OLLI Climate Change 2025 - week 3

To access slides and links from classes 1,2 go to
https://scruzclimate.org/olli-2025/

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Moss Landing Battery Fire Jan 17 2024

Mark Jacobson quote

"I don't consider this a disaster. San Bruno was a disaster," Jacobson said, citing the explosion of a PG&E natural gas pipeline in 2010 that killed 8 people and destroyed 37 homes in a San Mateo County neighborhood.

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This week's topics

1. [Drawdown](#)

2. Methane

3. EV's

Methane

The 2nd worst GreenHouse Gas   From:
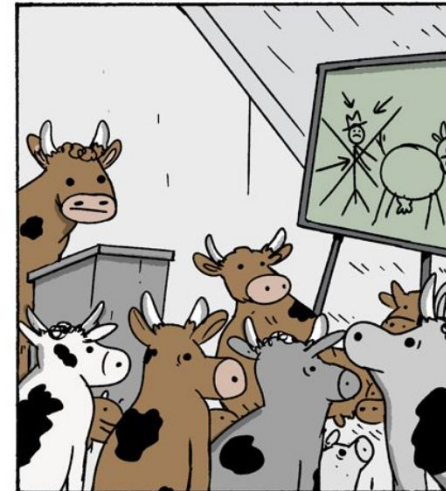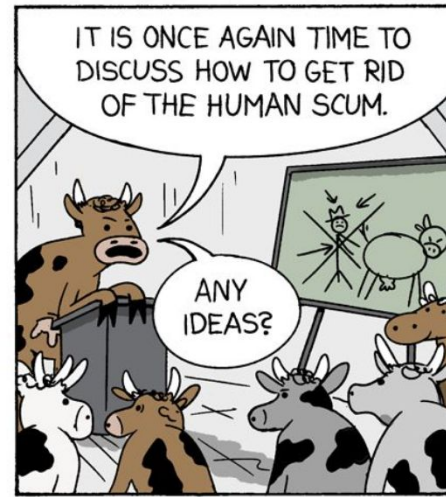
Cows - meat and dairy production

