

SUSTAINABILITY TALK VOLUME 5:

Hybrid off-grid solar-powered apartment

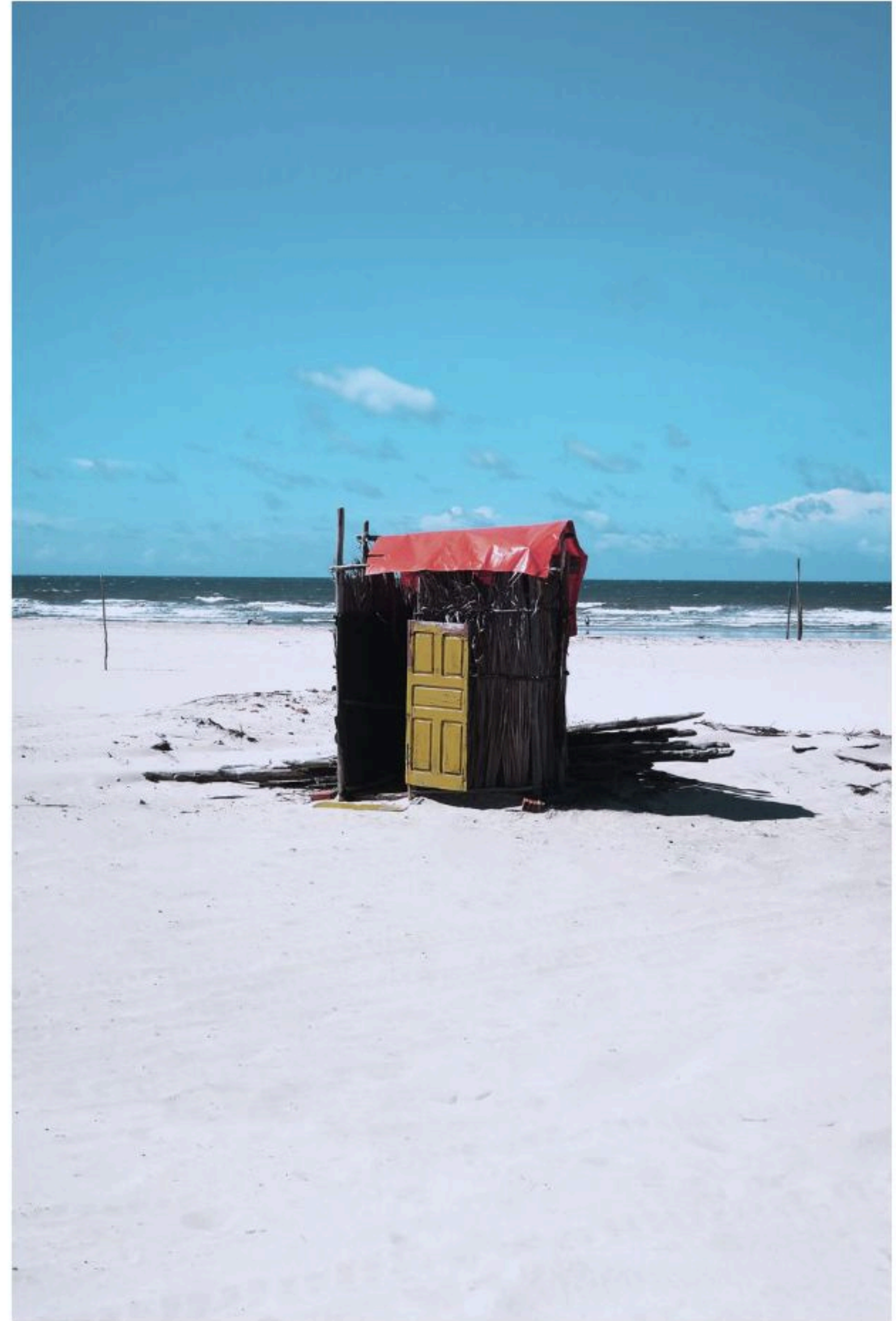
Presented by Dylan Cawthorne



“Experiments in living”

JOHN STUART MILL, 1869

IBO VAN DE POEL, 2018



A photograph of a nuclear power plant at dusk, with a large cooling tower emitting a plume of white steam. The sky is a mix of purple, blue, and orange.

