

Onshore Energy
Conference

1 November 2023

With or without you:

Carbon credit cover and BI claims issues in the
petrochemicals sector

GRs



C. Lewis Company



Trends in the petrochemical sector

Global reliance on petrochemical products

Need and avenues for decarbonization

Offsetting and trading schemes

Policy coverage for carbon credits

Claim scenarios

Petrochemicals: Sector overview



The world and the way in which we live is dependent on petrochemicals



Components used to make products used in many aspects of life – 95% of all manufactured good



Chemicals derived from oil, coal and natural gas



Increasing sector, increasingly important



Global market of (circa) USD 580 Bn in 2022

Petrochemicals: Sector overview

Chemical and Petrochemical Sector

HVCs



Petrochemicals

Ammonia



Methanol



Other Chemicals

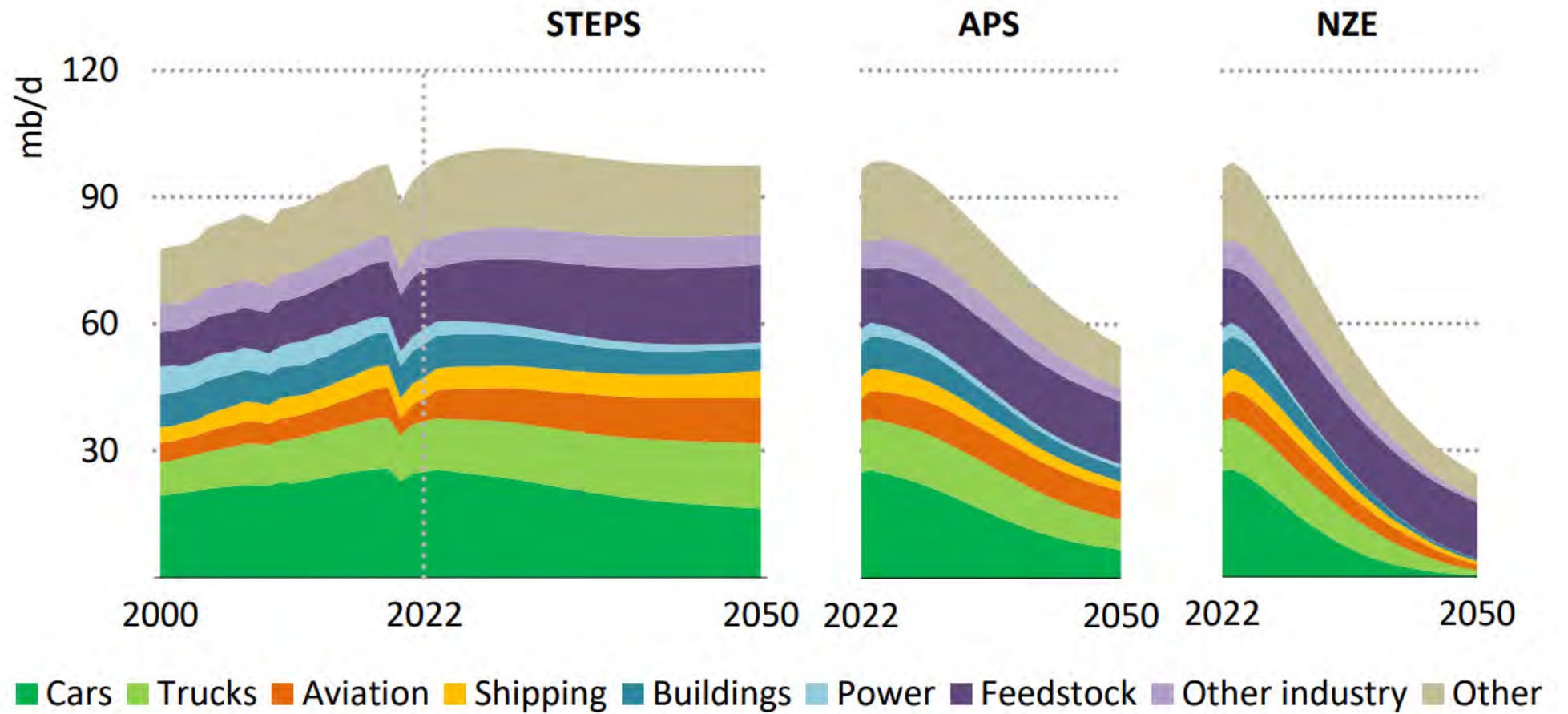


Petrochemical fossil fuel utilisation



- Consumption twofold:
 - Energy, heating, cracking.
 - Feedstock
- Sector expanding, increased consumption

