# Updates on Sustainability in Telecom

Harry Huang – Product Manager

TelariX

# Agenda

1

**Refresher**

Review key concepts and terms related to sustainability in telecom

2

**Policy Updates**

Review key policy updates that effect the majority operators

3

**Technology Updates**

Review the upcoming telecom advances that will impact sustainability

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# About me

10+ years of experience in the telecom industry

Master's Degree in the Humanities from NYU

Former Editor-in-Chief for an interdisciplinary journal covering Critical Theory, Climate Justice, and Sustainability

Published essayist on topics including literature and climate

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# Sustainability: A Refresher

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# What Is Sustainability in Telecom?

- Encapsulates the ongoing efforts made in the telecom industry to facilitate more environmentally friendly and renewable practices
  - This is a critical issue for consumers, businesses, and governmental entities
- Sustainability efforts are typically focused around:

Climate change

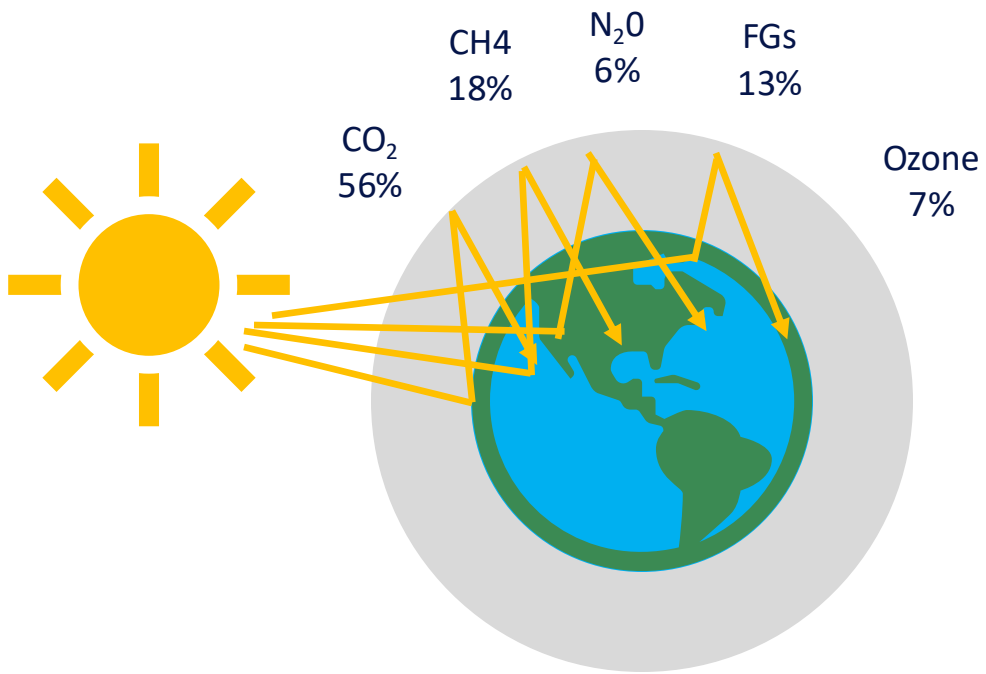
Natural Resource Conservation

Biodiversity

Pollution and Sanitation

# How the Earth Warms Up

- Greenhouse gases (GHG) emissions are the main contributor to rising global temperatures through the burning of fossil fuels: coal, oil, natural gas




$CO_2$: Carbon dioxide (fossil fuel burning)
CH4: Methane (livestock/natural gas)
$N_2O$: Nitrous oxide (soil/agricultural)
FG: Fluorinated gases (cooling/refrigeration)

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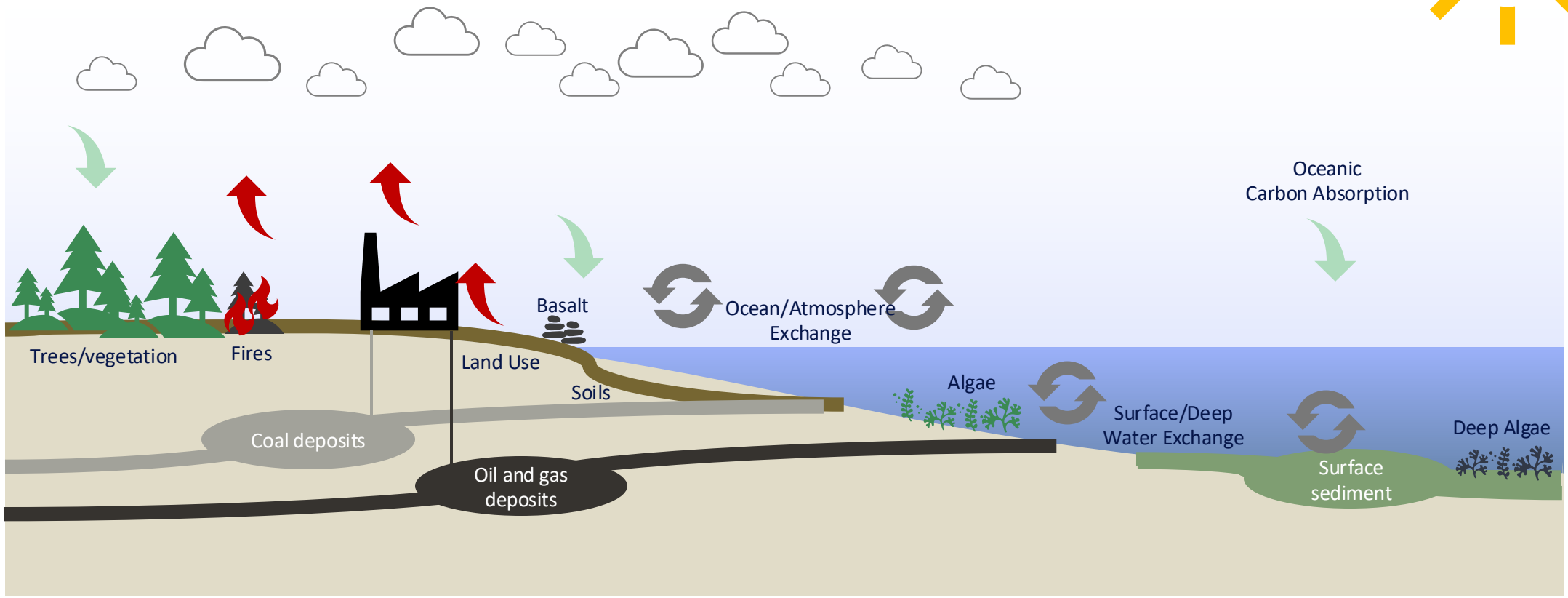
# The Global Carbon Cycle

$CO_2$: Carbon dioxide
CH4: Methane
$N_2O$: Nitrous oxide
FG: Fluorinated gases




It's important to note that the global carbon cycle is dynamic: That means, while carbon is released into the atmosphere through processes like burning fossil fuels, there are other (natural sink: oceanic, forestation) processes which help extract the carbon from the atmosphere

