

Renewable energy for a low carbon economy

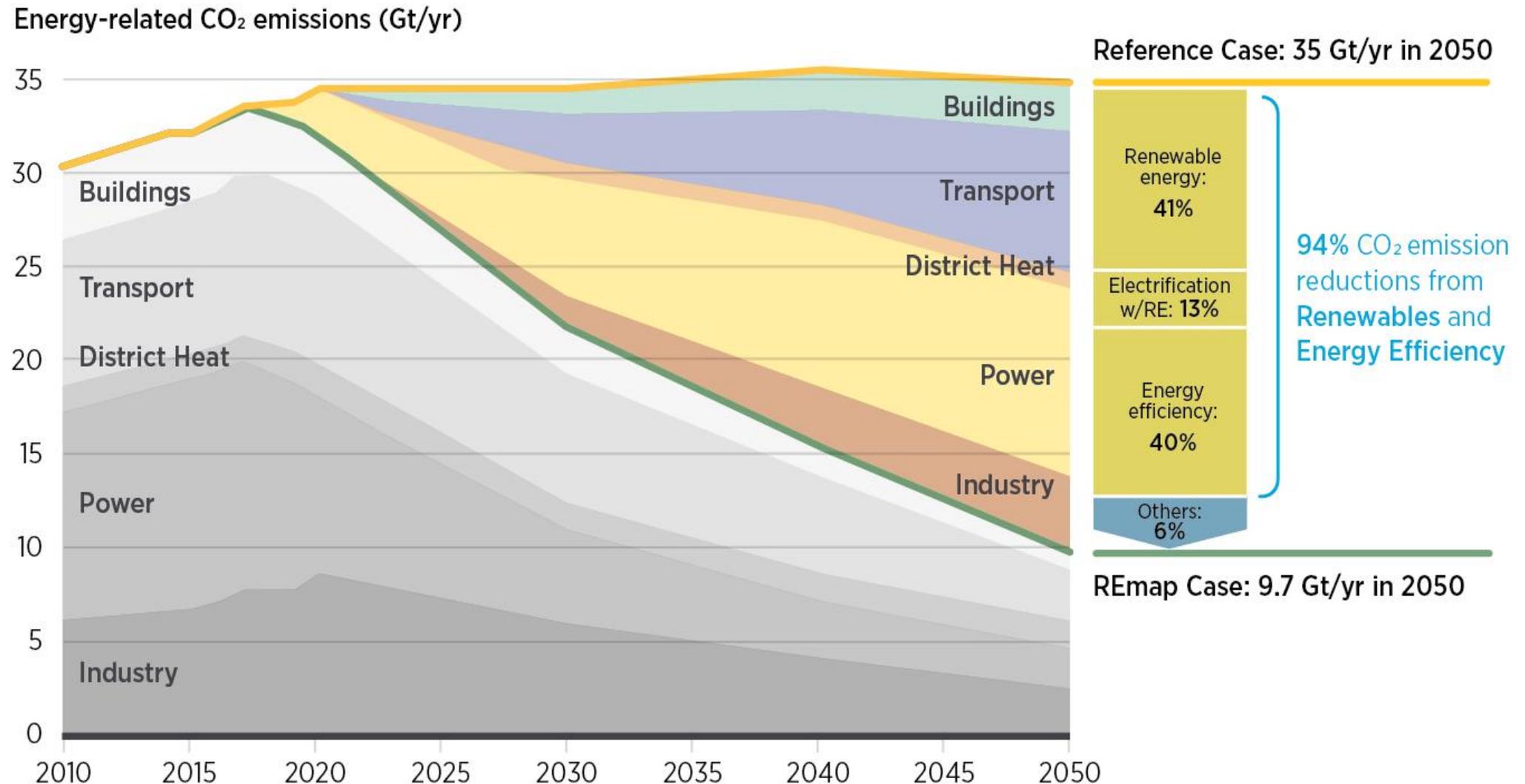


Dolf Gielen

IRENA Director Innovation and Technology

High-Level Public Event on the Long-Term Strategy for a Low-Carbon Economy in the EU, Brussels 10-11 July, 2018

