

# SUSTAINABILITY & CALIFORNIA'S MARCH TO CARBON NEUTRALITY

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COOC 2019 ANNUAL MEMBER MEETING  
March 23, 2019





# TRACKING H<sub>2</sub>O?





# TRACKING WASTE?





# TRACKING CARBON?





# TRACKING EXPENDITURES?





- Terminology & Concepts
- Two big (CA) regulatory happenings
- Implications
- **Discussion**



# EARTHSHIFT GLOBAL

Founded in 2000, we have  
a simple mission:

**PARTNER** with our clients  
and help them effect  
**CHANGE** that advances  
their organizations' specific  
**SUSTAINABILITY** goals.





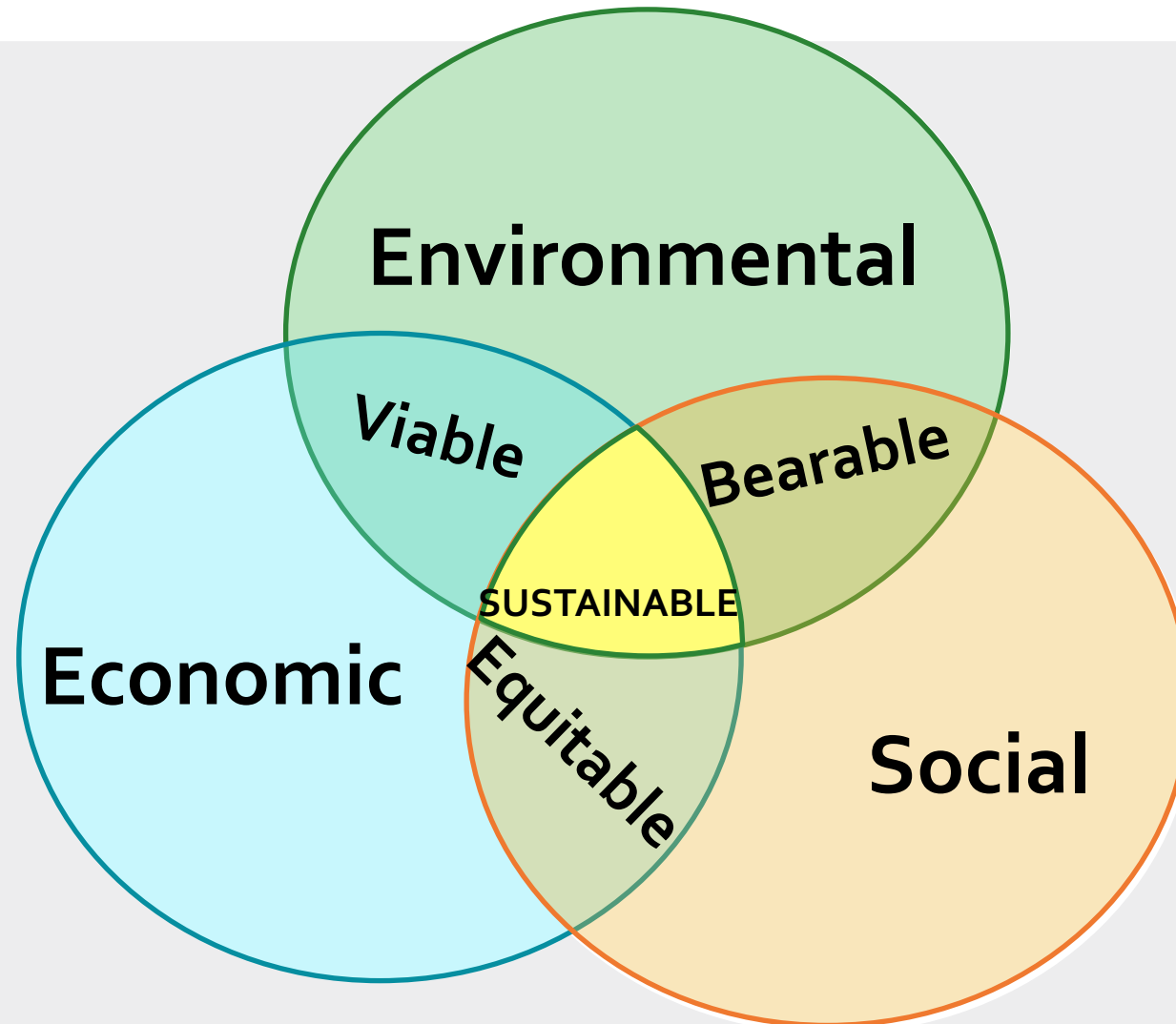
# SUSTAINABILITY

**"Sustainable development** is development that meets the needs of the present without compromising the ability of future generations to meet their own needs".