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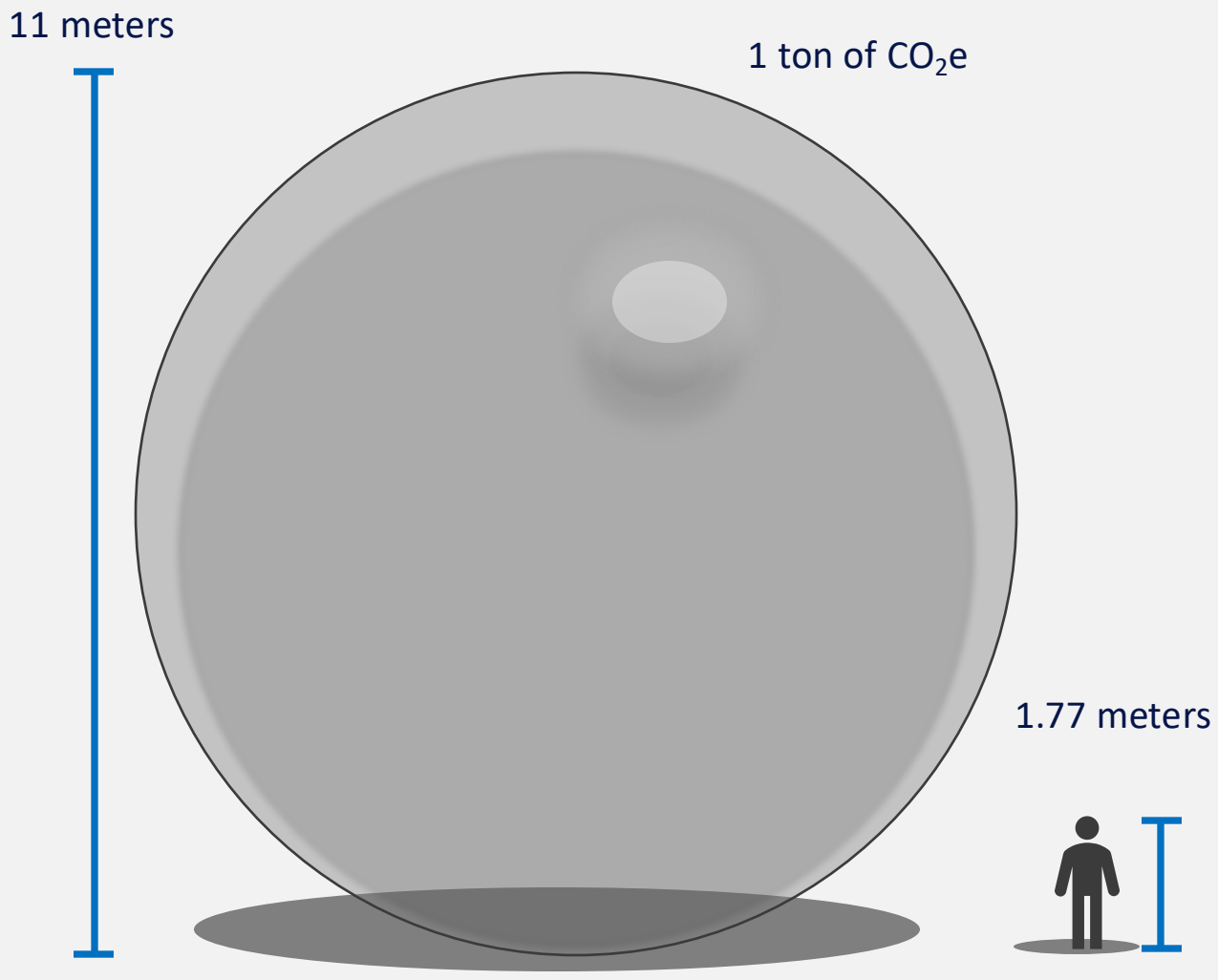
# Measure: $CO_2e$

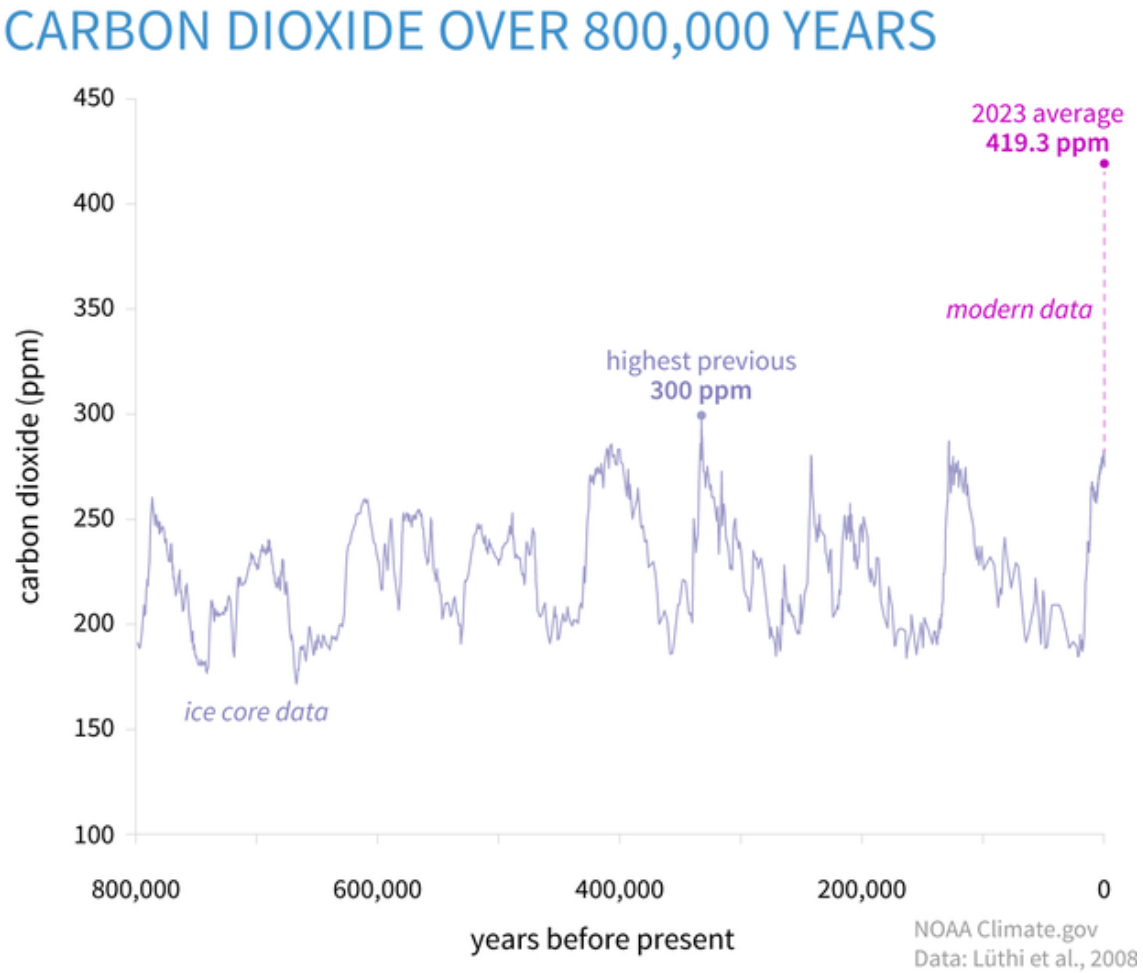
- $CO_2e$ (or carbon dioxide equivalent): used as a standard measure for greenhouse gases
- Average annual carbon footprint per individual: 4 $CO_2e$ tons
  - Average in US in 2024: 14 tons (down from 16)
  - The number of trees needed to counteract 1 $CO_2e$ ton ~ 50.




The total global emissions output in 2024 was 41.6 billion tonnes (up from 40.6 billion in 2023)

# Measure: PPM

- PPM (or parts per million): used to measure the number of carbon units per million (density) of carbon in the atmosphere
- Recently recorded PPM averages vastly exceeds data from any time in history
- PPM from the past air bubbles stored in ice cores, primarily from Antarctica