Oil/gas industry - leaks

LANDFILLS

Rice growing
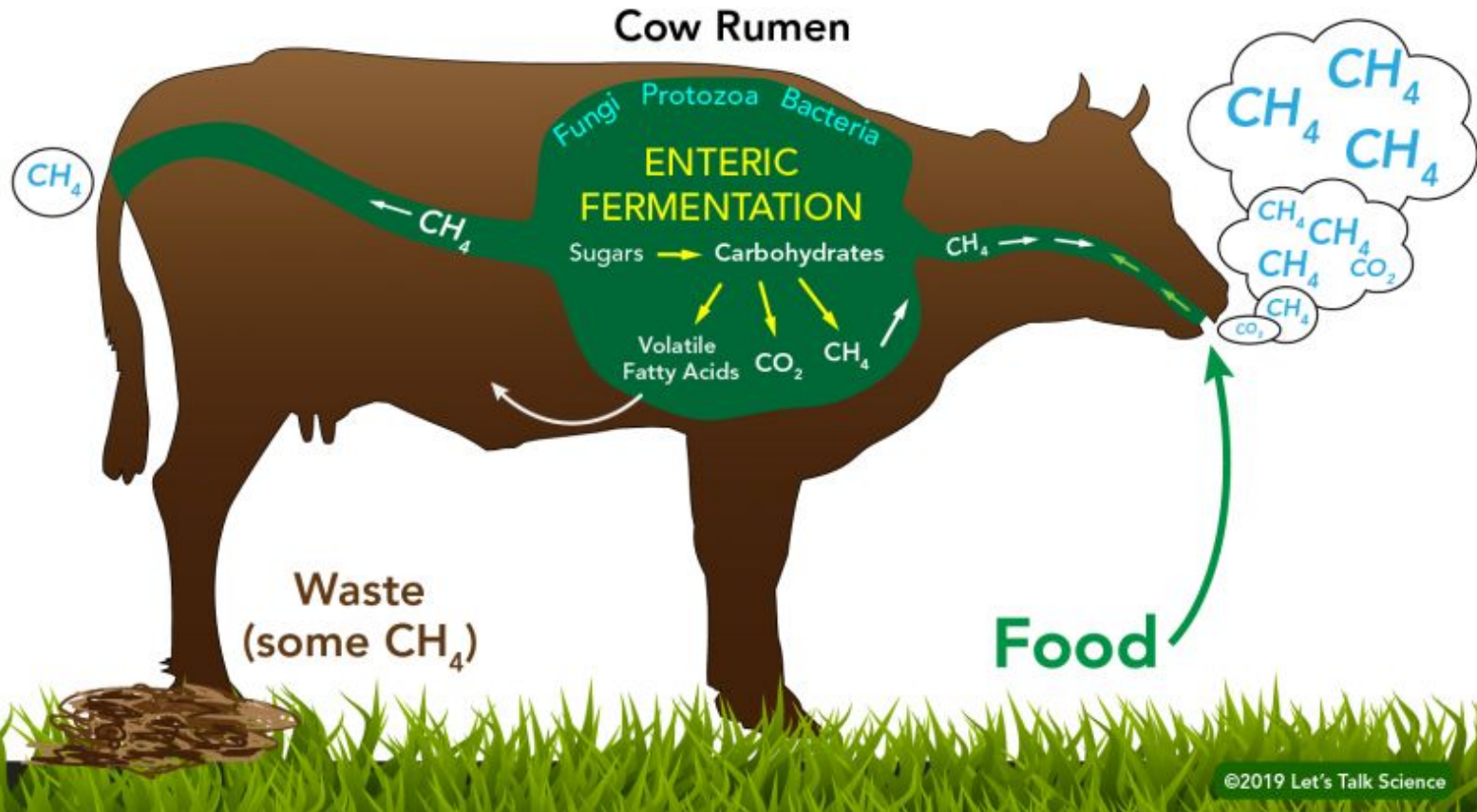