platform.sh

You don’t need another server: a greener way to host

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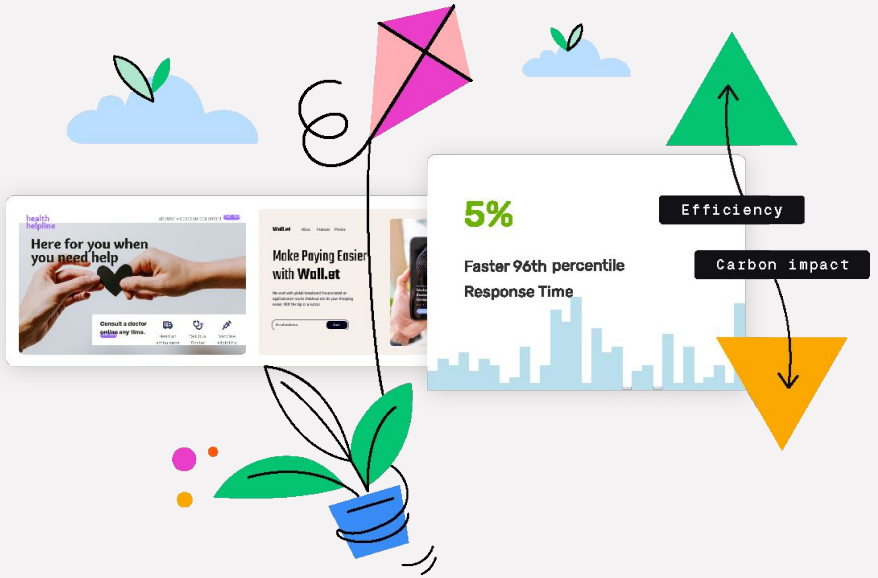
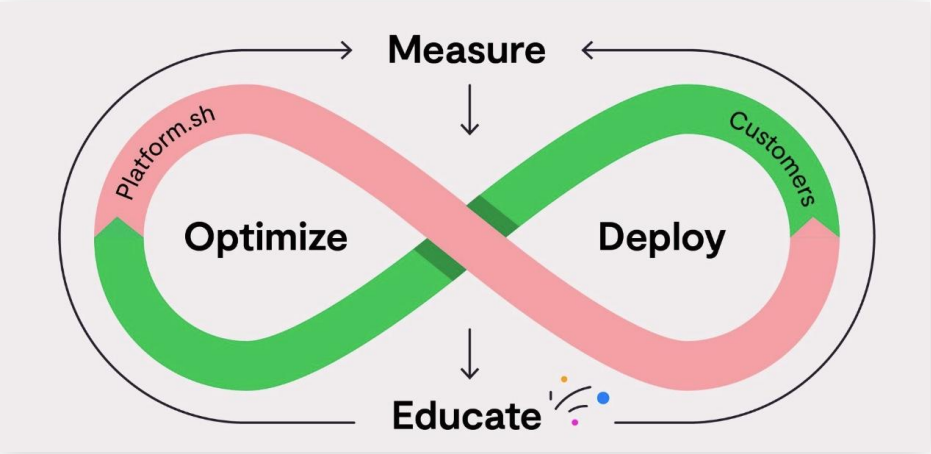
Environmental Impact Officer
16 January 2023