UN - The Report of the Brundtland Commission, Our Common Future 1987



# ENVIRONMENT > SUSTAINABILITY





# WHAT ARE CONSUMERS LOOKING FOR?

n

Nielsen 2015

## TOP SUSTAINABILITY PURCHASING DRIVERS

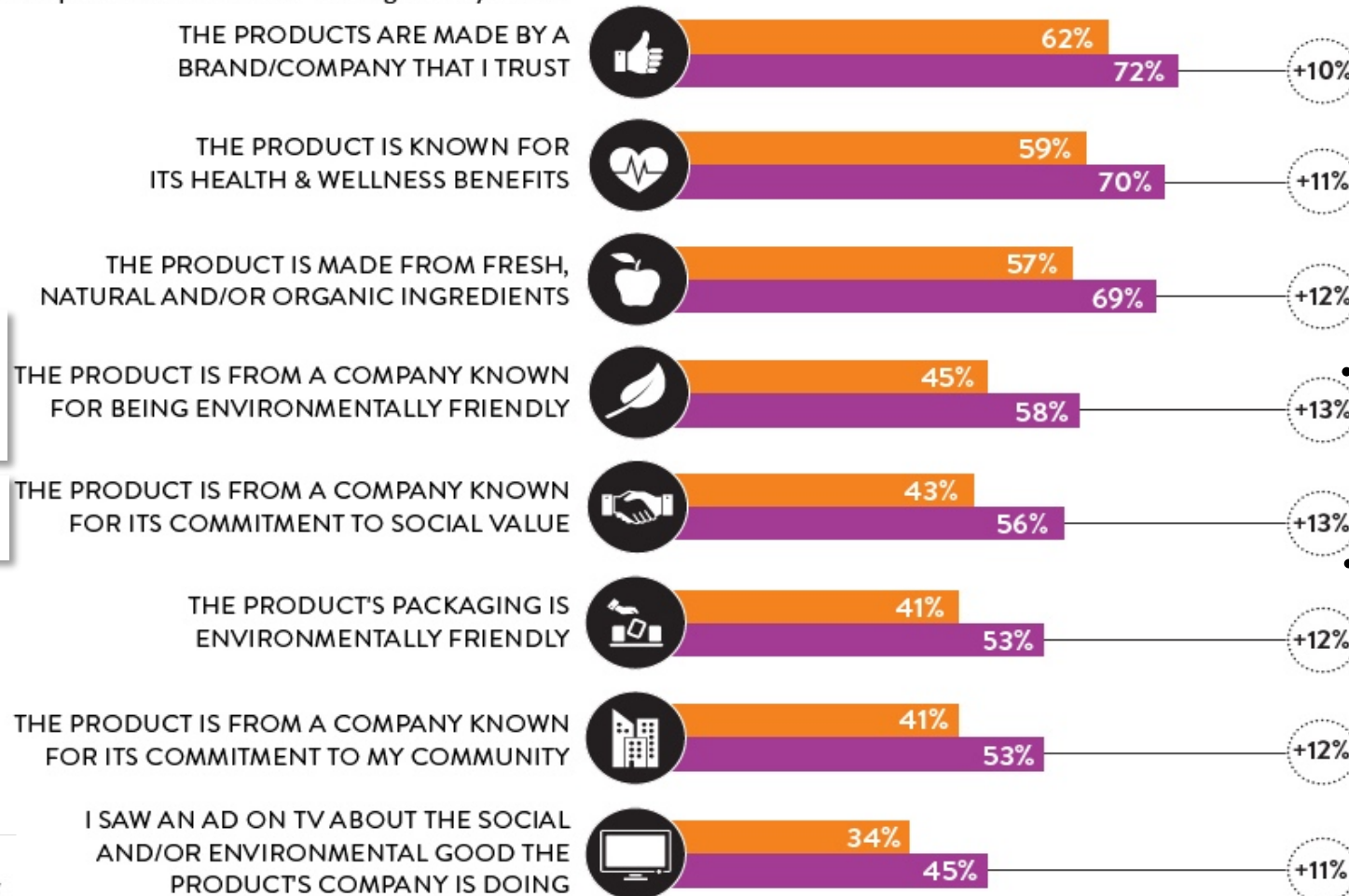
Global Respondents vs. Those Willing To Pay More\*

