

SUSTAINABLE

AI How to do better.

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DISCLAIMER

There's a lot of stuff we don't know, mainly because companies aren't telling us things. This makes it very hard to get a baseline against which we can measure any improvements, which suits them just fine. Not all of these tools have been fully vetted by the speaker and their inclusion should not be construed as a formal endorsement. In using these tools your mileage may vary based on criteria including, but not limited to: your location, power source(s), device(s), personal power configuration, and favorite cereal. Information used to make these recommendations may have changed in the four seconds since I last edited these slides. Do not make any medical decisions based on these recommendations.

AI-SPECIFIC POWER USAGE

2024 2028

76

TERAWATT-HOURS

UP TO

326

TERAWATT-HOURS

7.2

MILLION HOMES
POWERED

28-31

MILLION HOMES
POWERED

AI-SPECIFIC WATER USAGE

2028

UP TO

720

BILLION GALLONS

18.5

WATER FOR
MILLION HOMES

3X-4X

1/2026

500k

H100e CHIPS

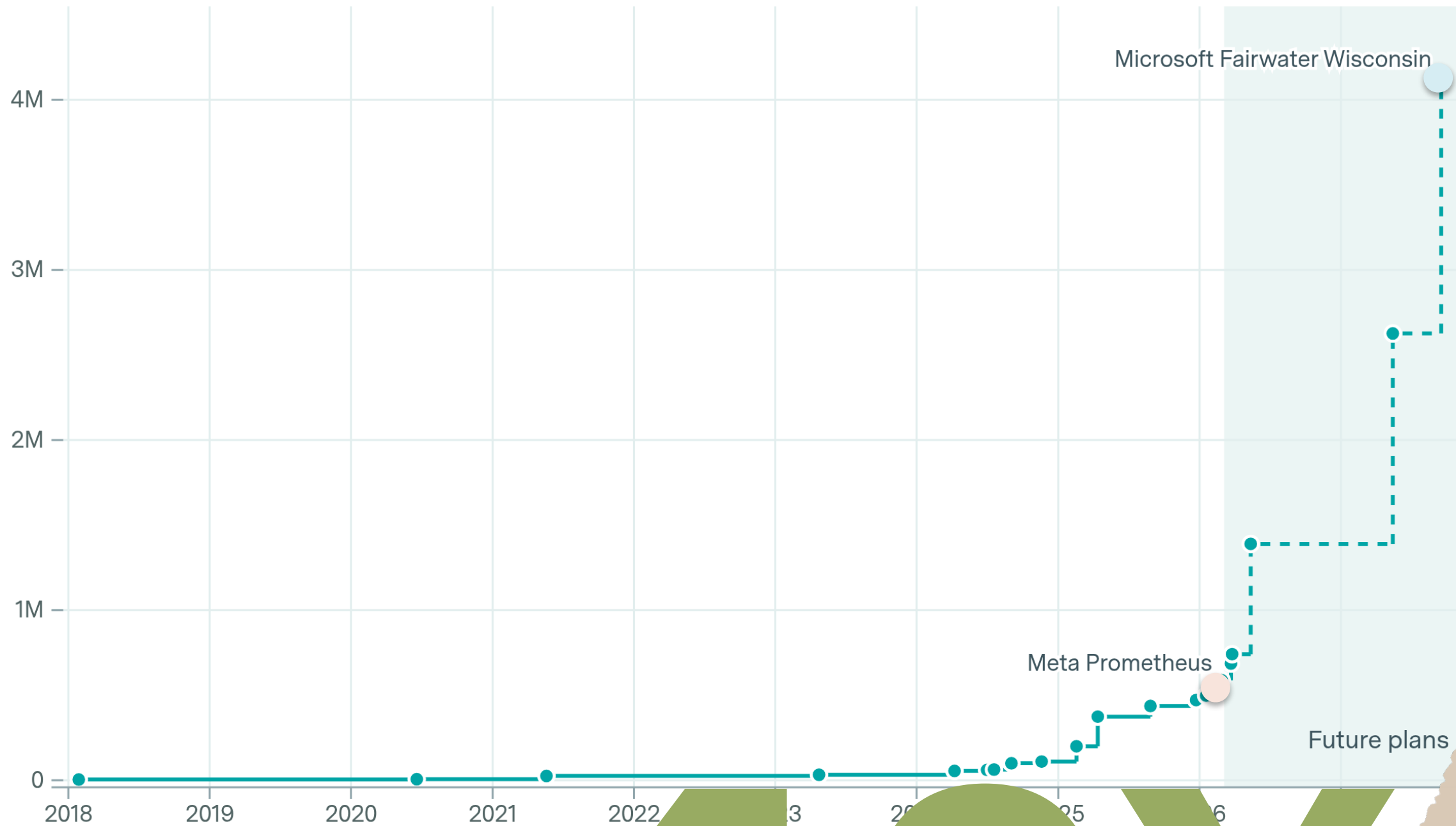
9/2027

5.2M

H100e CHIPS

Frontier AI data centers

Compute capacity (H100e)



EPOCH AI | CC-BY

<https://epoch.ai/trends>

10X



THE PROBLEM

AI requires unprecedented water and power usage.

