Carbon2Chem®

October 9th 2017 | Dr. Markus Oles

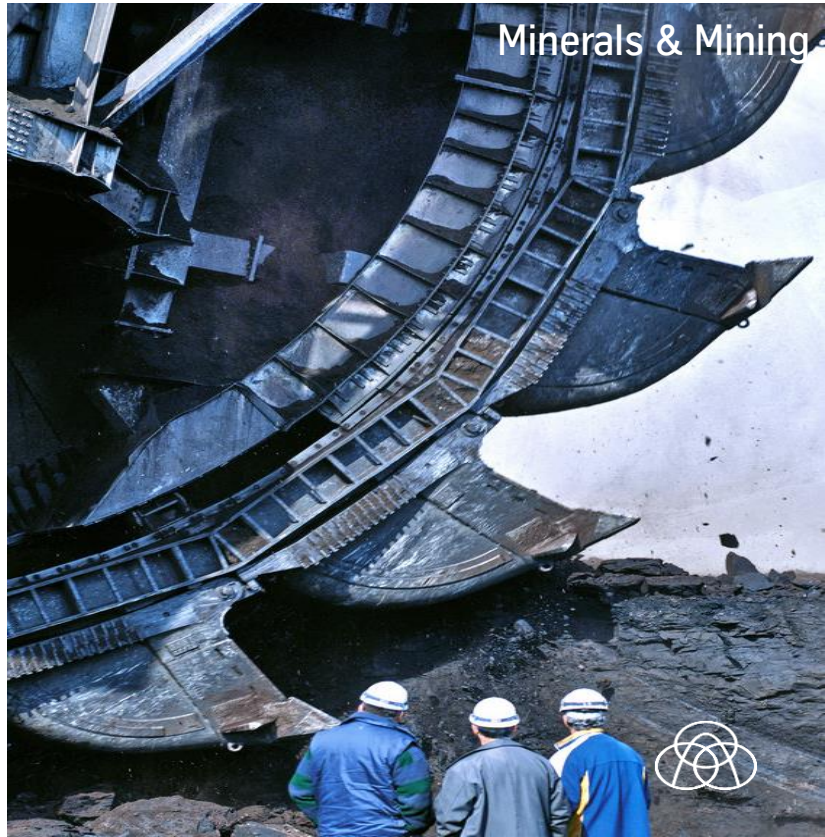
engineering. tomorrow. together.

thyssenkrupp

Working for our customers

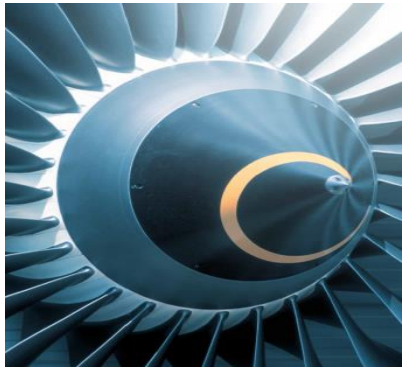
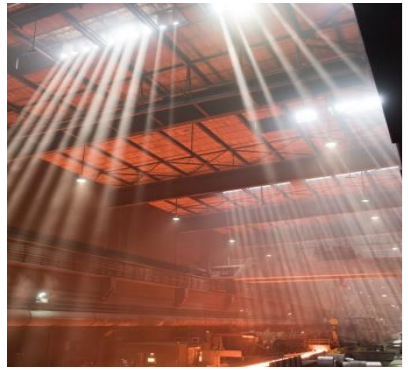
Mastering challenges together

Sector examples



Strong Industrial Company: Our Business Areas

Key indicators – fiscal 2015/2016

Components Technology	Elevator Technology	Industrial Solutions	Materials Services	Steel Europe	Steel Americas[4]
					*Discontinued activity*
Sales [€ mn][1]					
6,807	7,468	5,744	11,886	7,633	1,489
EBIT [€ mn][2]					
335	860	355	128	315	-33
Employees[3]					
30,751	51,426	19,602	19,754	27,559	3,847

1. Before consolidation | 2. Before consolidation/Corporate | 3. Before Corporate | 4. Agreement on sale with Ternium, close of transaction in September 2017