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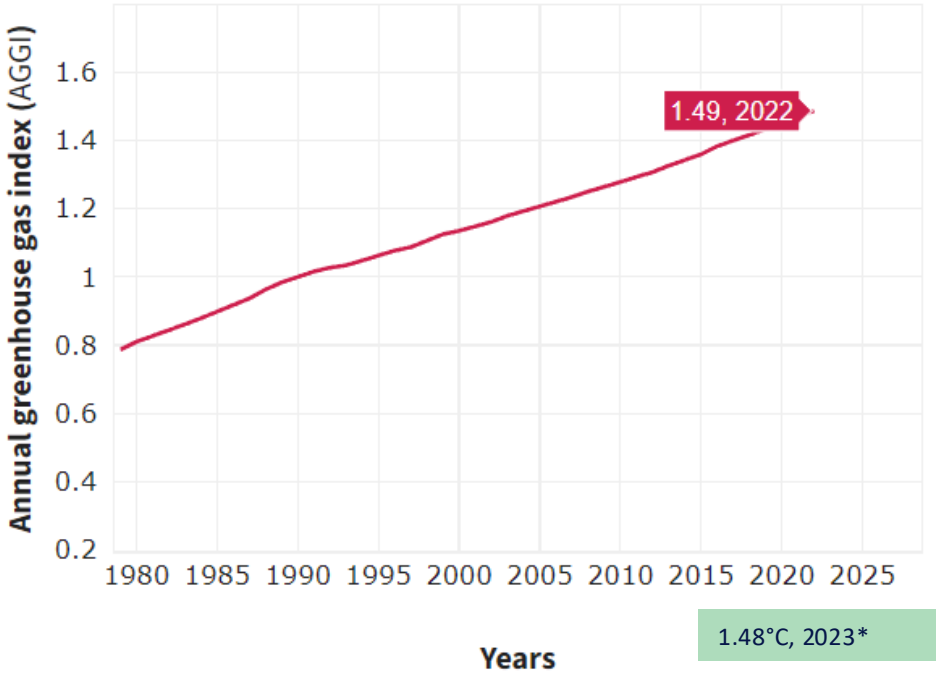
# How We're Tracking the Progression of Climate Change

- Most sustainability discussions today focus on the release of greenhouse gases, the biggest factor in rising global temperatures.

To avoid the worst effects of climate change, the world must limit global temperature increase (compared to pre-industrial times) to below:

1.5°C / 2.7°F

-United Nations




National Oceanic and Atmospheric Administration (NOAA) climate.gov

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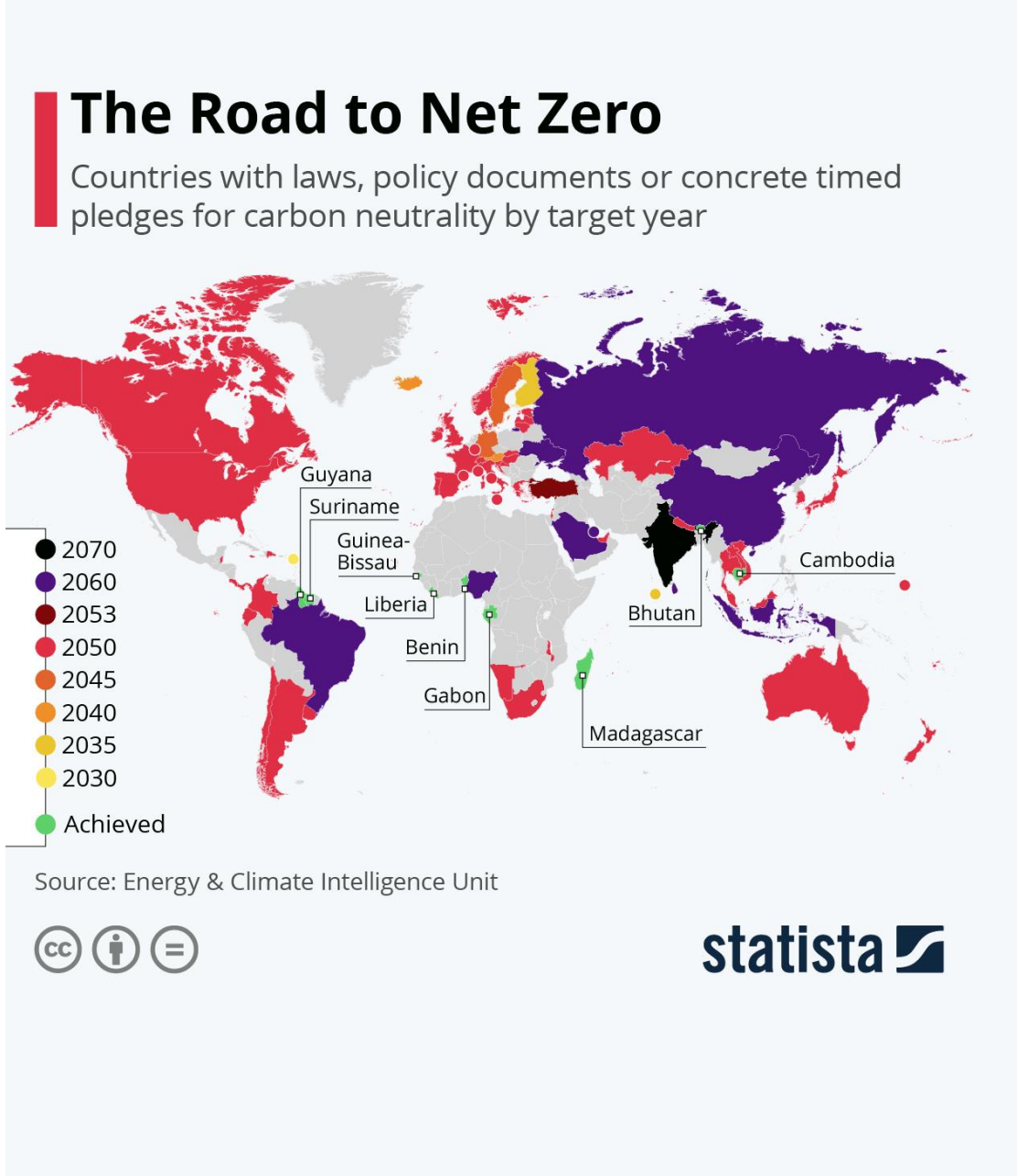
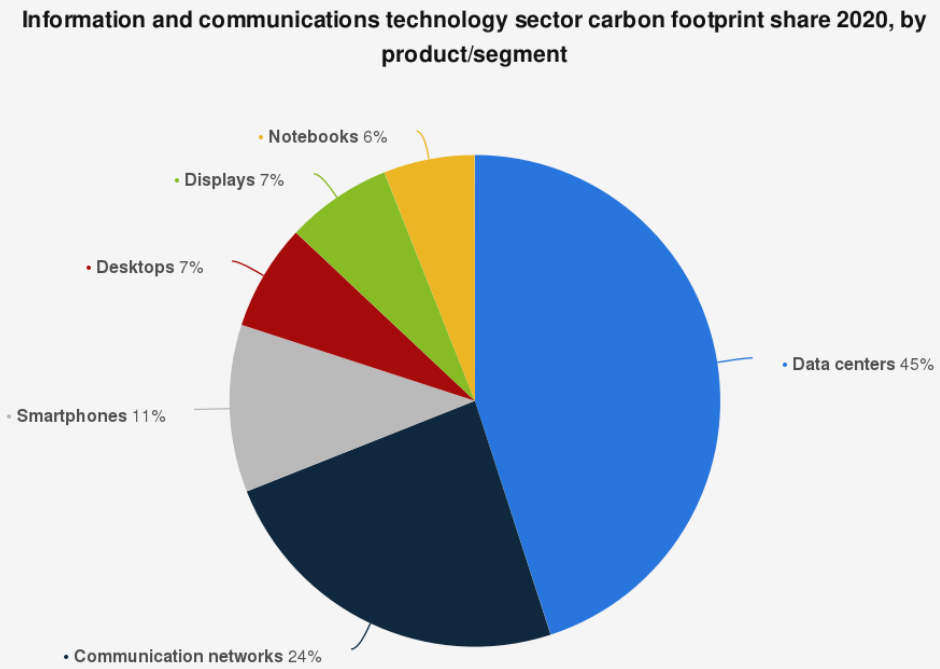
# Net-Zero Impact

- Countries around the world have targeted to achieve a “net-zero” emissions impact before 2050
- To stave off the most harmful effects of climate change, scientists are recommending even more aggressive targets
- Some countries are targeting net-zero impact by 2030



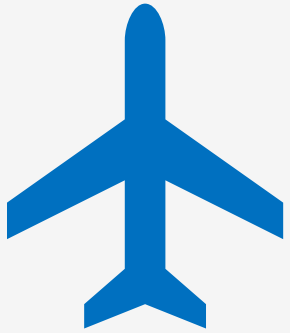
# Why is this Important in Telecom?

