

ALL THE WAY



# Building Resilience in Chemical Supply Chains

# Executive Summary

Chemicals can be found in almost everything around us. In fact, 96% of all manufactured goods contain a chemical - from medicines, to our cars and even the device you are reading this from.

The chemical industry has been a major contributor to businesses and global trade growth for decades and will remain so for many more to come. It contributes approximately 5 trillion USD to the global GDP and has created more than 120 million jobs. However, the industry has been hit hard recently by trade barriers, increased levels of protectionism, and the global COVID-19 pandemic.

Evidently, the need for a resilient supply chain in the chemical industry has never been greater. In this report, we speak with Maersk's Henrik Wretensjoe, Global Vertical Head of Chemicals as well as Satoshi Akasaka, Vertical Head of Chemicals and Ian Kaw, Vertical Associate Director of Chemicals for Thailand, Malaysia and Singapore area, to draw invaluable insights and trends within the industry.

We would like to offer special thanks to Peter Crowe, APAC Head of Logistics at Syngenta, who sheds light on how one of the world's leading agriculture companies managed to digitalise their supply chain and collaborate with Maersk as their largest 4PL to achieve their business objectives even in the face of a global pandemic.



## Key learnings:

- Raw materials account for 96% of all manufactured goods. It would be absolutely vital for Chemical companies to provide the "upstream" supply chain visibility to their customers in the "downstream" such as technology, automotive, FMCG, and retail sectors. In fact, many of these customers raise raw material visibility as one of the pain points in their supply chains
- The 6 pillars and the 4 mega trends in the Chemical industry foster the importance of a resilient supply chain and we recommend 3 main strategies to build such business models
- The 2 case studies show 2 different resilient supply chain models for specialty chemicals and petrochemicals sectors and how Maersk Chemicals Solutions have supported the initiatives



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# Fostering Resilience

Henrik Wretensjoe, Global Chemical Vertical Head here at A.P. Moller – Maersk defines a resilient supply chain as having the necessary visibility as a foundation to make the right decisions, the agility to shift sourcing, manufacturing or distribution with speed once a disruptive event calls for it and the right level of buffers to dampen unforeseen shocks.

Many surveys done with supply chain leaders globally indicate that the general perception is that their companies do not have the right level of resilience. How should companies prepare themselves to come out stronger with improved resilience for the next disruption?



## Wretensjoe suggests companies to consider these 6 pillars when designing a more resilient supply chain:

### 1. Review your manufacturing and sourcing network

- Is your supply chain diversified enough when it comes to geographical footprint? Do you have backup manufacturing capacity if certain assets cannot be utilised? What if your customers are moving their production to a new location as a result of the trade tensions between countries? Can you still supply them from where your assets are located?
- Similarly, the base of suppliers can be reviewed as well. Are they too clustered that all of them will face the same constraints due to major logistic bottlenecks, such as a lack of shipping containers?

### 2. Single-sourcing vs Multi-sourcing

- The pendulum for the last few decades has swung more towards cost optimisation, often exposing high risks with too few or maybe even a single selected supplier to save on cost.
- Even if it is a dual sourcing setup, how easily can you activate a backup supplier and how do you ensure they remain committed to support you even if they are primarily a backup? An example is the Earthquake in Japan 2011 and the Fukushima nuclear disaster that halted supply chains across industries ranging from chemicals to electronics and automotive and triggered many supply chain managers to review how to look at risks.



### 3. Inventory management and general buffers in the supply chain

- How tightly are safety stock levels steered? Are manufacturing assets sweated to the max or are there buffers that could be leveraged? The immense pressures to optimise working capital has probably meant that buffers are generally steered to minimal levels which means it is difficult to deal with shocks.

### 4. Nearshoring for increased control and reduced risks

- While feedstock and material access might dictate the location for most manufacturing sites rather than being next door with the customers, it remains a factor to review when it comes to resilience.
- Moving cargo over long distances with handovers and dependencies all adds up to supply risk, regardless of it being inbound or outbound. It should not be limited to only manufacturing but also how the distribution is set up: global vs regional vs local. It adds cost and complexity but grants more control by having the products available closer to where the customer base is.

