Environmental Sustainability

Best Practices Research

ICANN Org
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ICANN

TABLE OF CONTENTS

Background

Global environmental concerns have prompted discussions among ICANN's Board, community and org about ICANN's roles and responsibility in understanding and addressing its own ecological footprint. In 2023, the ICANN Board began developing a plan to delve deeper into this issue as part of its role in overseeing ICANN's Strategic Planning efforts. Additionally, the Board asked ICANN's CEO to begin exploring the issue, leading to its integration as CEO Goal 8.

This report on best practices by ICANN org is a compilation of various data sources to provide comprehensive insights and methodologies to inform ICANN about proven approaches in the field of environmental sustainability. The report covers key areas such as offices, travel, events, and org-wide products/purchases, offering practical strategies to consider in enhancing environmental sustainability efforts across ICANN's operations. While the focus is on operations, these sustainability efforts are not limited to ICANN-owned facilities but also are applicable upstream, to suppliers (for example, considering certified low-carbon accommodation where possible).

In line with CEO Goal 8, the focus for this report is ICANN org's operations, rather than the larger ecosystem. Org's learnings from improvements to its processes could, of course, be used to further future wider conversations in which org can share and encourage best practices more broadly.

Note that, throughout this report, many of the findings have been framed as questions since org has not yet carried out an analysis of what is already in place as part of its operational processes; the proposed environmental audit will be able to provide answers to some of those questions and help establish a baseline.

Offices, L-Root Server, and Colocation Facilities

Baseline audit

- Note: Focus on sustainability options that are available for each individual office and facility, bearing in mind that some offices/buildings may have more opportunities for upgrades than others.
- Determine what certifications buildings may already have.
- Determine what improvements have already been made towards sustainability.
    - For example, offices enable office recycling and encourage the use of reusable coffee mugs, glasses, plates, and silverware.
- Determine what improvements could be made, keeping in mind the shared nature of many office spaces.

- Celebrate the sustainability of our flexible/hybrid work policies.
    - Allowing employees to spend two days per week working from home can reduce commuting emissions by up to 40% (telecommuting also contributes emissions that should be accounted for).
- Celebrate current successes and share best practices across the offices:
    - For example, the Los Angeles (LA) office building has a Leadership in Energy and Environmental Design, (LEED certification) and the building offers paper recycling, free EV charging stations, free use of bikes, etc.
    - It has individual recycling bins at each workstation, and larger bins in the copy rooms and the third and fourth floor cafes to separate glass/plastics/cans. We also have battery recycle bins in our copy rooms.
    - The LA office has filtered water refill stations on the third and fourth floor to reduce use of single use bottles and we have distributed reusable ICANN bottles.
    - The offices have ICANN ceramic coffee mugs to reduce use of single use cups.
    - LA office lighting is upgraded to LED bulbs as needed.
    - The LA building landscape and complex utilizes reclaimed water for irrigation.
    - Additionally, the LA building hosts e-waste events to recycle used electronic equipment.

Building systems

- **Overview of best practices:** determine whether a recent audit of building's systems has taken place; if not, identify areas for improved energy efficiency and enhanced energy management strategies
- **Heating and cooling**
    - Are there any areas using more energy than necessary (such as temperature systems working against each other)?
    - Could outdoor air be used to cool ("free cooling") to reduce energy use and cost? Is an outside air economizer used already?
    - Are there any outdated or inefficient heating and cooling systems which need to be replaced? Are there any compressed air leaks which need to be repaired?
    - Is heating and cooling turned off in unoccupied rooms?
    - Are windows suitable for the climate (double or triple-glazed, if relevant)? Is the insulation effective?
    - Are smart thermostats (that adapt to usage patterns) used? Are they set at appropriate temperatures?
    - Are employees encouraged to close blinds or curtains when rooms are unoccupied to prevent heat build-up or loss?
    - For servers and colocation facilities in particular, are the air conditioning and cooling system environmentally friendly?
    - For standby generators in server rooms, have alternatives to diesel been considered? If not, would it be feasible to switch to Hydrotreated Vegetable Oil (HVO)?
- **Automations, controls, and meters**
    - Are automations and controls being used to achieve optimum efficiency and reduce energy use? If not, consider modifying unoccupied-hours setbacks, optimizing HVAC scheduling and start sequences, updating automated building management system (BMS), and retrocommissioning building controls if feasible.