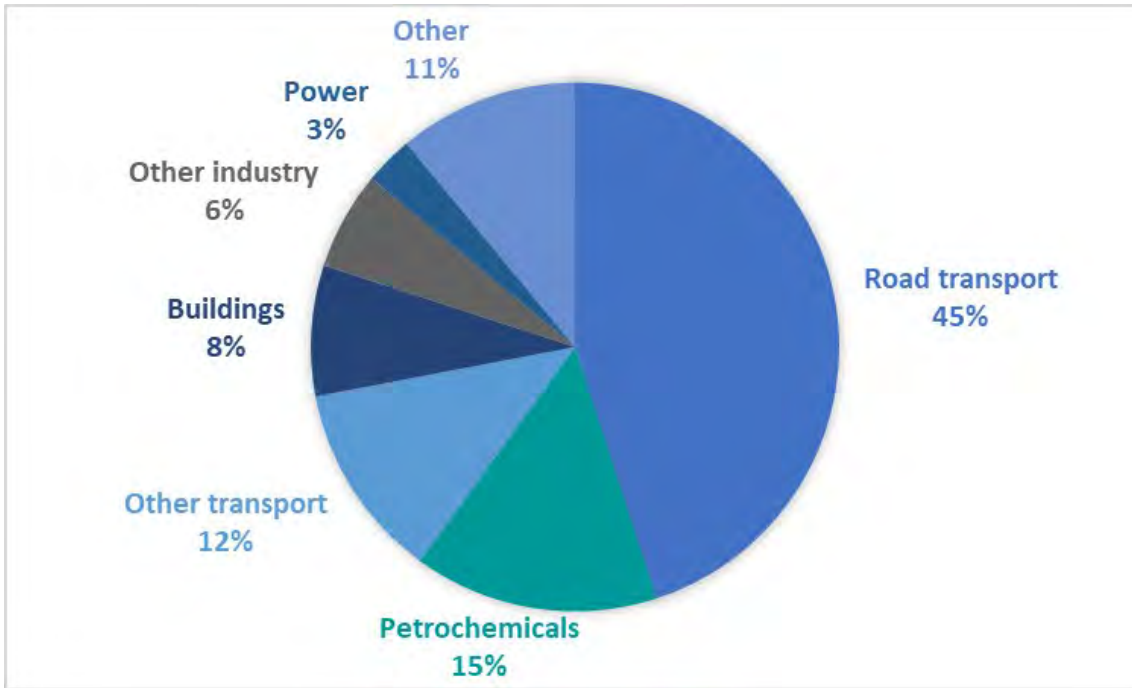
Global demand forecast: Oil



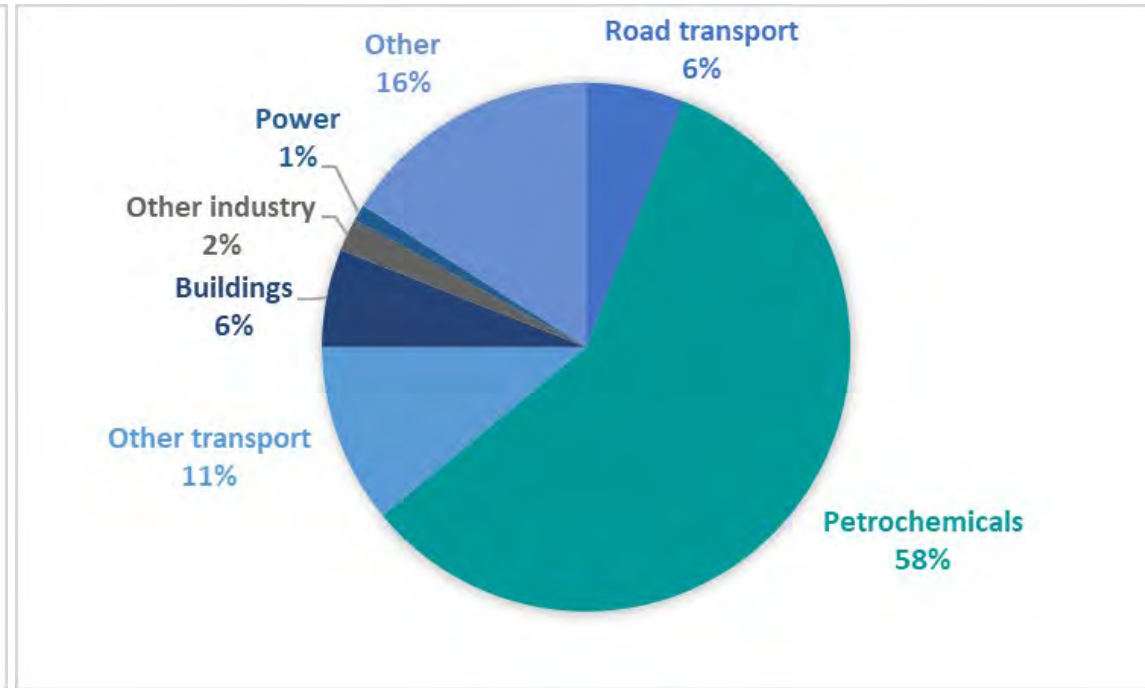
Source: IEA

Global oil demand by petrochemicals

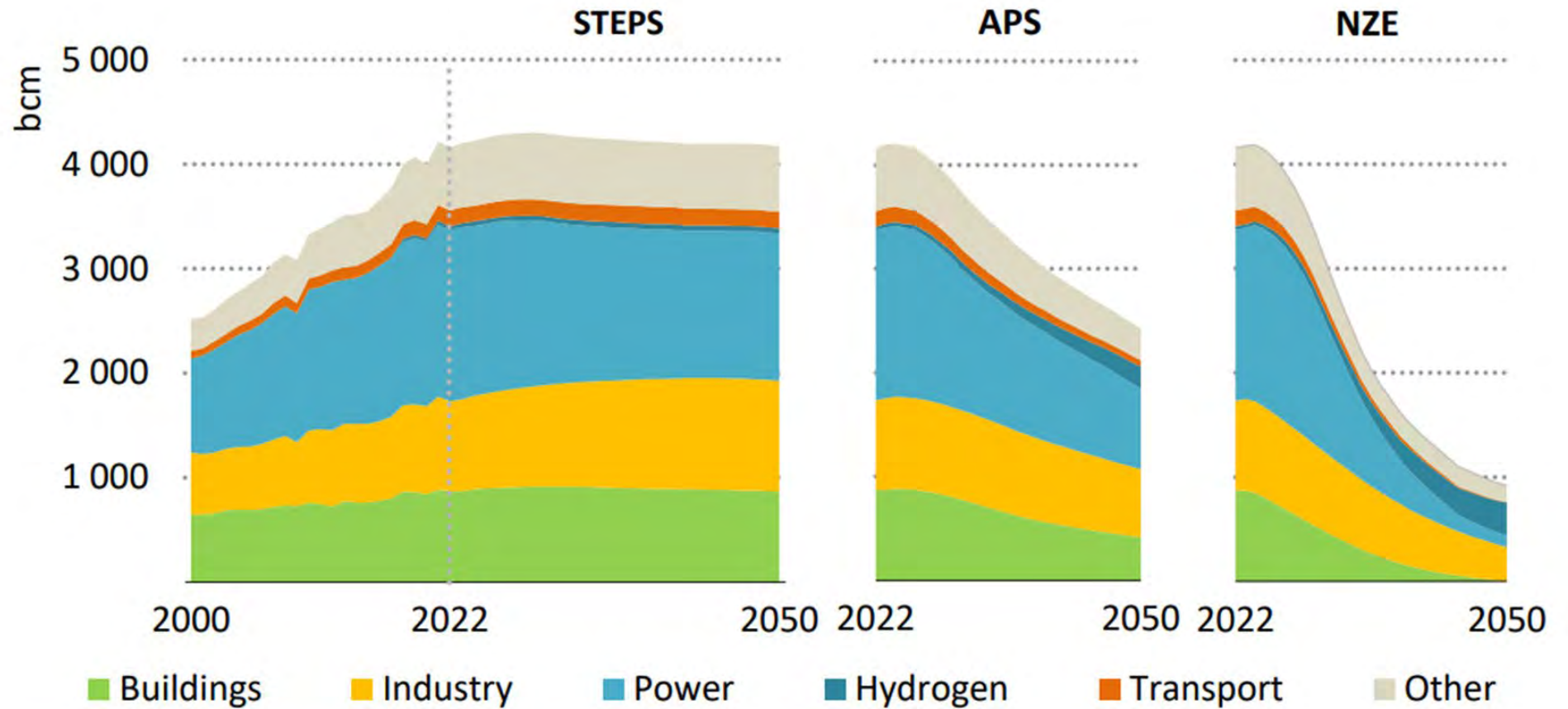
2022



2050



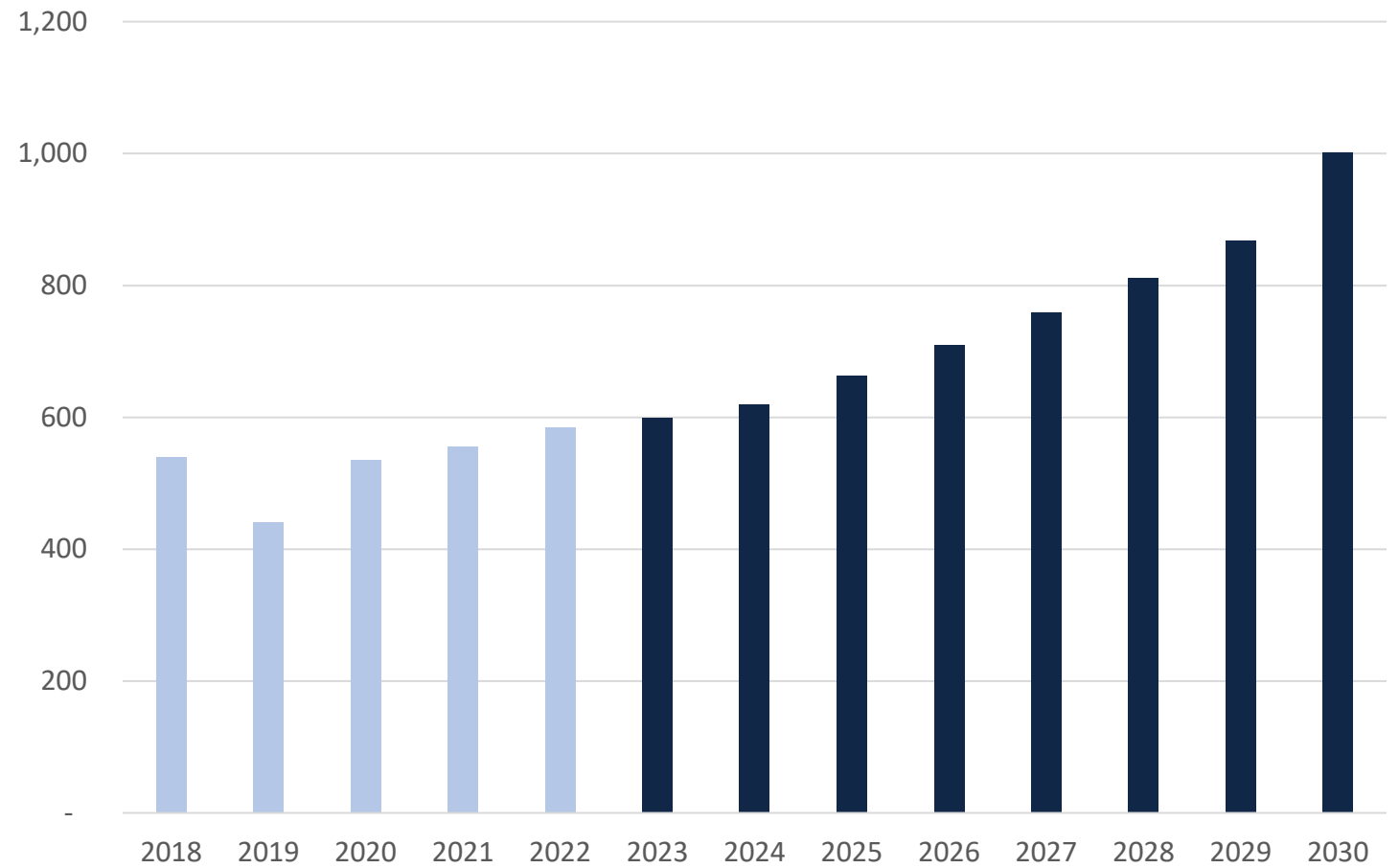
Global demand forecast: Gas



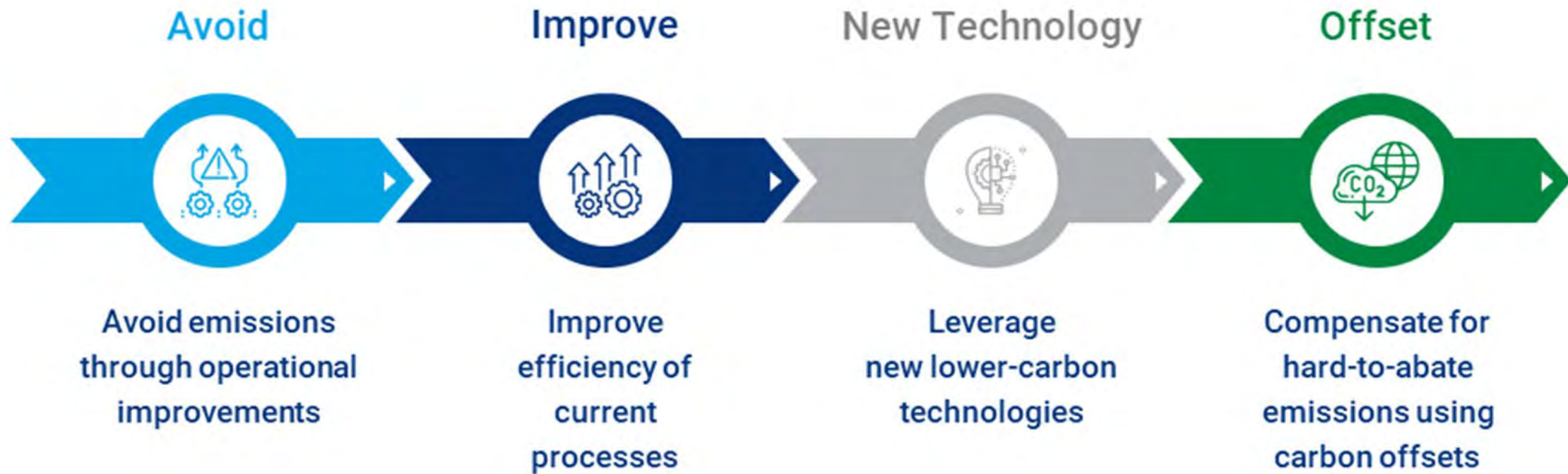
Source: IEA

Petrochemicals: Sector trends

Market value of petrochemicals (USD)



