

Lancashire County Council
Innovation and Investment Event
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Sustainable development in the Utility Sector



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Structure of presentation

- Background to United Utilities – energy usage
- Our Strategic Direction Statement
- Long term carbon target
- Our energy reduction strategy – what we know and what we need to know

“What are the opportunities this presents for the North West?”

What do we mean by carbon management?

- Manage risks
 - Energy costs
 - Compliance costs/penalties
 - Brand/reputation
 - Competitive position
- Identify opportunities
 - Energy efficiency
 - Energy supply
 - Re-engineering and design
 - Emissions trading and carbon projects

Where are we now?

**In 2005/06 we used 1,109GWh of electricity
– 1/3 of 1% of UK electricity supply**

“At United Utilities our aim is to provide the best value utility service to our customers in a way that is sustainable, environmentally responsible and reflects our wider social impact”

- Philip Green, Chief Executive Officer, United Utilities

Understanding carbon emissions at UU

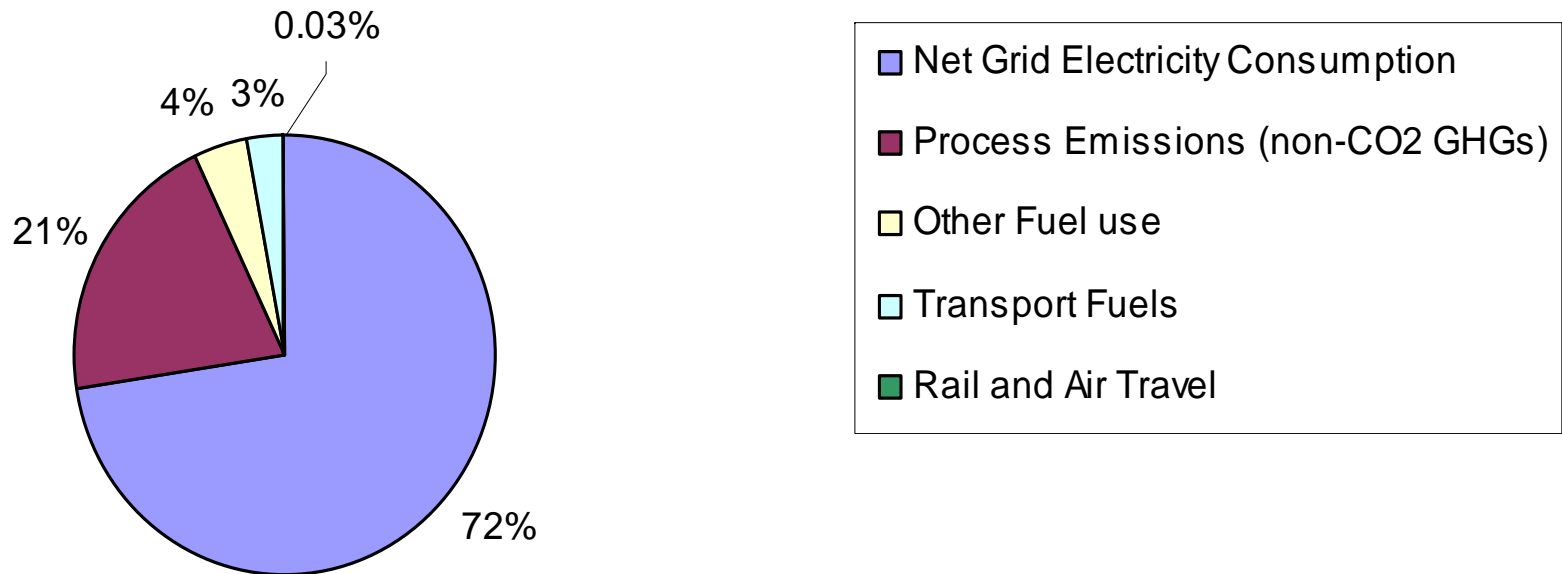
- Carbon emissions result from:
 - electricity consumption
 - process emissions
 - fuel use
 - transport

- Examples:
 - One household over a year - 5.3 tCO₂e
 - A family car driving 10,000 miles – 3.5 tCO₂e
 - One tonne of sludge digested (if methane emitted) – 3.3 tCO₂e

UU baseline

'UU-owned' GHG emissions 500,000 tCO₂e p.a.

UU-owned emissions split by source



What does it cost?

