

& THE RELEVANCE OF 5 KEY SOLUTIONS

A Week Before COP26, where are we at?

GLOBAL SCALE

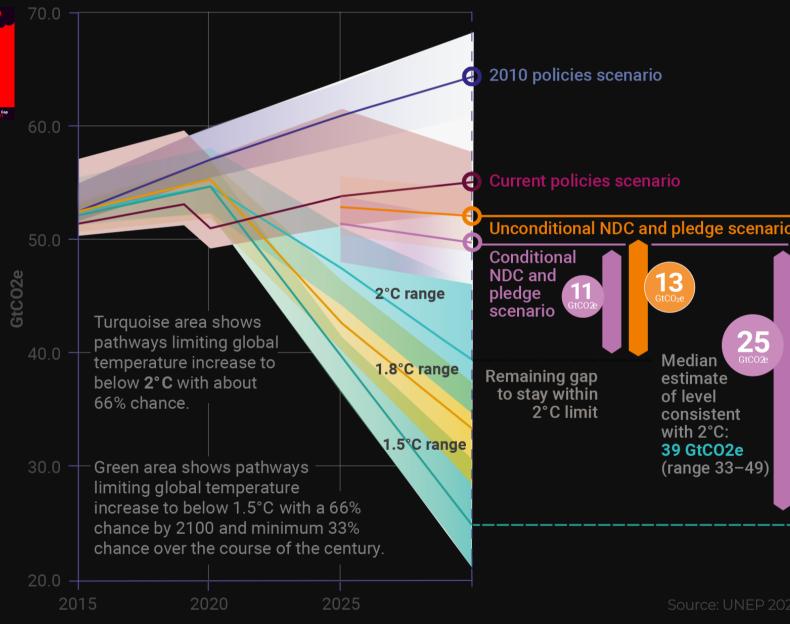
Immediate, rapid and large scale reductions in GHG emissions required to limit warming to 1.5°C

UNEP's 2021 Emissions Gap Report tells us:





- There is a 50/50 chance global warming exceeds 1.5°C in the next 2 decades
- Unconditional NDCs & announced pledges lower emissions in 2030 by 7.5% compared to prior unconditional NDCs
- 4x higher ambition is needed to get on track to 2°C and lower 2030 emissions by 30%
- 7x higher ambition is needed to get on track to 1.5°C and lower 2030 emissions by 55%



Climate targets

Status of the NDC update process

- Nationally determined contributions (NDCs) are at the heart of the Paris Agreement and embody efforts by each country to reduce national emissions and adapt to the impacts of climate change.
- NDCs are submitted every five years
- Successive NDCs will represent a progression compared to the previous NDC and reflect its highest possible ambition

A number of governments have also adopted mid-century net-zero targets. It is critical that 2030 targets align with 2050 net-zero targets.

As of 28th October 2021

28 GtCO2e

Median

of level

estimate

consistent

with 1.5°C: **25 GtCO2**e

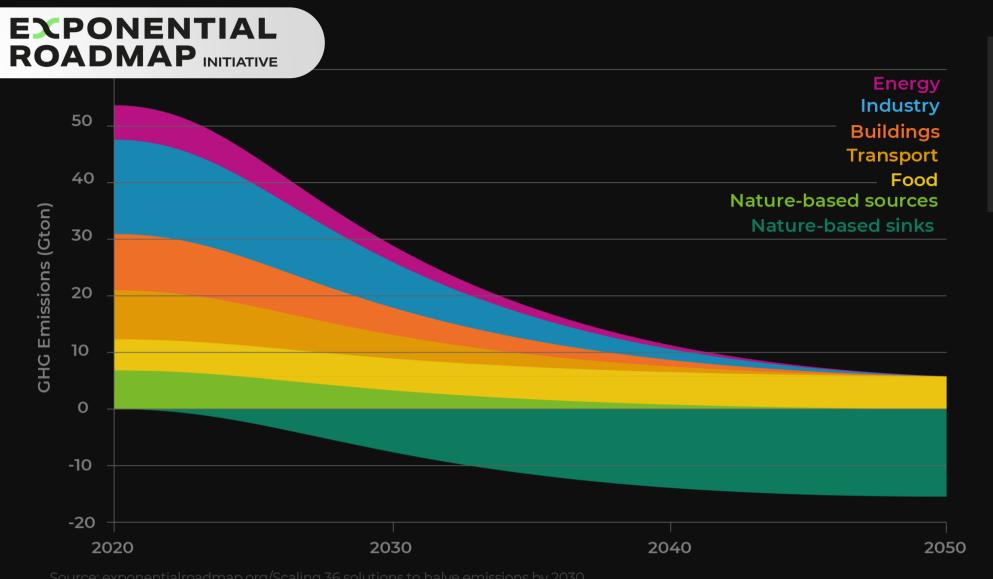
(range 17-33)

