repairs, which help in identifying potential issues before they escalate. This proactive approach can extend the lifespan of equipment, thereby reducing the need for frequent replacements and minimising the environmental impact associated with manufacturing and disposal of machinery.

By investing in these contracts, ports and terminals can achieve cost-effective operations and have the peace of mind that they will reap the environmental benefits of well-maintained machinery. When coupled with a strong network of local dealers, ports and terminals will also have the reassurance of expert support in their goals to reduce their environmental footprint while, at the same time, minimising potential unplanned downtime thanks to a strict preventative maintenance regime.



TRANSFORMING AFRICAN PORTS AND TERMINALS FOR A GREENER FUTURE

The journey towards sustainability requires a holistic approach that goes beyond merely adopting new technologies. It involves strategic investments, regulatory compliance, and a commitment to continuous improvement. By embracing these practices, African ports and terminals can pave the way for a sustainable future.

African ports and terminals can enhance their operations by adopting tough and durable materials handling solutions. By integrating options to reduce or eliminate tailpipe emissions, and exploring the opportunities that come with electric and hydrogen fuel cell powered trucks, these ports may uncover both efficiency and sustainability benefits. All backed up by the timely support and expert advice of the extensive Hyster® dealer network across Africa.

Learn more at www.hyster.com