

# Climate Policy in the EU

From the EU to the National Level

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**EU and US Climate Change Mitigation**

March 17<sup>th</sup>, 2022

# Austrian Institute of Economic Research

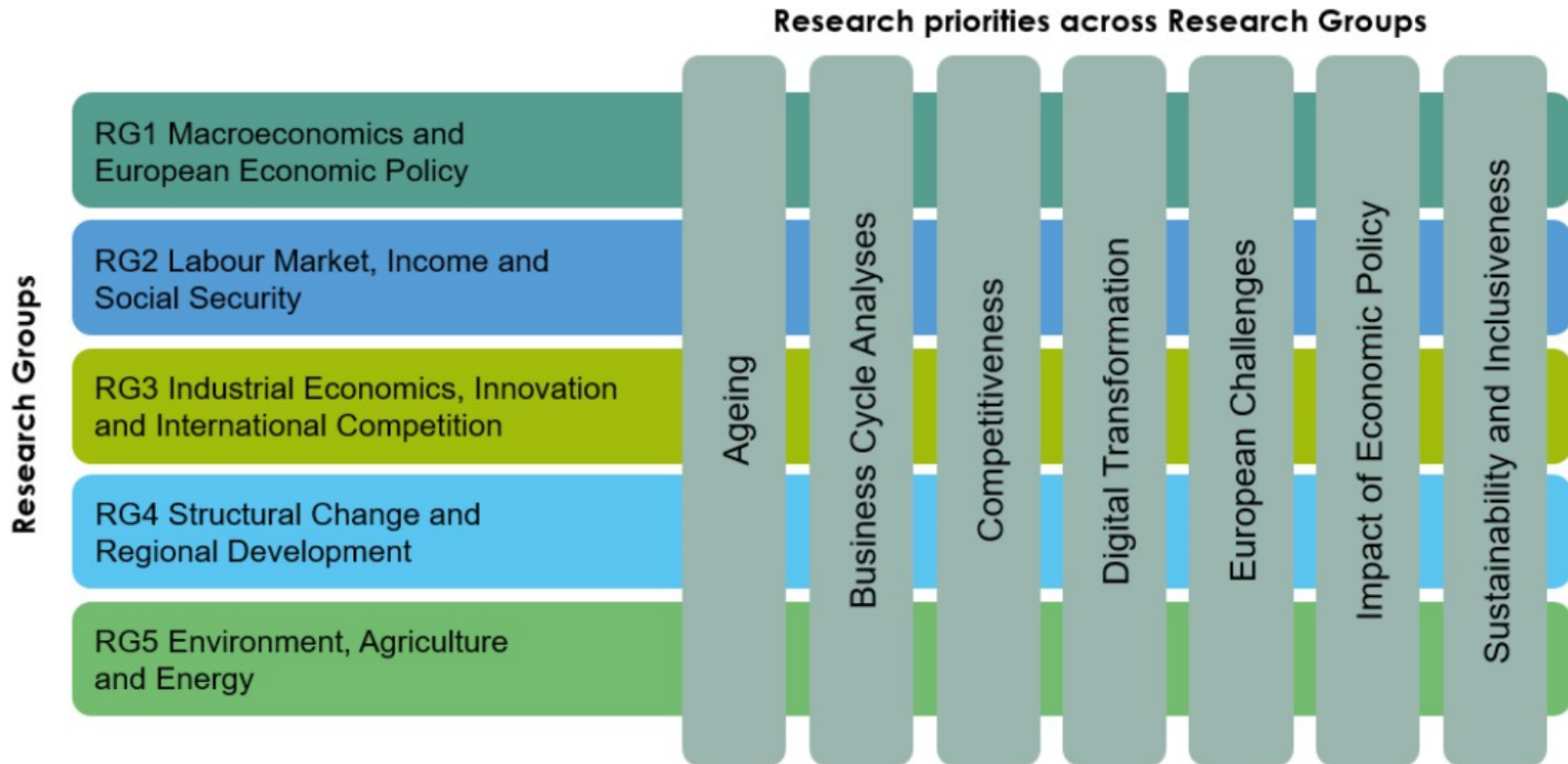
## Österreichisches Institut für Wirtschaftsforschung (WIFO)

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- WIFO is a independent non-profit research institute
- WIFO is Austria's leading institute for applied empirical economic research
- WIFO's mission is to "build a bridge between basic academic research and policy in order to contribute to tackling socio-economic challenges and to create sound foundations for decisions in business and society"
- 5 Research Groups ("Forschungsbereiche") + Service Divisions (e.g. data science, business surveys, communication,...)
- Employees (2021): 100 FTE (57 researchers / 24 research assistants / 20 admin)

# Austrian Institute of Economic Research

## Österreichisches Institut für Wirtschaftsforschung (WIFO)



# Outline

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- Background: Global Climate Targets
- Energy and Climate Policy Targets of the EU
- EU Climate Policy-making
  - Procedural Aspects
  - Overview of the "Fit-for-55" Package
  - Specific policies
    - Effort Sharing
    - Support of Renewable Energy Sources (RES)
    - Carbon Pricing (Second Part)

# Global Climate Targets

## Kyoto Protocol (1997)

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- Main target (Article 2):  
Reduce the onset of global warming by reducing greenhouse gas concentrations in the atmosphere to *"a level that would prevent dangerous anthropogenic interference with the climate system"*
- Binding emission reduction targets
- Average GHG emission reduction for Annex I group:  
-5.2% in the period 2008-2012 (compared to base year)
- EU committed to a GHG emission reduction of -8%

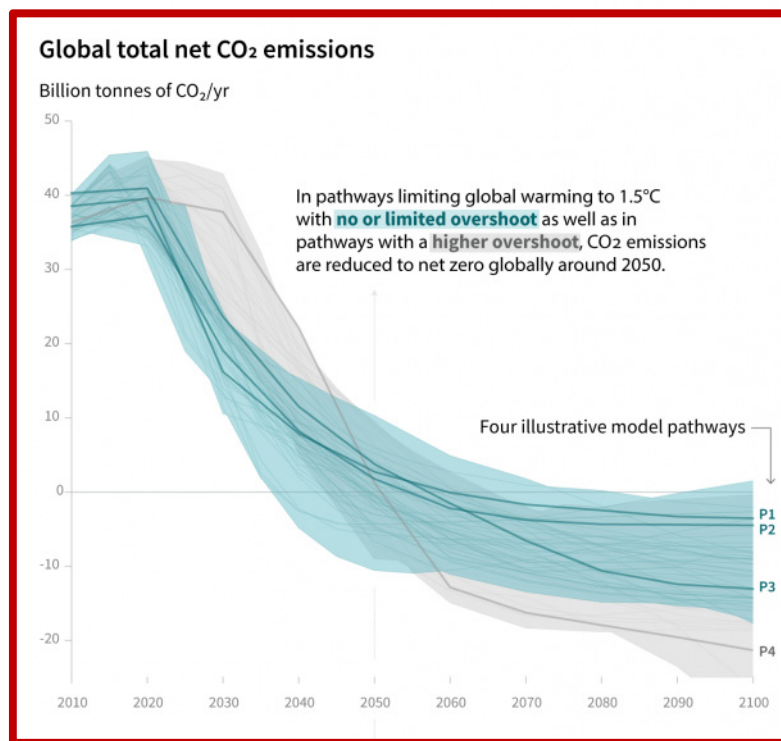
# Global Climate Targets

## Paris Agreement (2015)

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- Main targets (Article 2):
  - Hold the increase in global average temperature well below 2°C above pre-industrial levels and pursue efforts limit it to 1.5°C
  - Increase the ability to adapt to the adverse impacts of climate change and foster climate resilience and low GHG emissions development
  - Make finance flows consistent with a pathway towards low GHG emissions and climate-resilient development
- Countries prepare emission reduction plans (NDCs – nationally determined contributions) which should increase in ambition

# Emission Pathways Compatible with 1.5°C



## Timing of net zero CO<sub>2</sub>

Line widths depict the 5-95th percentile and the 25-75th percentile of scenarios

Pathways limiting global warming to 1.5°C with **no or limited overshoot**

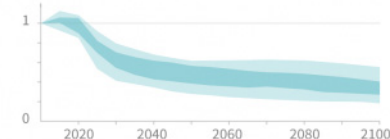
Pathways with **higher overshoot**

Pathways limiting global warming below 2°C  
(Not shown above)

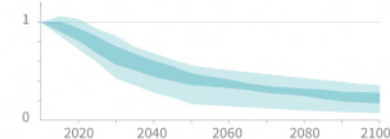
## Non-CO<sub>2</sub> emissions relative to 2010

Emissions of non-CO<sub>2</sub> forcers are also reduced or limited in pathways limiting global warming to 1.5°C with **no or limited overshoot**, but they do not reach zero globally.

