



# MicroDucts and FuturePath<sup>®</sup> ECO

June 18, 2024



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## Sustainability Without Compromise



Made with up to **100% internal reground** High-Density Polyethylene (HDPE)



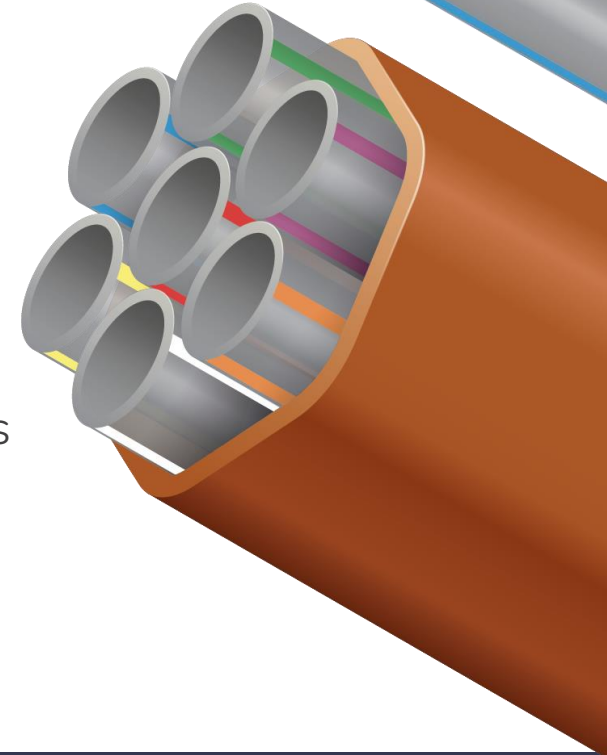
Helps network operators reduce **scope 3** carbon emissions



**Equivalent performance** to regular MicroDucts against key technical parameters

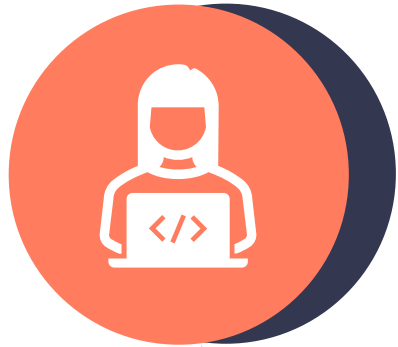


Demonstrates Dura-Line's commitment to **responsible manufacturing**



# Sustainability in Communications Networks

# Why Does Sustainability Matter in Communications Networks?



## IT sector is driving emissions globally

Communications networks and data centres could produce 14% of all global carbon emissions by 2040 (2-3% in 2021)



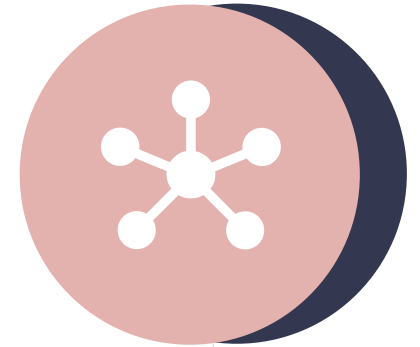
## 5G will drive massive power consumption

5G ecosystem will drive a 160% increase in power demand by 2030, to enable millions of small cells



## Operators adopting more sustainable practices

Many have made public pledges to increase circularity in their products, networks, and operations