- 118 Countries have submitted new NDC targets (117 countries plus the EU27)
 - Countries we analyse have submitted stronger NDC targets (20 countries plus the EU27)
 - (20 countries plus the EU27)

 Countries we analyse **did not**
 - increase ambition
 88 Countries we do not analyse submitted new NDC targets
- 2 Countries have **proposed** new NDC targets
 - Countries we analyse have proposed stronger NDC targets
 - Countries we analyse stated it will not propose more ambitious
 - Countries we do not analyse proposed new NDC targets
 - 46 Countries have not updated targets

How can we get to 1.5°C? SECTOR LEVEL

How much can each sector contribute to emissions reductions by avoiding or sequestering Greenhouse gases?



According to the WMO's annual Greenhouse Gas Bulletin, CO2 reached 413.2 parts per million in the atmosphere in 2020 and is now 149% of the pre-industrial level.

Exponential Roadmap mapped out 36 solutions across 6 sectors that will allow us to halve global emissions by 2030 or earlier.

We take a look at how 5 companies offering climate change solutions and the sectors that they are part of will help us meet this target





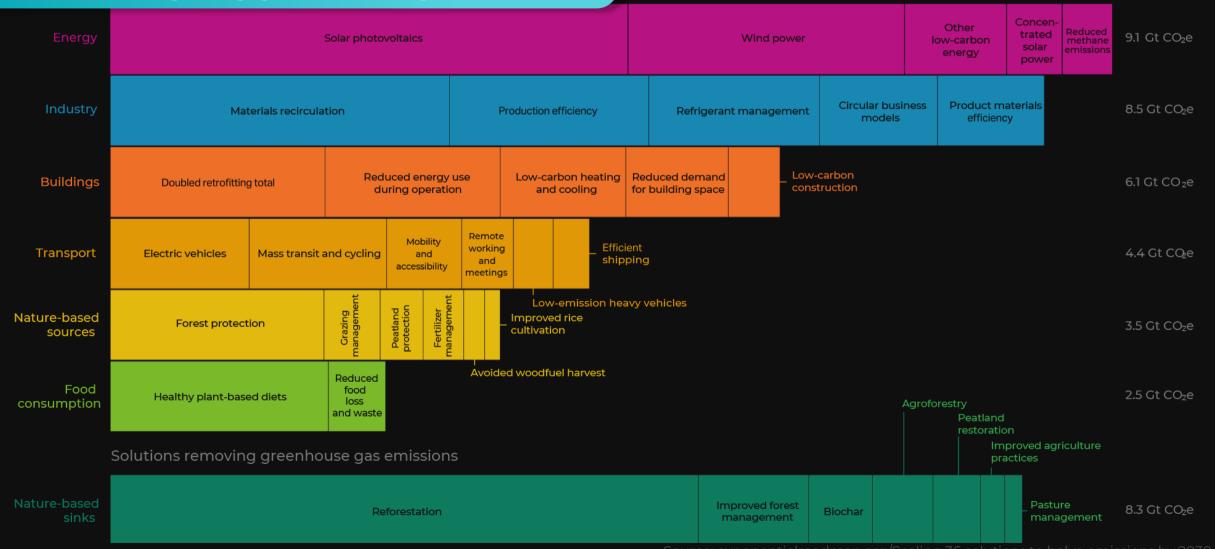




SOLUTIONS LEVEL

Which solutions are economically attractive & can scale rapidly?

