The Chartered Institute of Logistics and Transport

CILT

IC SPECIAL EDITION

LINK

FOCUS ON ECO-FRIENDLY PRACTICES IN LOGISTICS AND TRANSPORTATION

2024

OCTOBER ISSUE

DRIVING SUSTAINABILITY

BY SHADIL RIZAN

BUILDING RESILIENT ECOSYSTEMS

BRIDGING ACADEMIA AND PRACTICE

BY PROF. H. R. PASINDU

TRANSFORMING SUPPLY CHAINS

BUILDING A SUSTAINABLE FUTURE IN PORTS

BY UDARA CUMARATUNGA

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SAHANA VITHANAGAMA,CMILT

Editor's Note

We are delighted to present the latest edition of the CILT LINK magazine, the Q2 2024 issue. This special edition is dedicated to the theme of Sustainability & Green Logistics, emphasizing the crucial role these concepts play in shaping a more resilient and sustainable future for the supply chain industry. As global challenges continue to reshape the logistics landscape, we explore the strategies and innovations that are driving sustainable growth and transforming operations worldwide.

This issue also features a special section on the CILT Sri Lanka International Conference, held under the theme Transforming Supply Chains: Building Resilient Ecosystems for the Future. The conference brought together experts and thought leaders from across the industry to discuss how we can adapt to disruptions, embrace sustainable practices, and create a supply chain that is not only efficient but also resilient against future challenges. Our in-depth coverage aims to bring you the key insights and discussions from this milestone event. Additionally, we continue our CEO Column series, featuring conversations with industry leaders who share their experiences and visions for a sustainable future in logistics. This edition's interview delves into the perspectives of these leaders as they navigate the complexities of transforming supply chains while championing sustainability. Their insights provide valuable takeaways for professionals looking to make a positive impact in their fields.

This edition highlights cutting-edge advancements and best practices in sustainable logistics, featuring case studies on green initiatives and interviews with leaders driving change. It aims to inspire readers through innovative approaches transforming logistics and promotes a collective push for a greener future. Special thanks are extended to the editorial team, contributors, and readers for their dedication to bringing this issue to life. Enjoy exploring the world of sustainable supply chain practices.

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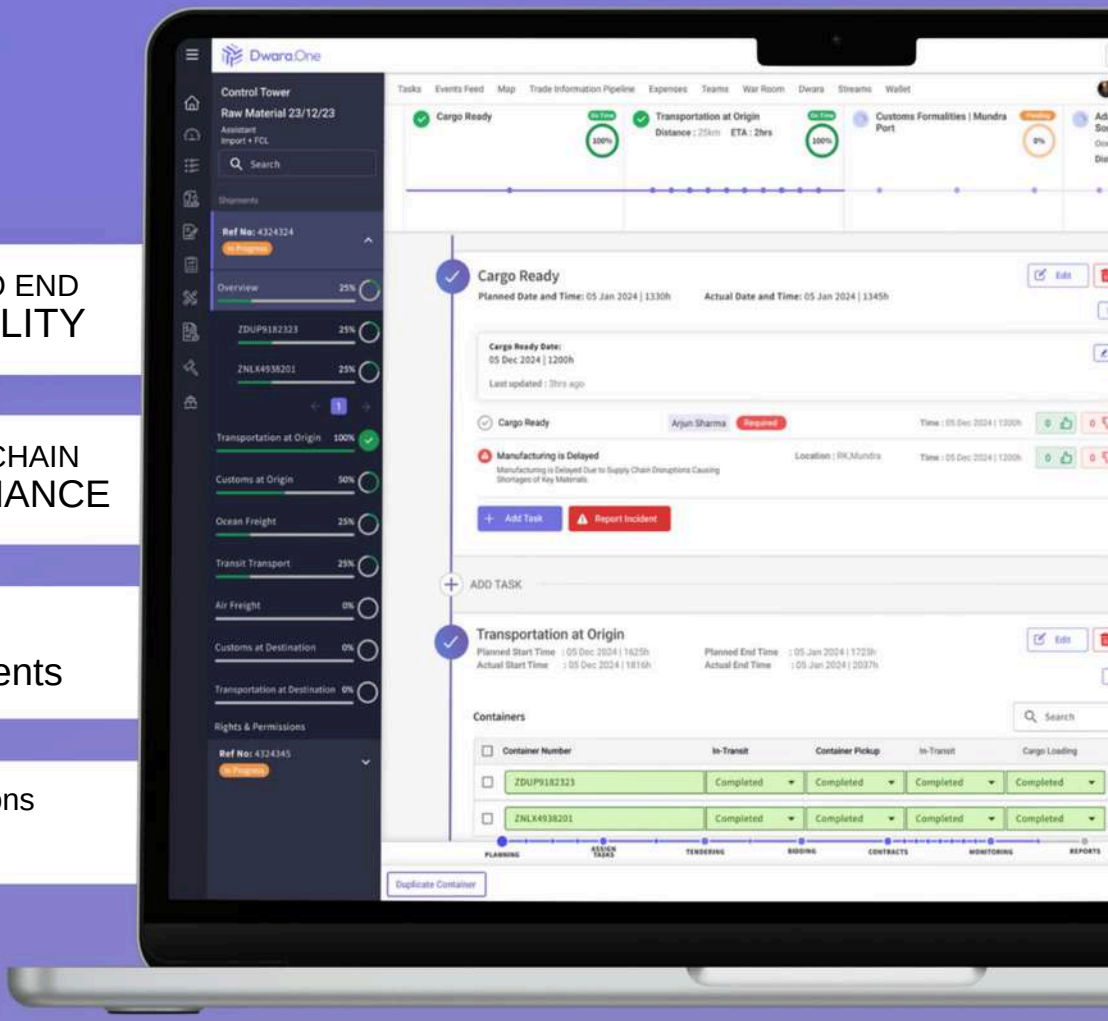

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MESSAGE FROM THE CILT INTERNATIONAL PRESIDENT CHIEF TEETE OWUSU-NORTEY, FCILT

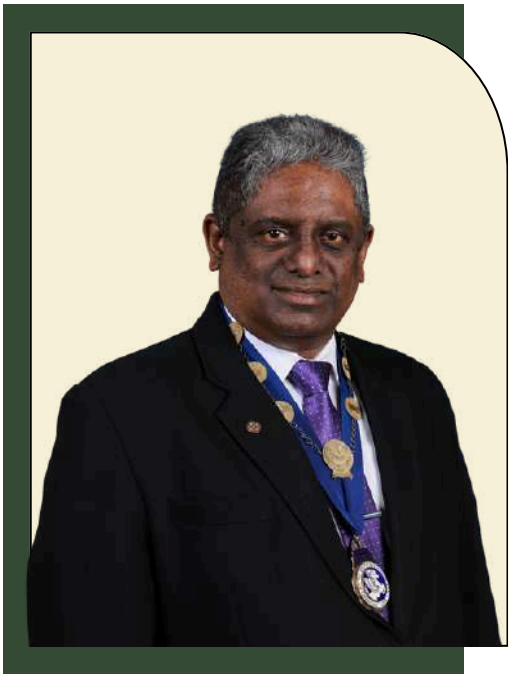
Dear CILT Sri Lanka Members,
It is with great honour that I bring you greetings from the CILT global community, to address you all in this special edition of your annual conference, as we come together across borders, disciplines, and industries to recognise the extraordinary contributions of Supply Chain, Logistics and Transportation professionals worldwide. As we celebrate our Institute's 105th anniversary, our commitment to advancing and supporting our industry remains as strong as ever. The vision of our founders to create a global community united by a passion for excellence and innovation in Supply Chain, Logistics and Transportation continues to guide our mission today.

This year, we are thrilled to launch the International Day of Supply Chain, Logistics & Transportation on the 3rd of November, a day dedicated to celebrating the people who keep the world in motion and this is one of my legacy projects as Global President. The day, which will be marked annually with activities and events across continents, and this serves as a reminder of the pivotal role each of you plays, from drivers and dispatchers to strategic planners and innovators, every professional in our field contributes to shaping the future of our interconnected world. I would like to extend my heartfelt gratitude to the CILT Sri Lanka team for their commitment and hard work in strengthening our branch network and furthering our mission in this region. Their dedication to the principles and goals of the Institute has been instrumental in fostering growth, nurturing talent, and supporting our global community. It is through your efforts that we continue to build strong ties with our members and achieve meaningful impact in Supply Chain, Logistics and Transportation here in Sri Lanka & beyond.

On behalf of the CILT Global Institute, I am especially pleased to have traveled to Sri Lanka to join you members in commemorating this significant moment in our journey. Together, let us celebrate our shared accomplishments and continue striving for a future where Supply Chain, Logistics and Transportation stand as pillars of global connectivity,
We are STRONGER TOGETHER.

Long Live CILT Sri Lanka!
Long Live CILT International

MESSAGE FROM THE CILT SRI LANKA PRESIDENT
MR. CHANDIMA HULANGAMUWA, FCILT



Dear Guests, Members, and Friends,

Welcome to the CILT Sri Lanka International Conference 2024! I'm thrilled to have you here as we come together to explore this year's theme: "Transforming Supply Chains: Building Resilient Ecosystems for the Future." In today's rapidly evolving world, building adaptable and resilient supply chains is more important than ever. This conference is our platform to share innovative strategies that will strengthen our logistics systems and prepare us for future challenges.

A heartfelt thank you to our Chief Guest and Guest of Honor. Your presence highlights the crucial collaboration between our industry and government, and we're excited to gain from your insights. We're also honored to have the International President of CILT with us, whose global vision and leadership inspire excellence across our industry.

To our esteemed Speakers and Panelists, thank you for joining us to share your expertise. Your perspectives will enrich our discussions and drive actionable ideas we can bring into our work. And to our dedicated members – your passion and support are the foundation of our mission to champion innovation and resilience.

Let's make the most of this opportunity to connect, learn, and pave the way for a sustainable future in supply chains. I look forward to the inspiring conversations and new ideas that will emerge. Thank you all for being a part of this journey!

MESSAGE FROM THE CONFERENCE CHAIR
MR. CHANAKA GUNATHILAKE, CMILT

As we gather for the CILT International Conference 2024, it is with great enthusiasm that I welcome you to a platform dedicated to "Transforming Supply Chains: Building Resilient Ecosystems for the Future." In today's fast-paced and unpredictable environment, the resilience of supply chains has never been more crucial. From natural disasters to global disruptions, our logistics networks face challenges that require innovative solutions and a forward-thinking approach.

This year's theme was chosen to reflect the pressing need for transformation in our supply chain systems. As businesses strive for sustainability and adaptability, it is essential to rethink our strategies, embrace disruptive technologies, and foster collaboration among stakeholders. The discussions at this conference will focus on building resilient ecosystems capable of withstanding future challenges while promoting growth and sustainability.

We are privileged to host a remarkable lineup of speakers and panelists who will share their insights on a range of pertinent topics. Their expertise spans various sectors, offering diverse perspectives on the critical issues facing our industry today. The engaging sessions will address technological advancements, sustainability practices, and innovative strategies that are reshaping the landscape of supply chains.

I encourage you to participate actively in the discussions, share your experiences, and connect with fellow professionals. Together, we can pave the way for a resilient future in supply chain management. Thank you for being part of this important event. Let us work together towards transforming our supply chains for a better tomorrow.

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CILT NEWS

STRATEGIC INITIATIVES FOR 2024

CILT and NTC Launch Sticker Campaign to Celebrate National Logistics Day

On August 16, The Chartered Institute of Logistics and Transport (CILT), in partnership with the National Transport Commission (NTC), successfully launched a sticker campaign on National Logistics Day at two key locations: The Makumbura Multimodal Transport Center in Kottawa and the Bastian Mawatha Interprovincial Bus Terminal in Pettah.

This dynamic initiative aimed to raise awareness about the importance of safety and accountability in public transport. Both organizations worked collaboratively to execute this campaign, gathering significant public engagement and participation. By launching this campaign on National Logistics Day, CILT and NTC underscored their leadership in the transport sector, promoting best practices and accountability.

This effort is yet another step toward building a more connected and responsible logistics and transport ecosystem, while also celebrating the role of logistics in national development.

CILT & ICS Celebrate World Maritime Day 2024 with a Focus on "Safety First"

CILT Sri Lanka, in collaboration with the Institute of Chartered Shipbrokers (ICS), successfully hosted a prominent event on September 26, 2024, to celebrate World Maritime Day. Held at the IESL Auditorium in Colombo, the event, themed "Navigate the Future: Safety First", brought together maritime professionals, policymakers, and industry experts to discuss the evolving challenges and innovations in the maritime industry.

This insightful event featured insightful presentations from Capt. Upul Peiris and Capt. Ravindra Jayawickreme, Mr. Nisthar Cassim moderated the event, guiding an engaging discussion on the future of maritime operations.

L. S. De Silva Memorial Lecture 2024

The L. S. De Silva Memorial Lecture 2024, held on 14th of October at the IESL Auditorium, Colombo. With the theme: Connecting People Through Multimodal Transport Development & Its Influences in the Tourism Industry." CILT, honored the legacy of Mr. L. S. De Silva, a visionary in the transport sector.

The keynote address was delivered by Dr. Namali Sirisoma, FCILT, Immediate Past President of CILT Sri Lanka. Dr. Sirisoma captivated the audience with her expert analysis of how multimodal transport systems can transform tourism, enhance traveller experiences, and stimulate economic growth. Her lecture highlighted the importance of integrating various transport methods—such as road, rail, and air—to ensure seamless connectivity for tourists.


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"DRIVING SUSTAINABILITY"

INTERVIEW WITH MR. SHADIL RIZAN
DIRECTOR/CEO - ADVANTIS PROJECT LOGISTICS

Advantis Project Logistics has a strong reputation in the industry. How does sustainability play a role in your company's long-term strategy, especially in terms of green logistics?

Advantis - Project Logistics is committed to embedding sustainability into our long-term strategy, with a particular focus on green logistics. As a subsidiary of the Advantis Group, the transportation and logistics arm of Hayleys PLC, we actively adopt the sustainable initiatives and strategies set forth by our parent company.

The Advantis Group's ESG roadmap includes achieving 50% usage of sustainable and renewable energy sources. The Group is also committed to cutting absolute greenhouse gas emissions from Scope 1 and Scope 2 by 45%.

In addition to these goals, we aim to expand our coastal ecosystem through initiatives such as mangrove restoration, which supports biodiversity and coastal resilience. We also plan to ensure that 20% of our water needs are met through sustainable sources, contributing to the sustainability of our operations. Furthermore, we are committed to reducing the Group's waste disposal by 30% through improved waste management and recycling practices.