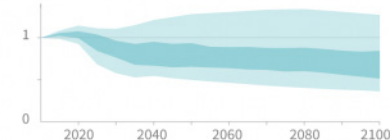
### Methane emissions



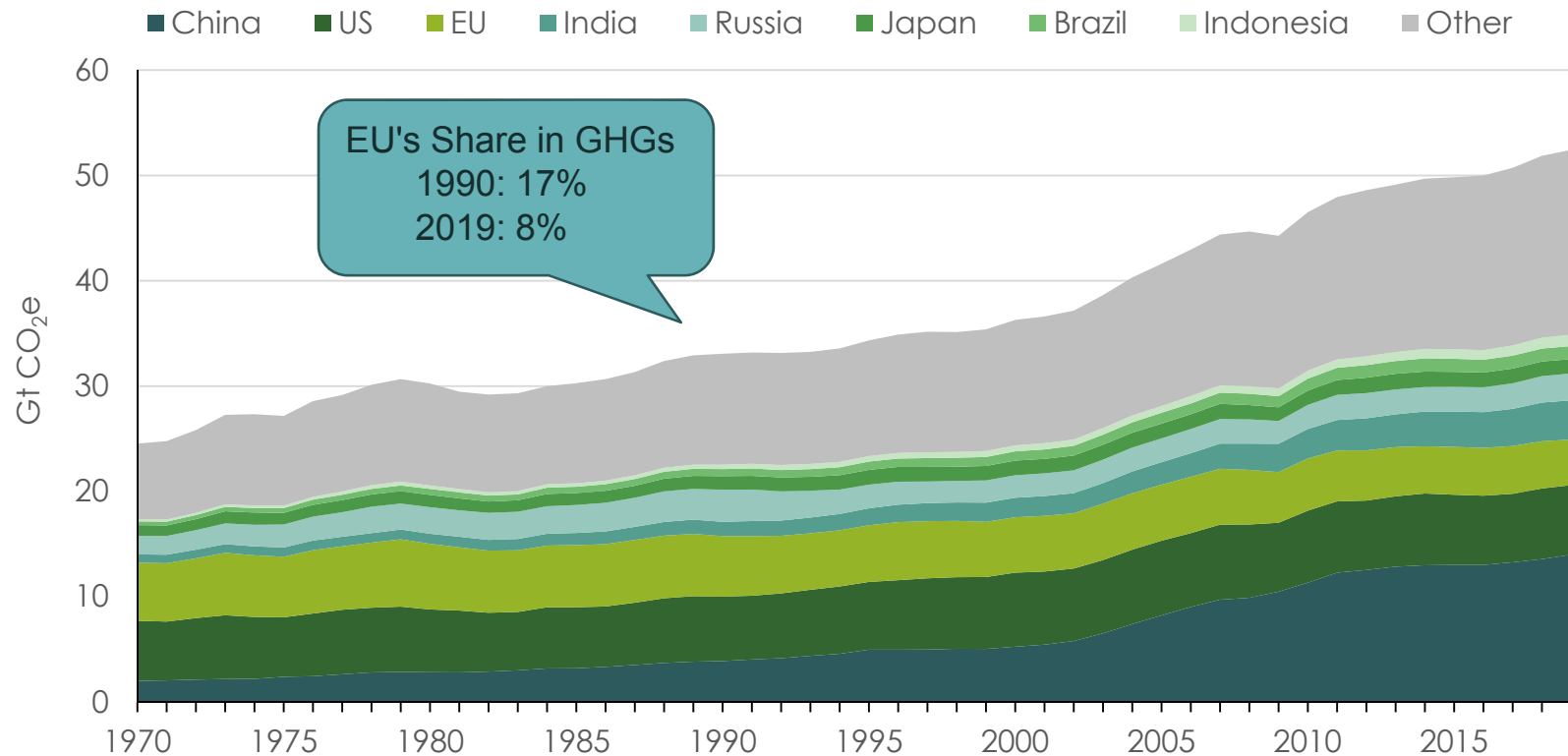
### Black carbon emissions



### Nitrous oxide emissions



# Development of Global GHG Emissions by Country (I)

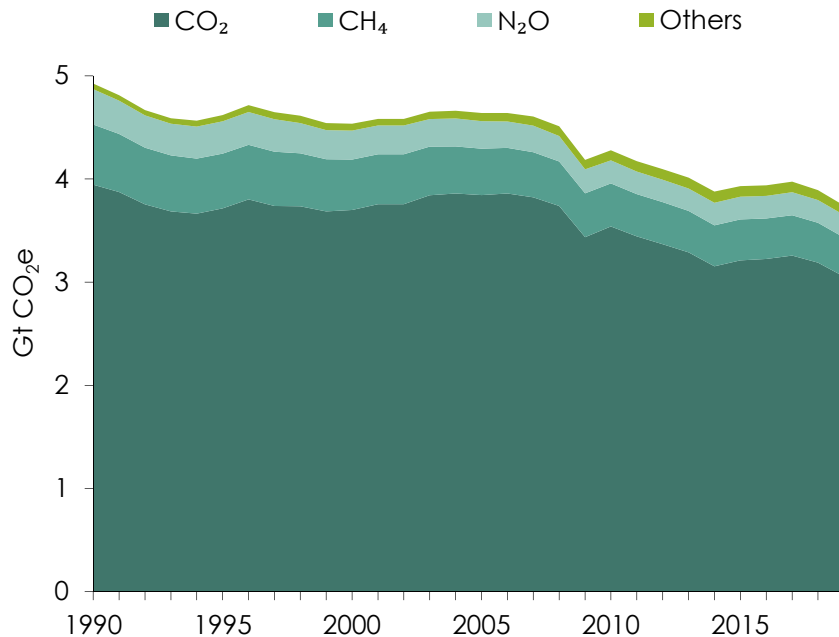


Source: <https://www.pbl.nl/en/trends-in-global-co2-emissions>

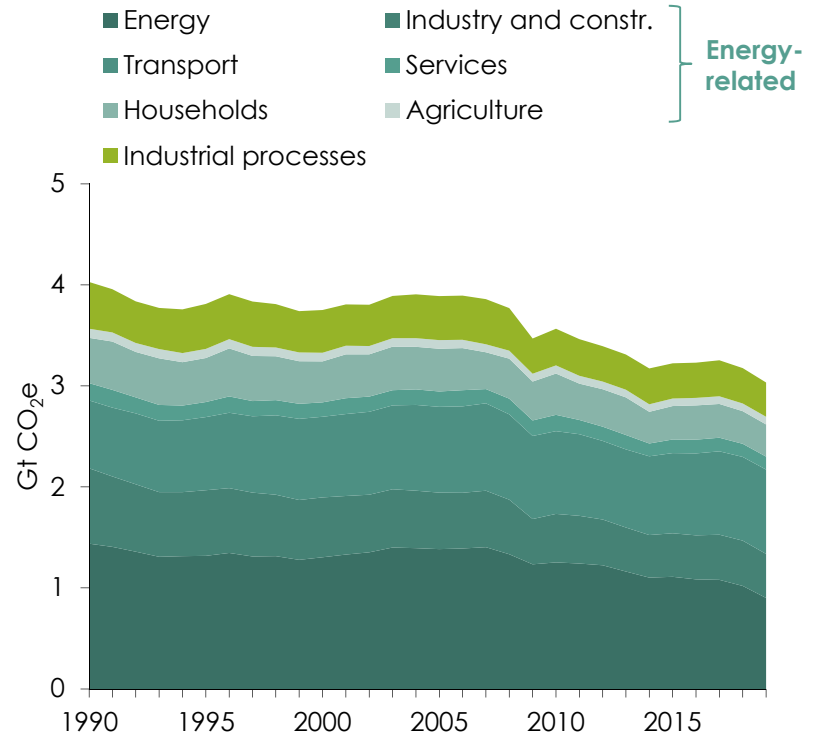


# Development of GHG/CO<sub>2</sub> Emissions in the EU

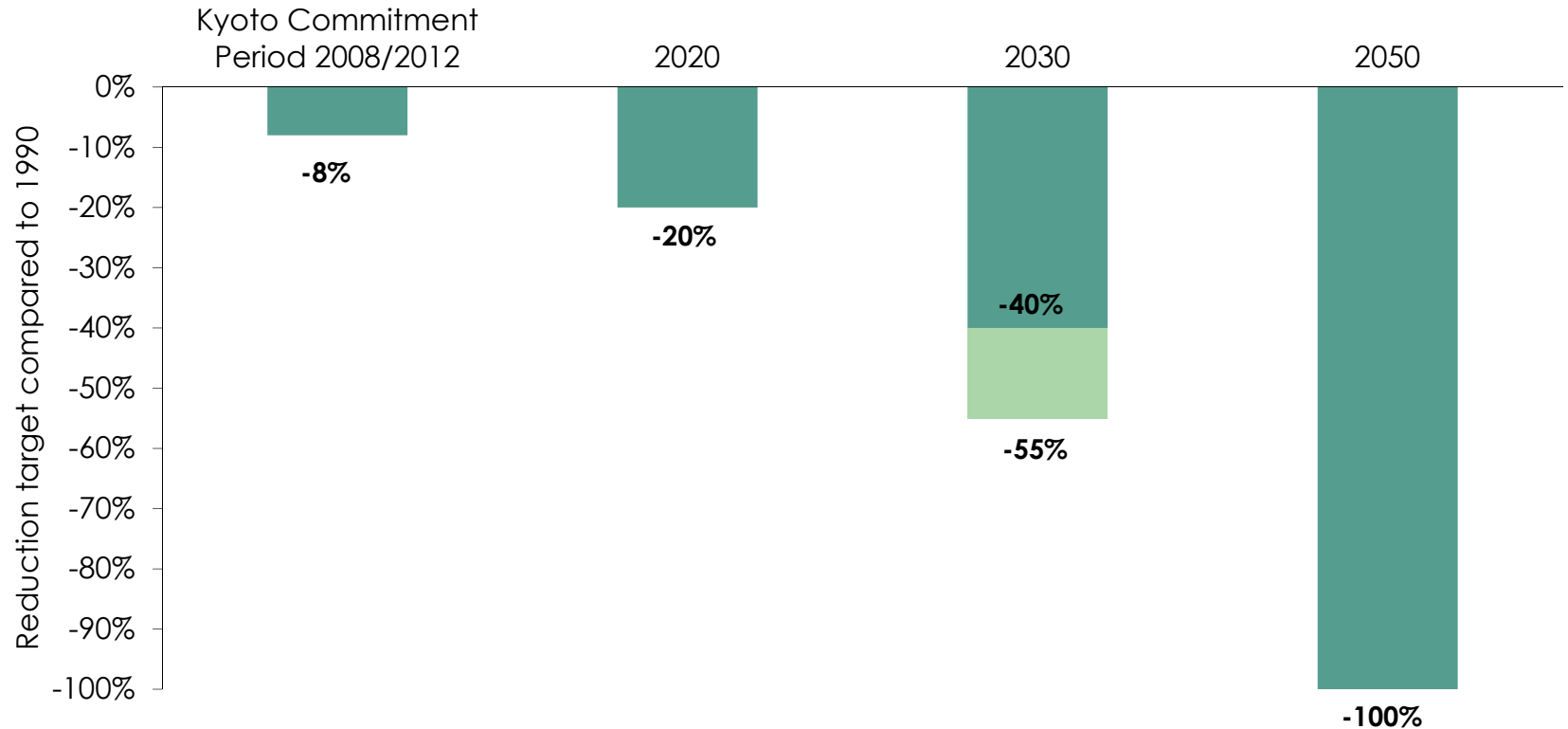
■ GHG Emissions by Gas



■ CO<sub>2</sub> Emissions by Sector



# Emission Reduction Targets of the EU



# The EU's Approach to Climate and Energy Policy

- Climate and energy policy are highly interrelated
- Since 2008/2009 the EU, the EU is developing "climate and energy" packages dealing simultaneously with the challenges of energy and climate policy
  - "20 20 by 2020 - Europe's climate change opportunity"
    - European Commission (2008). 20 20 by 2020. Europe's climate change opportunity. COM(2008) 30 final. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52008DC0030&from=EN>
