



RIPE NCC

RIPE NETWORK COORDINATION CENTRE

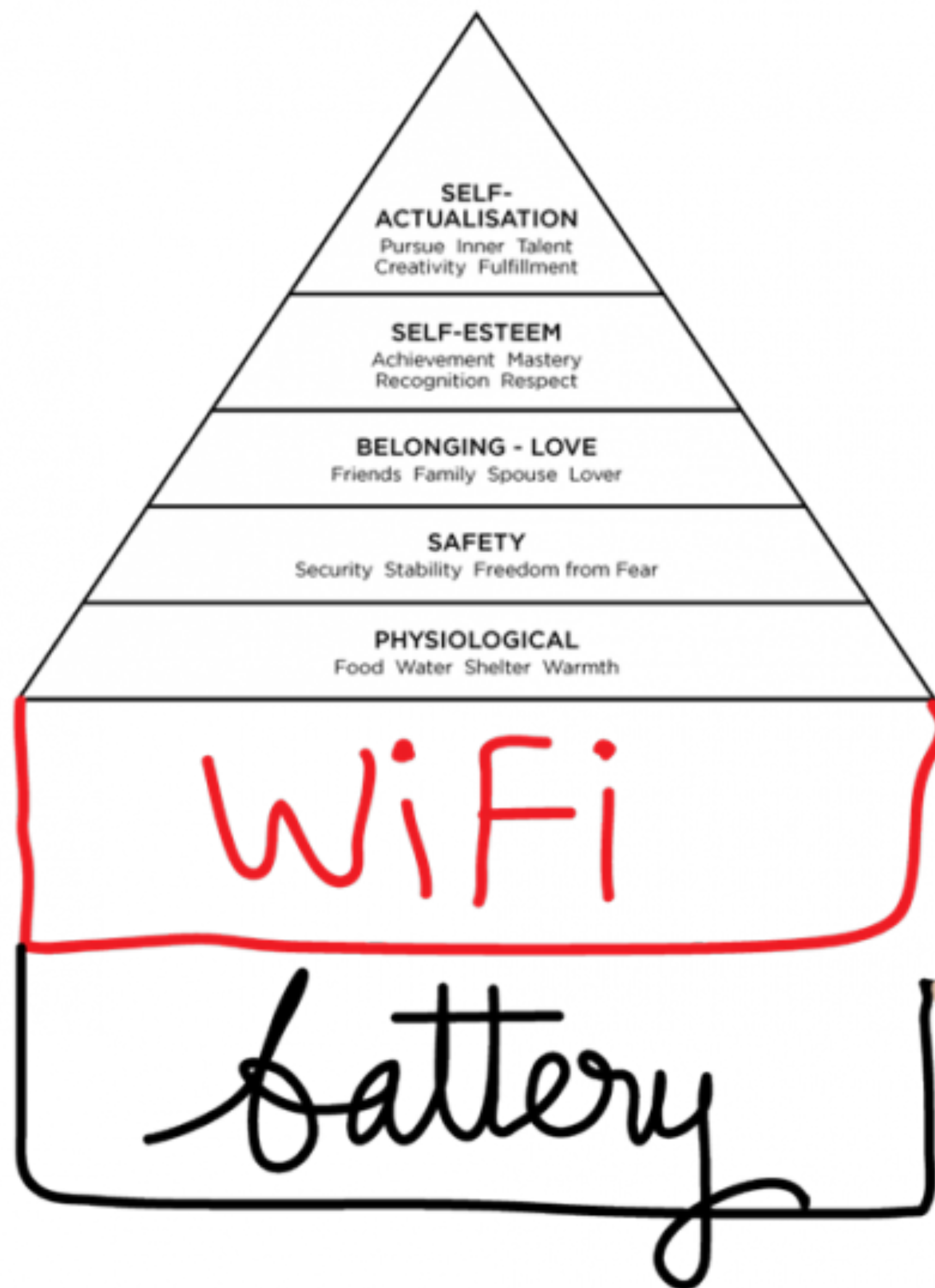
“Killing the Planet with Cat Videos”

Greening RIPE:

Internet Governance, Environmental Sustainability & Climate Justice

**Vesna Manojlović | BECHA@ripe.net
Senior Community Builder | RIPE NCC**

1st NOG.HR meetup | 10-Nov-2022 | Zagreb





WiFi

Battery



Cat Videos vs Greening RIPE

- Watching cat videos is fun!
 - ... but ... how much fossil fuels, land, minerals and water is consumed to make that possible?
- Let's work (& play) together to make the Internet environmental sustainable!
- Technical governance of Internet infrastructure operations is done within RIPE Community & NOGs (et.al.)
- Let's "green" the Internet together!
 - ... moving towards Climate Justice



Story about the Title



- **Talk with this title was accepted in 2019, for re:publica 2020**
 - <https://20.re-publica.com/en> ... but then, COVID-19 happened...
- ***“People care about cat videos; people don't care how the cat videos arrive.”*** (Nick Hilliard, IPv6 WG, 29.05.2020)
 - <https://www.ripe.net/ripe/mail/archives/ipv6-wg/2020-May/003633.html>
- **labs.ripe.net/sustainability**
- **“Greening RIPE with Activism & Empathy”, @ Bits & Bäume, Berlin, 1st October 2022**
 - <https://fahrplan22.bits-und-baeume.org/bitsundbaeume/talk/8WUASF/>