Model efficiencies are improving, but can't keep pace with the environmental impact.

New power plants are being planned, but in the meantime, much of the power in use is the dirty and carbon-intensive power such as coal and gas.

THE SOLUTION

Don't use AI.

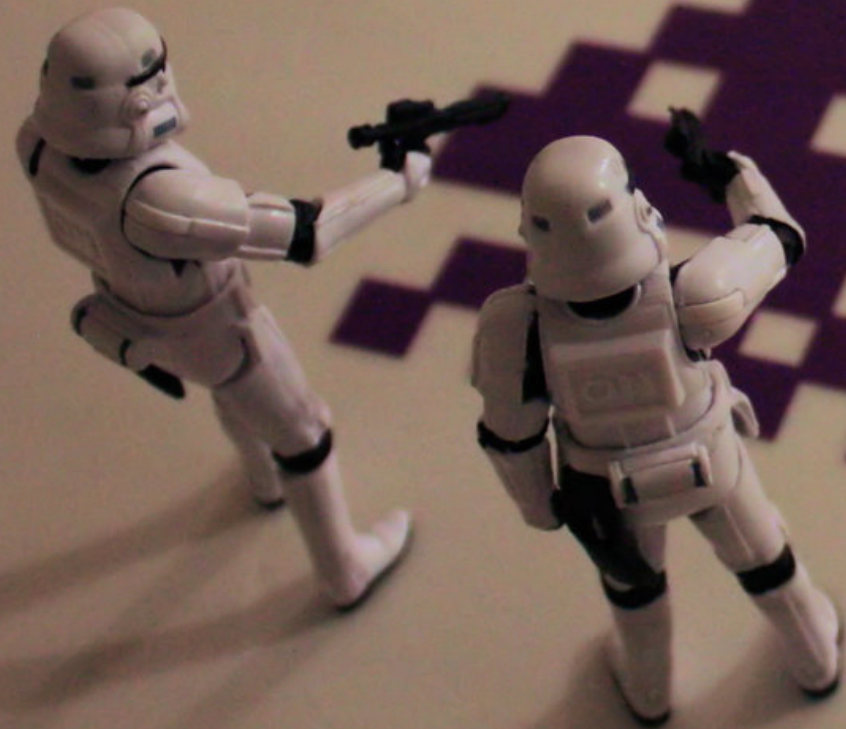


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LET'S DO BETTER.

**What are the most
environmentally-
friendly AI options?**





UMMM...

Little available data.

Mostly self reported.

No consistency of data across platforms.

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WHAT DO WE KNOW?

- OpenAI: no model-level data shared for GPT 4+; runs on MS Azure.
- Anthropic: treats training emissions as proprietary, all we have are estimates.
- Google: 2025 paper on cradle-to-grave emissions, critics debate it; company-wide emissions and water use.
- Meta: good operations disclosures, no training data shared.
- Mistral shares validated training data, water use, resource depletion, etc.