*“Resilient supply chains can boost revenue growth, improve customer satisfaction while balancing risks and cash flow impacts.”*

**Henrik Wretensjoe,**  
Global Vertical Head of Chemicals,  
A.P. Moller – Maersk

### 5. Visibility of your end-to-end logistics

- The right decisions can only be made if you have access to the right level of information, being able to predict, plan, sense and act with agility. It is of immense importance to have end-to-end visibility of the status of the events in your supply chain – the closer to real time, the better. Leveraging the power of data, connecting and integrating with both suppliers, customers and logistics service providers to move a rather linear supply chain network with limited cooperation into a more collaborative one.

### 6. Review your partners in the network from a service level agreement perspective

- You can expect stable performances from your suppliers and supply chain partners in an ordinary day, but what can you expect in times of demand or supply shocks or logistical bottlenecks? Do you have the right partners engaged and a clear understanding of what to expect in times of disruptions? This could be the obvious timing to review the balance of the decisive factors behind your sourcing decisions chain network with limited cooperation into a more collaborative one.

Resilient supply chains can boost revenue growth, improve customer satisfaction while balancing risks and cash flow impacts. The companies investing today will be best positioned for tomorrow's disruptive events which can be foreseen by these mega trends.

## The Four Key Mega Trends

### 1. Supply chain digitisation

The rate of development here is rapid. With the aim of creating transparency, reducing manual processes, integrating and connecting for better efficiency, and leveraging data for smarter decisions. Automation, artificial intelligence, IoT, paperless trade and blockchain, will impact how future supply chain ecosystems are set up.

### 2. Sustainable supply chains

Customers are demanding green products that need to be supported by green supply chains. Even in a B2B2B industry like chemical, this demand will quickly propagate backwards from the consumer. Start thinking about what modes of transport are used, how is cargo packed and with what material. See if you can also report your carbon footprint if your customers ask for it.

### 3. Circular supply chains

There is a move from linear supply chains to more circular ones. The supply chains of reused materials are getting integrated into the new produced ones. Recycling or refurbishment are new norms and customers also favour suppliers that take these into consideration.

### 4. Agile supply chains

The supply chain of the future is built around agility as a key competitive edge. Flexibility, rapid responses to changes from customers, the market or the circumstances around you are more important than ever.



# The 3 main strategies to build a Resilient Supply Chain

To better understand the 6 Pillars and 4 Mega Trends, Satoshi Akasaka, Chemical Vertical Head for Maersk Thailand, Malaysia and Singapore categorises them into three main strategies:



## 1. Select a dependable logistics partner

The first key is to work with resilient logistics partners who possess:

- In-depth understanding of your business
- Expertise in international/local regulations
- Global coverage
- Financial stability
- Flexible business implementation skill
- Robust Business Continuity Plans

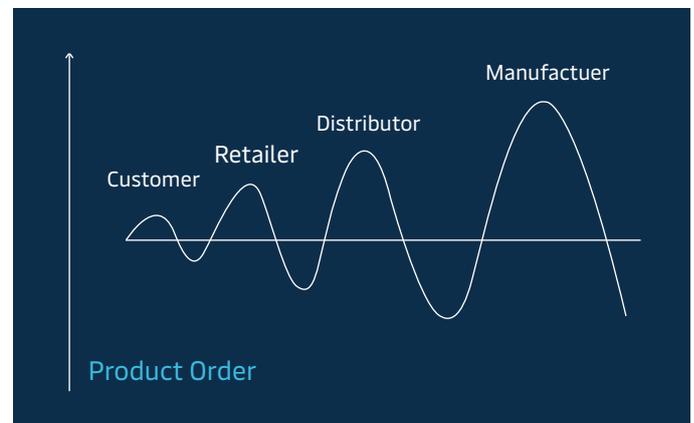
The closest frameworks that businesses can utilise to address these needs would be the 4PL or Control Tower models which Maersk offers. By integrating them as part of your business process outsourcing, your supply chain can be backed by a resilient logistics partner and a dedicated logistics team.