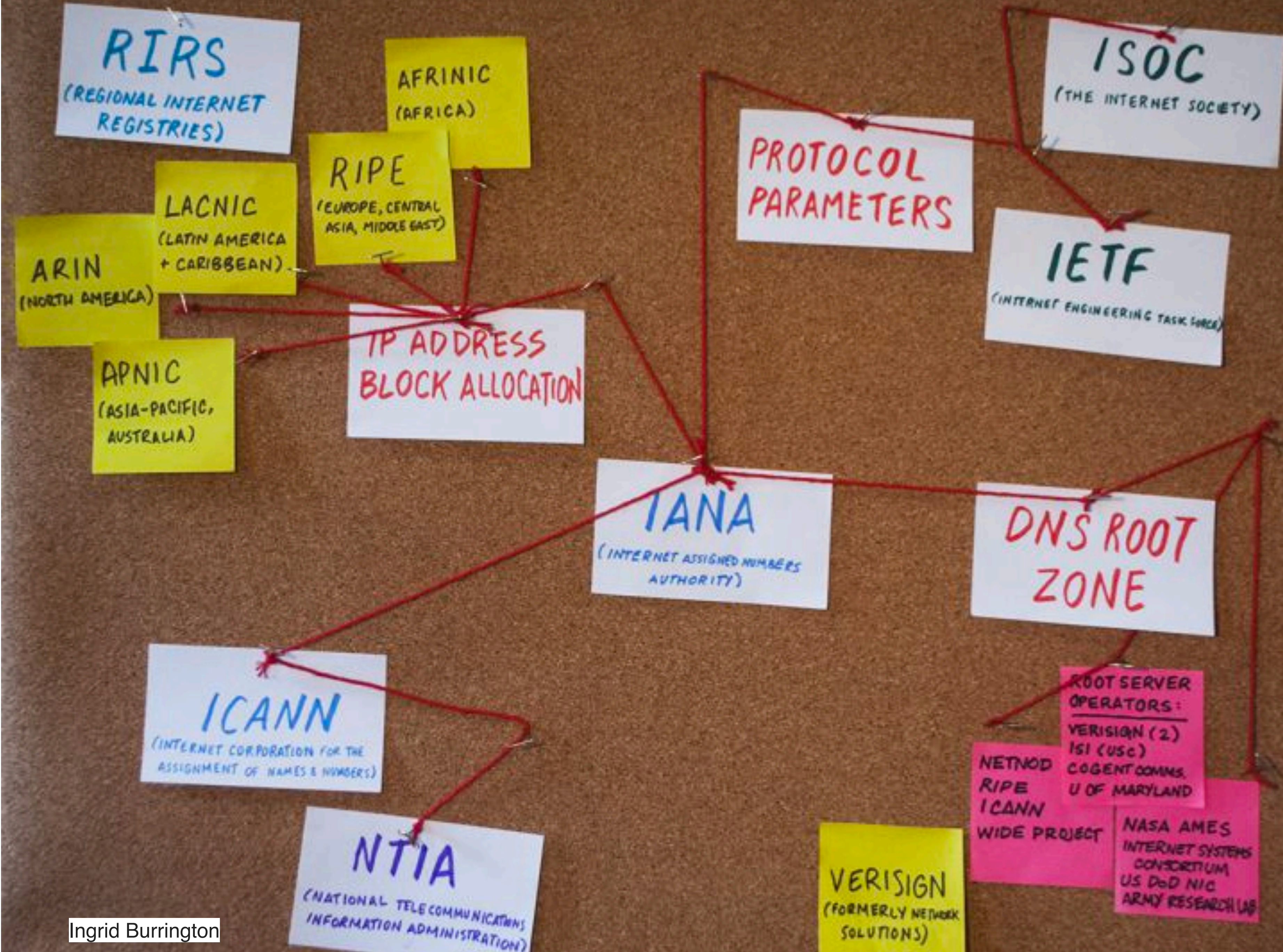
Placing Today's Talk in Context



- **2020(2) = Third Year of Global COVID-19 Pandemic**
- **Wars in Ukraine, Armenia, Syria, Yemen...**
- **Climate Chaos...**
 - Summer heat-waves: draughts, forest fires, dry rivers, lack of drinking water...
 - Floods in Pakistan, Texas, Middle-East, Africa, Australia, Italy, Puerto Rico, Japan...
 - Glaciers melting in Alps, Andes, Himalayas, Greenland, Alaska...
 - Upcoming "hunger winter" with inadequate heating infrastructure...
- **Still, I am grateful for being alive, safe, healthy-ish**



Internet Governance & Climate Crisis



Ingrid Burrington

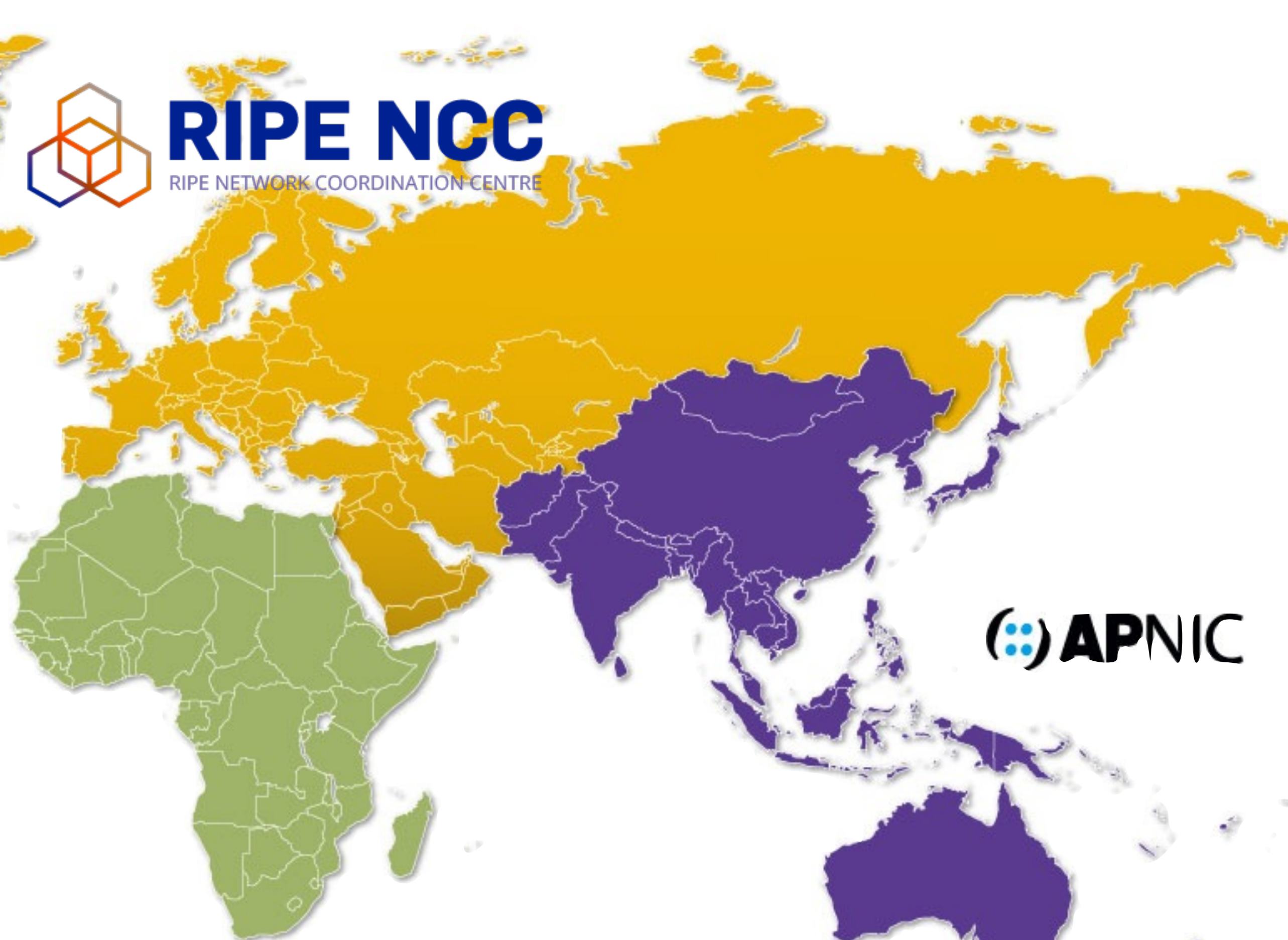
Vesna M

<https://splinternews.com/who-controls-the-internet-ted-cruzs-fantasy-vs-the-re-1793861684>