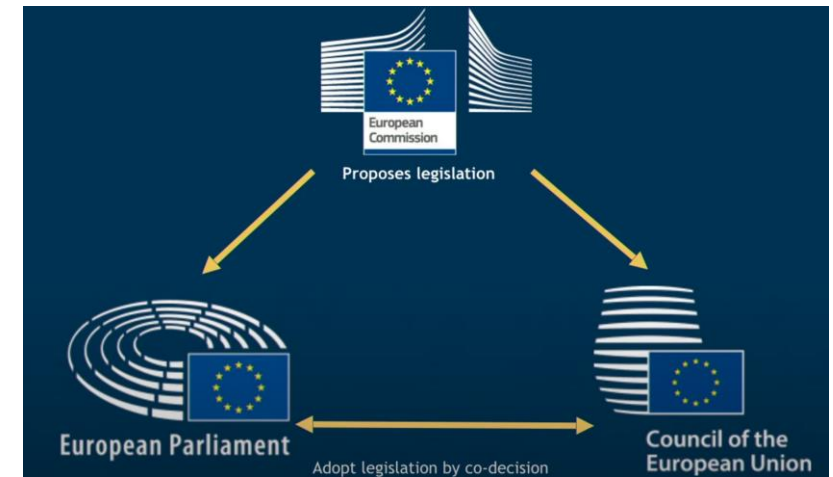
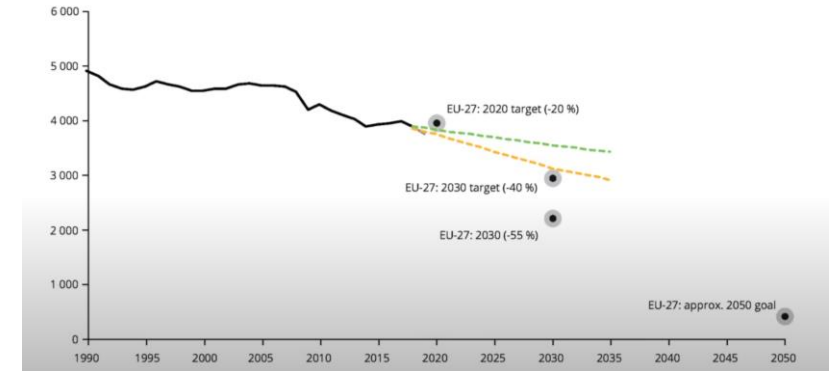


## Telecoms can enable sustainability across sectors

High-speed communications can reduce emissions across transport, logistics, agriculture, and more

# Introduction to Circular Economy













- **European Green Deal (approved 2020):** the European Commission's roadmap to make Europe the first climate-neutral continent by 2050
- Corporations require LCA (Life Cycle Assessments) to compare different products environmental footprints (e.g., CO2 equivalent)
- CO2-emissions permits in the European Union's emissions-trading system (ETS) have recently skyrocketed in price
- A certificate to emit one metric ton of CO2 now costs about €95 and in March 2023 hit €100
- Dura-Line will enable network infrastructure build in compliance with environmental, sustainability and governance aligned to corporate, local, national, and regional ambitions and regulations



EU Green Deal

# Understanding Carbon Emissions

 Up to **98%** of a telco's total carbon emissions occur in the **value chain**, including the physical products they use

Scope	1	2	3
Classification	Direct	Indirect	Indirect
Definition	Emissions from own operations (owned or controlled sources)	Emissions from generation of purchased energy	Emissions that occur upstream and downstream in value chain
Examples	   Company facilities and vehicles	    Purchased electricity, steam, heating and cooling for own use	     Employee business travel    Out-sourced activities    Contractor owned vehicles    Waste disposal    Product use
Typical % of a telco's emissions	≤10%	~20%	≥70% (up to 98%)

# Sustainable Supply Chains are Needed to Reduce Scope 3 Emissions

- **Definition:** indirect emissions that occur upstream and downstream in a company's value chain
- Scope 3 emissions account for **up to 98%** of a telco's overall carbon footprint
- Purchased goods and services account for **50%** of a telco's total scope 3 emissions



Greater **circularity in the supply chain** will be critical to control the future impact of communications networks