Some of the key projects driving our sustainability agenda include the expansion of our renewable energy capacity, having already installed solar panels to meet current energy needs, with plans for further growth. Additionally, the Group has invested in the restoration of 14 hectares of mangroves in Pubudugama. Furthermore, in partnership with the University of Moratuwa, Advantis is in the process of launching a comprehensive road safety programme aimed at reducing traffic incidents and promoting safer logistics practices.

The shift towards sustainable practices often require significant investment. How does Advantis balance the cost of green logistics initiatives with the need to remain competitive in the industry?

Investing in green logistics is essential not only for sustainability, but also for enhancing competitiveness. At Advantis, we strategically align our sustainability efforts with cost efficiency to ensure we remain competitive while championing environmental stewardship.

We employ advanced routing algorithms to optimize routes, minimizing fuel consumption and lowering both operational costs and emissions. Our fleet modernisation is focused on transitioning to more fuel-efficient and alternative

energy vehicles, such as electric or hydrogen-powered options, further cutting costs and reducing environmental impact.

Additionally, we engage our employees in sustainability initiatives to foster innovation and adherence to eco-friendly policies, helping to drive efficiency and reduce waste.

Regular carbon footprint monitoring ensures transparency and highlights our commitment to continuous improvement. Through collaborations with companies, government agencies, and non-profits, we co-develop cost-effective green logistics solutions. We also involve our customers in initiatives like recycling programmes, strengthening customer loyalty and appealing to a market segment that values responsible corporate practices.

Through these strategies, we not only advance our sustainability initiatives but also enhance our operational efficiency, effectively manage costs, and strengthen our market reputation.

As a leader in the logistics industry, what advice would you offer to companies looking to integrate sustainability into their operations? How can they overcome challenges in transitioning to greener logistics?

Transitioning to greener logistics might initially seem daunting, but the long-term advantages are significant. My advice is to:

1. Focus on Long-Term Savings: Consider investments in green technologies like solar panels, which offer long-term savings. While the upfront costs might seem high, these investments can pay for themselves within a few years and lead to substantial savings over decades.

2. Implement Pilot Projects: Begin with small-scale pilot projects, such as testing biodiesel, to demonstrate immediate cost reductions and other benefits, like decreased reliance on conventional fuels. Starting small can help build momentum and support for broader sustainability efforts.

3. Embrace New Technologies: Stay updated on technological advancements, such as electric or hydrogen-powered vehicles. Adopting these innovations not only ensures compliance with evolving regulations but also provides a competitive advantage

4. Phased base Approach: Start with small, cost-effective initiatives that cause minimal disruption. As positive results are observed, gradually expand to larger investments in sustainable operations

5. Develop a Business Case: Clearly outline the return on investment (ROI) for each sustainability initiative. Consider factors like payback periods and the overall financial impact on the company to help gain support from stakeholders at all levels

6. Access Funding and Incentives: Utilise available government grants, subsidies, or incentives to support green logistics efforts. These resources can help alleviate the financial burden of transitioning to more sustainable operations.

7. Collaborate for Broader Impact: Partner with other companies, government agencies, and educational institutions to exchange knowledge, resources, and innovations. Collaboration enhances the effectiveness and feasibility of greener logistics transitions.

By emphasising these strategies, companies can effectively transition to greener logistics and capitalise on the opportunities that sustainability presents.

As a CEO committed to sustainability, what personal values or experiences have influenced your dedication to green logistics? How do you stay motivated and inspired in your leadership role to drive these initiatives forward?

My commitment to green logistics is deeply rooted in my personal values and life experiences. Growing up, I witnessed the environmental impact of human activity, which instilled in me a strong sense of responsibility to protect the planet. This early awareness fuelled my passion for sustainability a passion that drives me every day.

I value responsibility, respect for all life, and a constant drive to find more sustainable solutions. I view the planet as a shared home for all not just for humans, and this belief shapes every decision we make as a company. Our actions should always aim to create a healthier, better world for future generations.

To stay motivated, I draw inspiration from the progress we have already made and take time to celebrate our achievements. I remain closely connected to the values that fuel my passion for sustainability. By keeping these values at the forefront, I aim to create a meaningful impact that extends beyond mere business objectives aiming to make the world a safer, more sustainable place for all.

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Membership Drive- DHL Global Forwarding

The Membership Development pillar organized a membership drive at DHL Global Forwarding on 28th June 2024. The team at DHL Logistics Park, Peliyagoda was given an introduction to CILT & WiLAT including membership benefits and the pathway to become a member of CILT / WiLAT. Prof. Renuka Herath – Chairperson WiLAT, Ms. Nilufa Nizam and Ms. Sithara Buddhini represented WiLAT at the event.

Prof. Renuka Herath, Chairperson WiLAT SL Featured in KDU Logistics Time - June 2024 Issue

Prof. Renuka Herath - Chairperson of WiLAT Sri Lanka was featured in the June 2024 issue of KDU Logistics Time, where she delivered a compelling message: "Gender should not limit anyone's potential." Her article underscores the critical importance of gender equality within the logistics and transport sectors by calling for systemic changes to create an inclusive environment where women can thrive and contribute fully. She highlights the achievements of women in the industry and encourages both organizations and individuals to support gender diversity and equal opportunities.

Membership Drive at Oki-Doki Global

The Membership Development pillar organized a membership drive at Oki-Doki Global on 17th July 2024. The event was facilitated by Mr. Shashi Gunathilaka, CEO of Oki-Doki Global and his team. The staff at Oki-Doki Global was briefed on CILT & WiLAT, membership benefits and the pathway to become a member of CILT / WiLAT. Ms. Kumari Sumanasekara– VC Membership Development, Ms. Sithara Buddhini, Ms. Nisansala Liyanapathirana and Ms. Indeewari Anuththara represented WiLAT at the event.

Visit to South Asia Gateway Terminals

Membership Services pillar of WiLAT SL organized a visit to the SAGT container terminal at Port of Colombo on 9th & 11th September 2024. Two batches of WiLAT members and University students took part in the visit gaining exposure and insights on container terminal operations at SAGT.

Field Visit to EFL 3PL Global

Membership Services pillar of WiLAT SL organized a field visit to EFL Logistics Campus of EFL 3PL Global which is a BOI approved 3PL provider in Sri Lanka and a global logistics leader. EFL offers glimpse into the world of advanced logistics and supply chain management. The event was facilitated by Mr. Nishan Hewagamage, CEO of EFL 3PL and Mr. Shashi Gunathilake, CEO of Oki Doki .

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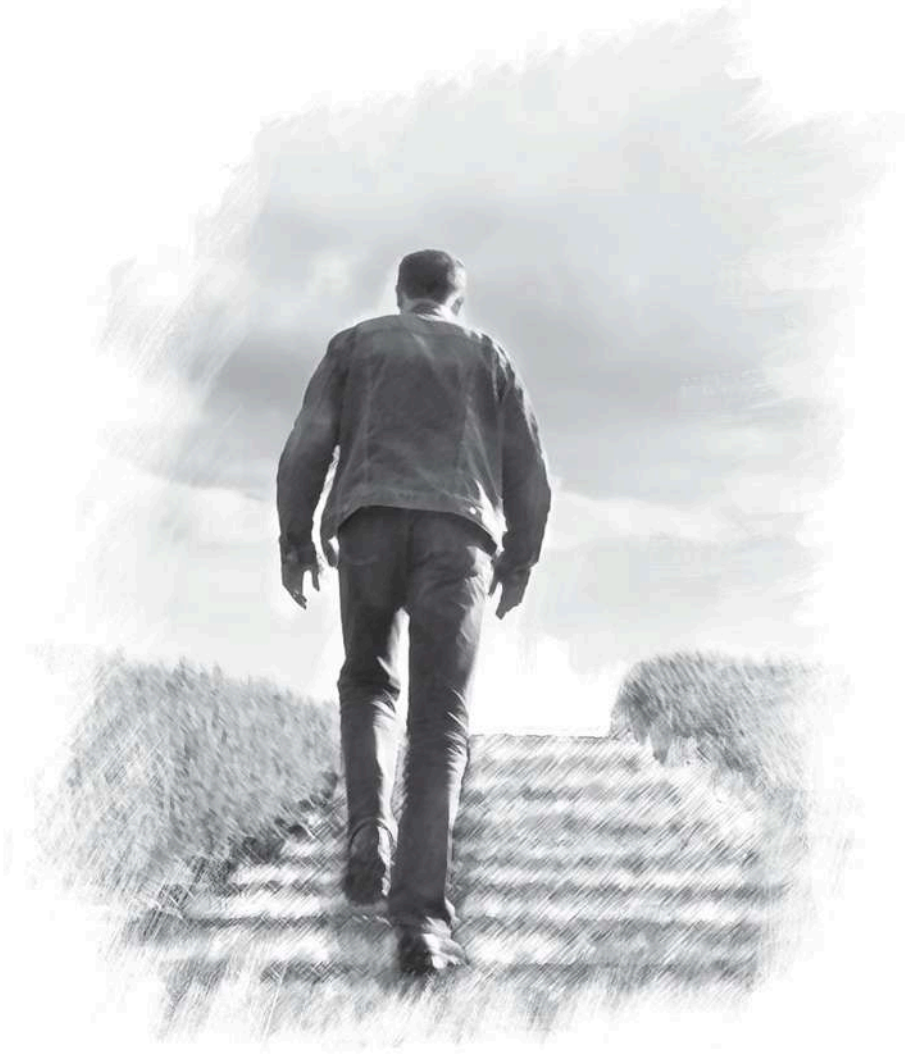
starts with the decision to *try*



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Awareness Session on Sustainable Waste Management at Cleantech (Pvt) Ltd

The Branding & Sponsorships pillar of WiLAT SL organized a site visit and an awareness session on sustainable waste management, including e-waste management and plastic recycling, at the Circular Economy Service Centre of Cleantech (Pvt) Ltd, Wattala, on 27th July 2024. This event showcased WiLAT's commitment to environmental sustainability. The main objectives were to raise awareness of the importance of environmental sustainability and to understand the responsibilities of stakeholders in the Logistics and Transport Industry. Cleantech (Pvt) Ltd, a member company of the Abans Group, briefed participants on responsible waste management and its contribution to a circular economy, explaining how the corporate sector can initiate proper waste collection through reverse logistics and partner for such initiatives.

Visit to Colombo West International Terminal (CWIT)

Membership Services pillar of WiLAT SL organized a visit to the CWIT container terminal at the Port of Colombo on 8th October 2024. The visit was facilitated by Ms. Dhashma Karunaratne, Chief Commercial Officer of CWIT and a past Chairperson of WiLAT SL. A team of thirty WiLAT members, comprising both corporate and student members, gained an in-depth understanding of the operations, the readiness of CWIT to commence operations, and the opportunities that lie ahead in making Sri Lanka's logistics hub future-ready.

Furthermore, this opportunity allowed the participants not only to see the operations firsthand but also to engage with the leadership team to understand their approach to making Sri Lanka ready while ensuring sustainability and diversity goals are held with the utmost importance. A discussion was held about how more opportunities are created for local graduates passing out from local universities and how knowledge sharing is happening while complementing other terminals at the port for capacity creation to become ready for more shipments reaching Sri Lanka.

Ignite 9 Closing Ceremony & Ignite 10 Inauguration Ceremony

The WiLAT Ignite 9 Closing Ceremony and Ignite 10 Inauguration Ceremony took place on 15th August 2024 at the IESL Auditorium. The event was attended by esteemed members of the CILT Council, WiLAT Executive Committee, CILT members, mentors, and mentees, drawing a record audience of over 150 participants.

This event marked a historic milestone in WiLAT Sri Lanka's history, with over 230 applications received from universities and industries, from which 75 mentees were selected and paired with 16 mentors. The main sponsor of the event was SAGT, with John Keells Logistics (JKL) as the gift sponsor.

The following mentees were awarded the Best Mentee prizes at the event:

- 1st Place– Kavishka Imarshana Weerasinghe
- 2nd Place– Kirushnananthy Vallipuram
- 3rd Place– Suvini Rathnayaka
- 3rd Place– Jayaji Anurudika

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CILT NEXT GENERATION NEWS

STRATEGIC INITIATIVES FOR 2024

CILT SL NG Awareness series

We successfully conducted our 2nd CILT Next Generation awareness session for 2024 on 11th October at the University of Moratuwa Department of Transport Management and Logistics Engineering Seminar Hall. Dr. Biman Hettiarachchi, the Regional Chairperson for the South Asian Region of CILT Next Generation International, delivered an inspiring speech and shared his valuable experiences with the participants.

CILT CENTRAL CHAPTER NEWS

STRATEGIC INITIATIVES FOR 2024

CILT Central Chapter Conducts Successful Membership Drive at PRDA

On the 2nd of October 2024, the Chartered Institute of Logistics and Transport (CILT) Central Chapter, led by Mr. Namal Bandaranayake, conducted a membership drive at the Provincial Road Development Authority (PRDA) office in Kandy. This initiative, organized upon the invitation of Mr. Indika Puwakgolla, the General Manager of PRDA, Central Province, aimed to introduce CILT to the engineering professionals within the organization.

During the event, Mr. Bandaranayake provided a comprehensive introduction to CILT, highlighting its global presence, professional development opportunities, and the value of membership for logistics and transport professionals. The session engaged the engineers, creating awareness of the benefits of joining CILT and how it could support their careers within the road development and transport sectors.

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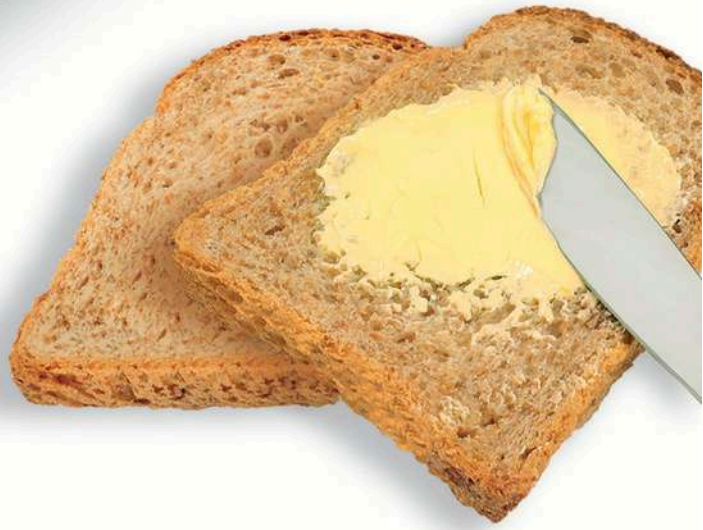

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“BRIDGING ACADEMIA AND PRACTICE”

INTERVIEW WITH PROF. H. R. PASINDU
ON TRANSPORT ENGINEERING, SUSTAINABILITY AND ROAD SAFETY

As someone deeply involved in both academia and professional practice, how do you see the intersection of transportation engineering and logistics in addressing current global challenges like sustainability and road safety?