  - Energy Union Package
    - European Commission (2015). A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy. COM(2015) 80 final. [https://eur-lex.europa.eu/resource.html?uri=cellar:1bd46c90-bdd4-11e4-bbe1-01aa75ed71a1.0001.03/DOC\\_1&format=PDF](https://eur-lex.europa.eu/resource.html?uri=cellar:1bd46c90-bdd4-11e4-bbe1-01aa75ed71a1.0001.03/DOC_1&format=PDF)
  - "Fit for 55" Proposal
    - European Commission (2021). 'Fit for 55': Delivering the EU's 2030 Climate Target on the way to climate neutrality. COM(2021) 550 final. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021DC0550>

# The "Fit for 55" Package (I)

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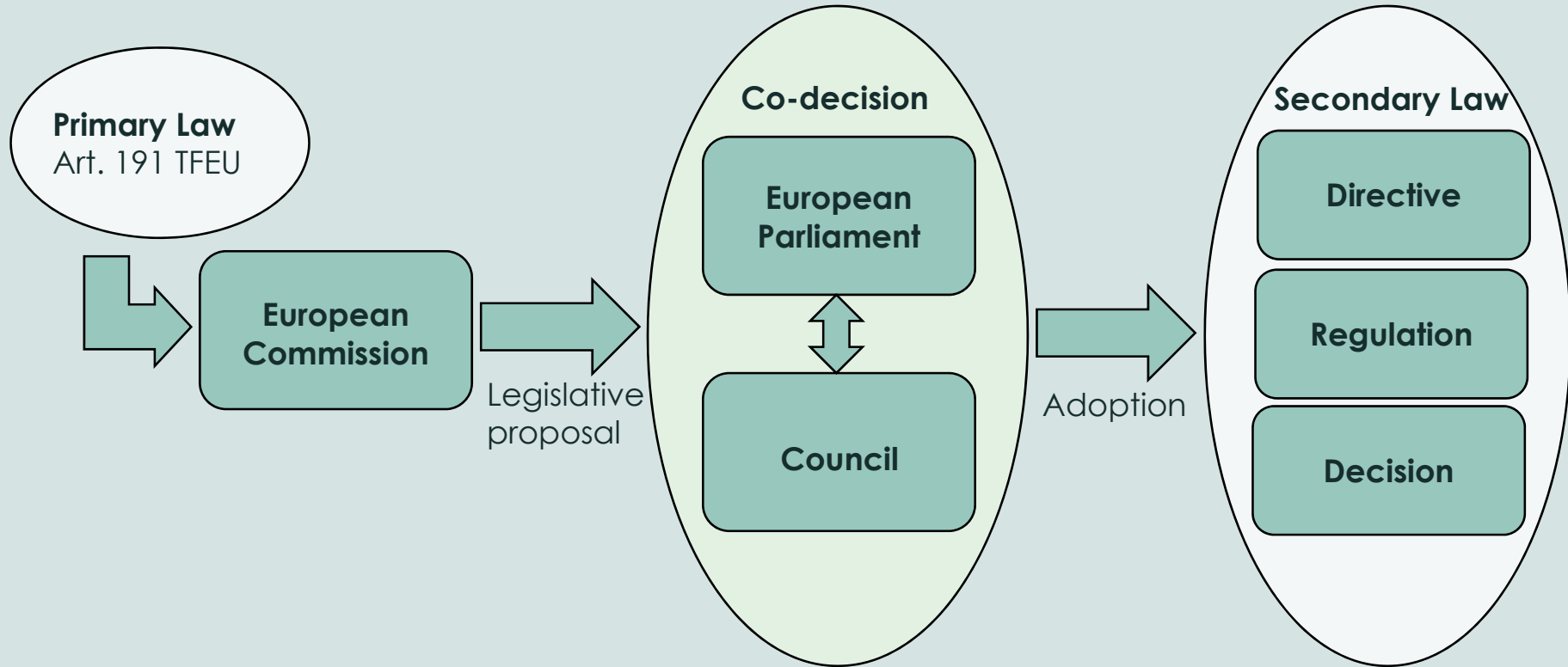
- Set of inter-connected proposals
- Proposed by the EC in July 2021
- Overarching goal: Ensuring a fair, competitive and green transition by 2030 and beyond
- Mix of revisions of existing legislative documents and new initiatives