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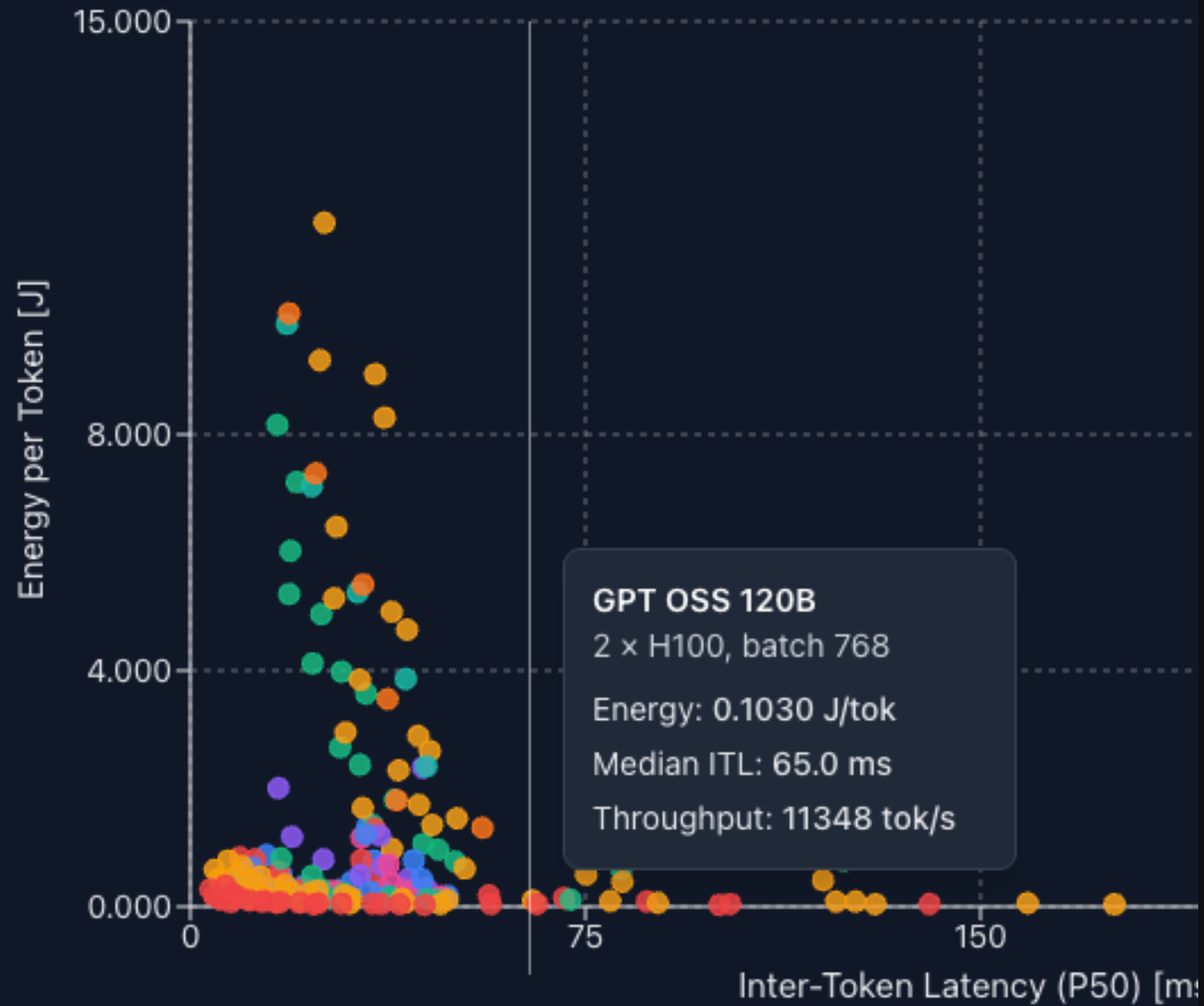
GOT ANY OTHER INFO?

- Open source data
 - ML Energy Leaderboard
 - AI Energy Score Project

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P50 (Median) P90 P95 P99



Model	Provider	GPU Energy (...)	Score	Test Date
Hunyuan-1.8B-l...	tencent	4.20	★★★★★	Dec 25
gemma-3-270m	google	9.29	★★★★★	Dec 25
Qwen3-0.6B	Qwen	11.83	★★★★★	Dec 25
gemma-3-1b-pt	google	12.33	★★★★★	Dec 25
granite-4.0-micro	ibm-granite	16.63	★★★★★	Dec 25
SmolLM3-3B	HuggingFaceTB	18.35	★★★★★	Dec 25
Phi-4-reasoning...	microsoft	18.42	★★★★★	Dec 25
Apertus-8B-Inst...	swiss-ai	21.74	★★★★	Dec 25
Mistral-Nemo-In...	mistralai	23.19	★★★★	Dec 25
Qwen2.5-Coder...	Qwen	27.12	★★★★	Dec 25
gemma-3-4b-pt	google	34.39	★★★★	Dec 25
*granite-4.0-h-tiny	ibm-granite	81.82	★	Dec 25

- Qwen 3 14B ● Qwen 3 235B A22B Thinking ● Qwen 3 30B A3B Thinking ● Qwen 3 32B ● Qwen 3 8B ● Qwen 3 72B
- NVIDIA Nemotron Nano 12B V2 ● NVIDIA Nemotron Nano 9B V2 ● NVIDIA Nemotron Nano 3.4B V2



ANYTHING ELSE TO CONSIDER?

- How data centers are powered
- Where data centers are/being built

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🔄 Previous Searches (3)

✕ Clear

URL	Green Host	Grid Intensity	PUE	CUE	WUE	Renewable
chatgpt.com	✓	370 gCO ₂	1.20	0.10	0.50	75%
claude.ai	✗	370 gCO ₂	1.58	0.35	1.80	30%
gemini.google.com	✓	370 gCO ₂	1.10	0.00	1.10	100%

Verified green hosted

PUE - Power Usage Effectiveness

CUE - Carbon Usage Effectiveness (kg CO₂/kWh)

WUE - Water Usage Effectiveness (L/kWh)

% energy from renewables



ANYTHING ELSE TO CONSIDER?