- The telecom industry was responsible for 1.6% of total emissions (600 million of 37 billion CO2e tons) in 2022




or
600 million
tons $CO_2e$

=



Data centers are projected to amount to 8% of global energy usage by 2030

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# How Does this Affect Your business?

## Policy

Due to the urgency of climate change, many world organizations and countries are adopting strict GHG emission guidelines (such as those proposed by the 2016 Paris Agreement)

## Legislation

To enforce these policies, governments (EU, UK, VCMDA in California) are passing stricter GHG emissions standards and anti-greenwashing laws

## Impact

To ensure that your business does not receive significant fines or risk being ostracized by consumers and enterprises, you'll need to properly report your carbon footprint

*Greenwashing: Promoting false solutions that distract or delay credible action

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# How Do Telecom Companies Act on Sustainability?

1

**Set Targets**

- Set Science Based Targets for Scope 1/2/3 measurements

2

**Implement Targets**

- Implement Targets with company policy changes

3

**Report Progress**

- Publish annual CSR (Corporate Social Responsibility) reports on Scope 1/2/3 progress

Science-based targets (SBTs) are emissions reduction goals aligned with the necessary level of decarbonization to limit global warming to within 2°C above pre-industrial levels, and ideally below 1.5°C, as outlined in the Paris Agreement.

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# What Are Scope 1, 2, and 3?

## Scope 3 (Upstream)

Cargo transport

Business Travel

Employee Commuting

Employee Equipment

Emissions produced through products or services purchased to operate business. For instance, travel, shipping, software services, electronic equipment

## Scope 2 (Upstream)

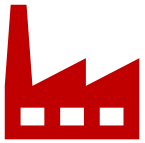
Air conditioning and heating

Data centers

Building lighting

Purchased electricity, steam, heating, cooling, and so on, for own use, which produces emissions

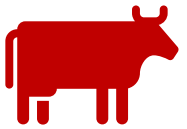
## Scope 1



Company Facilities

Company Vehicles

Company Infrastructure



Livestock

Emissions sourced from own organization. For instance, buildings or trucks owned by the company

## Scope 3 (Downstream)

Use of Sold Product

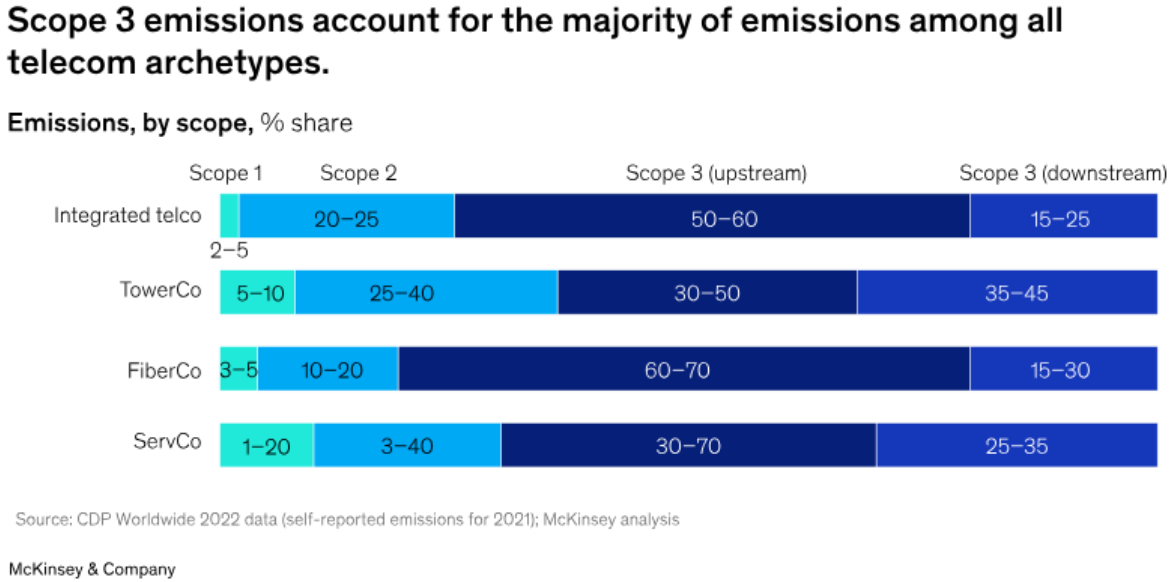
Investments

Delivery

Emissions produced from goods your organization has supplied. For instance, sold electronic equipment

# The Scope 3 Dilemma

- Scope 3 emissions are both the largest contributors of CO2e emissions for companies (75% on average) and the most difficult to track
- Initiatives like the CSRD (Corporate Sustainability Reporting Directive) in the EU have pushed operators to submit and validate science-based reduction emissions targets