Renewables and efficiency can deliver the transition on a global scale

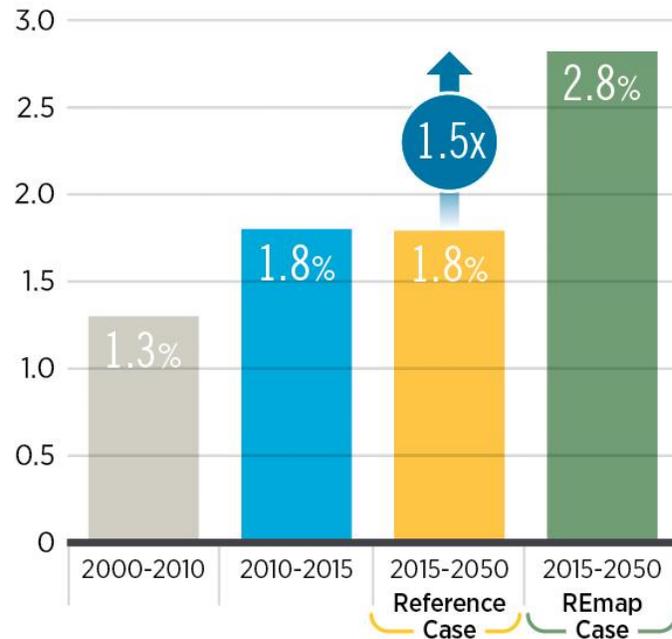


Annual energy-related emissions must be reduced by over 70% to bring temperature rise to below the 2C goal. 2

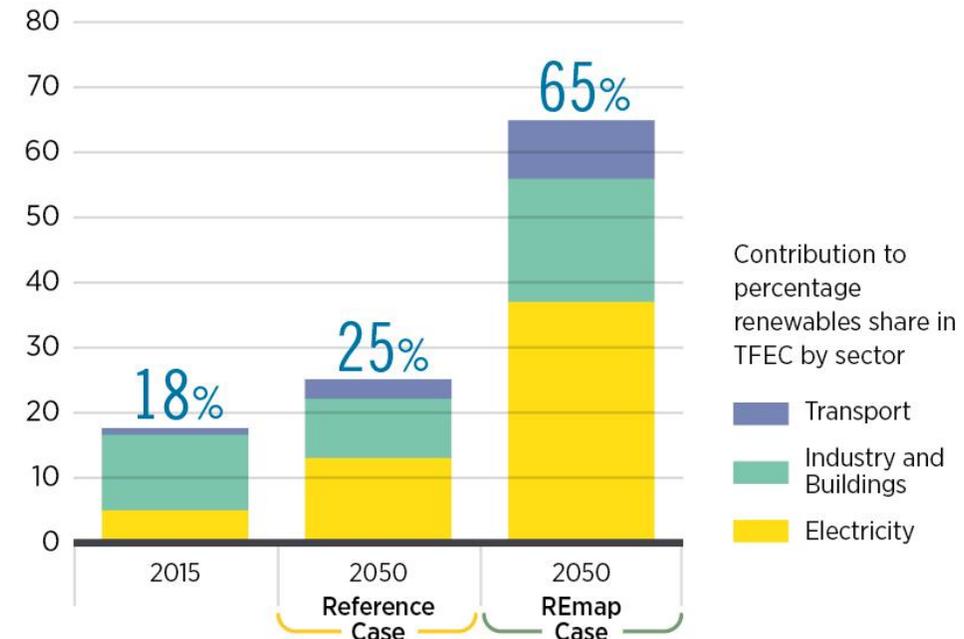
Significant improvements in energy intensity are needed and the share of renewable energy must rise

Energy intensity improvement rate and renewable energy share in TFEC, Reference and REmap cases

Energy intensity improvements (%/yr)



Renewables share in TFEC (%)



Source: Historical energy intensity improvement values from (SE4ALL, 2016), projections based on IRENA analysis