    - Is there system-level metering in place? If so, could the data analytics be used to further enhance efficiency measures like setpoint adjustments?
- **Space**
    - Is the office space being optimized? Studies show that office spaces are unused over a third of the time, resulting in energy waste.
    - Is the server room space being optimized in terms of air flow? If not, can server racks be re-arranged to manage air flow effectively?
    - Have space needs changed since initial design/installation? (For some, use of cloud-based servers for some operations can mean that IT load needs are now smaller than the rooms/systems were initially designed for.)

Lighting

- What products are currently being used? Are LED light bulbs an option? What would need to be retrofitted to make it possible, if not? LED bulbs save energy, last longer, and reduce maintenance costs)
- What timers and sensors are in place? Consider automatic lighting controls, zone controls, daylight sensors, and presence detector lighting controls (to significantly reduce electricity use and costs). Are timers and sensors in good working order and set according to occupancy times?
- Where possible, is natural light utilized to help in lowering energy consumption?

Energy provider / energy sources

- What options are available locally for renewable energy?
    - Some best practices include the following, though many may not be feasible in certain regions or due to the nature of shared commercial real estate:
        - Switch to a renewable energy provider using 100% fossil-free energy or inquire if your landlord could make the switch
        - If possible, install renewable energy sources at your location, or encourage your landlord to do so
        - Consider a long-term (10-15 years) power purchase agreement (PPA) with a renewable energy project developer (this supports renewable energy growth)
        - If possible, install renewable energy systems: replace gas boilers with low-carbon alternatives like heat pumps or solar thermal systems and generate your own renewable energy, by installing solar panels for example
        - Focus on renewable, carbon-free energy, such as wind and solar, where possible

Waste

- How much waste is currently being produced?
- Are there ways to further promote a culture of using less stuff to begin with and reusing and recycling as much as feasible?
- Would it be feasible to set goals such as diverting all food waste from landfill by [x year]?
- Is recycling encouraged, to remove as much other waste from landfills as possible?
- Are compostable or high post-consumer waste content paper products, such as napkins and towels, available?
- Are tap filters available, in place of plastic water bottles, to minimize plastic waste?
- How is electronic waste, or e-waste, handled? Is it recycled or disposed of in well-managed waste streams or repurposed?

- Note that waste offers an often overlooked and easily addressed opportunity to reduce emissions, save natural resources and reduce costs.

Water management / replenishment

- How are varied water needs (preparing food, cleaning and hygiene, irrigating landscapes, and keeping workspaces cool) considered? Are there additional ways to drive responsible water use through increased efficiency and by sourcing water from non-potable supplies?
- Is it feasible to set goals, such as replenish freshwater consumed, across our offices [by x date], so that we replenish more water than we use (help people globally reach clean water and sanitation solutions)?

Hardware and Software

- Has the hardware been evaluated for workload performance to ensure energy efficiency?
- Have products been chosen which are manufactured sustainably?
- If relevant, is software being used which employs coding practices that optimize their applications to reduce the amount of resources necessary to run?

Sustainable commuting and telecommuting

- What is in place to support electric vehicles? Do the office buildings provide infrastructure to encourage carbon-free transportation, such as electric vehicle charging stations?
- Are employees encouraged to walk and use bikes, public transit, electric cars, and shared vehicles/carpooling to reduce emissions? If not, would incentive programs be feasible?
- Have incentive programs been explored to promote more sustainable commuting for this office?
- Have efforts been taken to find the optimal mix between telecommuting and being in the office with colleagues?
- Conduct a survey about current commuting habits and patterns.