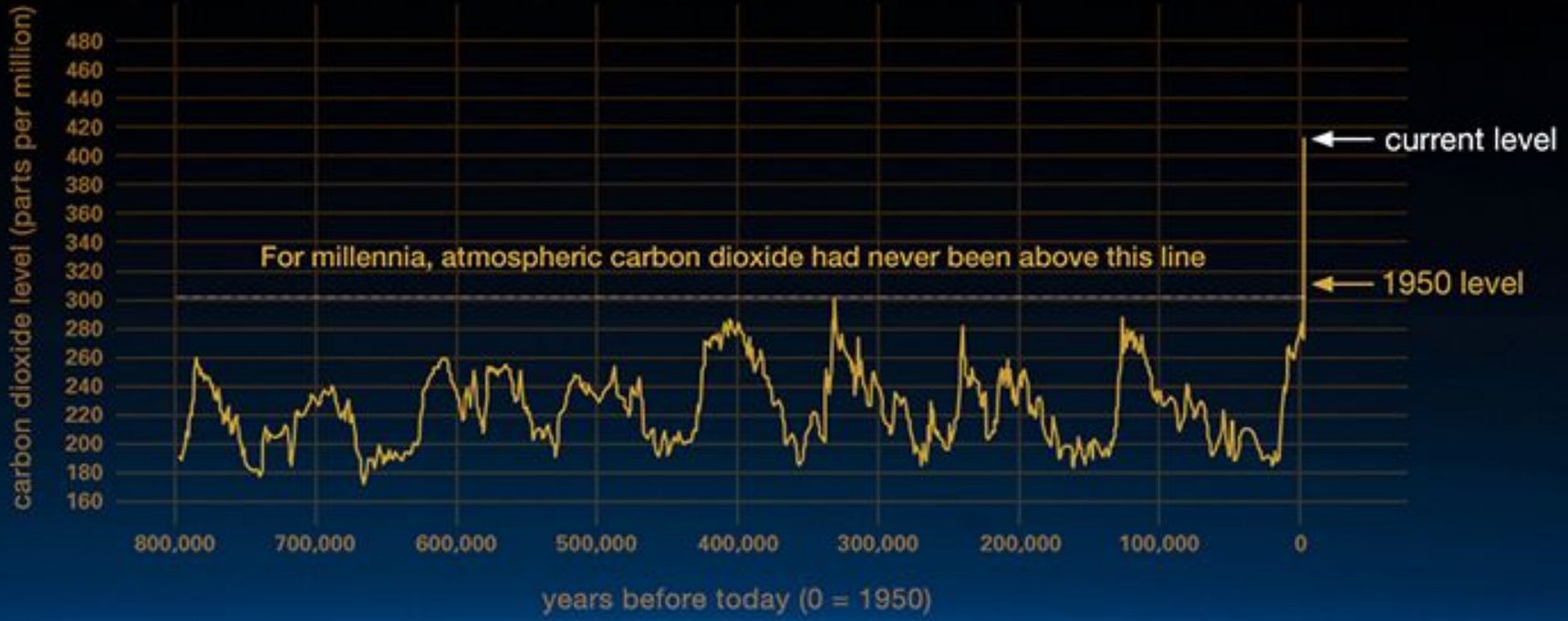
Outline



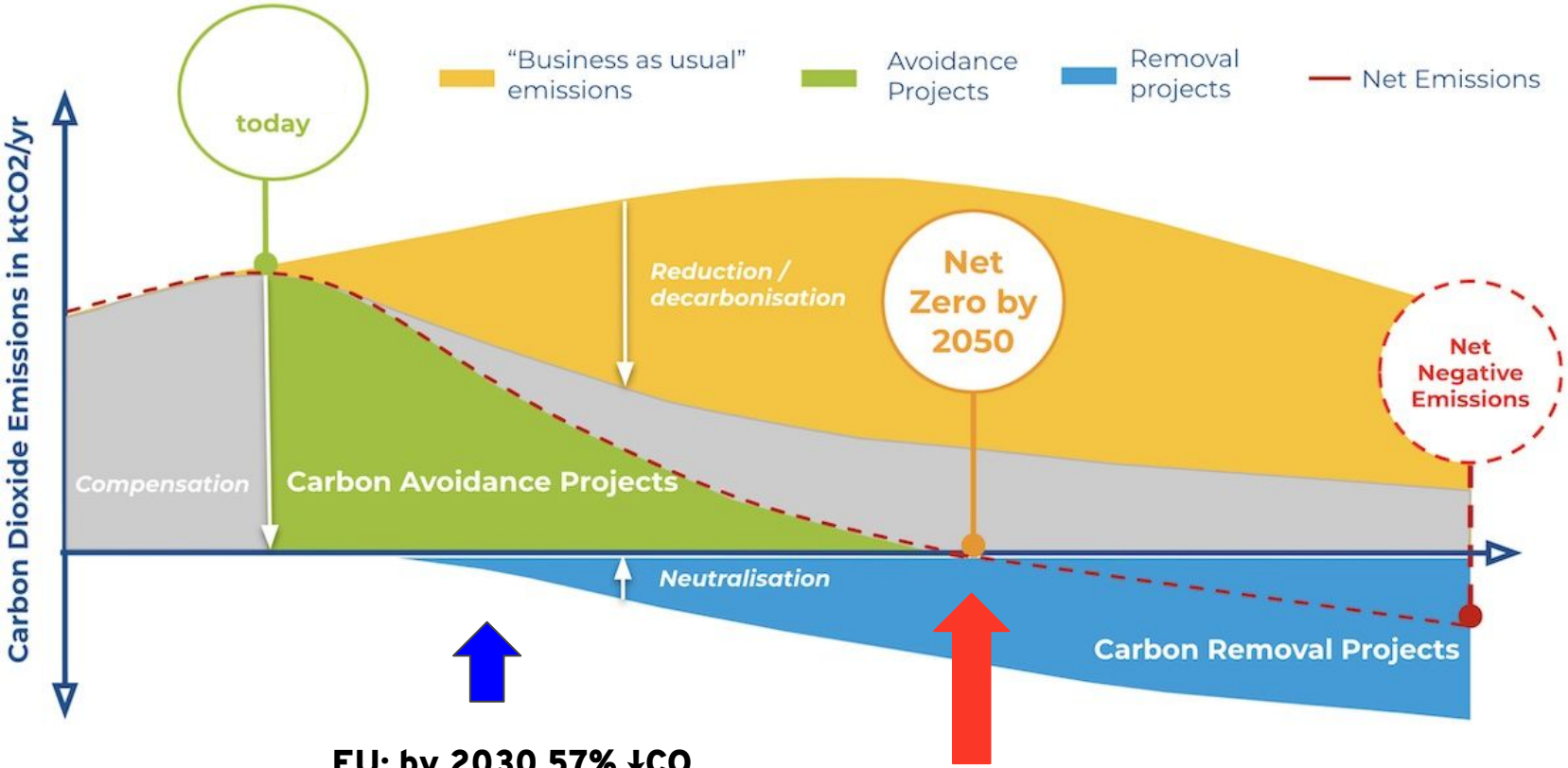
Why you don’t need another server

- **Climate change**
- **Role of the ICT community**
- **MODE strategy**

Climate change


carbon dioxide level (parts per million)
480
460
440
420
400
380
360
340
320
300
280
260
240
220
200
180
160
For millennia, atmospheric carbon dioxide had never been above this line
current level
1950 level
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
years before today (0 = 1950)