Before diving into global challenges, it’s important to focus on the local context, here in Sri Lanka, as many of our issues mirror those faced by other low to middle-income countries. One of the main challenges is the high cost of transport, whether for passengers or goods. Passenger transport having to rely on private vehicle usage resulting in the high cost of transport, essentially means it's not sustainable. Road safety issue is also an outcome of this high motorisation during a short period of time where limited improvements to infrastructure quality took place. So to address the issue of sustainability is to find solutions to reduce the cost of transport.

Furthermore, the economic situation has made travel costs disproportionately high compared to people's income levels. Reducing these costs is essential for both economic stability and personal well-being.

For passenger transport, the long-term solution lies in increasing mode share of public transportation, especially rail, so more people can fulfill their travel needs at a lower cost. Rail is so far the most efficient mode of transport, as seen in many cities across Europe and Asia. Even in Colombo, we have existing railway lines along most of the major transport corridors except the Malabe corridor, but they are not used to their full potential. If we improved the reliability of these rail services, improve passenger information services, and connectivity to the local bus routes, we could significantly increase their usage and reduce transport costs for the public. Few key projects that could have achieved this such as the Suburban railway development project, Colombo-Malabe LRT project, and KV line rail upgrading projects was not implemented after feasibilities were completed.

For freight transport, the key challenge is the low efficiency of our road networks. Slow speeds on major freight corridors that does not have high mobility road network such as expressways, drive up costs, often due to poor road conditions, congestion in town areas. Completing the planned expressway network and improving road quality on major routes could drastically reduce transport time and costs. Additionally, bulk goods like cement and fuel could be moved more efficiently by rail, although there are some limitations, the potential goods that can be transported via rail and necessary improvements in railway infrastructure needs to be carried out. However, the

immediate critical issue facing railway sector is that it requires major funds allocation to rehabilitate the existing tracks, so this must be a priority for the government. Sri Lanka Railways must be open to reforms, institutional restructuring, and proactively to seek private sector investment since government has limited fiscal capacity to allocate funds for railways in the short to medium term.
Improving efficiency in both passenger and freight transport is vital for economic growth and sustainability.

You've played an important role in the development of the Road Safety Strategic Plan 2020-2030 for Sri Lanka. What specific goals from this plan are you most passionate about achieving, and what impact do you foresee on the country's logistics and transport systems?
Our Road Safety Strategic Plan aligns with the UN's Sustainable Development Goals (SDGs), aiming to reduce road fatalities by 50%. However, achieving this requires a concerted effort across multiple sectors, which hasn't fully materialized yet. Although the plan is in place, real progress depends on strong political will and institutional support. As it stands, only the Police and the health sector seem fully engaged with the issue. This is unfortunate because road crashes not only puts a huge burden on the healthcare system which is already constrained due to various reasons. The economic loss due country is quite significant, conservative estimates suggests that economic loss due to road crashes are at least 2% of GDP. So, it makes sense to prioritise investments targeting crash reduction.
Another crucial factor is ensuring that road infrastructure projects allocate sufficient resources specifically for road safety improvements. Too often, road safety is treated as an afterthought rather than being integrated into the core of project planning. I would argue for a mandatory minimum budget allocation for road safety improvement from each road project, and ensure compliance through an independent monitoring mechanism. Here, I am referring to infrastructure related interventions only, but there are several other measures related to driving license issurance, vehicle worthiness, enforcement that can be done to improve safety.
For real progress, road authorities, the police, the education sector, and even the media need to prioritize road safety as a key issue. Advocacy is essential, particularly in ensuring that road safety becomes a political priority and receives the necessary attention and funding to make a meaningful impact.

Your expertise spans from assessing economic viability to traffic engineering studies for large infrastructure projects. What, in your experience, are the most critical factors to consider when planning transportation infrastructure that balances efficiency and safety?
When planning transportation infrastructure, it's important to start by assessing whether the investment is truly necessary. In Sri Lanka, we've sometimes over-invested in roads, particularly in areas where the economic potential doesn't justify such projects. Building new roads doesn't automatically lead to regional economic growth unless industries, agriculture, health and education, in the region also have the capacity to grow and utilise the transport infrastructure.
Efficiency is not just about building more roads; it's about building to the right standard. Too often, due to land acquisition challenges or limited funding, we end up with roads that are paved with asphalt concrete but has limitations in the

design, with narrow lanes, sharp curves, and insufficient safety features. These design limitations may contribute to higher accident rates, while not being able to gain much on travel time reduction. Overall we must reassess the need to upgrade local roads to asphalt concrete, especially when the traffic volumes are low and it's not used by freight transport vehicles. In addition, managing traffic is also a key to ensure efficiency in the movement. This is relevant to urban areas where congestion is observed. For example, Colombo city must adopt a integrated traffic management system, where signal timing is coordinated across the network to minimize, more regularly adaptive to variations of traffic flows, enforcement for traffic rule violation are carried out consistently to ensure junction traffic flow efficiently and reduce delays as much as possible.

To truly balance efficiency and safety in road sector investments, we need to ensure optimal designs and safety measures are incorporated in road construction. Considering our expenditure to other sectors, and our overall economic performance, we've spent a lot of money on roads, but without proper planning and standards, this investment won't deliver the intended benefits.

In your opinion, how can Sri Lanka's transport infrastructure be adapted to better support sustainable development while still maintaining economic growth?

Sustainability in transport largely hinges on reducing fuel demand (energy) and resource consumption to build and operate infrastructure. Any infrastructure development that achieves this, can be considered sustainable. It could even be a project such as the recent Kohuwala flyover construction that eliminates a bottleneck on a road corridor or a network level improvements achieved via the construction of expressway, or the public transport projects or non motorised transport development projects that we typically consider as sustainable.

During construction, sustainability can also be enhanced by allowing more flexibility in design standards. Our rigid standards force contractors to source materials from distant locations, driving up resource consumption. By adopting more flexible, locally sourced materials and maintaining high construction quality, we can reduce both costs and environmental impact.

In the long term, asset management is key to sustainability. Currently, we build roads and neglect them until they deteriorate, at which point they need to be completely rebuilt. Implementing a robust asset management system would allow us to maintain roads at a lower cost, reducing the need for costly rebuilds and ensuring that our infrastructure remains in good condition for longer periods.

As the Vice President of CILT Sri Lanka, what role do you think professional organizations should play in fostering innovation and sustainability in transportation logistics, especially in a rapidly developing economy like Sri Lanka?

As the Vice President of CILT Sri Lanka, I believe professional organizations like ours play a key role in cultivating innovation and sustainability in the transport and logistics sectors. One of our primary focuses is capacity building. We recognize that universities cannot meet all the knowledge and skill needs of the industry, so we offer Continuing Professional Development (CPD) programs to help professionals stay up to date with the latest advancements in the field.

For example, we've seen significant interest in data science programs. Such programs

help businesses optimize their operations, making them more efficient, which in turn contributes to sustainability by reducing resource use. Additionally, we are working to raise awareness among students about the vast potential in logistics and transportation sector. Many students enter the field without fully understanding the diverse career opportunities available, so we aim to guide them through education and exposure to the industry.

CILT also promotes dialogue and knowledge sharing through conferences, research symposiums, and seminars. These events provide a platform for industry professionals, academics, and students to exchange ideas and collaborate on innovative solutions. Furthermore, we engage in advocacy, working with government authorities and other professional organizations to promote policies that support road safety, innovation, and sustainable development in the transport and logistics sector.

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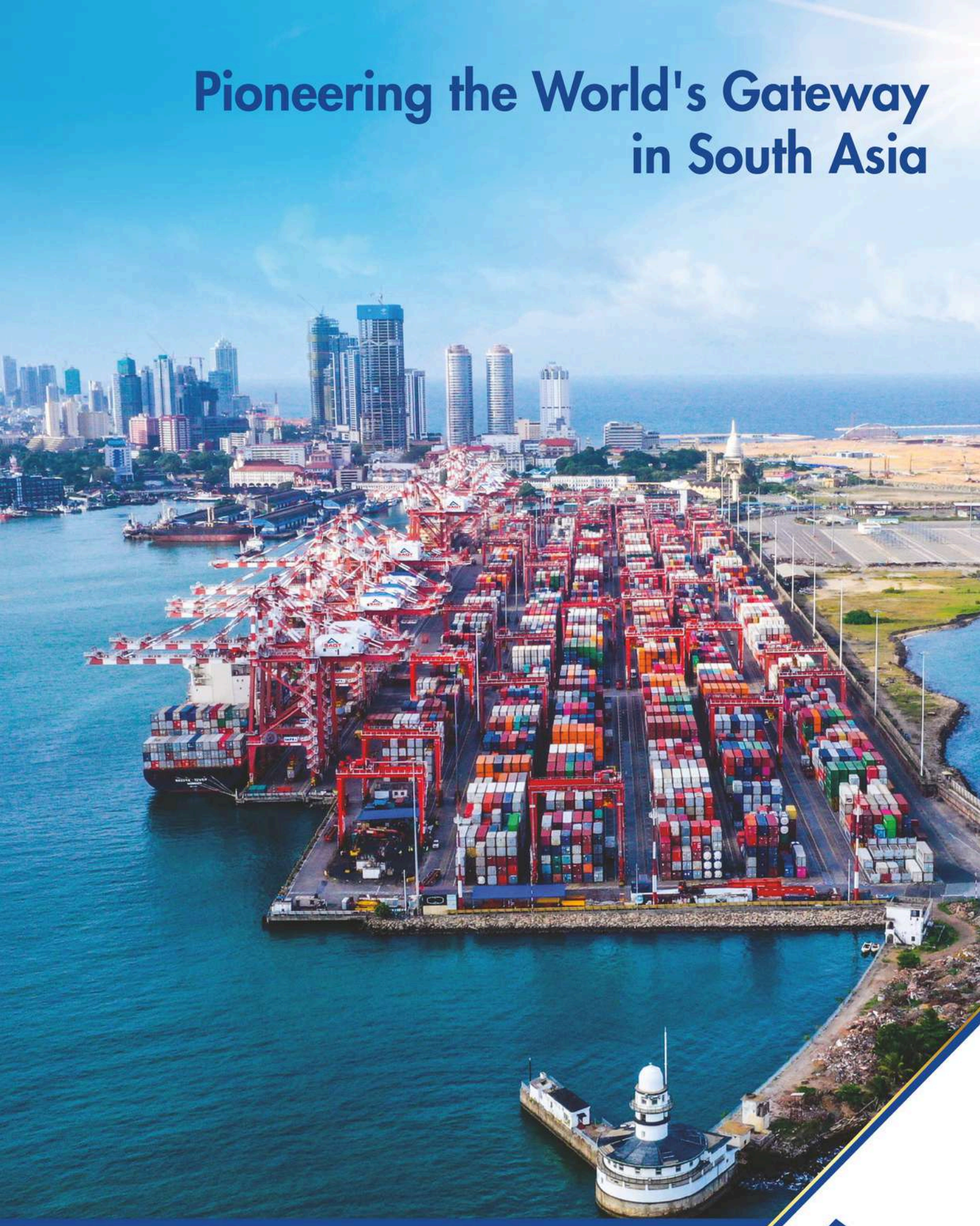

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SAGT
PORT OF COLOMBO SRI LANKA

"BUILDING A SUSTAINABLE FUTURE IN PORTS"

AN INTERVIEW WITH MS. UDARA CUMARATUNGA

SENIOR MANAGER - COMMERCIAL & MARKETING, SOUTH ASIA GATEWAY TERMINALS

How is SAGT integrating sustainability into its operations? What key initiatives have you implemented to reduce the environmental impact of port activities?

Sustainability has been central to SAGT's vision since its inception 25 years ago. In 2018, we streamlined our efforts and formalized a sustainability strategy, introducing a comprehensive framework aligned with global reporting initiatives (GRI). We track performance in 44 GRI topic specific disclosures, and results are reviewed monthly, ensuring continuous improvements and risk mitigation.

Our sustainability policy is built on four key pillars: environmental stewardship, enabling work environment, governance, and social responsibility. Environmental sustainability, particularly decarbonization, is a primary focus. Much of our carbon footprint stems from fossil fuel consumption in our equipment. In 2019, we introduced hybrid technology to our Rubber-Tired Gantry (RTG) cranes, the largest consumer of fossil fuel in our fleet of equipment. Since 2019, this hybrid conversion has reduced the Company's overall diesel consumption by 36%. In addition to operational improvements, SAGT has undertaken reforestation projects and launched a mangrove restoration initiative in partnership with the Center for Sustainability (CFS) at the University of Sri Jayewardenepura. The mangrove restoration project within the Benthara River Mangrove Complex, includes the implementation of an agroforestry system over five acres of land in Ththapana. These initiatives help offset our carbon footprint, but our focus remains on transforming operations to reduce consumption to create a lasting environmental impact.

On the gender front, SAGT is pioneering inclusivity within the industry, which traditionally has a low female workforce representation. SAGT was the first to introduce female engineers in its operational roles and continues to challenge outdated legislation that limit female participation in shift-based work. In alignment with their governance efforts, SAGT implemented Sri Lanka's first anti-sexual harassment policy and a whistle-blowing policy within the port industry. The introduction of a paternity leave policy encourages young fathers to share family responsibilities, reinforcing the company's commitment to work-life balance.

One of the most impactful CSR projects SAGT launched was the revitalization of Sri Lanka's "Thriposha" project, a government-funded meal supplement for malnourished mothers and children. During the 2022 economic crisis, we collaborated with stakeholders to ensure the production and distribution of the supplement to around 1.5 million beneficiaries.

Can you share insights into SAGT's approach to green logistics and how it aligns with global decarbonization efforts?

Globally, the International Maritime Organization (IMO) has set a target for net-zero emissions by 2050. While ports are directly within the shipping sector, it's vital for us to align with our customers' sustainability goals. SAGT supports these goals through projects such as the introduction of hybrid technology for RTG cranes and solar power utilization, which reduce our reliance on non-renewable fuels.