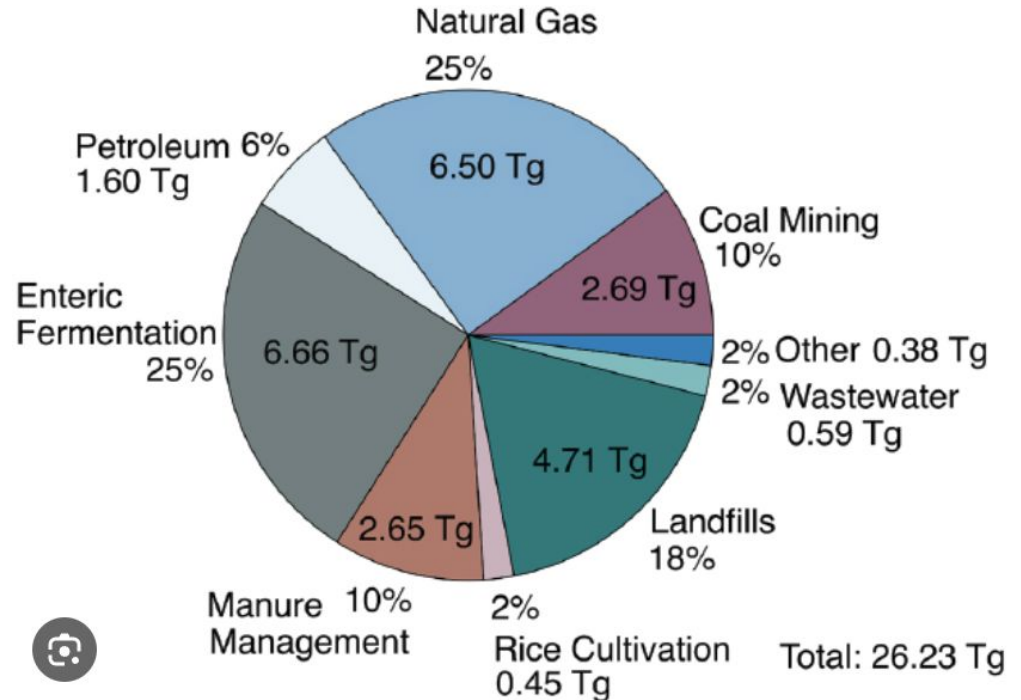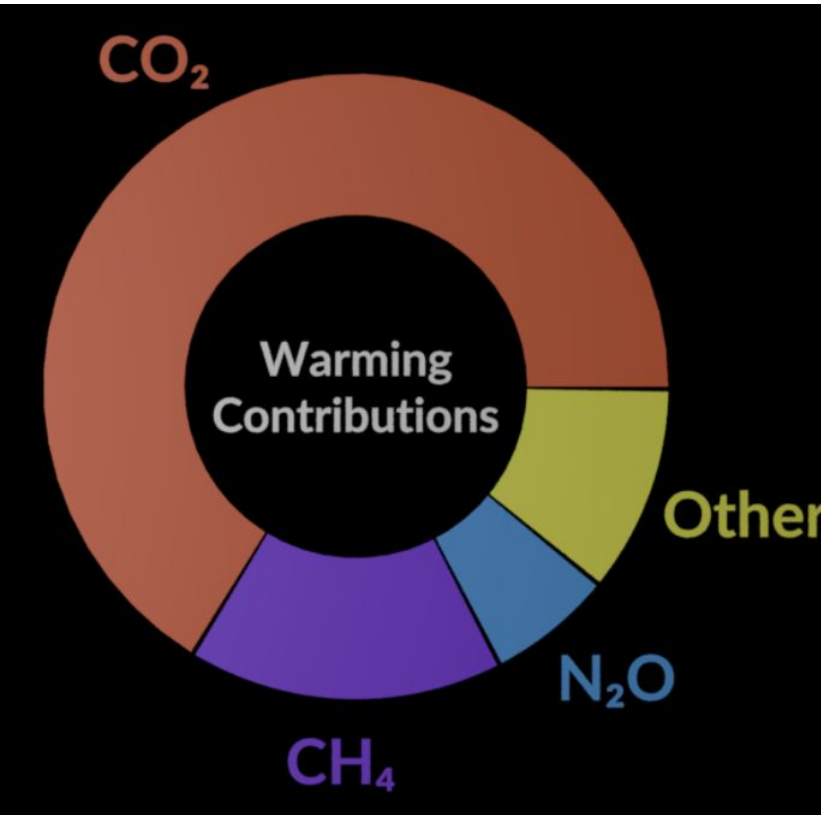
Wetlands