# The "Fit for 55" Package (II)

Pricing	Targets	Rules
<ul style="list-style-type: none"><li>• Revision of the EU ETS Directive<ul style="list-style-type: none"><li>• Stronger EU ETS including maritime transport</li><li>• New, separate ETS (ETS2) for road transport and buildings</li></ul></li><li>• Regulation establishing a Carbon Border Adjustment Mechanism</li><li>• Updated Energy Taxation Directive</li></ul>	<ul style="list-style-type: none"><li>• Updated Effort Sharing Regulation</li><li>• Updated Land Use Land Use Change and Forestry Regulation</li><li>• Updated Renewable Energy Directive</li><li>• Updated Energy Efficiency Directive</li></ul>	<ul style="list-style-type: none"><li>• Revision of the regulation on CO<sub>2</sub> performance for cars &amp; vans</li><li>• Regulation on new infrastructure for alternative fuels</li><li>• Regulation on more sustainable aviation fuels (ReFuelEU)</li><li>• Regulation on cleaner maritime fuels (FuelEU)</li></ul>
Support measures		
<ul style="list-style-type: none"><li>• Using revenues and regulations to promote innovation, build solidarity and mitigate impacts for the vulnerable, notably through the new Social Climate Fund and enhanced Modernisation and Innovation Funds.</li></ul>		

Source: Adapted from European Commission COM(2021) 550.

# EU (Environmental) Law Making



# Types of legislation

## ■ Directives

- A "directive" sets out a goal that all EU MS must achieve
- It is up to the individual MS to devise their own laws to reach these goals
  - MS must adopt laws, regulations and procedures to give effect to the directive
- Directives are most frequently used in EU environmental policy-making

## ■ Regulations

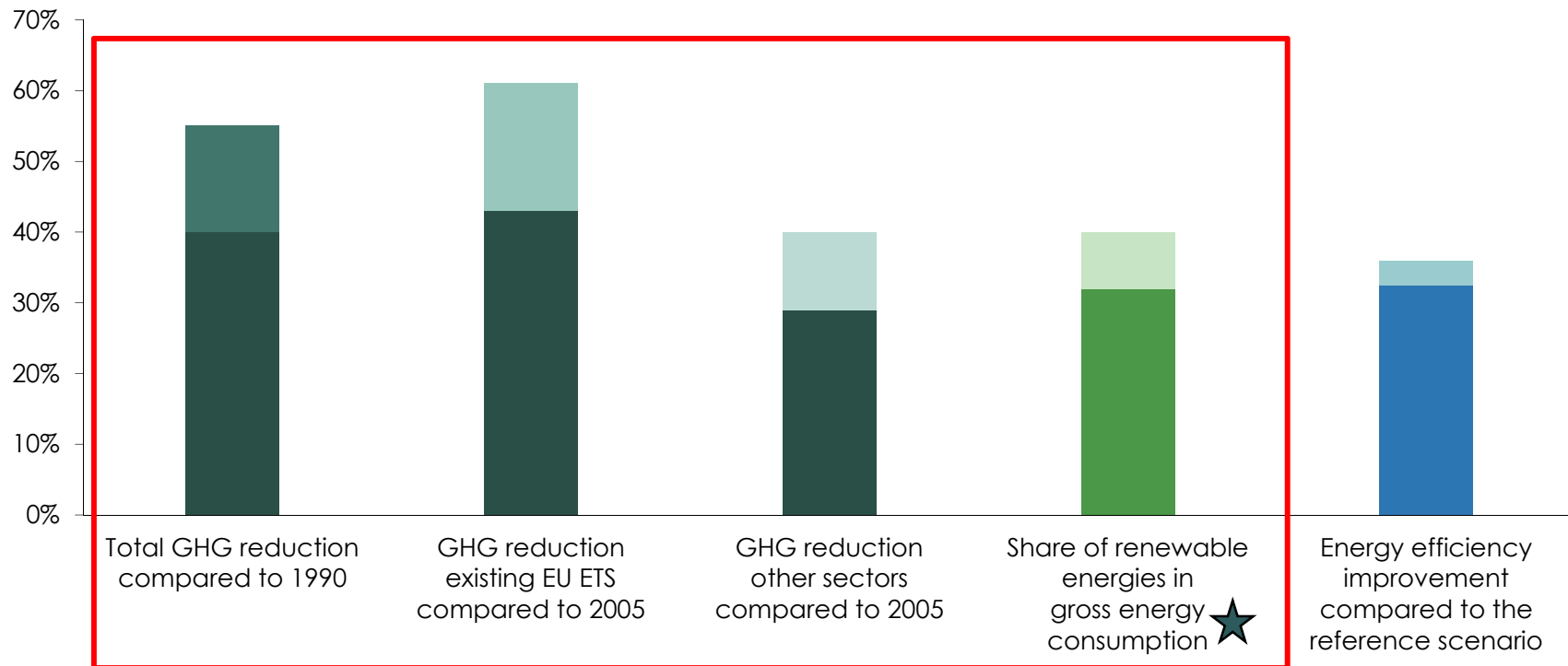
- A "regulation" is a binding legislative act
- It must be applied in its entirety across the EU – used when a unified system is needed
- MS must repeal conflicting national provisions

## ■ Decisions

- A "decision" is binding on those to whom it is addressed and is directly applicable
- It is focused in scope and application – specifies detailed requirements

# 2030 Targets

## Current Legislation vs. "Fit for 55" Package



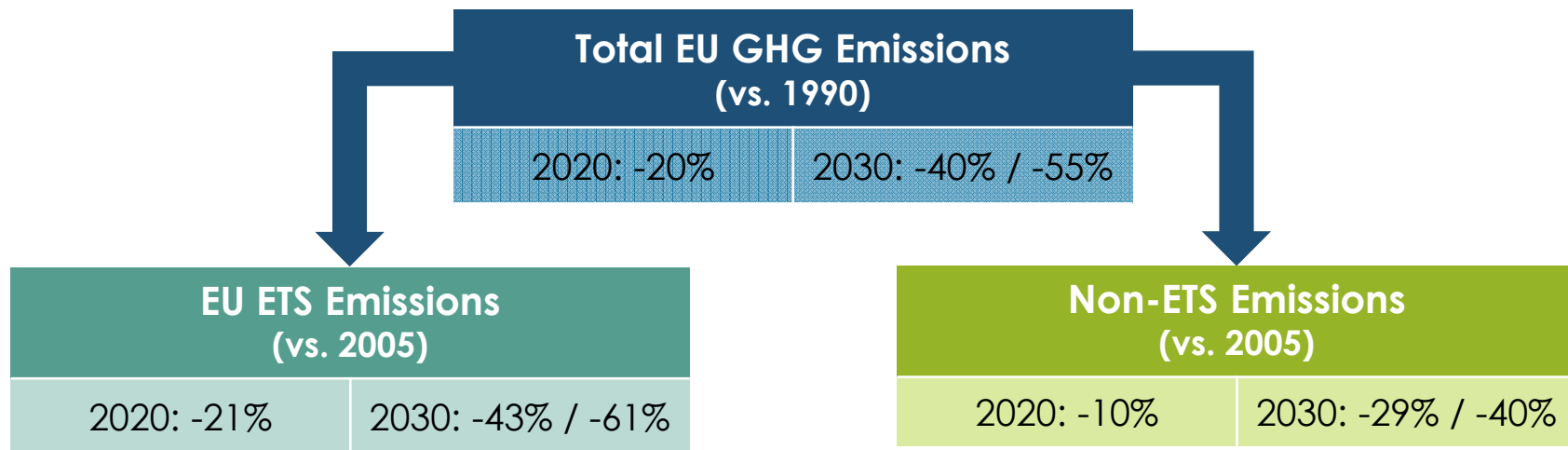
Source: European Commission (2020, 2021).