**Centralized
nuclear**

**“Do
artifacts
have
politics?”**

LANDGON WINNER, 1980

A close-up photograph of solar panels, showing the grid lines and the reflection of the sun. The panels are tilted and arranged in rows.

**Decentralized
solar**



Solar panels + mounts



Batteries, inverter, and charge controller + power box



Batteries



Inverter & charge controller

Power box



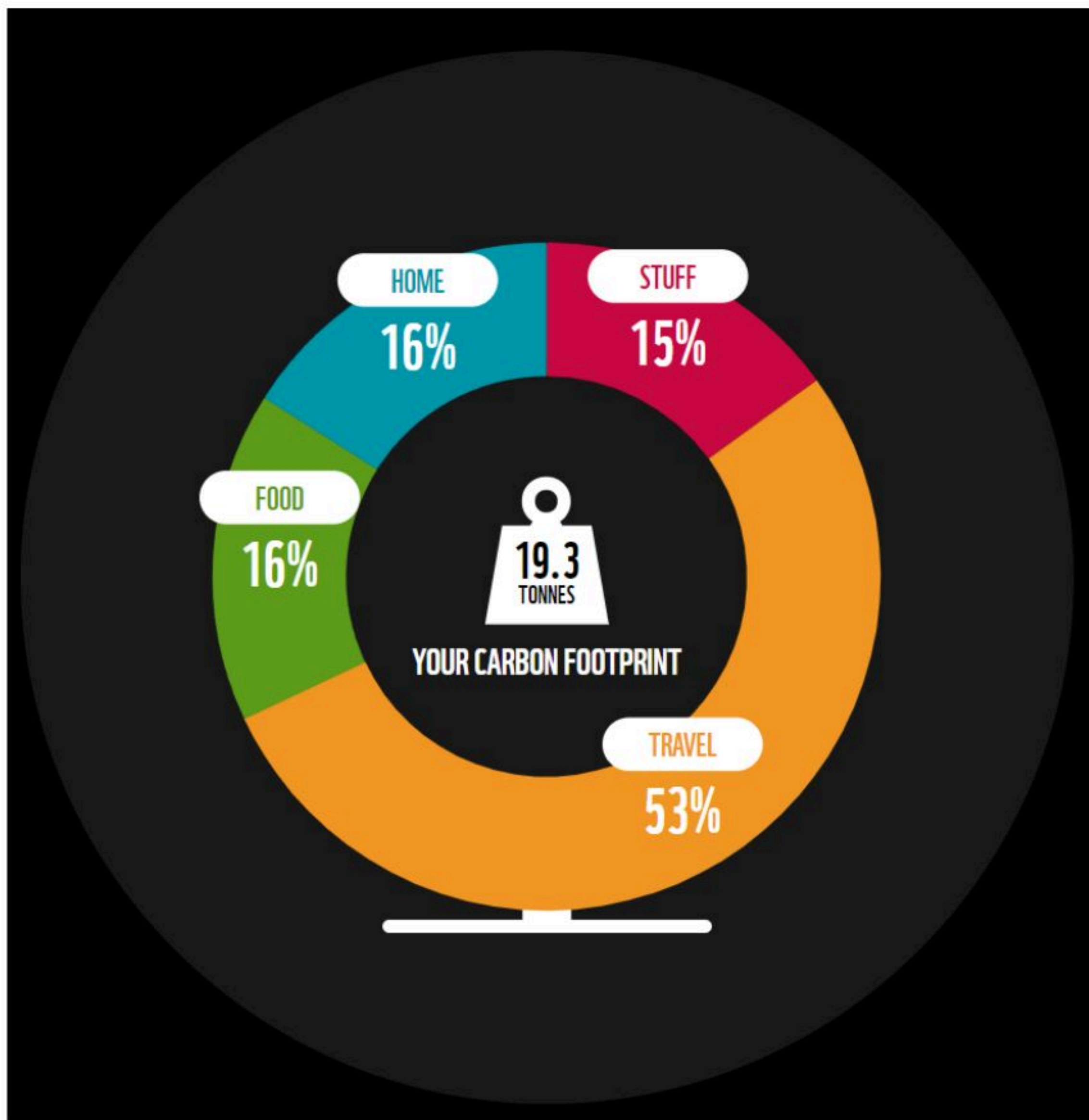
Daytime



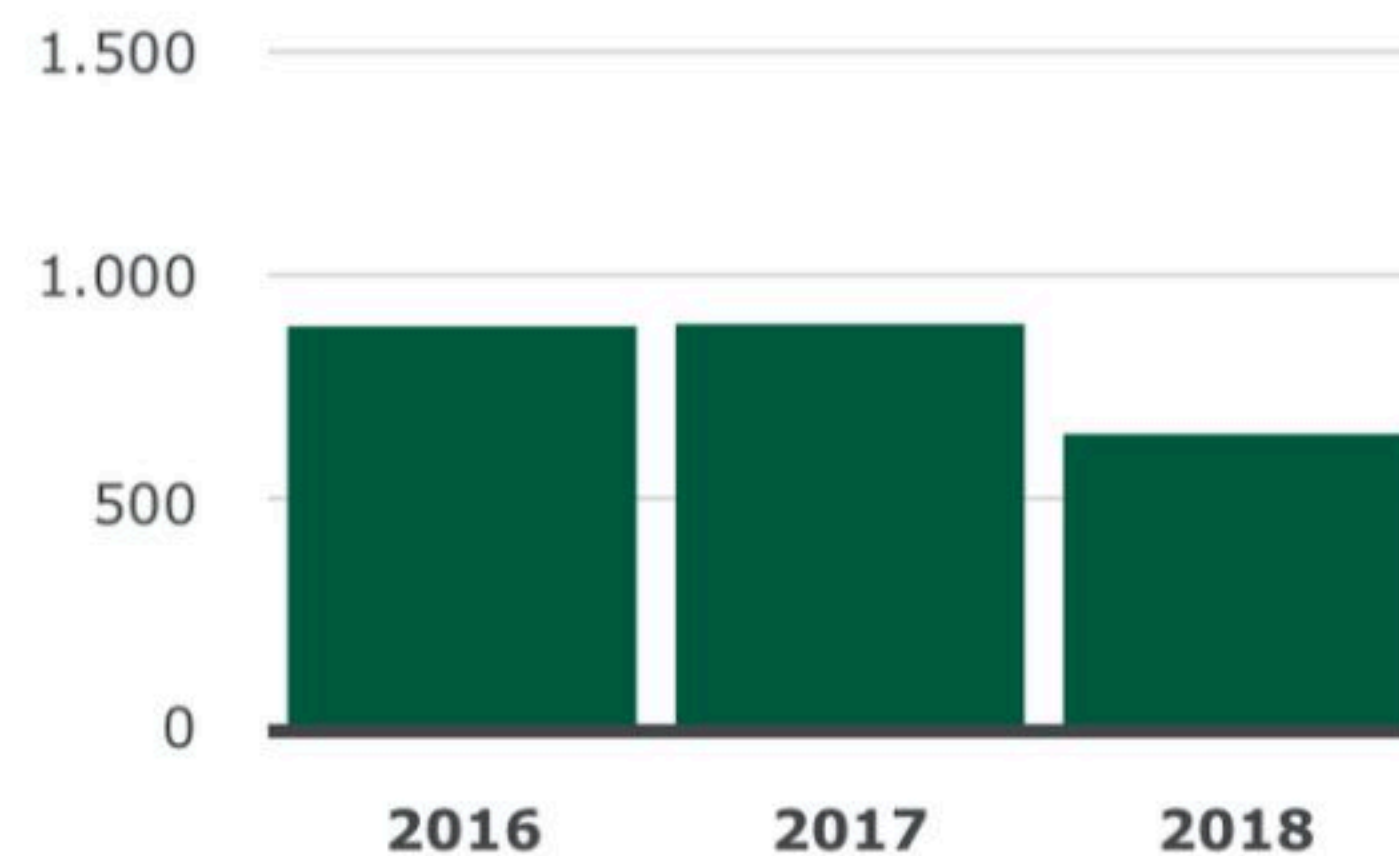
2Fast2Furious Mode

Costs