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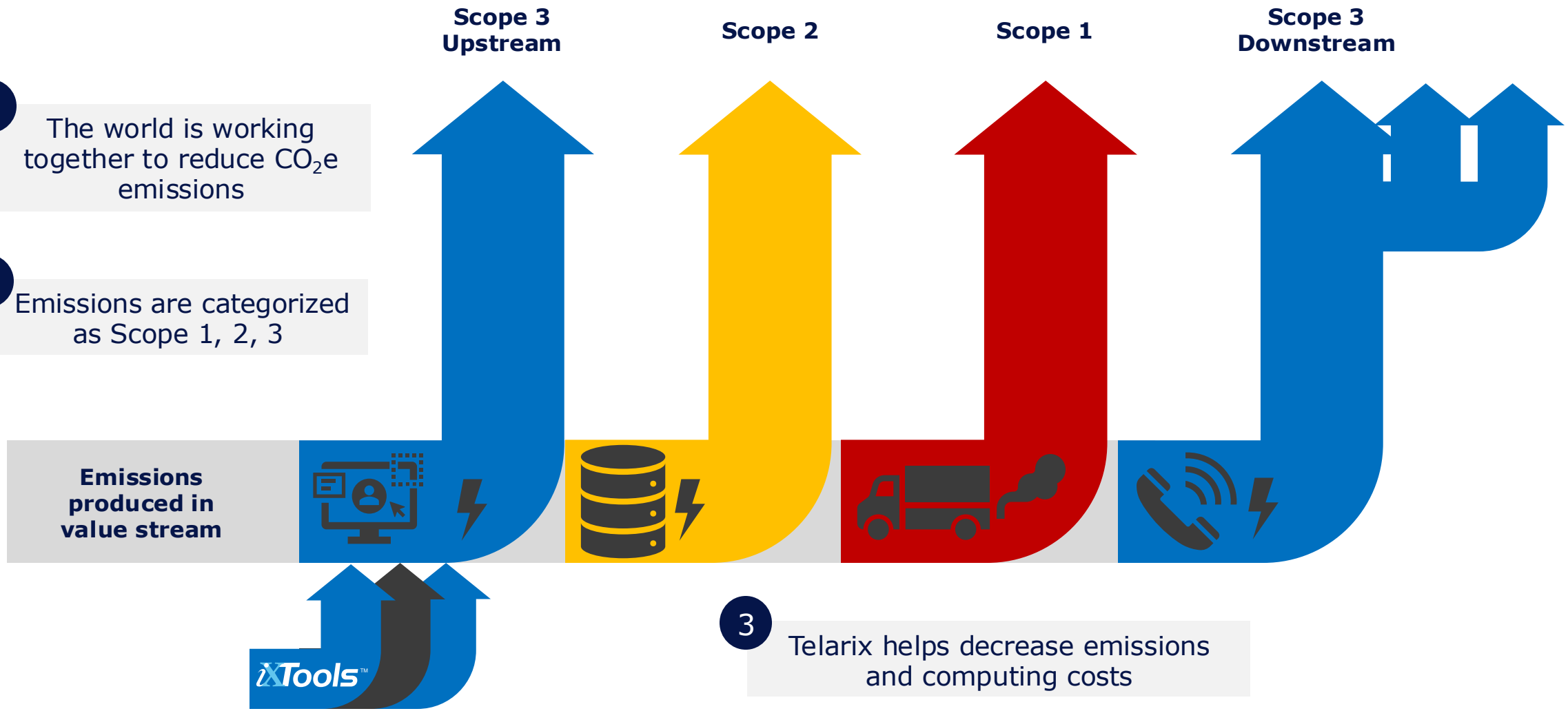
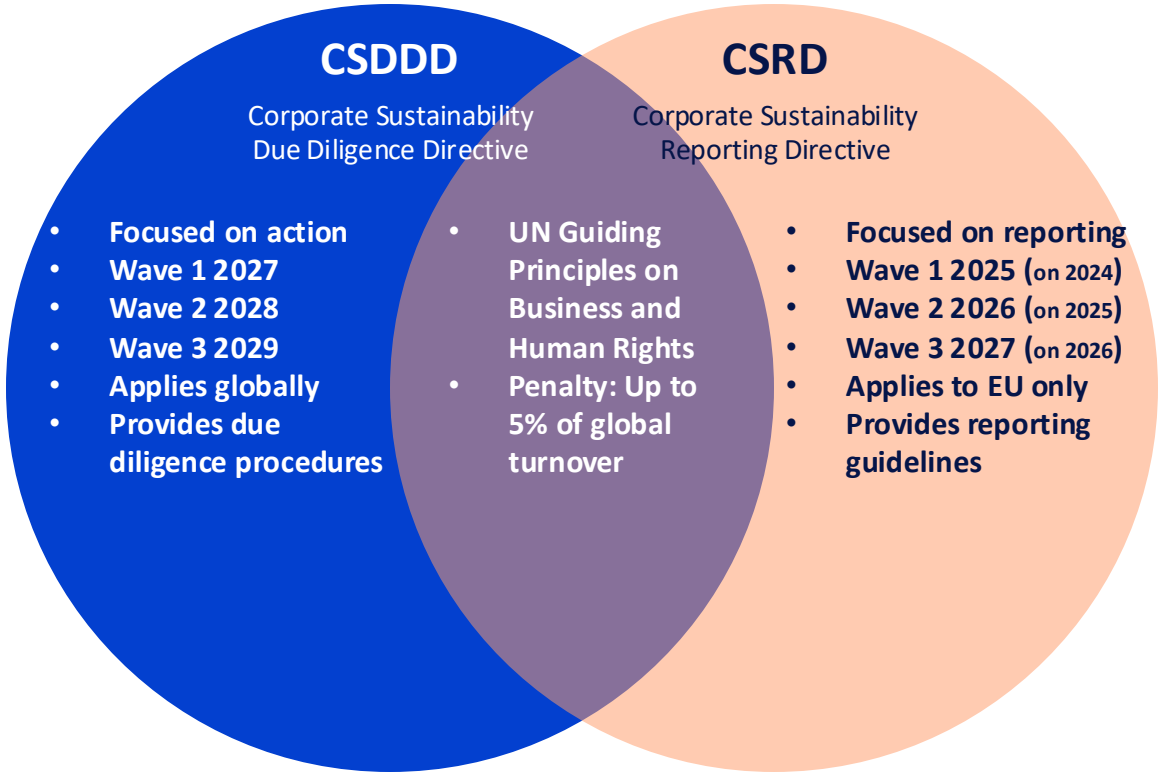
# The Big Picture




1. The world is working together to reduce $CO_2e$ emissions
2. Emissions are categorized as Scope 1, 2, 3
3. Telarix helps decrease emissions and computing costs

# Policy Updates

# Key Policies: CSRD and CSDDD




**Wave 1:**
Large EU/EU-parent companies with > 500 employees

**Wave 2:**
Large EU/EU-parent companies with €50 million in turnover or €50 million balance

**Wave 3:**
Listed small and medium-sized enterprises

The CSRD and the CSDDD are two complementary EU directives aimed at enhancing corporate sustainability and accountability

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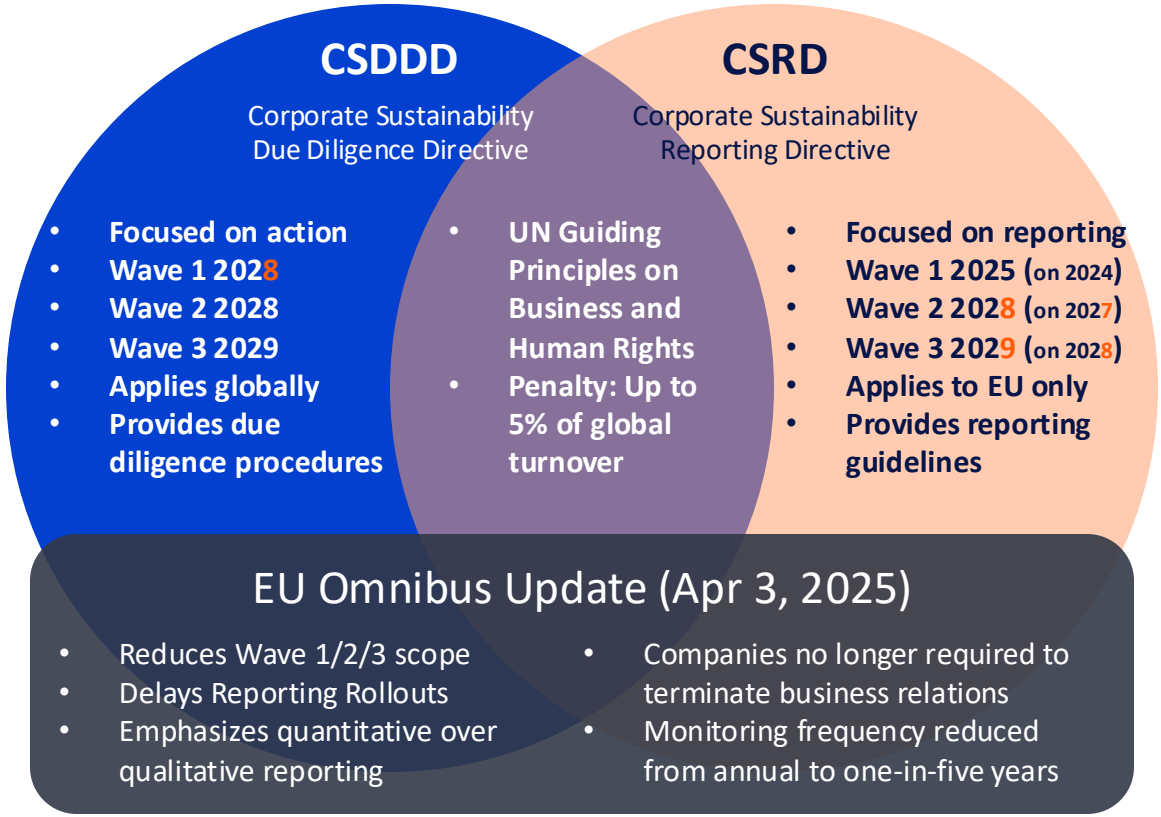
# Key Policies (Updated): CSRD and CSDDD