A standout initiative is our partnership with Greenstat, a company pioneering green hydrogen technology. SAGT sponsored a feasibility study to explore the implementation of hydrogen at our terminal as well as the Port of Colombo. We're also examining electrifying prime movers. As a port, new terminal operators are exploring the possibility of providing shore power to help docked vessels reduce their emissions.

Furthermore, we're working with our customers to repurpose potable water from ships, diverting excess water from being discharged into the ocean to use at the terminal to reduce our dependence on groundwater. These examples underscore our commitment to contributing to the global green logistics movement.

What are the biggest challenges SAGT faces in becoming a fully sustainable terminal?

One of the most significant opportunities for SAGT lies in the innovative mindset of our team. Their commitment has allowed us to test and implement hybrid technology in RTGs in Sri Lanka for the first time. Beyond the environmental benefits, this has given our staff the chance to expand their skills by acquiring knowledge on cutting-edge technologies. However, challenges remain. As a 25-year-old terminal, much of our infrastructure relies on fossil fuels, making the transition to renewable technologies both complex and expensive.

The long-term benefits of renewable technologies are undeniable. SAGT is committed to embracing greener equipment and technologies in a strategic approach.

Another hurdle is the timeline for implementation of sustainability projects. As we often lead initiatives at the Port of Colombo, these projects require engagement with multiple stakeholders and approvals, which can delay implementation

As Senior Manager - Commercial & Marketing, how do you view your role in driving sustainability at SAGT?

Sustainability is a shared responsibility, and we all must play our part in addressing the effects of climate change. At SAGT, we actively encourage innovation and empower our teams to contribute to sustainability efforts. I take pride in leading by example—whether it's reducing paper consumption or switching off unused equipment. These small actions can have a big impact, especially in a large organization. Beyond our operations, we also focus on raising awareness about sustainability within our community and among our employees' families. Collaborating with like-minded organizations and experts, further strengthens our efforts to make a real difference.

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MEMBER ARTICLES

BEYOND THE CLASSROOM: THE ROLE OF UNIVERSITY TEACHING IN SHAPING FUTURES

SABEEN SHARIC- SENIOR LECTURER AT KDU

Teaching is more than a profession; it is a service dedicated to guiding and shaping lives. Especially in fields like logistics and sustainability, where future leaders are molded, teaching goes beyond mere instruction. Every hour spent on teaching, mentoring, preparing, and organizing is an investment in human potential, underscoring the noble nature of this career. The purpose of this article is to illustrate how a university teacher in logistics management dedicates time to shaping the future of students, preparing them to contribute meaningfully to both the field and society as a whole.

A university teacher's commitment begins with developing a curriculum that meets the evolving needs of the logistics and transport sector. Designing courses relevant to current industry demands requires constant engagement with industry stakeholders, policymakers, and academic experts. Teachers invest months organizing consultative board meetings, gathering feedback from professionals, and aligning the curriculum with real-world applications. Significant hours are dedicated to preparing board papers, justifying curriculum changes, seeking approvals, and refining each module to ensure it prepares students for the demands of a competitive, fast-evolving sector.

Developing a new module or updating an existing one is a thoughtful and dynamic process. University teachers consult industry experts, collaborate with fellow academics, and conduct extensive research. The goal is not just to teach but to anticipate the skills that will be valuable as students step into an increasingly sustainability-focused world.

Once a solid curriculum is in place, the focus shifts to selecting students who are the best fit for the program. This process goes beyond assessing academic capability to identify individuals with the drive to succeed in a challenging field. Teachers invest considerable amounts of time in reviewing applications and interviewing candidates to ensure a balance between qualifications and motivation. Selecting students who are both capable and passionate helps prevent academic struggles down the line and ensures that those admitted will benefit from the program. This responsibility is significant; selecting the wrong candidate could lead to academic challenges, impacting not only the student's experience but also their future career.

As the academic year begins, university teachers ensure modules are covered effectively and on time. University teachers also provide guidance on instructional materials, assessments, and key academic objectives, creating a seamless experience for students. Coordinating with visiting lecturers to ensure timely module completion is crucial, any delays impact not only students' progress but also the department's overall effectiveness. Additionally, university teachers work diligently to oversee timely submission of marks. Monitoring and supporting visiting lecturers in submitting marks on time is essential to meet institutional deadlines and provide students with prompt feedback on their performance.When it comes to the classroom, teachers invest significant time preparing each lecture, creating materials that engage and challenge students. Every topic covered is carefully crafted to inspire curiosity and critical thinking. University teaching goes beyond classroom instruction; it involves helping students connect theory with practical applications, preparing them for real-world scenarios. Additionally, university teachers often devote countless hours to individual guidance, extra classes, and one-on-one sessions. Many students require support outside of scheduled hours to fully understand complex topics or receive guidance on projects, and teachers make themselves available to ensure every student has the help they need to excel. University teachers also play a crucial role in supporting students' academic and personal needs.

Some students may face personal challenges, such as medical issues, which require additional support. This often involves preparing board papers, seeking approval for adjustments, and coordinating with university administration to ensure fair treatment. Balancing empathy with academic expectations, university teachers go beyond their formal duties to support students through difficult times, embodying a commitment to both their academic success and personal well-being.

Beyond academics, university teachers broaden students' perspectives through industry exposure and hands-on experiences. Field visits to logistics hubs, seminars with industry leaders, and workshops on professional skills help students build a complete understanding of the logistics industry. Events like Logistics Days or industry meet-ups, publishing Logistics Times Magazines which require extensive planning and coordination, provide essential networking opportunities for students. Though organizing these activities often demands evening and weekend hours, teachers dedicate this time because they understand the lasting impact these experiences will have on students' futures.

As students progress through their academic journey, university teachers continue to support their growth. Organizing career fairs, connecting students with alumni and industry partners, and supervising research projects are all vital to their professional development. Research supervision is a particularly rewarding, though time-intensive, aspect of teaching. Guiding students through the process of topic selection, methodology, data collection, and analysis requires close mentorship, fostering academic and professional abilities. Each project is an opportunity to help students develop the skills and mindset needed to address real-world problems in logistics. The responsibilities extend even further, into exams and assessments, which are integral to measuring student progress.

University teachers must carefully prepare and grade exams, ensuring each assessment fairly represents students' understanding. Providing timely feedback is essential, allowing students to learn from their performance and make improvements. The commitment to student growth is evident as university teachers dedicate long hours to ensure fair and constructive assessments.

Finally, university teachers celebrate students' accomplishments at ceremonies like convocations, which mark the harvest of years of hard work and growth. Organizing these events, writing letters of reference, and offering career guidance reminds university teachers that their role goes beyond academic instruction. The connections formed with students over years of guidance and mentorship endure, as university teachers continue to support them as they transition into the professional world.

In every task, every lecture, and every interaction, a university teacher's focus remains on enhancing students' lives and preparing them for future success. University teaching is a noble career not merely because of the knowledge imparted but because of the profound transformation it fosters in students. Each hour spent developing a curriculum, organizing a workshop, guiding a project, or coordinating a career event is ultimately an investment in future generations and the society they will shape.

Reflecting on the countless responsibilities and sacrifices that university teaching entails, it becomes clear that this profession is one of honor and dedication. University teachers are committed to building competent professionals and compassionate individuals who will make meaningful contributions to a sustainable future. In preparing students to lead in logistics and transport and beyond, university teachers contribute to a legacy that is greater than individual achievements; it is a lifelong dedication to fostering human potential and supporting an impactful future for all.

HOW DIGITIZATION PROCESS AFFECTS SUSTAINABILITY OF APPAREL SECTOR MANUFACTURING

SHANEL ADIKARI, MILT-SENIOR EXECUTIVE AT CEYLINE ENGINEERING SERVICES (PVT) LTD

In an era where environmental considerations are ever stricter, the apparel sector is at a crossroads as digitization of production processes offers a promising path to sustainability as well as a challenge to traditional practices.

The fashion industry is a growing industry, creating the billions of dresses, suits, and other clothing and accessories consumers buy. The apparel industry consists of companies that design and sell clothing, footwear, and accessories. Fashion has a much broader meaning of which apparel is a part. The apparel industry represents a dynamic sector in global trade. The performance of Asia Pacific regions like China, India, Hong Kong, the Philippines, Indonesia, Bangladesh, and Sri Lanka in the apparel sector is astounding. China is the largest manufacturer and exporter of apparel.

Throughout the years, Sri Lankan apparel manufacturers and suppliers have gained a strong worldwide reputation for ethical manufacturing of high-quality apparel trusted by the iconic global fashion brands. Sri Lanka's apparel and textile manufacturing industry is the most significant and dynamic contributor to Sri Lanka's economy, which is entirely owned and operated by the private sector. Sri Lanka apparel and textile manufacturers have successfully utilized the opportunities in the international market to evolve beyond traditional exports and tailoring design to provide sophisticated and creative solutions through fashion BPO services, research and development, and innovation centers. Sri Lankan apparel companies have already been connected with global super brands in Europe and the USA.

The apparel industry produces finished clothing, such as kids' garments, women's and men's clothing, and other intimate apparel. Manufacturing apparel is one of the most in-demand businesses today. Fads change over time, particularly in the fashion world. In order to remain competitive, apparel manufacturers seek to expand their business in various ways. Factors such as short product life cycles, unpredictable market trends, volatile fashions, and the impulse purchase nature of the customer are to be given utmost importance by the manufacturers so as to sustain themselves in the apparel segment. Eco-friendly products/green manufacturing of garments, low cost, high quality, and reliability in products, digitized supply chain, robotics, automated machines and systems, and garments without guilt are the main trends of this industry.

The major apparel exporters in Sri Lanka are MAS Holdings (Pvt) Ltd, Brandex (Pvt) Ltd, Asia Fabric Ltd, EAM Maliban Textiles, Hirdramani International Exports Pvt Ltd, and Industrial Clothing Ltd.

The apparel industry earns $5 billion in export revenue with approximately 1 million employees. This revenue is 40% of the national export revenue. The apparel industry targets $8 billion in export revenue in 2025. Apparel Exporters Association, Fabric and Apparel Accessory Manufacturers' Association, Ministry of Industry and Commerce, and World Trade Organization are the associations related to the apparel industry.

Figure 1

Apparel categories span sportswear, workwear, swimwear, lingerie, loungewear, bridal wear, and children's wear, etc. Apparel companies connect global super brands such as Victoria Secret, Nike, Lululemon, Calvin Klein, Colombia, Levis, Tesco, etc.

Sri Lankan factories attract global brands to invest in Sri Lanka as a hub. Reducing cost and lead time saving grow exponentially, and it all began when they setup their regional supply chain in a logistic hub in Sri Lanka. A large number of European and Asian fabric suppliers store their fabric in Sri Lanka to support fast fashion, taking advantage of fast regional shipping time and clearing in less than 24 hours. The USA and the UK have historically been the highest buyers of Sri Lankan apparel throughout the decades.

Nowadays Sustainability in the apparel industry focuses on reducing negative impact across the entire life cycle of clothes with the concept of green logistics. Sustainable apparel companies aim to create eco-friendly products, eco-conscious manufacturing, safe working conditions with an eco-friendly working environment, sustainable sourcing, recycling processes, innovations, and technological implementations.

When considering sustainable and green logistics in an apparel context, apparel supply chain digitalization plays a major role.

Digital supply chain is a novel area to focus on and combine digital and supply chain domains. Data helps to drive today's supply chain. Data is powerful and starting to be used heavily within the supply chain industry. A digital supply chain is a foundation that was built on web-enabled capabilities. Most of the supply chains use a mix of paper-based and IT-enabled processes.

Digitization is the process of converting information into a digital format. It simply means the convertion of analogue source material into a numerical format. Digitalization is the use of digital technologies and digitized data to impact how work gets done, transform how customers and companies engage and interact, and create a new digital revenue stream. This is the most stylish and best trend and solution used in the apparel industry.

Appliances to digitalize a garment factory: tabs, TV screens, phones, computers, laptops, scanners, printers, barcoding machines, and other equipment using modern technology.

Unfamiliarity with digitalization is the main challenge faced in the initial stage, and people don't want to change their behavior. Current infrastructure-based technology like Wi-Fi/number of tabs/displays, less budget allocation, and high cost in the initial stage, having a lack of knowledge for management on self-service/business intelligence for analytics, current apparel culture, ethical/sustainable practices, and social/economic sustainability are the main challenges in digitalizing.

The main digitization trends in the apparel sector are 3D designs, virtual sampling, AR technology, AI, and data analytics. sustainable textile supply chains, robotics and automation in production, digital showrooms and fashion shows, smart textiles, wearable technology, etc.

Main consideration points in the process of digitalization are data security, job security, complexity, training, maintaining, innovations, and updates.

Better decision making, improving efficiency and productivity, efficient resource management, encouraging innovation, making communication and teamwork easier, improving working conditions, digital presence, improved design process, new contact channels for customers, trend forecasts, reducing space, time, and cost, and systemizing accuracy are the benefits of digitizing a garment factory.

While the journey to digitalize the supply chain of an apparel factory comes with its challenges, the benefits far outweigh the obstacles. With the adoption of digitalization, the industry can deliver more reliable, high-quality services to customers at a lower cost, ultimately paving the way for a more sustainable and efficient future in apparel manufacturing.

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THE FABRIC OF TOMORROW: EMERGING TECHNOLOGY AND TRENDS IN THE APPAREL SECTOR DRIVING GREEN LOGISTICS

G. K. S. COSTA- UNDERGRADUATE OF KDU

In the modern world, Mr. Robert Swan doesn't belong to the category of "A typical novelist". This is mainly because majority of his books are renowned for putting forward new models and sustainable solutions for the future. In one instance he highlights how the greatest threat to our planet is simply the people's belief that "someone else" will save it.

The Apparel sector and the fashion industry is one of the highly evolving industries in 2024 due to the constant changes in consumer taste and preferences when it comes to clothing. It can be stated that the apparel sector is a million-dollar making industry globally but however it is also one of the most environmentally damaging sectors due to the extreme levels of pollution associated in its supply chains. Few modern clothing brands have successfully recognized the market opportunity that comes along with this problem. For instance, Patagonia can be identified as an ecofriendly clothing brand which is purely based on circular fashion. This brand is operating its entire supply chain with the use of reverse logistics where used clothing are collected from customers and are subjected to either repair or recycling prior to resale. It is clear that modern consumer groups usually react positively towards such brands with sustainability motives. Therefore, Patagonia's target market is not only limited to the usual environmental activists and eco-warriors but also is open to almost any consumer with the basic consciousness of planet earth. At present, Circular fashion or thrifting is an emerging trend that has encouraged many firms like adidas and H& M in the fashion industry to redesign their supply chains to operate with reduced negative environmental impacts from the point of origin to the point of destination. With green sourcing strategies similar to Patagonia's supply chain process, its clear that green logistics implementations don't necessarily have to be mass scale always; Every small step counts and eventually makes a big difference on the road to sustainability.