// Net zero



EU: by 2030 57% ↓CO_2

Image from south pole

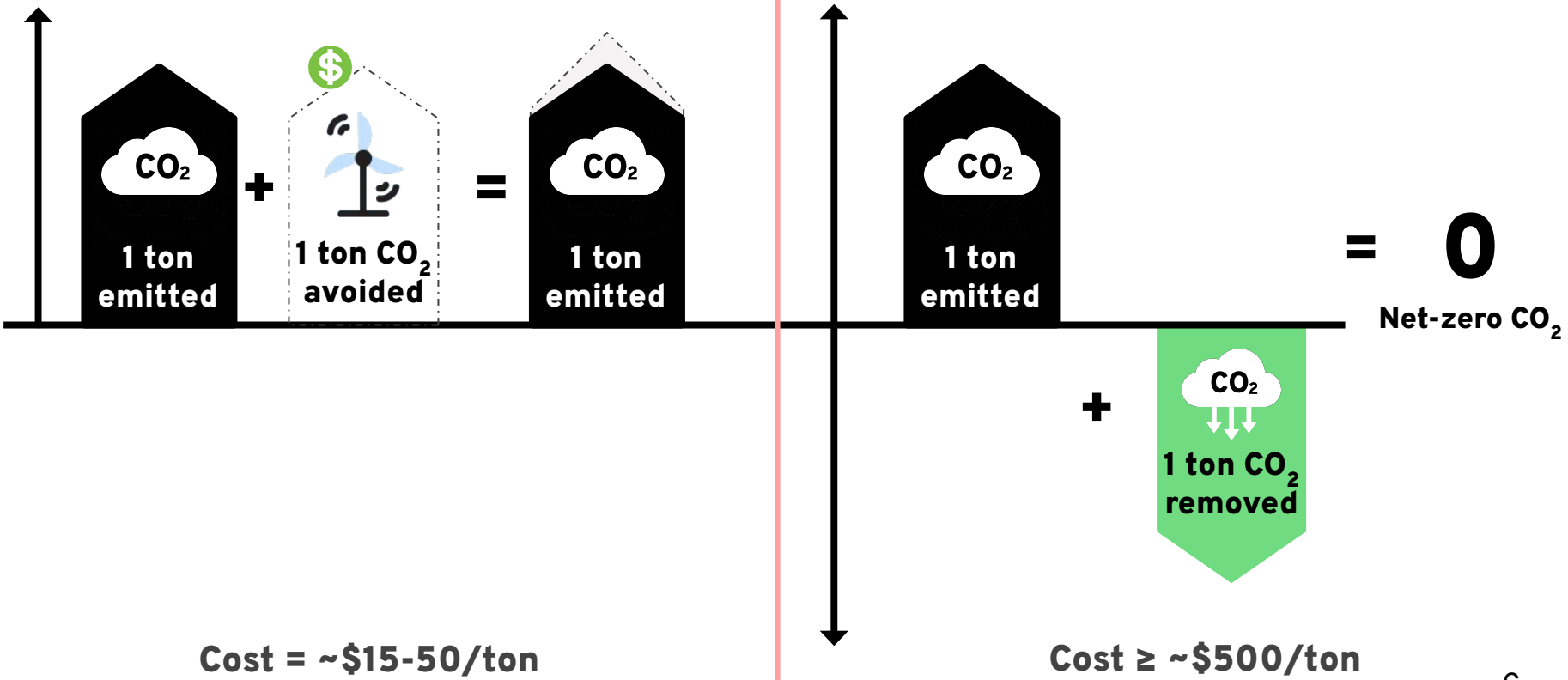
Carbon offsets

not net-zero compatible

vs.