Engage with employees

- Consider creating a cross-departmental sustainability team with members from different areas of the org.
- Are there ways to encourage employee engagement through campaigns or initiatives to support progress?
- Is there a sustainability office policy in place?

Data

- Calculate office and server/facility emissions
- Consider natural gas, diesel, propane; process emissions; electricity; employee commutes
- Examples:
    - Scope 1 emissions: transportation (company vehicles), fuel use from back-up generators, natural gas use, and refrigerant leakage in data centers and offices.

    - Scope 2 emissions: electricity use, emissions from steam/heat/cooling
    - Scope 3 emissions: indirect emissions from other sources in value chain, such as our suppliers, use of consumer hardware products, waste, transportation
- Notes from SME Climate Hub:
    - If you do not own the facility, contact the owner of the property to get information on the energy usage of your building. If you only have access to the total energy consumption of the building, you can calculate your share of the total building's energy consumption. E.g. if you are one out of four similar units in the building, your share of the building's total energy consumption would be 25%. If you do not know the energy mix from your office's energy consumption, reach out to the gas or electricity company and ask for the information.
    - Start by working out your annual consumption of each different type of energy you use (electricity, district heating, fossil gas, steam, district cooling). This is information that can be provided by your suppliers. Use a smart meter to collect data on the energy use by your organization, and consider how it may change in the coming years. Knowing your usage is essential as supplier options and prices often depend on volume. Energy delivered through grids is typically measured and sold in kWh. So, to track your progress in switching to renewables, look at the percentage of your purchased energy (in kWh) that comes from renewable sources.

- *Office best practices sources: Meta, Apple, Google, SME Climate Hub*

Travel

- **Overview**: Focus on limiting emissions by reducing travel and switching to low-carbon transportation

Baseline audit

- Determine what is currently being done to focus on sustainable travel.
- Celebrate the ways in which ICANN prioritizes hybrid and virtual meetings by providing and promoting high-quality, user-friendly virtual meeting solutions and by offering first-class hybrid meetings to reduce the number of people traveling to events
    - Acknowledge the ways in which ICANN continues to improve remote participation experience in order to lessen the need for international travel; some language to consider: "We are committed to improving the remote participation experience so participants who choose not to travel are able to contribute even more effectively to the work of the IETF." (IETF)
- Celebrate ICANN's best practice in encouraging employees to choose the most carbon-efficient routes by minimizing stopovers and flying economy.

Low-carbon travel

- Are staff encouraged to use trains for long-distance trips and public transport for short trips?
- Would it be feasible to incentivize employees to choose public transit options, such as compensation time if train travel takes longer than flights?

- For necessary car trips, are employees encouraged to use small, energy-efficient electric vehicles, whether owned or rented?
- While at events, are staff and event participants encouraged to travel by train/bus or walk rather than use private cars?

Flights

- Are employees encouraged to use high-quality Sustainable Aviation Fuel services when available, use services that can help to find low-carbon flights, and opt for carbon-neutral airlines where feasible, or airlines that are more engaged with sustainability.
- Are there ways to reduce the number of staff flying to events to encourage sustainability?

Data

- Calculate: emissions from business travel

- Primary *source for travel best practices: SME Climate Hub*

Events

Baseline audit

- Determine what is currently done to focus on sustainable events.
- Celebrate the best practices already in place.
  - For example, it is already common practice not to send mass emails to ICANN Public Meeting participants. A normal email has a footprint equivalent to 0.3 g of CO2 emissions. This can rise to 50g, however, with the addition of a large attachment.
  - Additionally, it is already common practice to opt for low-emission transport methods for meeting-related needs.
    - Air freight has the highest emissions, followed by heavy trucks. Rail and ocean shipping have the lowest emissions. Switching entirely from air to ocean freight can reduce freight emissions by 98 percent. (SME Climate Hub)

Event materials

- Are materials eco-friendly?
- Are there ways to further reduce the amount of plastic and single-use items?
- Are handouts printed on FSC-certified paper? Do they avoid extensive use of color? Are they used minimally, with QR codes as an alternative?
- Is there separate collection and disposal of all recyclable materials?
- Are meeting supplies ordered from local suppliers to the greatest extent possible?
- Do we work with venues to encourage sustainable practices and reduce waste?
- Is meeting sustainability considered at the meeting venue selection stage? Best practice suggests working directly with venues to inquire about their sustainability practices, encourage sustainable practices and reduce waste, and work together to take specific steps to improve the sustainability of meetings. A best practices document could be shared with venues to provide information about what would be ideal. (This could be combined with efforts towards a vendor code of conduct document.)