Regional Internet Registries



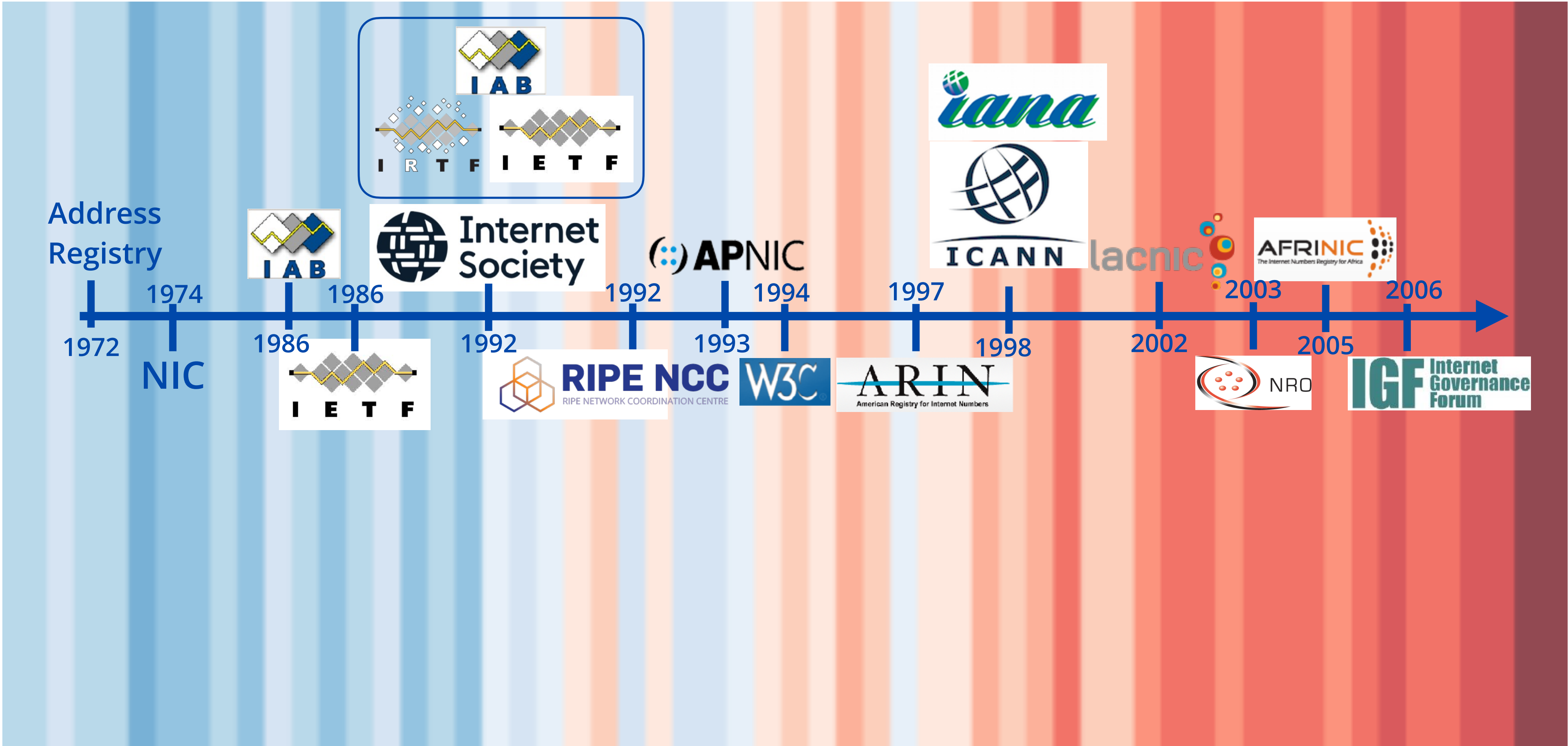
RIPE NCC
RIPE NETWORK COORDINATION CENTRE



RIPE (community) and the RIPE NCC




Internet Governance & Global Warming Timeline




“Data is the New Oil” & Digital Colonialism

THE INTERNET USES A HUGE AMOUNT OF ENERGY. THIS IS DUE TO TWO KEY FACTORS:

MANUFACTURING AND SHIPPING




Technology companies must manufacture and ship the internet's hardware including:




COMPUTERS SMARTPHONES SERVERS

POWERING AND COOLING



Computers and smartphones must be powered and cooled, drawing electricity from local grids.

This power is generated in different ways with varying emissions.¹



COAL NATURAL GAS NUCLEAR RENEWABLES



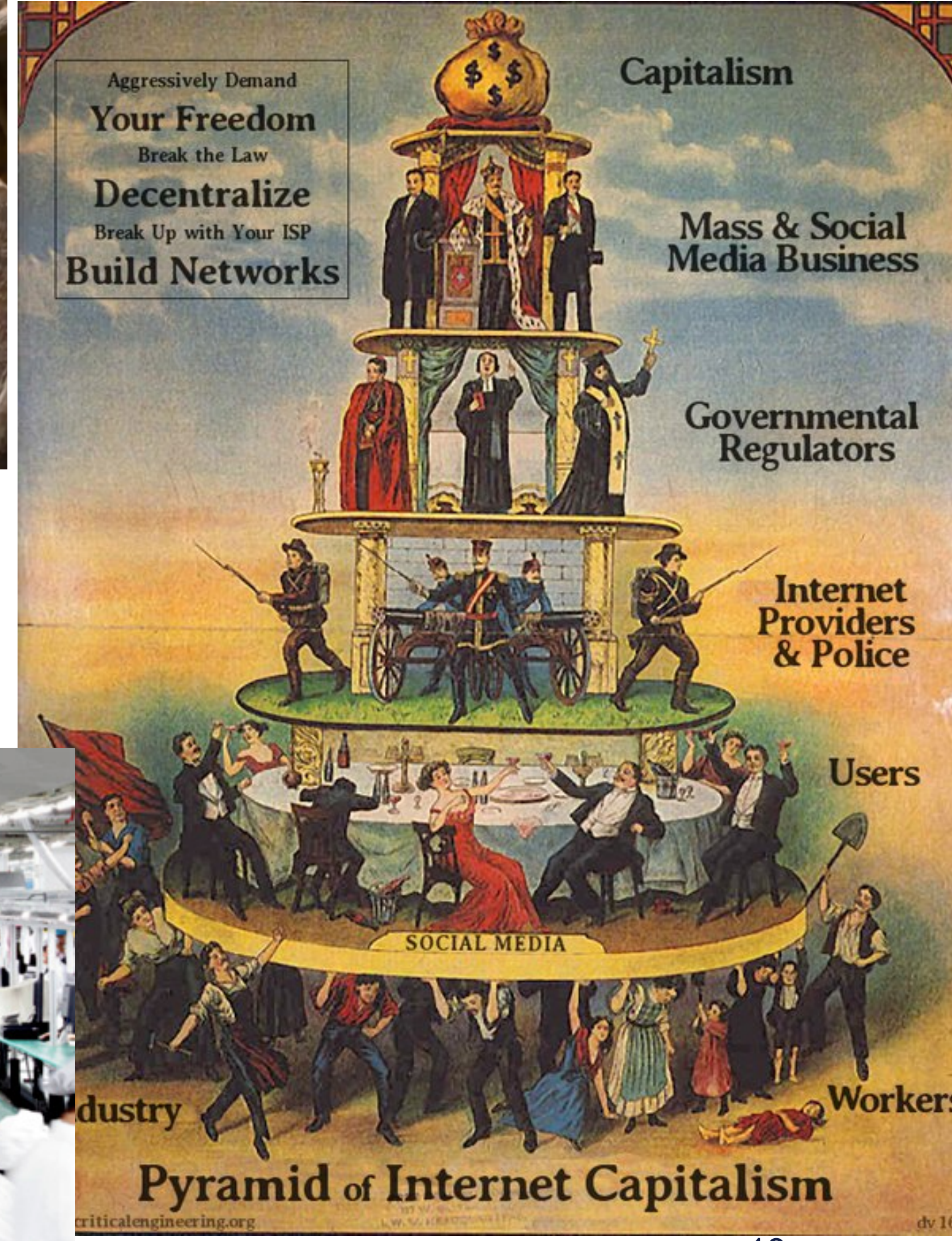
1 MILLION WORKERS.

