



A PALLETEARTH WHITE PAPER

# THE SUPPLY CHAIN OF 2030 5 MEGATRENDS SHAPING THE FUTURE OF LOGISTICS

JULY 2024

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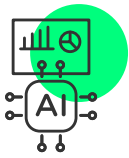


# LOOKING AHEAD TO A SAFER MORE EFFICIENT AND CLEANER SUPPLY CHAIN

## What will the global supply chain of 2030 look like?

Megatrends are shaping the future, driving disruptive change across the world's economies. We believe that the supply chain of 2030 will be safer, more efficient and cleaner, thanks to innovations, new legislation, and greater adoption of new technologies.

And if you think 2030 is still in the distant future, think again. It's only 65 months away. These changes are coming fast, so it's time to embrace them to make your business more resilient and more profitable. Companies that don't adapt now risk falling behind and becoming obsolete.



Artificial intelligence will analyse every step of an item's journey, optimising decision-making and operations.



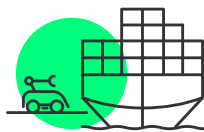
The drive toward a circular economy will see the near-elimination of single-use plastics, the demise of the old wooden pallet, and widespread 'right to repair' regulations.



Working in the supply chain will be safer, as industries embrace tools and technologies to track and monitor people and places.



Greenhouse gas emissions will be far lower, as renewable energy generation scales up. Industry collaboration will enable huge strides in decarbonisation the sea and air freight sectors.



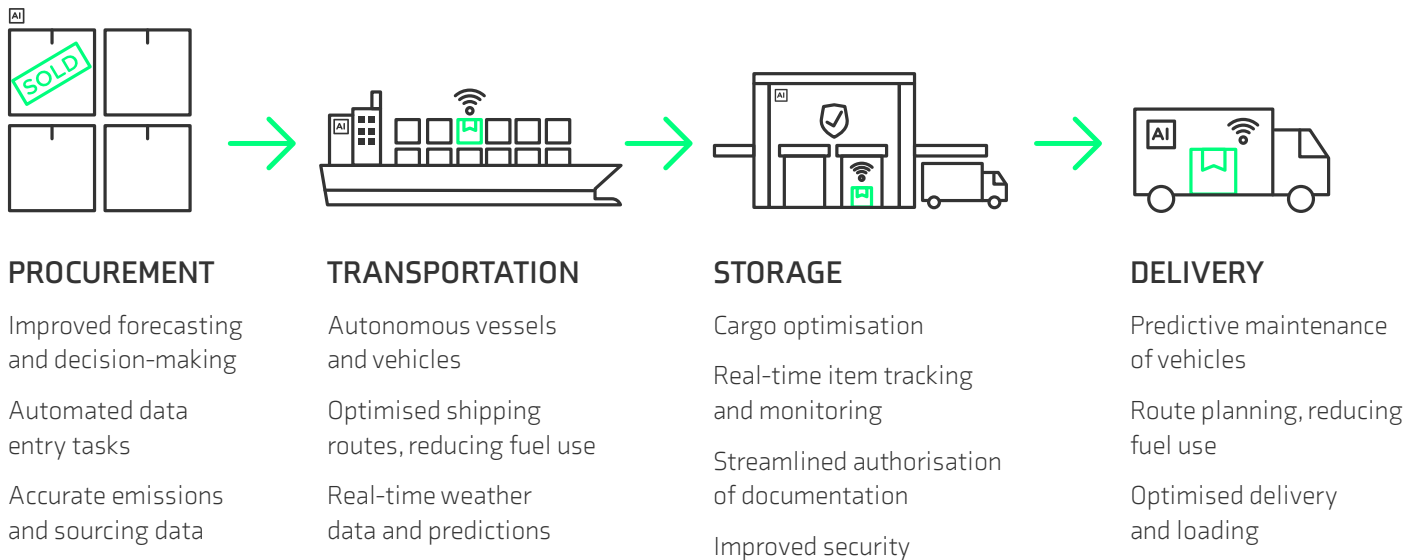
Robots will have taken over many of the most dangerous or unpleasant jobs in the supply chain, including cleaning and inspecting ships, handling containers and deterring piracy.