Sustainability is an element of thyssenkrupp's company strategy

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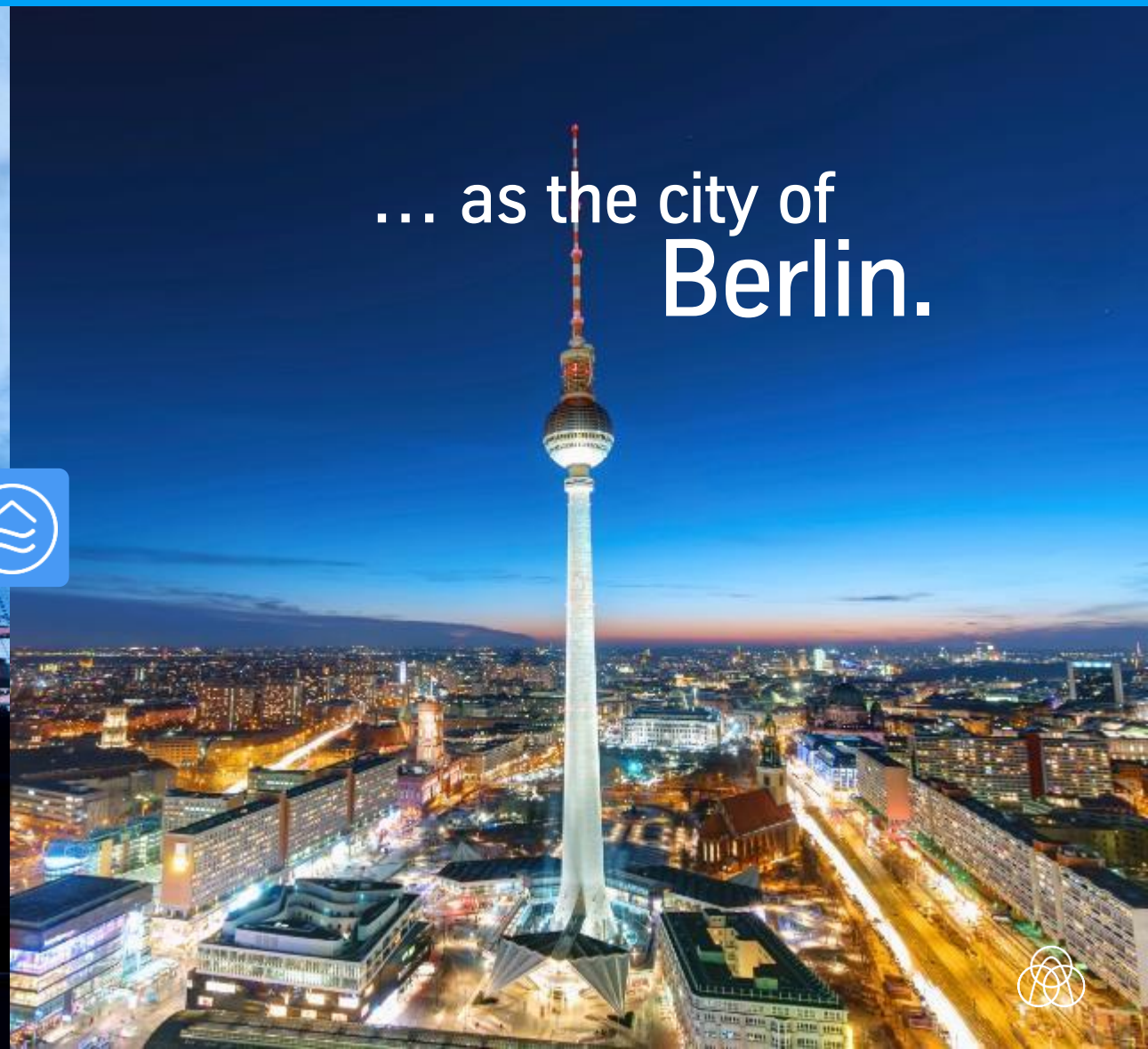
Steel production is an energy intensive Process