# Calculation of the Share of Renewable Energy Sources

- The shares of renewable energy in gross final energy consumption are calculated as the sum of final energy consumption of renewable energy and the electricity and heat production from renewable energy sources divided by the sum of total final energy consumption, distribution losses and own consumption of the energy sector

# A Closer Look at the EU's Emission Reduction Targets



Regulated at  
EU level

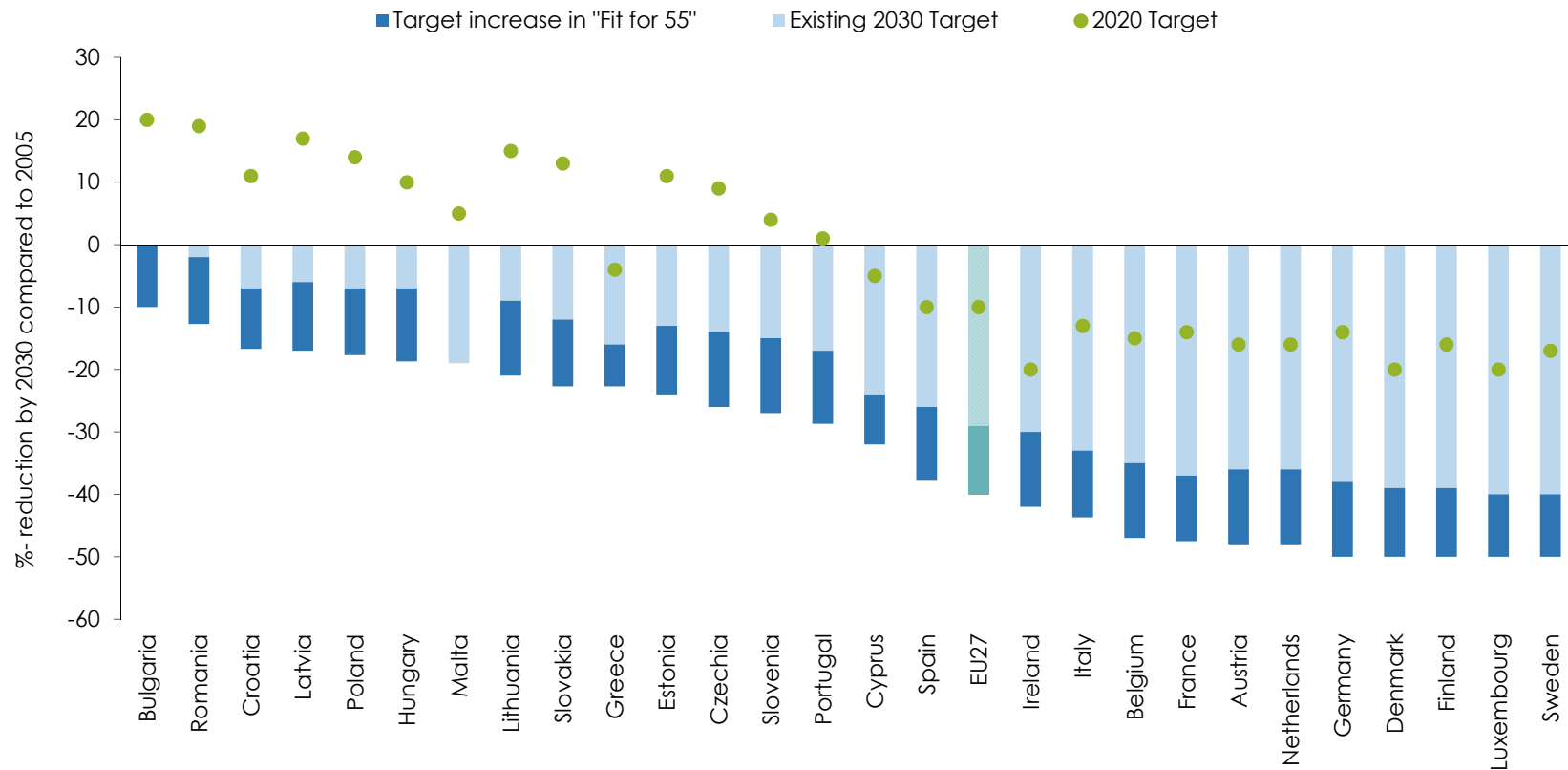
Regulated partly at EU,  
partly at national level

# Effort Sharing Regulation

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- Definition of binding emission reduction targets for the individual MS regarding sectors not covered by the EU Emission Trading Scheme (Non-ETS-Sectors)
- In total, emissions in Non-ETS sectors should be reduced by 2030
  - by 29% compared to 1990 (current legislation)
  - by 40% compared to 1990 ("Fit for 55" proposal)
- MS targets range between 10% (Bulgaria) and 40/50% (Germany, Denmark, Finland, Luxembourg, Sweden)
- Choice of concrete policy instruments is with the MS
- But: EU climate and energy policy also affects these sectors (e.g. RES targets for heating and cooling, emission standards for vehicles)

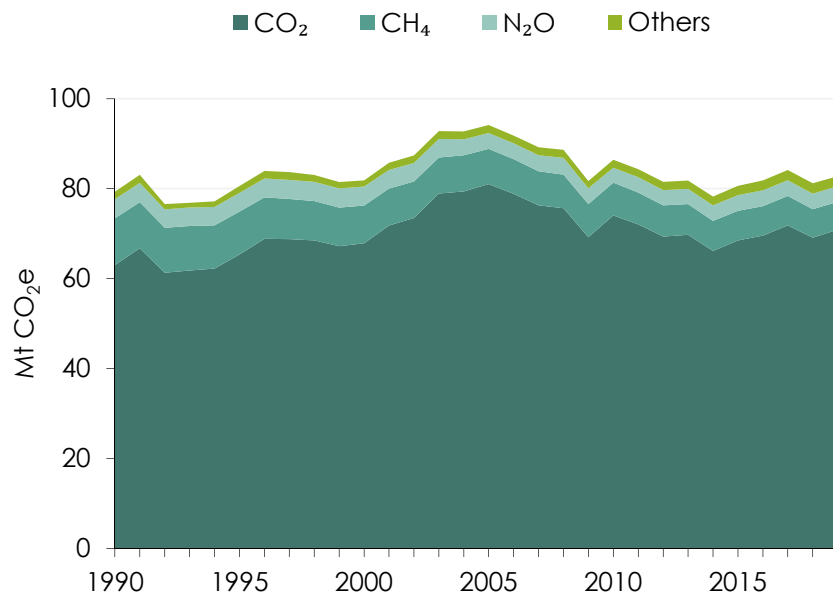
# Emission Reduction Targets in the Effort Sharing Sectors 2020 & (proposed) 2030



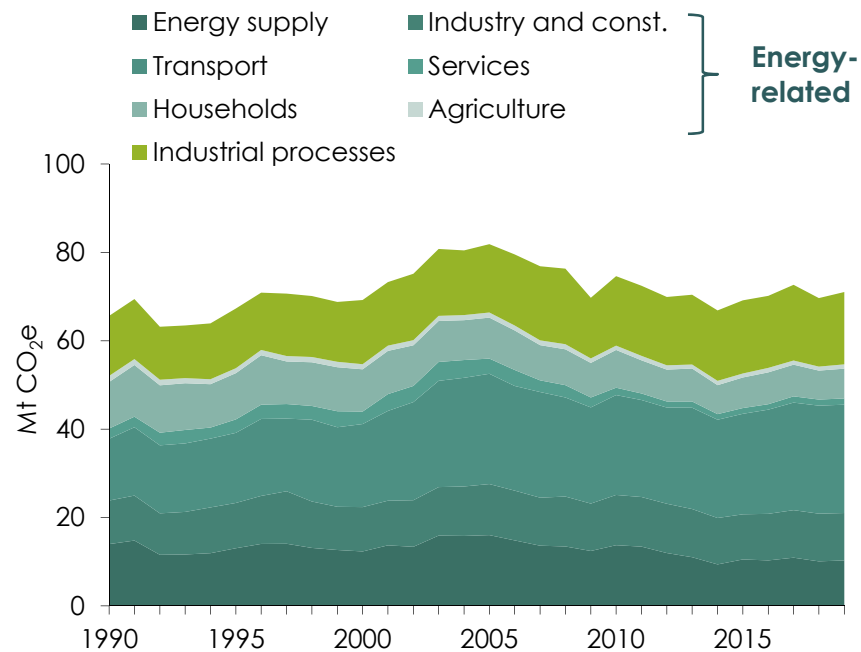
Source: European Commission (2018, 2021).