Carbon costs

Element	Actual (£m/yr)	Possible (£m/yr)
Climate Change Levy	4.6	
Total UU electricity costs (2005/6)	61.1	
Costs of transport, gas and oil (2005/06)	9.8	
Market drivers and EU ETS expected to increase energy bills		17.4
Tighter discharge standards at WWTW estimated to increase energy costs		12.2

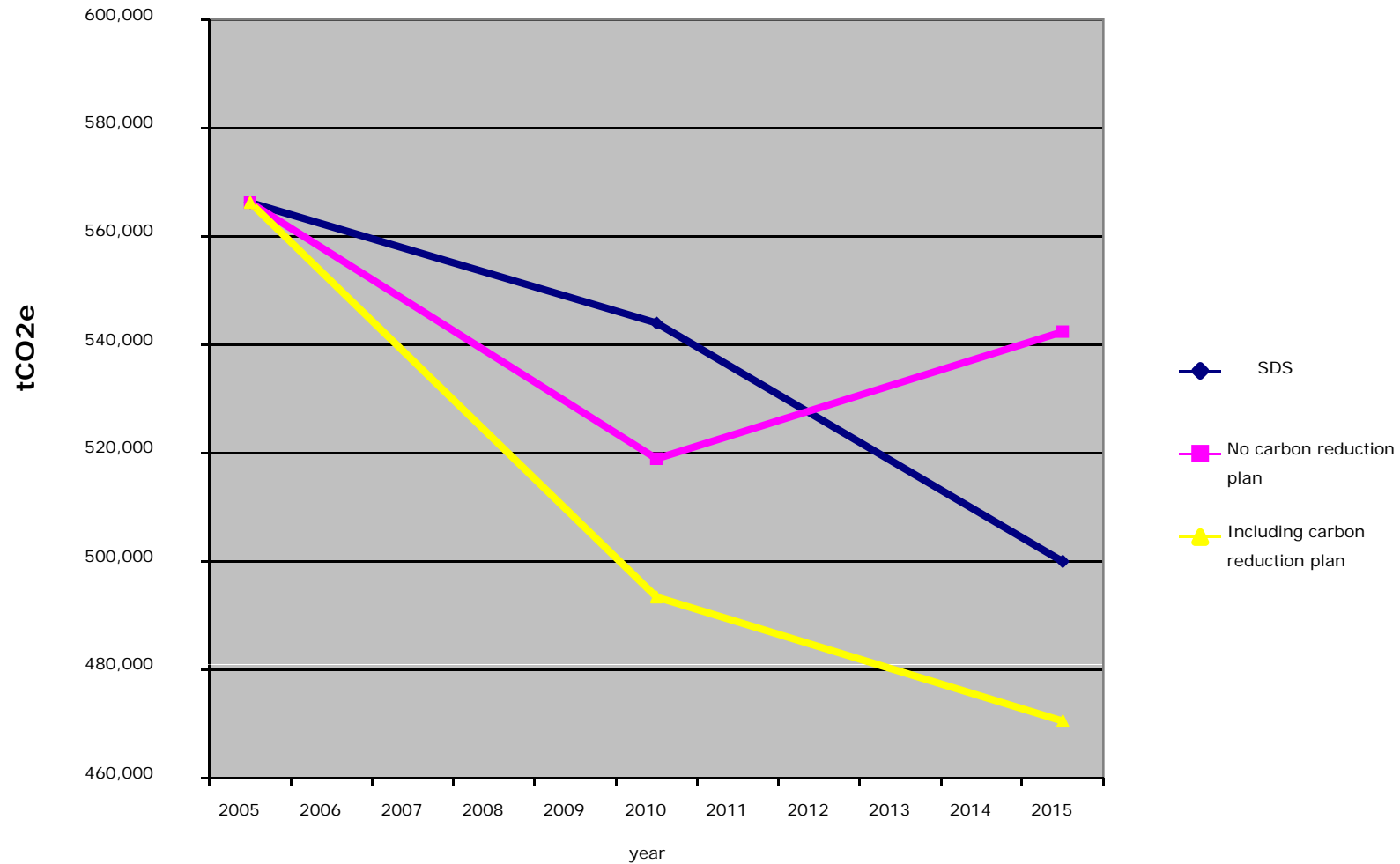
Cost mitigation

Element	Actual (£m/yr)	Possible (£m/yr)
Internal renewable energy saves/raises	7.3	
Potential to maximise methane use worth		3.0
5% reduction in energy would save		3.5