- How data centers are powered
- Where data centers are/being built
- Future investments
- Hosting your own model

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HOSTING YOUR OWN MODEL?

Assess its impact:

- Green Algorithms: <https://calculator.green-algorithms.org/>
- ML CO2 Impact: <https://mlco2.github.io/impact/>



SO WE SHOULD USE...?



EU-hosted, privacy-first,
sustainable AI.

Or the best tool for you.

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WHAT ELSE CAN WE DO?

**How can I use AI tools
more efficiently?**



1.

DON'T USE AI.

Do you really need AI to solve your problem?

OR USE IT LESS.

Use the right tool for the job.

Enforce an AI usage limit for the day/week/project.

2.

CONFIGURE BOUNDRIES.

“I prefer shorter responses.”

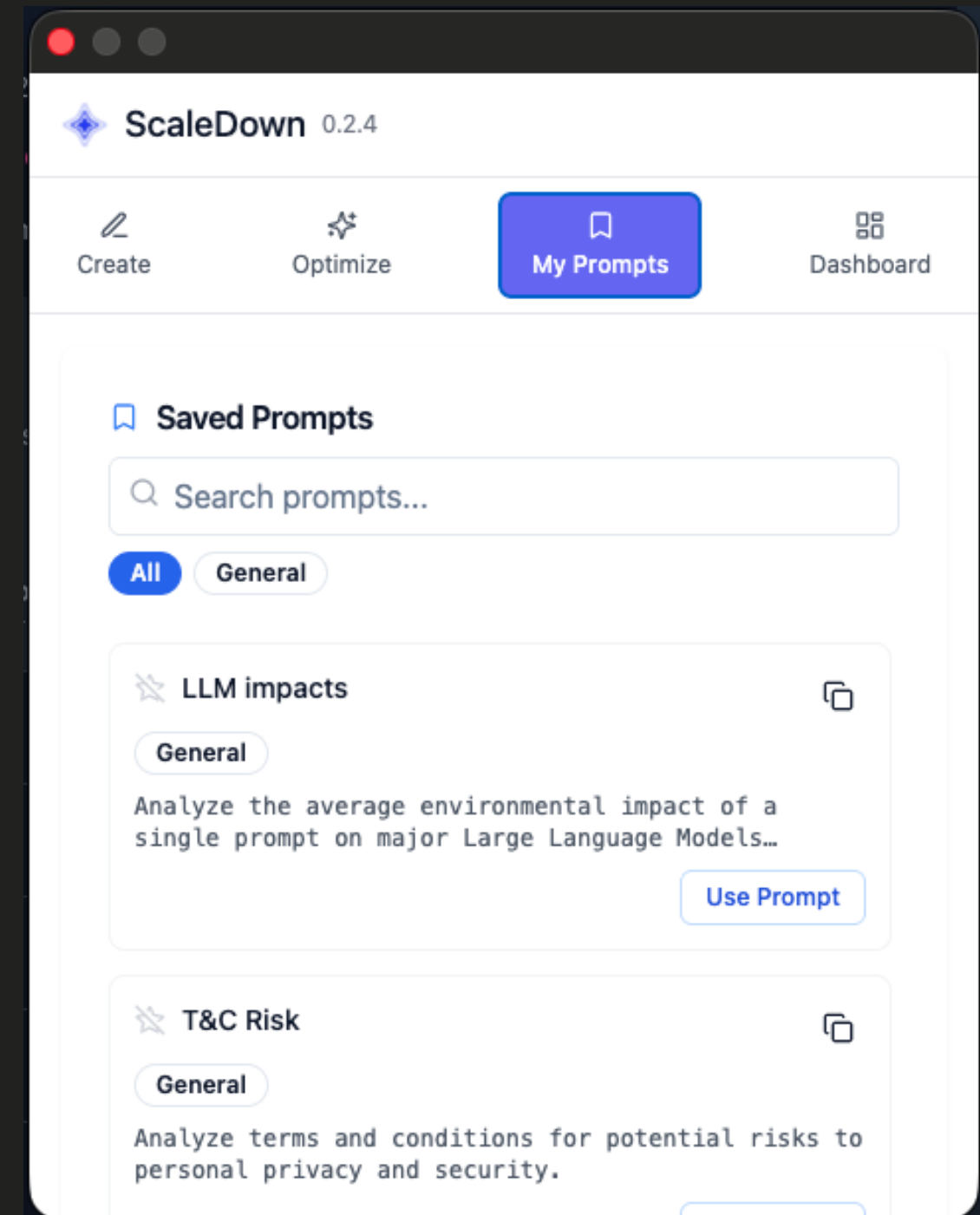
“Please provide the basics and ask me if I need more detail.”