Trust in Environmental Stewardship

Trust in Social Integrity

GLOBAL AVERAGE

THOSE WILLING TO PAY MORE



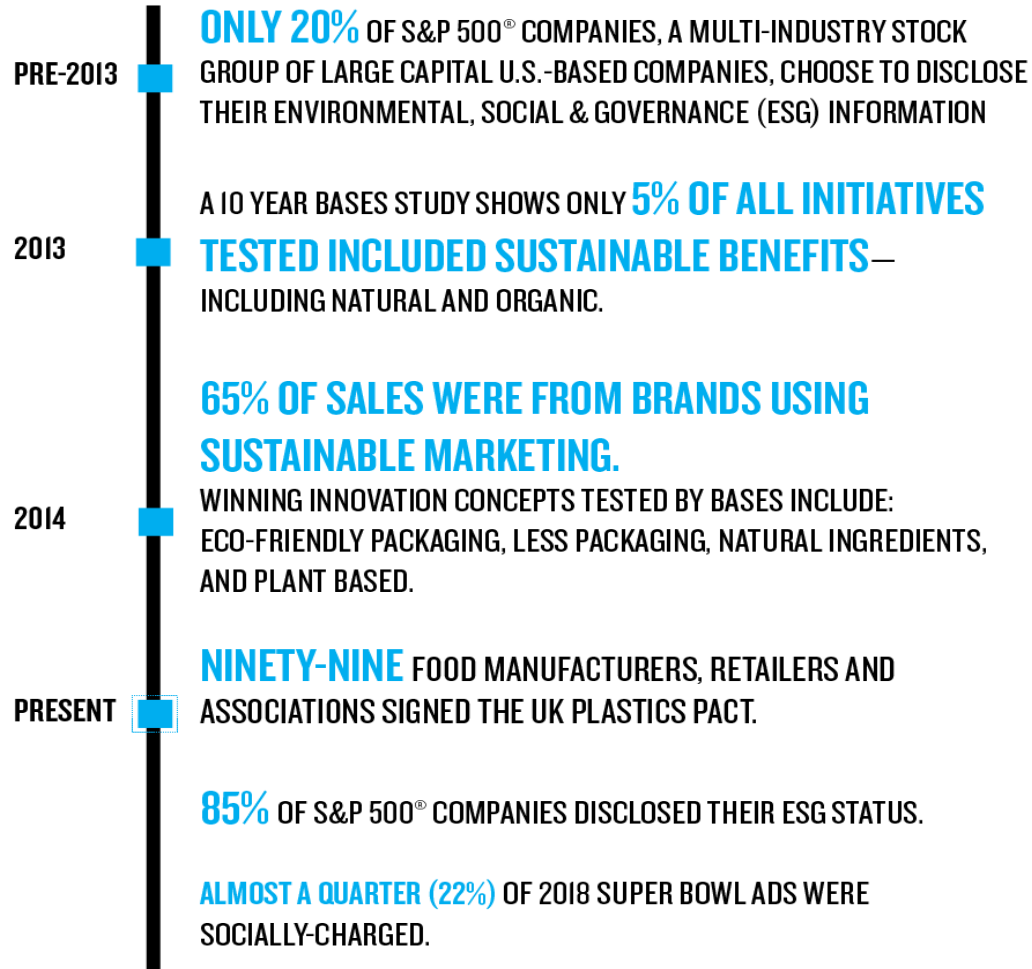
\*For those willing to pay extra, the importance of these factors increased the most



# WHAT ARE CONSUMERS LOOKING FOR?

Nielsen 2018

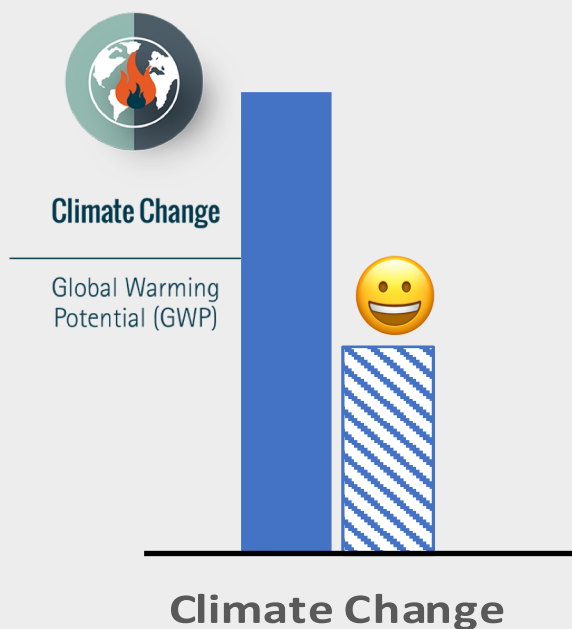
## CORPORATE SUSTAINABILITY GAINS STEAM OVER LAST FIVE YEARS



<https://www.nielsen.com/us/en/insights/reports/2018/the-education-of-the-sustainable-mindset.html>



