

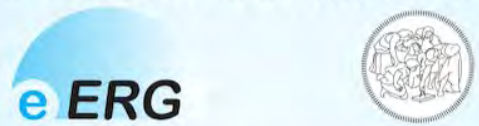


SIDE EVENT: 9 Dec. 2023, 15.00-16.30, Dubai. Blue Zone, B6 SE #7, #85 & ONLINE
Organised by INFORSE, Fraunhofer ISI, Association négaWatt, SE Sustainable Lifestyles, Sufficiency Supporting Just Climate Action, Stronger NDCs

What is sufficiency, Why is it necessary, Why desirable and How is it possible. Results of literature review.

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POLITECNICO MILANO



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<https://fulfill-sufficiency.eu/wp-content/uploads/2023/10/D2.1-Literature-review-revised-version.pdf>

**Literature review
for analysis of lifestyle change**

S U F F I C I E N C Y

- **What is it ?**
- **Why Necessary**
- **Why Possible**
- **Why Desirable**
- LITERATURE REVIEW
 - <https://fulfill-sufficiency.eu/our-research/>

Lots of references and data in the report.
Now let's use images

Photos and graph credits are attributed when known.
I'm available to include additional credits if required by authors



IPCC AR 6 /

- Sufficiency policies are a set of measures and daily practices
- that avoid demand for
 - energy,
 - materials,
 - land and
 - water
- while delivering human well-being for all
- within planetary boundaries.

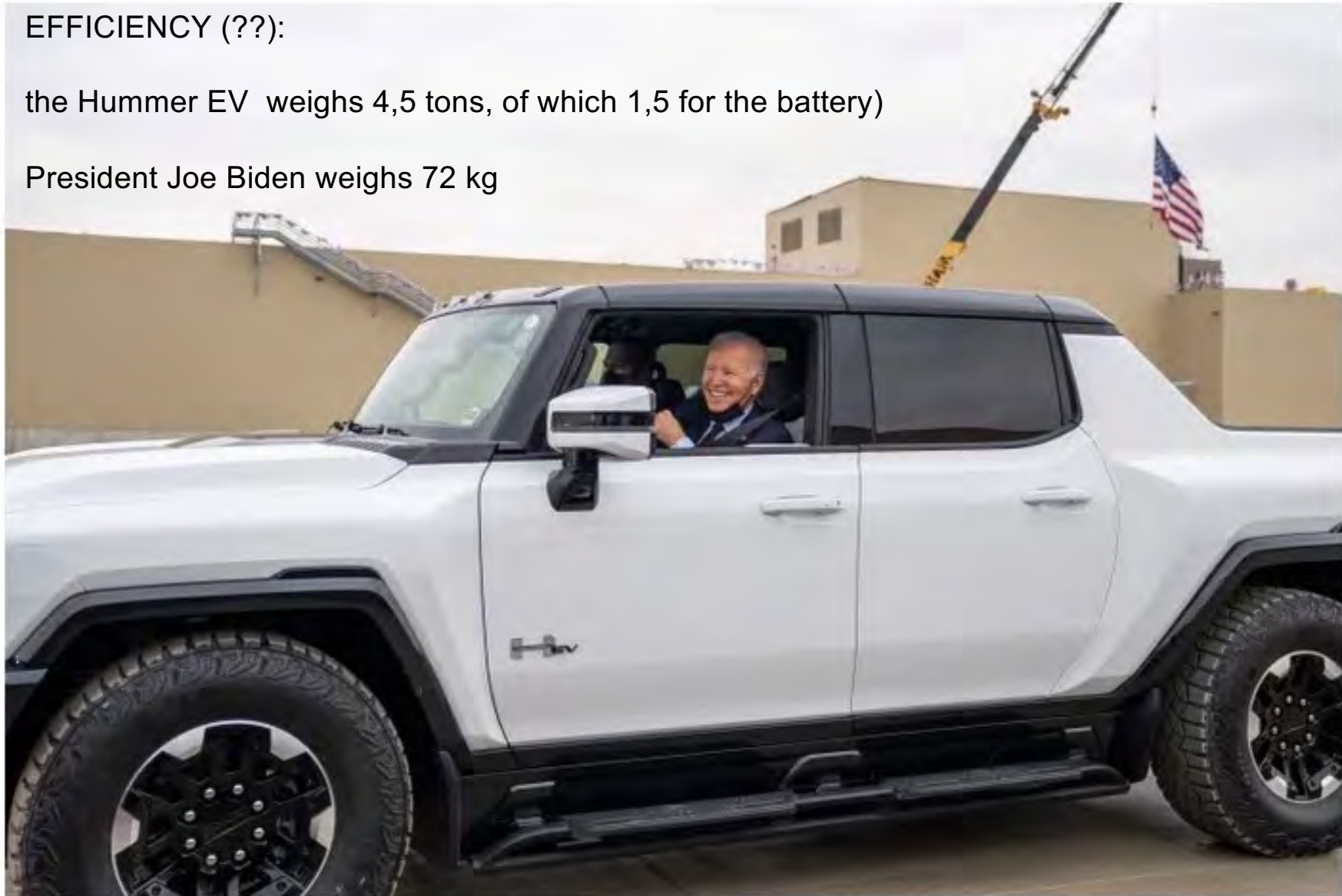
- **EFFICIENCY** = decrease energy use to deliver a fixed output
- e.g. decrease the fuel input to a motor to deliver a certain mechanical power.
- But you maintain the type of service (e.g. km travelled in private car)
- or you may even make it grow unreasonably (e.g. more km-person, SUV growth in number and weight,
- **vs SUFFICIENCY**: change the type of service.
- -> walking, cycling and efficient public transport substitute most travels in private cars.
- -> Number and weight of cars profoundly reduced . The space and money is directed to make cities adapted again to children, elderly people, to relax in green areas,...

Erba, Silvia, e Lorenzo Pagliano. «Combining Sufficiency, Efficiency and Flexibility to Achieve Positive Energy Districts Targets». *Energies* 14, fasc. 15 (3 agosto 2021): 4697. <https://doi.org/10.3390/en14154697>.

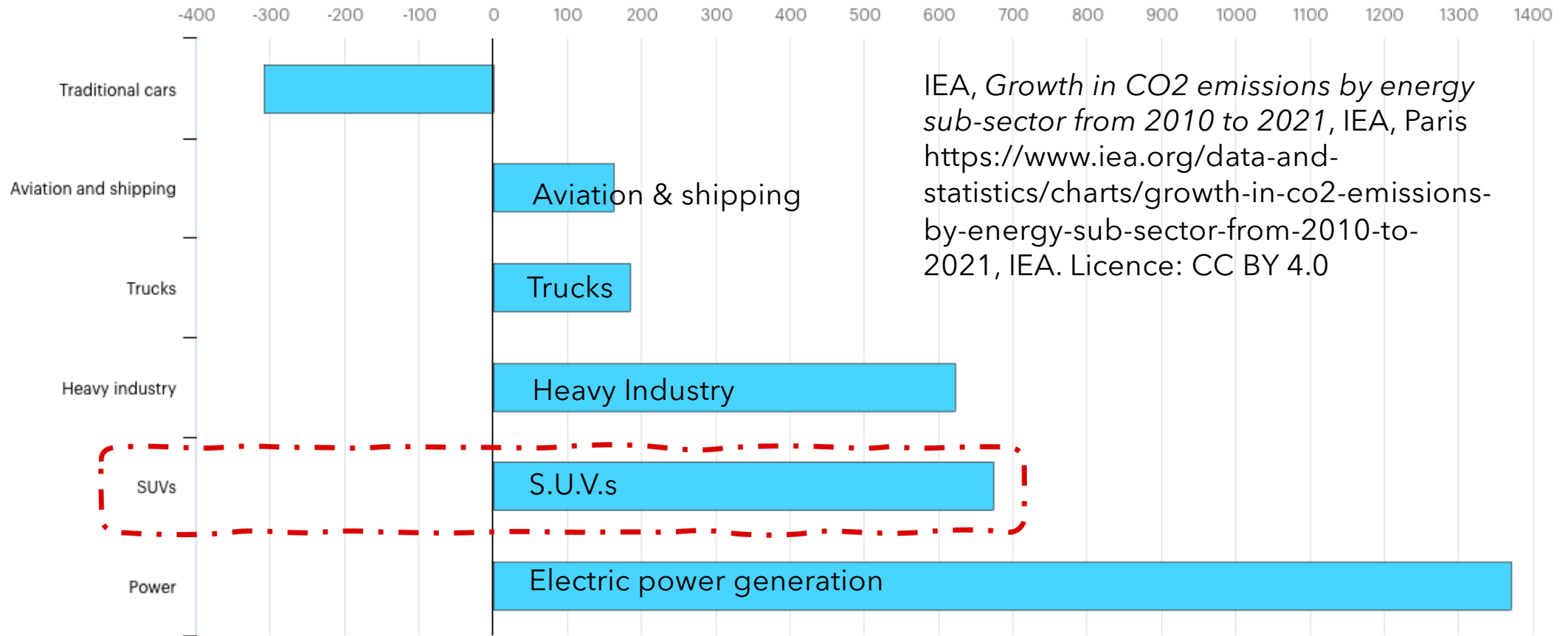
EFFICIENCY (??):

the Hummer EV weighs 4,5 tons, of which 1,5 for the battery)