“There's no need to provide background on an issue or reframe the problem unless I've specifically asked.”

3.

OPTIMIZE YOUR PROMPTS.

EcoLogits Calculator
ScaleDown browser extension



4.

USE SMALLER, SPECIALIZED MODELS WHENEVER POSSIBLE.

Google Gems & Notebook LM,
Claude Projects, OpenAI GPTs,
Perplexity Spaces, self-hosted models

WHAT ELSE CAN WE DO?

**How can we increase
our level of impact?**



MONITOR.

Track, assess, and offset your AI usage.

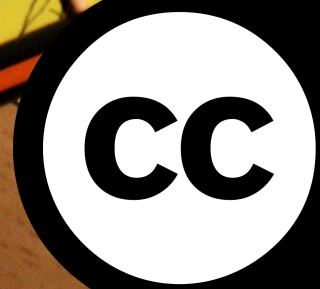
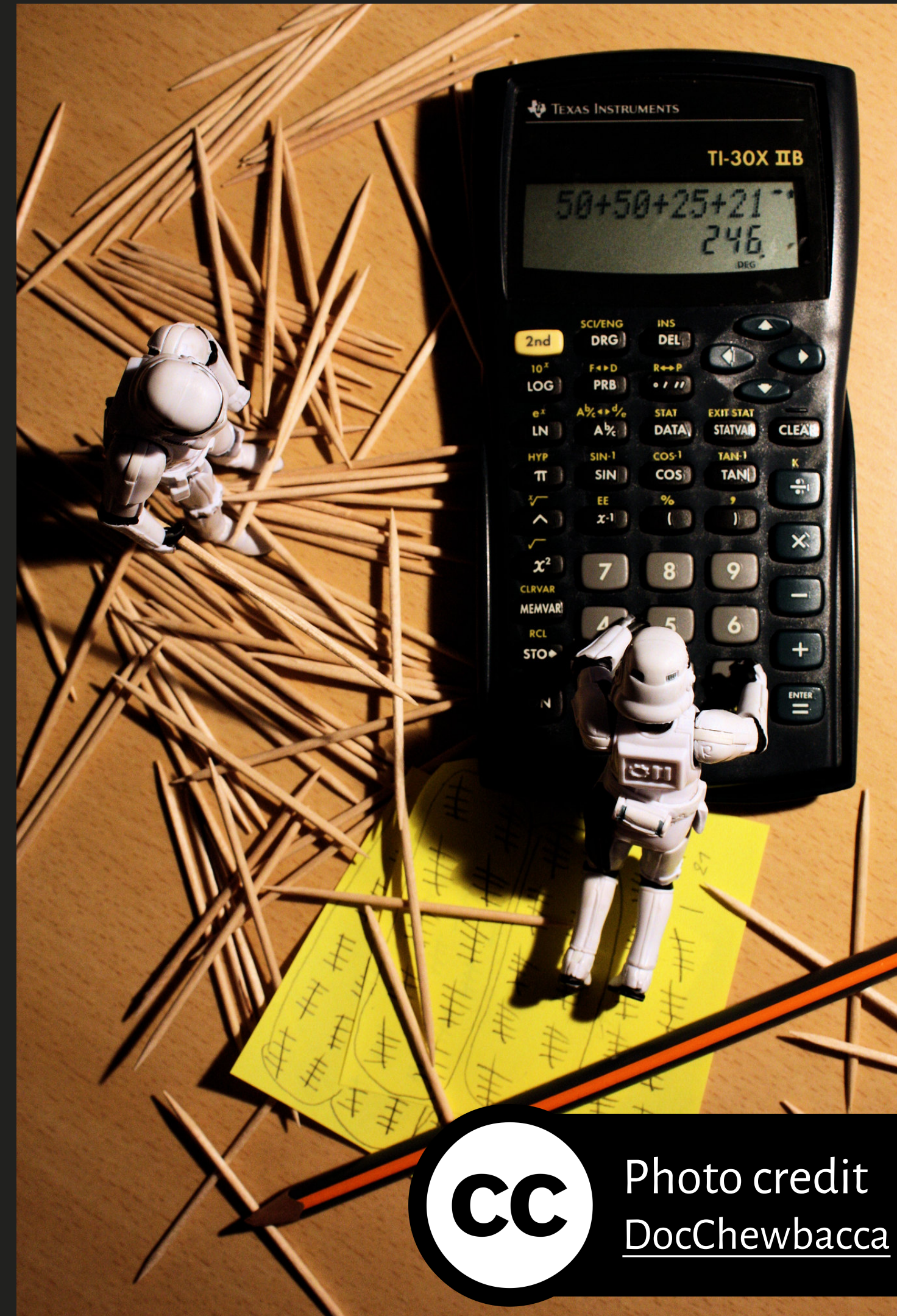