**By embracing the supply chain of the future, business decision-makers can create more resilient, efficient and sustainable companies.**

# AI OPTIMISATION ALONG EVERY LINK OF THE SUPPLY CHAIN

Artificial intelligence (AI) is a transformative force, reshaping every aspect of our lives, including our supply chains. By 2030, you can expect to see AI analysing every element of a supply chain to improve its efficiency, reduce human contact with items, and track and trace each unit as it moves around the globe.

## How AI will be used in the supply chain in 2030



## Material Intelligence is providing significant loss reduction

We use AI to unlock the data gathered from a company's pallet movements. Each tool helps business leaders make decisions that optimise their operations, saving time and money across an organisation.

Our Material Intelligence (MI) can already give you real-time pallet location data, combined with temperature monitoring and impact alerts. It can allocate pallet costs automatically to a customer and automate pallet utilisation.

By 2030, our MI will be gathering data from millions of units moving around the world each day. This will give us an enormous amount of data – by analysing this data we can extract insights that will benefit all our customers.

We anticipate these insights will lead to significant reductions in losses, damage, theft and inefficiency.

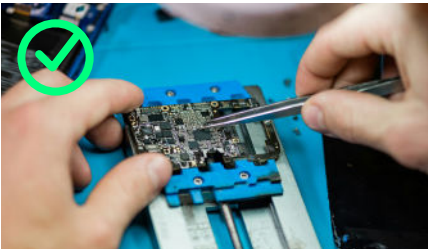
# AN INCREASINGLY CIRCULAR ECONOMY

The old linear economy is untenable.

The world cannot keep producing long-lasting items, using them briefly, and then discarding them in landfills. We are shifting toward a circular economy – one where a consumer product is designed to last.

When a product stops working, it can be repaired. And once it can no longer be used or repaired, it can be recycled so its components go back into the economy.

Here are four ways the circular economy will inform the supply chain of 2030:



## WIDESPREAD RIGHT TO REPAIR RULES

'Right to repair' legislation sets in place the legal right for consumers to modify and fix their own appliances and equipment. In 2024, the European Union adopted right to repair regulations that require manufacturers to provide more repairs. It aims to reduce e-waste – all the discarded phones, for instance, that were designed to be almost impossible to repair. Expect to see widespread right to repair legislation by 2030.



## FOOD WASTE IS GENERATING RENEWABLE ENERGY

The UN has a target to halve per capital global food waste by 2030 for consumer and retail sectors; food losses in production and supply chains will also be cut, including post-harvest losses<sup>1</sup>. Waste food is now being turned into fertiliser, biogas and biomethane, thanks to growing number of anaerobic digestion plants worldwide.



## SINGLE-USE PLASTICS ARE APPROACHING ELIMINATION

Single-use plastics account for more than 70% of ocean plastic pollution<sup>2</sup>, and a global plastic pollution treaty is in development – it should be in force by 2030. Changes are already in place: 99 countries have banned thin plastic shopping bags and by 2030 it is likely these bags will be eliminated worldwide. Bans on other single-use plastics – such as plastic straws, cutlery, and food containers – will broaden by 2030, probably to include items such as plastic and polystyrene packaging.



## THE DEMISE OF THE SINGLE-USE WOODEN PALLET

The Global supply chain has depended on wooden pallets since the 1920s, however it is clear that they come with significant drawbacks. Wooden pallets are prone to breakage, lack interlocking capabilities, bio-security issue's and safety risks due to nails, splinters, sharp edges and variable pallet weights. Additionally, single-use pallets contribute significantly to deforestation and often end up in landfills, despite recycling options being available.

**PalletEarth pallets are stronger, smarter and more sustainable. Their use is growing dramatically across the world as businesses embrace more sustainable supply chains - by 2030, we want to push the old single-use wooden pallet towards extinction.**

1. UN, Sustainable Development Goal 12 Hub, [Target 12.3](#), 2024.

2. World Wildlife Fund, [85% of People Want Global Ban on Single-Use Plastics](#), 2024.

# SAFER WORKPLACES THANKS TO NEW TECHNOLOGIES

Real-time data, wearable technology and integrated safety platforms are just a few of the technologies that will make workplaces safer throughout the supply chain. Global occupational accidents kill around 900 people a day<sup>3</sup>, but that number should fall considerably by 2030.