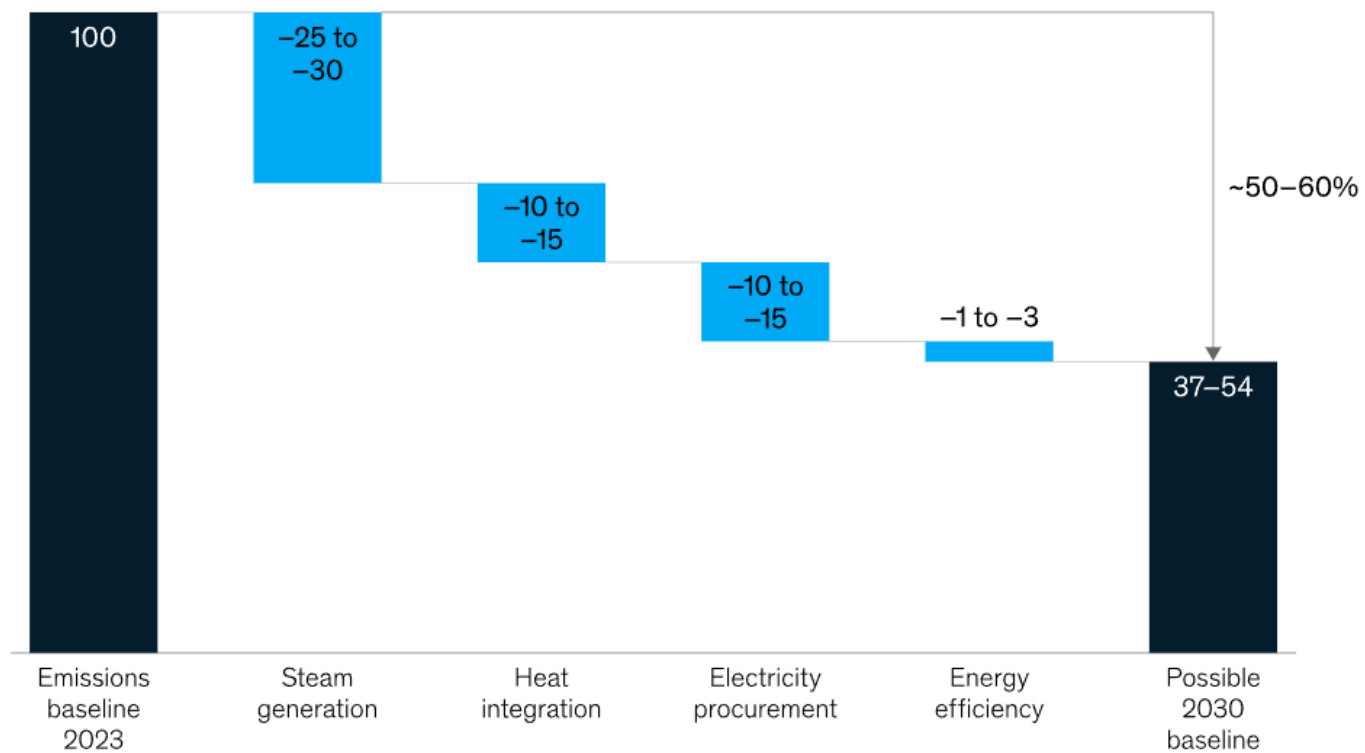
Achieving decarbonisation



Source: Wood Mackenzie

Operational improvements

CO₂ emissions, %

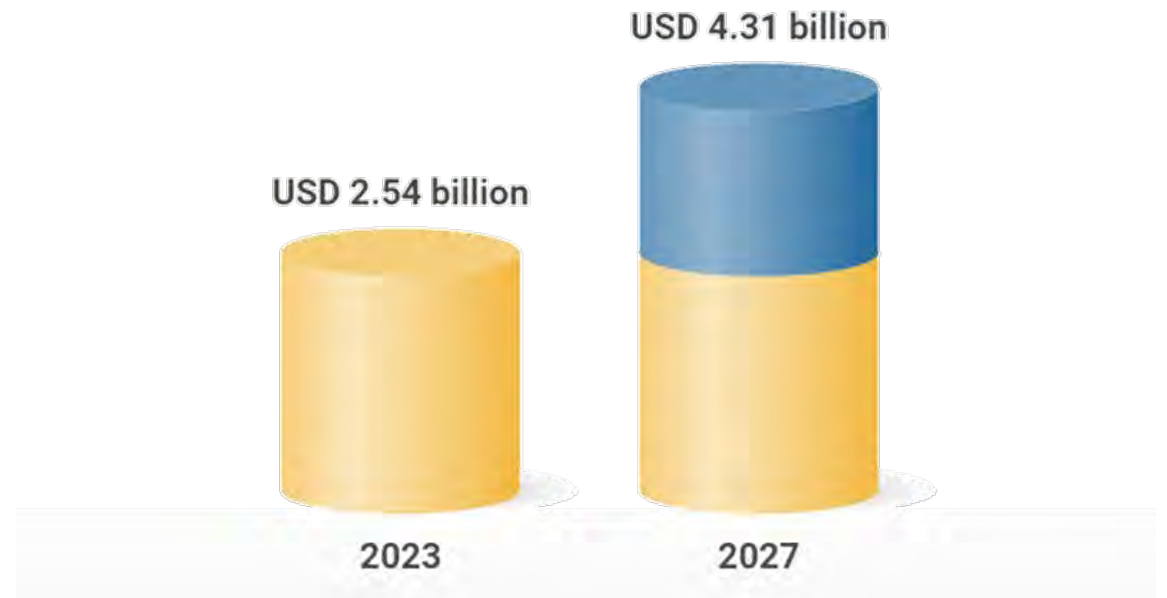


Source: McKinsey & Company

New technologies

Global Carbon Capture, Utilization, and Storage Market

Market forecast to grow at CAGR of 14.1%



Source: Research and Markets



But why?



Right thing to do...



To reduce Carbon Credit exposure

Emissions Trading Schemes

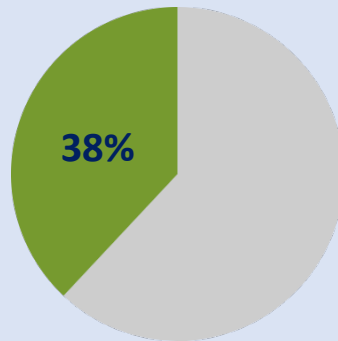
EU ETS

Incepted: **2005**

Sectoral coverage: **Domestic Aviation, Industry, Power**

The use of offsets is not allowed (P4)

Average auction price: **USD 83.10**



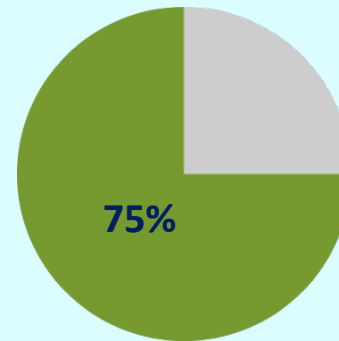
USA – California C&T

Incepted: **2012**

Sectoral coverage: **Transport, Buildings, Industry, Power**

Domestic offsets

Average auction price: **USD 28.08**



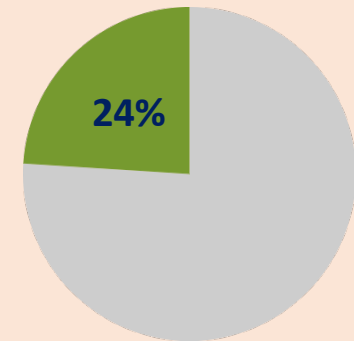
China – Beijing ETS

Incepted: **2013**

Sectoral coverage: **Transport, Buildings, Industry**

National offsets

Average auction price: **USD 17.44**



EU Emission Trading System

- Phases 1 (2005) to 4 (2021 onwards)
- Companies issued a fixed number of allowances dependent on sector/business
- One allowance gives the right to emit one tonne of CO₂eq (carbon dioxide equivalent)
- If exceeded, significant fines
 - Cut emissions; or
 - Buy extra allowances from a broker or another emitter
- Over time, the cap is reduced
- Allocated an allowance (for set period) proportionate to historical emissions
- Plant must show balanced emissions/allowances – 4 months to balance if required

Free Allowances

- Phase 4: Calculation of Free Allowance of CO₂ Allowances linked to production:
 - Historical Activity Level (**HAL**) of an installation calculated as average production 2014-2018
 - Benchmark emissions factor for Installation calculated based on average emissions of top 10% most efficient / greenest producer across industry.
Example: Ammonia Plant, Benchmark is 1.570MT of CO₂ to 1MT of Ammonia production

- **Free Allowance = HAL x Benchmark**
 - 85% rule for Phase 4:
 - Average production over 2-year period must be great than 85% of HAL to retain 100% allowance.
 - If not, e.g. average 80% of HAL, then lose all allowances to that level in the next year.

Accounting Treatments

- There is no international accounting standard (IAS) for accounting treatment of Free Allowances.
- Accounting principles for the treatment of CO₂ Allowances similar to other Raw Materials
- Assets in Inventory:
 - Purchase allowances recorded as cost.
- For Free Allowances, differing approaches:
 - Nil Value Approach
 - Fair Value approach
 - Free allowances recorded as Inventory at fair value on receipt.
 - If sold, recorded as **Other Income**
- In a claim, at what value / price should CO₂ allowances be valued if future losses are allowed?