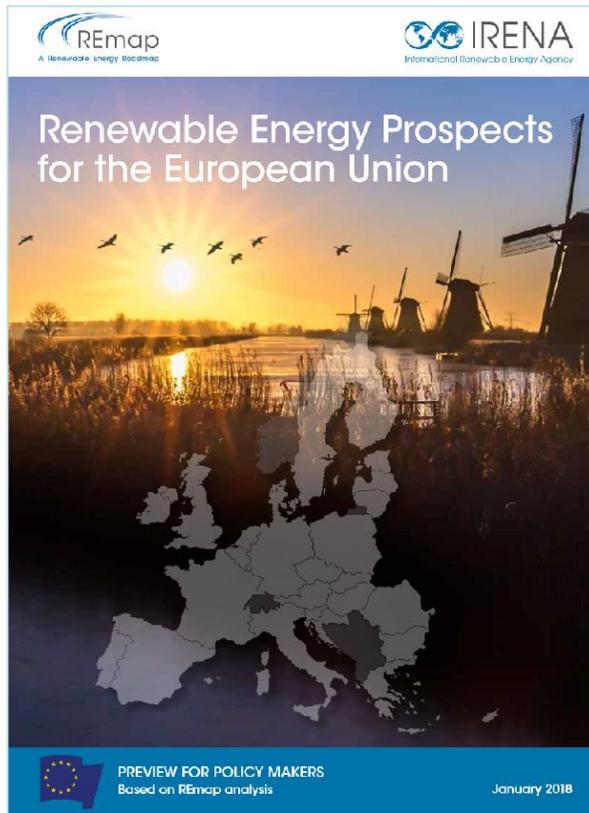
Both renewable energy and energy efficiency are at the heart of the energy transition and climate goals. By 2050 action in both areas must be scaled up considerably.

Comparison of recent global scenarios

		IRENA GET2050	IEA	Shell
		REmap	2 degrees/66%	Sky
Total primary energy supply	[EJ/yr]	550	586	828
Total final consumption	[EJ/yr]	386	398	548
Renewable energy share in total primary energy supply	[%]	63	46	43
Fossil fuel CO ₂ emissions in 2050				
Baseline*	[Gt/yr]	37	37	
Emissions 2050	[Gt/yr]	9.7	9	18
Contribution of abatement options				
Renewable energy	[%]	41	37	
Energy efficiency (including electrification)	[%]	53	35	
Others	[%]	6	29	
Investments for decarbonisation 2015-50 (excl. stranded assets)	[USD trln]	120	114	
Energy intensity improvements	[%/yr]	2.8	2.9	2
Electric mobility in transport	[%]	31	n/a	21
Total biomass demand	[EJ/yr]	128	147	55