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SustAIIn (browser extension)
AI Wattch (browser extension)
OffsetAI (browser extension+)
Shift Browser

The screenshot shows the 'Offset AI' browser extension interface. At the top, it says 'Offset AI This Conversation'. Below this, there are four buttons for AI models: 'ChatGPT', 'Gemini' (which is highlighted), 'Claude', and 'Perplexity'. Underneath the model buttons, it says 'Prompts' with a lightning bolt icon and the number '2'. The main section is titled 'Environmental Impact' and is split into two columns. The left column is for 'Carbon' and shows '< 0.001 kg CO₂e'. The right column is for 'Water' and shows '0.004 Liters'. At the bottom, there is a blue button that says 'See Dashboard →' and a link for 'About this extension'.

The screenshot shows the 'SustAIIn' browser extension interface. The header says 'SustAIIn Know your Impact, Make a Difference'. The main content is titled 'Your Total AI Usage' and includes the subtext 'Data from 1 conversation'. There are three data points: 1. '2.3 g CO₂' with a CO₂ icon and a comparison: 'Human breathing: 0.1h of breathing'. 2. '0.0 liters' with a water drop icon and a comparison: 'Glass of water: 27.2 times smaller'. 3. '5.1 Wh' with a lightning bolt icon and a comparison: 'Phone charge: 0.5 charges'. Below these is a light blue box titled 'Echoes of Usage' with the text 'Thank you for being mindful about your digital footprint.' and a 'Return to Current Conversation' button. At the very bottom, it says 'Made with ❤️ by Team SustAIIn For G Solution Challenge'.

The screenshot shows the 'Carbon Meter' browser extension interface. At the top right is a close button 'X'. Below the title, there are four buttons for time periods: 'Last 7 Days', 'Last 30 Days', 'Year to Date', and 'All Time'. Underneath is 'My Impact' with a help icon and two buttons: 'Standard' and 'Metric'. The main display shows '0.018 lb CO₂' in a large font. Below this is 'Shift Community Impact' with a help icon, showing '112.20K lb CO₂'. The bottom section features an illustration of a laptop, wind turbines, trees, and solar panels. At the very bottom, it says 'Shift supports climate projects by offsetting'.

DOCUMENT.

Create best practices
and governance for
your organization(s).