Free Allowances - Sectors

Sectors

- **% Allocated for Free** to companies dependent on the sector
- Certain sectors deemed **Key** and at high risk to relocate outside EU
- Examples (non exhaustive list):
 - *Extraction of Crude Petroleum*
 - *Manufacture of Refined Petroleum Products*
 - *Manufacture of Industrial Gases*
 - *Manufacture of Plastics in Primary Forms.*

- Receive 100% of Free Allowances at start of Phase 4 reducing to 30% by 2030

Source: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L:2019:120:FULL>

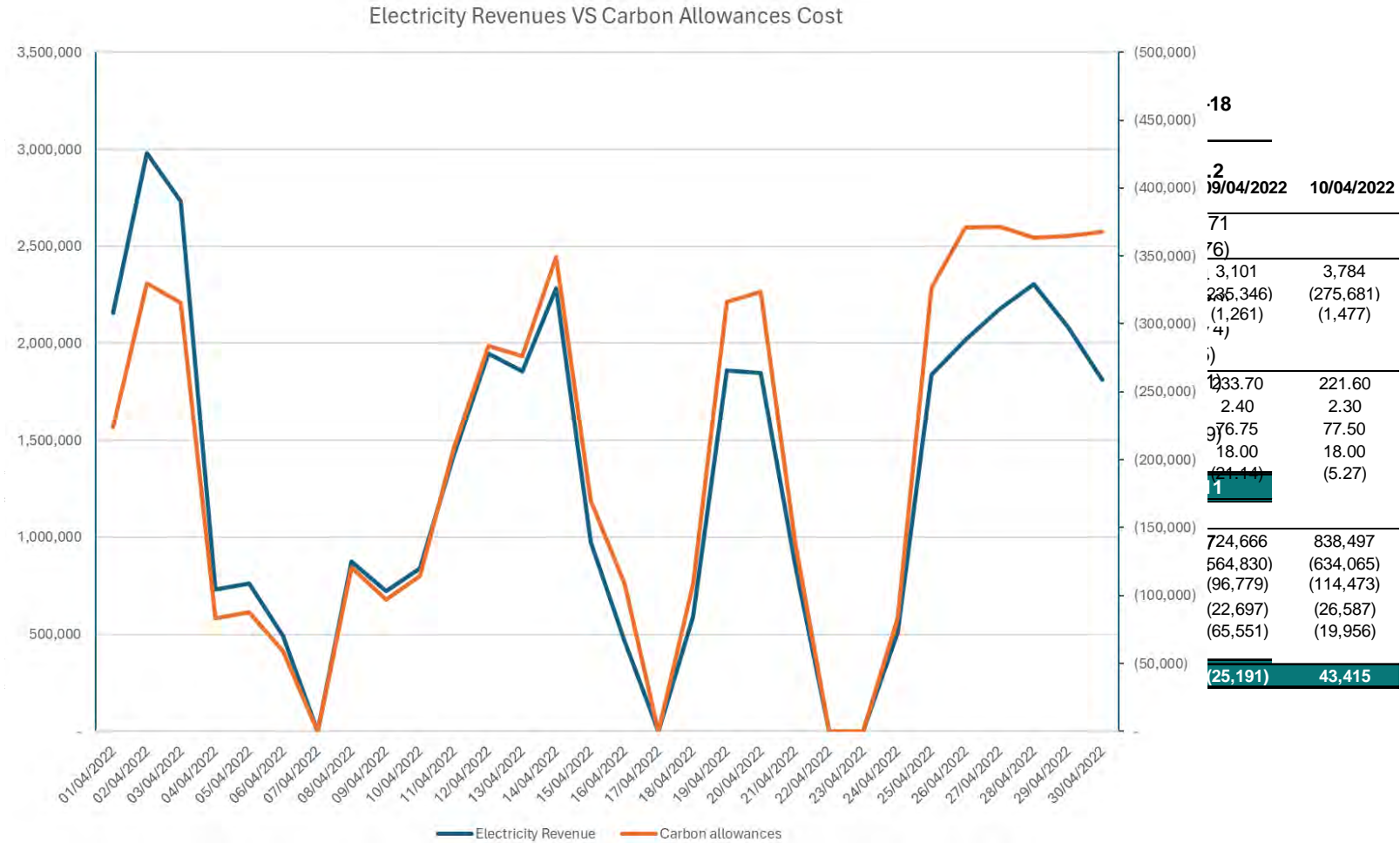
Key Industry FA benchmark Products



Source: https://eur-lex.europa.eu/eli/reg_impl/2021/447

Carbon Allowances – Fixed or Variable Costs?

➤ Power Plant Accounting of Carbon Allowances:



18	
2	
19/04/2022	10/04/2022
71	
76	
3,101	3,784
235,346	(275,681)
(1,261)	(1,477)
4	
1	
33.70	221.60
2.40	2.30
76.75	77.50
18.00	18.00
24.14	(5.27)
1	
724,666	838,497
564,830	(634,065)
(96,779)	(114,473)
(22,697)	(26,587)
(65,551)	(19,956)
25,191	43,415

Is there policy cover for Carbon Credits?

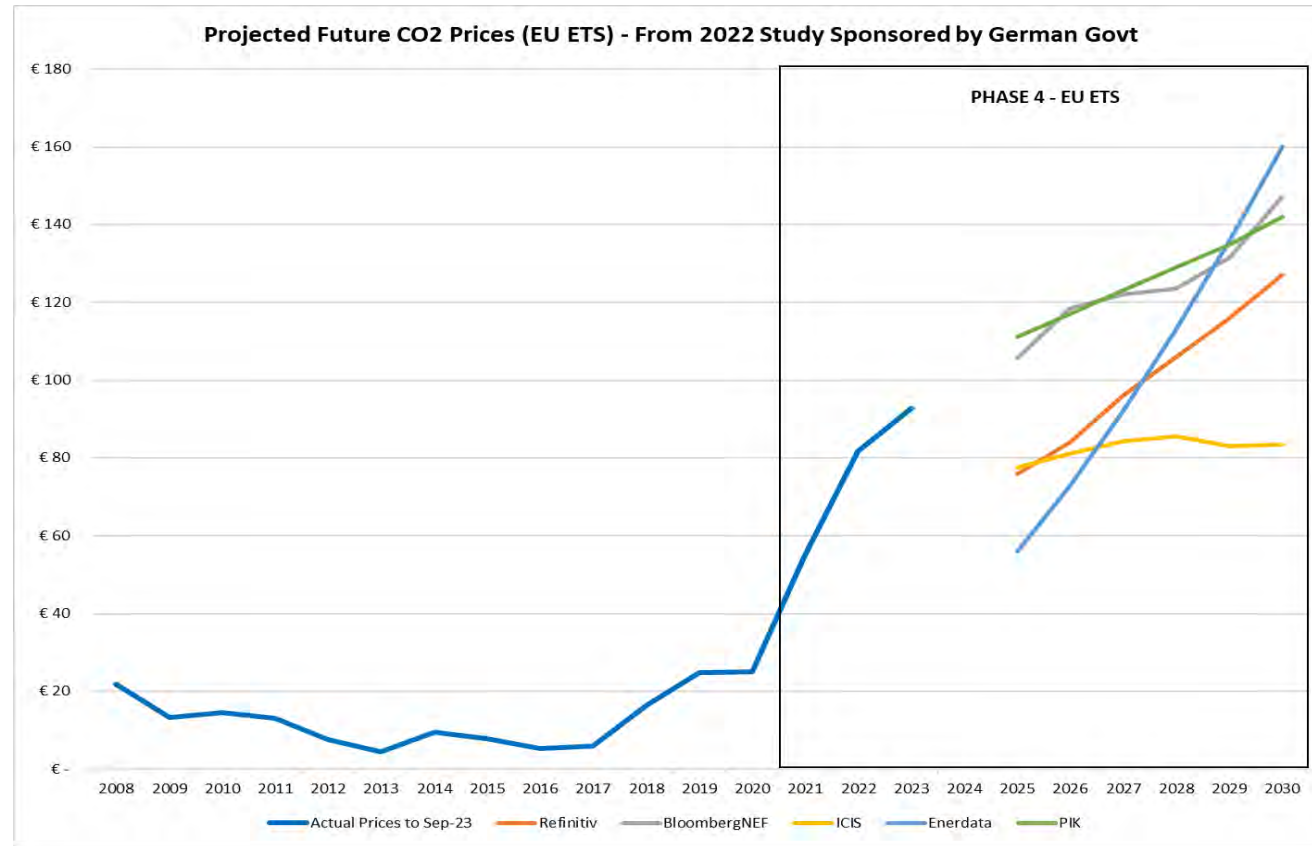
- What exactly are we talking about when we say carbon credits?
 - 1. Variable Cost, part of Gross Profit
 - 2. Loss of future allowances
- Inconsistency with taking savings but not paying future losses
- What can be done to clarify coverage?

EU Carbon Permit price since inception (EUR)



The Future – Price Projection

- Forecasts from seven organisations that model the carbon market.
- Rising CO₂ prices is the goal of the EU's climate policy to incentivize industries to decarbonize and invest in low carbon technologies.



The Future – Other Considerations

➤ Cross Border Adjustment Mechanism – “CBAM”

- Levy on Products entering EU to recognise GHG emissions in production
- Applies to Steel, Fertilizers, Aluminium, Iron, Cement, Ammonia and any Industrial good containing these.
- Aim to prevent Carbon Leakage
 - Aligned with reduction in Free allocation in these sectors.
- Responsibility is with the **Importer** of the product and **not** producer.