Note: incl bunkering and non-energy use

REmap analysis for the European Union

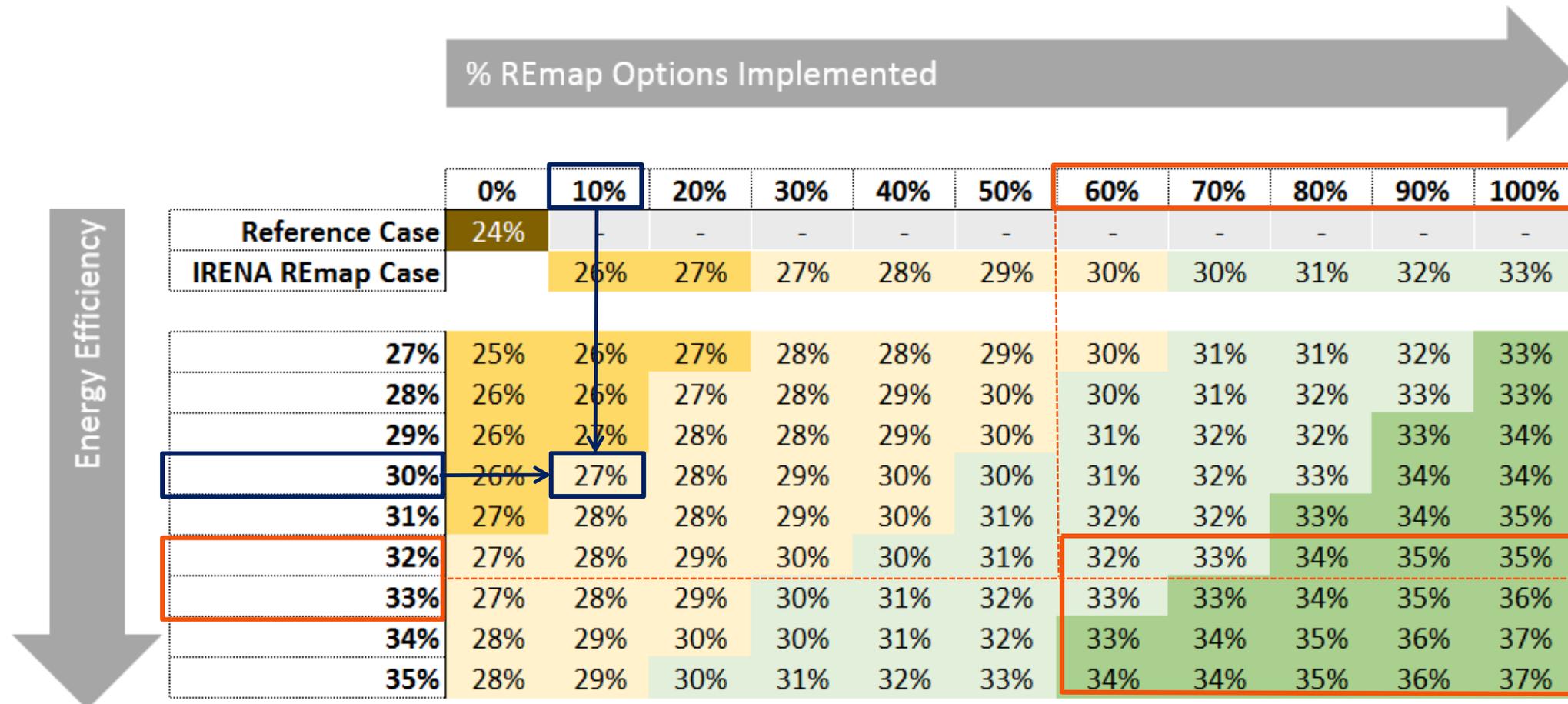


February 2018

- In 2014, the European Council agreed on 2030 climate and energy targets, including a minimum of 27% renewables
- Falling cost and technology innovations have raised the potential since
- Discussions on the “Clean Energy for All Europeans” legislative package
- REmap study for European Commission shows 34% RE at 30% EE is feasible and cost-effective by 2030
- The study shows an even higher percentage may be feasible
- Accelerated Energy Efficiency improvements and Renewable Energy are also critical for the 2050 climate objective