# Development of GHG/CO<sub>2</sub> Emissions in Austria

■ GHG Emissions by Gas

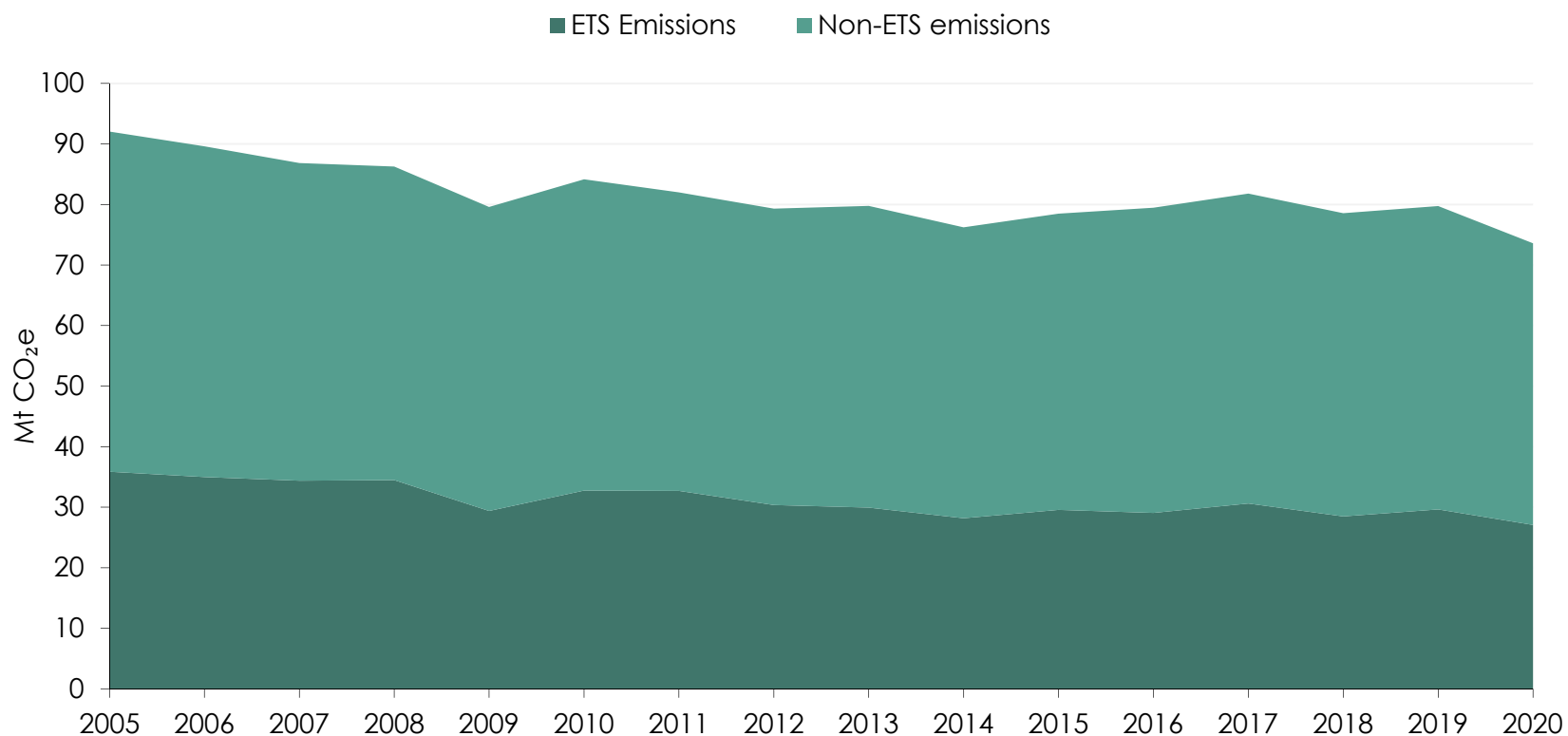


■ CO<sub>2</sub> Emissions by Sector



Source: Eurostat (2021).

# Development of ETS and Non-ETS GHG Emissions in Austria



Source: UBA (2022).

# Austrian Climate Change Act ("Klimaschutzgesetz")

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- Objective: Coordinated implementation of effective climate protection measures
- Maximum quantities of greenhouse gas emissions are specified (pursuant to obligations under international or Union law)
- Maximum quantities may also be differentiated by sector
- **Period Covered: 2013 – 2020!**

# Austrian Climate Change Act ("Klimaschutzgesetz", KSG)

in Mt CO <sub>2</sub> e	GHG emissions 2005-2020									Targets KSG	
Sector classification according to KSG	2005	2013	2014	2015	2016	2017	2018	2019	2020	2019	2020
Energy & Industry (Non-ETS)	5.8	6.0	5.6	5.6	5.7	5.9	5.6	5.5	5.3	6.6	6.5
Transport (excl. domestic air traffic)	24.6	22.3	21.7	22.1	23.0	23.7	23.9	24.0	20.7	21.8	21.7
Buildings	12.7	8.9	7.8	8.2	8.4	8.6	7.9	8.1	8.0	8.2	7.9
Agriculture	8.1	7.9	8.1	8.1	8.3	8.1	8.0	8.0	7.9	7.9	7.9
Waste management	3.3	2.8	2.7	2.7	2.7	2.5	2.4	2.3	2.3	2.8	2.7
F-gases (excl. NF3)	1.7	2.0	2.1	2.2	2.3	2.3	2.4	2.3	2.2	2.1	2.1
<b>GHG emissions according to KSG</b>	<b>56.2</b>	<b>49.8</b>	<b>48.1</b>	<b>48.9</b>	<b>50.4</b>	<b>51.2</b>	<b>50.1</b>	<b>50.1</b>	<b>46.5</b>	<b>49.4</b>	<b>48.8</b>
EU ESD target		52.6	52.1	51.5	51	49.5	48.9	48.3	47.8		
Deviations from the EU ESD target path		-2.8	-4.0	-2.6	-0.6	1.7	1.2	1.8	-1.3		
<b>Total GHG emissions</b>	<b>92.0</b>	<b>79.8</b>	<b>76.2</b>	<b>78.5</b>	<b>79.5</b>	<b>81.8</b>	<b>78.6</b>	<b>79.7</b>	<b>73.6</b>		

Source: UBA (2022).



# Measures to Achieve the Austrian ESR-Target (Selection)

- Domestic Environmental Support Scheme (Umweltförderungsgesetz)
- Green Electricity Act and Feed-In tariff Ordinance ('Ökostromgesetz 2012 und Ökostrom-Einspeisetarifverordnung 2012')
- Energy Efficiency Act ('Energieeffizienzgesetz')
- Implementation of Directive 2009/28/EC on the promotion of the use of energy from renewable sources ('Umsetzung der Richtlinie Erneuerbare Energieträger (2009/28/EG) gemäß Kraftstoffverordnung 2012')
- Action plan for electric mobility and electric mobility initiative
- Fuel tax increase in 2011 ('MöSt-Erhöhung 2011 Klimabeitrag')
- OIB guideline 6 – Energy savings and thermal insulation ('OIB Richtlinie 6 – Energieeinsparung und Wärmeschutz')
- Building renovation initiative for private buildings to improve energy performance (renovation cheques) ('Sanierungsscheck zur Verbesserung der Energieeffizienz von Privatgebäuden')

# The EU's Renewable Energy Directive

## Overview (I)

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- Definition of a common framework for the promotion of renewable energy sources in the EU Member States
- Definition of EU-wide targets for the share of renewable energy sources in gross final energy consumption
- Definition of national targets for the (rate of increase of the) share of renewable energy sources in certain use categories

# The EU's Renewable Energy Directive

## Overview (II)

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- Eligible support mechanisms
  - National renewable support schemes
  - Cooperation mechanisms (i.e. joint support schemes, statistical transfers and joint projects between Member States as well as joint projects with third countries)
- Further provisions
  - Definition of rules regarding grid access and grid operation
  - Definition of sustainability criteria for biofuels and bioliquids
  - Energy communities
  - Consumers' rights
  - Guarantees of origin
  - Administrative procedures
  - Information and training

# The EU's Renewable Energy Directive Targets

## Current Policy

- EU-wide RES target for 2030: 32%
  - Indicative target of increasing RES use in heating and cooling by 1.1 pp p.a.
- Indicative target of increasing RES use from waste heat and cold in district heating and cooling (DHC) systems by 1 pp p.a.
- Mandatory target of RES use in the transport sector of 13% by 2030
- Minimum share of advanced biofuels in the transport sector of 3.5 % in 2030