Catering

- Do we encourage vendors to use sustainable practices? For example, a list of best practices such as the below could be shared with venues.
    - **Overview**: focus on local food and drink; use water dispensers rather than bottled water; limit meat options
    - Is it feasible to install local water dispensers (fresh water from the tap, in regions where feasible) and choose local over imported beverages (local herbal infusions, local wines, etc.)?
    - Could you avoid single-use beverage packaging (i.e., PET, cans) and single-use plastics for beverages (i.e., straws or stirrers)?
    - Do you offer reusable or compostable tableware?
    - Would it be feasible to avoid the use of aluminum coffee capsules and instead use traditional coffee makers (such as a percolator)?
    - Do you offer local and seasonal food products and include at least 50% plant-based food?
    - Is it feasible to source organic and fairtrade products and select fish with Marine Stewardship Council (MSC) certification?
    - Could you plan quantities based on 70% participation (rather than 100%) to limit food waste?
    - Could you offer limited or no red meat? If possible, provide one meat option, one fish, and one vegetarian/vegan option; use locally sourced and organic meat only, and have one day which is 100% vegetarian.
    - Is it feasible to distribute left-over food to catering staff or the local community?
    - Refer to the World Economic Forum Sustainable Catering Guidelines for more details.

Low-carbon accommodation

- Do we currently prioritize hotels and accommodation with a low carbon footprint?
    - If the hotel doesn't disclose its emissions, look for environmentally-friendly certifications and green travel initiatives.
    - Keep in mind that hotels consume large amounts of energy and produce unnecessary waste, generating substantial emissions.

Community engagement

- Could we work further with the community to better understand the environmental impacts of travel vis-a-vis the multistakeholder model, and the ways the model benefits from face-to-face interactions?

Data

- Release information on calculations regarding current emissions from meetings
    - Consider releasing information about how we currently calculate emissions (link to current data). Make sure communications emphasize that it is a transparent, standardized process.
    - For example, IETF estimated the carbon emissions from the previous six IETF meetings including travel, venue, and hotel emissions (IETF); the raw data they used included the following:

        - The number of participants per country as published in Datatracker
        - Assume travel from capital city of each country and economy flights
        - Event venue emissions based on area
        - Hotel emissions based on estimated room nights
    - IETF's calculation used the following international standards:
        - Emission factors are from the GHG Protocol's Emission Factors for Cross-Sector Tools
        - Assumptions about energy use at venues and hotels are based on Commercial Buildings Energy Consumption Survey (CBECS) data
- **Certification**
    - Consider ISO 21021 certification for sustainable event management

- *Events best practices sources: IETF, SME, WEF*

Org-Wide Products / Purchases

Baseline audit

- Determine what is currently done to focus on sustainability in our purchasing, and determine improvements that could be made.
    - For example, most ICANN devices are made by Apple, which has a demonstrated and certified commitment to sustainability.

Plastic and single-use items

- Do we regularly seek out eco-friendly materials? Are our signage, badges, and banners made of eco-friendly materials?
- Are there ways to further reduce the amount of plastic and single-use items in meetings, offices, and org-wide giveaways (key rings, pens, etc)?
- Do we limit the use of plastic banners/backdrops? For those that are necessary, do we order them in FSC-certified paper or cardboard?
- Could we take measures to reduce the amount of single-use plastic water bottles?

IT Equipment and services

- What are we currently doing to repair, recycle, and reuse devices?
- Have all our suppliers committed to the 1.5°C goal? Are there any products we regularly purchase that do not have a low carbon footprint or are not long-lasting devices?
- Do we consider refurbished devices?