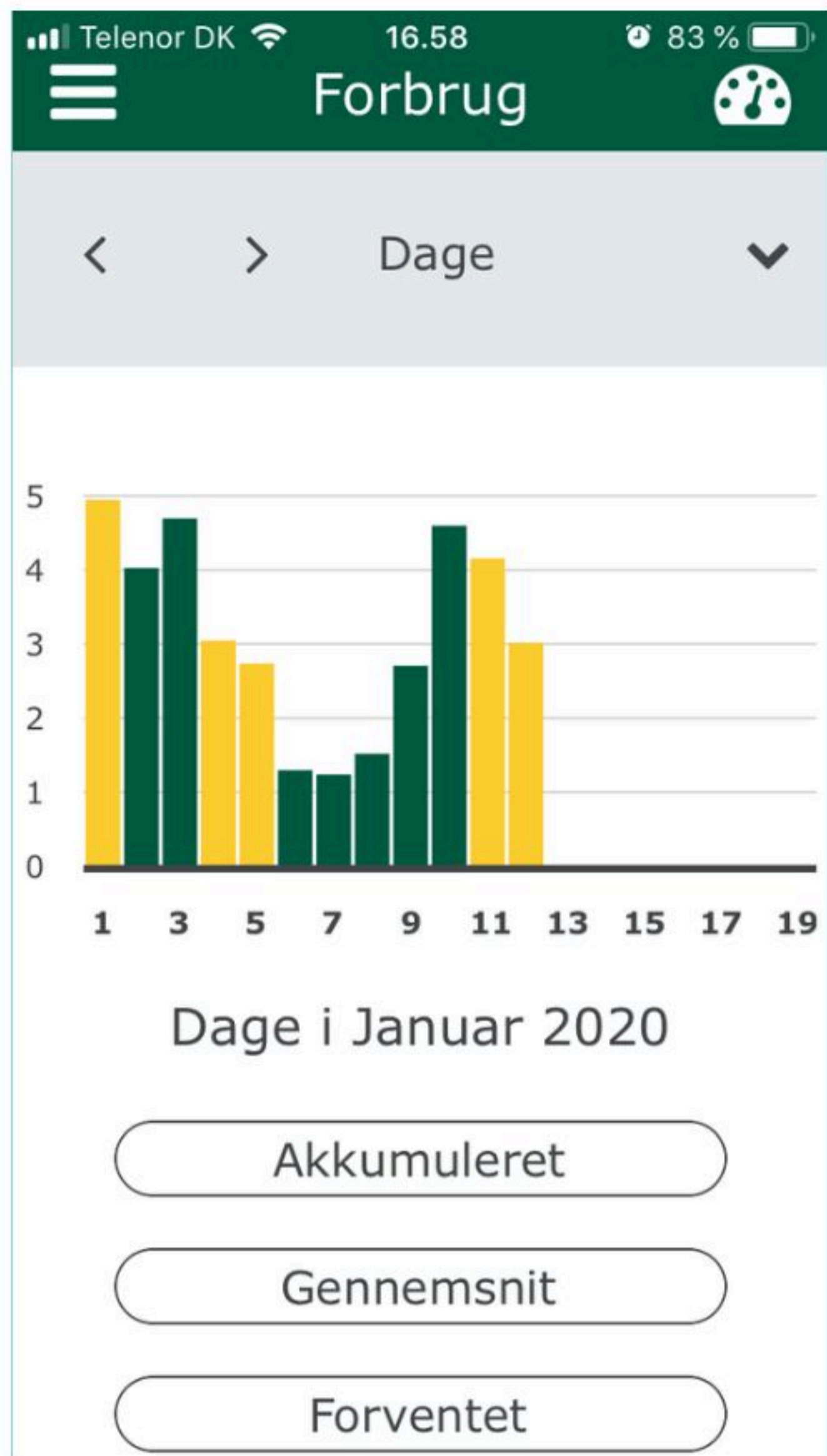
- Solar panels = 1,000 DKK each
X4 = 4,000 DKK (new)
- Charge controller = 1,000 DKK
(new)
- Batteries = 2,000 DKK (second
hand)
- Inverter = 2,000 DKK
- Wiring, materials = 1,000 DKK
- TOTAL = 10,000 DKK
- PAYBACK TIME = 10+ YEARS