**Wave 1:**
Large EU/EU-parent companies with > 500 employees

**Wave 2:**
Large EU/EU-parent companies with > 1000 employees **and** €50 million in turnover or €50 million balance

**Wave 3:**
Listed small and medium-sized enterprises (are now **optional**)

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# Technology Updates

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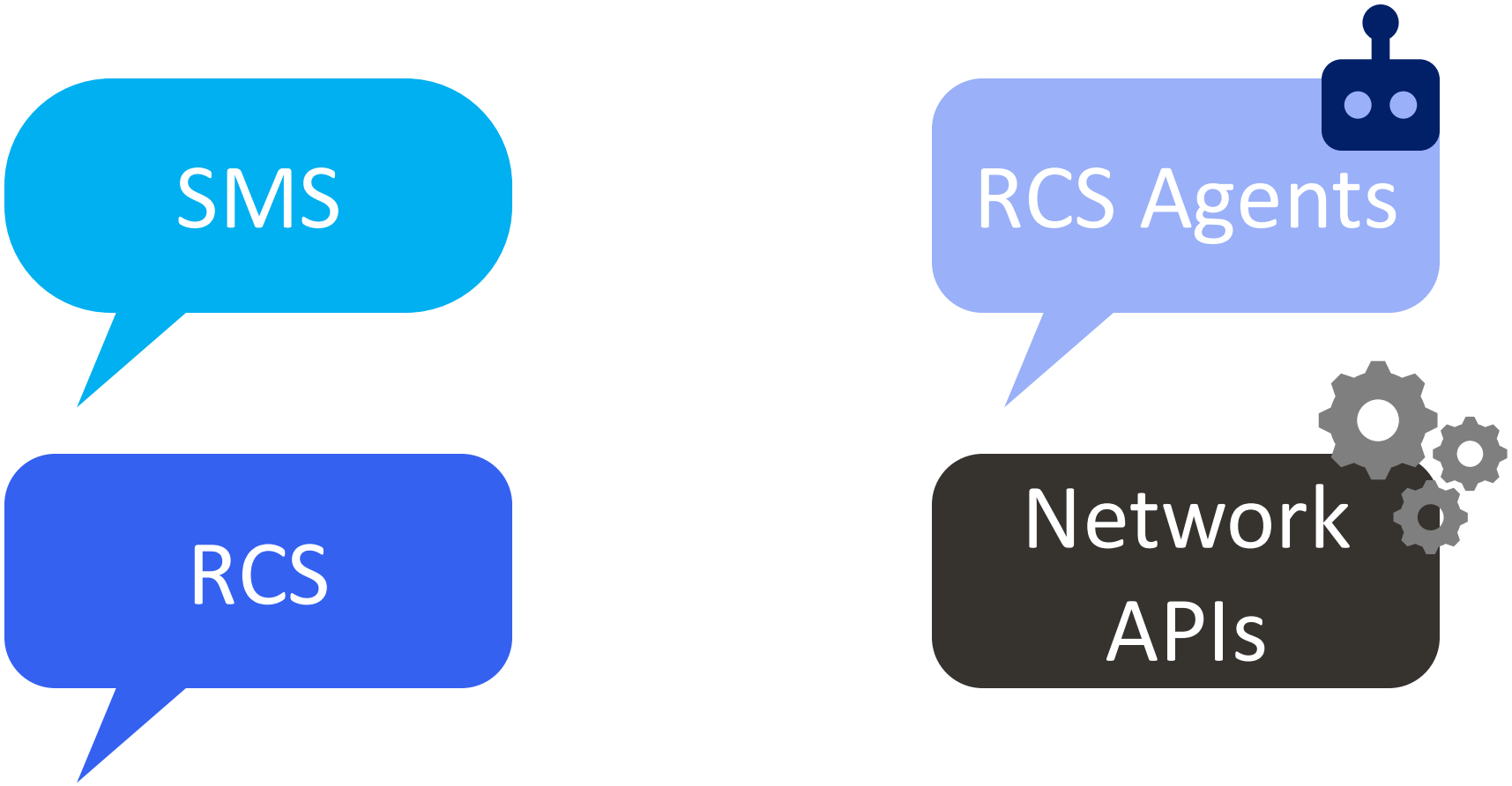
# Key Technologies to Consider



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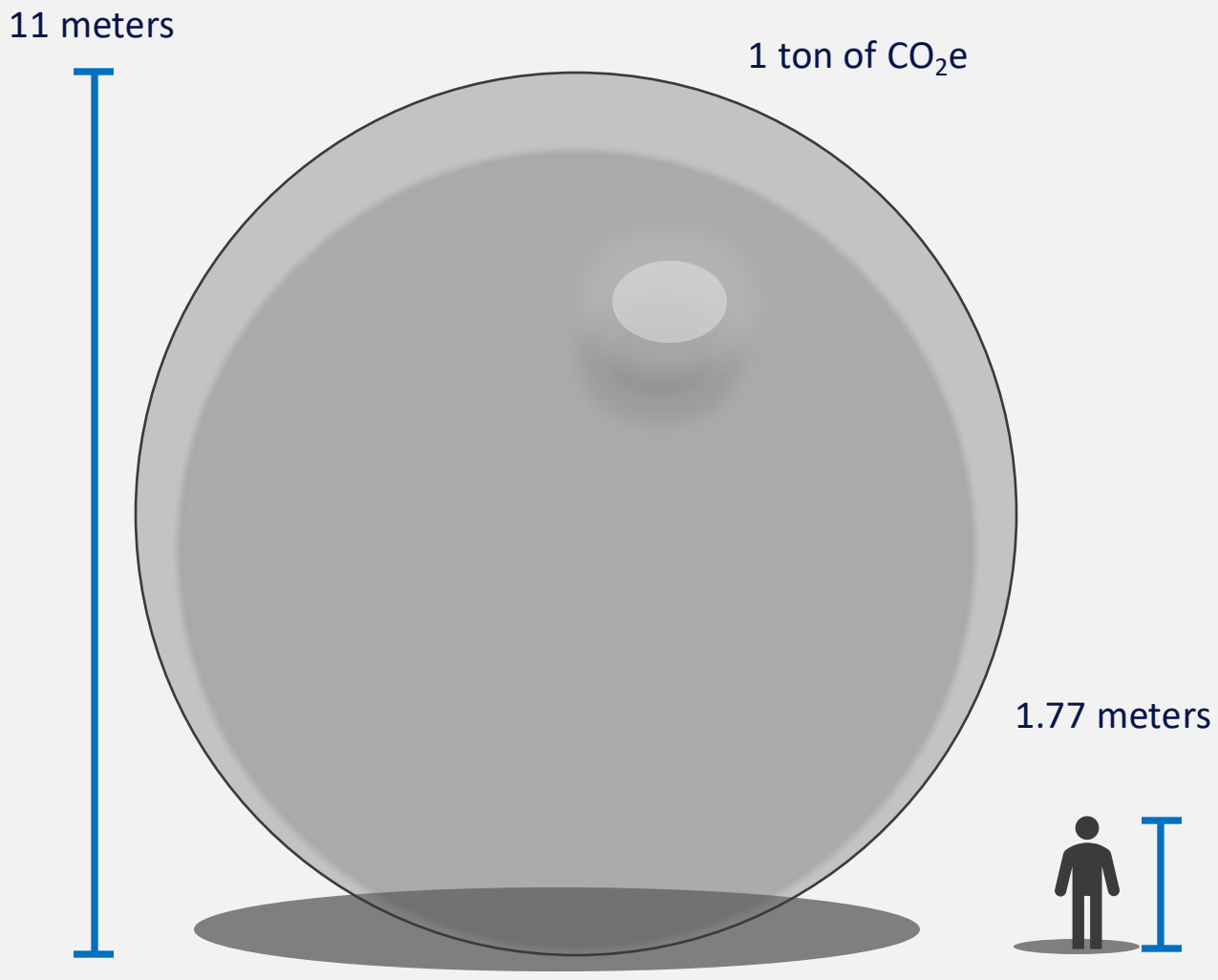


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# Emissions Output Comparison



Per msg: 14 milligrams
*Yearly: 117,000 tons

***8.4 trillion SMS messages are delivered per year**

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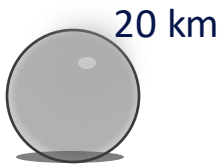
# Emissions Output Comparison

SMS

RCS


This bubble is 9 times the height of the Burj Khalifa

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Per msg: 300 milligrams
*Yearly: 2,500,000 tons

