

## **Summary of Objectives and Key Results Needed**

Doerr, John: *Speed & Scale—An Action Plan for Solving Our Climate Crisis Now*.  
Penguin Publishing Group.

### **Objective 1 Electrify Transportation**

**Reduce 8 gigatons of transportation emissions to 2 gigatons by 2050.**

#### **KR 1.1 Price**

EVs achieve price-performance parity with new combustion-engine vehicles in the U.S. by 2024 (\$35K), and in India and China by 2030 (\$11K).

#### **KR 1.2 Cars**

One of two new personal vehicles purchased worldwide are EVs by 2030, 95% by 2040.

#### **KR 1.3 Buses and Trucks**

All new buses are electric by 2025 and 30% of medium and heavy trucks purchased are zero-emission vehicles by 2030, 95% of trucks by 2045.

#### **KR 1.4 Miles**

50% of the miles driven (2-wheelers, 3-wheelers, cars, buses, and trucks) on the world's roads are electric by 2040, 95% by 2050. ↓ 5 Gt

#### **KR 1.5 Planes**

20% of miles flown use low-carbon fuel by 2025; 40% of miles flown are carbon-neutral by 2040. ↓ 0.3 Gt

#### **KR 1.6 Maritime**

Shift all new construction to “zero-ready” ships by 2030. ↓ 0.6 Gt

### **Objective 2 Decarbonize the Grid**

**Reduce 24 gigatons of global electricity and heating emissions to 3 gigatons by 2050.**

#### **KR 2.1 Zero Emissions**

50% of electricity worldwide comes from zero-emissions sources by 2025, 90% by 2035 (up from 38% in 2020).\* ↓ 16.5 Gt

#### **KR 2.2 Solar and Wind**

Solar and wind are cheaper to build and operate than emitting sources in 100% of countries by 2025 (up from 67% in 2020).

### KR 2.3 Storage

Electricity storage is below \$50 per kWh for short duration (4–24 hours) by 2025, \$10 per kWh for long duration (14–30 days) by 2030.

### KR 2.4 Coal and Gas

No new coal or gas plants after 2021; existing plants to retire or zero out emissions by 2025 for coal and by 2035 for gas.\*

### KR 2.5 Methane Emissions

Eliminate leaks, venting, and most flaring from coal, oil, and gas sites by 2025. ↓ 3 Gt

### KR 2.6 Heating and Cooking

Cut gas and oil for heating and cooking in half by 2040.\* ↓ 1.5 Gt

### KR 2.7 Clean Economy

Reduce reliance on fossil fuels and increase energy efficiency to quadruple clean energy

## **Objective 3 Fix Food**

**Reduce agricultural emissions from 9 gigatons to 2 gigatons by 2050.**

### KR 3.1 Farm Soils:

Improve soil health through practices that increase carbon content in topsoils to a minimum of 3%. ↓ 2 Gt

### KR 3.2 Fertilizers:

Stop the overuse of nitrogen-based fertilizers and develop greener alternatives to cut emissions in half by 2050. ↓ 0.5 Gt

### KR 3.3 Consumption:

Promote lower-emissions proteins, cutting annual consumption of beef and dairy 25% by 2030, 50% by 2050. ↓ 3 Gt

### KR 3.4 Rice:

Reduce methane and nitrous oxide from rice farming by 50% by 2050. ↓ 0.5 Gt

### KR 3.5 Food Waste:

Lower the food waste ratio from 33% of all food produced to 10%. ↓ 1 Gt

## **Objective 4 Protect Nature**

**Go from 6 gigatons of emissions to -1 gigaton by 2050.**

### KR 4.1 Forests

Achieve net-zero deforestation by 2030; end destructive practices and logging in primary forests. ↓ 6 Gt

### KR 4.2 Oceans

Eliminate deep-sea bottom trawling and protect at least 30% of oceans by 2030, 50% by 2050. ↓ 1 Gt

### KR 4.3 Lands

Expand protected land from 15% today to 30% by 2030, 50% by 2050.

