



Federal Ministry
for Economic Affairs
and Climate Action

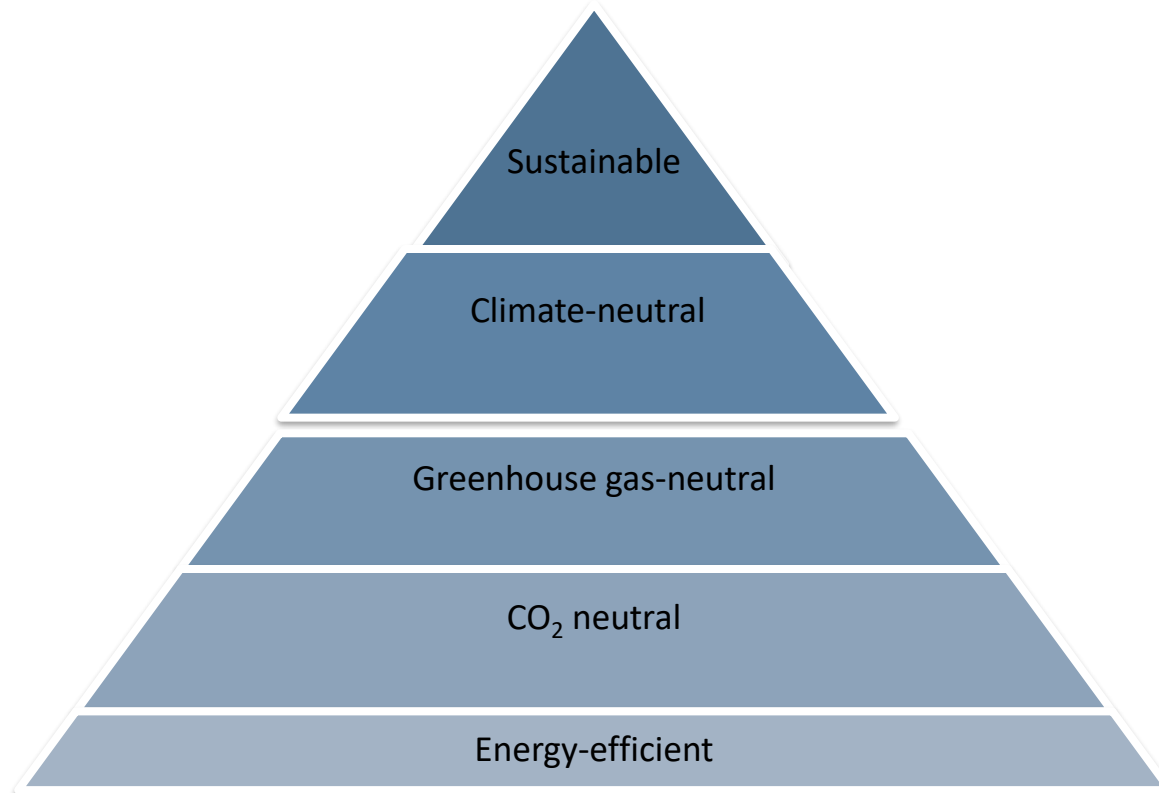
Climate-neutral construction and refurbishment - best practice examples from Germany

Manuel Palz – Unit IIC1

Content

1. Terms and definition
2. Selected trends
3. Federal Climate Change Act
4. Three examples from Germany

1. Terms and definitions



2. Selected trends

- ❖ Building materials
- ❖ Sufficiency
- ❖ Digitalisation & Automation
- ❖ Low Tech
- ❖ Neighbourhood / quarters
- ❖ Serial building & refurbishment
- ❖ Resilience

3. Federal Climate Change Act 2021

- ❖ CCA anchored ambitions targets in a law for the first time
- ❖ The aim is to reduce emissions by 65 percent of 1990 levels by 2030
- ❖ Impact on the CO2 reduction targets in individual sectors including energy, transport and the building sector
- ❖ By 2045 Germany is to become greenhouse gas neutral
- ❖ From 2050 onward, Germany aims to have a negative emissions balance, meaning that it would then remove more greenhouse gases using natural sinks than it emits.