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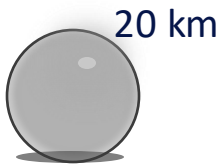
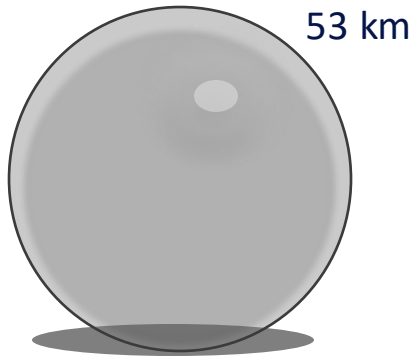
RCS

RCS Agents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Per msg: 5,300 milligrams
*Yearly: 45,000,000 tons

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# Emissions Output Comparison

SMS

7.3 km

This bubble is 9 times the height of the Burj Khalifa

Per msg: 14 milligrams
*Yearly: 117,000 tons

RCS

20 km

Per msg: 300 milligrams
*Yearly: 2,500,000 tons

RCS Agents

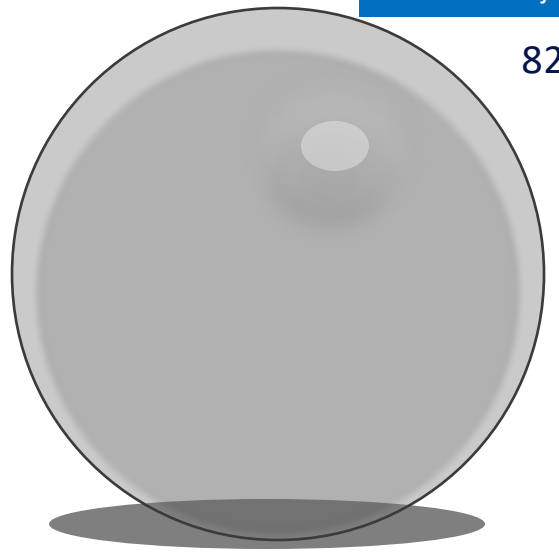
53 km

Per msg: 5,300 milligrams
*Yearly: 45,000,000 tons

Mail

This bubble is 100 times the Burj Khalifa

82.3 km



Per msg: 20,000 milligrams
*Yearly: 167,000,000 tons

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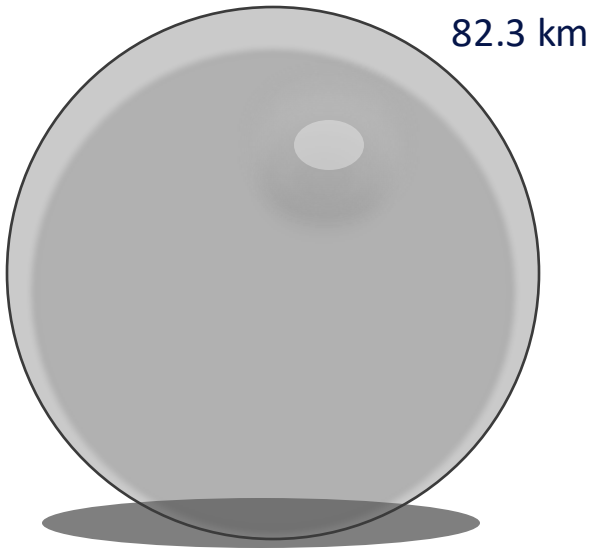
# What about driving?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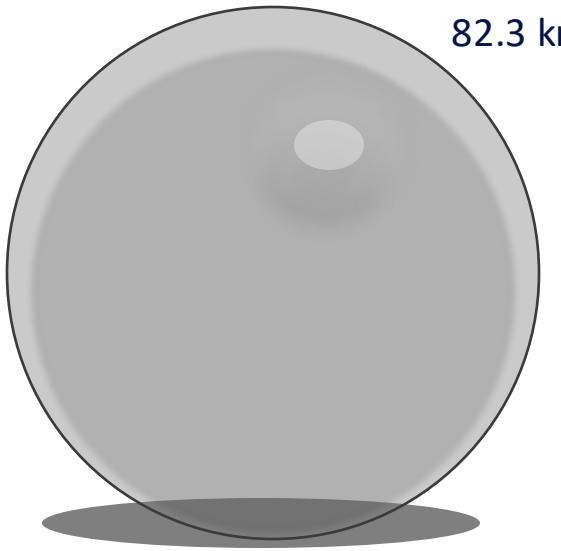


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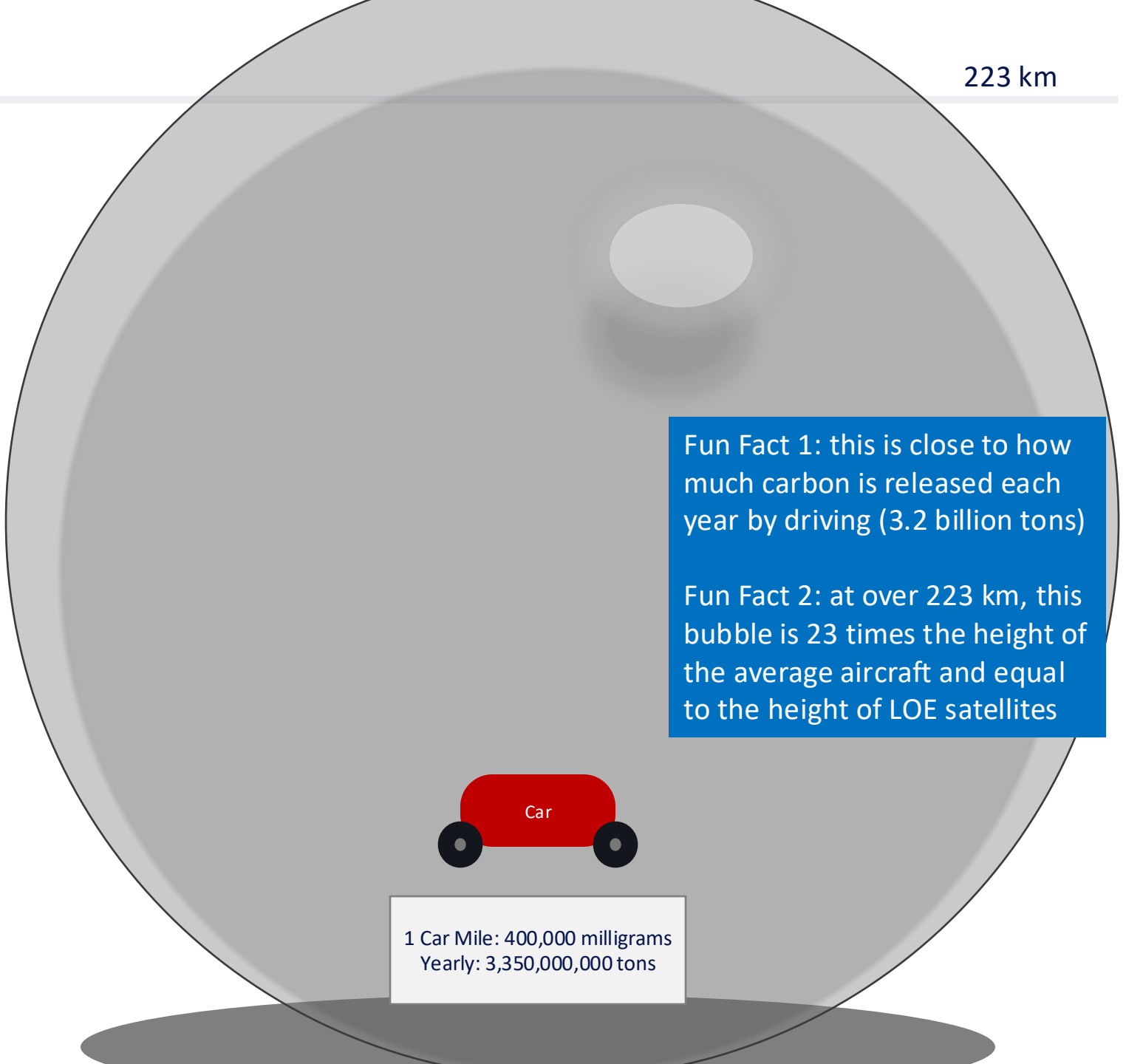