President Joe Biden weighs 72 kg

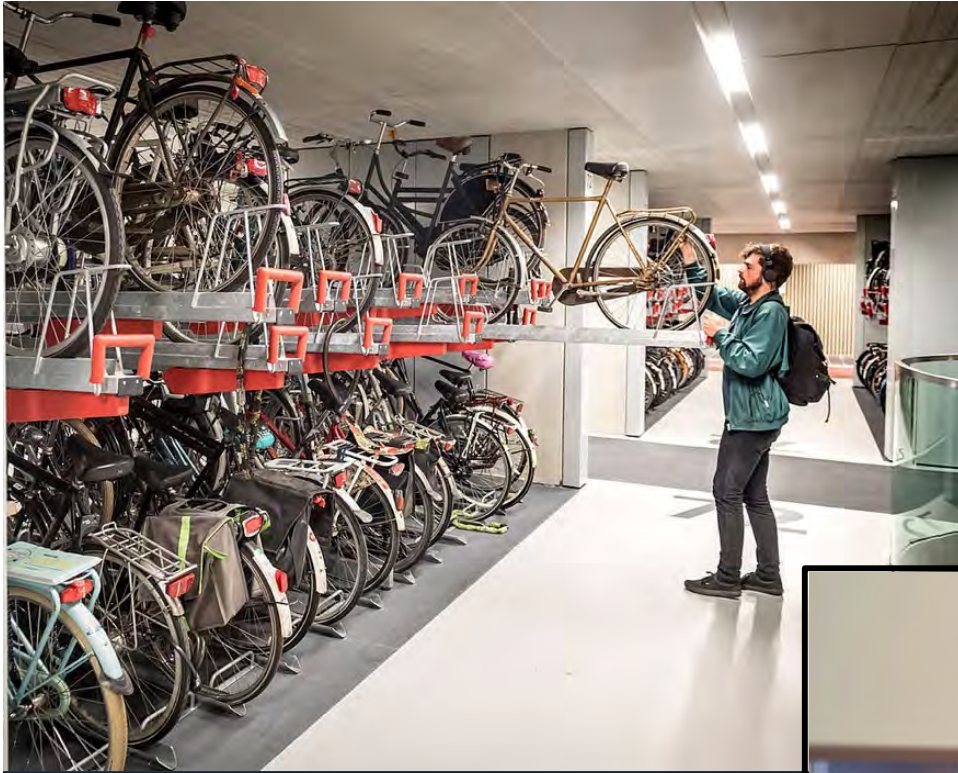


Mt CO2



IEA, *Growth in CO2 emissions by energy sub-sector from 2010 to 2021*, IEA, Paris
<https://www.iea.org/data-and-statistics/charts/growth-in-co2-emissions-by-energy-sub-sector-from-2010-to-2021>, IEA. Licence: CC BY 4.0

SUV are the SECOND source of CO2 emissions increase, 2010-2021 according to IEA:
<https://www.iea.org/commentaries/global-suv-sales-set-another-record-in-2021-setting-back-efforts-to-reduce-emissions>.



SUFFICIENCY IS e.g.:

Stationsplein Bicycle Parking in Utrecht:

- currently has 12 500 parking places
- open 24h /day 7 days/week
- free parking during the first 24 hours
- <https://www.youtube.com/watch?v=5YCvuPWvdQQ>



- *In buildings, in summer:*
- **Service A:**
- all windows closed day and night,
- large glazed surfaces with no external solar protection
- men dressed with long sleeves, neck tie, formal jacket,
- chairs with thick cushions that act as thermal insulation,
- temperature set-point at 22-24 °C

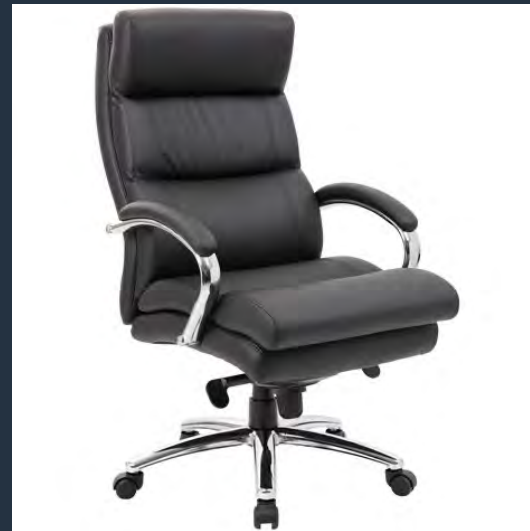


Photo L. Pagliano

- **SUFFICIENCY IS:**

- **Service B:** windows opened at night, to allow cool air in the building and store “coolness” in the mass of the building, New buildings and retrofit designed for **natural ventilation** (Le Corbusier, Marseille)
- men wearing **light clothes**,
- **chairs** with sitting and back made **in mesh tissue** or thin metal or wood (no insulation),
- air velocity produced by **ceiling and desk fans**,
- set point at **27-28 °C**.

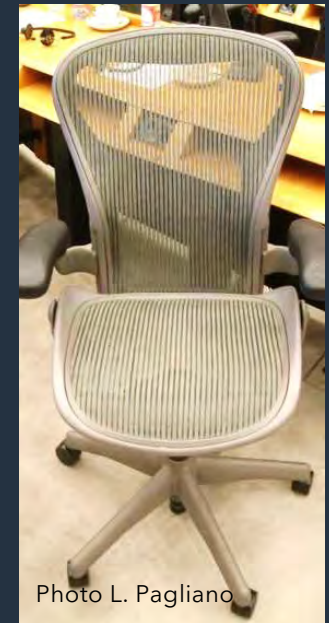
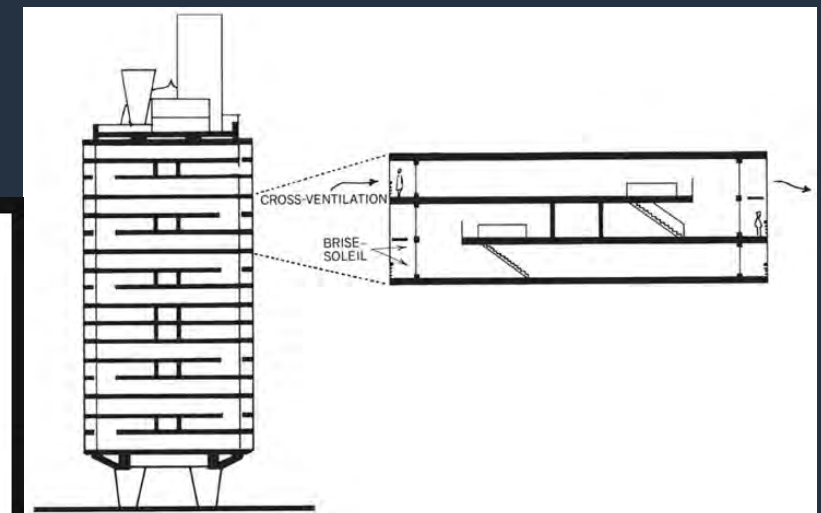
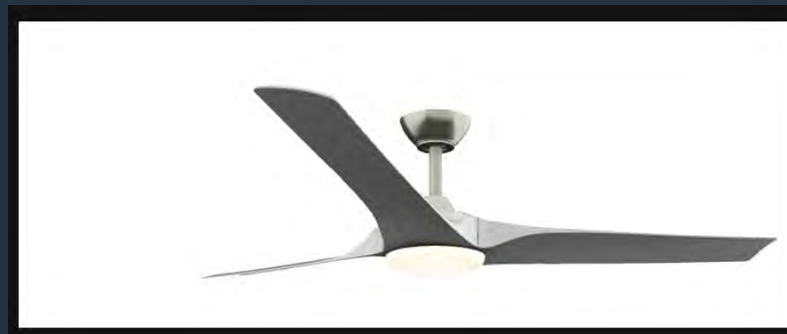