## How technology will be making the supply chain safer in 2030



### PROCUREMENT

Advanced safety management platforms

Wearables monitoring worker health and safety

Virtual/augmented reality safety training



### TRANSPORTATION

Autonomous vessels, reducing human error

Satellite communication improving response times

Enhanced collision avoidance and navigation systems

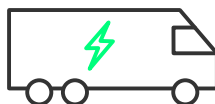


### STORAGE

Widespread use of cameras and sensors to identify risks

AI systems spotting fires early

Reduced human unloading



### DELIVERY

Driver alertness monitoring





Lower emission vehicles, improving air quality

Autonomous vehicles, reducing accidents

3. International Labour Organization, *Nearly 3 million people die of work-related accidents and diseases*, November 2023.

# EMISSIONS ARE DRAMATICALLY LOWER

The goal by 2030 is to dramatically reduce supply chain emissions. At the manufacturing and retail ends of the supply chain, companies are already well underway with their decarbonisation efforts:

-  Manufacturing is making strides in converting process heat to renewable energy.
-  Packaging is increasingly biodegradable and recyclable as single-use plastics are phased out.
-  Road and rail transport is gradually shifting from fossil fuel vehicles to zero-emissions vehicles.
-  Storage facilities, ports and retailers are all improving their energy management through digital tools, and sourcing renewable energy for their operations.

Shipping and air freight remain two of the world's most difficult sectors to abate, but an enormous amount of work is being done to find solutions.

## DRIVERS OF DECARBONISATION

The energy transition is gaining momentum as a range of stakeholders drive it forward.



## COLLABORATION IS THE KEY FOR CLEANER SHIPPING AND AIR FREIGHT

International shipping and aviation each account for around 2% of the world's energy-related CO2 emissions<sup>4</sup>. Both industries are aiming to get on track to reach net zero emissions by 2050.

Although these are two of the toughest sectors to decarbonise, major players in both industries are collaborating to come up with solutions and technologies that will reduce emissions.

In 2030, expect to see a significantly larger number of vessels being fuelled by renewable energy sources. It is already possible to order new vessels that can operate on methanol, ammonia, hydrogen or battery power, or a combination of these. As the technology behind these low-emissions ships scales up and becomes more efficient, these vessels will become the standard for global shipping.

Ports are getting ready: in early 2024, Yokohama signed a Memorandum of Understanding with Maersk and Mitsubishi Gas Chemical to develop green methanol bunkering at the Port of Yokohama. And Singapore is planning ammonia solutions on Jurong Island for bunkering and power generation<sup>5</sup>.

Aviation faces bigger hurdles, but by 2030 we will see a thriving sustainable aviation fuel industry, more trials of hydrogen flight, and improved battery technology enabling short-haul electric air freight.

Airbus says that by 2025 it will be operating ZEROe, a hydrogen-powered commercial aircraft. It is currently working with ArianeGroup on the first liquid hydrogen refuelling facility for the ZEROe at Blagnac Airport in France.