➤ Beyond 2030

- No clear planned legislation.
- Free Allowances to be completely phased out.
- Continual restrictions on Carbon Allowances available to buy.
- Carbon Neutrality by 2050.

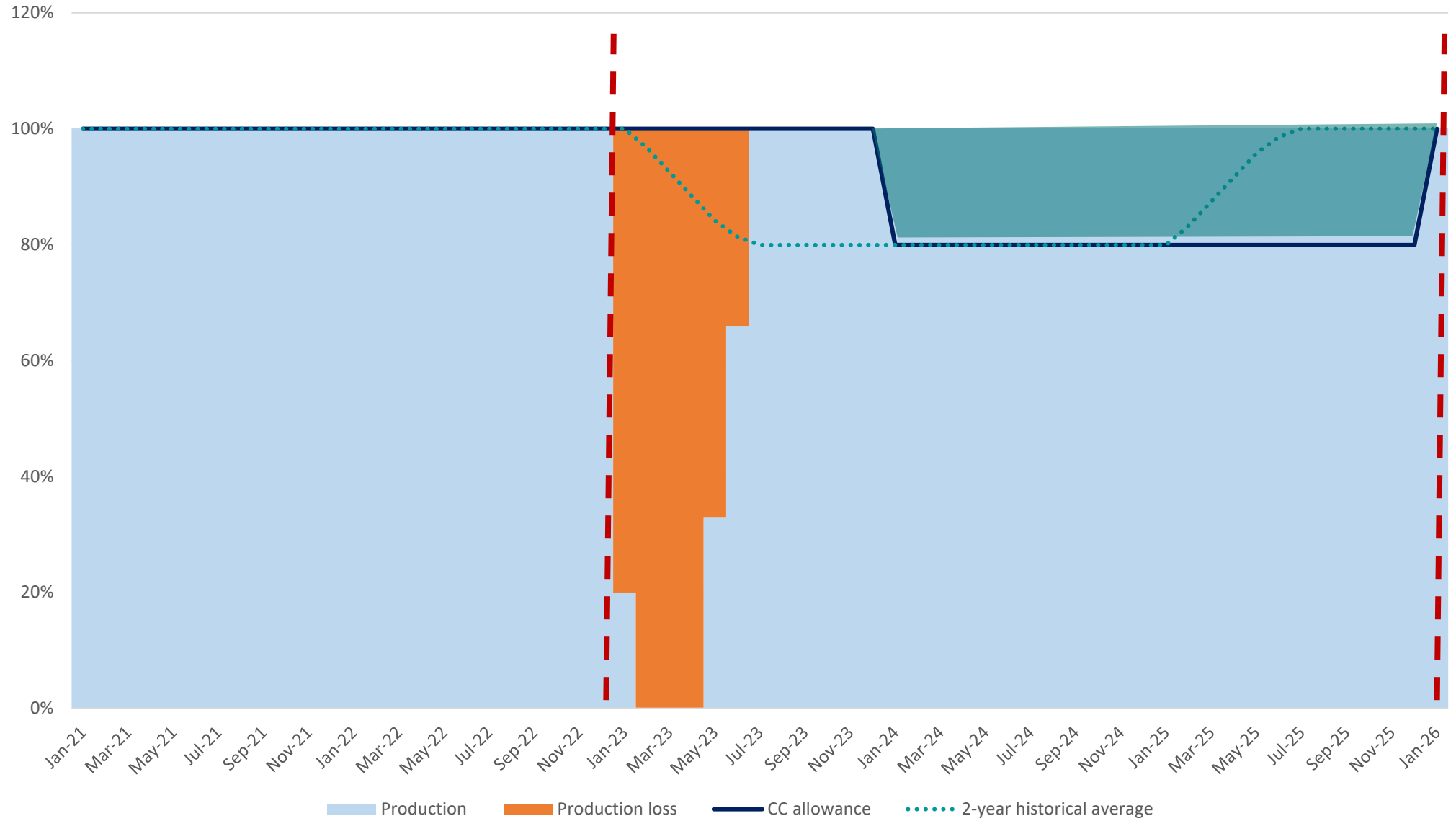


Scenario 1

1

- Ethylene plant
- Significant loss
- Loss period: 6 months
- Maximum Indemnity Period: 36 months

Scenario 1



Scenario 1

➤ BI Loss summary:

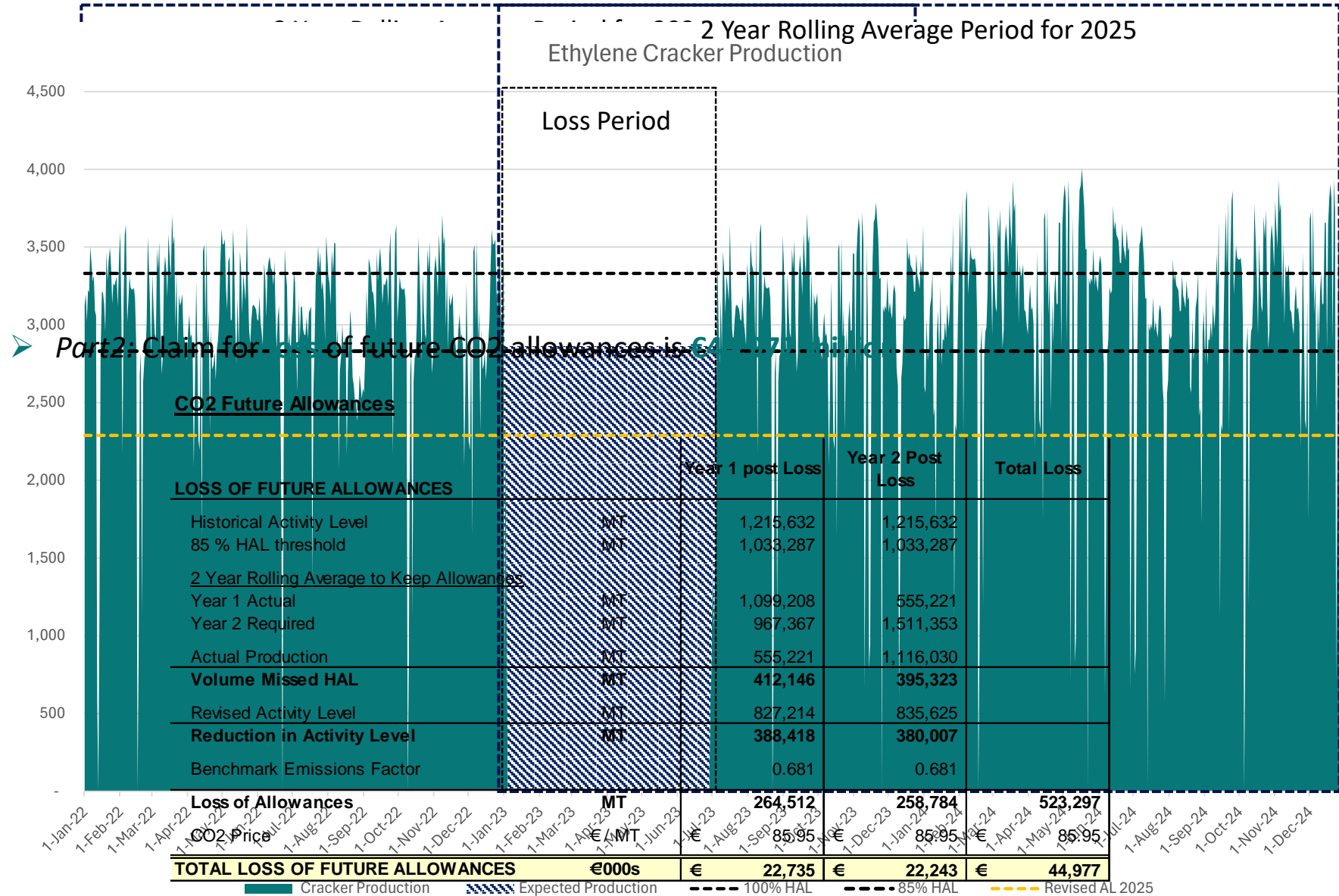
- 6 Month outage – and 36 month indemnity period
- Loss of 518,093MT during outage period.
- Fail to produce 85% threshold due to incident and will [lose allowances in subsequent years](#)

➤ *Part 1*: CO₂ savings calculated to be **€31.75 million**.