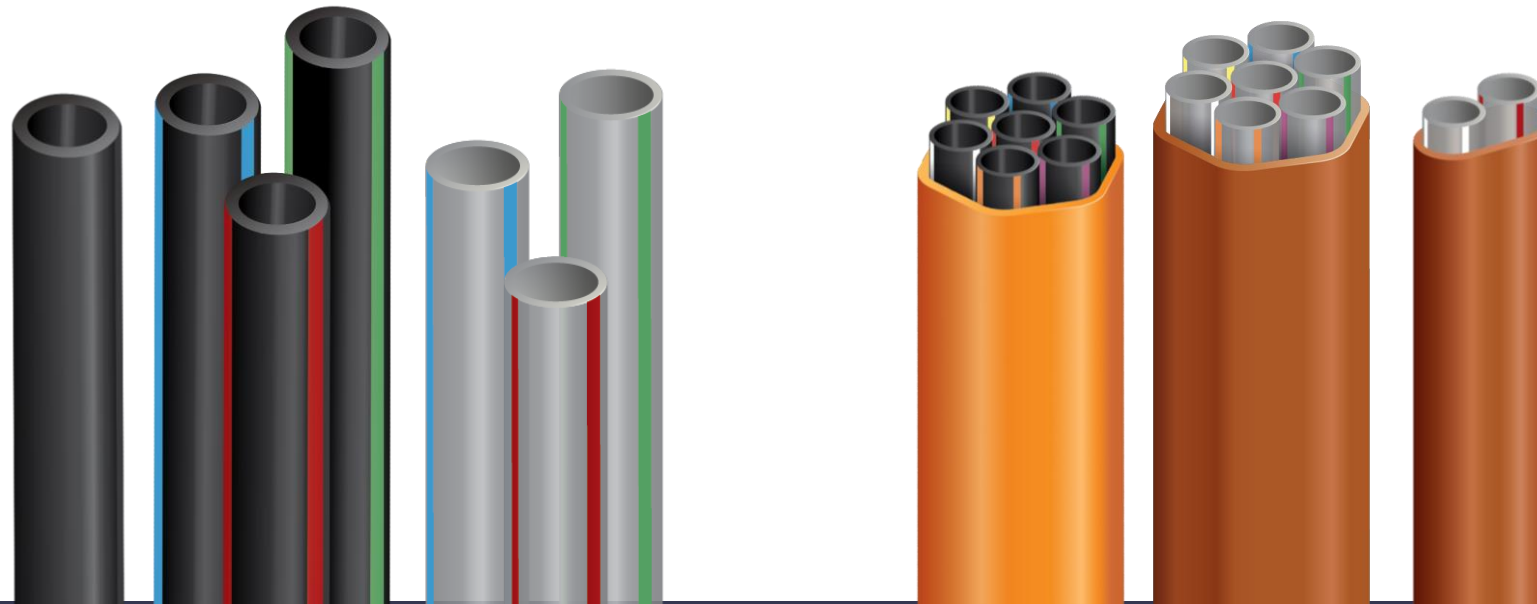


# MicroDucts and FuturePath<sup>®</sup> ECO Product Range



# What Are They?

- **MicroDucts ECO** use up to **100% reground HDPE** from Dura-Line's internal manufacturing process
- Available in black or grey varieties
- Black MicroDucts and coloured ID stripes may use regular material
- MicroDucts are bundled to create **FuturePath ECO**
- Available in all standard MicroDuct sizes and bundle combinations
- Available with a regular or **reground jacket**



 Maximise your **jetting performance** with **SILICORE®**

- MicroDucts and FuturePath ECO are available with SILICORE
- Permanently-lubricated inner MicroDuct lining
- <0.1 coefficient of friction for maximum cable jetting length
- SILICORE uses regular HDPE



# MicroDucts & FuturePath® ECO Meet Stipulated Parameters for Regular MicroDuct Products

Test	Requirements	Regular MicroDuct, 7/4 mm	ECO MicroDuct ECO, 7/4 mm
Visual inspection (colour, marking, shape)	Surfaces of the pipes must be smooth, no defects in the form of blisters, cavities, burrs, nonuniformity, and foreign inclusions	Meets requirements	Meets requirements
Dimensions	OD +/- 0.1 mm, wall +/- 0.1 mm	Meets requirements	Meets requirements
Durability of Marking	Marking visible after 15 cycles from a distance of 1 m	Visible after 15 cycles	Visible after 15 cycles
OIT	> 30 min	61 – 130 min	61-140 min
Bursting Pressure	≥ 60 bar	95 bar	95 bar
MFR	Max. change 0.2 g/10 min	0.00-0.19 g/10min	0.01-0.02 g/10 min
Elongation at Break	≥ 450%	514-806%	477-877%
Yield Point	Re ≥ 18 MPa	19-22 MPa	20-21 MPa
Kink	During the test the pipe shall reach the required minimum diameter without kinking	No damage after test	No damage after test
Change After Heat Treatment	≤ 3%	1.8-2.3%	1.9-2.8%
Homogeneity	Inhomogeneities (blisters, pores, inclusions) ≤ 0.02 mm <sup>2</sup>	No inhomogeneities > 0.02 mm <sup>2</sup>	No inhomogeneities > 0.02 mm <sup>2</sup>
Internal Creep Compressive Test ≥170 h	Minimum durability: 170 h	No cracking after 170 h	No cracking after 170 h

# How are MicroDucts and FuturePath<sup>®</sup> ECO Installed?

**ECO** suitable for underground installation via **all common duct deployment methods:**



Trench



MicroTrench



Directional Drill



Plough



Sub-Duct / OverRide



**Direct Burial** (no existing duct)



A thicker MicroDuct wall (e.g., 2 mm) is recommended for direct-buried installations