## "Fit for 55" Proposal

- EU-wide RES target for 2030: 40%
  - **Mandatory** target of increasing RES use in heating and cooling by 1.1 pp p.a., **indicative national targets for a stronger increase of RES use in heating and cooling**
  - **Indicative target of increasing RES use in industry by 1.1 pp p.a.**
  - Indicative target of increasing RES use from waste heat and cold in district heating and cooling (DHC) systems by **2.1 pp p.a.**
  - **RES and RES-E supplied to the transport sector should achieve a GHG intensity reduction of at least 13 % by 2030**
  - **Minimum share of advanced biofuels in the transport sector of 2.2 % in 2030, minimum share of renewable fuels of non-biological origin is at least 2.6 % in 2030**

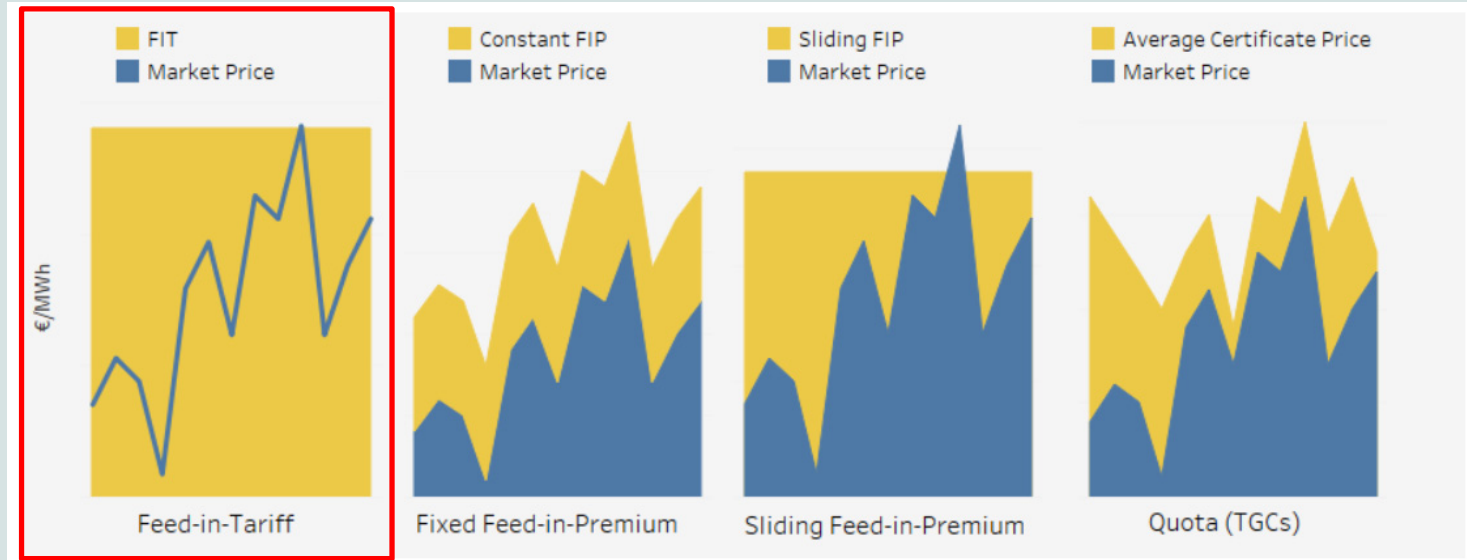
# The EU's Renewable Energy Directive

## Support Schemes

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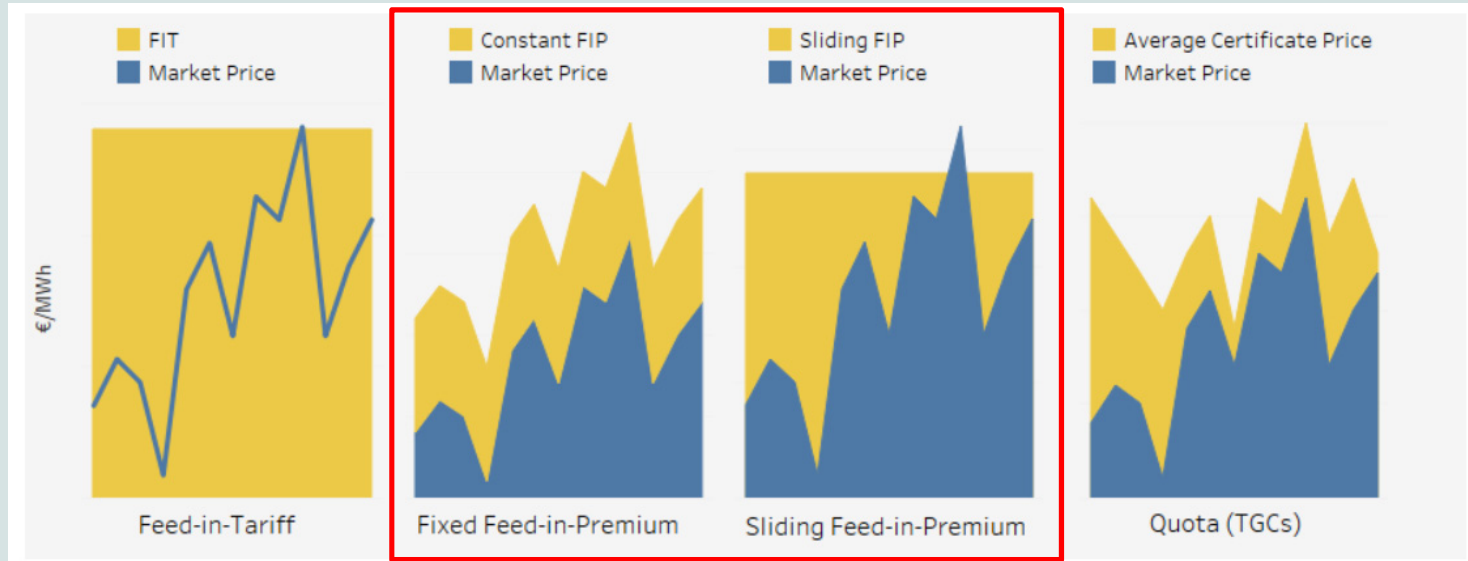
- Since 2020 support schemes for renewable electricity (RES-E) should avoid unnecessary distortions of electricity markets and ensure that RES-E generators consider electricity supply and demand as well as potential grid constraints
- RES-E should be market-oriented, i.e. ensure that generators respond to price signals and maximise their market revenues – shift from feed-in-tariffs to
  - Market premia
  - Tendering
- Effectiveness of their support schemes should be assessed periodically by MS
- When changing the support frameworks MS should ensure that the revisions do not negatively impact supported projects thus providing for investment security
- Opening of RES-E support: At least 10% of the support in the period 2021 to 2025 should open to installations located in other MS and respectively 15% in the period 2026 to 2030

# Renewable energy support policies (1)



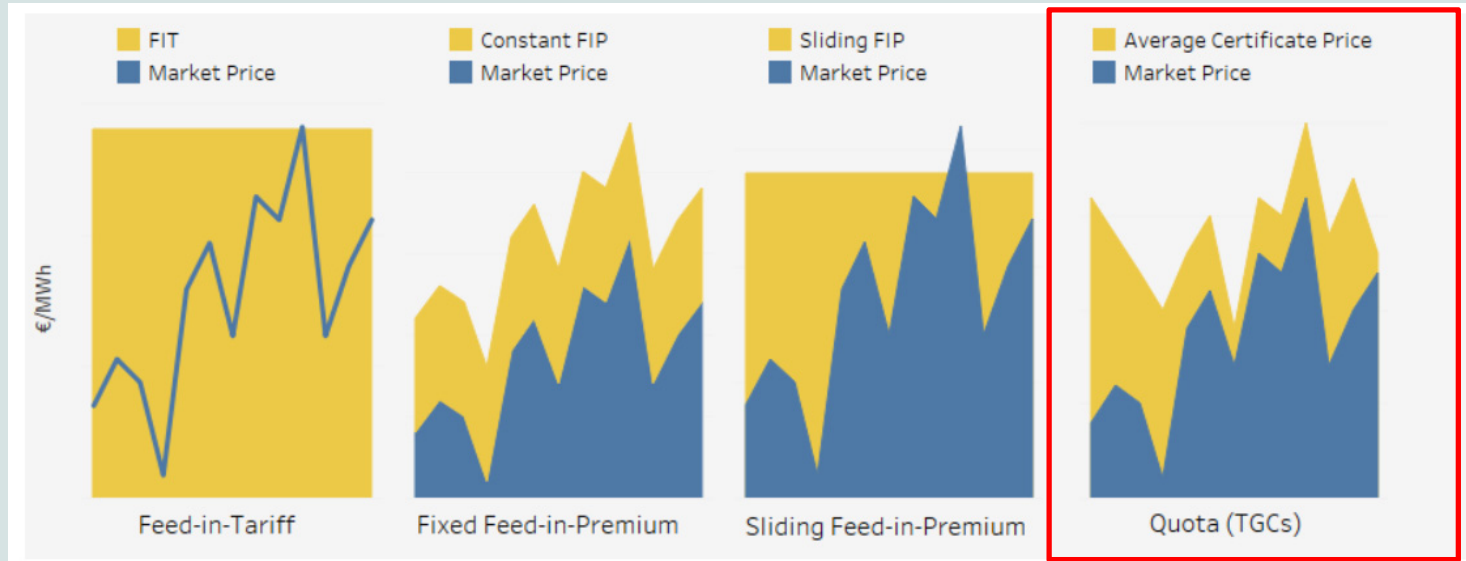
- FIT: Plant operators receive a fixed payment for each unit of electricity generated independent of the electricity market price