*"In order to mitigate such impact, we believe it is vital to set up a hub near your customers to improve service level with shorter lead time and optimize safety stock level by aggregating the demand."*

**Satoshi Akasaka,**  
Vertical Head of Chemicals, Thailand, Malaysia  
and Singapore, A.P. Moller – Maersk

## 2. Set up a hub closer to your customers

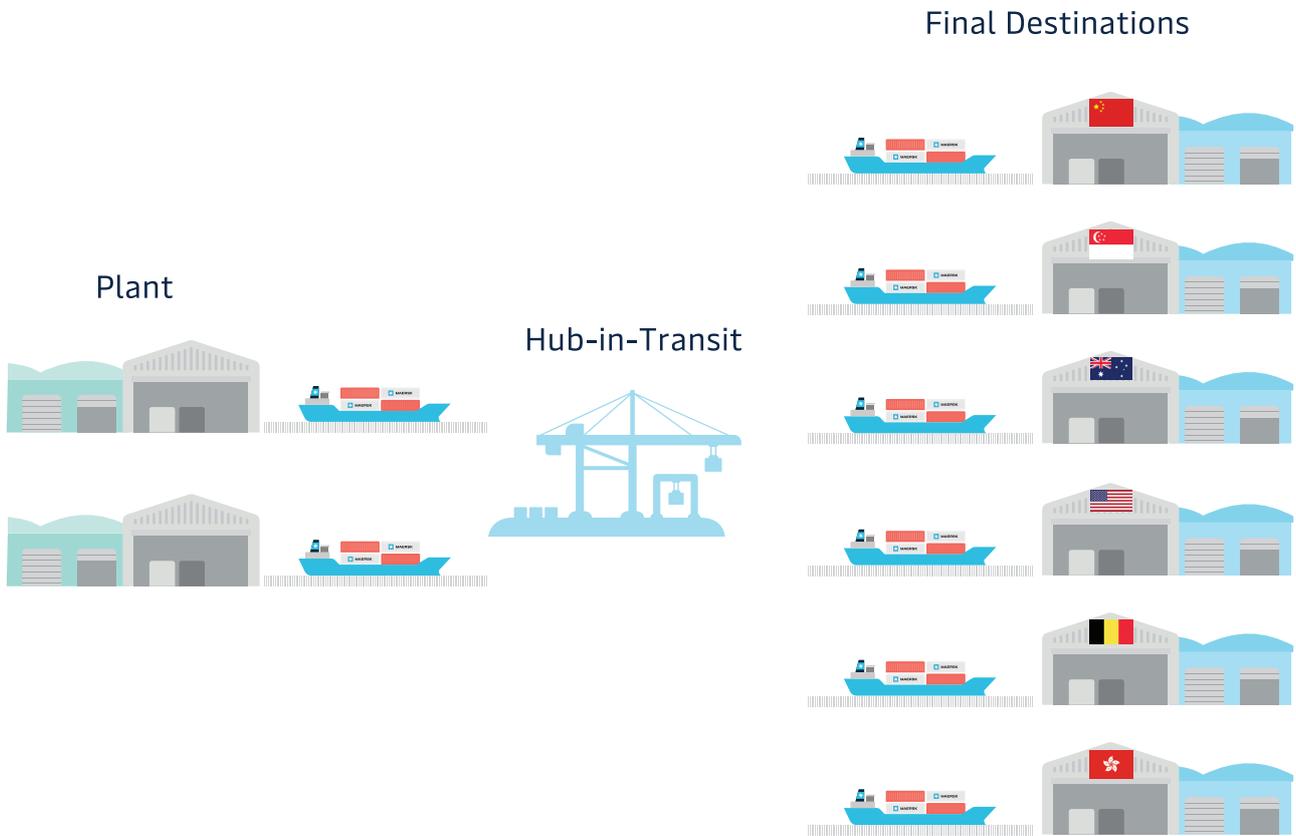
Being near your customers has been increasingly important due to highly volatile markets and demand surges for specific goods caused by lockdowns. This has also caused the bullwhip effect to fluctuate even more. For chemical companies, it has become tremendously challenging as they are one of the most upstream players for raw materials, which leads to them ending up overstocking in one location and stock outing in another.