Supply chain

- Do we collaborate closely with suppliers to prioritize energy reductions and efforts to shift to renewable energy sources?
- Do we engage suppliers committed to reducing emissions?
    - Keep in mind that greatest emissions tend to derive from the following supply chain areas:
        - Transport, delivery, or shipment methods
        - Energy consumption from production or manufacturing

        - Certain materials - steel, for example, is a source of very high GHG emissions and processes (such as upstream agriculture and deforestation emissions)
        - Distant supplier locations
    - Would it be feasible to publicly declare our commitment to engage suppliers through methods like a press release or a post on the org's website? Consider joining relevant initiatives like the SME Climate Hub.
    - Consider ways to inform suppliers about resources and to integrate climate action into purchasing processes

Data

- Calculate current usage for offices (water bottles) and for meetings (signs, giveaways). (This is an easy win: many celebrate facts like "x fewer water bottles used at this meeting!")
- Estimate emissions in the supply chain.
- Calculate IT emissions
    - IT equipment contributes to both your Scope 2 and Scope 3 emissions. Scope 2 emissions are produced from the electricity your equipment uses during operation, while Scope 3 emissions stem from the production and disposal of equipment. There are also indirect emissions that come from data transfer and storage through your equipment. To determine the emissions from the IT equipment you buy, see if your supplier discloses the emissions related to the production of the equipment. This information can help you evaluate and compare different options. If your suppliers cannot provide emissions data, you can use substitute data to estimate your emissions, and consider switching to a supplier who reports emissions for each product.

- *Purchases best practices sources: IETF, SME, WEF, Apple*

Summary: Targets and Progress Reporting

- **Overview:** Once all the measurements have been gathered, make a commitment to reduce the emissions by a certain percentage by a certain year, and report regularly on progress

Target Commitments

- Many use targets that are percentages (Reduce 50% of our emissions before 2030, etc)
- Commit to a "near-term" "science-based" target
    - "Greenhouse gas (GHG) emissions reduction targets are considered to be "science-based" if they are in line with what the latest climate science says is necessary to meet the goals of the Paris Agreement - to limit global warming to well-below 2°C above pre-industrial levels and pursue efforts to limit warming to 1.5°C." (SBTi Corporate Manual)
        - Consider signing a commitment letter with Science-Based Targets
        - "Establishing targets aligned with a 1.5°C future demonstrates a company's commitment to reducing its contribution to climate change and provides a structured framework for its climate action. [...] Organisations should commit to achieving net-zero emissions by 2030, 2040 or 2050 at the latest, and to

halving emissions by 2030. However, this commitment must be accompanied by detailed short-term and longterm targets to guide the organisation on the correct path. ” (SME Climate Hub)

- See target setting tool:
  - https://sciencebasedtargets.org/resources/?tab=develop#resource (Excel spreadsheet)

- Tips from SME Climate Hub:
  - Choose Your Target Type
    - There are three main target types:
      - Absolute targets - reach XX tCO2e by year YY
      - Intensity targets - reach XX tCO2e per unit by year YY
      - Net zero targets - reach net zero by year YY Reducing absolute emissions and achieving net zero is most important, but intensity targets can be appropriate for organisations that are solely focused on climate solutions, or those with fewer than 50 employees.
  - Get the details right
    - Long-term targets should cover all emissions from the value chain, including all greenhouse gasses, every part of the org, and emissions categories across all scopes, even land-based ones.
    - Interim targets might only cover a smaller subset if baseline data isn't available or reliable. You can also set subsidiary targets for specific greenhouse gasses (like methane), certain parts of the org, and particular emission categories.
  - Select Target Base Year
    - It is highly recommended to use a fixed target base year—a year to which future emissions will be compared. The target base year should be one with reliable baseline data available to ensure meaningful comparisons. If an organization changes significantly year-to-year, the baseline may need to be recalculated. If an organization’s emissions vary cyclically over several years, a multi-year baseline may be appropriate.
  - Set your level of ambition
    - Organizations need to set short-term and long-term targets to establish their roadmap for halving emissions by 2030 and reaching net zero. The UN-backed Race to Zero Campaign and the SME Climate Hub require a net zero target by 2050 and an interim target to halve emissions by 2030. Climate action should be included in business planning, and so it’s useful to set interim targets for every 3-5 years. Longer-term targets help when planning for large capital investments but they can also be affected by uncertain future developments.
  - Track and Communicate Progress
    - Once emissions reduction targets are set, communicate them internally and externally, and begin tracking progress. Annually review plans for actions to reduce emissions in light of progress made, new climate science, and global goals. In all communications, present your data and your progress transparently. If you have reported emissions in previous years, make clear how emissions have changed compared to those years, noting the reasons for changes and deviations from set targets, as well as the corrective actions being taken. If you are not achieving at least a 7% year-on-year reduction, it is particularly important to highlight hard-