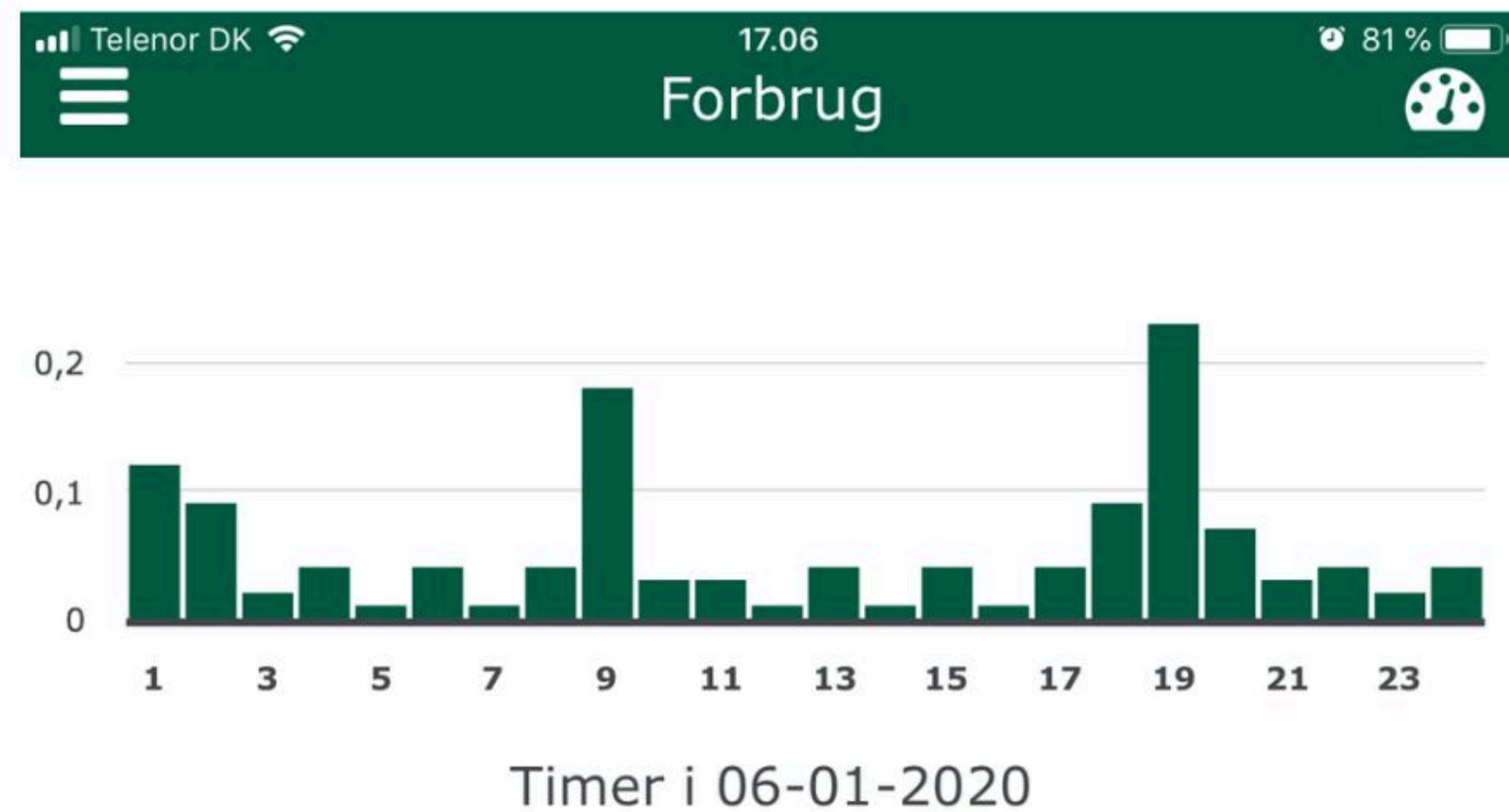
My annual CO2 (excluding CO2 offsets)