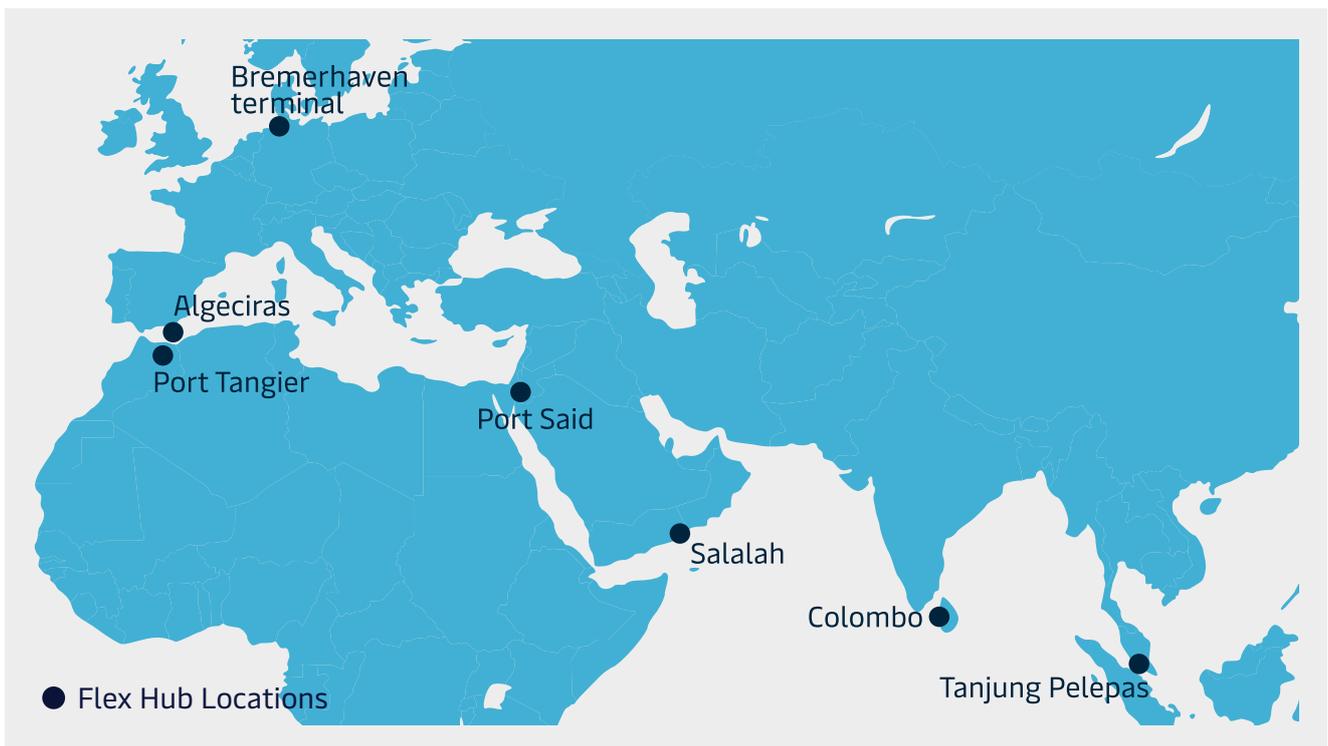
The bullwhip effect on the supply chain occurs when changes in consumer demand causes the companies in a supply chain to order more goods to meet the new demand.

The suitable solutions would be the **Hub-in-Transit** and **Regional Distribution Centre**.

### Hub-in-Transit



Our own terminal network can be found globally, and we also operate Flex Hub services in Tanjung Pelepas, Malaysia, Sri Lanka, Oman, Egypt, Morocco and Spain.



If the dwell time in the storage location is longer and the business requires value-added services on the cargo itself, the solution is to set up Regional DC (Distribution Centre) in Bonded Warehouses. Maersk offers such solutions in Tanjung Pelepas, Malaysia and many other APAC locations as well.



## Regional Distribution Centre



### 3. Become a resilient partner for your customers

Although the bullwhip curve for companies in retail, technology, automotive and FMCG industries might not be as steep as those in the chemical field, visibility remains critical for their production planning.

Since the COVID-19 pandemic, more retail, technology, automotive and FMCG customers have expressed the importance of visibility of their raw material for crucial production planning. Especially since they are major suppliers to these sectors, it further emphasises the need for chemical companies to provide such visibility to their customers for improved service level and to potentially differentiate from the competition.