Photo L. Pagliano



More on COMFORT MODELS at www.abc21.eu
<https://youtu.be/DDuiDITT77Y>

- **Unrealistic?** It is done since 15 years each summer in **Japan** in **all public buildings** and many private companies, under impulse by the Government, which meets in Hawaiian short sleeve shirts,



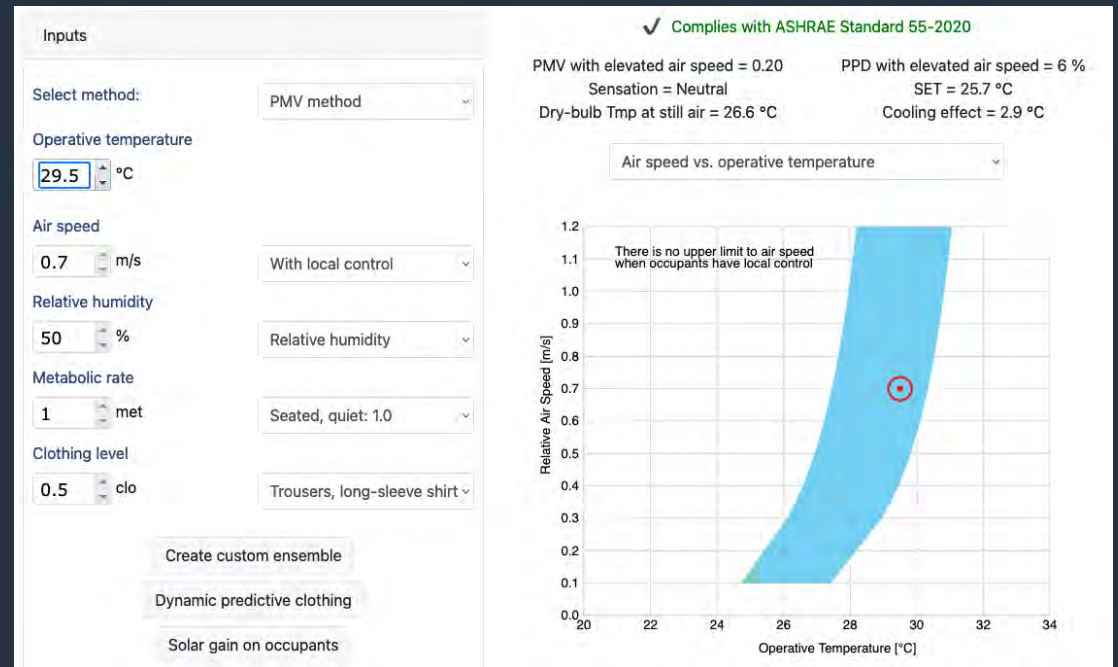
*Japan Prime Minister Fumio Kishida,
2023 Cool Biz campaign.*

Credit...Kyodo News, via Getty Images, via NYT:

<https://www.nytimes.com/2023/09/24/business/japan-cool-biz.html>

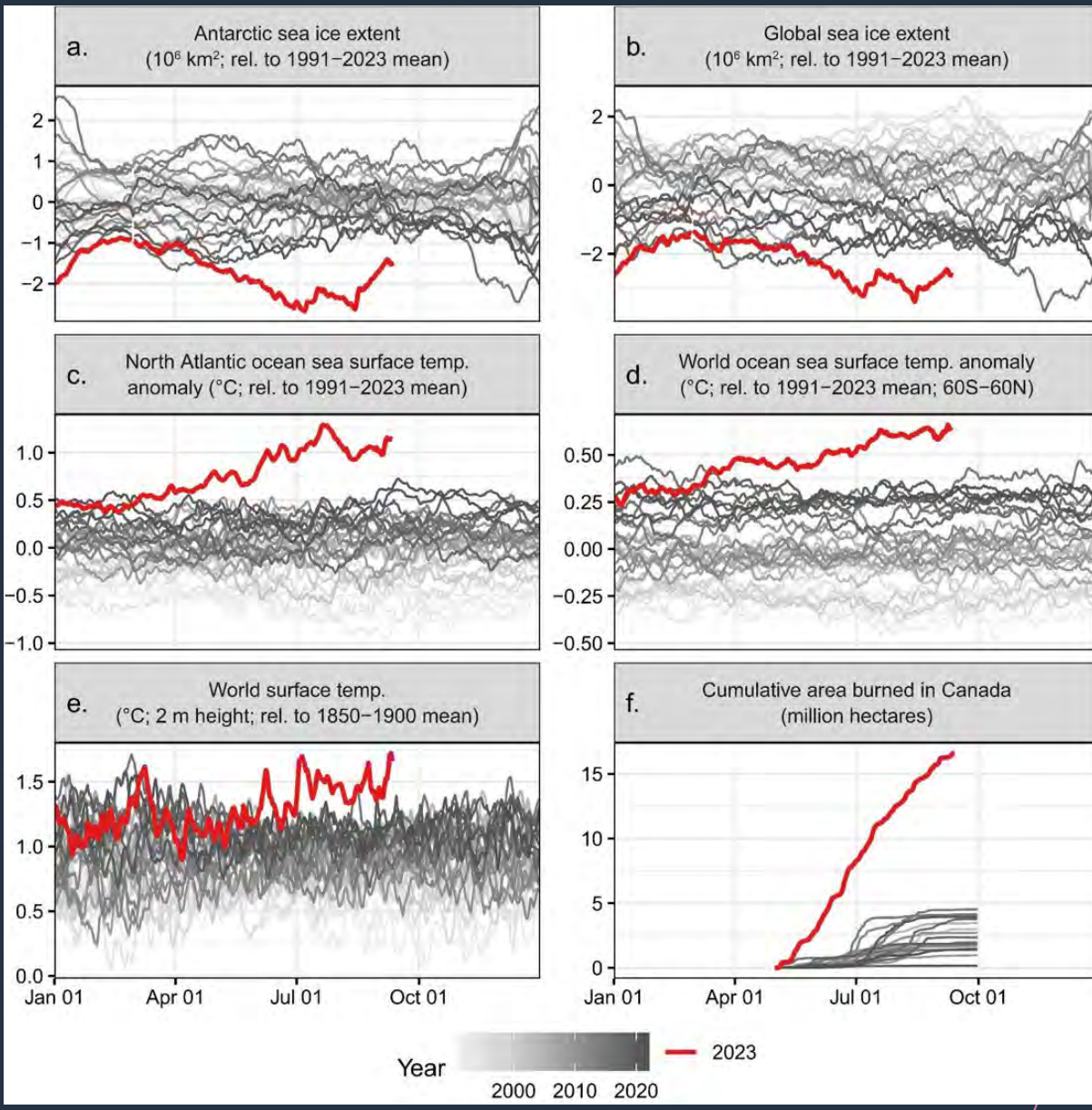


- **Desirable: gender equity:** women who rightly wear light dresses in summer showed high satisfaction not be obliged to uncomfortable cold conditions
- **Perfectly in line with Comfort Science condensed in ASHRAE 55 Standard** (substantially updated in 2020)



Info on COMFORT MODELS:
https://www.abc21.eu/wp-content/uploads/2021/12/ABC21_1-1.pdf