Carbon removal

✅ *net-zero compatible, true CO_2 removal*



Cost = ~$15-50/ton

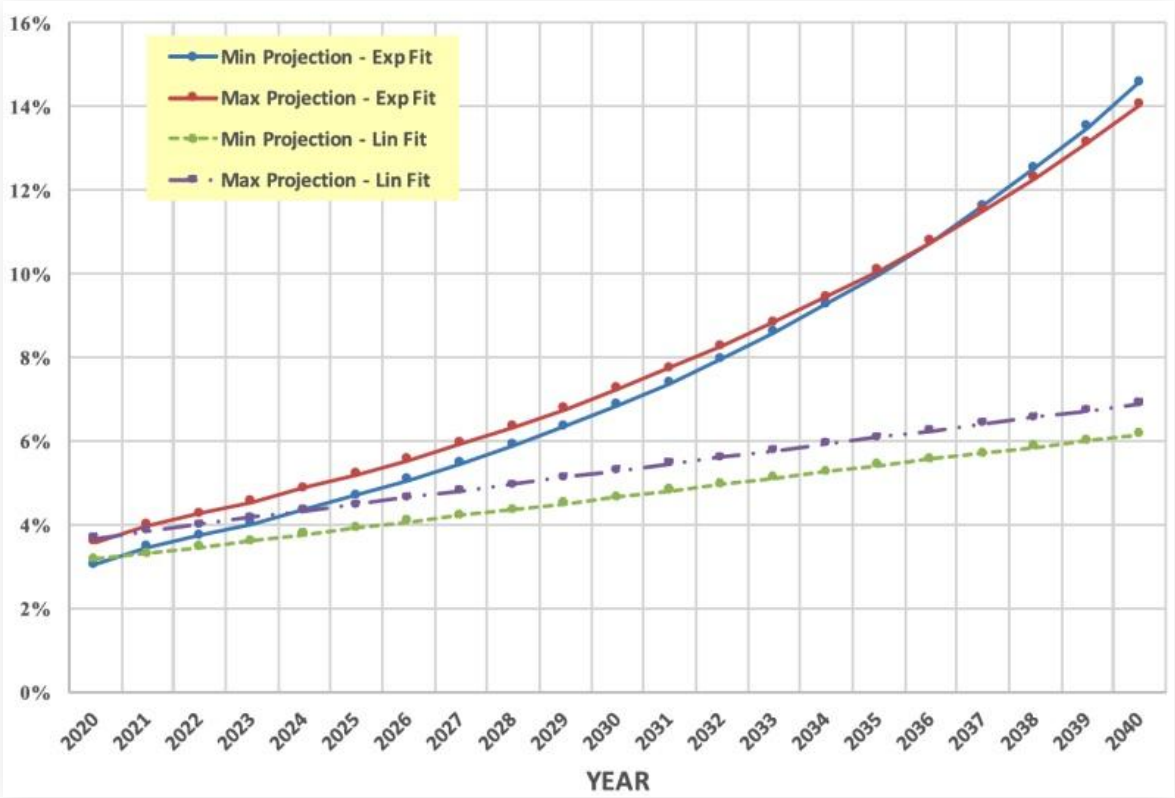
Cost ≥ ~$500/ton

Image from climeworks.com

Role of the IT community

ICT global carbon footprint relative to total global footprint

% ICT's total global carbon footprint



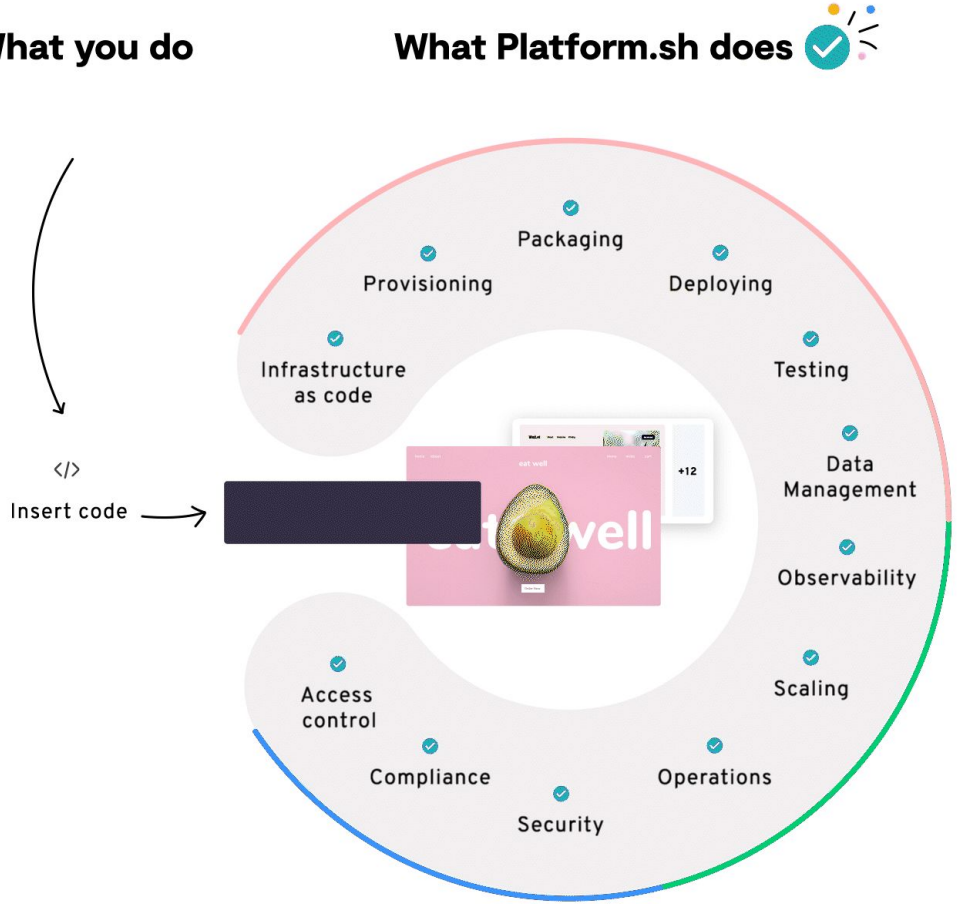
15% (2040) max

~7% (2040) min

~4% (2020)

2040:Belkhir & Elemeligi (2018)

We help teams build web apps and spend zero time managing infrastructure



Cloud carbon auditing: boundary conditions*

Inside the scope

Data centers:

- Servers manufacturing
- Electricity
- Refrigerant
- Gas consumption
- All based on servers lifetime assessment

Network:

- Fixed networks (includes office internet router)
- Electricity for network backbone (mobile incl.)
- Models: ADEMExARCEP and free.fr studies

Outside of the scope

- Network manufacturing parts
- End-user devices

*From our carbon auditor: Greenly

The research is still emerging...

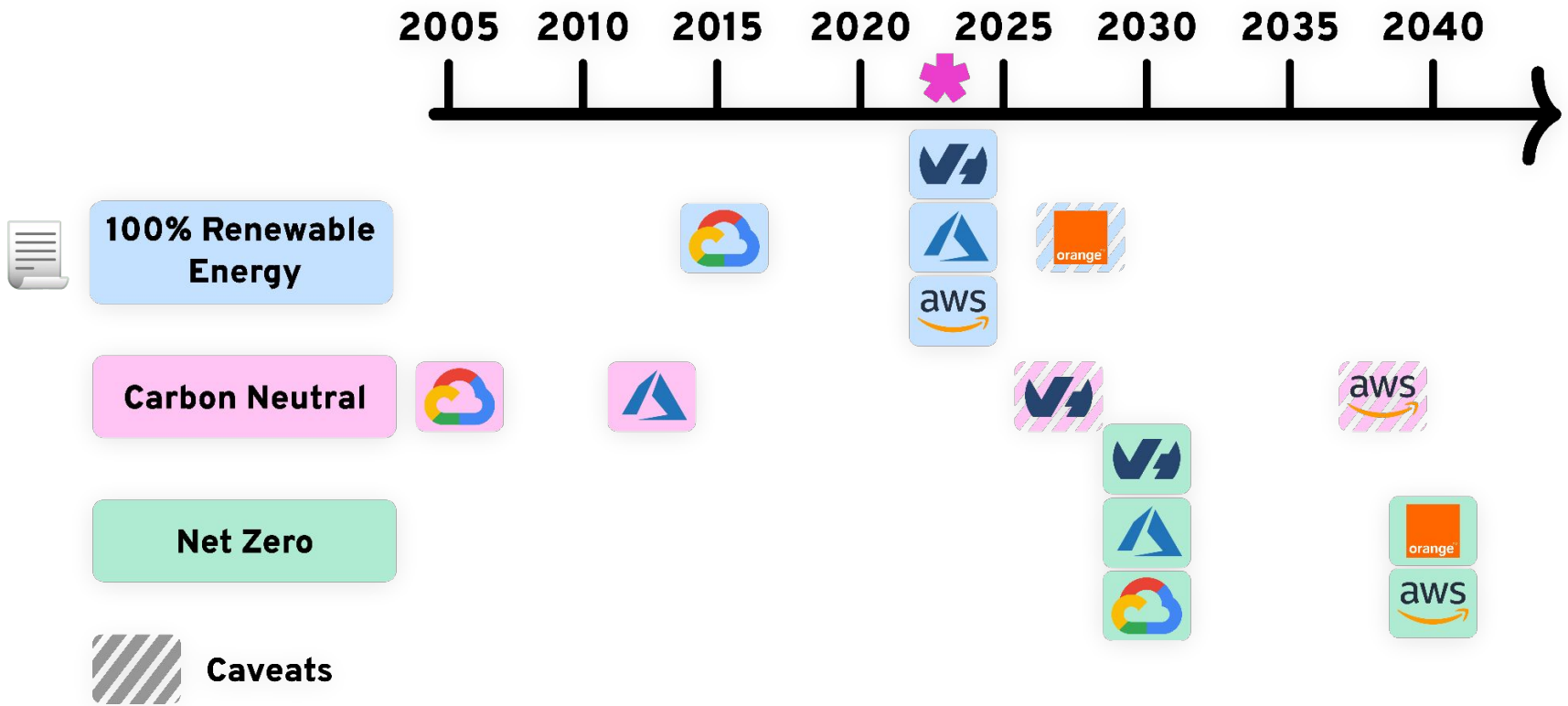
...but there is agreement that:

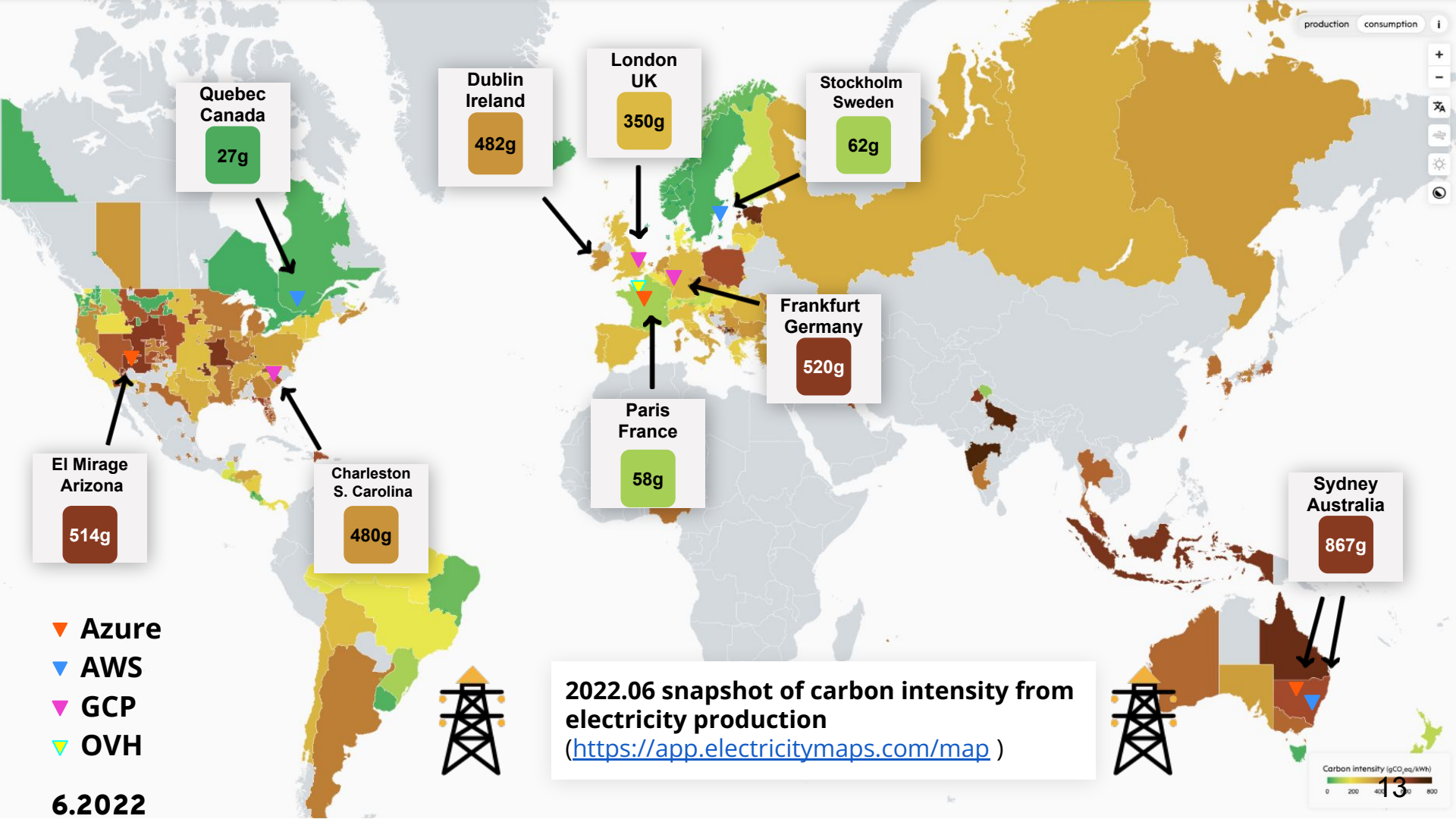
- Cloud is less resource intensive than on premises*
- A location-based approach is the standard in carbon accounting
- It is a process: transparency is a necessity
- An accredited auditor should use **GHG Protocol for carbon accounting**

...and we will continuing to refine our process as new peer-reviewed research is published