3. Federal Climate Change Act 2021

- ❖ CCA anchored ambitious targets in a law for the first time
- ❖ The aim is to reduce emissions by 65 percent of 1990 levels by 2030
- ❖ Impact on the CO2 reduction targets in individual sectors including energy, transport and the building sector
- ❖ By 2045 Germany is to become greenhouse gas neutral
- ❖ From 2050 onward, Germany aims to have a negative emissions balance, meaning that it would then remove more greenhouse gases using natural sinks than it emits.

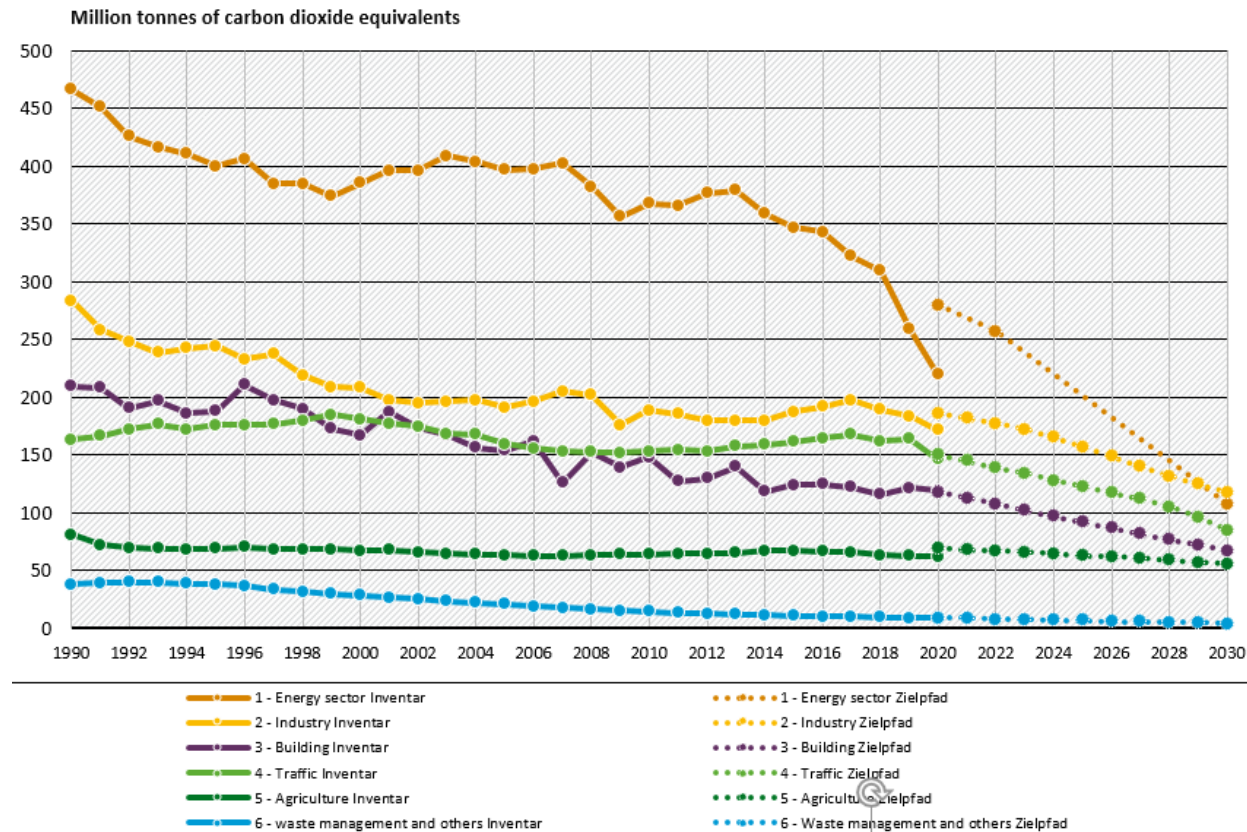
3. Federal Climate Change Act 2021

Climate Change Act: Emissions of the fields of action included in the target definition for 2020 and 2030