NECESSARY

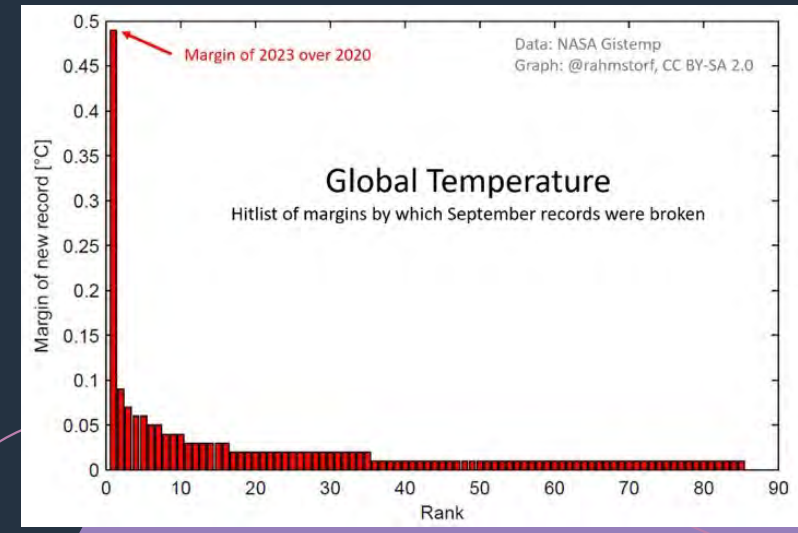


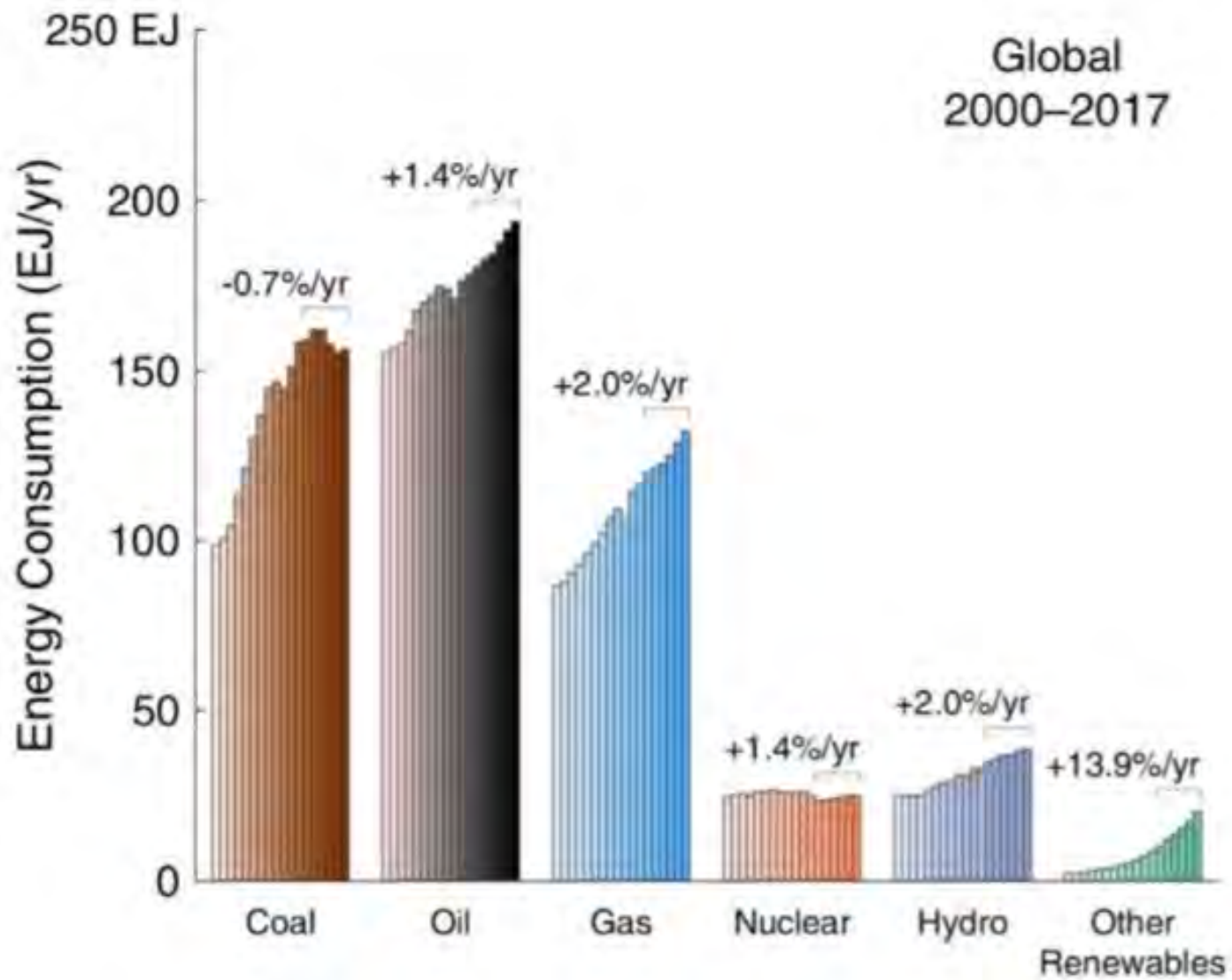
BioScience, biad080,
<https://doi.org/10.1093/biosci/biad080>

The content of this slide may be subject to copyright: please see the slide notes for details.

Ripple, W, ...J. Rockström, et al.
 «The 2023 State of the Climate Report: **Entering Uncharted Territory**». *BioScience*, 24 ottobre 2023, biad080.

<https://doi.org/10.1093/biosci/biad080>.

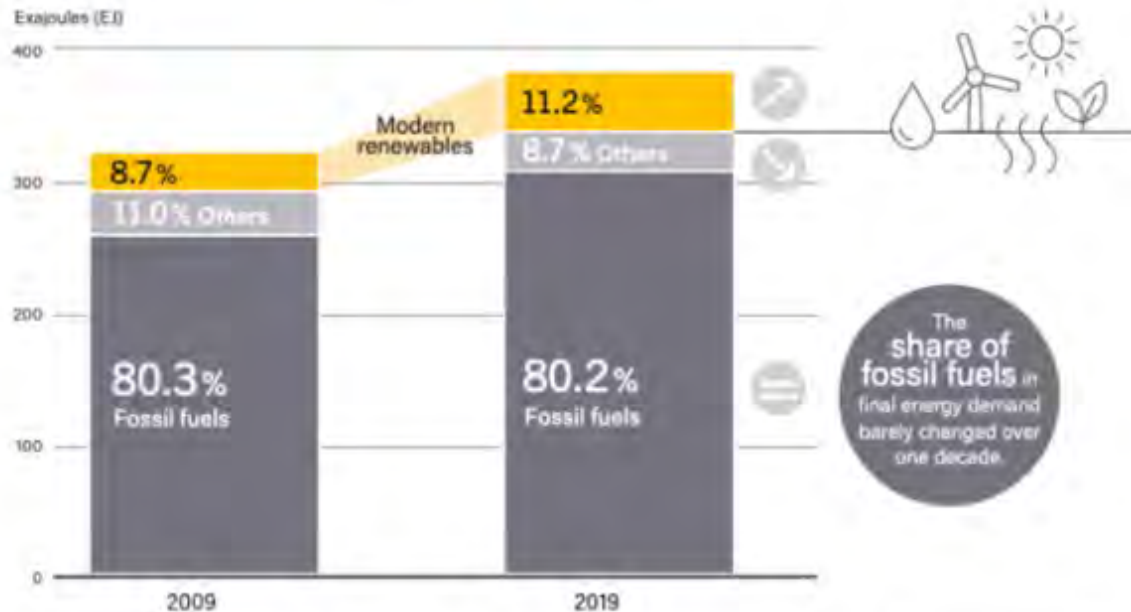




Jackson, R B, et Al.
 “Global Energy Growth Is Outpacing Decarbonization.”
Environmental Research Letters 13, no. 12 (December 5, 2018)