Solutions mitigating greenhouse gas emissions



Exponential technological development can considerably reduce energy consumption and material waste in all sectors, while supporting global health, sustainability and economic goals. It can also enable rapid transformation through new disruptive business models



Which companies are producing the solutions that can get us to 1.5C and how impactful are they?



Plant-based Diet

Plant-Based Diet's potential

contribution to reduction in annual global emissions 2020 to 2030



Replacing Meat with Plant-based Alternatives

Example Solution



5 7 per burger kgCO2e



per burge kgCO2e

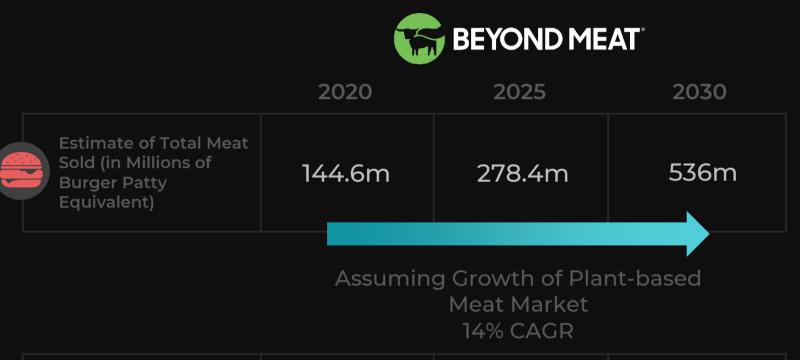


Avoided Emissions per Beef Burger replaced by a Plantbased Burger

3.3

reduction per burger kgCO2e

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	14% CAGR				
Poter Emiss	nated Annual ntial Avoided sions CO2e)	0.42	0.92	1.77	
Roadr Plant- poten to red Globa	exponential map's target for Based Diet's Itial contribution Juction in Annual I Emissions to 2030	0.02%	0.04%	0.08%	



5.36b

Assuming 10% US Market Share

0.8%

% of Exponential Roadmap's Target for Plant-based Meat's Potential Contribution to Reduction in Annual Global Emissions 2020-30



EXPONENTIAL ROADMAP INITIATIVE target for emission reduction

BEYOND MEAT®

EXPONENTIAL ROADMAP INITIATIVE
target for emission reduction

17.7MMtCO2e

2.18 GtCO2e

- 0.8%

1.77 MMtCO2e

2.18

GtCO2e

_

0.08%



EXPONENTIAL ROADMAP INITIATIVE

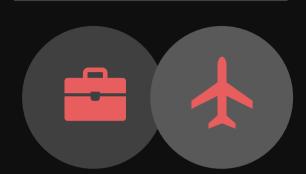
Telepresence Potential contribution to reduction in annual global emissions 2020 to 2030