90 MILLION IPHONES.

17 SUICIDES.

THIS IS WHERE YOUR GADGETS COME FROM. SHOULD YOU CARE?

See inside | mac 2011



A child at the Agbogbloshie electronic waste dump in Ghana. Photograph: Andrew McConnell/Alamy

Nature is Fighting Back



- impact on the the operations of Internet infrastructure:
- **Sea-level rise & storms: flooding of data centers**
 - <https://labs.ripe.net/author/ggm/surviving-the-flood-how-data-centres-and-the-internet-must-face-climate-change/>
- **... & forest fires** <https://www.akcp.com/blog/data-centers-coping-with-climate-change-induced-wildfires/>
- **Water (un)availability for cooling power-plants & data centers:**
 - <https://www.datacenterdynamics.com/en/opinions/why-data-centers-need-to-talk-about-water/>
- **Energy over-consumption leads to (un)availability**
 - <https://www.consultancy.uk/news/28772/10-ways-businesses-can-reduce-their-digital-carbon-footprint>
 - ... taking water, land & energy **away** from local (human/plant/animal) populations



Een datacenter van Google in Middenmeer.



REBOOT THE WORLD

The Internet: Can we survive with it?



Environmental Sustainability & Technical Communities

Green Tech at RIPE



	GHG	Water
	63%	83%
	22%	9%
	15%	7%

To Green the Internet, We Need RIPE

Michael Oghia • 29 Jun 2020

If Europe is going to realise its vision for a greener ICT ecosystem and a sustainable future, support from the RIPE community is imperative. But what can you do - as a network operator and as a user - to work towards a sustainable Internet?

sustainability policy community

1 2



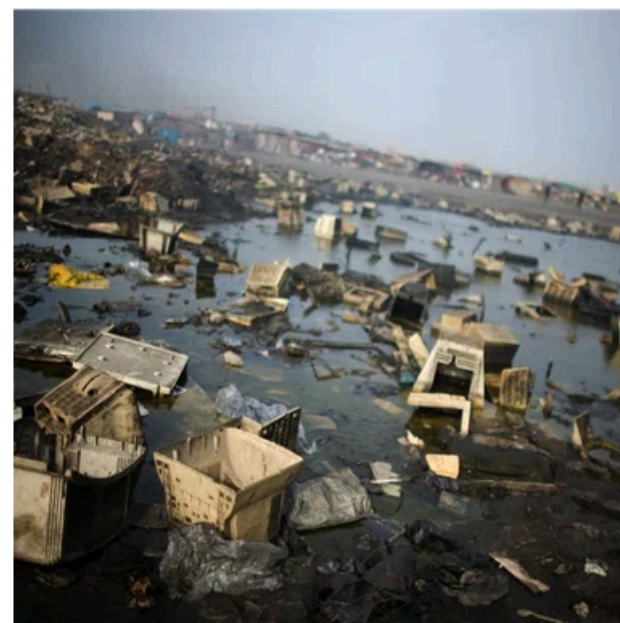
What Do We Do With E-Waste?

Mirjam Kühne • 9 Nov 2018

The headlines are raising awareness about the plastic soup that's clogging up our oceans but there's another problem much closer to home for much of the RIPE community: e-waste (aka 'dead electronics'). E-waste is a massive contributor to environmental pollution globally. We want to keep the conver...

sustainability community

2 1



Sustainability is Good for the Internet (and Business too)

Michael Oghia • 23 Jun 2017

In recent weeks, I've attended two events, SEE 6, hosted by the RIPE NCC in Budva, Montenegro, and the 10th European Dialogue on Internet Governance (EuroDIG) in Tallinn, Estonia. At both events, I had the opportunity to speak about the issue of sustainable access to the Internet.

sustainability governance

0 4

● RIPE81 (October 2020): Sustainable ICT Procurement

- Michael Oghia, Independent Community Member
- <https://ripe81.ripe.net/programme/meeting-plan/bof/#mon14>

● RIPE84 (May 2022): Towards a Fossil Free Internet

- Chris Adams, Green Web Foundation
- <https://ripe84.ripe.net/archives/video/751/>

● RIPE85 (October 2022): 13 Propositions for a Burning World

- Tobias Fiebig, MPI INF, and Doris Aschenbrenner, Aalen University
- <https://ripe85.ripe.net/archives/video/877/>

Other Tech Communities & “Green” Topics

13 Propositions on an Internet for a “Burning World”

Tobias Fiebig
Max-Planck-Institut für Informatik

Doris Aschenbrenner
Aalen University

APNIC 2022:

<https://youtu.be/x5HwbtgBEEQ?t=3710>



<https://media.ccc.de/v/mch2022-278-m-a-y-will-contain-climate-change>

Vesna Manojlovic | NOG.HR, Zagreb | November 2022



APC 2020: <https://www.apc.org/en/project/technology-environmental-justice-and-sustainability>

CCC 2019
<https://labs.ripe.net/author/becha/reporting-back-from-36c3-resource-exhaustion/>