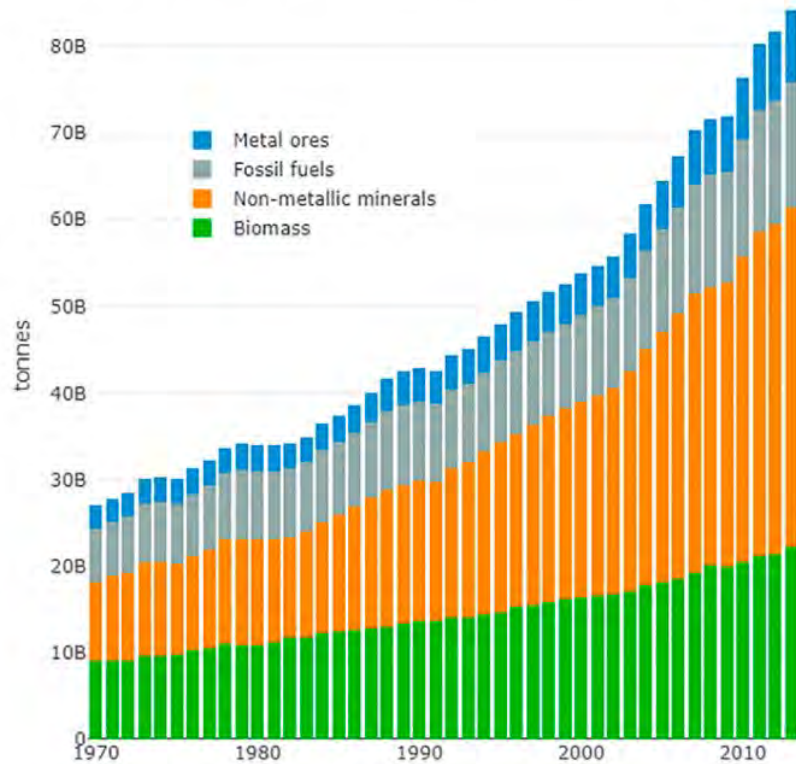
Estimated Renewable Share of Total Final Energy Consumption 2009 and 2019



Note: Totals may not add up due to rounding. This figure shows a comparison between two years across a 10-year span. The result of the economic recession in 2008 may have temporarily lowered the share of fossil fuels in total final energy consumption in 2009. The share in 2008 was 80.7%.
Source: Based on IEA data.

- IEA Outlook 2023:
- **Renewables** like solar and wind will continue to expand rapidly, becoming the number one source of **new electricity generation** by 2025.
- **But [their] growth still falls short of achieving net zero emissions by 2050.**

Global material footprint 1970-2013



Global GDP and material footprint 1990-2013

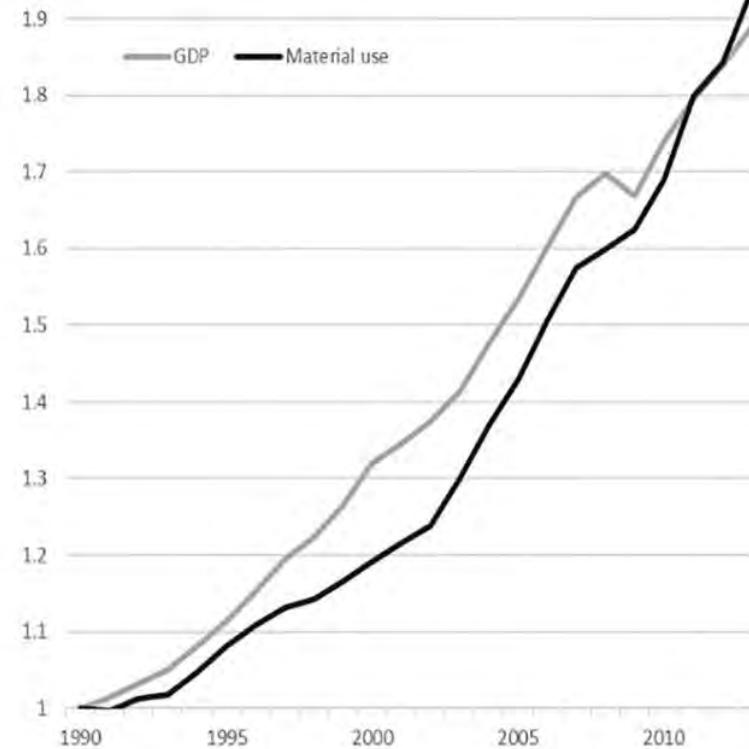


Figure 2. (a) Global material footprint, 1970–2013; (b) Change in global material footprint compared to change in global GDP (constant 2010 USD), 1990–2013. Source: Materialflows.net/World Bank.

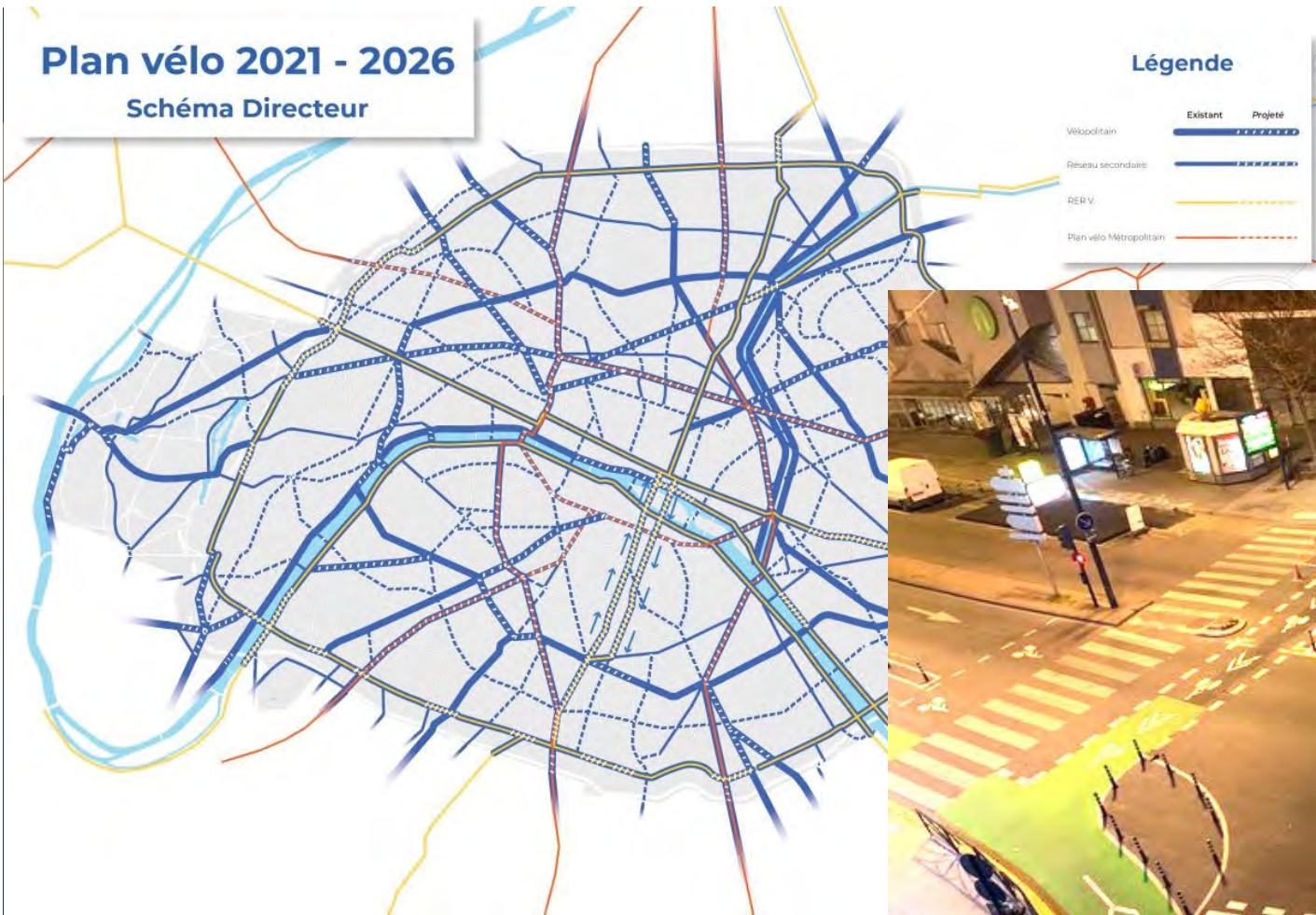
Hickel, Jason, e Giorgos Kallis. «Is Green Growth Possible?» *New Political Economy*, 17 aprile 2019, 1-18. <https://doi.org/10.1080/13563467.2019.1598964>.