Shipping emissions are considered as the biggest challenge when it comes to achieving green logistics. It's simply because shipping is a very crucial aspect of supply chain and logistics which is quite difficult to avoid. At the same time, it is quite clear that in the road to sustainability, technology plays a pivotal role in this era of digitalization. For instance, the Adidas Speed factory which is purely designed to reduce the shipping emissions by automated machines and robots are producing shoes and apparel closer to their consumer markets. This contributes on a major level to reduced shipping emissions while paving the way towards green logistics. Additionally, it is evident that in the textile industry especially the cotton production is responsible for major level of water consumption annually. For an instance it has been reported that Aral Sea is currently on the verge of having a total disappearance due to the cotton farming in central Asia which has caused rivers to divert resulting the Aral Sea to shrink by 90%. This situation is threatening one of the must have resources of the world; Water. Therefore, many clothing brands including Nike and Adidas have already opted recycled Polyester as an alternative for cotton, while creating tremendous waves in the market in the form of athletic wear. Moreover, recycling a non-degradable substance such as polyester wouldn't have been easy without the support of technology and this has overall made a major impact on assuring sustainability in the textile industry.

On the other hand, the "go-green" initiatives taken by the Sri Lankan business firms are comparatively low in terms of global means, however it should not be neglected that there are few firms going that extra mile to ensure sustainability in their supply chains. For instance, Hayleys Fabrics is fully focused on sustainable dyeing practices since synthetic

dye can be quite hazardous to the human skin when contacted over a longer period of time. Theres a major contribution from technological innovations to develop their WARNA by Mahogany which is a natural dye that repurposes waste from the furniture industry, aligning with the circular economy mode. Furthermore, it is truly quite fascinating to see Sri Lankan Apparel companies fulfilling their part, in the road to sustainability. For instance, leading the charge in fostering a circular and green economy are programs like MAS Holdings' KREEDA Cellucycle project, which closes the production loop by recycling waste fleece fabric into yarn for new clothes. Despite Sri Lanka's small scale, these initiatives are part of a larger global movement in which every action matters.

In conclusion, despite of what the industry is, green logistics is anyway not just a strategic initiative but a lifeline for the planet. Every shipment made and every mile traversed leaves behind a carbon trail, contributing to air pollution, climate change, and the depletion of ecosystems. Without intervention, our children will inherit a world where nature is compromised by endless consumerism and environmental degradation. It cannot be neglected that the Technology plays a pivotal role in reshaping this narrative, offering innovative solutions to reduce emissions and streamline operations. In 2024, From electric and hydrogen-powered vehicles to AI-powered route optimization, technology ensures that goods move efficiently with minimal environmental impact. At the same time green sourcing is revolutionizing the inbound logistics of supply chains currently, ensuring eco-friendly practices are upheld. By embracing green logistics, businesses can transport goods responsibly ensuring the customer demand is fulfilled—balancing economic growth with environmental care. It offers a vision of progress that does not sacrifice the Earth but harmonizes with it, creating a future where sustainable choices drive prosperity for generations to come.

SUSTAINABLE LOGISTICS SYSTEMS IN TELECOMMUNICATION SECTORS

KIRUSHNANANTHY V, MILT
[BSC (WUSL), MSC (PGIA,UOP), MSC (UOB,UK)

Logistics plays a crucial role in the telecommunications industry by ensuring seamless operations, efficient inventory management, and timely delivery of essential equipment and services. As one of the largest industries globally, managing a vast number of customers, the telecommunications sector depends heavily on logistics management, especially courier services and logistics companies, to meet customer demands.

Logistics in telecommunications can be categorized into five types: procurement logistics, production logistics, sales logistics, recovery logistics, and recycling logistics. Key logistics services in this sector include warehousing, distribution, cross-docking, inventory management, packaging, and transportation.

These services enable telecommunication companies to meet customer needs efficiently, ensuring effective transport, storage, and asset tracking.

Effective supply chain management supports the seamless supply of goods and services, providing end-to-end logistics network support to deliver products and services to customers. Optimized processes throughout the supply network help telecom sectors to achieve key objectives such as efficient product launches, meeting unpredictable demand, and thriving in a highly competitive business environment.

The logistics supports telecommunications in various ways, including:

1. Simultaneous Connection Between Different Parties Involved: Logistics and courier services facilitate cooperation and coordination between manufacturers, operators, and suppliers dealing with telecommunication.

2. SIM Card/Equipment Delivery Service: Telecom service providers partner with top courier and logistics companies to deliver SIM cards/equipments to new customers, enhancing the customer experience and building trust. Logistics services ensure that network providers receive all necessary parts, equipment, and materials across different offices in a region, maximizing efficiency and functionality.

3. Inventory & Warehouse Management: With the integration of courier and logistics services, inventory and warehouse management becomes more efficient. Logistics companies ensure that orders are crosschecked with different vendors, selecting those with sufficient inventory to fulfill requirements.

4. Assets and Transportation Management: Supply chain management optimizes all processes related to planning, purchasing, storage, transportation, and selling of physical products through various channels.

The telecommunications sector is characterized by its size, sensitivity, and technological advancement, leading to increased customer demands. Optimizing available resources through effective logistics management, including safe transport, warehousing, distribution, cross-docking, inventory management, and packaging of equipment, is crucial.

Previous research has highlighted the importance of logistics integration in measuring the performance of telecommunications industries. Moskdanian and Molahosseini (2013) reported a positive relationship between logistics integration and performance. However, research is limited in this area, particularly within the telecommunications sector.

Logistics systems in telecommunications highly impact on the smooth functioning of sector. The telecommunication sectors are adversely facing number of challenges in order to fulfill their customer requirements as mentioned in the Table 01 given below. Accordingly, few strategically reliable systems can be implemented in the telecommunication entities to oversome these challenges and win the customers' satisfactions. The strategic systems are pointed out in the Table 01. Consequently these

strategically implementing systems can bring out number of benefits especially cost cutting, optimum resource utilization, minimum waste etc through the approach of lean in logistics, green logistics, agile scrum approach in logistics and other sustainable practices in logistics especially the digitalized systems resulted in paperless dot com and less carbon foot print etc.

- **Table 01: Logistics Overview in Telecommunication Sector**

Entities	Logistics Components	Challenges	Systems	Benefits
• Sri Lanka Telecommunication • Mobile service providers	• Warehousing • Distribution • Cross-docking • Inventory management • Packaging • Transportation services • Vendor/supplier management (under Procurement)	• Higher lead time/Delays in delivery • Unnecessary Cost/Processing • Miscommunication • High manpower involvement • Decentralized Logistics system/ complex distribution network • Poor inventory management • High Demand for fast and reliable delivery • Compliance and regulations • Environmental concern	• Adapting a Ultimate cheat sheet for logistics Management • Integrating Agile Scrum Approach in logistics system in upcoming project • Introducing Kanban board for inventory and transportation management • Sustainable Practices in logistics handling such as Solar power usage in vehicle, warehouses, online system like Transport Management system, Warehouse Management System, ERP etc. • Using PowerBI for expedite the data processing	• Timely delivery of product/service • Effective Inventory and warehouse management • Better management of Transportation • Optimum usage of resources and ensure the maximum output • Reduction in unnecessary costs in logistics

SUSTAINABILITY & GREEN LOGISTICS: DRIVING THE FUTURE OF SUPPLY CHAINS

DR. PRIYANGANI JAYASUNDARA, CMILT, FISMM
DIRECTOR - FOUNDATION FOR INNOVATIVE & SOCIAL DEVELOPMENT - FISD

"Sustainability is not a choice; it's an imperative. Green logistics is the future of supply chains, and those who invest in it now will lead the way forward."
Antonio Guterres, United Nations Secretary-General

In today's fast-paced, interconnected world, sustainability is no longer a buzzword—it's a necessity. The logistics sector, which forms the backbone of global trade, is transforming to meet the demand for greener, more efficient operations. The emergence of green logistics is reshaping the future of supply chains, ensuring that businesses not only reduce their carbon footprint but also enhance their long-term profitability and resilience.

The Rise of Green Logistics

Green logistics refers to the sustainable practices that aim to minimize the environmental impact of logistics activities, including transportation, warehousing, and packaging. This holistic approach focuses on optimizing operations to reduce waste, energy consumption, and emissions while maintaining operational efficiency.

As global industries grapple with the environmental challenges posed by climate change, the logistics sector—responsible for a significant portion of carbon emissions—is under increasing pressure to adopt green practices. According to a 2022 report by the World Economic Forum, the logistics industry accounts for 11% of global carbon dioxide emissions, with transport operations being the largest contributor. The shift towards green logistics is, therefore, crucial to meeting global climate goals.

Drivers of Sustainability in Logistics

Several factors are accelerating the adoption of sustainability initiatives within the logistics sector:

Regulatory Pressures: Governments worldwide are implementing stricter environmental regulations, such as carbon taxes and emission standards. These regulations compel logistics companies to innovate and adopt green practices. In Europe, the Green Deal aims to make the continent carbon-neutral by 2050, with logistics playing a critical role.

Consumer Demand: Today's consumers are more environmentally conscious than ever before. According to a Nielsen study, 73% of global consumers are willing to change their consumption habits to reduce their environmental impact. This shift in consumer behavior forces companies to adapt their supply chains to ensure sustainable practices throughout the logistics process.

Corporate Social Responsibility (CSR): Companies across industries recognize that sustainability is not just good for the planet but also for business. Adopting green logistics practices is becoming integral to companies' CSR strategies, helping to enhance brand reputation and foster consumer trust.

Technological Advancements: Innovation in logistics technology, such as electric vehicles (EVs), blockchain, and big data analytics, is driving sustainability. These technologies improve efficiency, reduce energy consumption, and provide better visibility into supply chain emissions, making it easier to manage and optimize green logistics operations.

1. Eco-Friendly Transportation Solutions

As Dr. Lars Stoll, an Environmental Economist, states: "Transportation is evolving from a major source of carbon emissions to a pioneer in clean energy solutions. The shift is inevitable, and those who adapt quickly will thrive." Transportation remains the most energy-intensive element of the logistics process, traditionally relying heavily on fossil fuels, which contribute significantly to carbon emissions.

Dr. Lars Stoll, Environmental Economist said "Transportation is evolving from a major source of carbon emissions to a pioneer in

clean energy solutions. The shift is inevitable, and those who adapt quickly will thrive." Transportation is the most energy-intensive element of the logistics process. Traditionally, logistics operations relied heavily on fossil fuels, leading to significant carbon emissions.

However, the sector is undergoing a shift towards sustainable transportation solutions. Electric and hybrid vehicles are becoming more prevalent, offering significant reductions in carbon emissions. According to the International Energy Agency (IEA), electric vehicle sales grew by 40% in 2023, with commercial vehicles accounting for a significant portion of this growth. Many logistics companies are also adopting alternative fuels such as biofuels, hydrogen, and liquefied natural gas (LNG) to power their fleets.

2.Green Warehousing and Infrastructure

Sustainable warehousing practices are key to reducing energy consumption and waste. Many logistics companies are investing in green buildings, using energy-efficient designs that incorporate natural lighting, ventilation, and renewable energy sources like solar panels. For instance, Amazon's fulfillment centers in California and Europe are equipped with solar energy systems that provide clean energy for their operations.

Automation in warehouses is also playing a role in sustainability. By using robots and AI-driven systems, logistics companies can streamline processes, reduce human error, and minimize energy use. Furthermore, smart warehousing technology allows for real-time tracking and inventory management, reducing overstocking and minimizing waste.

Jane Stevenson, Global Head of Sustainability at XYZ Logistics, stated Smart logistics hubs are the future, where sustainability meets technology to create efficiency and value for businesses and the planet alike.

3.Sustainable Packaging Solutions

Another crucial aspect of green logistics is sustainable packaging. Traditional packaging materials, such as plastic, contribute to environmental pollution and require vast amounts of energy for production and disposal. Companies are shifting towards recyclable, biodegradable, and reusable packaging to minimize environmental impact.

The "circular economy" concept is gaining traction, where packaging materials are reused in continuous cycles. Companies like UPS and DHL are experimenting with eco-friendly packaging solutions, such as using materials made from cornstarch or seaweed, which are biodegradable and significantly reduce waste.

4. Reverse Logistics and Recycling Initiatives

Mark Jensen, Logistics Consultant and Author, notes that Reverse logistics is the unsung hero of green logistics. It's where companies can make the greatest strides in reducing waste and closing the sustainability loop. Reverse logistics, which refers to the process of returning goods from consumers back to suppliers, plays a critical role in sustainable logistics. It enables the recycling, refurbishing, and reusing of products, thereby reducing waste. Companies like Dell and HP have implemented reverse logistics programs for recycling electronic waste, while fashion brands like H&M offer customers the option to return used clothing for recycling.

Moreover, logistics companies are increasingly designing their supply chains to support a circular economy model, where materials flow in a closed loop, minimizing waste. This approach not only supports sustainability goals but also offers cost savings by reducing the need for new materials.

Challenges and Opportunities

While the adoption of green logistics practices is accelerating, the journey is not without challenges. One of the biggest barriers is the cost of transitioning to sustainable technologies and infrastructure. Electric vehicles, for instance, require significant upfront investment, and the development of renewable energy sources can be expensive.

However, these costs are often offset by long-term savings. Energy-efficient warehouses reduce utility costs, while eco-friendly transportation options can result in lower fuel expenses. Moreover, government incentives, such as tax breaks and grants, are available in many regions to support green logistics initiatives.

Another challenge is the complexity of implementing sustainable practices across global supply chains. Companies must coordinate with multiple stakeholders, from suppliers to customers, to ensure that sustainability is embedded at every level of the supply chain.

Despite these challenges, the opportunities are vast. Green logistics offers companies the chance to reduce operational costs, improve brand loyalty, and gain a competitive edge in an increasingly eco-conscious market. By investing in sustainable practices now, companies can future-proof their supply chains and meet the growing demand for environmental responsibility.

The Road Ahead

As the world continues to face environmental challenges, the logistics sector will play a pivotal role in driving sustainability efforts. Green logistics is not only a solution to the current environmental crisis but also a strategic advantage for businesses looking to lead in a rapidly changing global landscape.