to-abate emissions, identify key blockers that need removal, and suggest collaborative actions required.

Report on progress regularly

- Many organizations use language of: achieved a x% reduction in line with y (YEAR) base levels
  - "Since April 2020, we have been carbon neutral for our corporate emissions, including direct emissions (scope 1), electricity-related emissions (scope 2), as well as emissions from business travel and employee commute (scope 3). [...] We've addressed the remaining scope 1 and 2 emissions, as well as scope 3 emissions from business travel and employee commute [...] by securing high-quality carbon credits from projects that protect and restore forests, wetlands, and grasslands." (Apple)

Style of Language to Consider

- For acknowledging need for change:
  - "In-person meetings and events take a huge toll on the environment with travel, single use plastics, and food waste. A number of studies have indicated that conferences have significant environmental impacts." (IETF)
- For highlighting progress:
  - As just one recent example of putting these principles into action, we eliminated single-use plastic water bottles at IETF 117 in San Francisco, which saved nearly 6800 plastic water bottles from the landfill. (IETF)
- For encouraging suggestions from the community:
  - "We also take suggestions from the community and work creatively to find ways to both improve the attendee experience and reduce our footprint. For example, we've created an IETF traveling library, giving IETF meeting participants who gather from all over the world the ability to leave a book and take a book." (IETF)
- On offices:
  - Around 40% of global energy-related emissions come from buildings, and 60% of office building emissions come from energy use, making it a priority to address. Reducing energy and material use also often delivers long-term financial benefits as well as environmental advantages. (SME Climate Hub)
- On event certification:
  - "The World Economic Forum is committed to integrating sustainability best practices into the core of its event operations. As part of this, it obtained three-year ISO 21021 certification for sustainable event management in 2018 and renewed this certification at the Annual Meeting 2022." (WEF)
- For setting targets:
  - Meta sustainability**:** We are targeting a 50% reduction in workplace carbon emissions in 2030 (from a 2019 baseline), which we aim to achieve through the following reduction goals:
    - 32% reduction in office energy consumption
    - 50% reduction in waste generated in office operations
    - 35% reduction in employee commute emissions
    - 40% reduction in embodied carbon of building materials and furniture
    - 54% reduction in carbon intensity of culinary offerings

        - A portion of our office portfolio is ISO 50001 certified, a globally recognized energy management standard.
        - 25% Reduction in electricity and natural gas consumption at facilities adopting ISO 50001
    - Advancing carbon-free energy: Our primary approach for reducing our Scope 2 emissions is through the procurement of carbon-free energy. Since 2017, we've matched 100% of the electricity consumption of our global operations with purchases of renewable energy on an annual basis. (Google)
    - "Even as we seek ways to make how we work more sustainable, it is not possible to eliminate entirely the impact a global community of thousands of individuals, like IETF participants. To understand and mitigate the remaining carbon footprint imposed by its work, the IETF has embarked on a project to measure and offset carbon emissions. As part of its efforts to move towards a net zero IETF, the IETF calculates annually the carbon footprint of its meetings and ongoing operations, and then seeks to acquire carbon credits that meet well-established recommendations and standards." (IETF)