Actually cows mostly BURP methane

Why Beef is so damn carbon-expensive...

New feed additives - Bovaer and others - may help reduce Methane emissions. Manure ponds are also a problem.
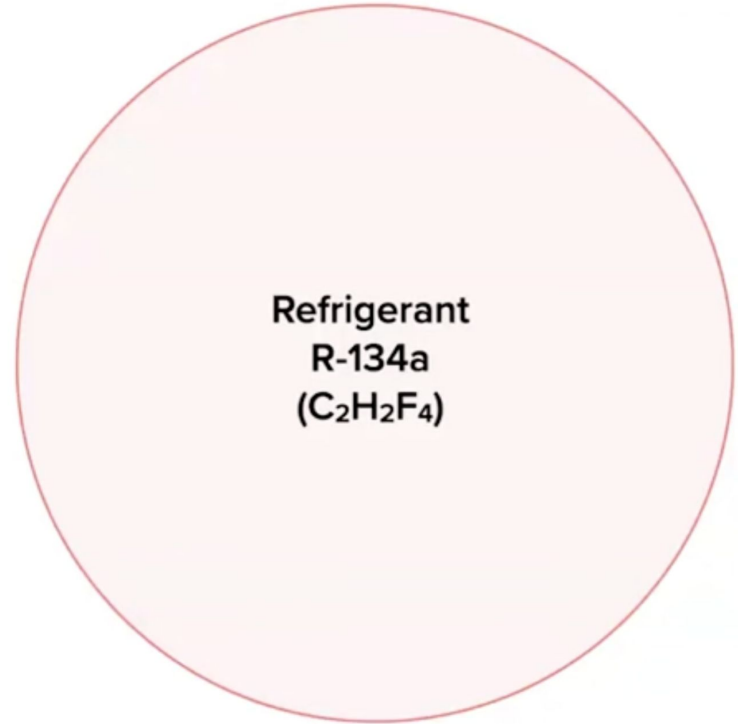
Methane is an important warming gas

Relative heat trapping power of Greenhouse gases.