The path to sustainability requires collaboration across industries, governments, and consumers. By embracing green logistics, we are not only reducing the impact on the planet but also building a more resilient and prosperous future.

By committing to green logistics, businesses can take meaningful steps toward reducing their environmental footprint while fostering innovation and efficiency. In an increasingly eco-conscious world, the future of logistics is green, and the time to act is now.

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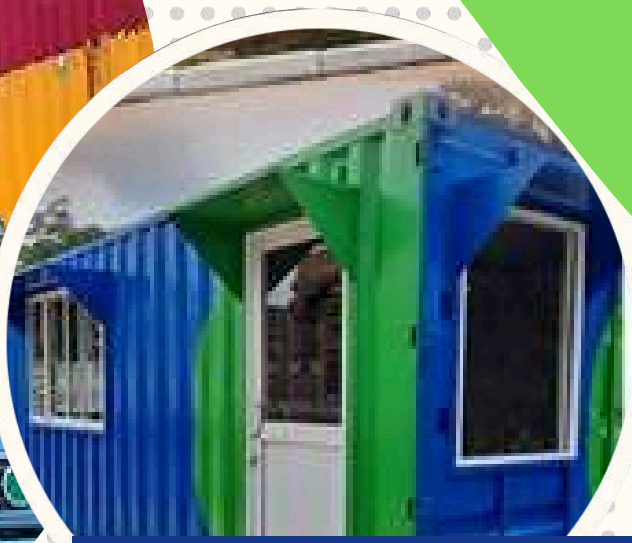

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SUSTAINABILITY AND GREEN LOGISTICS: RESHAPING THE SUPPLY CHAIN

BHAGYA WETTASINGHE- BUSINESS DEVELOPMENT MANAGER

What's good for the planet is also good for business: sustainable supply chain logistics equals smaller carbon emissions and leaner, more cost-effective operations. Going green means growing stronger!

Sustainable logistics is the practice of reducing the environmental impact of logistics operations, while green logistics involves using sustainable and environmentally friendly practices throughout the entire supply chain. In today's increasingly environmentally conscious world, reducing carbon emissions has become a priority for many industries, including logistics. Hence, understanding the impact of carbon emissions in logistics is crucial in developing effective strategies to mitigate their effects and promote sustainability.

The rise of sustainable practices and green logistics is revolutionizing the supply chain industry. Companies across various sectors are taking steps to mitigate their carbon footprint and adopt environmentally friendly practices in their logistics operations. This trend is being driven by both consumer demand for environmentally conscious products and a growing awareness of the impact that logistics can have on the environment.

The Role of Logistics in Carbon Emissions

The logistics sector is responsible for a significant portion of carbon emissions globally thus the studies show, transportation accounts for nearly 14% of global greenhouse gas emissions, with road freight being the most dominant contributor which highlights the urgent need for the industry to take action to reduce its carbon footprint.

In fact, it is crucial to recognize the impact of warehousing operations on carbon emissions as warehouses are essential components of the logistics network, but they also consume vast amounts of energy for lighting, heating, and cooling. Implementing energy-efficient practices in warehousing, such as utilizing solar panels or automated lighting systems, can significantly reduce the carbon footprint of these facilities.

Despite the challenges, there have been significant advancements in understanding and addressing carbon emissions in logistics. Many companies have started adopting sustainable practices and investing in technologies that can minimize environmental impact. However, there is still much work to be done to achieve widespread carbon reduction.

Collaboration across the supply chain is essential for driving meaningful change in carbon emissions. From suppliers to manufacturers to retailers, each stakeholder plays a crucial role in implementing sustainable practices. By fostering partnerships and sharing best practices, the logistics industry can work towards a greener future with reduced carbon emissions throughout the entire supply chain.

Every step toward the smoother and faster movement and delivery of goods, is a win/win, making customers happier and more engaged, and helping businesses to improve both their sustainability profiles and their bottom lines.

Carbon emissions contribute to global warming and climate change, leading to adverse effects on ecosystems, weather patterns, and overall environmental health. The transportation sector is a significant source of carbon emissions, with trucks and ships being major contributors. By investing in alternative fuels, such as biofuels or electric vehicles, companies in the logistics industry can significantly reduce their carbon footprint and help transition towards a more sustainable future.

corporate social responsibility and attract environmentally conscious customers.

C.H. Robinson's recent efforts to create more sustainable supply chains include the

introduction of Emissions IQ, a free online tool to help customers track their supply chain emissions and carbon footprint across all forms of transportatioImplementing effective strategies is key to reducing carbon emissions in the logistics sector. By adopting sustainable practices, optimizing transport routes, and transitioning to low-carbon vehicles, businesses can significantly minimize their environmental impact.

Reducing carbon emissions in the logistics industry is not only crucial for environmental sustainability but also for meeting regulatory requirements and improving brand reputation. Companies that proactively address their carbon footprint demonstrate a commitment to n globally. The company put together a team of expert global sustainability professionals and partnered with the Global Logistics Emissions Council (GLEC) to get their methodology accredited. In the pilot phase of the Emissions IQ platform, 125 companies reduced carbon emissions by a total of 350,000 metric tons of CO2 equivalents. Now, any shipment through C.H. Robinson will automatically get an emissions score, measuring and helping companies reduce metric tons of CO2 annually across their supply chain. Customers can track their emissions and achieve their sustainability goals.

Technological Innovations for Carbon Reduction: The Role of AI and Machine Learning

In reducing carbon emissions in logistics, technological advancements play a pivotal role. Innovations such as artificial intelligence (AI) and Machine Learning (ML) are revolutionizing the way logistics operations are conducted and optimizing resource utilization.

One of the key aspects of utilizing AI and ML in logistics is their ability to continuously learn and adapt. These technologies can analyze real-time data to make informed decisions that lead to more sustainable practices.

By incorporating AI-driven solutions, companies can, not only reduce their carbon footprint but also improve operational efficiency and customer satisfaction.

AI and machine learning algorithms can analyze vast amounts of data to identify patterns and optimize various aspects of logistics operations. For example, intelligent routing algorithms can dynamically optimize delivery schedules, considering factors such as traffic conditions and fuel efficiency, to minimize carbon emissions.

Furthermore, AI can be used to predict demand more accurately, leading to better inventory management and reduced waste. By leveraging machine learning models, companies can optimize their supply chains to operate with minimal environmental impact while meeting customer demands effectively.

In conclusion, the transition to green logistics is not just a trend; it is a vital step towards a sustainable future. By adopting eco-friendly practices, businesses can significantly reduce their environmental impact while also harvesting economic benefits and meeting consumer demands. Along the way forward, the commitment to sustainability in logistics will play a crucial role in shaping a greener, more resilient planet. Embracing green logistics is not just about compliance; it's about innovation, responsibility, and the opportunity to lead the way toward a sustainable future.

"The first rule of sustainability is to align with natural forces, or at least not try to defy them."

"Sustainability is no longer about doing less harm. It's about doing more good."
"Progress is impossible without change, and those who cannot change their minds cannot change anything." *(George Bernard Shaw, Irish playwright)*

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GREEN LOGISTICS: SUSTAINABLE TRANSPORTATION AND ENVIRONMENTAL STEWARDSHIP THROUGH GREEN VEHICLES AND DRONES

T. HAREESHANAN- UNDERGRADUATE,UNIVERSITY OF MORATUWA

Logistics in the 21st century became a driver in global commerce, enabling goods and commodities to move around the globe. The industry of logistics involves transportation, warehousing, and distribution; it plays a very vital role in international trade as it bridges the large gap from suppliers and manufacturers to consumers. This growth does not come without a significant environmental price. Emissions from transport means like trucks, ships, and planes increase; air pollution and greenhouse gas emissions become a hot topic linked to climate change. While the logistics sector is expanding, so is its ecological footprint-a demand for urgent action with sustainable solutions to balance economic growth with ecological responsibility.

Among the environmental issues which have been a matter of great concern in logistics, air pollution has arisen due to the combustion of fossil fuels for transport. With logistics demand continuing to rise steadily and boundlessly, sustainable solutions are becoming seriously urgent. New concepts have been developed to address this: carbon-neutral, smart eco-logistics, zero-carbon initiatives. The basic objective of all such initiatives is either to reduce or avoid air pollution emissions for environmental friendliness and sustainable development of the logistics industry.

Defining Green Logistics

Green logistics are an integrated concept in logistics operations with methods that are environmentally sustainable and contribute to the reduction of the negative environmental impact of the sector. It involves the use of renewable sources of energy, reduction of greenhouse gas emissions, minimization of noise pollution, improvement in waste management, and so on. Companies that adhere to green logistics practices work to maintain high levels of operation efficiency while reducing their environmental footprint. The operational shift to greener operations is mainly driven by regulatory pressures, the rise of consumer demands to help ensure that sustainable practices are realized, and corporate social responsibility commitment.

Recent significant headways in advanced technologies, such as AI, ML, and IoT, have pushed the industry toward sustainability. These technologies will enable companies to further optimize their operations and minimize waste to higher levels of efficiency. For example, AI and ML analyze real-time data in the identification of inefficient routing that could assist an organization in minimizing fuel consumption and thereby reducing emissions. In this light, green logistics is not restricted to using eco-friendly vehicles; it's about reworking the complete logistics operation to be more sustainable.

Green Vehicles for Sustainable Logistics

Some of the most noteworthy recent advances in green logistics concern the use of green vehicles, particularly in last-mile delivery. Since last-mile delivery includes the highest number of frequent, small deliveries up and down the supply chain, it should be expected to bear a disproportionately large impact on the environment. In an attempt to find a solution to this challenge, companies are resorting to electric vehicles, autonomous vehicles, and drones as alternatives to the conventional gas- and diesel-fueled delivery vehicles.

Success with green logistics occurs with the help of a green vehicle. Besides this, there are several other benefits that are associated with it, which relate to lowered carbon emission, fuel costs, and overall dependence on fossil fuels. The adoption of EVs, for example, has the capacity to bring down the environmental footprint of logistics operations dramatically. EVs do not have any tailpipe emissions. Therefore, air pollution is reduced, contributing towards cleaner urban environments. Besides, EVs are cheap to run compared to conventional vehicles, since they require less

maintenance and have low fuel costs. All that goes to the bottom line for businesses and allows them to answer that growing consumer demand for environmentally responsible practices.

By 2030, urban last-mile delivery is forecasted to grow as much as 78%, further emphasizing sustainable solutions. The after-effect is that companies are rapidly rushing toward transition and power for fleets of electric vehicles. It is said that an electric vehicle has half the operating cost compared to conventional gas or diesel-powered ones, thus making it alluring for companies to cut costs and enhance sustainability. Besides, with the integration of IoT technology into EV fleets, monitoring and optimization of vehicle performance have been enhanced way more than before, thus enhancing their efficiency even more.

Extra Incentives: Some countries are taking extra measures to encourage the adaptation of green vehicles. For example, some regions are introducing electric charging roads whereby EVs can gain power while on the move; this reduces their downtime and enhances their efficiency in operation. Hybrid heavy trucks that combine electric power with conventional engines can use overhead wires to cut fuel consumption in long-distance hauls. These are the bright, promising futures of green logistics-technologies combined with sustainability for ever-efficient and greener transportation solutions.

Drone Technology on the Rise in Logistics

Other transformative technologies in green logistics include drones, which have several advantages over traditional delivery methods.

Different types of drones exist, like fixed-winged, single-rotor helicopters, and fixed-wing hybrids, and all apply to different types of delivery, given size and weight issues. Drones are particularly assuring in on-demand delivery of e-commerce products, making it much quicker, highly efficient, yet at the same time being more environmentally

friendly than traditional ground vehicles.

With the versatility of drones, they would be very applicable in various logistics operations. Apart from delivering goods to urban consumers, it would reach remote or unreachable areas and could be very useful during disasters and emergencies. Drones have been tried in a number of cases for transporting medical supplies, including blood and vaccines, apart from other essential items to disaster-stricken areas or isolated communities. Drones can carry food and other medical consumables into areas that would normally be inaccessible to conventional vehicles during rescue operations. Even commercial companies, such as Amazon, have started deploying drones for commercial use; reportedly, their drones can carry items with a maximum weight of up to 25 kg over distances as long as 10 miles.

Barriers to Drone Adoption in Green Logistics

While drones are a promising alternative for sustainable logistics, there are numerous setbacks that hardly enable this to become mainstream. To date, regulatory approval remains one of the big barriers.

Most countries have various regulations concerning the use of drones for commercial deliveries in highly densely populated areas where safety and privacy concerns matter. This mainly regulates where and when the drones can fly, allowing their use in zones or conditions that delay the full deployment of drone delivery services.

The highest barrier is the technical limitation of this generation of drones. Most drones, due to their payload, are restricted by the size and weight of merchandise they can deliver. This also makes them more suitable to carry small, lightweight packages and not larger shipments, which are still best taken care of by the more conventional delivery vehicles. Besides this, drones have limited battery life and hence can only cover a restricted range. It will be quite difficult for them to make long deliveries without many recharges in between. This problem becomes more critical in areas where the basic infrastructure for the recharging and swapping of drone batteries is not well developed.

Weather conditions are another big barrier to effective drone delivery. Drones are seriously vulnerable to adverse weather conditions like wind, rain, and very low/high temperatures that may affect stability and operational efficiency. With these uncertainties, companies cannot solely depend on drones as a solution to logistics problems, especially for regions with extreme or changing weather conditions.

More than that, high development and implementation costs provide a rather serious obstacle for many companies. Smaller logistics providers are indeed unlikely to purchase, maintain, and ensure a fleet of drones and to build investments in necessary supporting infrastructure and technology. Large enterprises like Amazon or Google can afford the technology behind drones, whereas smaller businesses simply cannot without some considerable financial assistance and even regulatory incentives.

Conclusion

The use of logistics has gradually changed and is continuously changing as more and more companies are adopting the concept of green logistics by trying to be less polluting. Electrification, automation, and the use of drones could be a way to make logistics operations sustainable. With drones being an innovative alternative, their widespread application still faces challenges on many fronts: from regulatory issues through limitations in payload and range, to weather dependency, not to mention high costs. However, continued improvement in drones and batteries, not to mention changing regulations, means that the use of drones in logistics could become increasingly prevalent.

With the continuous improvement of batteries and the implementation of supporting policies, green logistics is bound to become one of the key contributors in the global response to lower carbon emissions and contribute to environmental sustainability. The industry can thereby do a lot in giving its due contribution towards a more sustainable future if supported by just the right mix of technological innovation, regulatory support, and corporate commitment.