Maersk's TradeLens - a block chain solution and a joint venture with IBM - offers real time cargo and document visibility by partnering with ecosystem players such as shipping lines, terminals, truckers, customs and even banks.

The Maersk 4PL also offers HIT visibility dashboard which is E2E visibility on SKU/grade level, and Sourcing APP.

# Best Practice: The Evolution of Syngenta's Supply Chain

In this report, we speak with Peter Crowe, the Head of Logistics for Syngenta Asia Pacific on how the global agricultural technology company managed to bring its complex supply chain to greater heights with digitisation, efficiency and resilience.

Being a global leader in agriculture, Syngenta's aim is to help feed the world while taking care of the planet. They are present in 90 countries, supported by 89 production and supply sites, 116 R&D sites and 28,000 committed employees around the world.

Syngenta also produces a plethora of crop protection products which are faced with heavy regulations that affect imports, exports, manufacturing and even the customer's application of the product.

With a highly complex supply chain, they initially had very limited visibility on the whereabouts on their cargo and the specific cost of their logistics. The complex supply chain undeniably came with a complex problem.

In 2015, Syngenta went on a mission to digitise their supply chain and appoint a supply chain expert to help them feed the world both safely and sustainably. They needed an evolution, not a revolution for their supply chain as transforming their complex system overnight would come with unnecessary risks.



## Their mission came with three phases:

- Plan the Growth
- Prepare the Ecosystem
- Empower the People

To digitise their logistics and gain full visibility on their shipments, they utilised Infor Nexus (formerly known as GT Nexus). Syngenta also appointed several 4PL providers, with Maersk being the largest, to handle all global sea and airfreight shipments.

The setup with Maersk was end-to-end, keeping to our philosophy of going All the Way. While running their global sea and airfreight tender, we also processed procurements for them, making every shipment an efficient and seamless one.

Our committed service paired with their robust digital system now provides Syngenta the visibility they never had before. From the confirmation of pick up to the arrival at the customer's door, their new system also provides a multitude of milestones throughout the journey. Any deviations from plans are attached to these milestones which allows Syngenta to react accordingly. With an abundance of reporting possibilities including CO2 footprint and detailed costs, they now work with Maersk to build initiatives to constantly evolve their supply chain.



*“When choosing our 4PL provider, we had to find a partner who could work with us to solve problems when the time came and would go the extra mile for us. Maersk not only convinced us but confirmed with high-ranking executives going out of their way to help us. Now we can safely say that we are in good shape.”*

**Peter Crowe,**  
Head of Logistics Asia Pacific, Syngenta

## How did it help Syngenta to serve customers during the pandemic?

Utilising the GTN data was essential throughout the crisis as it gave them full visibility of upcoming and pending orders as well as the ability to communicate directions clearly with us on their priorities. Despite the adversities brought on by COVID-19, Syngenta managed to sail through the storm. Mr. Crowe credits this success to the strong visibility that the setup has been providing for years and continues to bring plant potential to life.



# Case Study:

## Driving supply chain efficiency and visibility

Associate Director for Chemical Vertical, Ian Kaw, shares how Maersk has also worked with a top-tiered global petrochemical company to enable supply chain resilience as well as the ability to gain control and optimise costs across the end-to-end logistics flow. The company produces polymers at its multiple cracker plants located in the Middle East and Asia, with its total tonnage in multiple millions.

As a global 4PL provider, we put in place multiple Control Towers to cover different geographies that span from Bahrain, Dubai, Saudi, South Korea, Malaysia, and a large back office team in India. As seen from the on-going COVID-19 pandemic, different countries face varied levels of lockdowns and restrictions, but the setup we built allows teams in multiple countries to cover for each other when needed.

### Our 4PL's scope-of-service covers the following main functions:

- Sourcing of empty containers from multiple Ocean carriers
- Transport empty containers and have them loaded at the plants
- With a Hub-in-Transit inventory optimisation plan, we transport the laden containers to one of the 6 HIT Hubs or Warehouses, which are setup across UAE and Asia
- Upon receiving the final leg shipment order, based on RETA, the 4PL / Booking Services Team will proceed with carrier bookings, SI submissions, documentations including CHB
- Freight Invoices from Ocean Carriers are audited before payment





## Maersk Lead Logistics Platform

As all activities are executed via our Lead Logistics platform, it offers a full E2E visibility from PO creations, ocean carriers booking, inventory at each hub, booking status, track-and-trace to final leg delivery at destination ports.