For simplicity all are calculated in CO_2 equivalent units

Carbon dioxide (CO_2) ○   Methane (CH_4)

Refrigerant
R-134a
($C_2H_2F_4$)

Methane Emissions Alarming Increase

Global monthly average CH$_4$ concentrations – 1983 to 2024 parts per billion (ppb)

575 million tonnes per annum

January 2024
1931 ppb
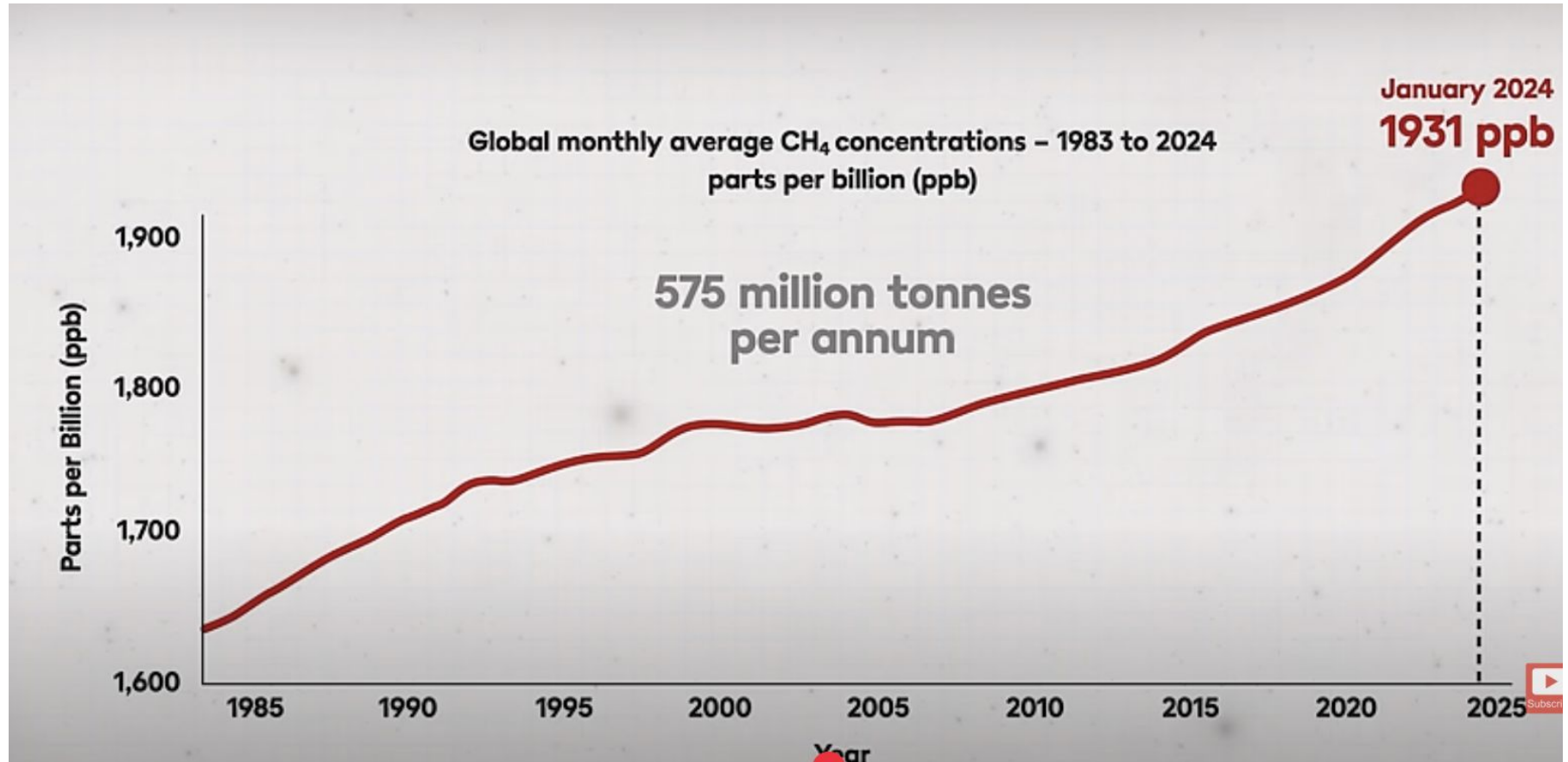
Natural Gas is mostly Methane CH_4