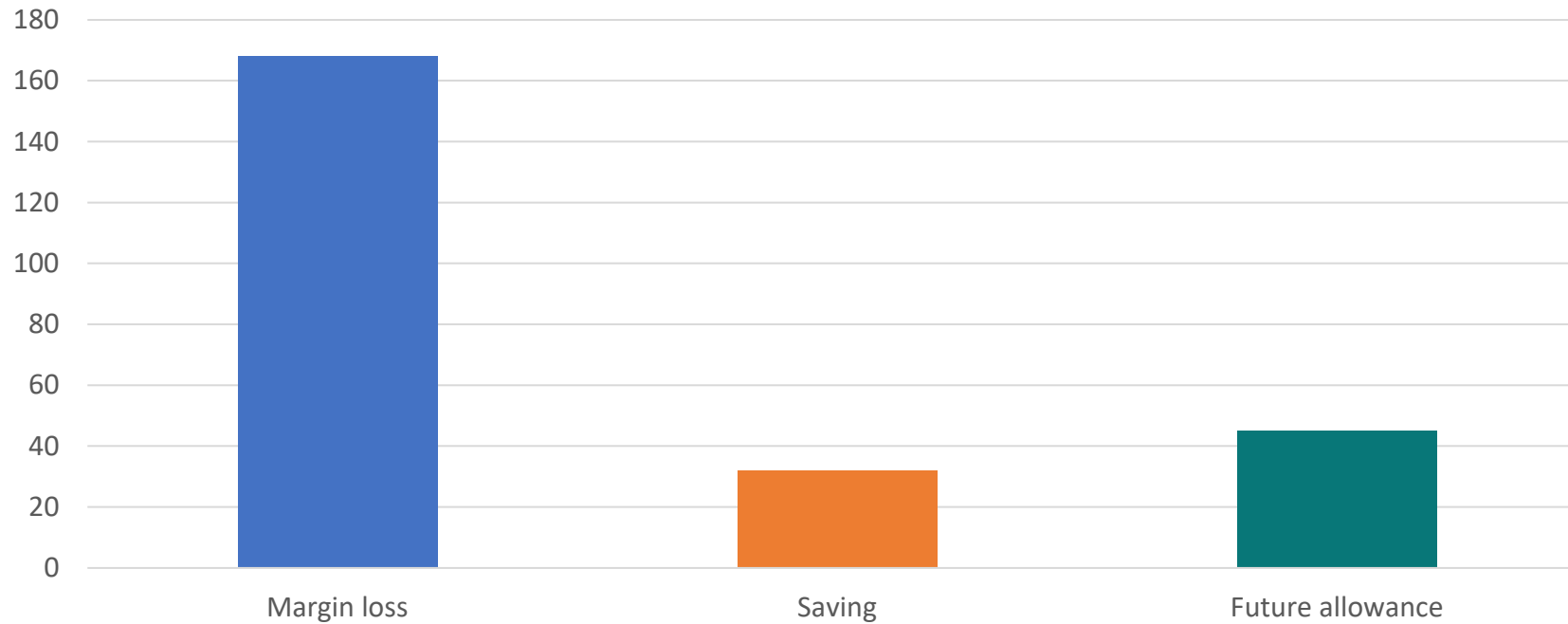
CO2 Saving Summary

		Total
CO2 Allowances Saving Calc.		
Expected Output	MT	606,239
Actual Output	MT	88,145
Loss of Ethylene Output	MT	518,093
Emissions Factor		0.713
CO2 Price	€/ MT	€ 85.95
CO2 Saving	€000s	€ 31,750

Scenario 1



Scenario 1



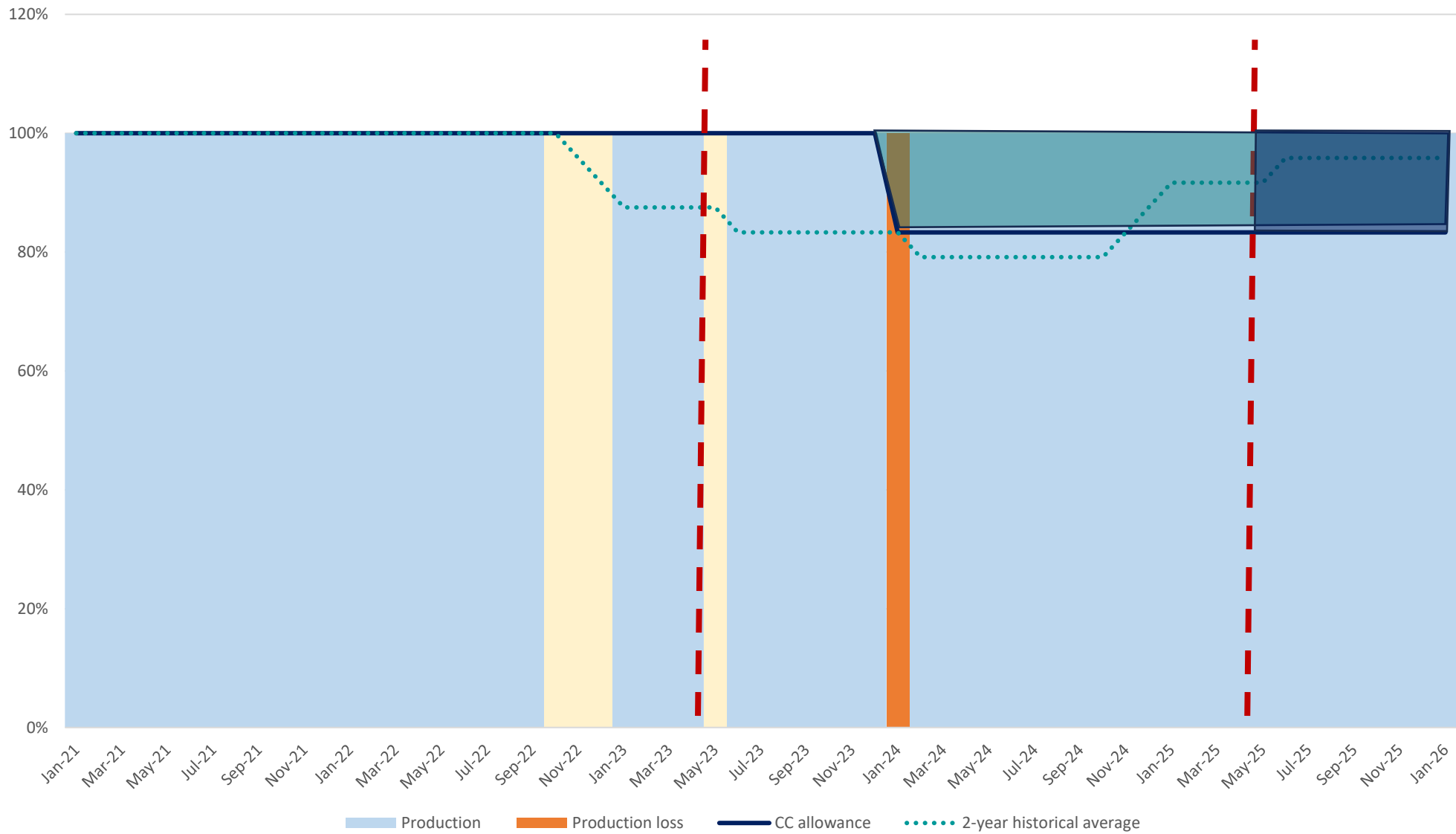
- Can the reduction in carbon emissions be taken as a saving against the loss?
- Is the loss of future allowances covered under the policy?

Scenario 2

2

- Ethylene plant
- Minor loss
- Loss period: 1 month
- Maximum Indemnity Period: 24 months
- Additional production factors

Scenario 2



Scenario 2

➤ BI Loss summary:

- 31 Day Outage – 1 to 31 December 2023.
- Loss of 96,813MT
- Total Gross Loss **€25.4m** when including a CO₂ saving of **€5.9m**

BI Loss Summary

| Total |

➤ **BUT**, Insured claim that 85% Threshold of HAL was missed as a result of Incident so claim for loss of Future Allowances

Loss of Ethylene Output	MT		96,813
Average Margin per MT	€/ MT	€	324.00
Loss of Margin	€000s	€	31,367
CO2 ALLOWANCES SAVING			
Emissions Factor			0.713
CO2 Price	€/ MT	€	85.95
CO2 Saving	€000s	€	5,933
GROSS LOSS	€000s	€	25,434

Scenario 2

- But for Loss would have met production Threshold by **7,130MT**
- Miss 85% Threshold by **89,683MT**
- Loss of Allowances in 2024 = **€13.3m**
- **Total Gross Loss = €38.7m**