OUR STRATEGIC DIRECTION STATEMENT

- 1 Demonstrating responsible stewardship of the water and wastewater networks we operate....**
- 2 Listening to what our customers and other stakeholders tell us....**
- 3 Ensuring our water resources are more sustainable and resilient....**
- 4 Following an integrated approach to drainage to reduce the threat of flooding....**
- 5 Reducing significantly the carbon impact of our activities....**
- 6 We aim to achieve this without adding to the burden on household budgets.**

Potential impact of AMP5 (£3bn between 2010 and 2015) on our carbon footprint



AMP4 achievement

The AMP4 programme to reduce our operational carbon has already delivered significant progress towards our 2012 target. The programme consisted of the following projects:

- CHP projects with an anticipated reduction of 34,000* tCO₂e p.a.
- SCaMP with a 1,000* tCO₂e reduction p.a.
- Pump efficiency programme with an estimated reduction of 4,000* tCO₂e p.a.

***Note:** Based on a 0.43 conversion factor.

Our AMP5 and beyond carbon strategy

There are four parts to this programme:

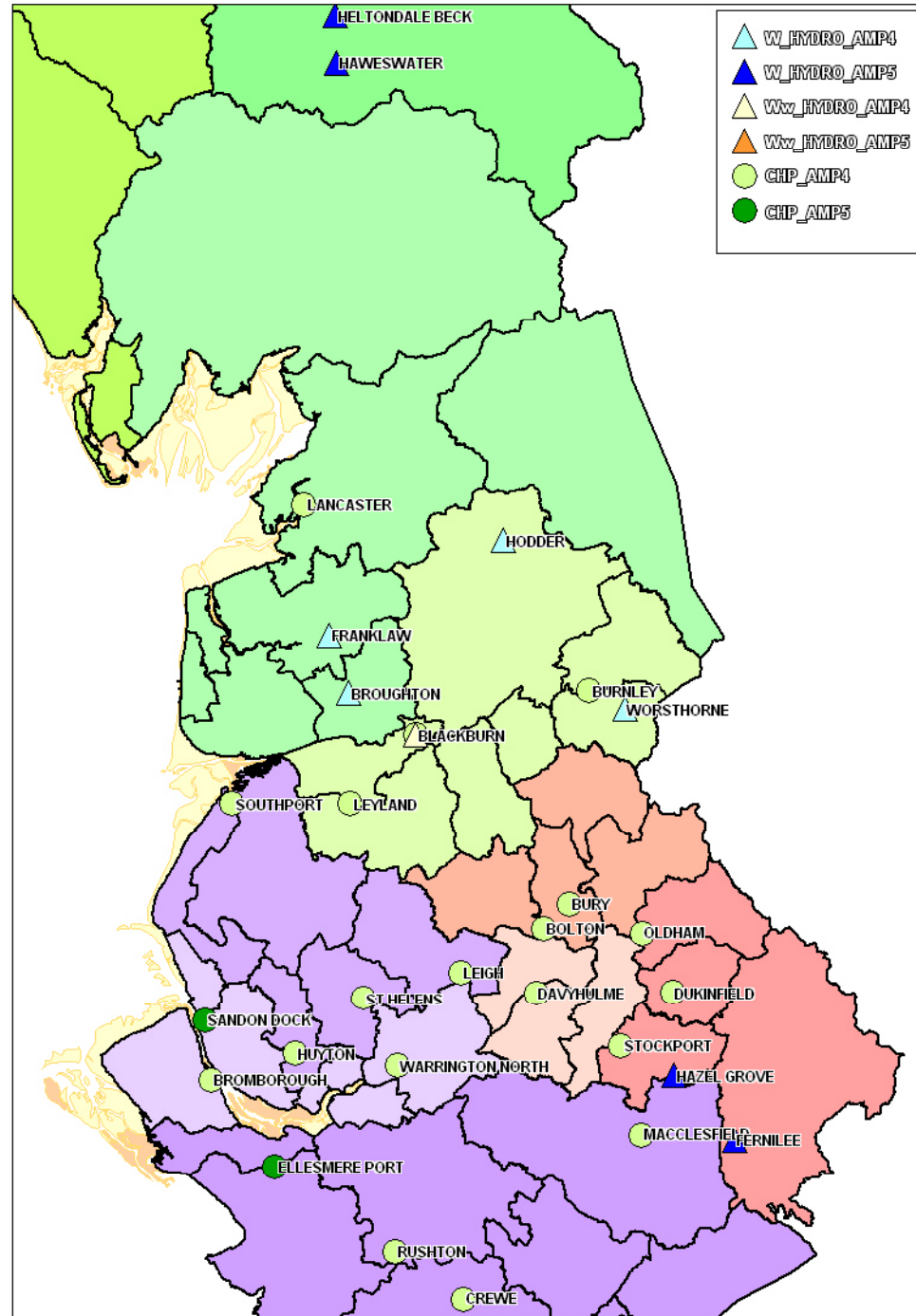
- Use of **known** technology: CHP, hydro-electricity, pump efficiency
- The development and demonstration of **novel** technologies
- **Optimisation** measures using low carbon solutions, optimising energy use and carbon emissions such as our sludge balance asset programme
- **Research and development** intended to identify and inform us about how we can reach our long-term carbon reduction target of 50% by 2035 and 60% by 2050.