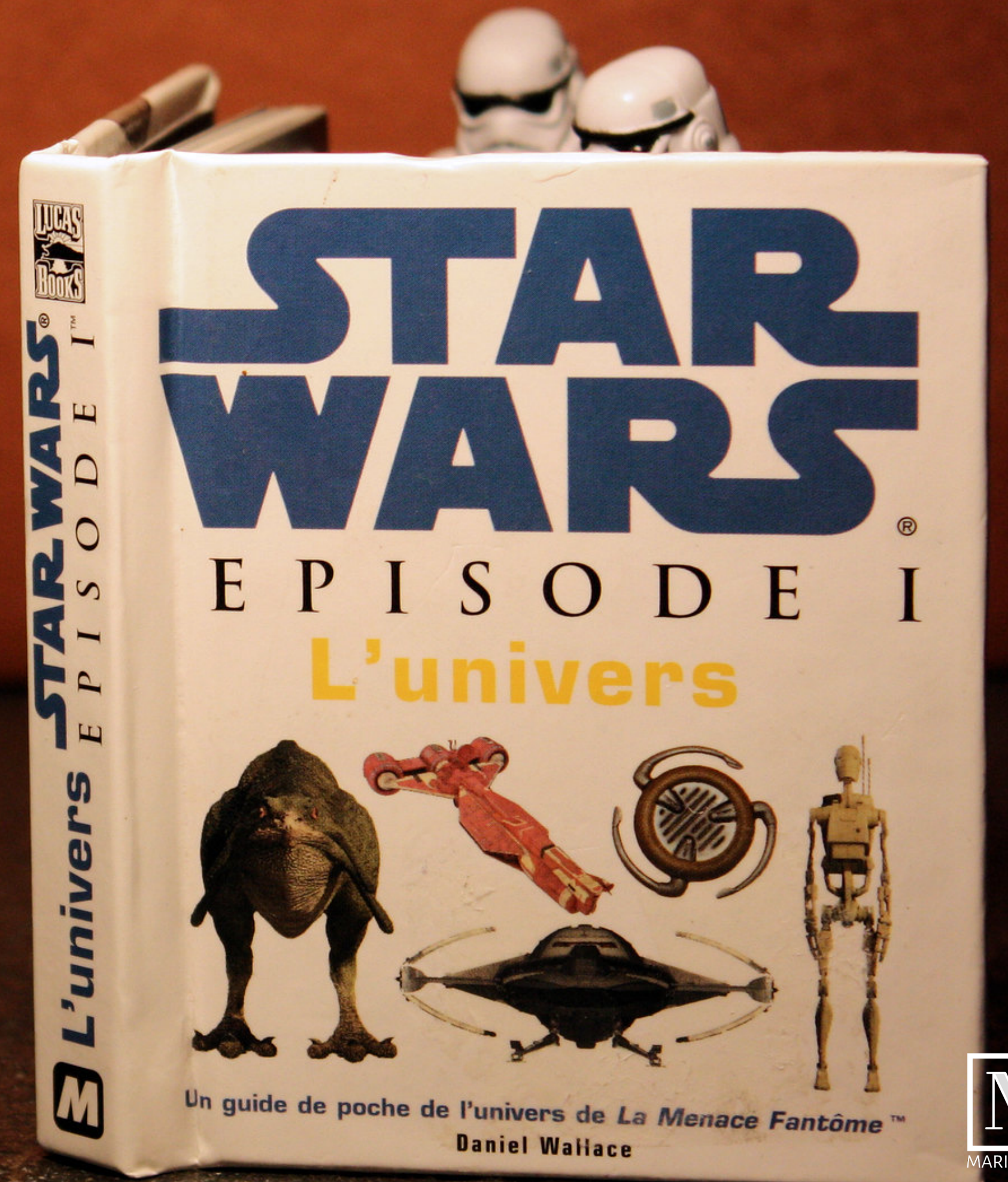


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SHARE.

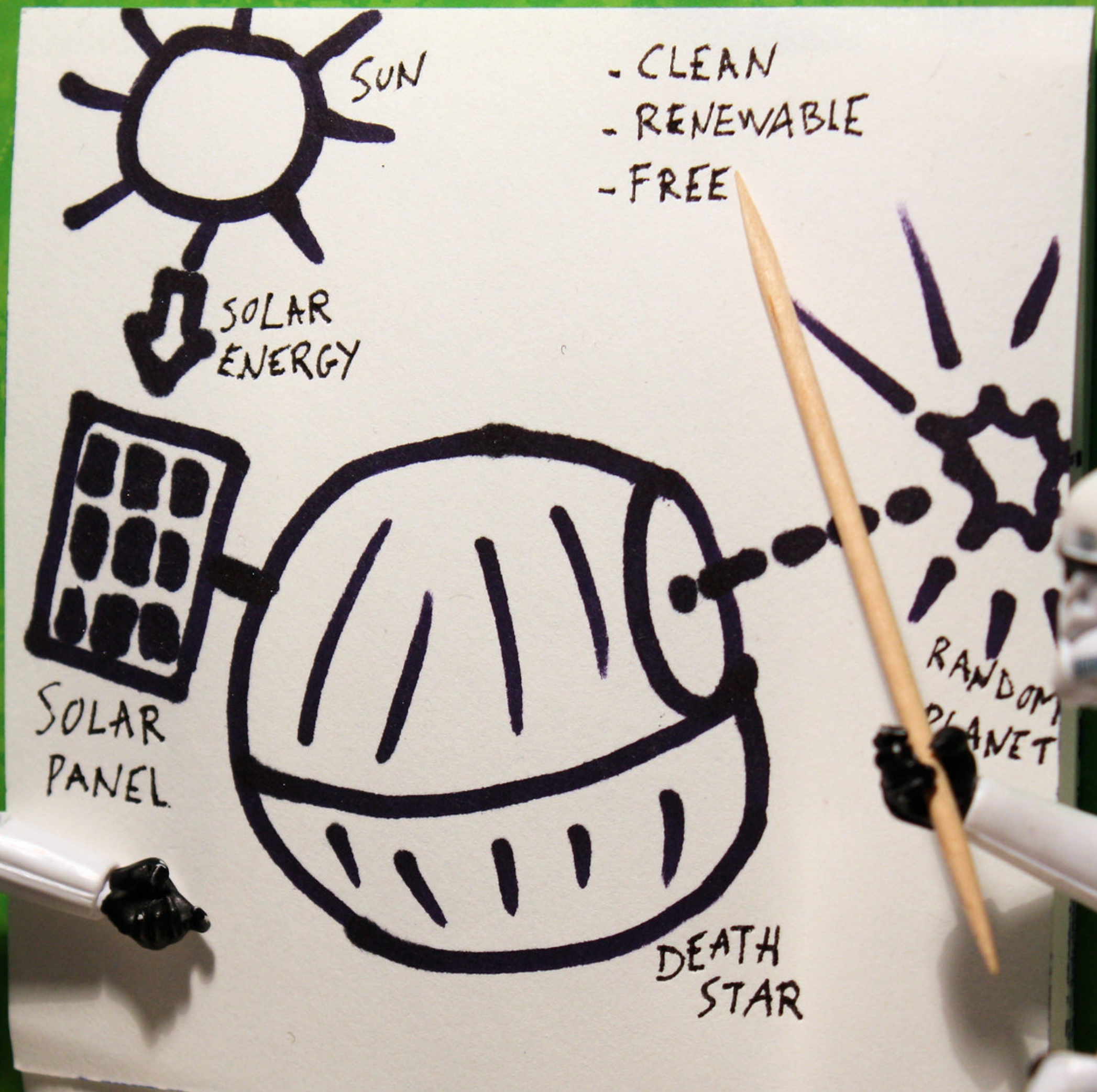


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SUPPORT.