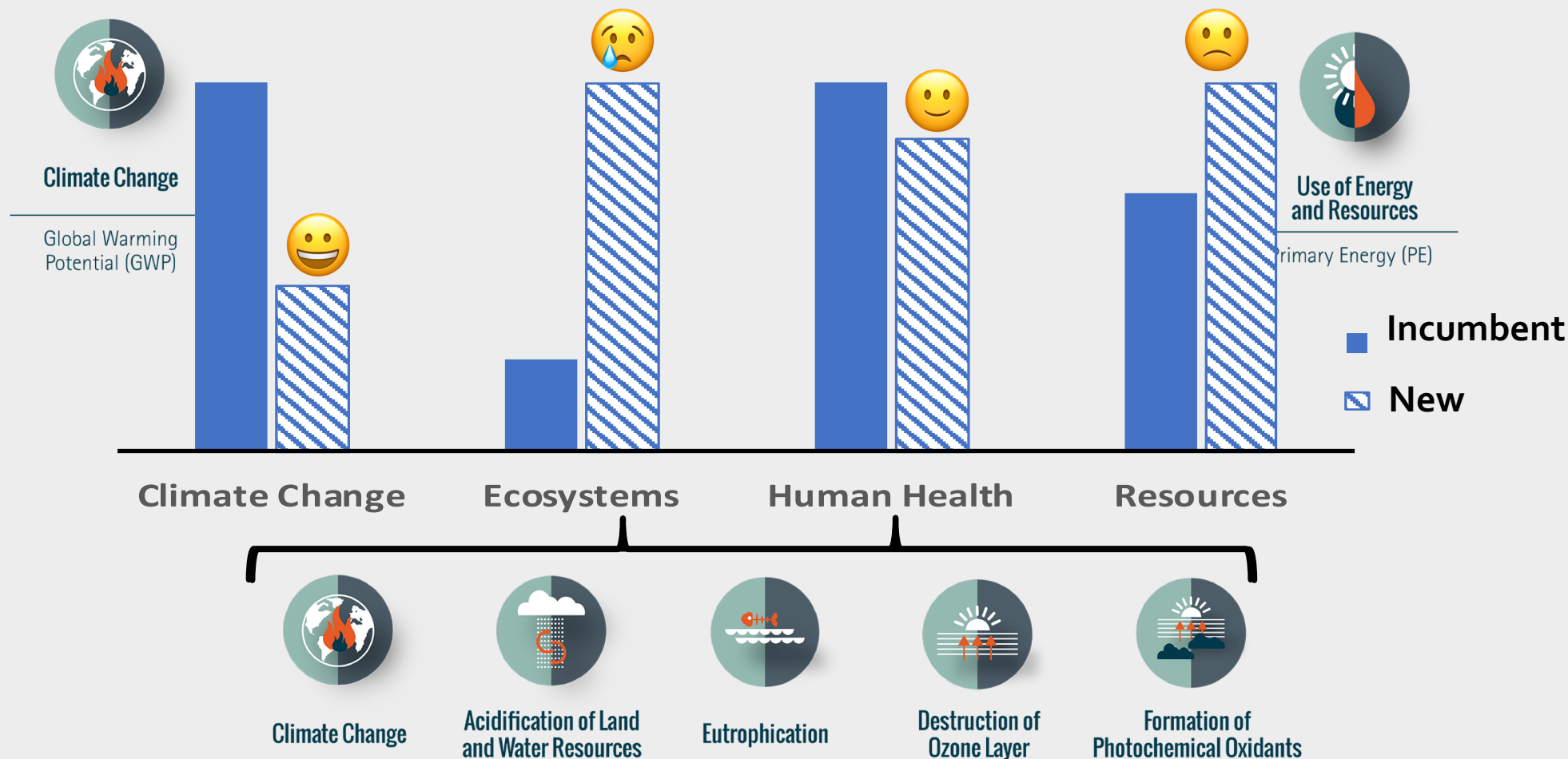
# CO<sub>2</sub> < GHGS < ENVIRONMENT < SUSTAINABILITY



