Project 10: Sustainable Planning of Material Movement



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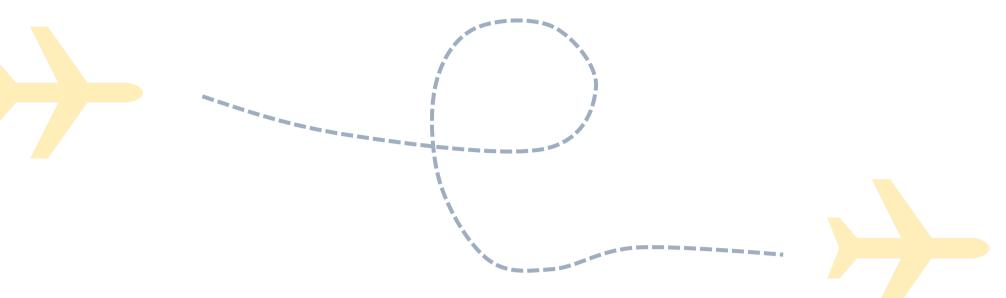
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PROJECT SPONSOR

Lufthansa Technik AG is a leading global provider of maintenance, repair and overhaul services for the aviation industry, ranging from commercial, VIP and special mission aircraft. The company has over 20,000 employees and 800 customers worldwide. Main sites of the company include Frankfurt, Munich and Hamburg.





INTRODUCTION

Aimed to develop a sustainable planning for movement of materials during the operations between different destinations.



Sustainability is fulfilling present needs without compromising next generations to fulfil their needs [1].

Logistics sector should focus on becoming more sustainable, as it is one of the major contributors to **Carbon Emission**, which triggers **Global Warming**. To address this issue, our project aimed to develop a sustainable planning solution for material movement during operations between different destinations.

CO2 Emissions by sector (Million Tonnes), 2017 [2]

Electricity and Heat

CLUSTERING OF DATA

Cluster analysis was used to group similar shipping operations together based on their urgency and importance, which helped to identify trends and patterns for improving sustainability in the shipping industry.

JFTHA	NSA ON A	AIR			Contraction Lufthansa
elect Origin	~	Select Destination	~	Select EXEC Txpe	Select Status
ghts from Origiı	n				
	15475				
		10329			
			731	143	7
	FRAHL	MUCHL	HAMH		SINRDC
ghts arriving at	Destination			One view Analysis	
-	Destination			One view Analysis 20K	
RA	Destination	9934	14244		
RA MUC	Destination 2298	9934	14244	20К	
RA MUC MUC		9934	14244	20К 15К	10,3К
TRA MUC MUC DTW 52		9934	14244	20К	10,3K
FRA MUC MUC DTW 52 ORD 48 FRAHL 40		9934	14244	20К 15К 10К	10,3K
FRA MUC MUC 52 OTW 52 ORD 48 FRAHL 40 FLL 35		9934	14244	20К 15К	10,3K
ORD 48 FRAHL 40		9934	14244	20К 15К 10К	10,3К 0,7К 0,0К

Shipping data was divided into four categories - Very Urgent, Urgent, Important, and Normal - to prioritize shipping operations identifying which operations required the most attention and resources in terms of sustainability. Most parts were internally moved in and around main store in Frankfurt. The main delivery store is in Munich and Frankfurt for customers.

SOLUTIONS

Our approach was based on four key solutions and recommendations: harnessing the power of a comprehensive sustainability measurement tool, promoting collaboration and co-operation among stakeholders, embracing innovation and new technologies, and adopting a proactive approach to corporate foresight. By adopting these solutions, we aimed to drive sustainable logistics and create positive impact for the environment, society, and our business.

Powerful Tool





Cost

Optimization

Track and

Collect data



Route Optimization **Better Planning**



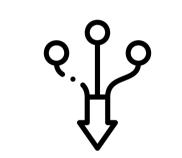
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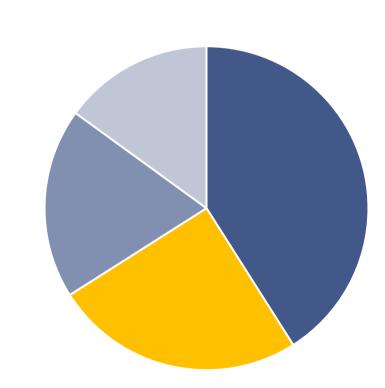
regulations