POSSIBLE?



Plan vélo 2021 - 2026

Schéma Directeur



a **NETWORK** of 1400 km of HIGH QUALITY bike lanes.

<https://www.20minutes.fr/paris/3010391-20210330-seine-saint-denis-pantin-carrefours-hollandaise-developpent-cyclistes>



Paris: science-fiction or the near future of all cities in Europe?

- 20 and 30 km/h speed limit in 95 per cent of the city
- Reducing car parking spaces by 50%
- Parking price proportional to car **weight** (subject to referendum in 2024)
- Project to limit speed to 50 km/h on the urban highway around Paris, and reserve a lane to car-pooling
- 5000 bicycle parking spaces foreseen at North Train Station (Gare du Nord)
- Additional bike lanes to connect all Olympic sport facilities for Olympic games 2024

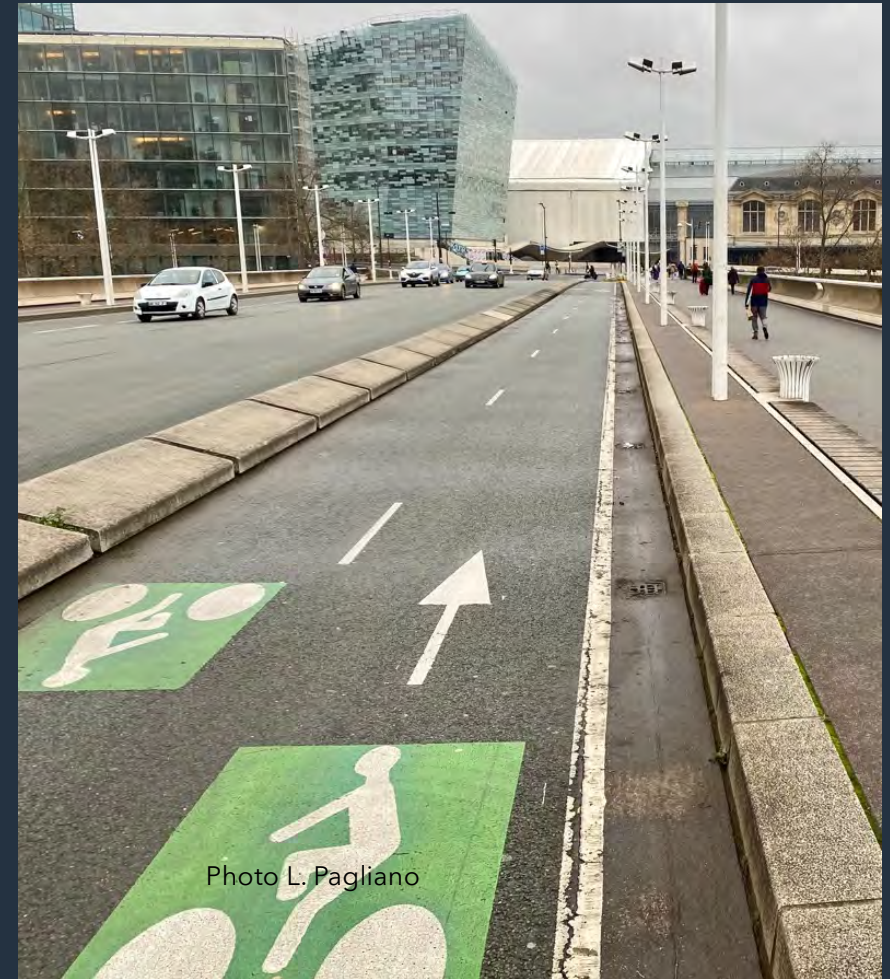
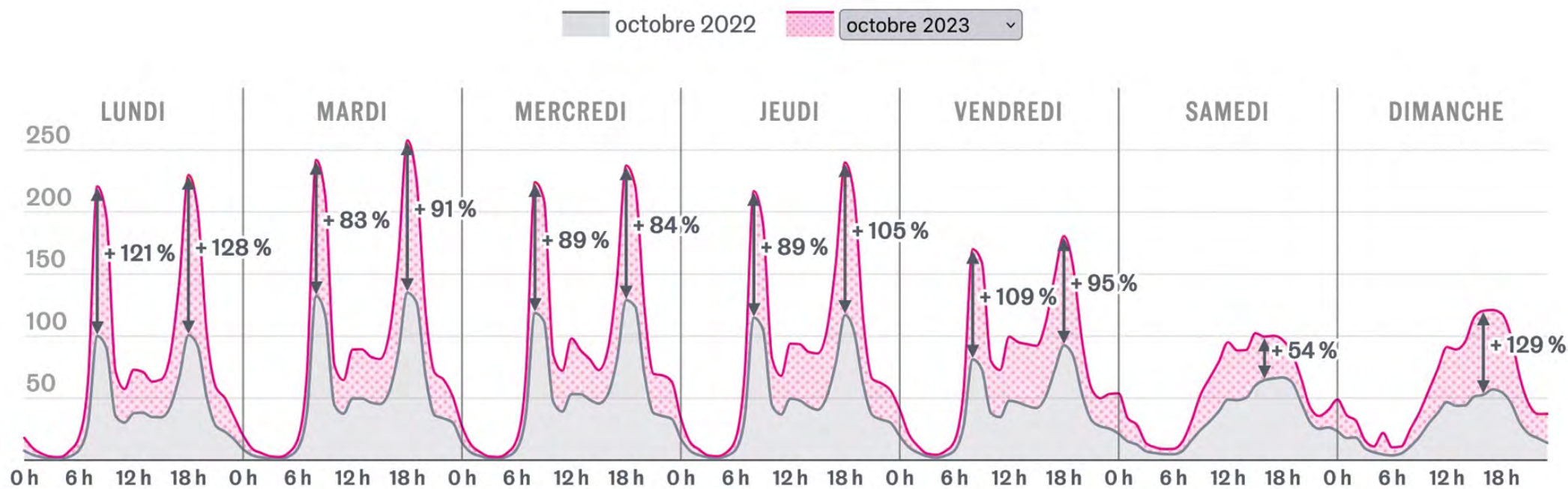


Photo L. Pagliano

DOUBLING of bicycles trips at measurement points in Paris October 2023 compared to October 2022

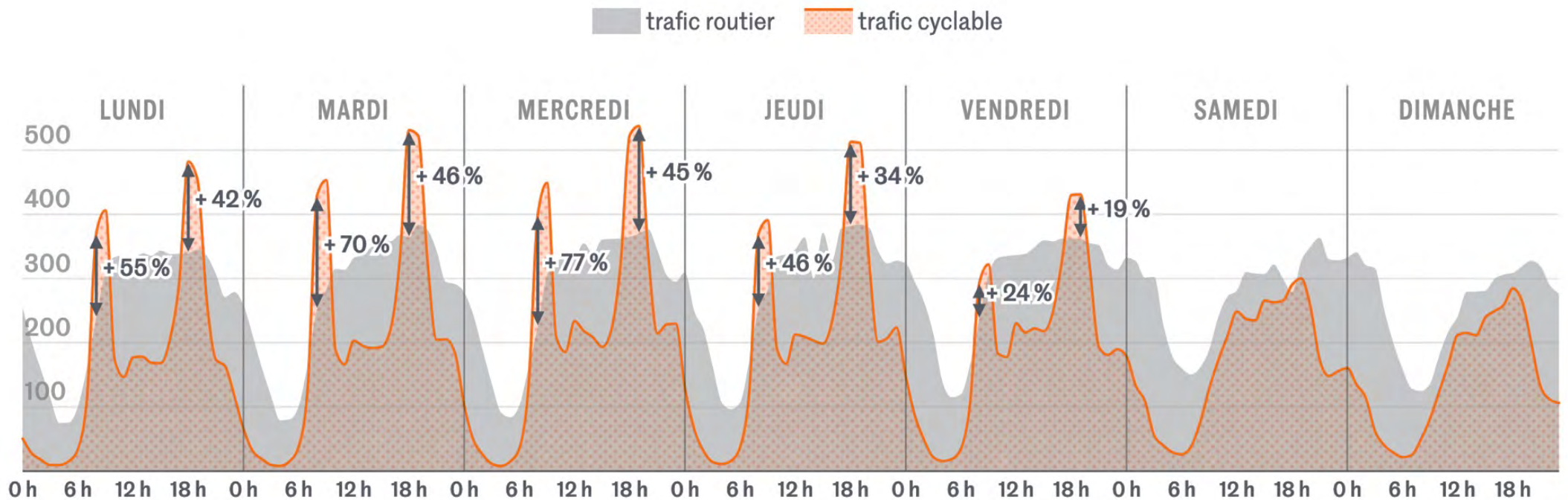
Data elaboration by LeMonde



https://www.lemonde.fr/les-decodeurs/article/2023/11/11/a-paris-la-frequentation-des-pistes-cyclables-a-double-en-un-an_6199510_4355770.html