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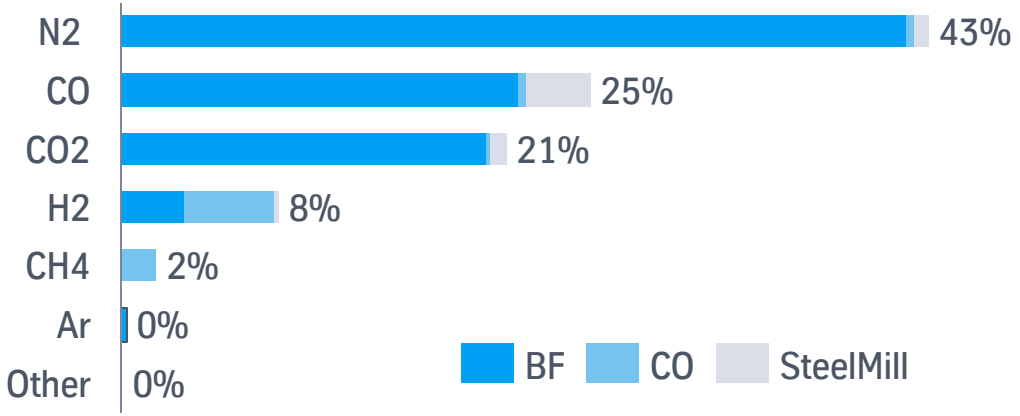
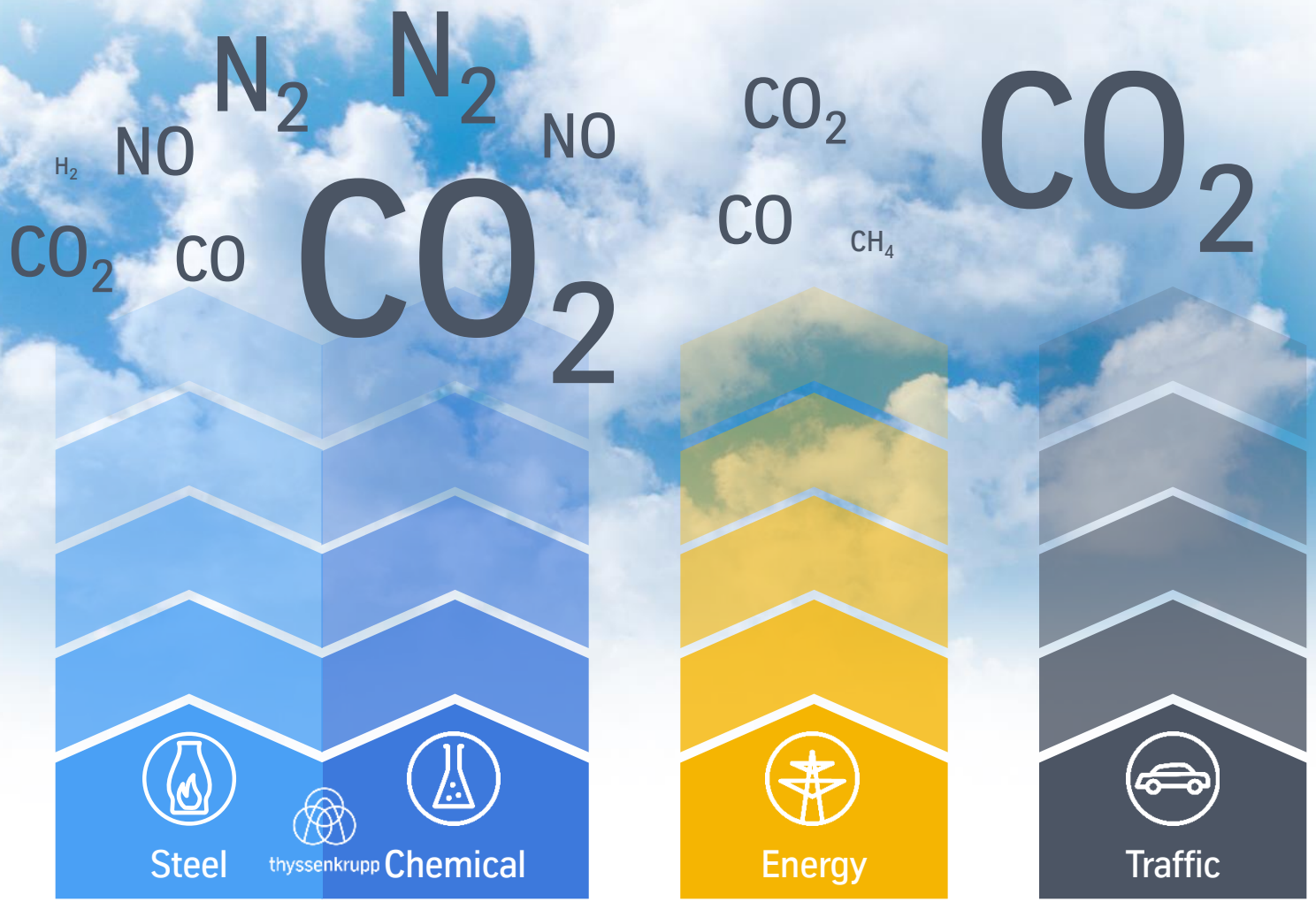
Large amount of Waste Gas are hard to store