Internal

Cooperation

2





Generation, 13603.3 MT, 41%

Transport, 8039.9 MT, 25%

Manufacturing industries and Construction, 6227.6 MT, **19%**

Other, 4969.1 MT, 15%

5 PHASES OF THE PROJECT



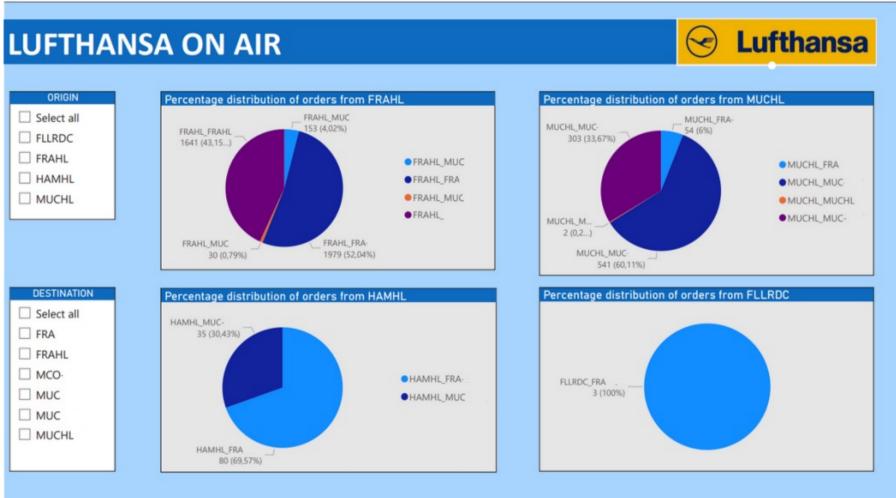
Planning and Research



Cluster Analysis

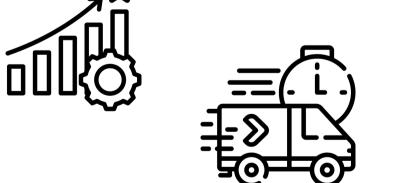


Sustainable Measurement Tool Development



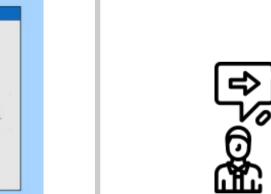


Improved Efficiency



Reduced Delivery Time

















Customized

Questionnaire



External Cooperation





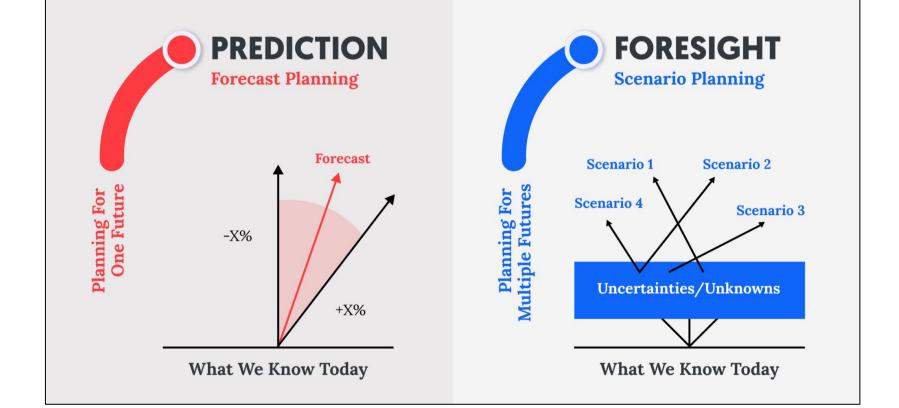




Multimodal transport

Solving deadhead mileage problem







E-Bike delivery





Sustainable Opportunity Identification

Recommendation Development

the the recommendations, То address project proposes implementing measures such as identifying frequently used routes and optimizing them, conducting cost-benefit analyses for different transport options, implementing a monitoring and evaluation plan, and collaborating with suppliers and carriers to reduce carbon emissions.



References

[1] United Nations (2023) Sustainability. Available at: <u>https://www.un.org/en/academic-impact/sustainability</u> (Access date: 1 March 2023)

[2] Karaduman, H., Karaman – Akgul A., Caglar, M., Akbas, H., E. (2020) "The relationship between logistics performance and carbon emissions: an empirical investigation on Balkan countries", International Journal of Climate Change Strategies and Management. 12(4), pp. 449 –

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