More bicycles than cars at peak hours average over 3 main roads in Paris

Data elaboration by LeMonde



Oil displacement from EVs

<https://about.bnef.com/electric-vehicle-outlook/#>

EVs of all types are already displacing 1.5 million barrels per day of oil usage, equivalent to about 3% of total road fuel demand.

Oil displacement by vehicle segment



Vans and trucks

Buses

Passenger cars

2 and 3 wheelers



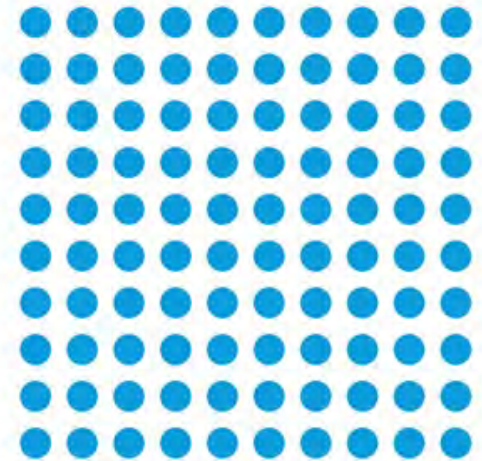
26,614 Barrels per day



207,482 Barrels per day



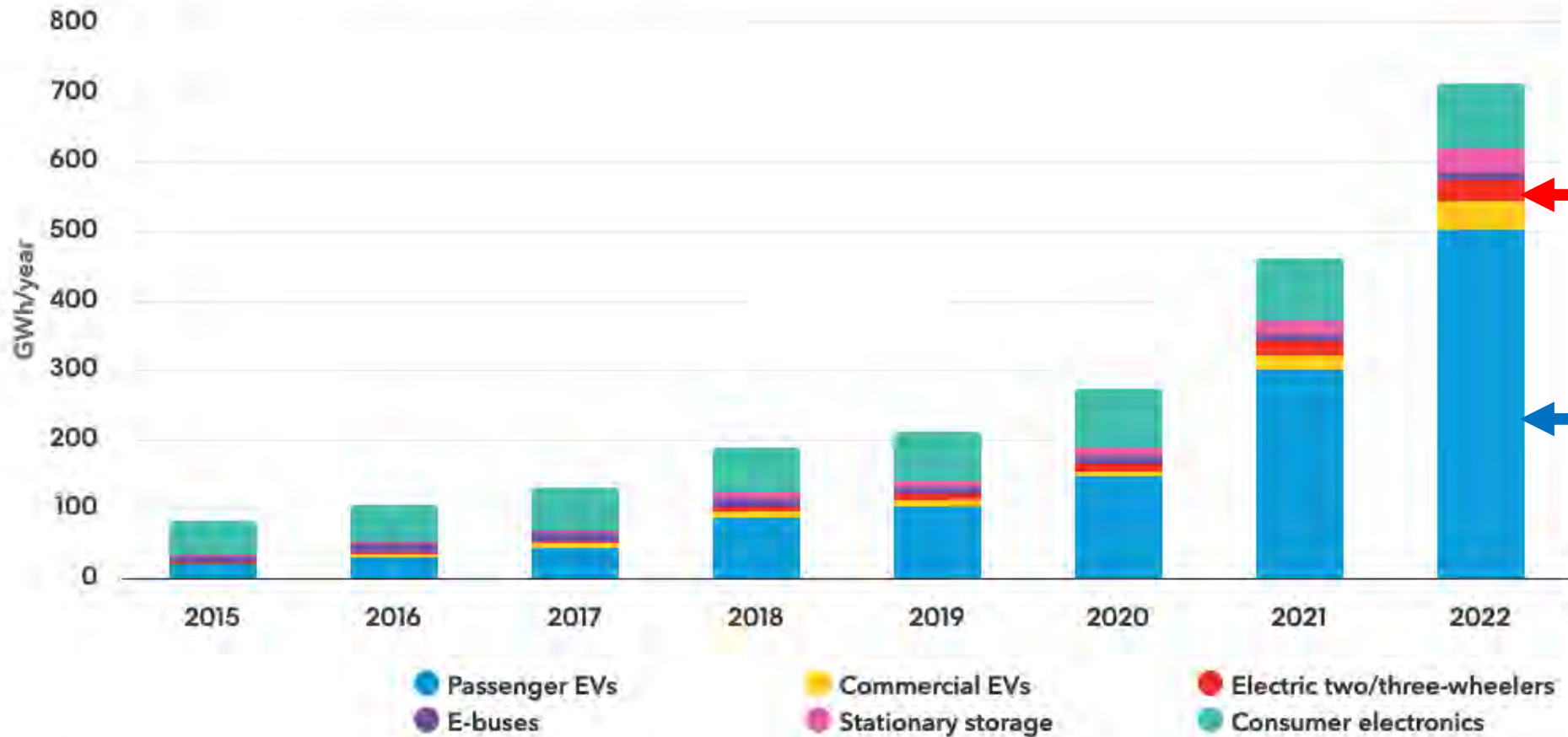
264,382 Barrels per day



997,230 Barrels per day

BloombergNEF: Electric Vehicle Outlook 2023 : 2 & 3 – wheelers displacing 1% of global oil use

Annual lithium-ion battery demand by application



Source: BloombergNEF

<https://www.fastcompany.com/90994141/why-2023-was-the-year-of-the-e-bike-and-not-the-self-driving-car>



- In July 2023, the Minister of Transport of the **federal state of Brandenburg** (the German region surrounding Berlin) announced a new mobility plan :
- 1) "in the near future, **65 per cent of journeys will have to be made by public transport, by bicycle or on foot**".
- 2) "**No new state road will be built. In their place, cycle paths and super cycle paths off the roads**".
- 3) "**Every city and suburb of Brandenburg is to be served every hour** by buses, trains or taxis, regardless of actual usage".
- 4) The nearest large cities - Berlin, Hamburg, Dresden, Leipzig - must be reachable from anywhere in the country within a maximum of two hours'.
- 5) Detailed programme to **reactivate disused railway**.



Verkehrsminister Guido Beermann (CDU, l.) und Brandenburgs Umweltverbände stellten den Gesetzentwurf am Dienstag vor



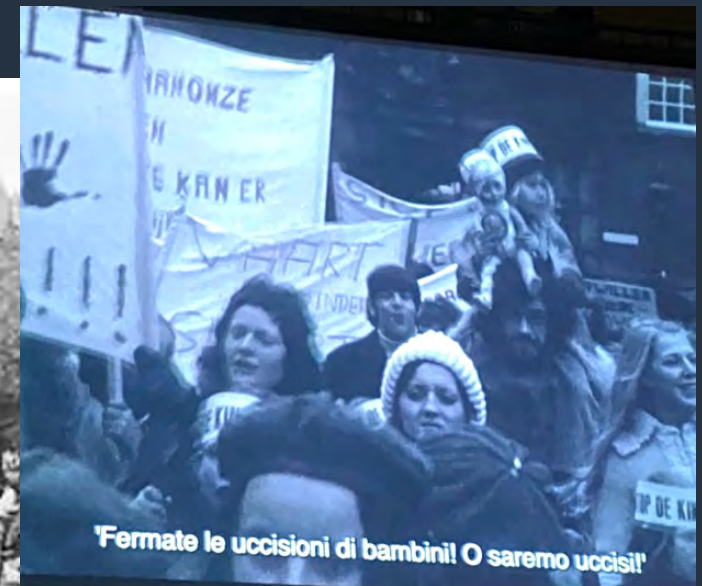
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BUT HOW
TO TRIGGER IT?