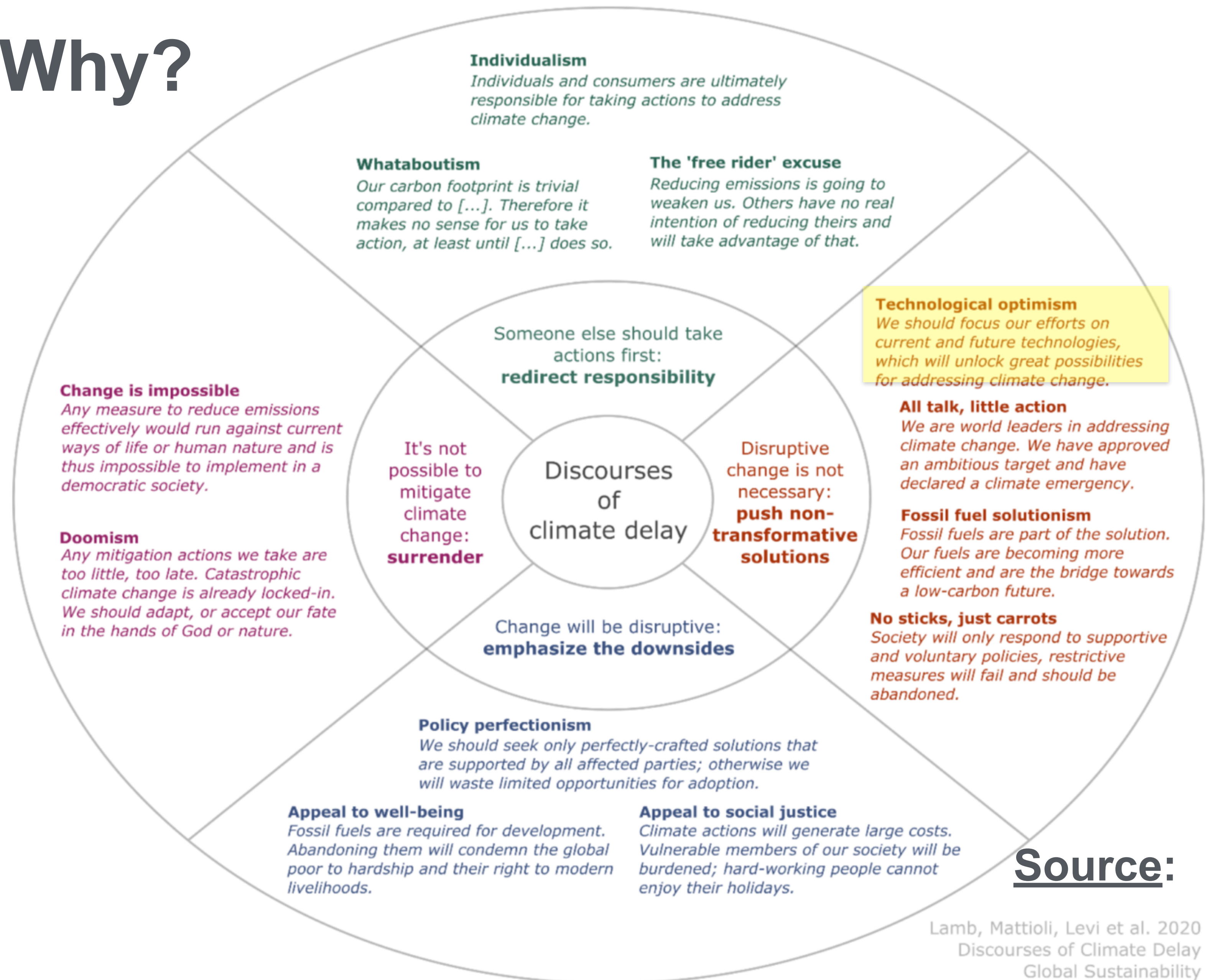


Painfully Slow... Why?

- focused on growth
- efficiency myth (Jevons paradox)
- aligned with dominant power structures

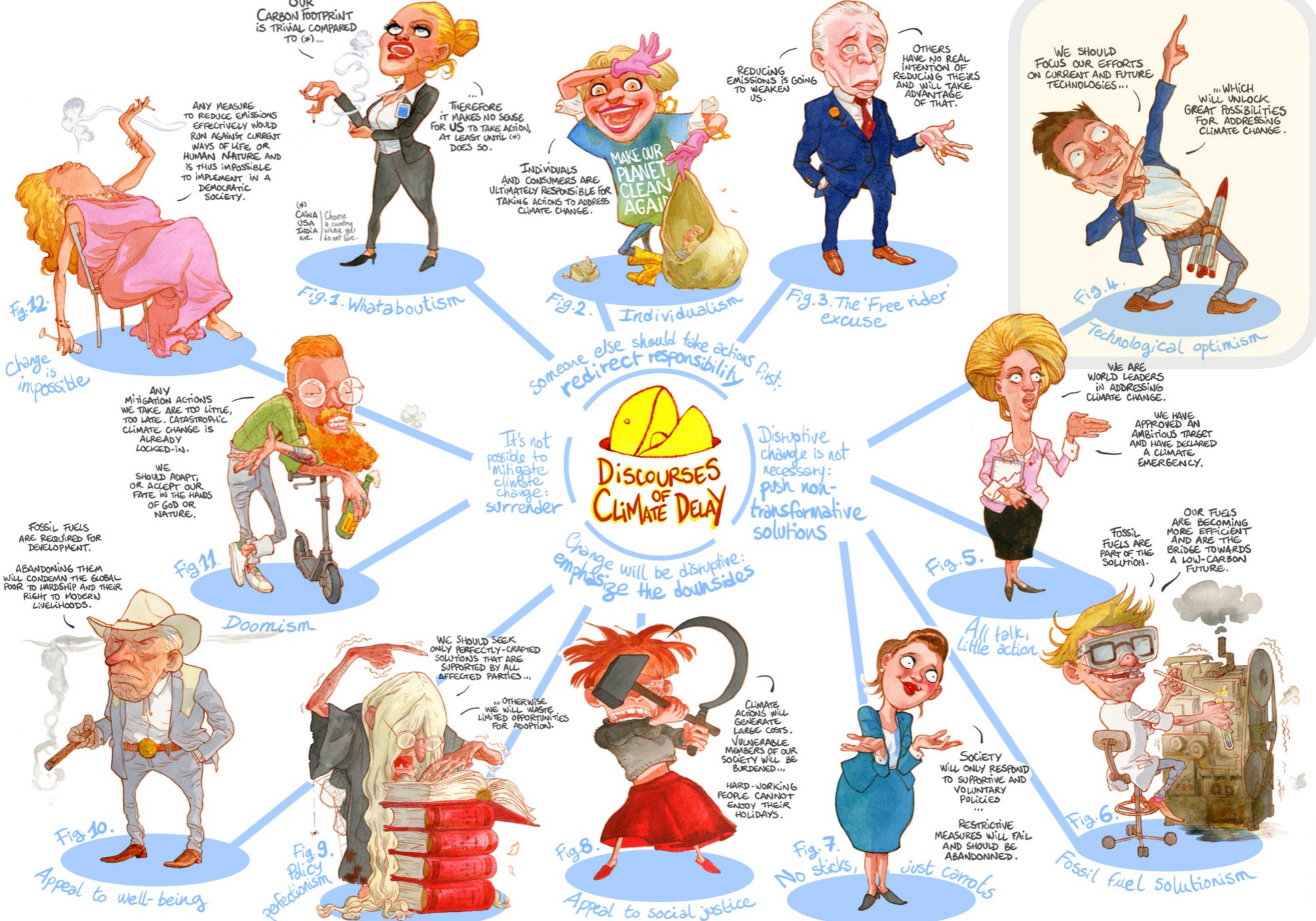
● Beliefs:

- “tech is neutral”
- “we are the good guys” bias
- tech optimism



Source:

Lamb, Mattioli, Levi et al. 2020
Discourses of Climate Delay
Global Sustainability



Take part in RIPE / NCC Communities



- **Join RIPE meetings**

- Twice a year, hybrid; ~1000 participants; network operators et.al
- Academic cooperation funding & Fellowship available : ripe.net/raci
- Become WG-chair or volunteer on the Programme Committee

- **Join smaller events organised by RIPE NCC**

- Regional meetings / Training courses & on-line education / Hackathons
- <https://forum.ripe.net>

- **Join RIPE Working Groups**

- mailing lists / online meetings / in-person meetings

Which RIPE Working Groups?