■ Incumbent  
▨ New  
-

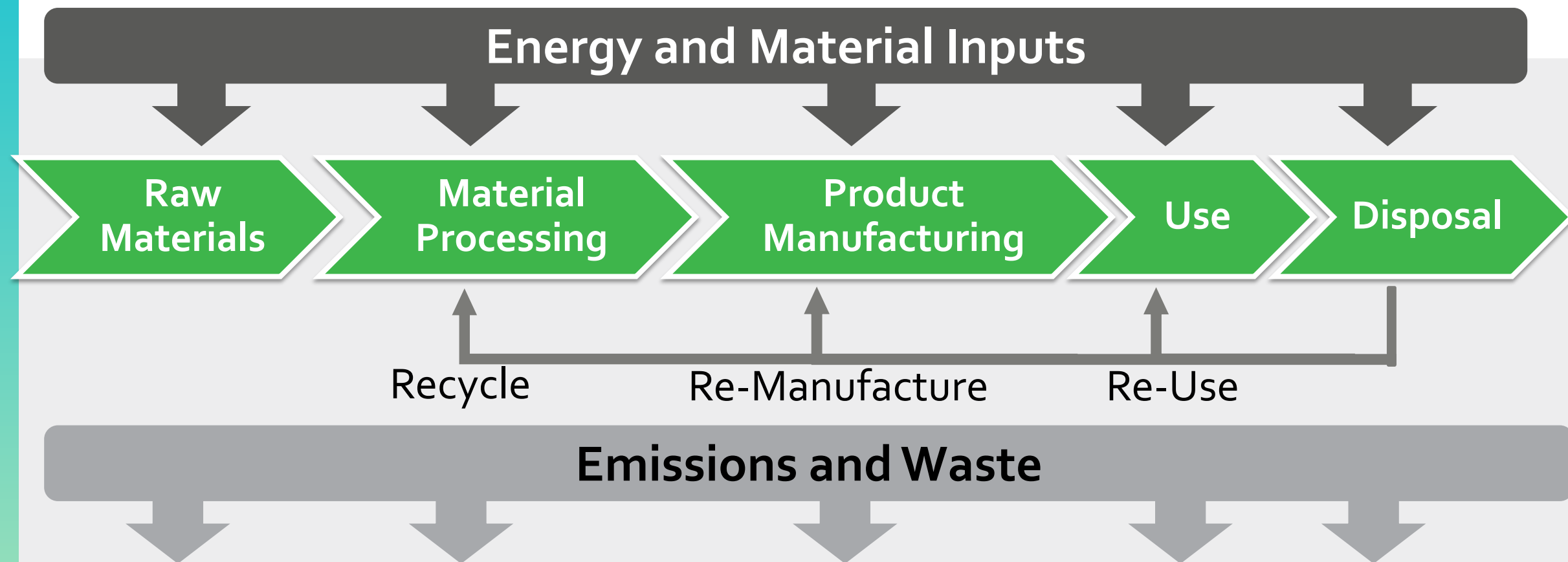


# CO<sub>2</sub> < GHGS < ENVIRONMENT < SUSTAINABILITY





# LIFE CYCLE PHASES USE RESOURCES & MAKE EMISSIONS

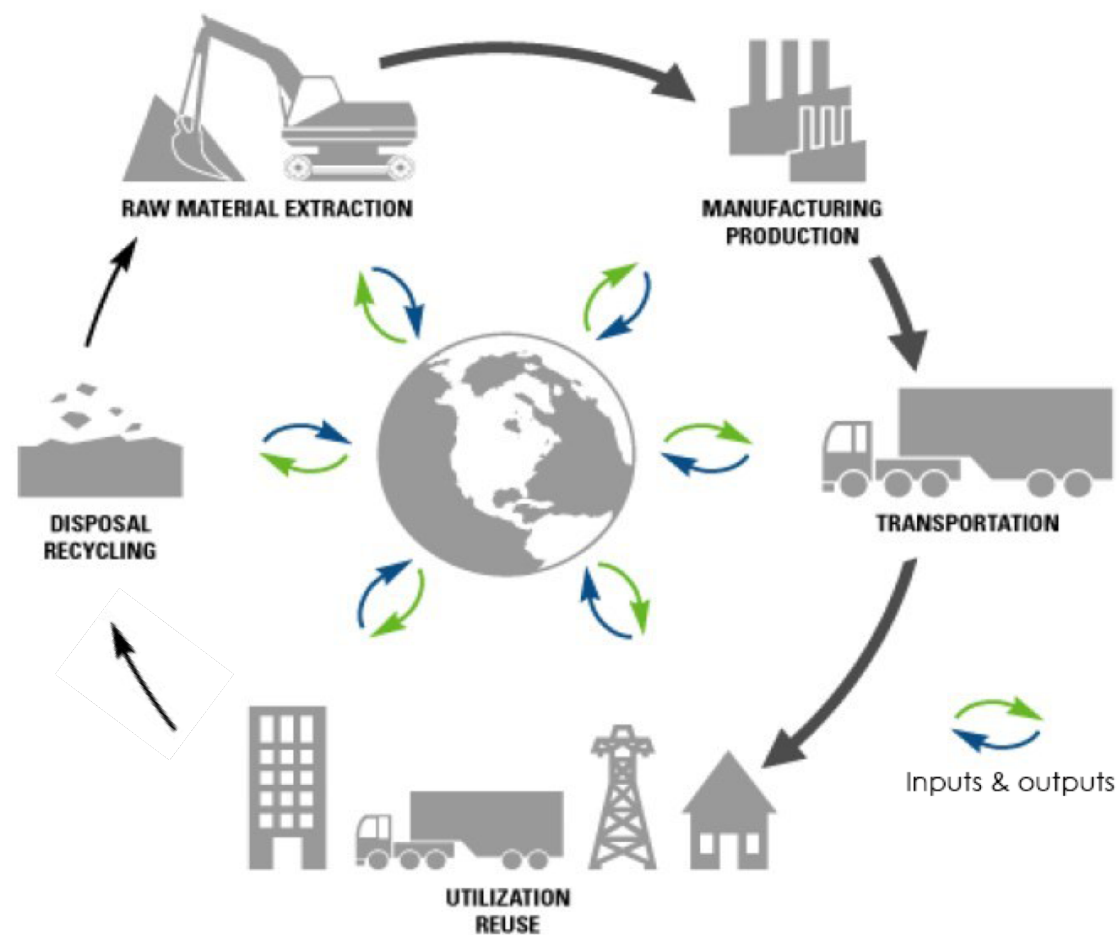


Life Cycle assessment (LCA) A scientific method for analysis of the environmental impacts associated with the life cycle of a product.