It leaks from many places

Good landfills are capturing and using the methane

Link to carbon mapper

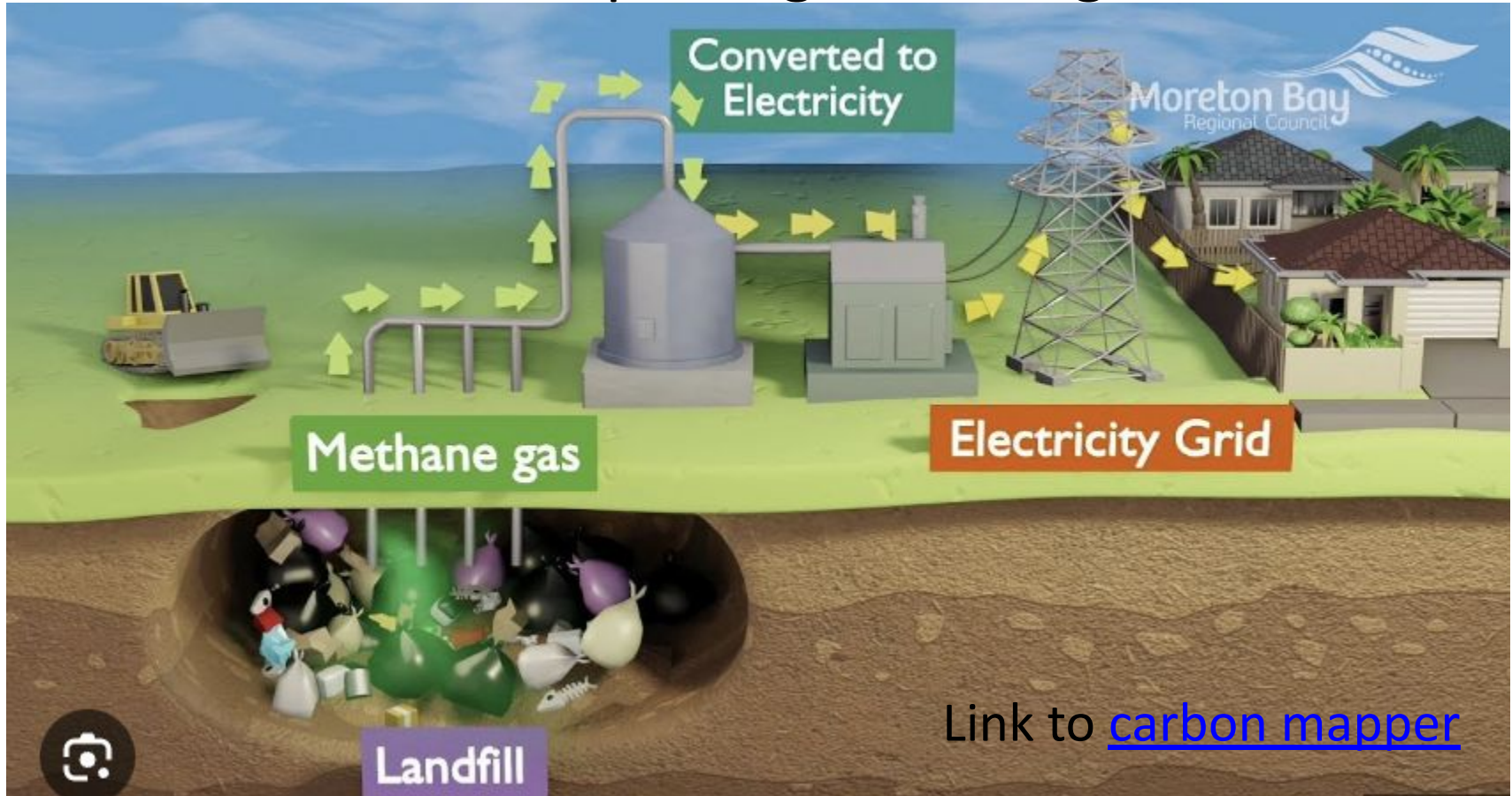This satellite image shows methane emissions from a nearby dump which is apparently NOT capturing it's methane. Nothing detected from Buena Vista!