## **Objective 5 Clean Up Industry**

**Reduce 12 gigatons of industrial emissions to 4 gigatons by 2050.**

### KR 5.1 Steel

Reduce total carbon intensity of steel production 50% by 2030, 90% by 2040. ↓ 3 Gt

### KR 5.2 Cement

Reduce total carbon intensity of cement production 25% by 2030, 90% by 2040. ↓ 2 Gt

### KR 5.3 Other Industries

Reduce emissions from other industrial sources (i.e., plastics, chemicals, paper, aluminum, glass, apparel) 80% by 2050. ↓ 2 Gt

## **Objective 6 Remove Carbon**

**Remove 10 gigatons of carbon dioxide per year.**

### KR 6.1 Nature-Based Removal

Remove at least 1 gigaton per year by 2025, 3 gigatons by 2030, and 5 gigatons by 2040. ↓ 5 Gt

### KR 6.2 Engineered Removal

Remove at least 1 gigaton per year by 2030, 3 gigatons by 2040, and 5 gigatons by 2050. ↓ 5 Gt

**Objective 7 Win Politics and Policy** (We will track this objective by country for the top five global emitters.)

**KR 7.1 Commitments**

Each country enacts a national commitment to reach net-zero emissions by 2050, and gets at least halfway there by 2030.\*

**KR 7.1.1 Power**

Set an electricity sector requirement to cut emissions 50% by 2025, 80% by 2030, 90% by 2035, and 100% by 2040.

**KR 7.1.2 Transportation**

Decarbonize all new cars, buses, and trucks by 2035; freight ships by 2030; semi trucks by 2045; and make 40% of flights carbon neutral by 2040.

**KR 7.1.3 Buildings**

Enforce zero-emissions buildings standards for new residential by 2025, commercial by 2030, and prohibit sales of nonelectric equipment by 2030.

**KR 7.1.4 Industry**

Phase out fossil fuel use for industrial processes at least halfway by 2040, and completely by 2050.

**KR 7.1.5 Carbon Labeling**

Require emissions-footprint labels on all goods.

**KR 7.1.6 Leaks**

Control flaring, prohibit venting, and mandate prompt capping of methane leaks.

**KR 7.2 Subsidies**

End direct and indirect subsidies to fossil fuel companies and for harmful agricultural practices.

**KR 7.3 Price on Carbon**

Set national prices on greenhouse gases at a minimum of \$55 per ton, rising 5% annually.

**KR 7.4 Global Bans**

Prohibit HFCs as refrigerants and ban single-use plastics for all nonmedical purposes.

### KR 7.5 Government R&D

Double (at minimum) public investment into research and development; increase it fivefold in the United States. (\* This is the timeline for developed countries. For developing countries, this key result is expected to take more time (5–10 years).)

## **Objective 8 Turn Movements into Action**

### KR 8.1 Voters

The climate crisis is a top-two voting issue in the twenty top-emitting countries by 2025.

### KR 8.2 Government

A majority of government officials—elected or appointed—will support the drive to net zero.

### KR 8.3 Business

100% of Fortune Global 500 companies commit immediately to reach net zero by 2040.

#### KR 8.3.1 Transparency

100% of these companies publish transparency reports of their emissions by 2022.

#### KR 8.3.2 Operations

100% of these companies achieve net zero in their operations (electricity, vehicles, and buildings) by 2030.

### KR 8.4 Education Equity

The world achieves universal primary and secondary education by 2040.

### KR 8.5 Health Equity

Eliminate the gaps among racial and socio-economic groups in greenhouse gas-related mortality rates by 2040.

### KR 8.6 Economic Equity

The global clean energy transition creates 65 million new jobs, equitably distributed and outpacing the loss of fossil-fuel jobs.

## **Objective 9 Innovate!**

### KR 9.1 Batteries

Produce 10,000 GWh of batteries yearly at less than \$80 per kWh by 2035.

## KR 9.2 Electricity

Cost of zero-emission baseload power reaches \$0.02 per kWh, with peak-demand power reaching \$0.08 per kWh by 2030.

## KR 9.3 Green Hydrogen

Cost of producing hydrogen from zero-emissions sources drops to \$2.0 per kg by 2030, \$1.0 per kg by 2040.

## KR 9.4 Carbon Removal

Cost of engineered carbon dioxide removal falls to \$100 per ton by 2030, \$50 per ton by 2040. KR 9.5 Carbon-Neutral Fuels Cost of synthetic fuel drops to \$2.50 per gallon for jet fuel and \$3.50 for gasoline by 2035.

## **Objective 10 Invest!**

### KR 10.1 Financial Incentives

Increase global government subsidies and support for clean energy from \$128 billion to \$600 billion.

### KR 10.2 Government R&D

Increase public-sector funding of energy R&D from \$7.8 billion to \$40 billion a year in the U.S.; other countries should aim to triple current funding.

### KR 10.3 Venture Capital

Expand investment of capital into private companies from \$13.6 billion to \$50 billion per year.

### KR 10.4 Project Financing

Increase zero-emissions project financing from \$300 billion to \$1 trillion per year.

### KR 10.5 Philanthropic

Investing Increase philanthropic dollars from \$10 billion to \$30 billion per year.