- **“Political” Layer: Cooperation-WG**
- **Application Layer**
 - Opensource-WG, Anti-abuse-WG, MAT-WG, DNS-WG
- **Transport Layer**
 - IoT-WG, Routing-WG
- **Network Layer**
 - Connect-WG, IPv6-WG, (IPv4) Address Policy
- **Link Layer**
 - “RIPE NCC Services” WG / RIPE NCC members meeting

Address Policy Working Group

Anti-Abuse Working Group

Connect Working Group

Cooperation Working Group

Database Working Group

DNS Working Group

Internet of Things Working Group

IPv6 Working Group

MAT Working Group

Open Source Working Group

RIPE NCC Services Working Group

Routing Working Group

RIPE Community Offers & Contributions



- **Community Projects Fund: ripe.net/cpf**
- **Diversity & Inclusion @ our events**
 - Paid childcare
 - RACI & Fellowship funding
 - Mentoring programme
 - Free (diversity) tickets for speakers
 - Code of Conduct & “Trusted Contacts” available
- **Bottom-up power distribution: community self-governance**

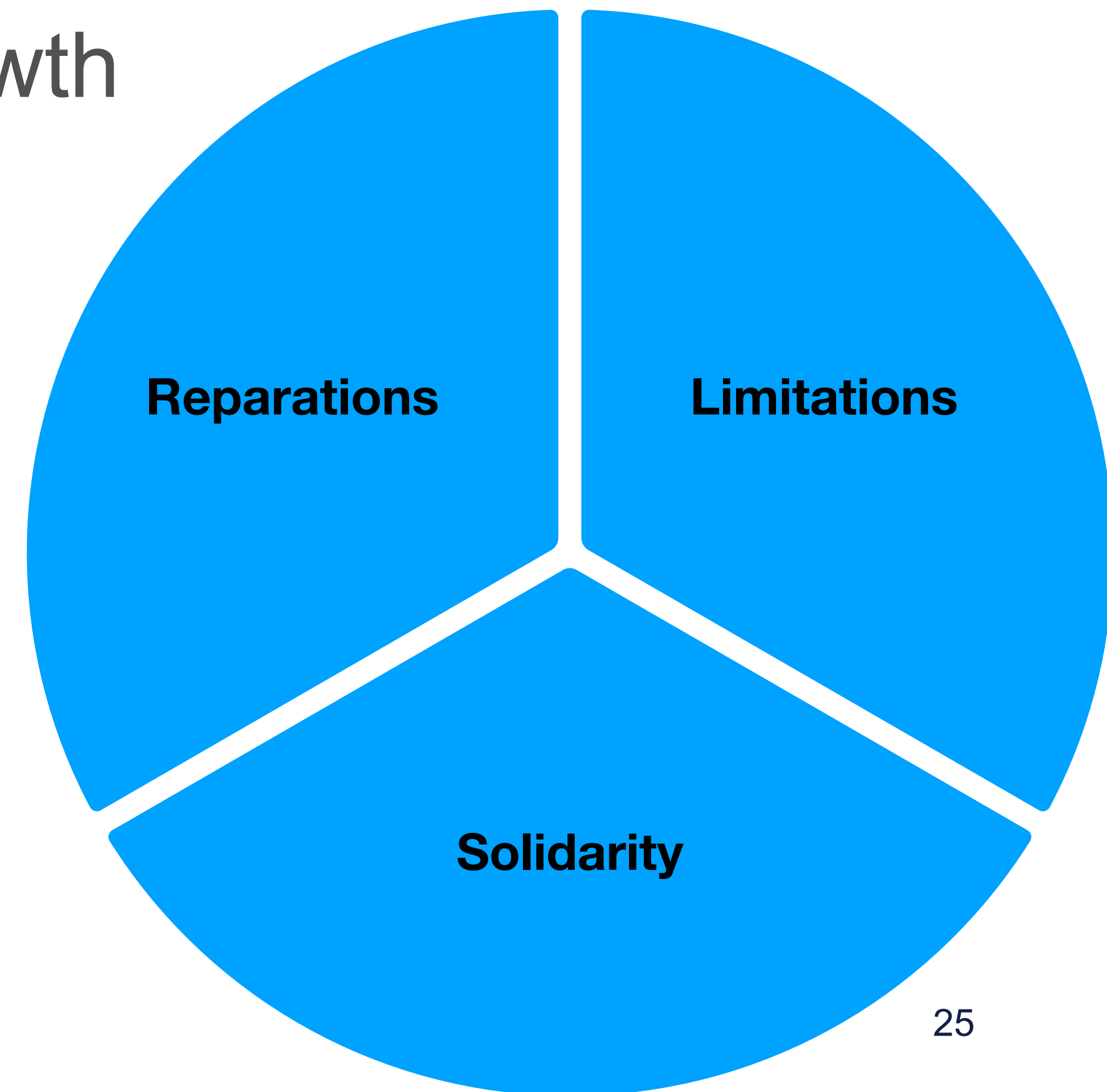


Beyond Sustainability, Towards Climate Justice

My Principles of Just Tech Governance



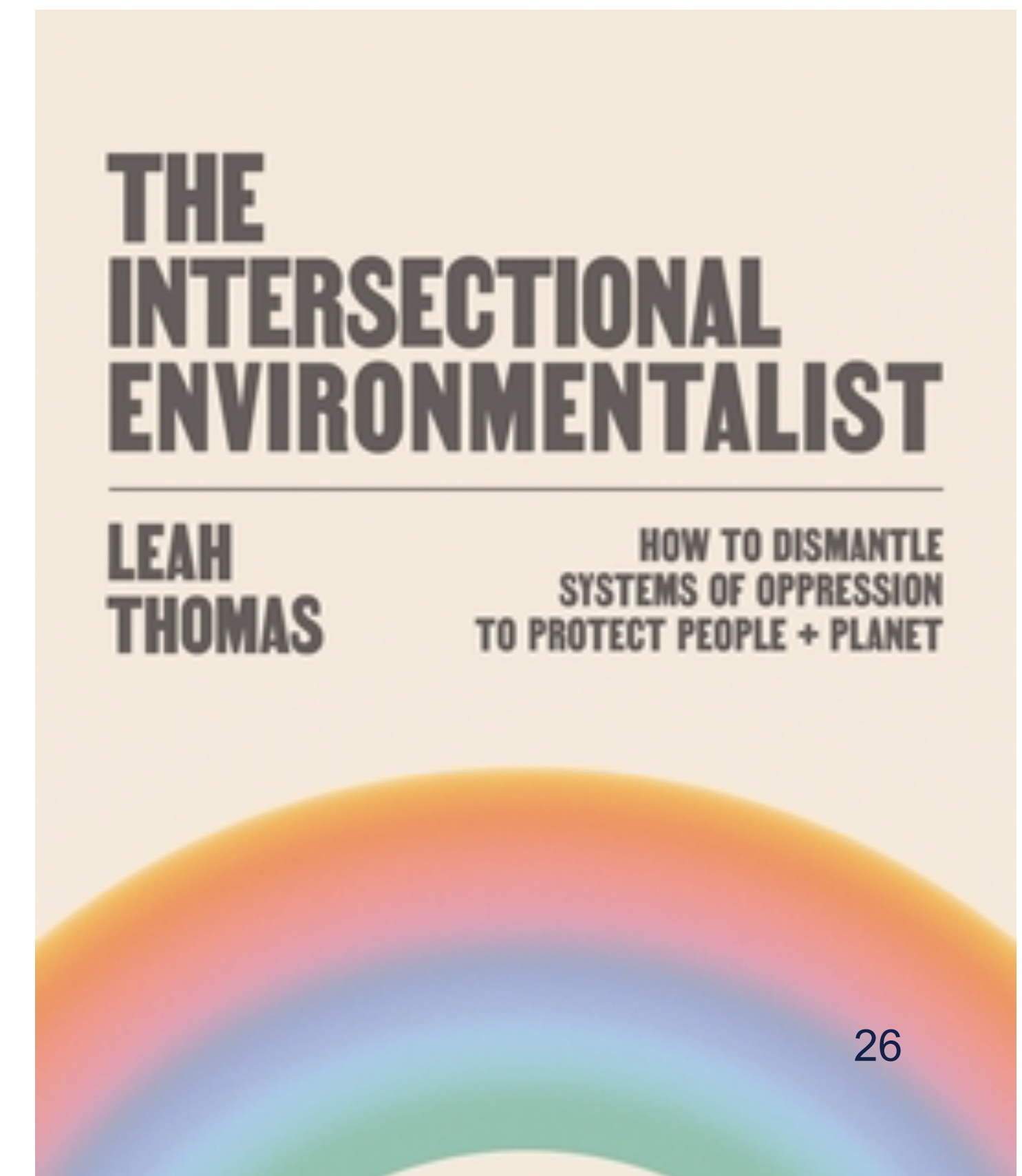
- “Towards Climate **Justice** in Tech”
 - <https://labs.ripe.net/author/becha/towards-climate-justice-in-tech/>
- **Limiting** extractivism & decreasing growth
- **Reparations**: giving back to the most affected communities
- Acting in **solidarity** with the frontline communities & centering marginalised groups; mutual aid



