Considering Emissions from a Consumption-Based Perspective

Guidance for Local Government Staff

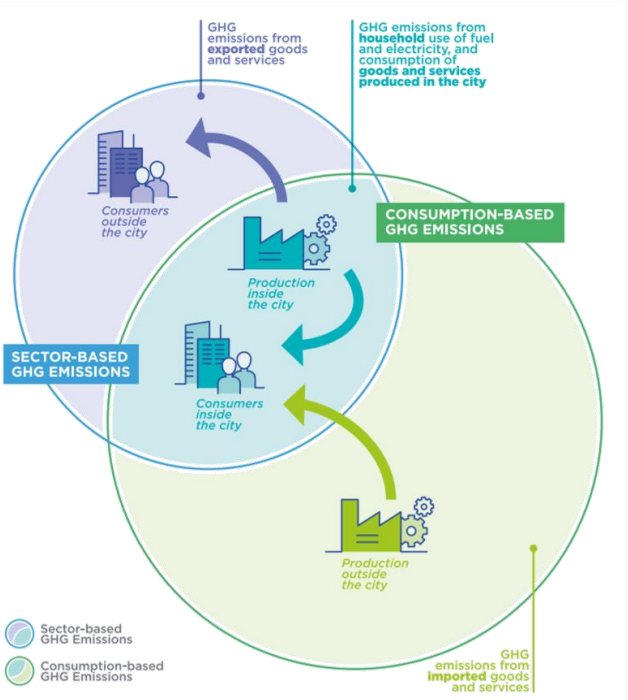
This short introduction to consumption-based emissions inventories (CBEI) addressed three common questions from local governments. The referenced resources can be found at stopwaste.org/cbei

How does CBEI relate to my existing inventory?

Most California cities' GHG inventories follow standard community emissions inventory protocols[1], which assign emissions to jurisdictions based primarily on the location of emissions generating activities. In cases such as natural gas combustion by stationary appliances like building heating, the activity and the related emissions both occur within the jurisdiction. Other activities such as electricity use and solid waste generation occur within the jurisdiction, but the emissions may occur at power plants and landfills outside of the jurisdictional boundaries. They are included, however, because the local community has a high level of control over the activity that causes the emissions. The traditional inventory methodology thus reflects a range of local activities that result in emissions both within and beyond the jurisdictional boundaries.

The logic to include emissions resulting from local activities can be applied more comprehensively to include the emissions resulting from consumption of goods and food. Emerging best practices and recommendations are to include lifecycle/upstream/embodied emissions. For example, in March 2018, C40 recommended that cities in North America "use consumption-based GHG inventories alongside their sector-based GHG inventories, or incorporate key supply chains into the latter."[2] This closes what has recently been termed the "carbon loophole" in recent press coverage.

A consumption-based emissions inventory (CBEI) includes the emissions resulting from all consumption activities of a local community of residents. It attributes all emissions to the end consumer, including all emissions released along the supply chain. This is in contrast to a production-based inventory, which attributes all emissions to the location where the emissions occur. The difference in magnitude between the two lenses depends on a jurisdiction's mix of activities (residential, commercial, agricultural, etc.) The C40 analysis found that in affluent North American cities, CBEI can be up to 400% a production-based inventory.



Source: C40

[1] For example, GPC and U.S. Communities Protocol

[2] www.c40.org/researches/consumption-based-emissions

Why would I want to include a consumption-based inventory?

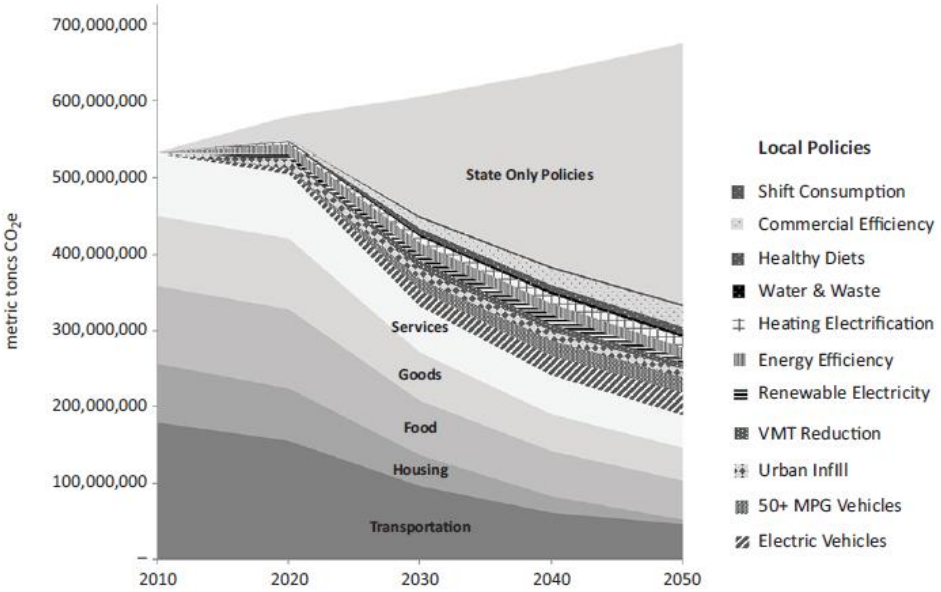
Both inventory methodologies are valid. They most effectively inform GHG reduction policies when considered together; the consumer has the opportunity to consume more sustainably and the producer has the opportunity to produce more efficiently and cleanly. For effective climate action, the purpose of an inventory is to allow a community to identify and prioritize strategies, and track local and global performance. Considering both lenses allows a community to explore the full range of their climate action potential.