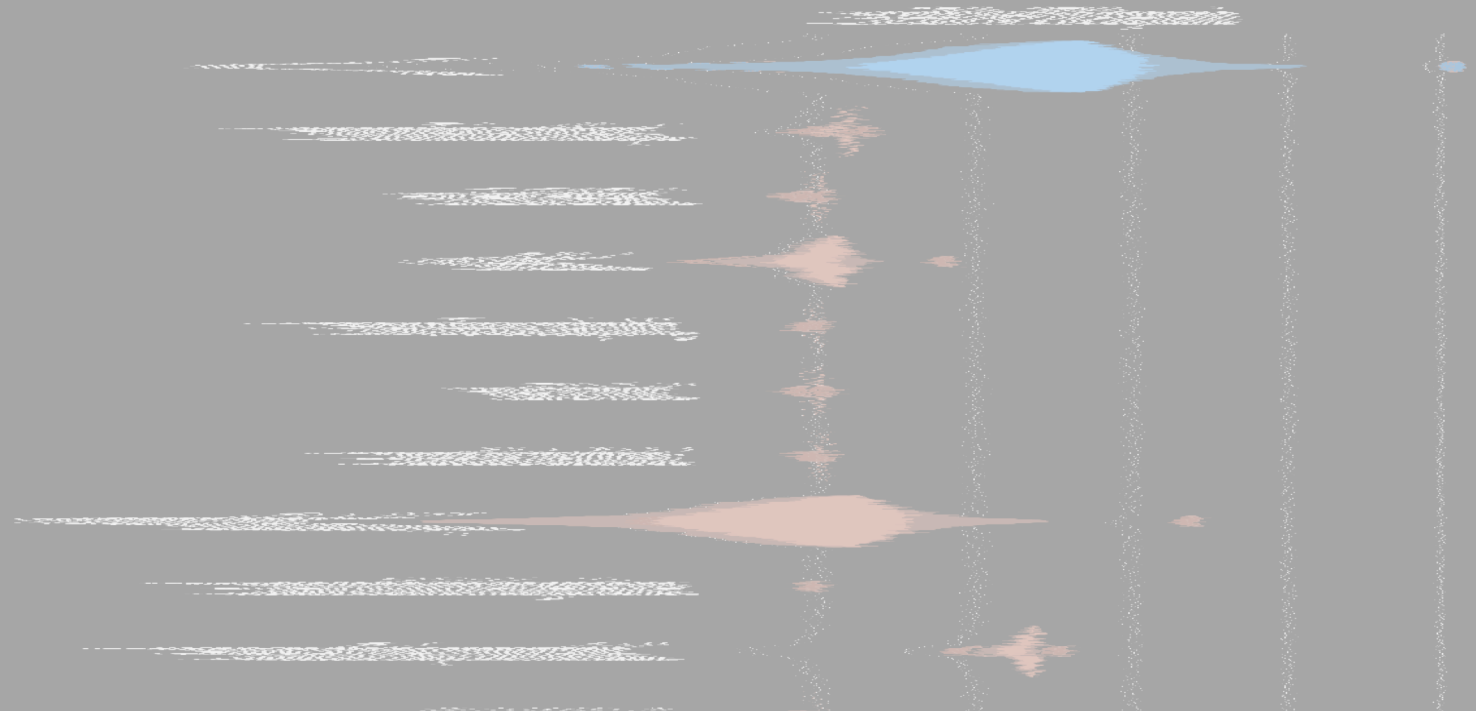


# LIFE CYCLE ASSESSMENT TIES TO OTHER CONCEPTS

- Sustainability
- Circularity/Circular economy
- Life cycle thinking
- Design for sustainability
- ...







# WHAT? WHEN? HOW?



# CA SB-100: 100% RENEWABLE/ZERO-C ELECTRICITY BY 12/31/2045



[https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill\\_id=201720180SB100](https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180SB100)

## Senate Bill No. 100

### CHAPTER 312

An act to amend Sections 399.11, 399.15, and 399.30 of, and to add Section 454.53 to, the Public Utilities Code, relating to energy.

[Approved by Governor September 10, 2018. Filed with Secretary of State September 10, 2018.]

#### LEGISLATIVE COUNSEL'S DIGEST

SB 100, De León. California Renewables Portfolio Standard Program: emissions of greenhouse gases.

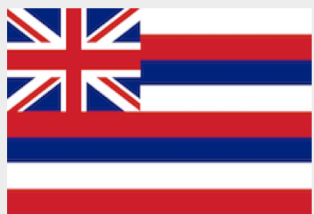
(1) Under existing law, the Public Utilities Commission (PUC) has regulatory authority over public utilities, including electrical corporations, while local publicly owned electric utilities, as defined, are under the direction of their governing boards. The California Renewables Portfolio Standard Program requires the PUC to establish a renewables portfolio standard requiring all retail sellers, as defined, to procure a minimum quantity of electricity products from eligible renewable energy resources, as defined, so that the total kilowatthours of those products sold to their retail end-use customers achieve 25% of retail sales by December 31, 2016, 33% by December 31, 2020, 40% by December 31, 2024, 45% by December 31, 2027, and 50% by December 31, 2030. The program additionally requires each local publicly owned electric utility, as defined, to procure a minimum quantity of electricity products from eligible renewable energy resources



<https://www.latimes.com/politics/la-pol-ca-renewable-energy-law-signed-20180910-story.html>



# CA JOINED HAWAII AS THE ONLY STATES WITH 100% RENEWABLES COMMITMENTS.



198M BTU/year



199M BTU/year



92 Trillion BTU/year



1622 Trillion BTU/year





# SB-100'S IMPORTANT SUBTLETY...

Ch. 312

— 12 —

correction against a local publicly owned electric utility for failure to comply with this article, and for referral of violations to the State Air Resources Board for penalties pursuant to subdivision (o).

(o) (1) Upon a determination by the Energy Commission that a local publicly owned electric utility has failed to comply with this article, the Energy Commission shall refer the failure to comply with this article to the State Air Resources Board, which may impose penalties to enforce this article consistent with Part 6 (commencing with Section 38580) of Division 25.5 of the Health and Safety Code. Any penalties imposed shall be comparable to those adopted by the commission for noncompliance by retail sellers.

(2) Any penalties collected by the State Air Resources Board pursuant to this article shall be deposited in the Air Pollution Control Fund and, upon appropriation by the Legislature, shall be expended for reducing emissions of air pollution or greenhouse gases within the same geographic area as the local publicly owned electric utility.