~300.000 m³ Gas

2 Mio. Nm³ Waste Gas per hour

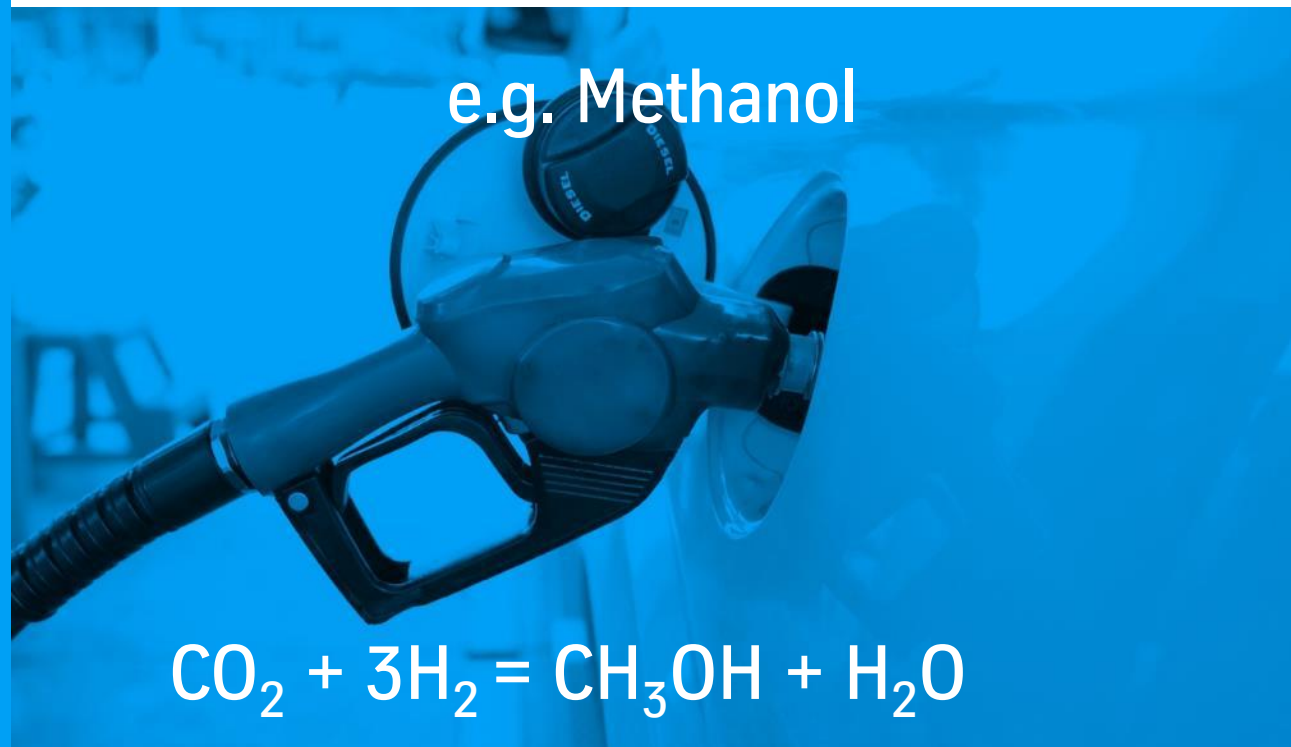


CO_2 only harmful emission or valuable Resource ?