1 Car Mile: 400,000 milligrams
Yearly: 3,350,000,000 tons

Fun Fact 1: this is close to how much carbon is released each year by driving (3.2 billion tons)

Fun Fact 2: at over 223 km, this bubble is 23 times the height of the average aircraft and equal to the height of LOE satellites

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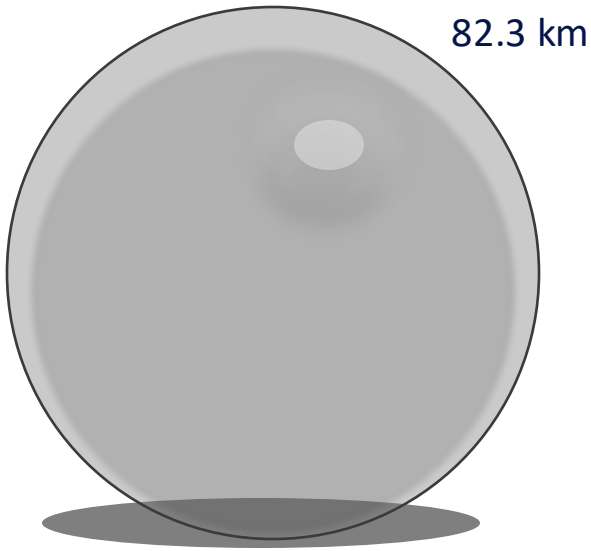
# It’s not all bad news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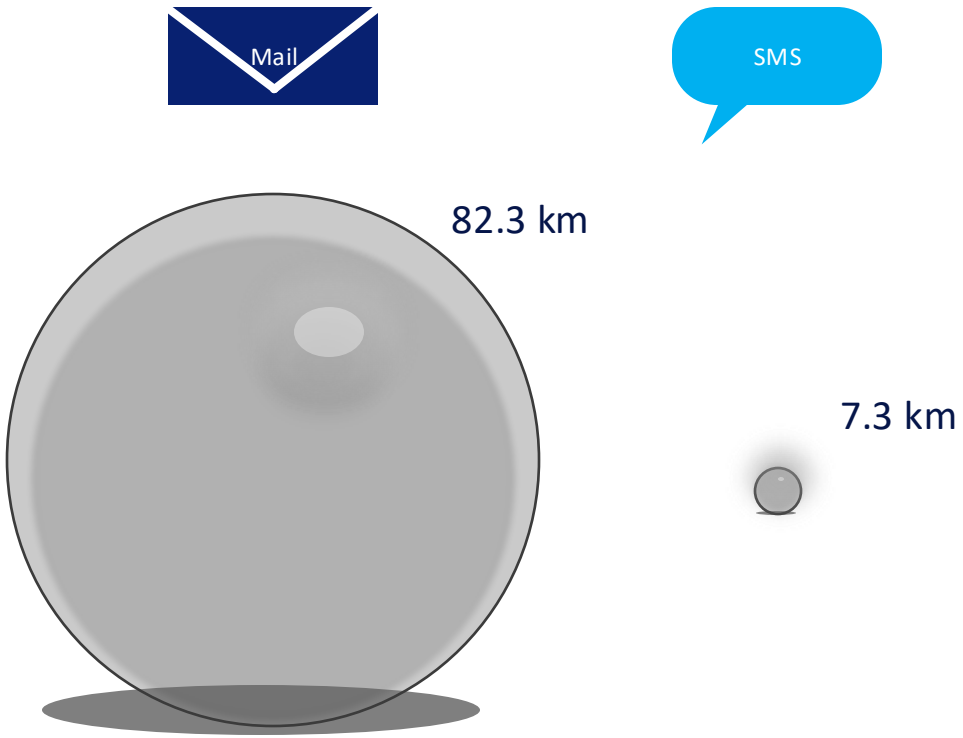


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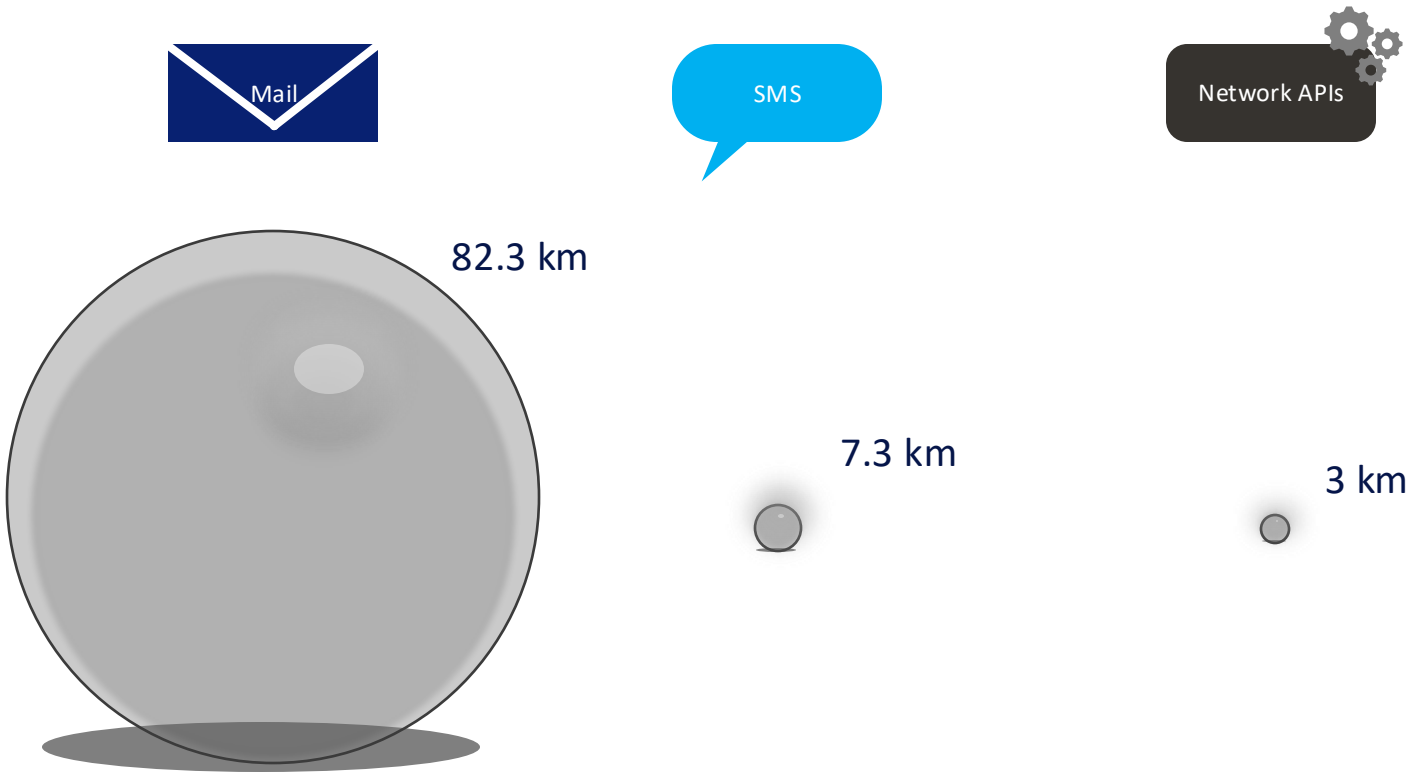


The telecom industry is helping decrease emissions overall

| Per msg: 20,000 milligrams<br>*Yearly: 167,000,000 tons | Per msg: 14 milligrams<br>*Yearly: 117,000 tons | Per Network API: 1 milligram<br>*Yearly: 8,000 tons |
|---|---|---|

***8.4 trillion SMS messages are delivered per year**

# To recap: why I’m still hopeful

- While imperfect, telecom remains a positive force against climate change
- We need to remain vigilant
- Remain education
- And remain **conversational**

# Questions?

# Thank You

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