	1990	2019	2020	Emission caps 2020	Emission caps 2030	
	in million tonnes of CO2 equivalent	in million tonnes of CO2 equivalent	in million tonnes of CO2 equivalent	in million tonnes of CO2 equivalent	in million tonnes of CO2 equivalent	Reduction in per cent compared to 1990
Fields of action						
1- Energy sector	466	259	220	280	108	77%
2 - Industry	284	183	172	186	118	58%
3 - Buildings	210	121	119	118	67	68%
4 - Traffic	163	164	146	150	85	48%
5 - Agriculture	81	63	62	70	56	31%
6 - Waste management and other	38	9	9	9	4	89%
Total	1242	800	729	813	438	65%

3. Federal Climate Change Act 2021

Development and target achievement of greenhouse gas emissions in germany
in the delimitation of the sectors of the Federal Climate Protection Act



4. The Cradle

The wooden hybrid office building is a **circular pilot project** and, with its sustainability concept based on the **cradle-to-cradle principle**, stands for innovative approaches and the future of construction

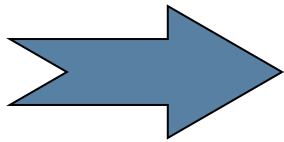


4. The Cradle – basic facts

- ❖ Leasable area approx. 6,600 sqm for office and approx. 600 sqm catering; total site area 1,200 sqm
- ❖ Construction period 2020 – 2023
- ❖ KfW Efficiency House 55
- ❖ Photovoltaics
- ❖ Used materials:
 - ❖ Waterproof concrete
 - ❖ Wooden elements

4. The Cradle – achievements

- ❖ A total of 1,152 tonnes of CO₂ are saved by substituting reinforced concrete with wood
- ❖ 97.7 percent of The Cradle's materials can be returned to the material cycle thanks to their properties
- ❖ The Cradle registered as first pilot project in Germany on the Madaster platform



Buildings mapped as valuable raw material depots

4. Energiesprong – Pilot project Hameln

Before the **serial refurbishment**, Hameln's Kuckuck neighbourhood was characterised by its poor structural condition and a high vacancy rate. Now it is considered an Energiesprong showcase project.



4. Energiesprong - basic facts

- ❖ total of 612 sqm
- ❖ Construction period 11/2019 – 02/2022
- ❖ net-zero standard
- ❖ larch wood casing inclusive of insulation
- ❖ Insulated roof elements with photovoltaic modules
- ❖ Heat pump and heat accumulator

4. Energiesprong - achievements

- ❖ Dilapidated, vacant apartment buildings have been turned into 612 m² of attractive, affordable and sustainable housing
- ❖ Proof that it is technically possible to carry out serial refurbishment from the single-family house to the multi-family house sector.
- ❖ Buildings in the worst energy efficiency class can be brought up to NetZero standard with a serial refurbishment according to the Energiesprong principle

4. Quartier – CampusRO

Rosenheim's largest timber construction housing project **combines sustainability and social aspects** - and meets architectural standards.



© Sigurd Steinprinz, Düsseldorf

4. CampusRO – basic facts

- ❖ Construction period 2020 - 2022
- ❖ KfW 40 plus
- ❖ Prefabricated wooden panel construction
- ❖ Photovoltaic system installed on the roofs with battery storage (70 % own power supply)

4. Campus RO - achievements

- ❖ By working with prefabricated wooden panel elements, the construction time could be significantly reduced
- ❖ By using wood up to 1,250 tonnes CO₂ are saved
- ❖ The energy supply is 70 percent self-supplied, generated by the photovoltaic system with battery storage located on the roofs.
- ❖ Rainwater is kept on the property for as long as possible by means of roof surfaces, green courtyard areas and underground infiltration trenches

Thank you very much for your attention

Manuel Palz

Unit IIC1 - General issues of energy and climate action in the buildings sector, strategies and buildings technologies

Contact:

Manuel.palz@bmwk.bund.de