The platform also allows the 4PL Teams and shipper, to collaborate strategically on managing exceptions, measure performance of other 3PL partners across the supply chain, minimise COGS, execute delivery orders on-time, and identify opportunities for continuous improvement.

With the near shoring approach, HUBs are setup across different locations. When a purchase order arrives, our Sourcing App functions as the “digital brain” allowing the shipper and 4PL Team to view important information such as:



Location of stock being held in each hub



Transit time and cost per ton to ship

The app features a robust algorithm to run various scenario plans that cater to cost, transit-time or any other factors the shipper prioritises. We also have a default plan that is automatically recommended but with the impact of the pandemic, we saw more manual overwrites kick in.

## Our Value

In summary, collaboration and operating on a single digital platform are key to building a resilient supply chain. But most importantly, data is king in driving every decision.

While supply chains, circumstances, target markets and 3PLs are prone to change over time, control towers, supporting platforms and existing processes must be flexible to accommodate such developments.

With an adaptable architecture we can achieve:

- Improved service level
- Minimised COGS
- Reduced expediting costs
- Minimised lost sales
- Achieved revenue and profit growth

*“The app features a robust algorithm to run various scenario plans that cater for cost, transit-time or any other factors the shipper prioritises. We also have a default plan that is automatically recommended but with the impact of the pandemic, we saw more manual overwrites kick in.”*

**Ian Kaw,**  
Vertical Associate Director of Chemicals, Thailand, Malaysia and Singapore, A.P. Moller Maersk

# Insights from our experts

**Q: What are your thoughts about the trade-off between Resilience and Efficiency?**

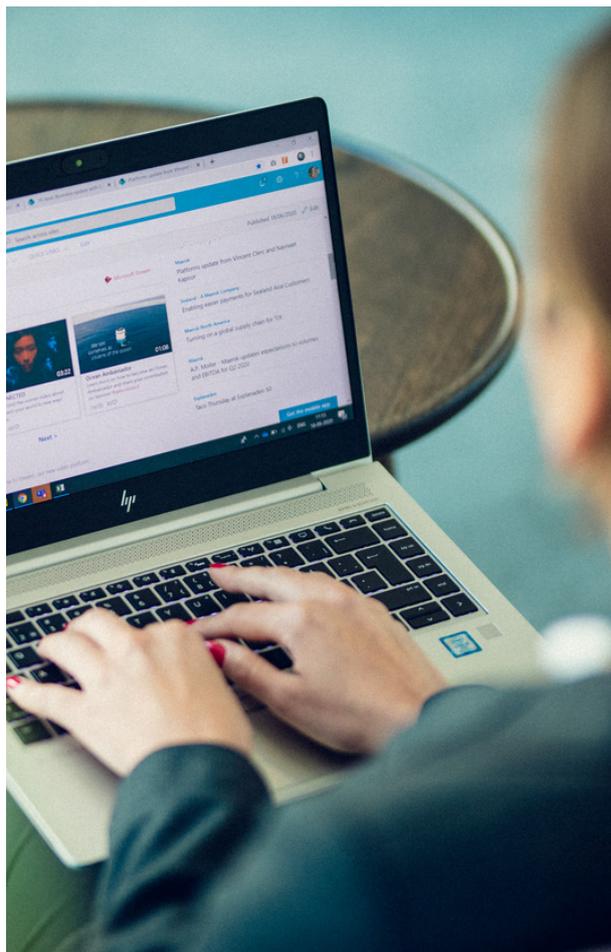
**Henrik:** It cannot be either or. It will always be a mix of the two. In the past couple of years, most companies focus more on having an efficient, lean and cost-effective supply chain rather than a resilient one. However, I think companies will soon be forced to adopt both strategies to deliver an efficient and resilient supply chain. That can translate to different priorities regarding the 6 pillars depending on your industry and even the type of chemical company.