SEC. 5. Section 454.53 is added to the Public Utilities Code, to read:

454.53. (a) It is the policy of the state that eligible renewable energy resources and zero-carbon resources supply 100 percent of all retail sales of electricity to California end-use customers and 100 percent of electricity procured to serve all state agencies by December 31, 2045. The achievement of this policy for California shall not increase carbon emissions elsewhere in the western grid and shall not allow resource shuffling. The commission and Energy Commission, in consultation with the State Air Resources Board, shall take steps to ensure that a transition to a zero-carbon electric system for the State of California does not cause or contribute to greenhouse gas emissions increases elsewhere in the western grid, and is undertaken in a manner consistent with clause 3 of Section 8 of Article I of the United States Constitution. The commission, the Energy Commission, the State Air Resources Board, and all other state agencies shall incorporate this policy



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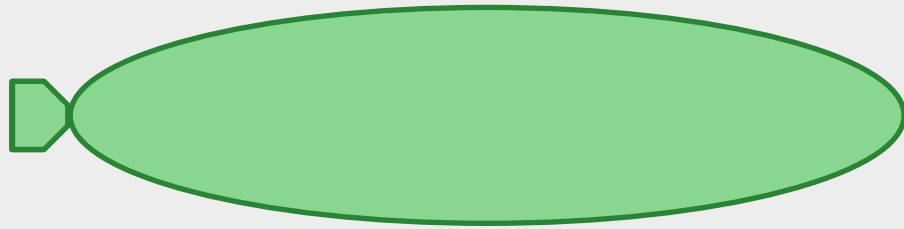
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## Leakage/Burden Shifting....



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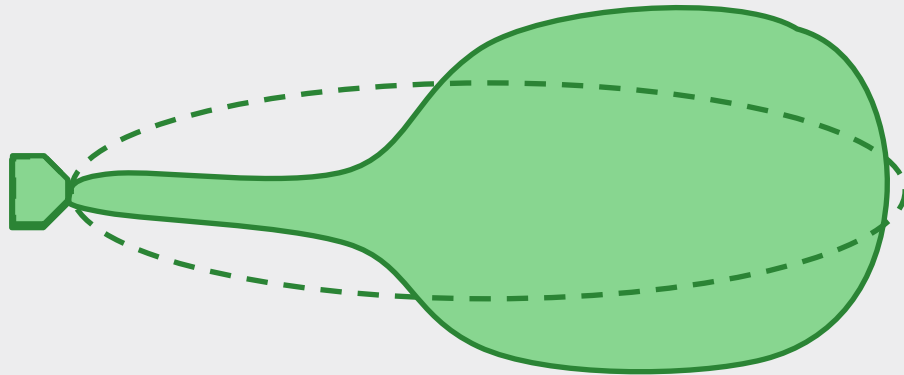
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# CA B-55-18: WAIT, WHAT?

<https://www.gov.ca.gov/wp-content/uploads/2018/09/9.10.18-Executive-Order.pdf>

## Executive Department State of California

### EXECUTIVE ORDER B-55-18 TO ACHIEVE CARBON NEUTRALITY

**WHEREAS** climate change is causing historic droughts, devastating wildfires, torrential storms, extreme heat, the death of millions of trees, billions of dollars in property damage, and threats to human health and food supplies; and

**WHEREAS** California's forests, agricultural and ranch lands, wetlands, oceans, and other natural and working landscapes define the beauty and well-being of our state, but tragically are suffering increasing degradation caused by changing climate; and

**WHEREAS** California has established ambitious targets to reduce carbon emissions 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050; and

**WHEREAS** nations came together to adopt the Paris Agreement under the United Nations Framework Convention on Climate Change, which calls for preventing average global temperatures from rising more than 2°C (3.6°F) above pre-industrial levels and pursuing efforts to keep warming below 1.5°C (2.7°F); and

**WHEREAS** California has strong partnerships through the Under2Coalition with more than 200 jurisdictions around the world, representing 1.3 billion people, committing themselves to meeting the Paris Agreement goals and going beyond them wherever possible; and





# CA B-55-18: W

<https://www.gov.ca.gov/wp-Executive-Order.pdf>

## Executive Department

### State of California

#### EXECUTIVE ORDER B-55-18 TO ACHIEVE CARBON NEUTRALITY

**WHEREAS** climate change is causing historic drought, torrential storms, extreme heat, the death of millions of trees, property damage, and threats to human health and food supply;

**WHEREAS** California's forests, agricultural and ranch lands, and other natural and working landscapes define the beauty of the state but tragically are suffering increasing degradation caused by climate change;

**WHEREAS** California has established ambitious targets for reducing greenhouse gas emissions 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050; and

**WHEREAS** nations came together to adopt the Paris Agreement, the United Nations Framework Convention on Climate Change, and to pursue efforts to keep average global temperatures from rising more than 2°C (3.6°F) above pre-industrial levels and pursuing efforts to keep warming below 1.5°C (2.7°F);

**WHEREAS** California has strong partnerships through more than 200 jurisdictions around the world, representing 1.2 billion people, themselves to meeting the Paris Agreement goals and going beyond what is possible; and