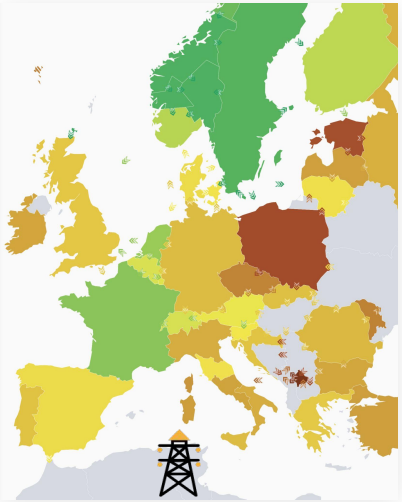
***-30-90% GHG emissions Cloud Computing and Sustainability: The Environmental Benefits of Moving to the Cloud (accenture, et al 2010).**

Hyperscalers' communication



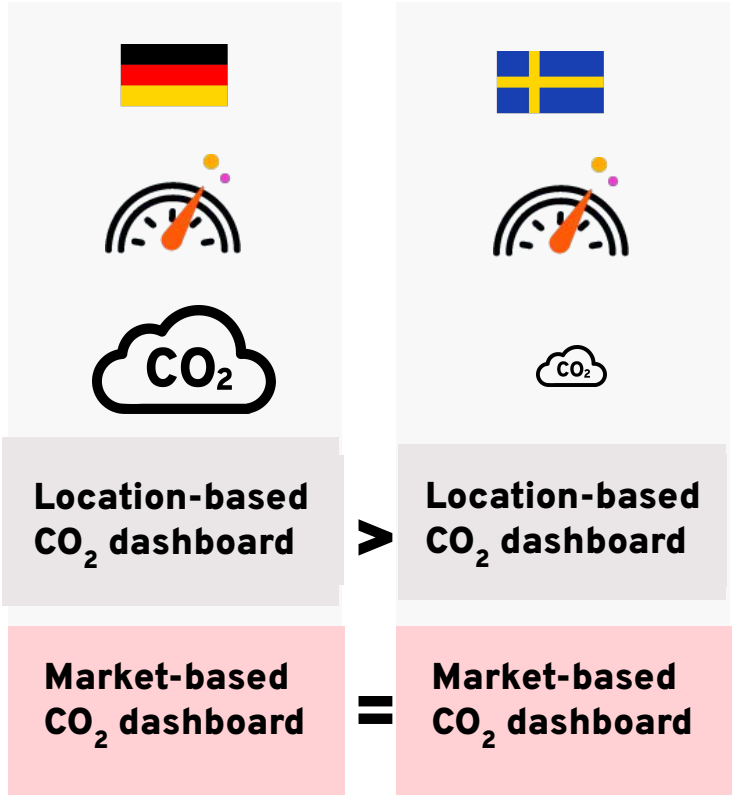

production
consumption
Quebec
Canada
27g
Dublin
Ireland
482g
London
UK
350g
Stockholm
Sweden
62g
Frankfurt
Germany
520g
Paris
France
58g
El Mirage
Arizona
514g
Charleston
S. Carolina
480g
Sydney
Australia
867g
Azure
AWS
GCP
OVH
6.2022
2022.06 snapshot of carbon intensity from electricity production
(https://app.electricitymaps.com/map)
Carbon intensity (gCO2eq/kWh)
0
200
400
800

Market-based: not necessarily 1:1 carbon* 📄



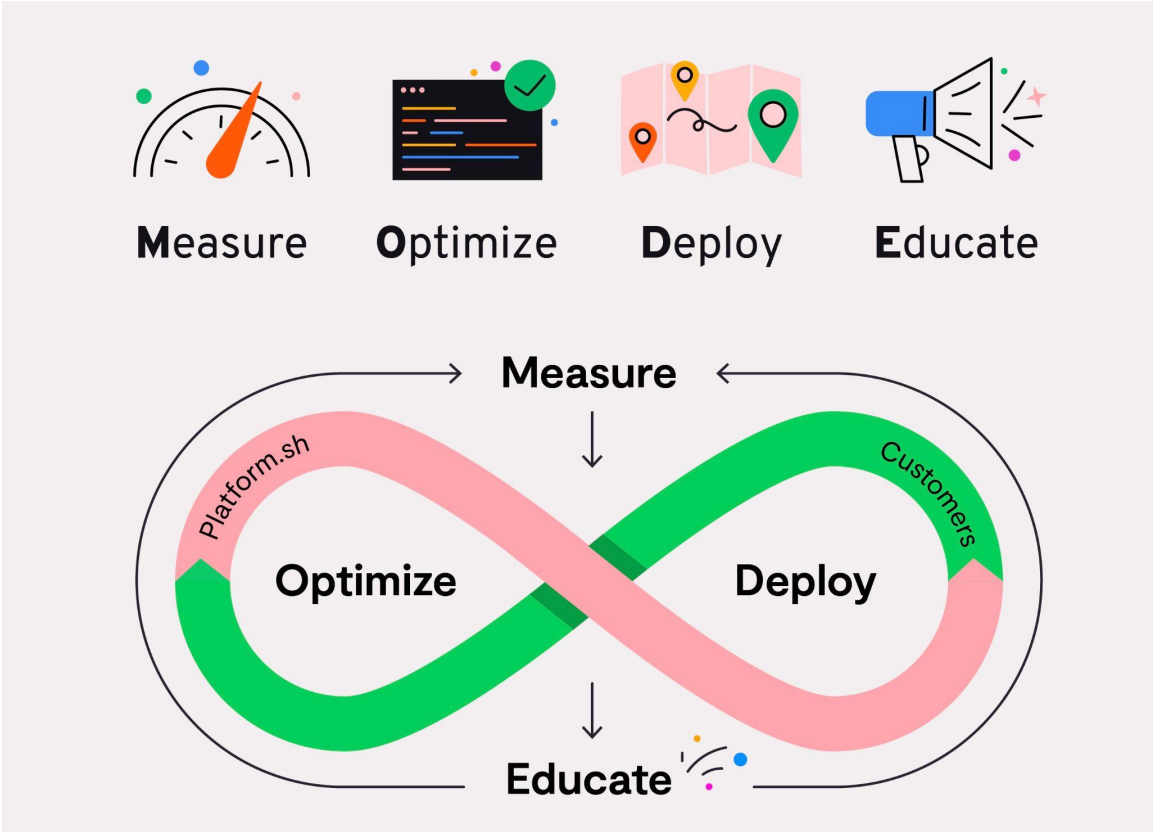
*Why your data centers should be located on clean electric grids.