My annual electricity usage <5% of annual CO2

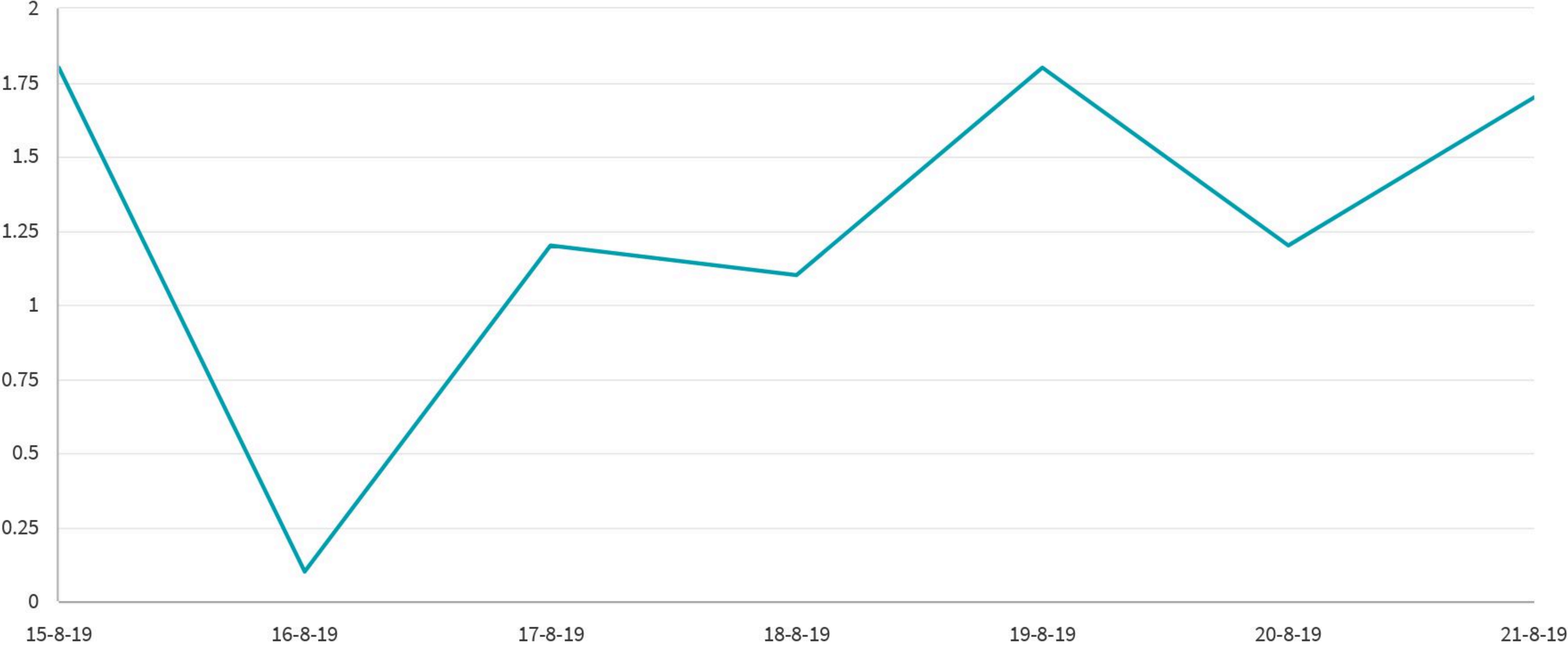


My typical daily energy usage



My typical hourly energy usage

Solar energy (kWh/day) in August



High energy-use items



- **Refrigerator - runs 24/7!**

...and is a cold box inside a hot box inside a cold environment :-/

- **Cooking - oven, stove**

Switch to induction, mini-oven



**Solar is not a
“silver bullet”**

Downsides of solar



**CO2 of production -
typically a few years
payback time**

European VS Chinese panels



**Toxicity in production -
hydrofluoric acid :-/**



**Intermittent energy
supply, limited energy
in DK**



Ugly?



Safety and legality

**“Home with
a skin”**



References

- **CO2 Footprint calculator**

<https://footprint.wwf.org.uk/#/>

- **“Home with a skin”**

<http://pretaloger.eu/>

- **Second hand components**

<https://www.dba.dk/>

<https://www.guloggratis.dk/>

- **Downsides of solar**

<https://spectrum.ieee.org/green-tech/solar/solar-energy-isnt-always-as-green-as-you-think>

- **Energy Fyn app**

https://www.energifyn.dk/privat/energiraadgivning/foelg-forbrug/mobilen_eller_ipad

Thank you!