Our proposed AMP5 GHG programme

Part of programme	Initiative	Carbon Reduction in 2014 – 2015	Capex £m	Full year effect Opex Savings £k/yr	GWhs generated / Saved
Known technology	Pump Efficiency	2,440	2.0	457	5.8
	CHP	2,900	3.3	599	7.6
	Hydroelectric	2,270	2.9	340	4.3
Novel technology	Bio-methane	530	2.6	358	None
	Grit / screenings composting	4,960	1.9	106	None
Optimisation	SBAP	32,200	n/a	n/a	9.4
	Sludge Q programme	0	n/a	344	4.4
	Water Supply/ Demand Efficiency	1,450	n/a	n/a	None
	SCaMP	1,016	n/a	n/a	None
R&D	R&D programme	n/a	2.2	n/a	None
	Totals	47,760	15.0	2,184	27.2

Known technologies

- CHP
- Hydro-electric
- Pump efficiency



Novel Technology

- Bio-methane to vehicles and grid
- Compost grit and screenings
- Enhanced electrical dewatering



Optimisation

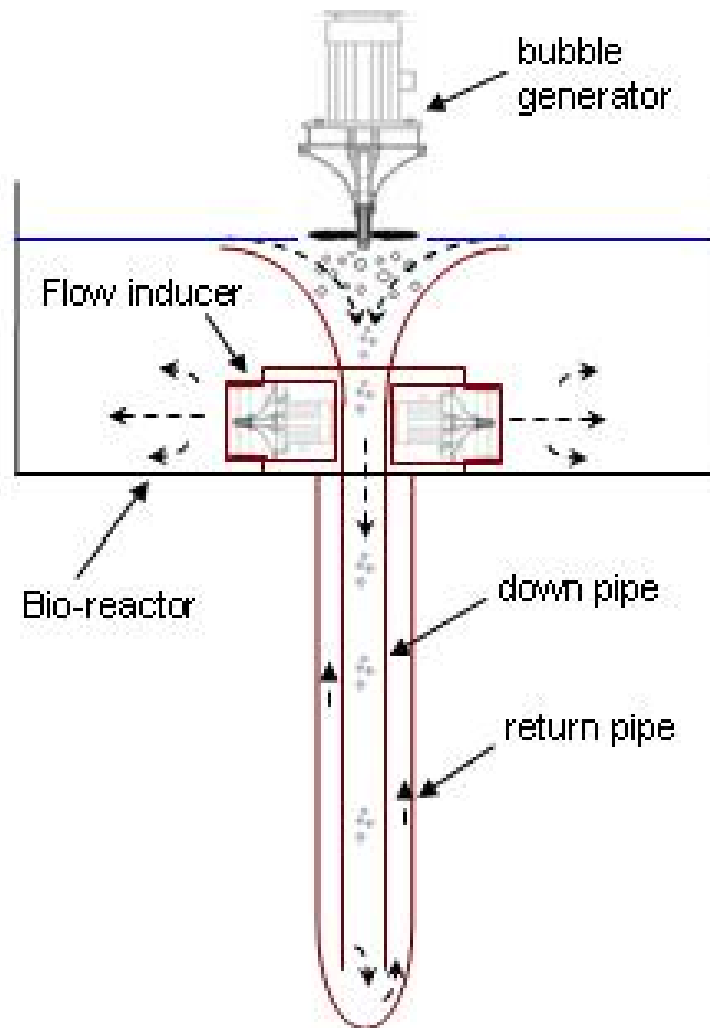
- Sludge Balanced Asset Programme
- Water demand management
- SCaMP