Replacing Travel for Business Meetings with Telepresence

Example Solution

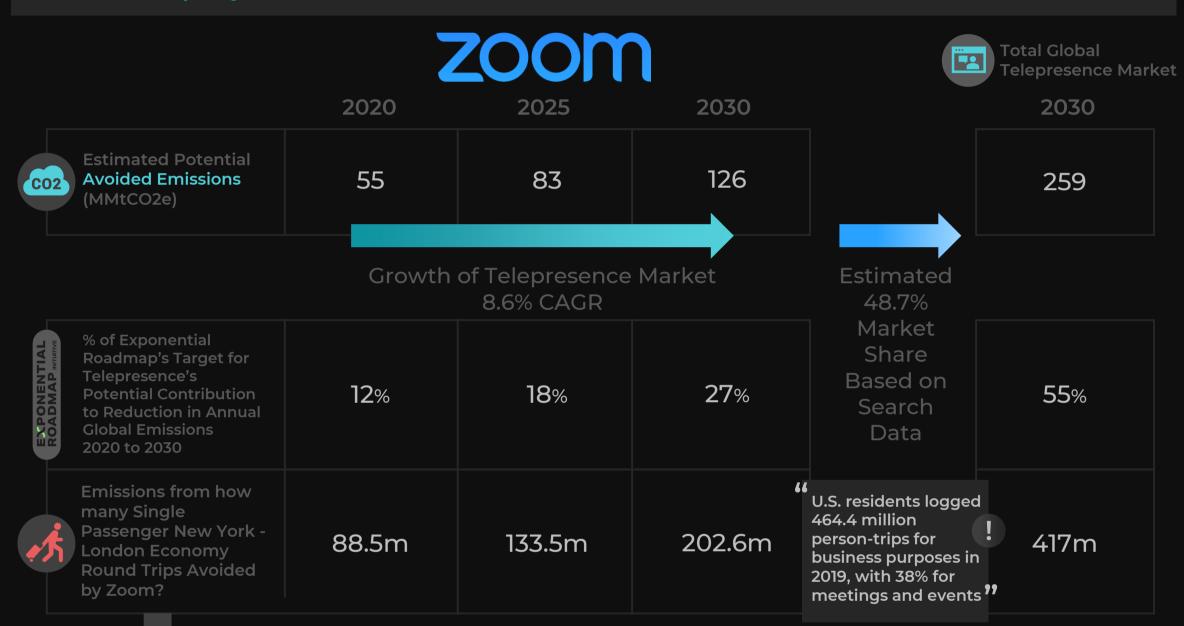






Business Travel Represented 20% of US Domestic Passenger Trips in 2019 ustravel.org

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% of Exponential Roadmap's Target for Telepresence's Potential Contribution to Reduction in Annual Global Emissions 2020-30



EXPONENTIAL ROADMAP INITIATIVE target for emission reduction

GtCO2e

Electric Vehicles' potential contribution to reduction in annual global emissions 2020 to 2030

1.26 GtCO2e

Replacing Internal Combustion Engine Vehicles with EVs

Example Solution

Business as Usual





EXPONENTIAL ROADMAP INITIATIVE

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		T	= 5 L		All EV Companies
		2020	2025	2030	2030
	Estimate of EV Fleet additions since the start of 2020	0.5m	9.1 m	63.7m Tesla Forecast 20m	веv: 183.2m рнеv: 31.9m
C02	Estimated Potential Annual Avoided Emissions from Vehicle's Added to the Fleet Since 2020 (MMtCO2e)	0.49	16.47	Sales in 2030 alone	356.8
EXPONENTIAL ROADMAP INTIMUE	% of Exponential Roadmap's Target for Electric Vehicles' Potential Contribution to Reduction in Annual Global Emissions 2020 to 2030	0.1%	1.3%	9.1%	28.3%

The Passenger Electric Vehicle Market

	2030 Estimated Potential Annual Avoided Emissions from Vehicle's Added to the Fleet Since 2020 (GtCO2e)	0.36 GtCO2	0.56 GtCO2	0.87 GtCO2
EXPONENTIAL ROADMAP INTERTINE	% of Exponential Roadmap's Target for Passenger Electric Vehicle's Potential Contribution to Reduction in Annual Global Emissions 2020 to 2030	28.3%	44.4%	68.8%
	Scenario: Mileage per Year + Charging	Average Mileage + IEA Stated Policies Grid Mix	Average Mileage + Full Renewable Charging for BEVs from 2020	High Mileage + Full Renewable Charging for BEVs from 2020
: 4	31:			-:: ::

iClima's Current Forecast could be considered optimistic as it assumes a significantly higher number of BEV passenger vehicles on the road than the IEA Stated Policies Scenario and even slightly higher number than the IEA's more optimistic Sustainable Development Scenario