**Direct Install**  
(existing duct)



# Proven Technical Performance



## Summary of Field Trial

FuturePath® ECO was compared to regular FuturePath in a customer field trial in The Netherlands (7 x 14/10 mm)



## Duct Spiralling

Spiralling (or “memory”) can inhibit cable jetting performance: both exhibited spiralling after removal from reel at -3.5°C but were easily straightened in trench at 2°C, ready for cable jetting



## Cable Jetting

Cable completed 1 km route at 130 m/min speed and 6 bar pressure in both MicroDucts in identical environmental conditions (96F cable, 65% fill ratio)

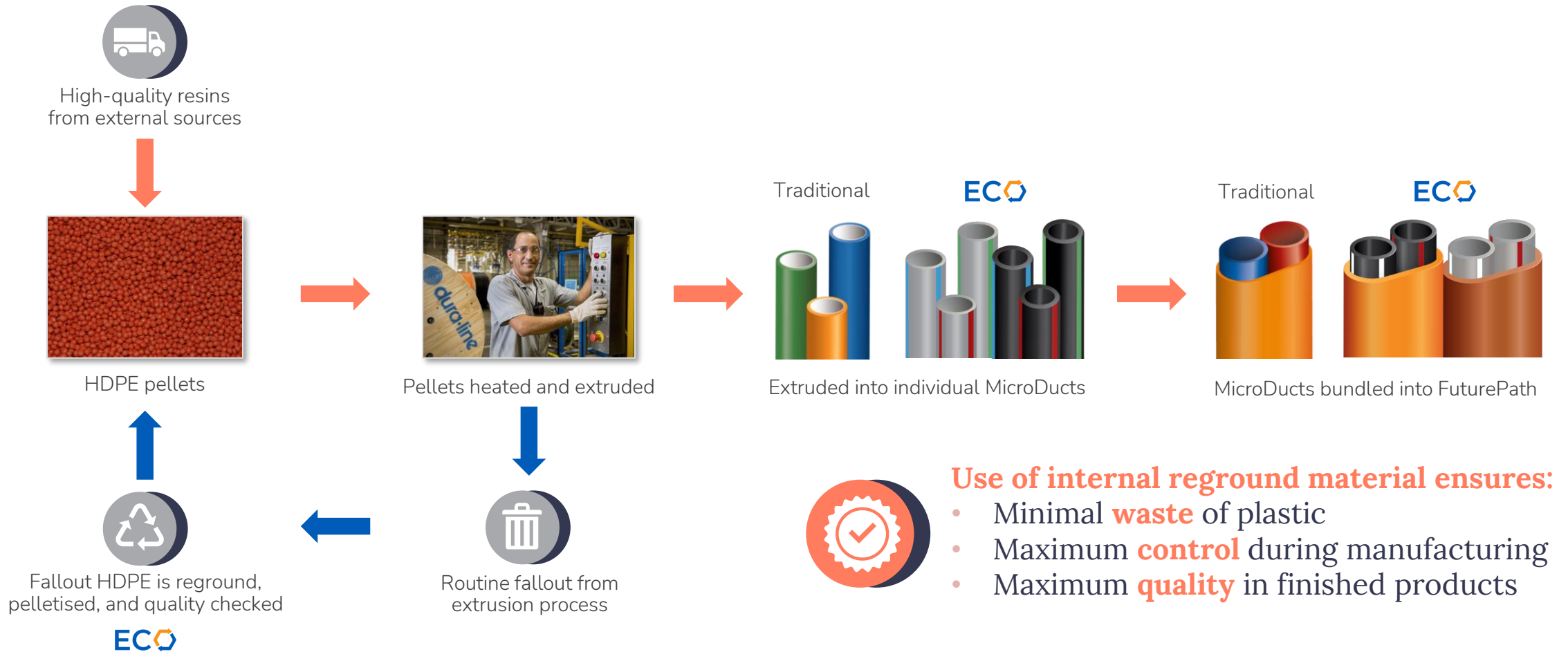


## Result

FuturePath ECO exhibited **equivalent performance** to a regular MicroDuct in crucial procedures: duct laying and cable jetting



# How Are They Manufactured?



# Verified LCA for FuturePath ECO 2x14/10 & 7x14/10

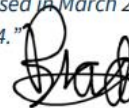
The following methodology has been used for the analysis:

- ✓ According to **ISO-14040 / 14044**
- ✓ Impact assessment method: **EN 15804+A2:2019 [4]**, Dutch NMD Bepalingsmethode 1.1 [5]
- ✓ The LCA scope is ‘**cradle to gate with options**’. It includes the production (A1 – A3), transport to construction location (A4), packaging waste treatment (A5), the use-phase (B1 – B7), and End of Life-Treatment (C1 – D). The installation process needs to be added project-specific by down-stream users.