Other High Emission areas

Carbon mapper link   - set filter

1. landfills   Stockton SE
2. livestock   Turlock SE
3. oil/gas   Bakersfield N   (set filter >100)

With the improved detection emissions can be better controlled.

Electric Vehicles - EVs

EV Myths   - Dave Borlace Video - watch to 6.5 mins

IEA assessment

Energy needed for 100km of travel, based on 2023 data (kWh)

Electric car

Petrol car
(US - Gasoline)

Refinery
losses 6.3 kWh

Input energy for electric
vehicles is a fraction
of the size (29%)

Power plant
losses 8.0 kWh

Drivetrain
losses 2.4 kWh

↓ 30 kWh

Fossil Fuel
105 kWh

Energy
to drive
100km

20 kWh

17 kWh

Clean Power

20 k

Electricity ←

Energy
input

Petrol →
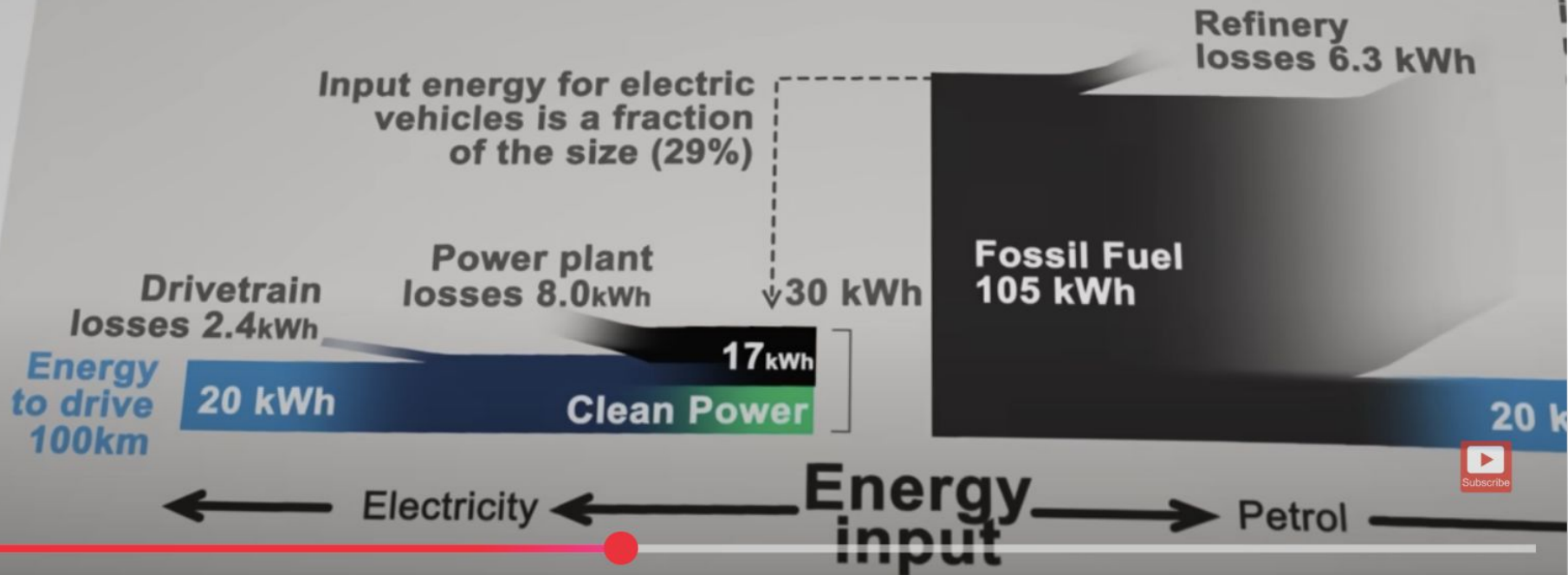
Source: EPA, E... ber ca....
The figures shown here are national averages. Energy use and losses vary by vehicle:
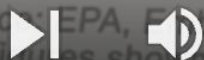
EVs Made Today Are Cleaner Than Gas Cars. By 2030, the Difference Will Be Even Starker
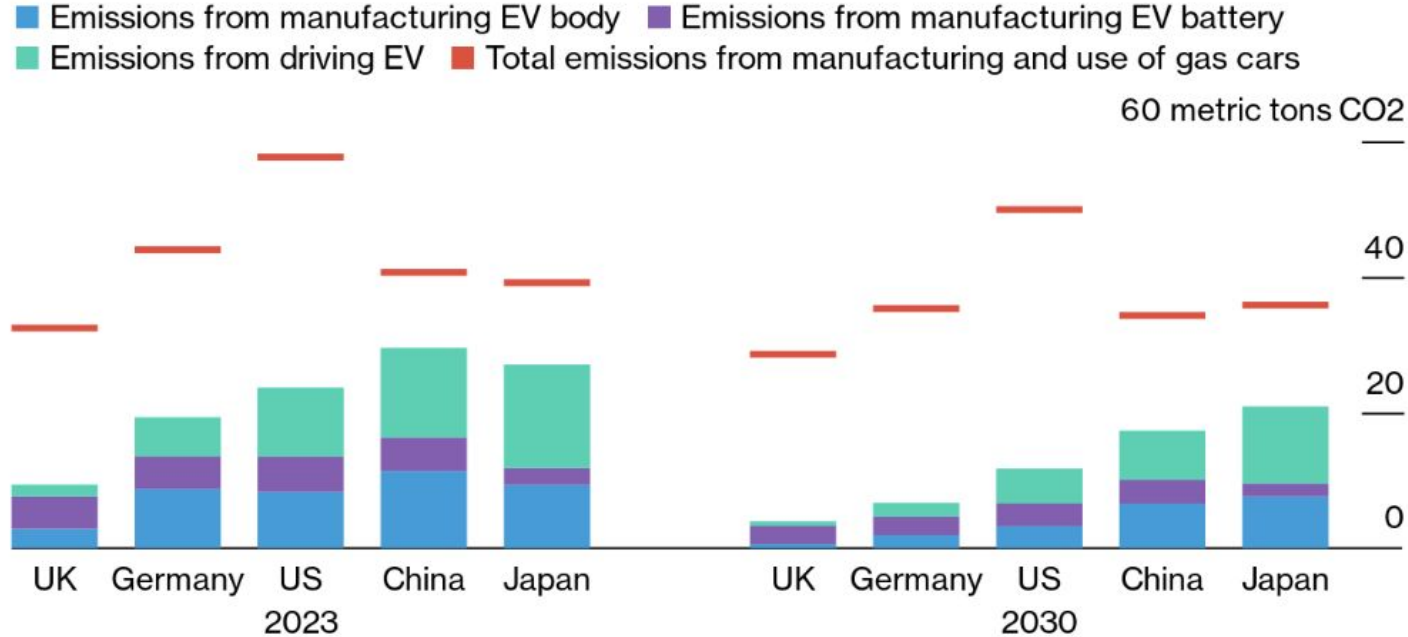
Emissions from new electric and gas cars after driving 250,000 kilometers, by market

- ■ Emissions from manufacturing EV body
- ■ Emissions from manufacturing EV battery
- ■ Emissions from driving EV
- ■ Total emissions from manufacturing and use of gas cars

Source: BloombergNEF, International Council on Clean Transportation.
Note: Takes into account the changing grid emissions over the time it takes to drive 250,000 km, which varies by market. For this analysis, EVs are battery-electric vehicles.

BloombergNEF

EVs really are Cleaner

Recent analysis includes manufacture of car and batteries

Strong Local Resource - Ecology Action

Ecology Action - [EV's for everyone](#)

[Myths](#) - 10 myths debunked

[Popular Models](#) - quick review video 3:40 mins

[Charging](#) 2 mins

Personal Experiences Shared

1. Start with 👍🏻👎🏻

2. Brief experience? (1-2 mins each)

3. Questions?

LESS!

Group discussion of potential need for us all to consume LESS

Next Week - Class 4

Nuclear   **Heat Pumps**

<u>Possible briefly</u>

Biofuels   Carbon Storage

Diets   How to live with LESS impact