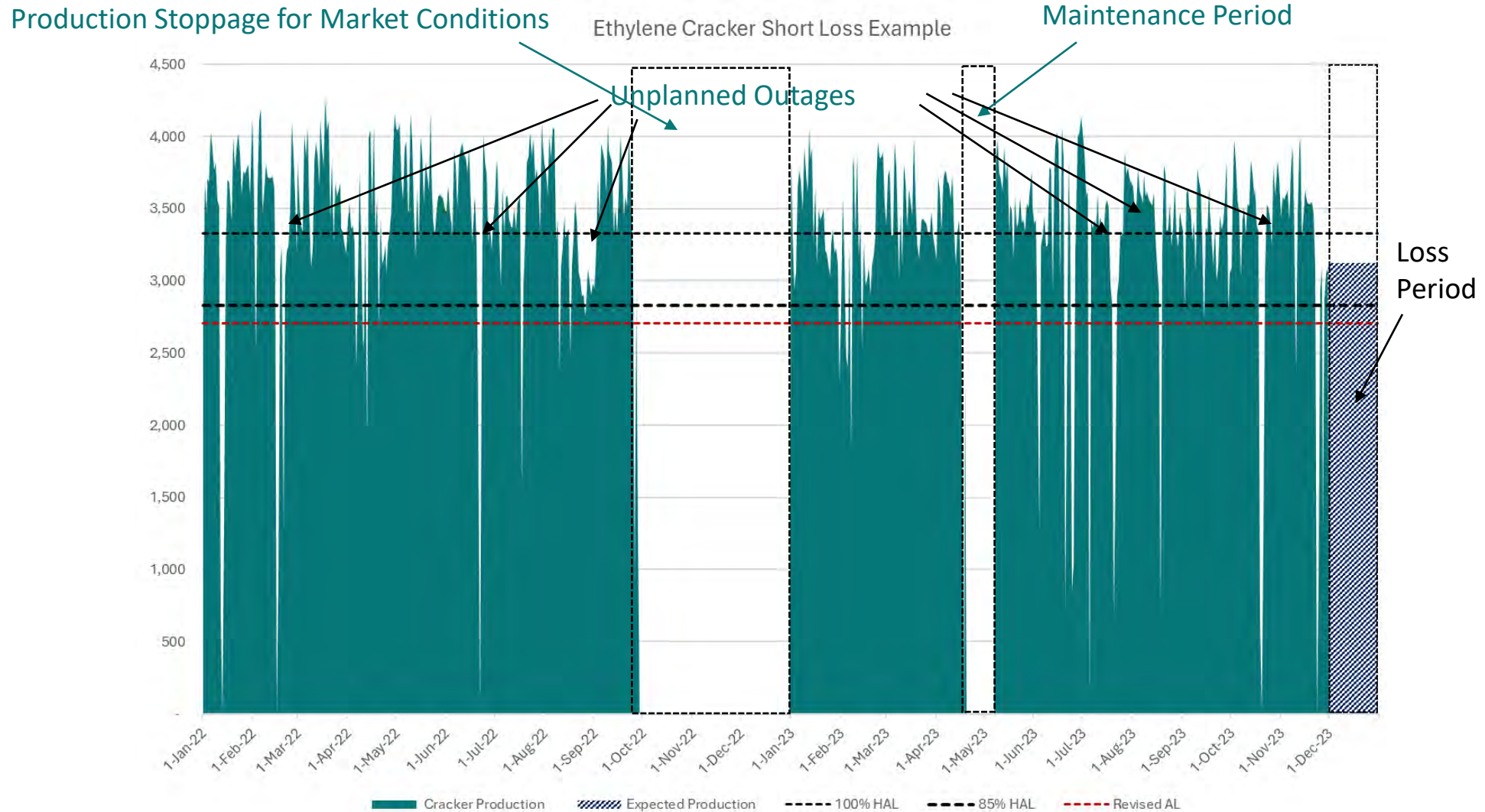
CO2 Future Allowances

- Insured were due to meet 85% of HAL if no incident had occurred but that is considerably less than HAL. Why?

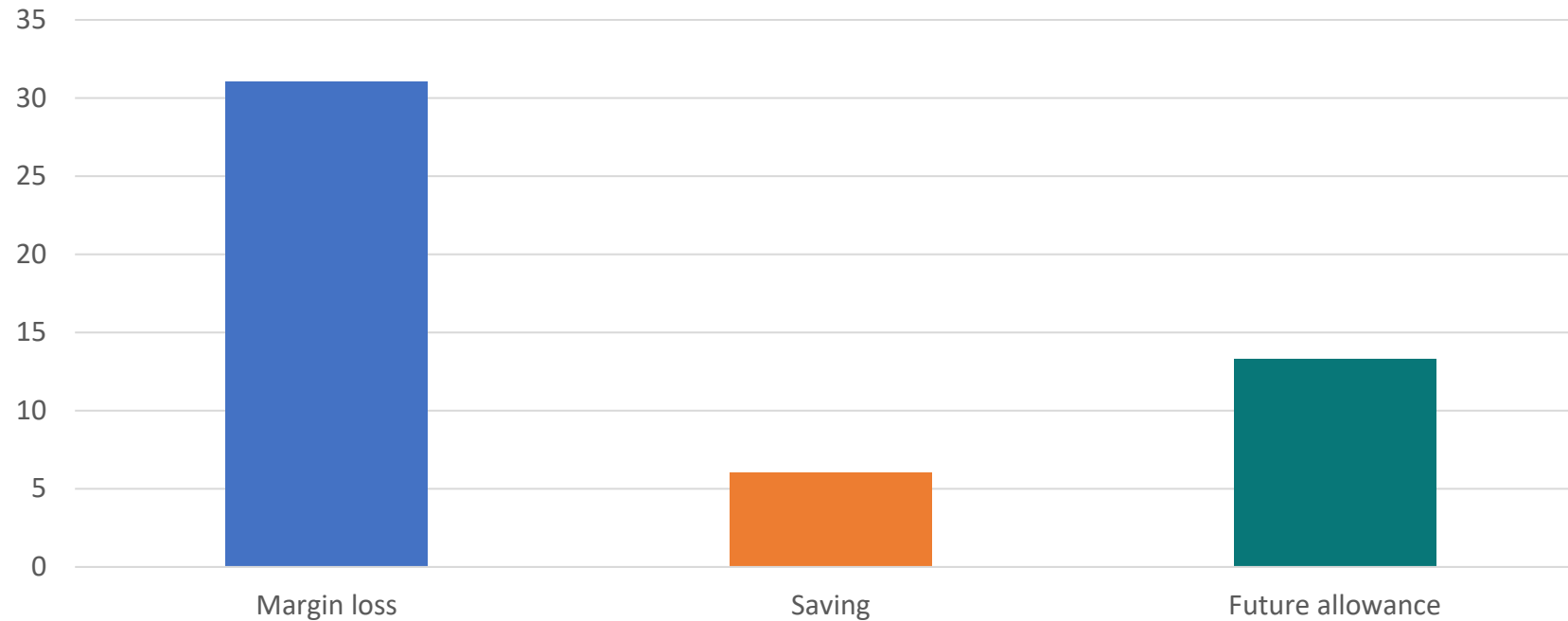
<u>2 Year Rolling Average to Keep Allowances</u>		
Year 1 Actual	MT	932,030
Year 2 Required	MT	1,134,544
Actual Production	MT	1,044,861
Volume Missed HAL	MT	89,683
Revised Activity Level	MT	988,446
Reduction in Activity Level	MT	227,186
Benchmark Emissions Factor		0.681
Loss of Allowances	MT	154,714
CO2 Price	€/ MT	€ 85.95
TOTAL LOSS OF FUTURE ALLOWANCES	€000s	€ 13,298

Impact of non-loss related production factors

➤ When look at historical performance number of issues impacted production:



Scenario 2



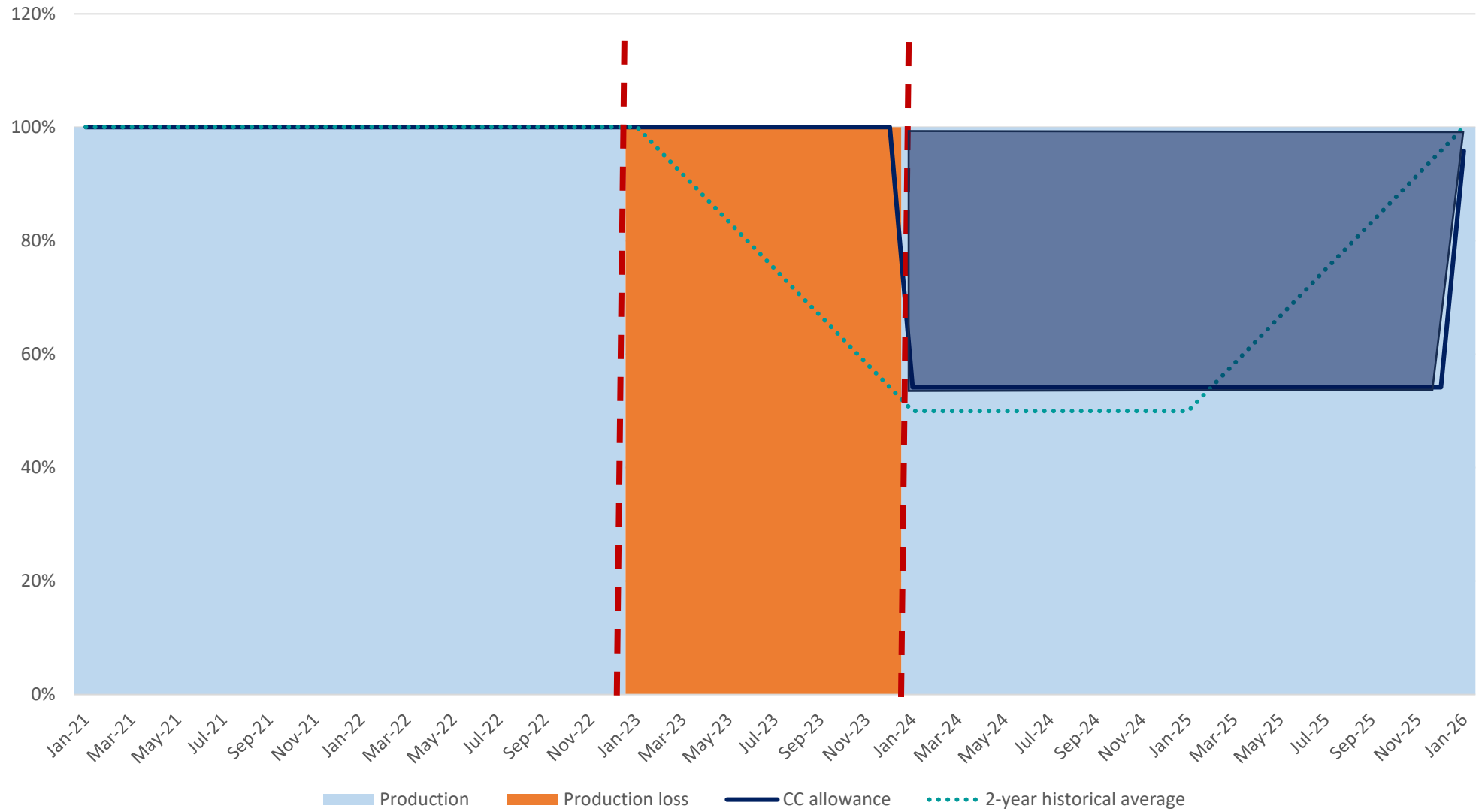
- Is it reasonable that the full loss of future allowances falls to insurers?
 - Production factors
 - MIP
- Should this be proportionate?