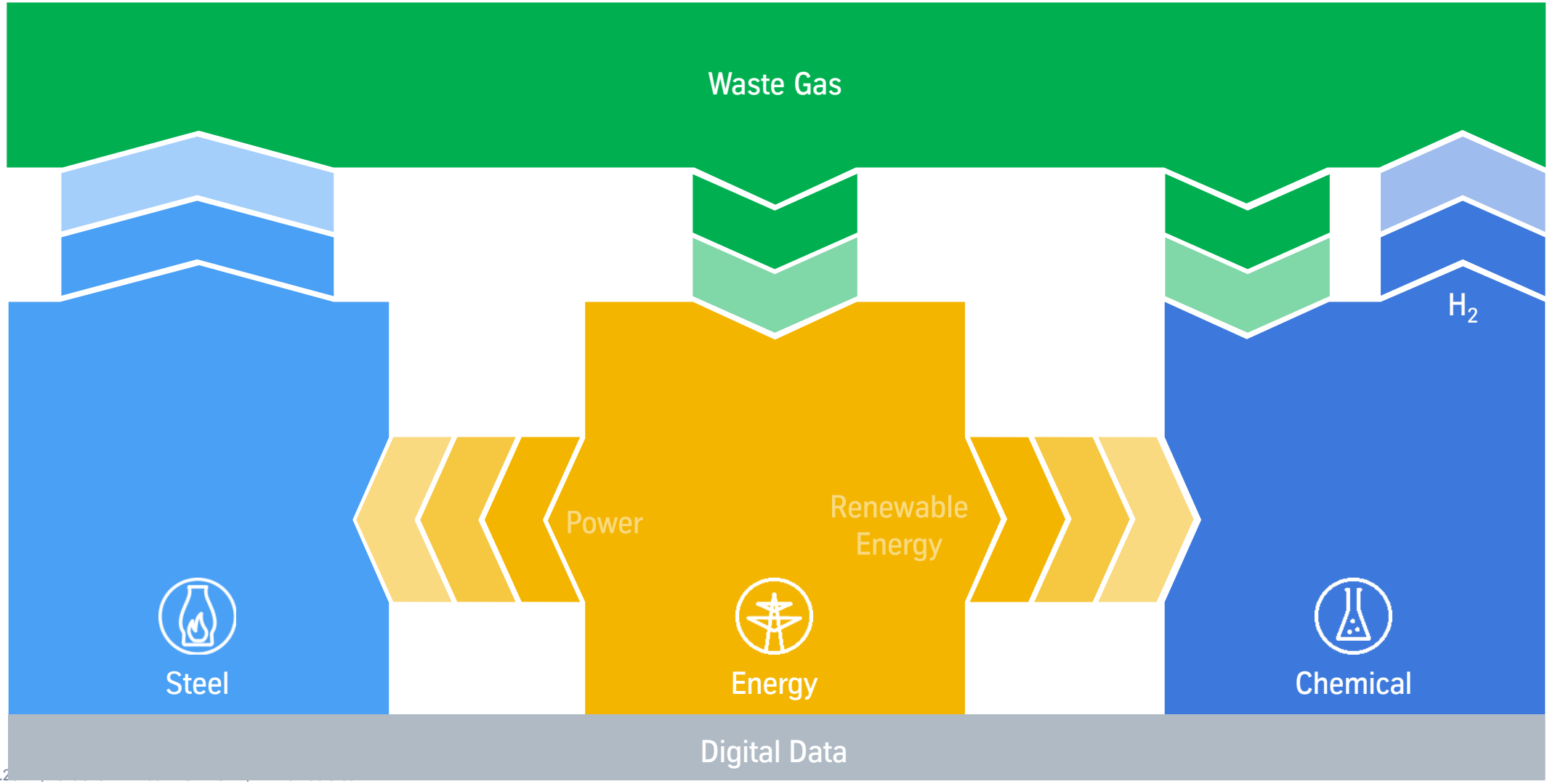


CO_2 as a valuabe recycling resource?