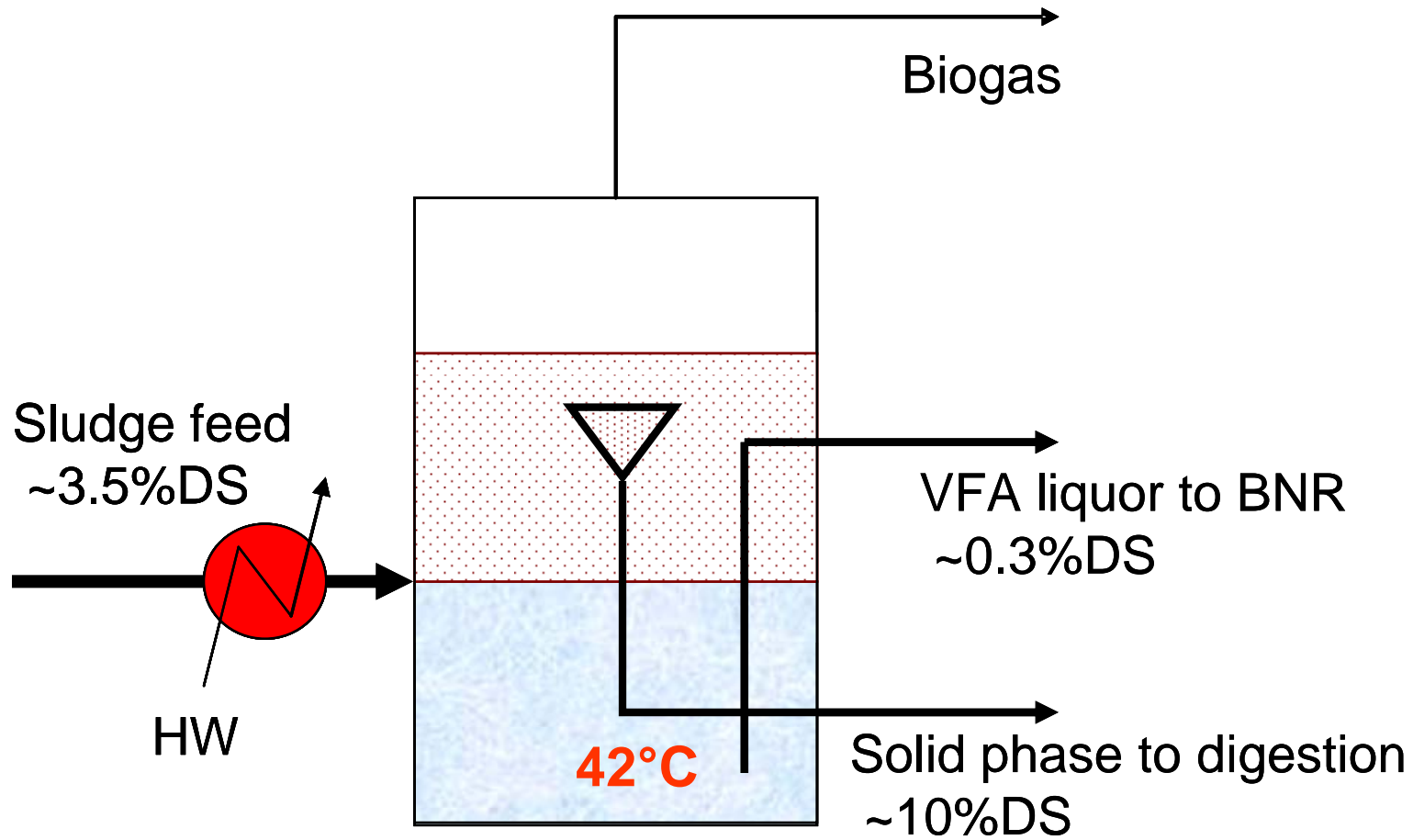
R&D

- Gravitox
- Inverted Phase Fermentation
- Enhanced Biological Phosphorous Removal
- Organo Mineral Fertiliser
- Sewage sludge digestion enhancement