Support the companies doing well.

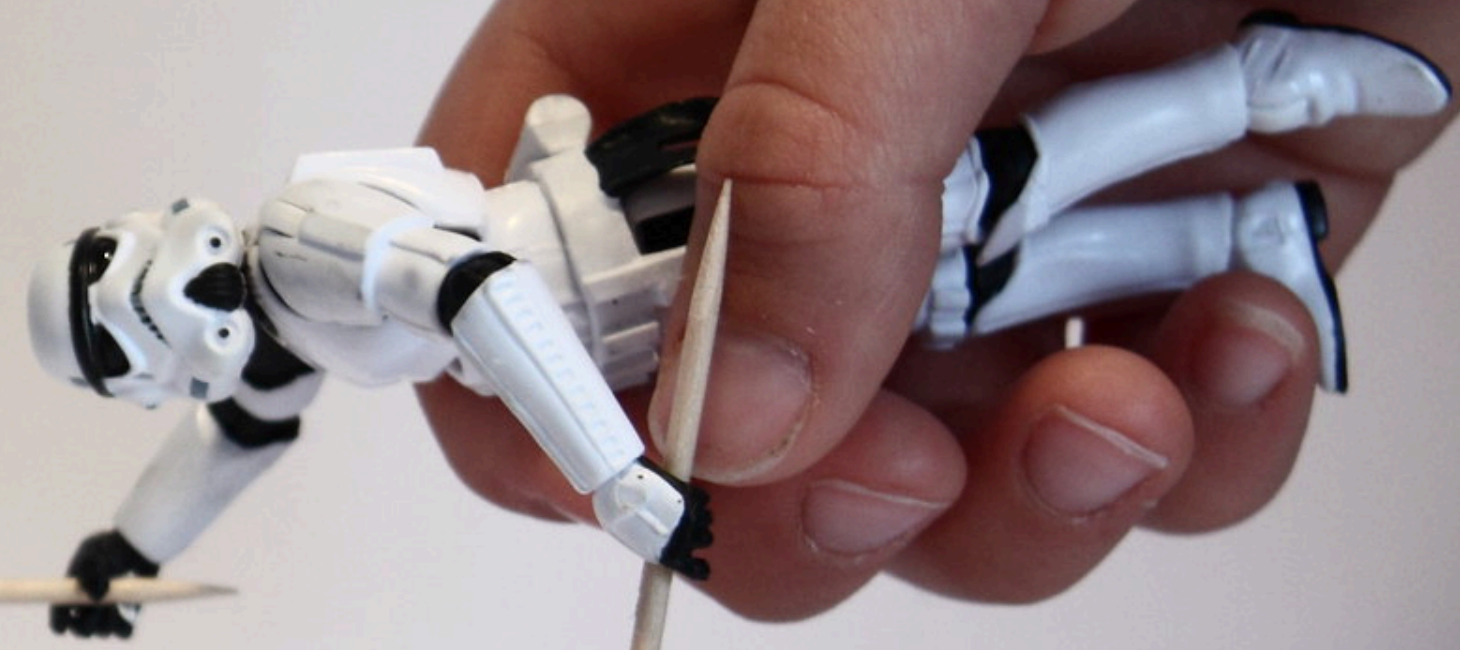
Communicate when a vendor you want to work with isn't environmentally-friendly.

OTE.

FREEDOM
FOR TOYS



iii d7EH



TOYS II
NOT SLAVES

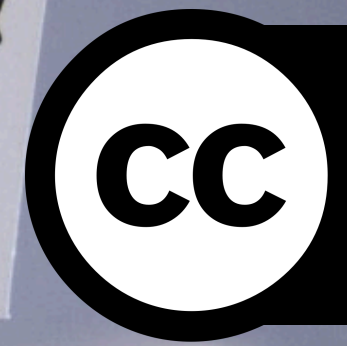


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WATCH.

Keep an eye on what's coming.



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AI SUSTAINABILITY IS A PROBLEM

But it's a problem we can
all contribute to improving.





The most common way
people give up their
power is by thinking
they don't have any.

ALICE WALKER

THANK YOU.



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Slides +
Resources



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