We fail to reach the Exponential Roadmap target for reduction in annual emissions 2020-2030 in all 3 scenarios. Even in iClima's most optimistic scenario where all passenger battery electric vehicles are charged with 100% renewable energy from 2020 onward

EXPONENTIAL ROADMAP INITIATIVE

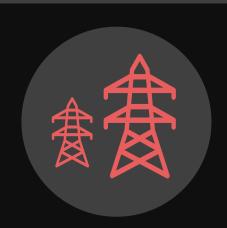
Solar Photovoltaics

Potential contribution to reduction in annual global emissions 2020 to 2030

Replacing Electricity from the Grid with Residential Solar

Example Solution

Business as Usual





A recent study in Nature found that US rooftops could host enough solar capacity to produce 4.2 petawatt-hours (PWh) per year. Slightly more than the country's current total energy output of around 4 PWh per year

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Assuming 14% Market Share is





Total for US Residential

Solar Companies

2030

104.9

% of Exponential Roadmap's Target for Solar Photovoltaics' Potential Contribution to Reduction in Annual Global Emissions 2020-30





target for emission reduction

36.4 MMtCO2e

> 4.71 GtCO2e

0.77%

This number does not account for other significant emissions savings residential solar can enable e.g. the ability to power vehicles and home heating/cooling

SUNTUN



target for emission reduction

MMtCO2e

GtCO2e

GtCO2e

0.11%





MMtCO2e

Wind Power's potential contribution to reduction in annual global emissions 2020 to 2030

EXPONENTIAL ROADMAP INITIATIVE GtCO2e

Replacing Fossil Fuel Electricity Generation with Onshore Wind

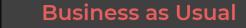
Example Solution

Return on Energy:

The amount of energy paid back to society versus the energy needed in the lifetime of that turbine.

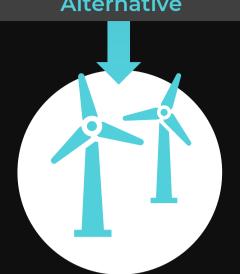
A V117-4.2 MW wind plant will return 50 times more energy than consumed. 1 kWh gives a 50 kWh return

1 kWh of Coal typically returns < 0.4 kWh



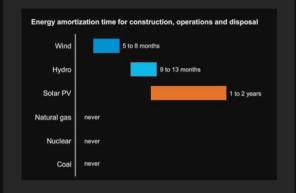


Alternative



Energy Payback:

The energy requirement over the lifecycle of the power plant versus the energy generated. Vestas calculate that turbines with assumed 20 year lifetimes payback their energy requirement within the first 5-8 months



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Vestas. 2025

IEA Sustainable Development Scenario ANNUAL ONSHORE capacity addition 2030



Estimated Additions of Installed Capacity Since the Start of 2020 (GW)

14.4GW

2020

89.5_{GW}

170GW

2030

108_{GW}

Assuming Vestas maintains a 15.3% Share of the Global Onshore Wind Market and grows in line with the market towards the IEA SDS 2030 target



% of Exponential Roadmap's Target for Wind Power's Potential Contribution to Reduction in Annual Global Emissions 2020-30



EXPONENTIAL ROADMAP INITIATIVE

target for emission reduction

1392.1 MMtCO2e

> 2.51 GtCO2e



EXPONENTIAL ROADMAP INITIATIVE target for emission reduction MMtCO2e

4.71 GtCO2e

8.5%

Turbine towers are becoming taller to capture more energy, since winds generally increase as altitudes increase. At higher heights wind can flow more freely, with less friction from obstacles on the earth's surface

Wind Turbine Size Evolution

Larger rotor diameters allow wind turbines to sweep more area, capture more wind, and produce more electricity. 250m 221m 164m 12 - 14 MW 15 - 20 MW Statue of Liberty Washington Memorial Golden Gate Bridge Chrysler Building