Hopeful Directions Towards Planet-Friendly Internet



- Decolonising The Internet; Degrowth, Divestment, Decentralization ...
- Feminist Internet / Data Feminism
- Community-owned & community-run networks (e.g. GAIA)
- “Right To Repair” Movement
- Permacomputing
- Low-Tech, Slow-Tech, Retro-Tech
- Intersectional Environmentalism
- Extinction Rebellion, Scientists Rebellion,
 - Youth Rebellion, Mothers Rebellion...



Engineering: Power and Responsibility



At a time when science plays such a powerful role in the life of society, when the destiny of the whole of mankind may hinge on the results of scientific research, it is incumbent on all scientists to be fully conscious of that role, and conduct themselves accordingly. I appeal to my fellow scientists to remember their responsibility to humanity.²¹⁰

With Great
Power
Comes
Great
Responsibility





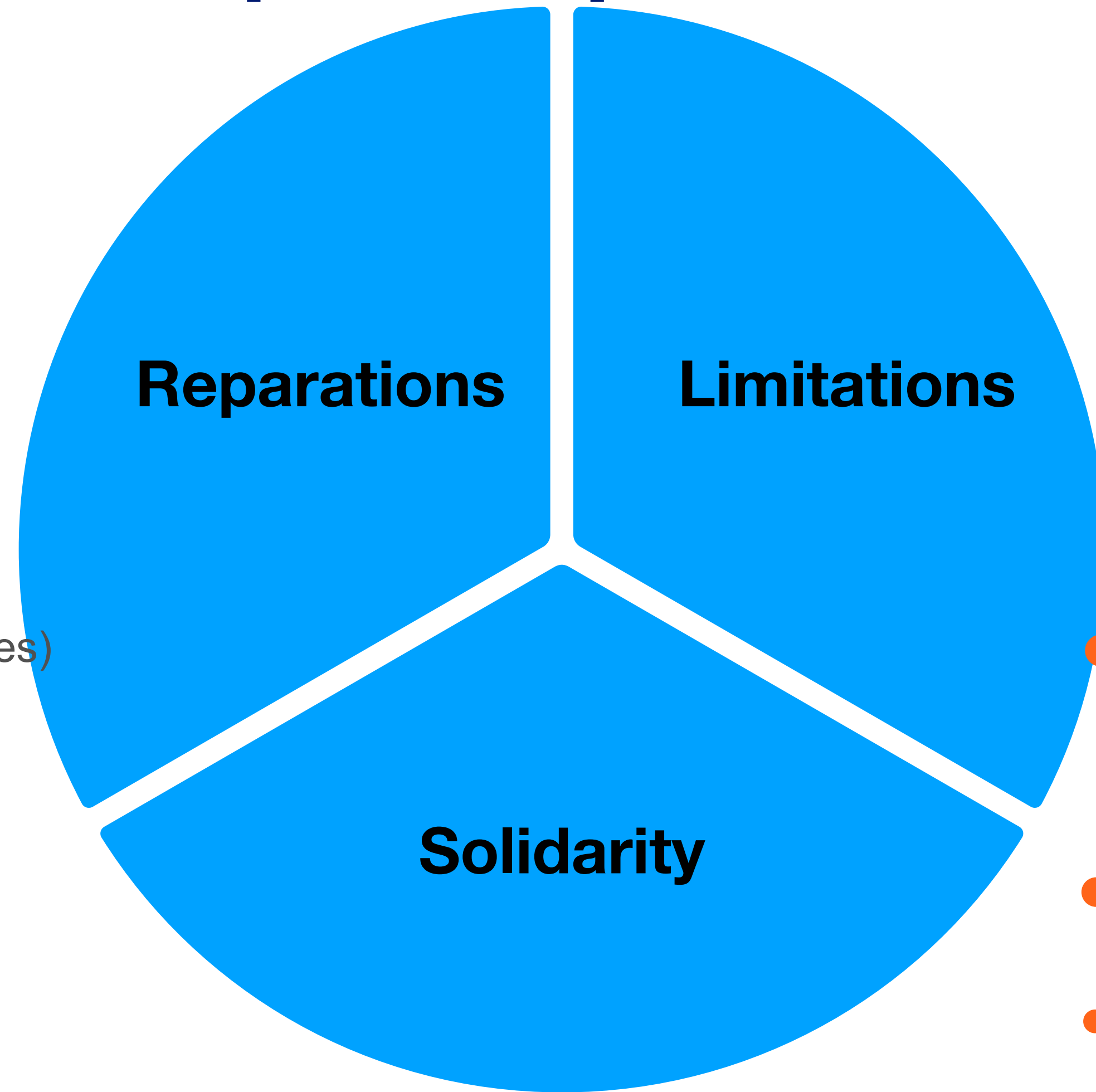
Rebel for Life!