- ~900 Mio. tons of greenhouse gas emissions annually in Germany
- Potential Use for production of Base-Chemicals

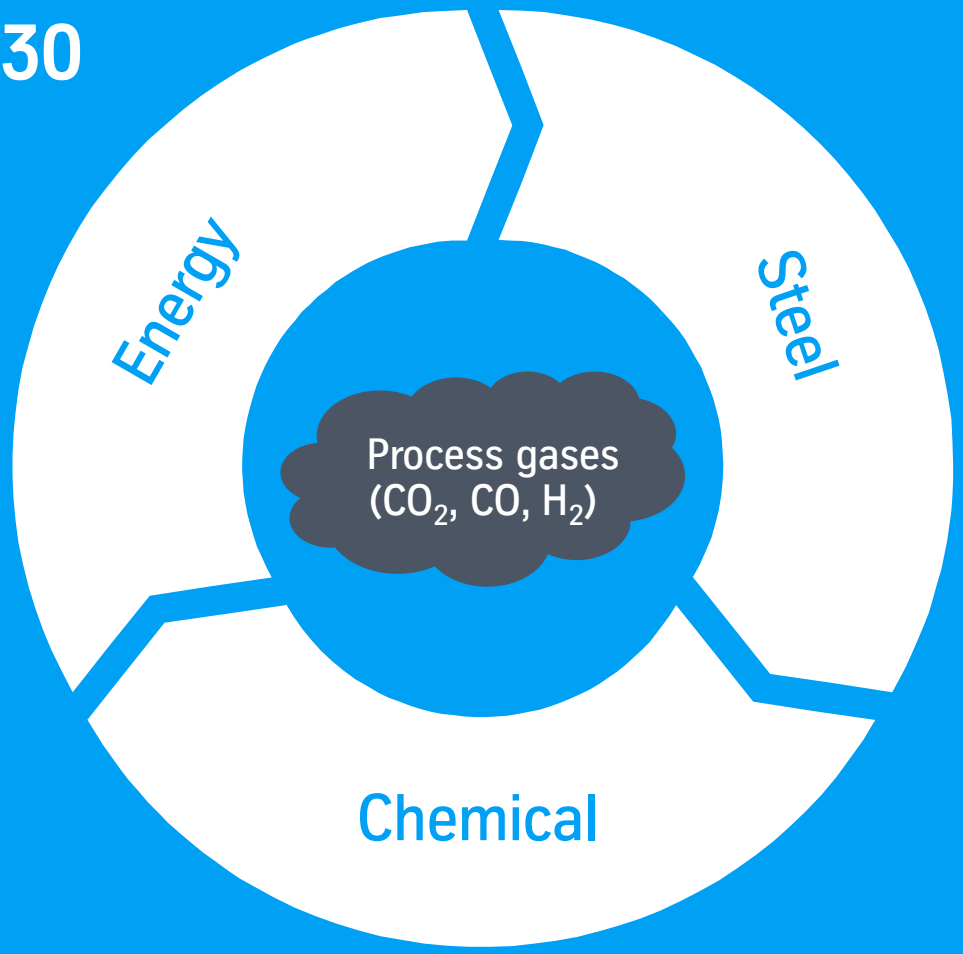


Beside Waste Gas Digital Data will be one of the most important „Resource“ in the future



…or Carbon as raw material for Methanl and Urea Production

Vision for 2030 and beyond



Carbon2Chem®: Project partners and Sub-projects

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L0	System Integration Carbon2Chem®					
Lab	Water electrolysis / network stability	Sustainable methanol production	Gas cleaning / catalysis	Higher alcohols / polyalcohols	Polymers	OME
Technikum						
	L1	L2	L3	L4	L5	L6
	thyssenkrupp MPI-CEC Umsicht Siemens	thyssenkrupp ZBT	AkzoNobel ISE MPI-CEC RUB Umsicht Clariant tk	Linde RUB MPI-CEC Umsicht Clariant tk	EVONIK INDUSTRIES RUB RWTH-ITMC Umsicht tk	covestro MPI-CEC MPI-KOFO RWTH-ITMC RWTH-LTT RWTH-AVT RWTH-CAT	BASF We create chemistry Umsicht KIT-IKFT TU KL VW Eni Linde tk

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