4. International Energy Agency, [International shipping](#) and [Aviation](#) pages, 2024.

5. World Economic Forum, [Reducing barriers to maritime fuel projects is key to decarbonizing shipping](#), April 2024.

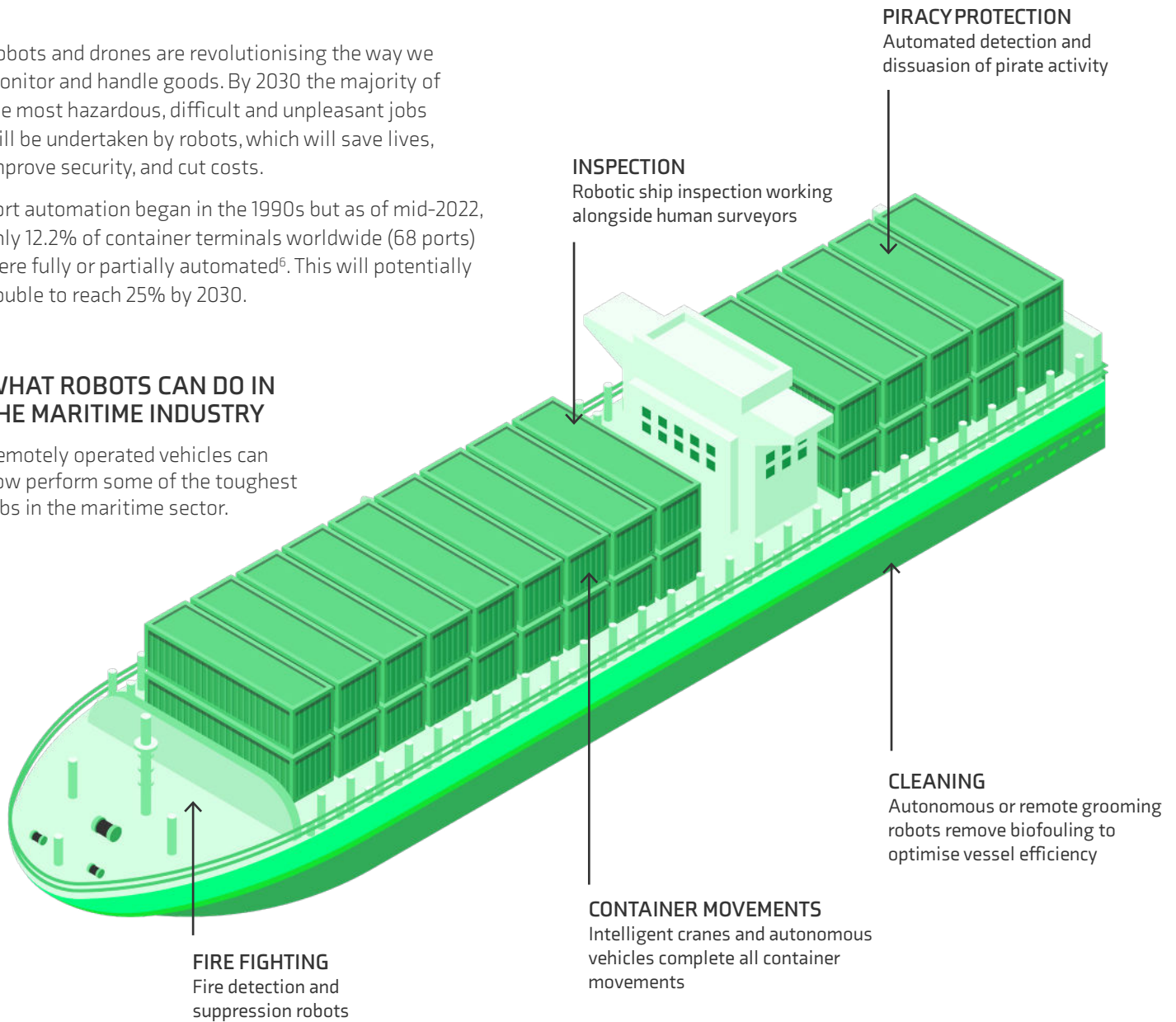
# WIDESPREAD USE OF ROBOTICS

Robots and drones are revolutionising the way we monitor and handle goods. By 2030 the majority of the most hazardous, difficult and unpleasant jobs will be undertaken by robots, which will save lives, improve security, and cut costs.

Port automation began in the 1990s but as of mid-2022, only 12.2% of container terminals worldwide (68 ports) were fully or partially automated<sup>6</sup>. This will potentially double to reach 25% by 2030.

## WHAT ROBOTS CAN DO IN THE MARITIME INDUSTRY

Remotely operated vehicles can now perform some of the toughest jobs in the maritime sector.



## ADAPT NOW OR RISK FALLING BEHIND

The supply chain of the future is inevitable – failing to adapt and prepare will leave businesses at risk of falling disastrously behind the competition.

As various drivers push supply chains to become safer and cleaner, there will be costs associated with continuing to operate in the traditional ways. These costs will keep rising as time goes on, eventually becoming unsustainable.

Business decision-makers must have effective strategies to adopt new technology and embrace new ideologies as early as practicable.

Companies that fall behind will not survive.

You have 65 months to prepare – use them wisely.

6. Port Economics, Management and Policy, *Fully and Semi Automated Container Terminals, Total Hectares*, 2022, 2024.