 **These results have been externally verified**

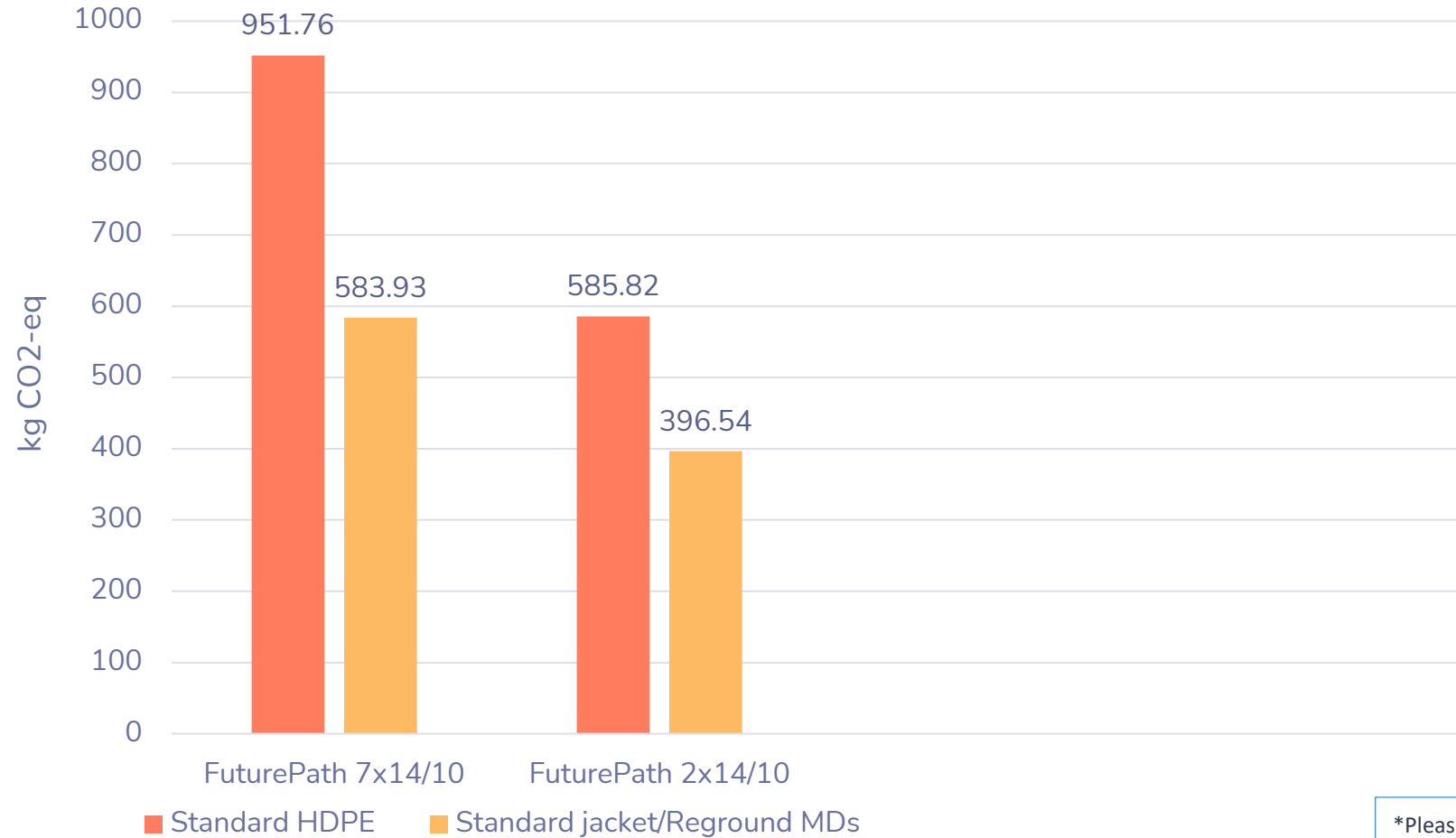
Statement of the verifier, MSc P.F. Stadhouders, 15th September 2023:

*“the methodologies and data collection that are described in this report, comply with the requirements that are stated in “Bepalingsmethode Milieuprestatie Bouwwerken” version 1.1, released in March 2022, and the standards that it is based on: ISO 14040, ISO 14044 en NEN-EN 15804.”*



# FuturePath ECO helps improve CO2 emissions by at least 60% compared to the standard FuturePath

Impact to Climate Change (GWP-total) –1 reel



\*Please note that standard HDPE calculations have not been verified

# Why Choose Them?



Up to 100% reground materials to reduce operator **scope 3 emissions**



Manufactured in region – **no overseas transport** required to mainland Europe



Long-established manufacturing process, **proven over more than 15 years**



Meet stipulated **technical parameters** for regular MicroDuct products



**Tested and proven performance** in customer installation trials

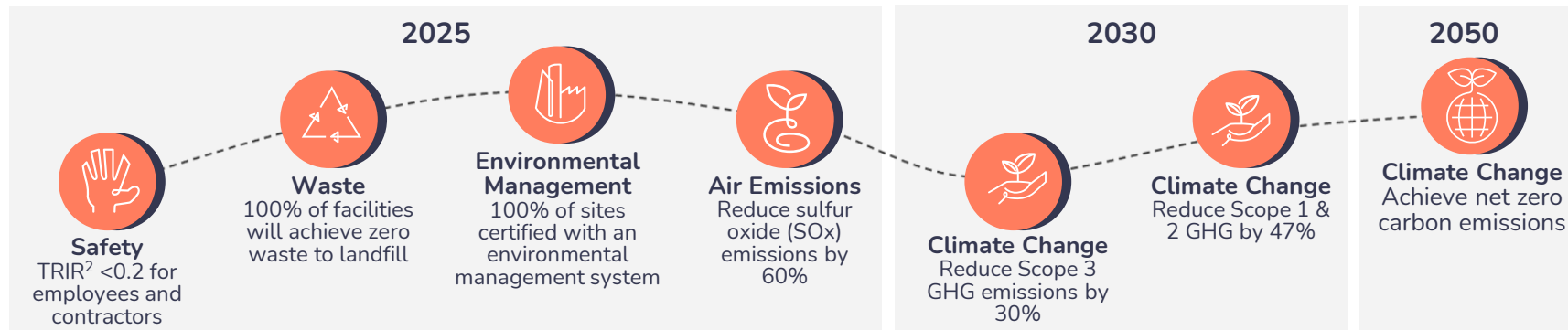




# Corporate Sustainability

# Orbia's Sustainability Goals for Advancing Life Around the World

## Our path to net zero with ambitious, science-based targets



## 2021 Key Achievements

**10%** reduction in GHG emissions (vs. 2019 baseline)

**-20%** process waste directed to disposal vs. 2020

**-6%** water withdrawal intensity

**-19%** Total Recordable Incident Rate

Inaugural **Sustainability-Linked Bond** tied to SO<sub>x</sub> emissions target

**22%** women in leadership roles

WASH projects provided access to water to **+30,000** people in Latin America

**+24%** revenues from solutions contributing to the UN Sustainable Development Goals

# Dura-Line Manufactures Responsibly Across Europe

MicroDucts and FuturePath® ECO are just one example of Dura-Line's commitment to responsible manufacturing



## Closed Loop Water System

Our manufacturing equipment reuses 1,362 litres of water every minute, reducing overall water requirements and avoiding creation of wastewater.



## Regrind Programme

For more than 15 years, routine fallout HDPE from our manufacturing processes has been reground and reused in conduits that can be installed in future-proof digital networks.



## Reel Re-Use Programme

Each of our plants re-uses or has a partner that re-uses transportation reels. Sochaczew, Poland also has a Green Label certificate and is a member of the Pallet Recovery System.



## Renewable Energy

We partner with local power companies to drive energy efficiency at our 3 European manufacturing locations. All 3 plants have also converted to LED lighting.



## Zero Waste to Landfill

All Dura-Line plants are working toward a zero-waste-to-landfill goal. Motz, France was the first to reach the goal with all waste recycled or burnt for energy recovery.