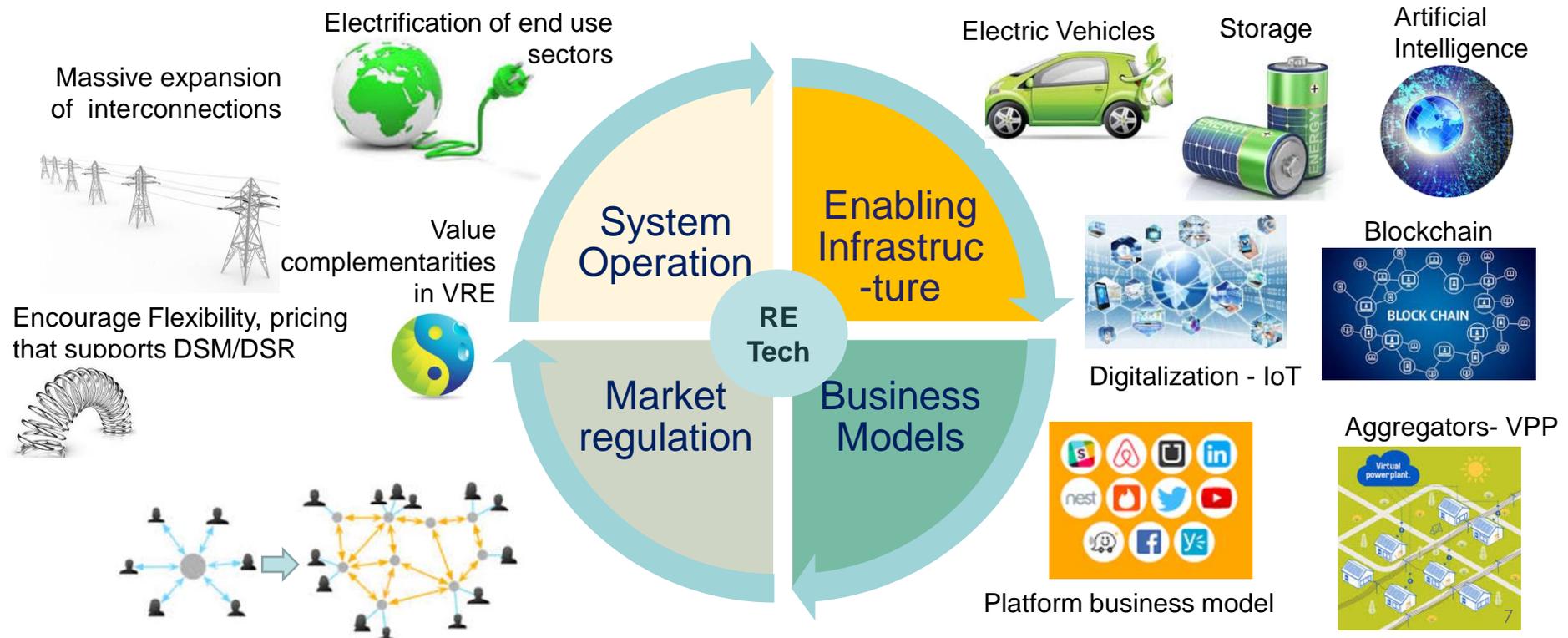
European Union 2030 - RE, EE targets in the context of 2C-compatible scenario

Both efficiency and renewables need to be scaled up by 2030 to align with a 2C-compatible scenario



A multitude of energy sector innovations drive the transition – but gaps remain (industry, transport)

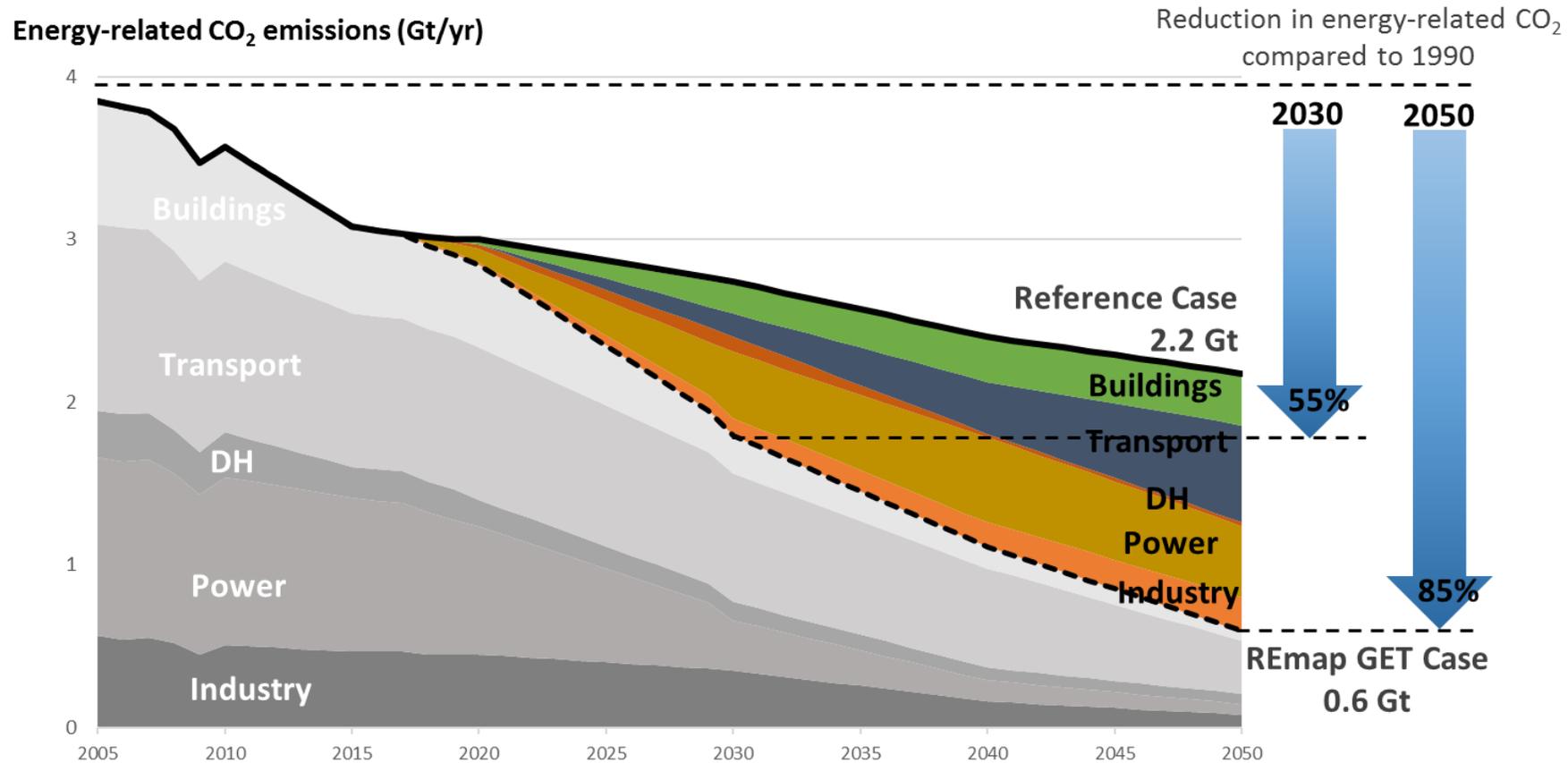
A Combination of Affordable RE Technologies, Digitalization and Climate Change Policies is driving change – IRENA Innovation Landscape Assessment ongoing