R&D - GRAVITOX



R&D - INVERTED PHASE FERMENTATION



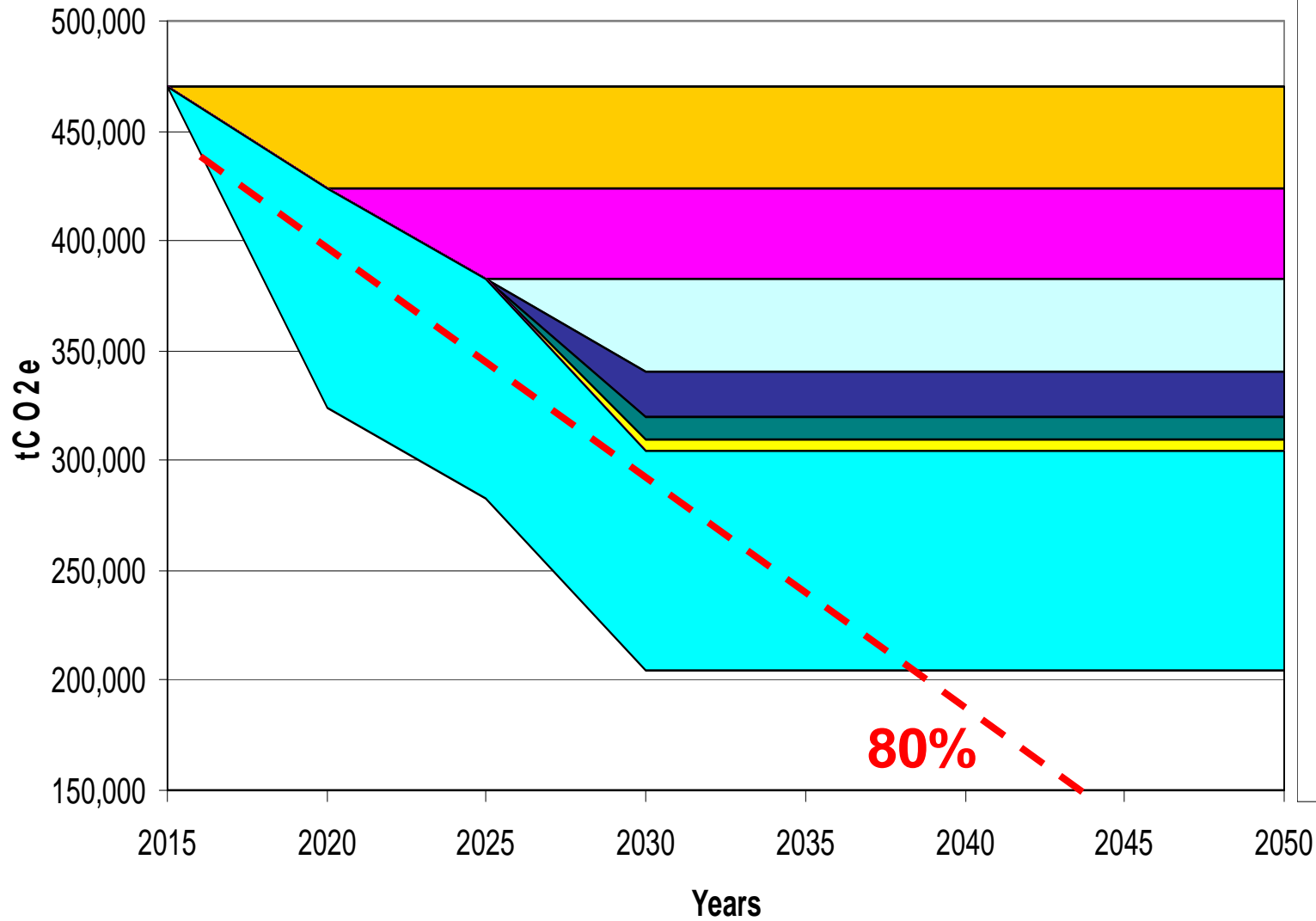
R&D - ORGANO MINERAL FERTILISER



Watching brief

- Ground source heat pumps
- Photo-voltaics
- Wind
- Further hydro

Long Term Carbon Reduction Potential



Thank you

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BUILDING FOR TOMORROW

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