Sufficiency: Individual heroes or a societal transformation?

- We adopt the three-fold formulation of Sahakian and Wilhite :
 - **Sufficiency habits** = Sufficiency measures taken by individuals due to permanent lifestyle changes
 - **Sufficiency infrastructures** = Physical and non-physical infrastructures enabling *Sufficiency habits*
 - **Sufficiency societal framework** = institutions, legislation, norms





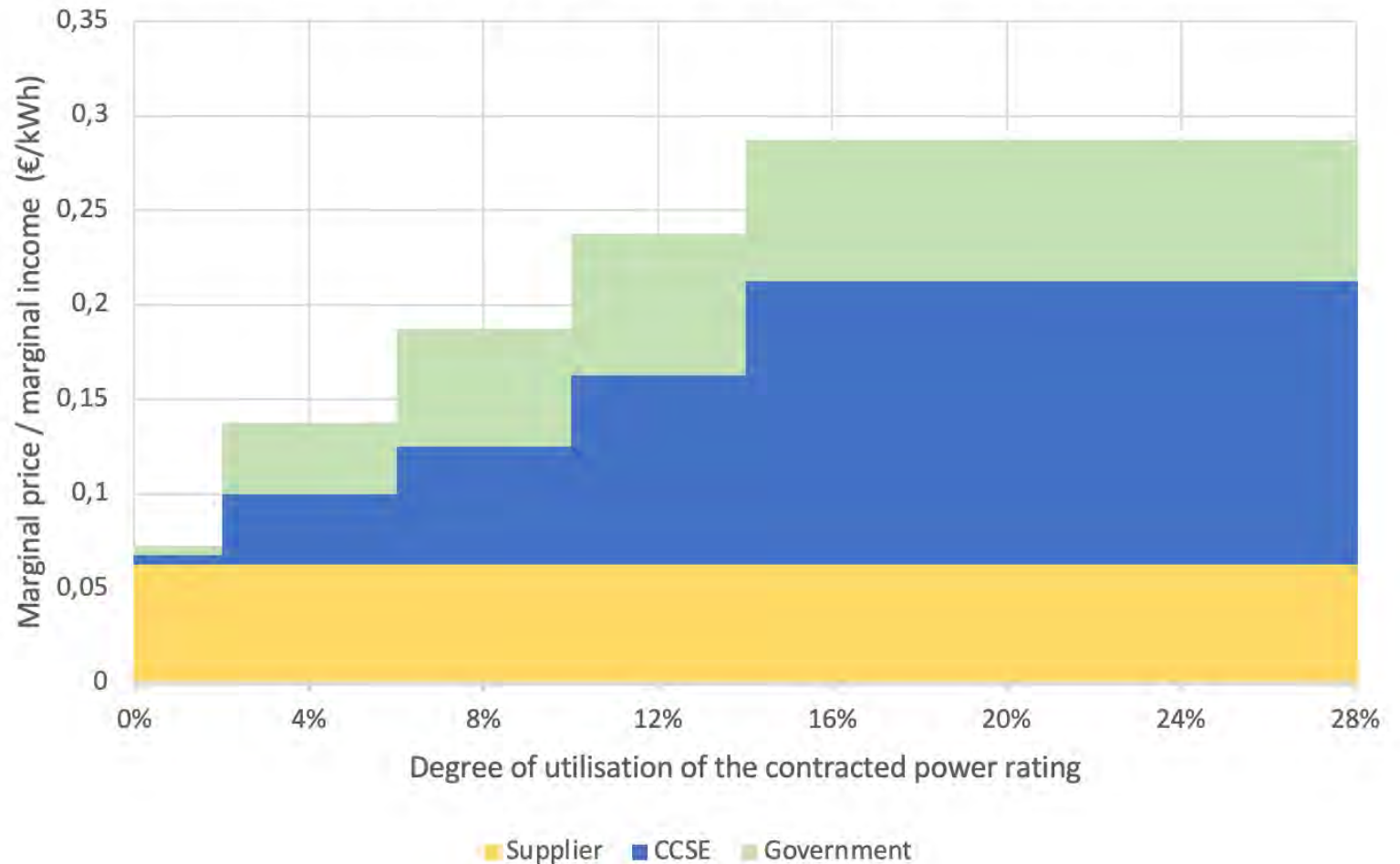
« Stop the kids' murders » demonstrations

Figure 24 A die-in demonstration outside Amsterdam's Rijksmuseum in the mid-1970s, from documentary: How the Dutch got their cycle paths. Source: <https://www.youtube.com/watch?v=XuBdf9jYj7o>.

How can we ensure that everyone's basic energy needs are met at low prices, while making excessive use of energy costly?

The example of progressive tariffs (energy price per unit increases with consumption)

Progressive price regime for domestic customers
Marginal energy price and marginal incomes for different actors



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Burn Calories,
Not Electricity



Take the Stairs!

Walking up the stairs just 2 minutes a day helps prevent weight gain. It also helps the environment.

WALK UP THE STAIRS TO SAVE THE PLANET    

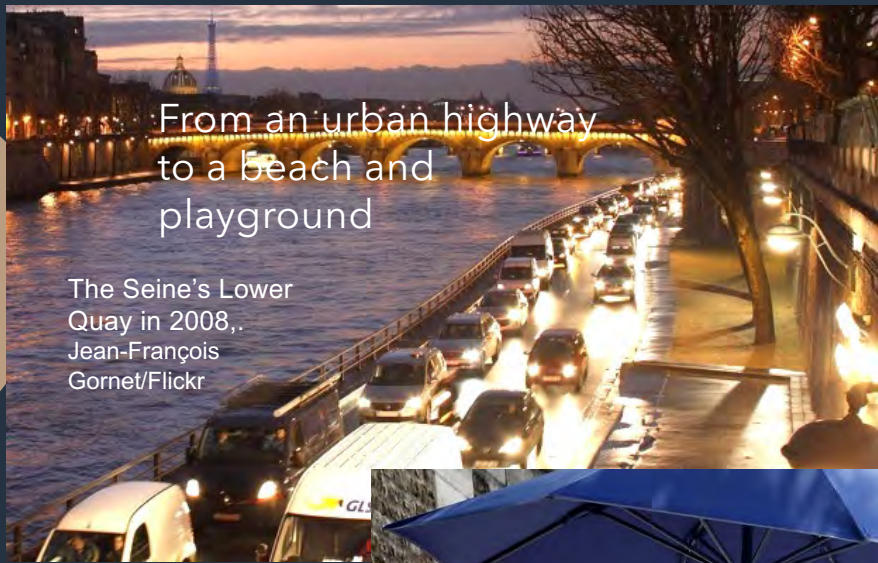


Photo L. Pagliano



Photo L. Pagliano





From an urban highway
to a beach and
playground

The Seine's Lower
Quay in 2008,
Jean-François
Gornet/Flickr



Photo L. Pagliano





Photo L. Pagliano



Photo L. Pagliano



Photo L. Pagliano



Not at Bahamas,
but from my
window (city
center)

Hawfinch (*Coccothraustes coccothraustes*)

<https://www.inaturalist.org/>

tends to move with extreme
circumspection and at the
slightest noise tends to seek
refuge in dense vegetation

Photo L. Pagliano

Not at
Bahamas,
but from
my window
(city center)

Photo L. Pagliano



To
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LITERATURE REVIEW

<https://fulfill-sufficiency.eu/wp-content/uploads/2023/10/D2.1-Literature-review-revised-version.pdf>

<https://fulfill-sufficiency.eu/our-research/>



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Photo L. Pagliano