Notes on carbon offsetting / carbon removal projects

- While many organizations invest in carbon credits, there are big questions around using credits only for 'residual' corporate emissions that cannot be reduced (such as air travel) and around the quality of the credits. Important quality issues are around the origin of the credits (i.e. from avoided emissions or actual removals) and then the question of "permanence" of removals (which is a big issue for forestry credits). There is also the issue of whether credits also respect other sustainable development issues like biodiversity or have social or development co-benefits.
- While there are projects with good development benefits, given the issue of non-permanence of land use, nature-based solutions should not be used as an offset for fossil-fuel related emissions.
- Carbon Plan article about systematic over-crediting of forest offsets
    - Note that forest credits are prominent in the carbon market but there are systemic issues with forestry credits; trees provide relatively short-term durability even for successful projects given the natural length of their carbon cycles
- Note that removals and offsets are both contentious, though for different reasons; there is a concern that removals are bring prioritized over emissions reductions in the first place.
- Note: There is a difference between "net-zero" and "carbon neutrality." "A business can claim carbon neutrality by measuring its emissions and then offsetting the balance through financed projects—often carbon offsets—outside of its value chain. On the other hand, net-zero does not permit offsetting emissions, which compels companies to meaningfully reduce their value chain emissions." (Sustain.life)
- Note that others are aware of these issues and see carbon offsets as an interim solution.
    - "High-quality carbon offsets as an interim solution - We plan to reach our goal of becoming carbon neutral across our entire value chain by 2030, using every solution at our disposal, including long-term carbon removal initiatives, like the Restore Fund. But as the projects in the Restore Fund come online, we're also working to address difficult-to-avoid emissions in the short term. Since April 2020

we have been carbon neutral for our corporate emissions. We started by reducing our corporate emissions through the use of 100 percent renewable electricity and energy efficiency efforts at our facilities. However, there are some activities where emissions remain difficult to avoid — including the use of natural gas in some of our buildings or the emissions from business air travel and employee commute. As the Restore Fund projects come online, we've partnered with Conservation International to develop and invest in projects that generate carbon credits to cover our remaining corporate emissions." (Apple)

- Managing residual emissions - Carbon removal solutions While permanent carbon removal solutions aren't yet economically viable or deployed at scale, the IPCC stated in 2022 that "the deployment of carbon dioxide removal (CDR) to counterbalance hard-to-abate residual emissions is unavoidable if net-zero emissions are to be achieved." That's why we're supporting the development and commercialization of emerging carbon removal technologies, as well as the development of initiatives to ensure the integrity and climate impact of CDR solutions. (Google)
- If air freight is unavoidable, choose Sustainable Aviation Æuel (SAÆ) and consider investing in certified carbon removal projects. Keep in mind that while carbon credits can't offset your transport emissions, they can help address emissions that can't be eliminated right now. (SME Climate Hub)

Notes

- Third party tools are also available for those who wish to visualize the electricity consumption and greenhouse gasses emissions that one's Internet browsing leads to. Examples include Carbonanalyser's browser extension.
- May encounter questions about investments and how "green" they are
- May also encounter questions about the environmental impact of Internet applications themselves (for example, these are discussed by the Internet Architecture Board; see workshop here)
- IETF had a presentation about CO_2 emissions relating to flights to IETF meetings
  - Had a comment saying the technology behind the IETF - IP technology - uses so much more CO_2 than flights, and that focusing on flights is like focusing on cents rather than dollars (in terms of orders of magnitude); the response was that there was a group looking into that (EERG - energy efficiency research group), and the reason to focus on travel is that we have less of an impact on how the technology is used versus travel, and most research shows that emissions come from building the devices rather than using them; aviation is a major contributor to global warming (contributed approximately about 4% to global warming); Daniel Migault (speaker) suggests having 1 meeting a year (to cut emissions in half)
    - Estimates 2.7 tonnes of CO_2 per attendee; 3.2 Gg of CO_2 for an IETF meeting

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