Scenario 3

3

- Ethylene plant
- Catastrophic loss
- Maximum Indemnity Period: 12 months
- Loss period: 12 months

Scenario 3



Scenario 3

- BI Loss summary:
 - 12 Month Outage – 1 January 2023 to 31 December 2023.
 - Loss of 1,040,621MT

- Total Gross Loss **€273.4m** when including a CO₂ saving of **€63.8m**

BI Loss Summary

		Total
LOSS OF MARGIN		
Expected Output	MT	1,044,995
Actual Output	MT	4,374
Loss of Ethylene Output	MT	1,040,621
Average Margin per MT	€/ MT	€ 324.00
Loss of Margin	€000s	€ 337,161
CO2 ALLOWANCES SAVING		
Emissions Factor		0.713
CO2 Price	€/ MT	€ 85.95
CO2 Saving	€000s	€ 63,772
GROSS LOSS	€000s	€ 273,389

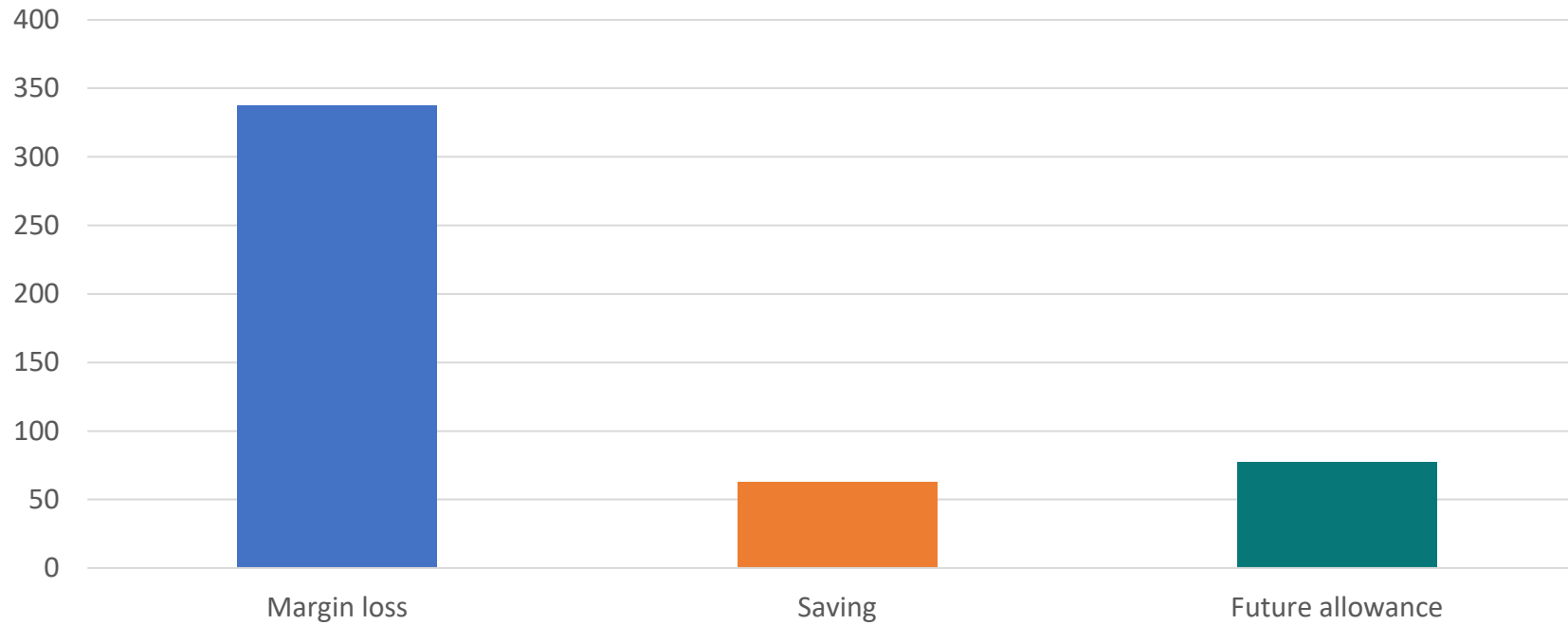
Scenario 3

- Indemnity Period Limited to 12 months – Future Loss **outside** of Indemnity Period
- Insured will miss 85% of HAL in year of incident and subsequent year = **2-years of loss of Free Allowance**
- Loss of Free Allowances in 2024 = **€38.8m**
- Loss of Free Allowances in 2025 = **€36.4m**
- **Total Loss of Free Allowances = €77.2m**

CO2 Future Allowances

LOSS OF FUTURE ALLOWANCES		Year 1 post Loss	Year 2 Post Loss	Total Loss
Historical Activity Level	MT	1,215,632	1,215,632	
85 % HAL threshold	MT	1,033,287	1,033,287	
<u>2 Year Rolling Average to Keep Allowances</u>				
Year 1 Actual	MT	1,099,208	4,374	
Year 2 Required	MT	967,367	2,062,200	
Actual Production	MT	4,374	1,116,030	
Volume Missed HAL	MT	962,992	946,170	
Revised Activity Level	MT	551,791	560,202	
Reduction in Activity Level	MT	663,841	655,430	
Benchmark Emissions Factor		0.681	0.681	
Loss of Allowances	MT	452,076	446,348	898,423
CO2 Price	€/ MT	€ 85.95	€ 85.95	€ 85.95
TOTAL LOSS OF FUTURE ALLOWANCES	€000s	€ 38,856	€ 38,364	€ 77,219

Scenario 3



- Is it reasonable to exclude the future loss based on the MIP?

Coverage of Carbon Credit Allowances



CO2 Allowances are lost in years after minimum requirement of HAL not met



A loss generates a credit for CO2 allowances not used or not needing to be purchased



Typical wording provides cover for the loss of gross profit due to a reduction in turnover



Can a saving be included due to carbon credits not being utilised?



In the subsequent years, there is a loss of gross profit from an increase in variable costs



...but there is not a reduction in turnover.



Does the loss of CO2 allowance fit under this definition of cover?



Questions raised on current claims



Should the loss of Future Free Allowances be covered?



Is it reasonable to take a saving but not cover the future loss?



Is the current policy wording adequate?



How could the policy wording be changed to cover future losses?

Takeaways on Carbon Credits



Major issue for insureds, significant money at stake



Likely an issue for the next 10 years

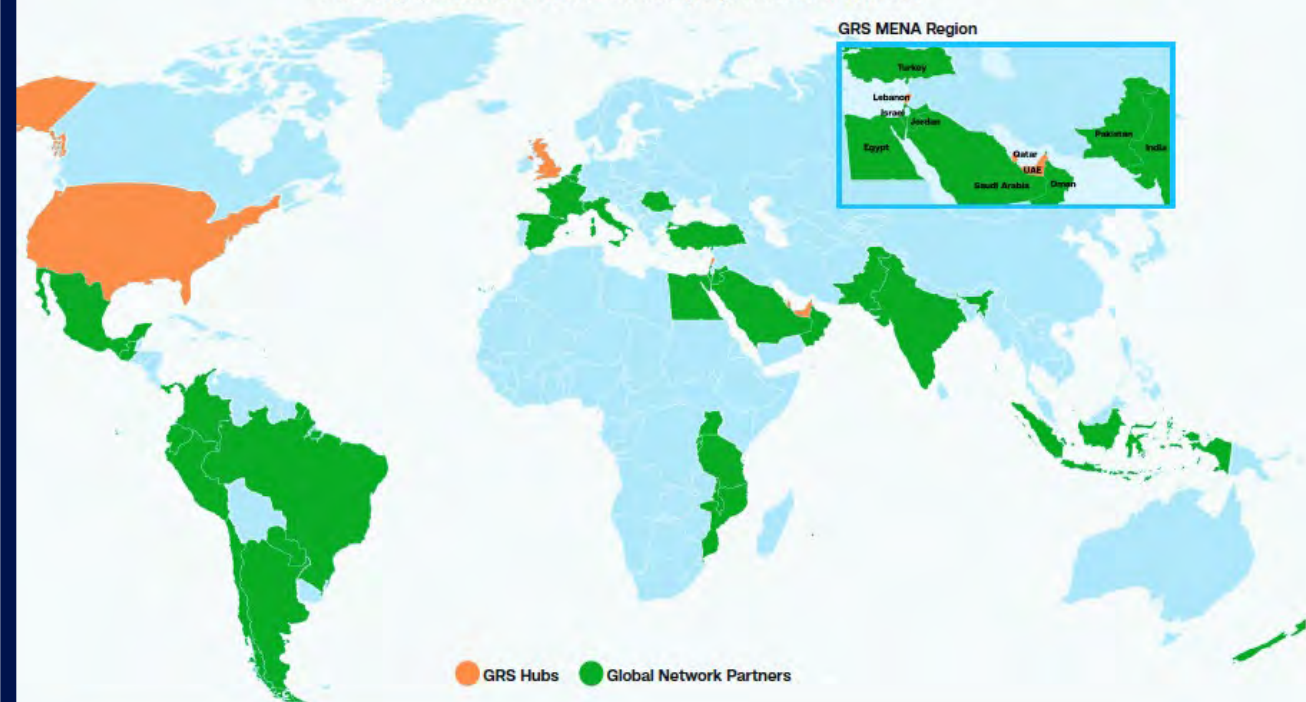


Potential to scale dependent on pricing, plus sector growth



Is there a need for new cover (sub limited)?

5 hubs; 72 offices in our Global Network
Serving the Needs of the Global (Re)Insurance Market



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THANK YOU