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SUSTAINABILITY & GREEN LOGISTICS

ANUSHI HEWAMARABA- ASSISTANT MANAGER, EFL 3PL

Logistics is one of the many industries worldwide that has been forced to embrace greener techniques due to the growing concern over environmental sustainability. The logistics industry greatly influences waste production, emissions, and energy consumption since it is an essential part of international supply chains. Green logistics, or the move to environmentally friendly logistics methods, is becoming seen as a competitive advantage and a need. A key component of this change in Sri Lanka is the warehouse sector. This essay examines the advantages of such improvements and how sustainable practices might transform Sri Lanka's warehouse sector.

Logistics activities, which include distribution, storage, and transportation, are frequently energy-intensive and affect the environment. Operating a warehouse results in a significant carbon footprint because energy is needed for refrigeration, heating, cooling, and lighting. Additionally, by using ineffective waste disposal techniques and inefficient supply chain management, traditional logistics methods contribute to pollution.

Implementing strategies that reduce environmental effects while sustaining economic viability is what is meant by sustainability in logistics. It involves reducing emissions, maximizing waste, employing fuel alternatives, and streamlining supply networks. It involves implementing innovative economic ideas, renewable energy sources, and energy efficiency for the warehouse sector.

The Warehouse Industry's Principal Trends

1. **Efficiency in Energy Use**

Because of Sri Lanka's severe climate, keeping warehouses at ideal temperatures frequently requires large amounts of energy for refrigeration and air conditioning. Energy-efficient technologies, such LED lighting systems and high-performance insulation, can be used to address this. Based on occupancy and storage requirements, automated climate control systems can optimize energy consumption: An increasing trend to use solar energy to power warehouses. Sri Lanka has a great deal of potential for using solar electricity because of its plentiful sunshine. Long-term energy expenses can be lowered and dependency on the national grid can be decreased by installing solar panels on warehouse rooftops. A step towards a greener future has already been taken by several warehouses by integrating renewable energy sources.

2. Design of Green Buildings

Reducing energy use and environmental effects is largely dependent on sustainable warehouse design. The environmental impact of a warehouse can be decreased by using rainwater collection, natural ventilation systems, enhanced insulation, and eco-friendly materials. Warehouses that have earned certification from green building organizations like EDGE (Excellence in Design for Greater Efficiencies) or LEED (Leadership in Energy and Environmental Design) are built with reduced energy and water usage, which lowers operating costs and improves sustainability over the long run.

3. Technology and Automation

Automation may improve productivity and drastically cut energy use in warehousing operations. Operations can be streamlined with the use of automated guided vehicles (AGVs), robotic picking and packaging systems, and warehouse management systems (WMS) that maximize space use and control of inventory. There are fewer resource-intensive tasks as a result of these technologies' increased productivity and decrease in human error.

Because labour costs are very affordable in Sri Lanka, automation is frequently seen as less necessary. Automation can, however, have long-term advantages over initial costs in terms of operations and the environment. Additionally, improved inventory and energy management are made possible by

automated systems, which cut down on waste and inefficiency.

4. Reducing Waste and Using Sustainable Packaging

The distribution of products, which requires a lot of packing materials, depends heavily on the warehouse sector. Significant waste is produced by the non-recyclability of many of these materials, particularly plastics. Green logistics promotes the use of environmentally friendly packing materials, such as recyclable, reuse, or recyclable packaging.

Reusing and recycling packaging materials is one way that Sri Lanka can drastically cut waste by using circular economy techniques. Reducing the environmental impact of warehousing operations can also be achieved by implementing waste management systems that prioritise material sorting and recycling.

The initiative I carried out at work is centered on encouraging sustainability and cutting waste in the warehouse. Right now, we palletize goods using shrink wrap, which results in unnecessary wastage and ongoing expenses. I suggested using reusable belts for holding boxes on pallets to solve this problem. Although there is an upfront expense for the belts, this method saves money overtime by doing away with the requirement for shrink wrap.

The endeavor is a component of a larger initiative to reduce the amount of polythene/shrink wraps used in the warehouse. We discovered several operational issues throughout the concept's implementation, which will require attention.

Some of the customers' main requirements :

- Pallets need to be shrink wrap
- Inflexibility in changing established processes (Staff dissatisfaction)
- Time limitation
- Avoid unnecessary costs of shrink wrap usage
- One-time cost and re-usable.

- Economic Effectiveness: Green logistics solutions can have a large upfront cost but also considerable long-term economic savings. Automated systems, solar power installations, and energy-efficient lighting all save operating expenses by lowering energy use. Furthermore, firms can lower their raw material costs and avoid waste disposal costs by implementing sustainable packaging and waste management practices.
- Observance of Regulations: Governments everywhere are putting more stringent restrictions on the environment, and Sri Lanka is no exception. Companies that use green logistics techniques are in a better position to abide by these regulations, which can save them money and even earn them government incentives. In addition, by conforming to international sustainability standards, Sri Lankan warehouse operators can attract foreign customers who value environmentally friendly supply chains.

Enhanced Competitiveness and Brand Image: Adopting sustainable practices helps businesses stand out in a market that is becoming more environmentally

concerned. Sri Lankan warehouses can enhance their corporate social responsibility (CSR) image and attract clients who prioritize sustainability by adopting green logistics. This not only improves the brand's reputation but also creates clients in international marketplaces where collaborations increasingly require sustainability.

- Enhanced Efficiency in Operations: Green logistics is not just about reducing environmental impact; it's about improving operational efficiency as well. By optimizing supply chains, reducing waste, and adopting energy-efficient practices, warehouse operations can become more streamlined & productive. Automation & technology integration can reduce labor-intensive tasks, minimizing errors and ensuring faster turnaround times.

Difficulties and the Future Direction

There are obstacles even though switching to green logistics has many benefits. Automation, energy-saving technologies, and green building certifications all come with significant upfront expenses that are out of reach for small and medium-sized businesses (SMEs). To successfully implement sustainable practices, the sector must raise awareness and provide training.

Conclusion

It is now strategically imperative, not discretionary, for the logistics and warehousing industry to transition to sustainability. The implementation of green logistics practices by Sri Lanka's warehouse business yields several benefits, including less environmental impact, improved operational efficiency, adherence to regulations, and increased market competitiveness. Sri Lanka's warehousing sector needs to adopt sustainability as it positions itself as a major player in international trade in order to maintain long-term growth and resilience in a world that is becoming more environmentally sensitive.

Sri Lankan warehouses have the potential to lead the green logistics movement and serve as role models for the rest of the region by making investments in waste management, automation, energy efficiency, and green building designs.

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REVERSE LOGISTICS FOR SUSTAINABILITY: A GREEN APPROACH TO STRATEGIC SUPPLY CHAIN MANAGEMENT

DESHAN WAKKUMBURA- WAREHOUSE COORDINATOR

With the widely developed modern industrial world, all businesses are being accountable for the environmental impact of their operations. Sustainable Supply chains play a vital role as a backbone of modern commerce in this environmentally conscious world. Since there are no exceptions to this trend, reverse logistics has become a major component of sustainable supply chain. It is focusing on management of products returns, recycling, refurbishing and the way of disposal process to plummet the environmental harm. Let's discuss how we can thrive the sustainability through strategic reverse logistics which make benefits on both environment and the bottom line of the businesses. I am writing this article with my own experiences of handling total reverse logistics process in a multinational organization.

Figure 1: Green Reverse Logistics Process

What is Reverse Logistics?

The process of moving products from customers towards either manufacturer or distributor can be identified as the basic picture of the reverse logistics, which seems like opposite of the traditional flow of materials in supply chains. Here we are significantly focusing on the handling of returned goods, defective products, or residuals of the consumed items to maximize the value of recovery and minimize the waste. The activities that evolve the reverse logistics consist of:

- **Product Returns:** Handling of stuff returned by consumers caused on defects, unwanted items or recalls.
- **Recycling:** Reengaging the items into the production cycle which extracting as usable from consumed items or defects.
- **Refurbishing:** Repairing and reconditioning of the returned stuff as purpose of reselling.
- **Disposal:** Ensure the environmental responsibility of waste disposal process which cannot be reused or recycled while making zero hazard.

The Role of Reverse Logistics in Sustainability

Reverse logistics has undertaken one of the major pallor of the sustainability of the industrial operations as it offers an opportunity to treat the environmental impact through the efficient management of the residuals and waste. Sustainability in the reverse logistics is retrieved by 3R concept that we can significantly see in the Lean approach around the world. Each component in this concept is leading to eco-friendly and resource-efficient operation.

- **Reduce:** Improving production quality and customer service of the businesses can reduce the returns and minimize the potential environmental impact. Reducing hazardous components in the bill of materials and using ecofriendly raw materials, packaging will direct you to decrease the waste.
- **Reuse:** Products which are returned but still in good condition can be assigned for refurbishing, repairing or reselling processes which alleviate the market trend towards the less demand of new products while saving natural resources by extending product life cycles.
- **Recycle:** once any materials are being filtered in reuse stage and still alive, recycling will help you to reduce the requirement of virgin raw materials and eradicate the energy and emissions associated with the producing of new products.

Benefits of Sustainable Reverse Logistics

Benefits from the sustainable reverse logistics system that belong to Environmental, Economic and Social aspects can be evaluated as follows.

- **Reduction of Environmental Impact:** Reducing generated waste and reusing materials will help to reduce the carbon footprint of every business. It may lead the businesses to achieve remarkable certifications in the industry to compete in a dynamic market environment as well. Eradicating potential harmful waste from ending up in landfills is significant to save the environment.
- **Cost Saving:** Reduction of costs is crucial when you focus on the bottom line of the business. An effective reverse logistics system will assist with reducing unwanted cost centers in your business. You'll be able to find new revenue streams by refurbishing and reselling returned materials while reducing your cost from recycling since decreasing of purchasing cost of new raw materials.
- **Improved Customer Loyalty:** All businesses are focusing on the most suitable eco-friendly operational strategies in their businesses in this modern industry. Thus, once you make sustainable revers logistic process it can be encouraged by your clients while sharing their values on the process. Providing an eco-friendly return solution can enhance the brand reputation and attractiveness of customers.
- **Regulatory Compliance:** There are a lot of strict government regulations imposed in every country promoting recycling and effective waste management. So, a sustainable reverse logistic system will keep you away from costly fines or penalties while adhering to the environmental regulations.

Contribution to the Circular Economy: Circular economic process will be enabled by the sustainable reverse logistics system which gets the materials regulated in circular process in last longer. Repairing, refurbishing and reusing materials are leading you towards more effective contributions to the circular economy where your waste can be minimized.

Challenges in Implementing Green Reverse Logistics System

Sustainability has become an emerging topic in the modern world, but do you believe the proactive approach may be allowed to harmonize the process without challenges? Implementing green reverse logistics system would not be exclusive of challenges.

- **Complexity of Returns:** Returns are associated with in-depth tasks that require more resources for inspection, sorting, documentation either in refurbishing, recycling or disposing to reduce environmental impact and the cost minimization. Since the reverse logistics is not the main function of the business customers' focus may not be significant in this process so the materials will not be received in an appropriate way. There should be a standard procedure to make it effective.
- **Transportation Emissions:** If you are not able to optimize the way of handling the reverse logistics it may lead to an increase in the emission of transportation caused for sustainability in the other way round since it is a major component of the reverse logistics. Because without returning the materials through the supply chain there would not be a reverse logistics system. We will have to get the support of transportation widely.
- **Cost of Infrastructure:** Establishment of green reverse logistics is inclusive of some initialization cost on required infrastructures. It may trigger the budget allocation in small and medium scale businesses (SMEs).

Customer Behavior: Consumers may not be aware of green revers logistics or willing to make their contribution to this practice.

Making effective communication is significant to persuade them to return materials for recycling or reuse. It's important to make a win-win situation which benefits both parties.

Strategies for Implementing Sustainable Reverse Logistics

Approaches you take into the scenario are important to overcome the potential challenges in this process. Make sure to implement proactive strategies which are effective to make your reverse logistics more sustainable.

- **Optimize Product Design:** Design your products by materials as easier to recycle specially for single-use products because still your business is taking accountability of residuals in your output even after selling. Use components that can be disassembled for refurbishment. Ensure the durability of your product which reduces the need of return and decrease the frequency of reuse.
- **Leverage Technology:** Get the benefits of utilization of digital technologies such as Internet of Things (IOT), Barcode Scanning and Data Analytics to enhance your green reverse logistics. It may make you in better visibility into the supply chain which all stakeholders can track the process.
- **Partner with Recycling and Refurbishment Centers:** You can reduce your cost allocation of initialization in reverse logistics system by making collaboration with third-party recycler and refurbishes. They can manage the refurbishing and disposal in an eco-friendly manner. Select your best collaboration model upon the supplier categorization considering the impact and supplier complexity in the market.
- **Optimize your Transportation Network:** Develop your strategies to cut your transport emission by route optimization, using electric vehicles and analyzing geographical locations that minimize the distance of your third-party partners while ensuring the total positive effectiveness of your reverse logistics. The same delivery vehicle can be used for reverse logistics as a milk-run operation.
- **Encourage Customers:** Rasing awareness of environmental befits will assist you to make your clients establish on your revers logistics system. You can make them involved with this system by implementing take-back programs. Provide incentive schemes for returns and get it covered by reusing and reselling of returned items. Develop a standard operating procedure (SOP) for your process.

Conclusion

Reverse Logistics is enabling the sustainable supply chains that provide benefit in social, economic and environmental aspects. It is significant to focus on reducing waste, reuse of materials and recycling of products while reducing environmental impact and increasing operational efficiency. Implementation of proper strategies to overcome the associated challenges will ensure your business not only complies with the environmental regulations but also competes in dynamic market conditions as consumers demand eco-friendly products and services. Embracing green reverse logistics is no longer an option, it would be a must for persistence of the businesses.

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MICRO WAREHOUSING AND CIRCULAR ECONOMY: ENABLING LOCALIZED REVERSE LOGISTICS

M. D. S. NISANSA

In an era where everything is accessible with a single click, customers choose expedited delivery above complimentary shipping. They already comprehend what it means to get "food" an hour after placing a purchase online, and micro fulfillment is based on a similar paradigm. The approach basically seeks to get closer to buyers in order to provide speedier delivery. Similar to food, it would not be shocking if we could expect delivery in a few hours. It may appear unrealistic, yet that is where we are heading.