To illustrate the distinction, consider the attribution of emissions related to a manufactured in China for a user in California. A production-based inventory attributes the manufacturing emissions to China (who can affect the emissions by cleaning their energy supply), whereas a consumption-based inventory attributes them to the Californian user (who can affect the emissions by keeping each computer longer and purchasing refurbished models).

In urbanized western regions such as the Bay Area where consumption outweighs production, local communities are empowered to reduce more emissions globally by knowing the upstream emissions impact of their consumption to better understand how they can help reduce those emissions. C40 recommends inclusion because it can yield more holistic assessment, reveal a wider range of opportunities, and provide additional perspective for stakeholder engagement.

According to analysis by the Cool Climate Network of California's emissions, planned state and local actions combined are projected to reach 80% reduction below baseline by 2050 under a production lens, but they will only result in a 65% reduction from a consumption-based lens. If consumption of goods and food are not included in climate action planning, these will represent over half of the remaining emissions by 2050.

"As direct emissions from vehicles and energy are reduced over time, an increasingly large fraction of carbon footprints will be embedded in goods and services consumed within the state but produced elsewhere. This underscores the importance of tracking consumption-based emissions over time at state and local levels."



Jurisdictions in Alameda County may be able to obtain a version of the graph above that is customized to their local emissions. Inquire with StopWaste.

In addition to reducing additional emissions globally, strategies derived from a consumption-based perspective can deliver local community benefits. For example, *production-based* inventories can show a desirable GHG reduction when economic activity declines or is outsourced – falsely creating a perceived conflict between climate action and local economic growth. In contrast, a consumption-based lens can create alignment and synergies with economic development, bringing broader support for climate action from other jurisdictional departments. Strategies can include localizing and cleaning production, "onshoring" jobs that are typically outsourced to locales with dirtier production; supporting new "circular economy" business models like sharing, repair, and resale that tend to be local; and shifting consumer spending to local services and entertainment instead of goods (purchased online for example). These strategies diversify local employment for more equitable workforce opportunities and attract investment in the local economy. In the area of public health, consumption-based messaging can bolster the old adage of eating more vegetables and unprocessed foods. All of these strategies reduce consumption-based emissions but have no measurable impact on production-based emissions.

How do I go about including a CBEI?

The primary obstacle to including a consumption-based perspective is the difficulty of modeling consumption and accessing data. Fortunately, the Bay Area Air Quality Management District commissioned UC Berkeley's Cool Climate Network to produce a CBEI for every jurisdiction in the Bay Area. The project modeled the average household carbon footprint of every census block group and extrapolated those averages to create emissions profiles by jurisdictions. The findings are based on economic models. Local data were used whenever possible; however, some data sources reflect regional or national averages. The challenge remains to obtain sufficiently detailed data to reflect and evaluate changing consumption choices. Outside of the Bay Area, the Cool Climate Network has a less granular but still useful emissions profile for every zip code in the U.S. The coarse findings are still useful for informing general strategy direction, even if it currently is unable to track local impacts of those strategies over time. Climate action planning in general needs to improve monitoring and metrics, and consumption trends could be included in monitoring efforts.

If your jurisdiction uses ICLEI's ClearPath, inquire with ICLEI about new features that allow you to add consumption-based emissions and related emissions reduction strategies. StopWaste has supported an effort to add these capabilities to the software, and welcomes input on how to make the tool functional for local governments.

Consumption-related measures are designed to be additive to existing CAP measures, and not replace them. Many measures that are relevant to both consumption-based and geographic inventories (e.g. electric vehicles, recycling, energy efficiency) are expected to be in the main body of the CAP. Electrification of vehicles and building space and water heating could be reemphasized and prioritized based on CBEI findings.

Resources

- Download template designed for Bay Area cities to add a CBEI lens to their CAPs www.stopwaste.org/cbei
- Explore the Cool Climate Network for research and tools: coolclimate.berkeley.edu
- Visit Cool Climate Network and explore the Bay Area inventory project and download the spreadsheet to pull your jurisdiction's CBEI results: coolclimate.berkeley.edu/inventory
- Download list of strategy options for addressing consumption-based emissions in goods and food sectors, also at www.stopwaste.org/cbei
- Instructions for how to include CBEI emissions and reduction strategies to ClearPath (coming soon)
- The West Coast Climate and Materials Management Forum's Climate Action Toolkit including case studies of CAPs that include materials management and upstream emissions: westcoastclimateforum.com/toolkit/homepage
- Link to C40 report in PDF: https://www.c40.org/researches/consumption-based-emissions