Extra Slides

Three Principles Expanded



Reparations

- giving **back** to the most affected communities
- removing harms
(to the most affected communities)
from products & services
- supporting public infrastructure & commons

● Limiting extractivism

- decreasing growth
- investing in durable tech & slow tech & low tech
- divesting from fossil fuel products & services

● Acting in **solidarity** with frontline communities ;

- centering marginalised groups
- engaging in decentralised decisions making
- rejecting false climate solutions

Other Tech Communities & “Green” Topics



- **2021: GreenTech Events Every Month!**
 - <https://labs.ripe.net/author/becha/green-tech-2021-compilation/>
- **IETF (Internet Engineering Task Force) / IRTF (Research)**
- **ACM SIGCAS** <https://www.sigcas.org/events/sigcas-showcase-2022/>
 - association for computing machinery - special interest group on Computers and Society
- **“Computing Within Limits”** conference & papers (2015-2022)
 - My talk at MCH2022: <https://media.ccc.de/v/mch2022-442-computing-within-limits>
- **SDIA: Sustainable Digital Infrastructure Alliance** : <https://sdialliance.org>

IETF

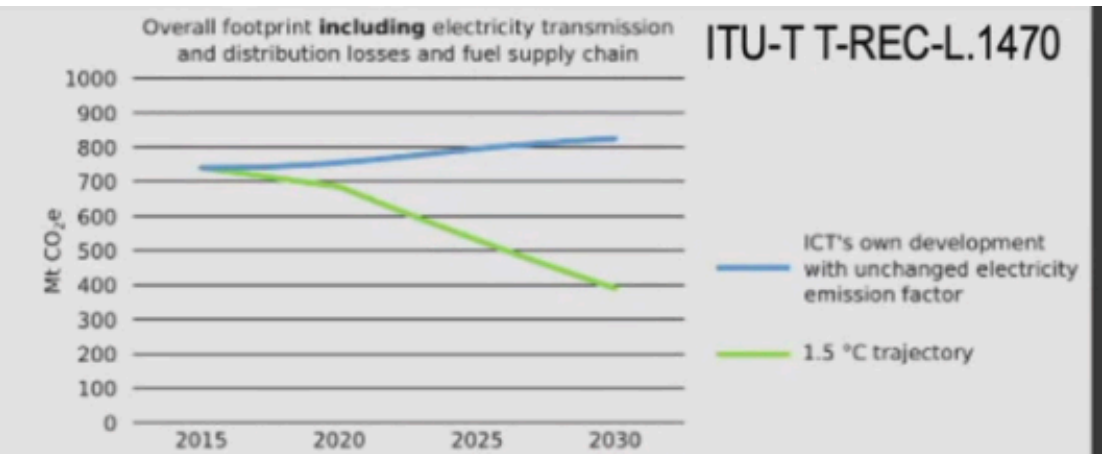
- **GAIA & OPSAWG at IETF115**

- November 2022, London
- IETF116, February 2023, Japan

- **IETF / IRTF Docs**

- <https://www.ietf.org/blog/towards-a-net-zero-ietf/> &&
- <https://datatracker.ietf.org/doc/slides-113-gaia-the-internet-and-environmental-sustainability-revolutionary/> ^^^^
- <https://datatracker.ietf.org/doc/html/draft-cx-green-ps-00> && <https://datatracker.ietf.org/doc/draft-eckert-ietf-and-energy-overview/>
- <https://datatracker.ietf.org/doc/draft-nottingham-avoiding-internet-centralization/>

Goals?



- Reduction of environmental impact of **about 50%** by 2030 to align with the IPCC 1.5°C trajectory, [ITU-T L.1470] or severe effects for 2°C or ...
- **Keep warming at 1.5°C implies global emissions must peak by 2025 → in 9-10 IETF meetings**
- Contribution of ICT in electricity usage is a major green-house gases factor:
 - By **2030** it could use up to 51% of global electricity, and contribute up to 23% of globally released GHG emissions

<https://theconversation.com/ipcc-report-global-emissions-must-peak-by-2025-to-keep-warming-at-1-5-c-we-need-deeds-not-words-165598>

A. Andrae, T. Edler. *On Global Electricity Usage of Communication Technology: Trends to 2030*. Challenges 2015

13 Propositions for the Internet in the Burning World



- 1. Operating systems requires operators to execute care, towards their system, their users, and the infrastructure as a whole.**
- 2. The centralization of the Internet has been promoted by a lack of care.**
- 3. There is a tension between privacy and security pitting decentralization vs. centralization.**
- 4. Centralization and profit are inherently incompatible with care for infrastructures.**
- 5. We have to be prepared for hypergiants' failing.**
- 6. Communities caring for local and distributed infrastructure are the future in a world falling apart.**
- 7. The slow adoption of IPv6 hinders a re-decentralization of the Internet.**
- 8. In a burning world, functionality is more important than security, but remains trumped by safety.**
- 9. Systems that are too complex to be understood by a single person cannot be sustainable.**
- 10. Systems should enable a better tomorrow and not burn the world even further.**
- 11. There are no technical solutions for social and societal problems.**
- 12. Internet sanctions: What once has been thought can never be taken back. The Internet will be falling apart.**
- 13. Digital sovereignty is being used wrong.**

[\(LINK\)](#)



Squirrels

Animals Against Technology

- https://wiki.techinc.nl/Hackers_tribes#Other_animals_against_Technology



TOTAL SUCCESSFUL CYBER WAR OPS
AS OF 2017.01.08 - 1748

Agent	Success
Squirrel	879
Bird	434
Snake	83
Raccoon	72
Rat	36
Marten	22
China	0
Russia	0*
USA	1



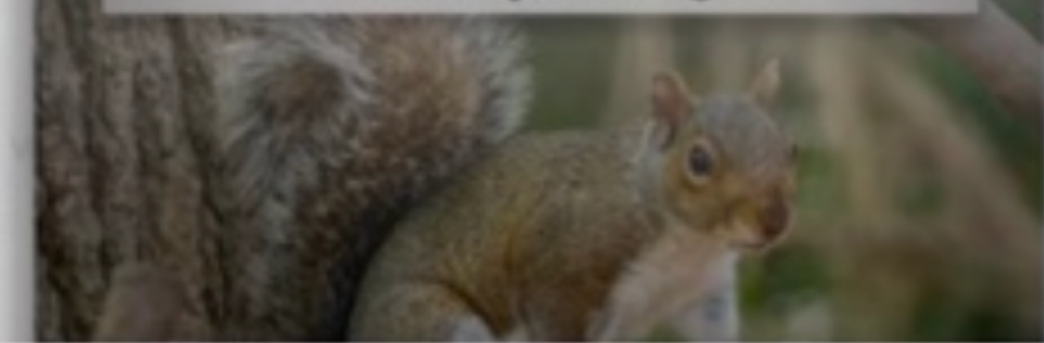
Squirrels Winning the Cyber War ;)



JANUARY 12, 2016

The Washington Post

A terrifying and hilarious map of squirrel attacks on the U.S. power grid



“... 623 power disruptions caused by squirrels ...”



How is **your country** protecting its animals?

WORLD ECONOMIC FORUM



Additional Links



- <https://labs.ripe.net/author/becha/ripe-community-resilience-economy-of-care/>
- <https://labs.ripe.net/author/becha/data-feminism-from-data-ethics-to-data-justice/>
- <https://labs.ripe.net/author/becha/computing-within-limits-2022-event-wrap/>
- <https://labs.ripe.net/author/becha/ripe-community-resilience-every-society-has-the-internet-they-deserve/>
- <https://labs.ripe.net/author/becha/ripe-community-resilience-nature-is-healing/>
- <https://irtf.org/gaia>
- <https://zenodo.org/record/7047049#.YzGNcy0RqgA> (The Role of Life Scientists in the Biospheric Emergency)
- https://wiki.techinc.nl/Hackers_tribes#Other_animals_against_Technology
- https://en.m.wikipedia.org/wiki/Jevons_paradox
- <https://archive.org/details/being-genuine-stop-being-nice-start-being-real-2/page/n11/mode/2up>
- <https://UnCiv.nl>