## Renewable energy support policies (2)



- FIP: plant operators have to sell the electricity directly at the electricity market and receive an additional payment on top of the electricity market price – either fixed payment or adapted to changing market prices

## Renewable energy support policies (3)



- Quota: Power plant operators receive certificates for their green final energy, which they may sell to the actors obliged to fulfil the quota obligation; selling the certificate provides an additional income on top of the electricity market price



# Austria's Erneuerbaren Ausbau Gesetz ("Renewable Energy Expansion Law ") Overview

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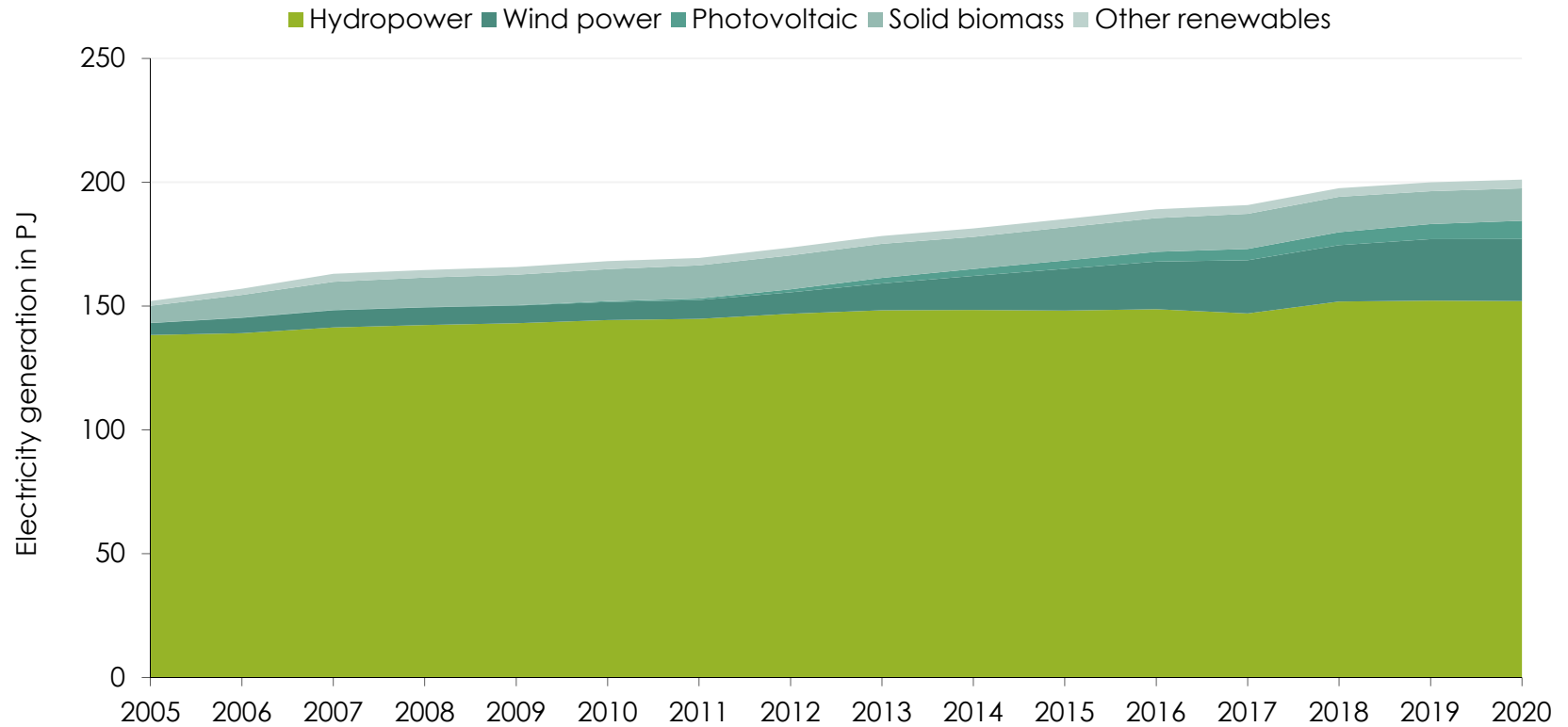
- Contribution to the achievement of the following targets:
  - Paris Agreement 2015
  - EU target of covering at least 32% of the Union's gross final energy consumption with renewable energy by 2030
  - Achieving climate neutrality in Austria by 2040
- Objective: Promotion of the construction, expansion and revitalisation of plants generating electricity from renewable energy sources
- Expansion target: Increase the annual electricity generation from renewable sources by 27 TWh by 2030 (compared to 2019)
  - 11 TWh from photovoltaics
  - 10 TWh from wind
  - 5 TWh from hydropower
  - 1 TWh from biomass

# RES-E Generation in EU MS 2020



Source: Eurostat (2022).

# Development of RES-E Generation in Austria



Source: Statistik Austria Energy Balance 1970-2020.

# Austria's Erneuerbaren Ausbau Gesetz Support Schemes (I)

- Market premia
  - Technologies eligible for support
    - New / repowered hydro power
    - New / repowered wind power
    - New medium / large PV ( $>10 \text{ kW}_p$ )
    - New / repowered biomass CHP
    - New / repowered biogas CHP
    - Existing biomass and biogas – meeting certain efficiency criteria ("Nachfolge Prämie")
  - Level of the market premium (in cents/kWh):  
Difference between the guaranteed price and the applicable market price or market price (in cent/kWh)

# Austria's "Erneuerbaren Ausbau Gesetz"

## Support Schemes (II)

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- Tendering
  - Definition of technology-specific maximum prices up to those bids that will be considered in the tenders
  - Maximum prices are determined for each calendar year
  - Procedure:
    - Admissible bids are ranked according to their bid price, starting with the lowest
    - Bids are accepted until the auction volume is reached
  - Technologies eligible for support
    - Wind
    - PV
    - Biomass

# Austria's "Erneuerbaren Ausbau Gesetz"

## Support Schemes (III)

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- Investment subsidies
  - Technologies eligible for support
    - PV and batteries
    - Wind power
    - Biogas
  - Support is limited to
    - max. 30% of the total investment cost
    - max. 45% of the environmentally-related investment cost
  
- The total support volume for RES-E is limited to € 1 bn p.a.

# Austria's "Erneuerbaren Ausbau Gesetz"

## Other provisions

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- Sustainability and greenhouse gas emissions saving criteria for bioliquids and biomass fuels
- Information provision
- Renewable gas
- Collection and administration of support funds
- Renewable energy communities
- Guarantees of origin

# Summary

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- EU Climate Policy is increasing in ambition
  - Targets for 2020 have been achieved
  - Action must be stepped up to reach the 2030 targets
  - Achieving climate neutrality only by 2050 not in line with the targets of the Paris Agreement
- The EU has competence in climate policy making and has taken a leading role
- Most environmental EU legislations take the form of "directives" – must be transposed into national law
  - Examples: Renewable Energy Directive, Emissions Trading Directive



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**Break** 😊