Note, when PPAs 📄 are on the same elec. grid, market-based =location-based.



MODE strategy: you don’t need another server

Platform.sh's MODE strategy



Measure: carbon auditing

Defined by [GHG Protocol]

Platform.sh office

Scope 1

Scope 2

Our activities

Scope 3

- Renting cloud instances ☁️
- Business travel ✈️🚄🚗
- Purchased goods + services
- Employee commuting
- Energy related activities
- End-of-life treatment of sold products
- Processing + use of sold products

Cloud methodology

Total CO_2eq emissions = **Embodied Emissions** + **Operational Emissions**

Embodied emissions

Small compared to operational emissions

- Estimated emissions from the manufacturing of data center servers

Operational emissions factors

- Capacity used: compute, storage, network
- Emissions factor for type of capacity
- Power usage efficiency
- Power mix

cloudcarbonfootprint.org

Measure: carbon auditing

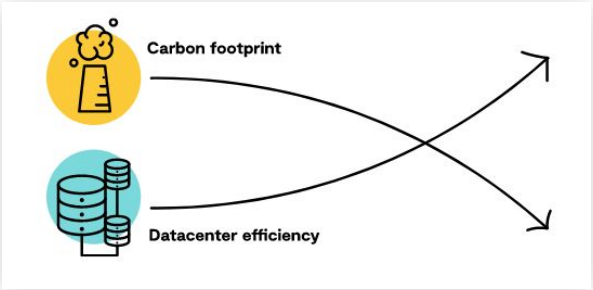
2020 tbc

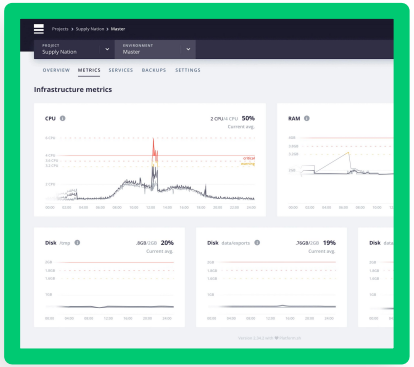
- **Third-party certified by** Greenly
- **2020 carbon audit results (tCO_2eq)**

+	**1300**	**Total**
+	5	Scope 1
+	1	Scope 2
+	1294	Scope 3
+	1206	Scope 3: clients (cloud)
+	88	Scope 3: Platformers

- **We are committed to reducing carbon emissions of our clients**

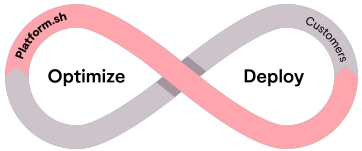
Optimize: it is a shared responsibility

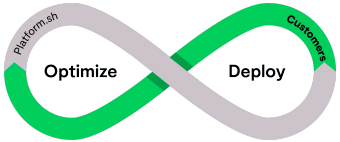




Density

Application Performance Monitor (APM)

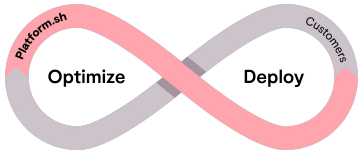




Fewer resources mean less electricity used

10x higher density for production

14x higher density for development



Up to 12[X] fewer servers used*

Standard approach

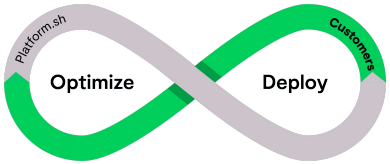
Platform.sh

* Greenly certified comparison to AWS EC2 virtual machines

Optimize your performance

With Blackfire:

- Measure loading times
- Identify bottlenecks
- Follow recommendations

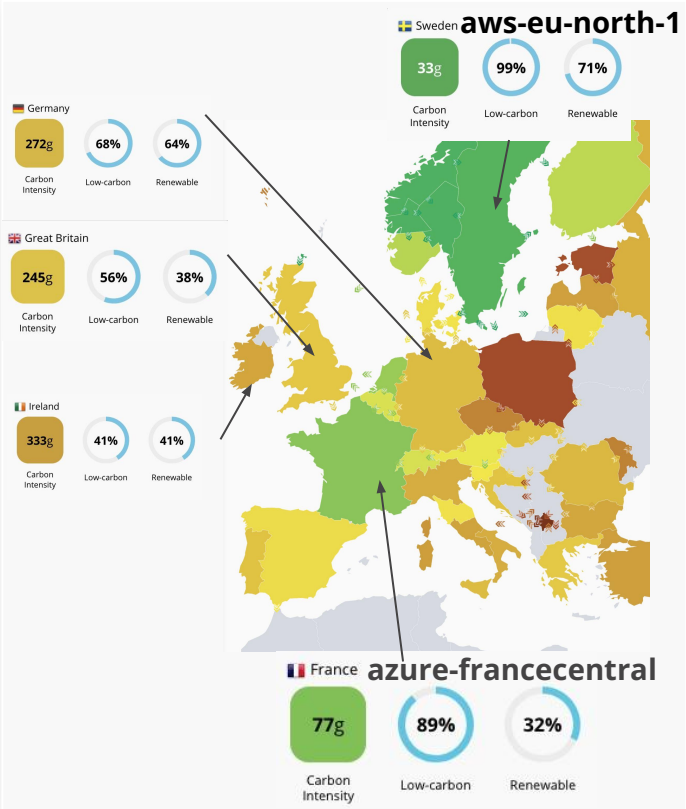


Following the adoption of Blackfire.io in the development workflow, up to

20x

more concurrent orders for GOG.com

Deploy: to greener regions



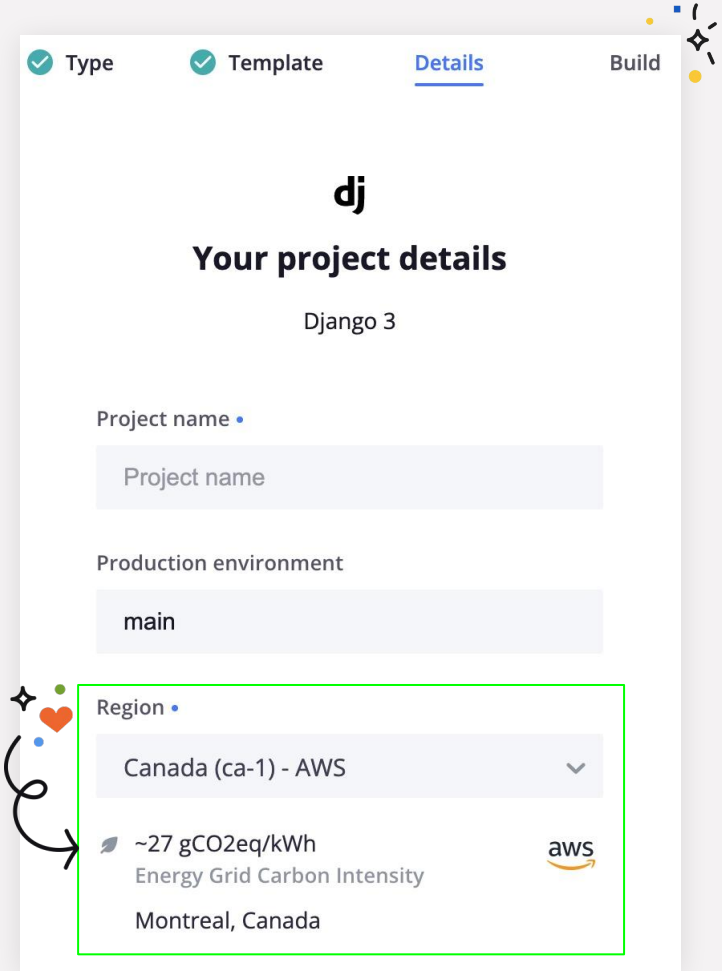
1. A measurement of CO_2 produced per electricity produced
2. Carbon intensity can vary in time
3. This shows the importance of a location-based, rather than market-based approach

https://app.electricitymap.org/map

Carbon intensity transparency

Full transparency on the underlying carbon intensity of the region's electricity grid provider

https://console.platform.sh



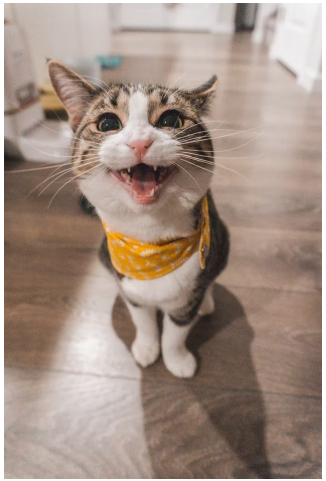
Educate

2015

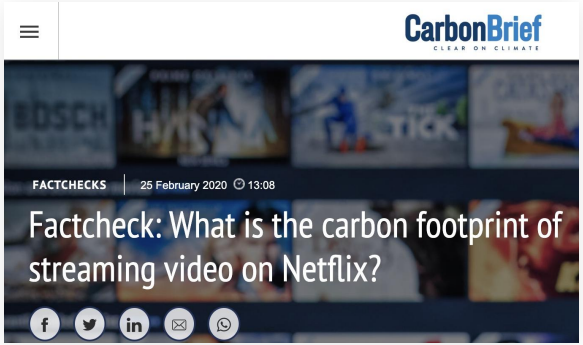
Search The Guardian International
News website of the year

How viral cat videos are warming the planet

Datacentre web servers, such as those used by Google and Facebook, to blame for 2% of greenhouse gas emissions – about the same as air travel



2020



Educate: Carbon auditing is in its infancy

2020		2021 (preliminary)
Greenly audits of **Platform.sh:**	**Shift's 1-byte model**	**ADEME x ARCEP model & Free carbon assessment**
	20% compute 4% storage **76% transfer**	55% compute 12% storage **22% transfer** 10% other (CDN…)

Our carbon auditors: network is less resource-intensive than originally believed, tbc.

We partner to reduce your carbon footprint

We prioritize on density and servers' optimization and green localization deployment

Efficiency and density

Up to 5-12x more efficient

Greenly certified

Observability and monitoring

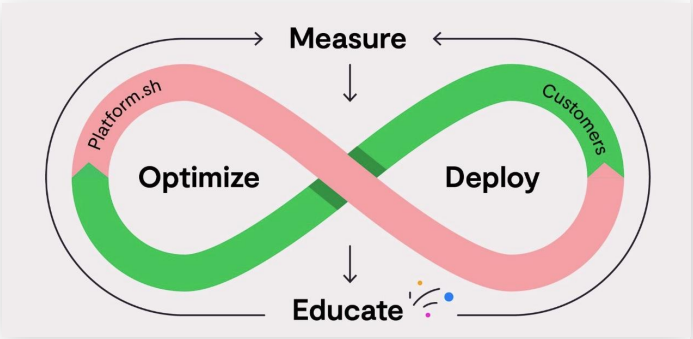
Up to 20x better performance

blackfire.io
A Platform.sh company

Location deployment

Up to 15x CO_2 reduction

What can you do?



- **Make a conscious choice about the region in which you host**
  - + Opt for high-density cloud computing
  - + Optimize code with an Application Performance Monitor (APM) to use resources efficiently
  - + Choose data centers that run on low-carbon electricity grids (i.e., location-based approach)
- **Support your team/organization making environmental choices**

Thank you!

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