**Satoshi:** To add on, I think it is important to also have multiple options when you are building supply chain resilience. For example, have your goods placed on three different carriers across three different alliances in case one gets cyber-attacked or delayed by unforeseen circumstances. You can even go beyond that and have a variety of transportation modes like intercontinental rail and airfreight in the mix.

**Peter:** I agree, I do not think there needs to be a trade-off. You can have a resilient and efficient supply chain which I consider Syngenta to possess. To us, resilience means having the visibility which makes the whole chain efficient too as it gives you a better perspective of what needs to be accomplished.

**Q: How is Maersk doing with sustainable logistics?**

**Satoshi:** Maersk has a dedicated sustainability team who are behind the many initiatives taking place right now. The most exciting was in December 2018 when Maersk announced its target to produce zero CO2 emissions from operations by 2050. We are currently incorporating that into our ocean transportation and are working with many different partners to achieve this goal. We are also testing many innovations such as biofuels, formed a partnership with The Ocean Cleanup in a unique mission to remove plastics from our oceans and are working on a Maersk CO2 dashboard for our customers.



**Henrik:** To add on, I think the most important aspect is to know what your current sustainability footprints are. Without this, it will be highly challenging to drive improvements. The Maersk CO2 dashboard Satoshi-san mentioned will help our customers in a 4PL scope to align the way CO2 emissions are presented because a challenge in this space is the many different standards. By standardising the format, it allows you to compare sustainability data fairly and make more informed decisions for improvements.

**Q: COVID-19 has impacted industries to focus on reducing cost and increasing efficiency. How will this affect initiatives for sustainability in the short- and long-term future?**

**Henrik:** There is indeed an immense cost-pressure on the chemical industry, but the importance of sustainability will not fade out. It is a global challenge and I do not think there is a company that can neglect sustainability to reduce cost or else they might lose out in the market. So, every company needs to carefully consider what they can do to be part of a sustainable future.

**Q: How does supply chain visibility impact resilience?**

**Ian:** The fundamentals of visibility is all about DATA. Data must be designed with a business purpose; cleaned, harmonised, accurate, updated, and always available. It also needs to be available through a platform, not excel. To be agile, the control towers and decision makers should not be hopping between multiple systems, which is surprisingly common in many companies. As we know, scenario planning is predictive and supported by accurate availability of data.

So, when a pandemic hit, the supply chain will enter a fierce fire-fighting mode which Syngenta did. In such situations, having a powerful platform to view accurate data will help businesses make better decisions. For example, if a shipment will be delayed, it carries many crucial implications. To make better decisions, one needs to have an overall view of the inventory across multiple storage hubs and supply networks. As you can see, visibility is critical in regular situations, but more importantly, during a global pandemic.

All projects are planned to work, but most pitfalls occur from human errors. So, companies need to appoint the right stakeholders to drive projects. During a disruption, as in the current pandemic, supply chain goes into fire-fighting mode, and exceptions begin to soar. In such a situation, a robust supply chain visibility platform with accurate data and status updates is paramount.

Knowing a shipment is not going to arrive on time has all sorts of implications. Every subsequent decision made has a significant impact on service level and financially.

All supply chain systems are planned to work, but most pitfalls occur from human errors. So, companies need to appoint the right stakeholders to drive projects.

**Peter:** An example of this would bring us back to 2017 when Maersk was unfortunately hit by the NotPetya cyber-attacks. Syngenta was not hit and could still carry on working with Maersk because the visibility platform that was put in place. Although we had to coordinate with Maersk through alternative means such as phone calls and private servers, the visibility we had was the epitome of resilience in trying times.

**Q: Syngenta has a whopping 95% on-time delivery. Has it always been this successful?**

**Peter:** No, we had a rough start at the beginning as we were constantly changing work processes and SOPs. But we did not select our 4PL partners solely based on a budget. We had to ask ourselves who do we feel can solve problems when issues arise and who do we feel are willing to go the extra mile. DAMCO (now merged with Maersk) checked all the boxes and when things did not run as smoothly at the beginning, the CEO went out of his way to help resolve the issues. So, it validated our decision to trust a reliable partner like Maersk. Now we can confidently say that we are in good shape.



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