IRENA's Innovation Week: 4-7 September 2018, Bonn
CEM Campaign Long term energy scenarios for the energy transition

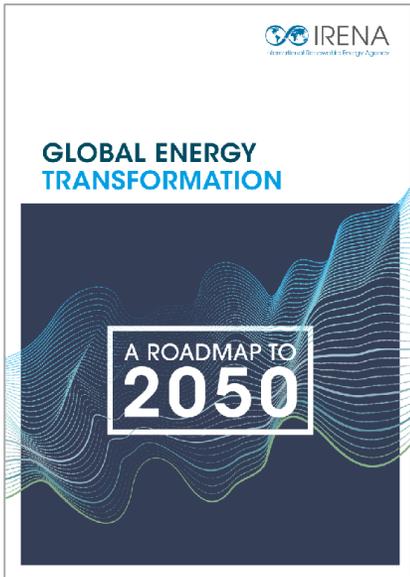
EU energy-related CO₂ emissions to 2050 (Gt CO₂/year)

In the REmap Global Energy Transformation Case, Energy-related CO₂ emissions would fall by 55% by 2030, and 85% by 2050, compared to 1990 levels.



REmap Global Energy Transformation Case explores one out of multiple possible long-term decarbonization pathways compatible with the 2C limit established in the Paris Agreement.

- **Heating and cooling solutions account for more than one third of the EU's untapped renewable energy potential.**
 - Heating and cooling accounts for **about half** of the energy demand in the EU today; however, progress has been slower than in the power sector.
 - Share in heating and cooling could reach **34% by 2030** with faster renewable energy uptake.
- **More than two-thirds of the additional renewable heating and cooling options identified are cheaper than the conventional option.**
 - Significant potential to accelerate the deployment of **heat pumps** – which could account for about **9% of heating needs by 2030**
 - Solar water heaters and direct use of biomass in industry and buildings can be scaled up significantly too.
 - The conversion of district heating systems to use renewables is an option to accelerate renewable deployment (**District heating** systems provide about **9% of the EU's heating needs**; however, the bulk is produced with natural gas and coal).



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Thank you!



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