Micro-warehousing is the idea of operating small-scale warehouses in locations that are easily accessible and in closer proximity to end users. Micro Fulfilment Center (MFC) are small-scale, decentralized distribution centers located close to urban centers and key consumer markets which are designed with advanced technologies, allowing businesses to fulfill online purchases promptly and sustainably. In contrast to large-scale distribution hubs located far from local communities, MFCs which are designed with agility concepts and with the ability to sustain the rapid inventory turnover, prioritize efficient services for localized distribution. Hence, it offers a solution to the logistics congestion in the traditional centralized warehousing model. The emergence of micro-fulfilment centers has made rapid delivery services more cost-effective and seamless. The principle of micro fulfillment is simple, yet straightforward, optimizing the efficiency and the effectiveness of order fulfillment while liberating retailers of the burden of maintaining and handling their individual inventories.

Micro warehousing not only serves to address issues associated with last-mile delivery, it also provides assistance with localized logistics through practices which are compatible with the concepts of circular economy. The Circular Economy plays a crucial role in sustainable and green supply chain management, where it seeks to eliminate waste and optimize the utilization of resources, thus contributing significantly to the Sustainable Development Goals (SDGs). The primary objective of Circular economy is focused on helping businesses to comprehend the natural and renewable sources which ultimately benefit them in the long-run profits while addressing the unsustainable consumption of resources. The circular economy aims to reduce waste in landfills and incinerators while reusing resources for profitable use where it takes a systematic approach, aiming to sustain a circular flow of resources via renewing, retaining, or adding value to them. It creates a closed-loop system in the supply chain through return management allowing reusing, refurbishing, remanufacturing, recycling and reselling or sustainable disposal of products and materials, thereby extending their lifecycle and reducing waste. It comprises of emissions and waste reduction strategies that yield significant financial benefits, which is the objective of all business sectors dedicated to safeguarding the environment.

The micro fulfillment centers act as a vital player in enabling the localized reverse logistics since its proximity to the consumers. Through placing the fulfillment centers near the urban centers decentralizing the traditional hub based centralized distribution network, it reduces the transportation distances across local communities while also reducing the transportation emissions leading to minimize the carbon footprint on the environment. It also allows faster processing and turnaround times for return management in a business organization enhancing the customer satisfaction towards the business. These micro fulfillment centers often designed with advanced automated technologies for sorting and handling of customer orders and returns which assists in efficient classification of returns in a business based on their status and organizing them suitably based on which step that they should process in the return management system stating whether it should

be refurbished or recycled or disposed or otherwise. They often equipped with modern warehousing techniques and equipment and with specialized and dedicated spaces for repairing and further processing of retuned items streamlining the overall return management practices across the supply chain channel partners. Proximity downstream supply chain channel partners allows them for the seamless return management whereas proximity to manufacturers and other respective upstream channel partners allows them for a seamless collaboration for remanufacturing and refurbishing of returned items for the ultimate purpose of meeting the essential quality standards for relaunching the items back to the re-sale market. Real-time inventory management systems often incorporated with Just-In-Time (JIT) inventory management initiative assist in real-time tracking of inventory levels and real-time monitoring of return management in a business to ensure that the returned items reach their respective processing station to reintegrated with the market promptly. With the advance technologies and green building designing strategies incorporated, micro fulfillment centers often aiming for the maximum utilization of handling and processing of materials and items through the return management system minimizing the waste accumulated in the reverse logistics system of an organization while leading to energy efficient business operation throughout the supply chain. Ultimately, this localized approach to return management in a reverse logistics system ensures that the circular economy runs sustainably and environmentally friendly manner.

In conclusion, Micro-warehousing or in other words, Micro Fulfillment Centers (MFC) could be identified as a major player in the emerging circular economy which has become an increasingly popular concept in the contemporary logistics industry. Adhering to the micro warehousing has gained a significant attention in the industry since it contributes to the sustainable and green supply chain management by promoting wase minimization and reducing the carbon footprint throughout the supply chain. This has paved the was for businesses to enhance their brand reputation through gaining the customer satisfaction leading to develop a loyal customer based for the business as in the modern world consumers have become more environmentally conscious. As organizations continue to place a greater emphasis on sustainability, the incorporation of micro-warehousing into their supply chain strategies becomes a crucial part in shaping the logistics ecosystem more resilient as well as environmentally friendly.

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TURNING THE TIDE: HOW GREEN LOGISTICS CAN SOLVE THE EMPTY CONTAINER REPOSITIONING CRISIS

K.A.K. MANISHI BHAGYA GUNATHILAKE- LECTURER

A major problem in international shipping is empty container repositioning (ECR), which is caused by trade imbalances that lead to an accumulation of containers in areas where exports exceed imports. For example, nations such as China have an excess of empty containers that need to be moved to areas where demand is stronger. Approximately 20–25% of container activity worldwide is attributed to these moves, which have a significant negative impact on the environment and operational costs. The process adds significantly to the carbon footprint of maritime logistics by consuming large amounts of fuel and producing emissions. Taking care of this problem is crucial to cutting waste in the global supply chain.

Additionally, technology advancements like predictive analytics and Internet of Things-enabled smart containers enhance real-time tracking, allowing transportation businesses to anticipate container requirements and minimise needless transfers. These methods can greatly reduce emissions on repositioning voyages, especially when combined with the use of alternative fuels like LNG or biofuels.

There are various ways to lessen the environmental impact of ECR through green logistics. Strategically repositioning hubs enables more effective storage and redistribution, while collaborative shipping can minimise the need to transfer empty containers. Furthermore, real-time tracking is improved by technological solutions like predictive analytics and Internet of Things (IoT)-enabled smart containers, which allow shipping companies to eliminate wasteful movements and anticipate container demands. When these strategies are used in conjunction with the use of alternative fuels like LNG or biofuels, emissions during repositioning voyages can be greatly reduced.

Green logistics provides a number of ways to lessen the impact of ECR on the environment. The need to relocate empty containers can be minimised by maximising container utilisation through collaborative shipping, and more effective storage and redistribution are made possible by strategically relocating hubs.

PROFESSIONAL ACHIEVEMENTS

Mr. Nushrath Ghouse

I am honored to share that I have been recognized with the Long Service Award from Almarai Company, celebrating 5+ years of dedicated service across multiple departments since 2016.

I began my journey at Almarai as a Stock Controller, where I gained extensive knowledge and experience in logistics and warehouse activities, adhering to international market standards. This foundational period was crucial in shaping my expertise in logistics and warehousing.

In 2023, I transitioned to the Merchandising Department as a Regional Merchandising Supervisor. This role allowed me to further develop my skills and contribute significantly to our merchandising strategies. It marked a pivotal point in my career, broadening my professional scope.

Most recently, in 2024, I joined the Modern Trade sales Team as a Data Analyst. In this role, I analyze daily sales data and develop comprehensive sales reports for the Head of Sales and other key stakeholders. This position has enabled me to leverage my diverse experience to drive data-driven decision-making within the company.

Dr. Ashan Silva

Dr. Ashan Silva secured "Chartered Marketer" status from the chartered institute of marketing UK.

Mr. Rajith Ranasinghe

In July 2024, I had the privilege of being elected as the President of Hayleys Toastmasters Club for the 2024/25 term (Division G, Area 2, District 82, Toastmasters International), following a rewarding five-year journey during which I served in key roles including Vice President Education, Vice President Membership, and Secretary. Each of these roles allowed me to contribute significantly to the growth and development of our club, fostering a supportive environment for members to enhance their public speaking and leadership skills. Apart from the above, I have been serving as a member of the District 82 Toastmasters judging panel, further enriching my experience and deepening my commitment to the Toastmasters mission of empowering individuals to become confident communicators and leaders.

PROFESSIONAL ACHIEVEMENTS

Dr. Priyangani Jayasundara

Training of Trainers Building the Capacity of Women Business Development Coaches in Sri Lanka held in Courtyard Mariott from 10 – 15 June 2024.

Achieved the status of Accredited KAB ITC ILO - National Key Facilitator for Sri Lanka on 5th July 2025.

Honored and appreciated being part of the SPARK Skilled Youth Entrepreneurship Competition 2024 as a Trainer and Panelist held at the Taj Samudra Hotel on 5th September 2024.

Mrs. Gayani De Alwis

Gayani de Alwis FCILT, Past President CILT was elected as the Chairperson of Women's Chamber of Industry & Commerce (WCIC) at the AGM held on on 26th September 2024 at Jetwing Colombo 7.

She was also appointed as a Non Executive Director at Global Marine Investment Group.

CILT NEW MEMBERS

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MILT
Nilakshika Rupasinghe
Chathurika Nadeeshani
R.D. Karunarathna
B. K. I. De Silva
Roshan Subasinghe
Student Member
Gayathma Geeshani Silva
Wathika Vimansha Deshan
Dinith Nuwanga Madhushan
Dushmi Shonali Edirisinghe
Disanda Nanayakkara
Hisan Ahamed
Inilka Shashin
Dulaj Manodya
Lakshan Pradeep Kumara
Sanjana Malithi Indumini
Geeganage Erandi Deshani
Amandi Thilakarathne
Dilantha Perera
Wihansa Udai
Sithma Himanshi Hewage
Chathuni Dilushika Jayakodi
Ishini Madushika Jayakodi
Ishini Umanga
Sadasi Lakna Iddagoda
Indumini Aloka Lamahewa
Dananjana Uyana Hewage
Ayodya Sachinthani Galkotuwa
Buddhima Kamburugamuwa
Chamara Ekanayake
Chamindu Dinujaya Mendis
Chanaka Minidu Weligamage
Don Chathushka Randima
Damidu Isanka Ranaweera
Danusha Kavishwara Wishwajith
Dasuni Kithma Illankoon
Dewmi Adithya Weragoda

Student Member
Geethma Peiris
Dulara Senanayake
Hashini Vishminee
Dhananjaya Kondage
Nuwanthi Thibbatumunuwa
Sathsarani Senarathne
Thamindu Harischandra
Prabhash Nawarathna
Prabath Bandara Dissanayaka
Poornima Hiththatiya Liyanage
Jeenuya Jokarasa
Jude Merushan Figurado
Dona Kalani Nimasha
Kalindu Srimaan Wijesinghe
Dilashan Suriyaarachchi
Kavinda Wickramasinghe
Sethsara Ambalandawaththa
Keshara Meewala Arachchige
Kimal Venath Nuwarapaksha
Kiruththiga Saththiyaseelan
Kithmina Bihara Perera
Lakshani Hirushima Gamage
Lakshi Madhushika Kankanamage
Laksandhi Nihinsa Jayawardane
Lasantha Lakmali Wijekoon
Minuwansala Mudiyanselage
Malithi Iresha Kulasinghe
Manula Pamuditha Gamlath
Bhashini Herath Mudiyanselage
Methma Weragoda
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Naginthan Thirunaavukarasu
Navodya Preethi Divyanjalee
Nimethma Thalagala Achchige
Nethmini Yashobha Weerakkody
Nihindu Nimneth Illeperuma
Joseph Nikesh Victoria
Subhagya Nilupulee Laksiri
Sasini Nimesha Keerthirathna

Student Member
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Supun Rathnakeerthi
Tajana Uthayakumaran
Thamindu Gunasinghe
Malshan Weragoda Arachchi
Bhagya Baragama Arachchige
Desitha Meegama Withanage
Vinuka Janandith Jayawickrama
Vithursan Kathirkamanathan
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Yasindu Navodya Fernando
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Jayodya Kankanamge
Duleesha Wickramasinghe
Dulan Perera
Don Nuwini Navindya
Pramodya Vidanapathirana
Nawanjana Minimuthu

CILT EVENT PLAN

CILT	
Awareness Programme on the use of modern technology for public passenger transport	November 2024
Membership Drive	November 2024
Educational visit for School Students	November 2024
Membership drive – AASL	December 2024
CILT Diploma	January 2025
CILT Pub Quiz - Maritime theme	January 2025
Maritime Evening	January 2025
Educational visit to Sri Lankan Airlines Engineering division	February 2025
Research Symposium	February 2025
Road Safety Training program	March 2025
PBK Memorial lecture	March 2025
WILAT	
Knowledge Hub – 1st Event	November 2024
Well Being Session	November 2024
Membership Drive at John Keells Logistics	November 2024
Membership Drive at NIBM	December 2024
Membership Drive at DPL	January 2025
Webinar for mentees of Ignite 10 batch	January 2025
Distribution Center Visit for Student Members (Unilever)	January 2025
Field visit for mentees of Ignite 10 batch	February 2025
Industry Knowledge Sharing session	February 2025
International Women's Day Celebration	March 2025
Power BI Training -Virtual	March 2025
Annual General Meeting	April 2025
CENTRAL CHAPTER	
Guest Talk 3	November 2024
Field Visit 2	December 2024
Guest Talk 4	January 2025
School student programme	February 2025
Annual General Meeting	April 2025

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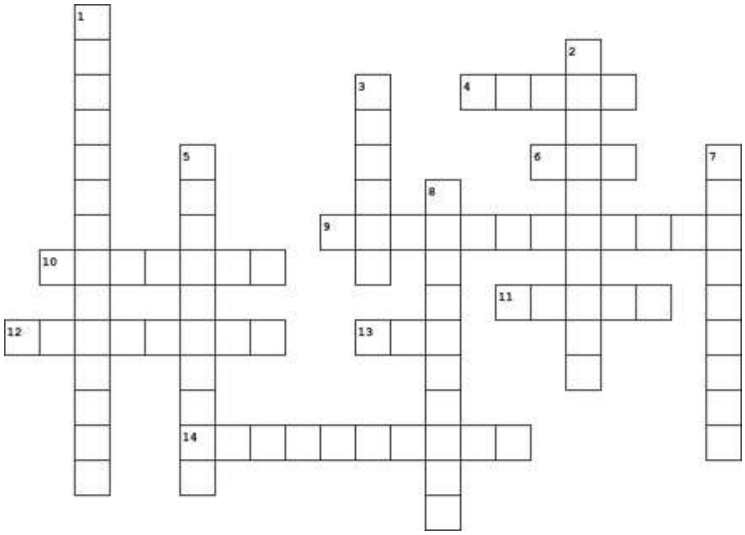

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9. Reducing distance in supply chains by sourcing locally
10. Green transportation alternative using wind and solar power
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12. Transport of goods over water with less environmental impact
13. International standard for environmental management systems
14. Waste process that turns organic matter into compost

DOWN

1. Reducing environmental harm through careful resource management
2. Eco-friendly material made from plants or recycled products
3. Major greenhouse gas contributing to global warming
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