**NOW, THEREFORE, I, EDMUND G. BROWN JR.,** Governor of the State of California, in accordance with the authority vested in me by the Constitution and statutes of the State of California, do hereby issue this Executive Order, effective immediately:

#### IT IS HEREBY ORDERED THAT:

1. A new statewide goal is established to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter. This goal is in addition to the existing statewide targets of reducing greenhouse gas emissions.
2. The California Air Resources Board shall work with relevant state agencies to develop a framework for implementation and accounting that tracks progress toward this goal.
3. The California Air Resources Board shall work with relevant state agencies to ensure future Scoping Plans identify and recommend measures to achieve the carbon neutrality goal.
4. The California Natural Resources Agency, the California Environmental Protection Agency, the California Air Resources Board, and the California Department of Food and Agriculture shall include sequestration targets in the Natural and Working Lands Climate Change Implementation Plan consistent with the carbon neutrality goal.
5. All policies and programs undertaken to achieve carbon neutrality shall seek to improve air quality and support the health and economic resiliency of urban and rural communities, particularly low-income and disadvantaged communities.
6. All policies and programs undertaken to achieve carbon neutrality shall be implemented in a manner that supports climate adaptation and biodiversity, including protection of the state's water supply, water quality and native plants and animals.
7. State agencies will engage the support, participation, and partnership of universities, businesses, investors, and communities, as appropriate, to achieve the goals contained in this order.

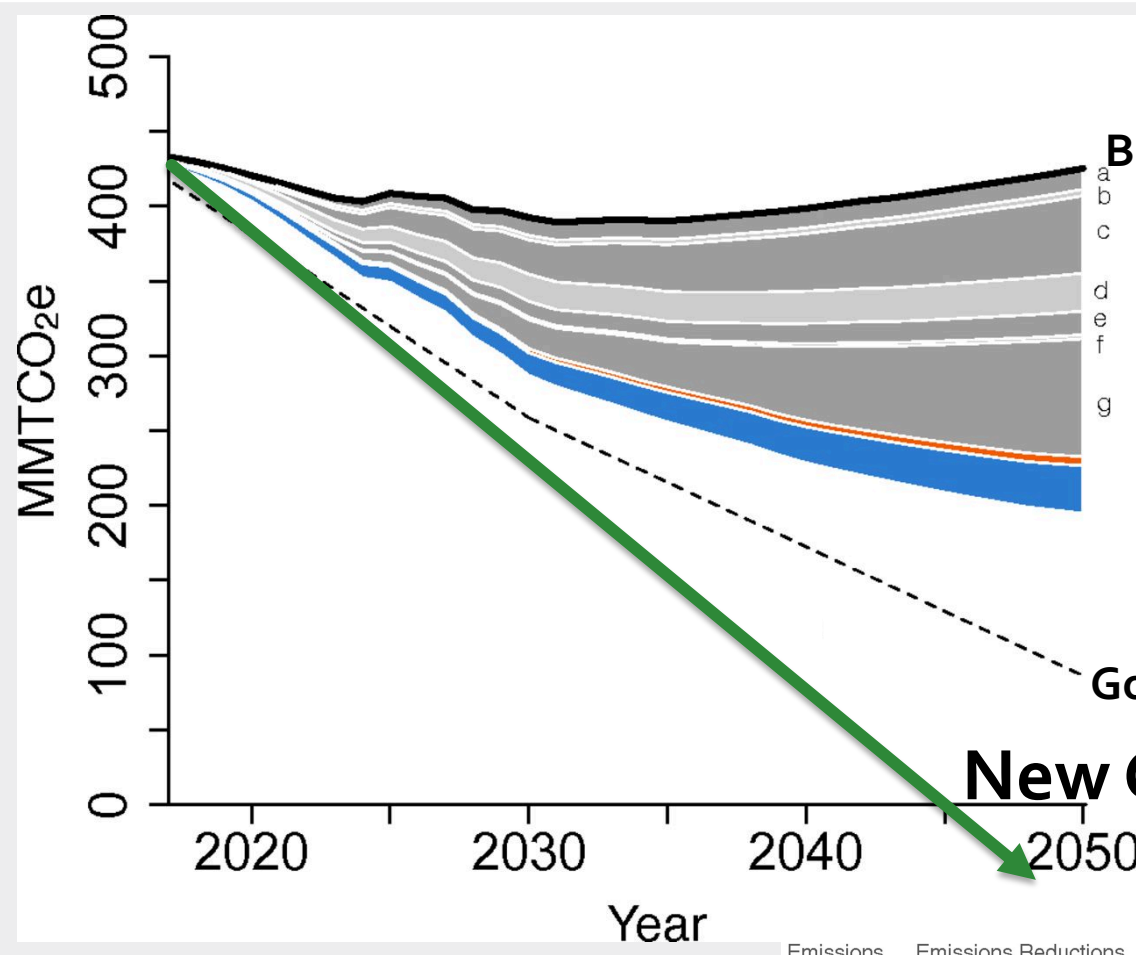
This Order is not intended to, and does not, create any rights or benefits, substantive or procedural, enforceable at law or in equity, against the State of California.





# WHAT?!

## JUST HOW BIG A CHALLENGE IS THAT?



Business as usual

Goal

New Goal

Ecosystem management and land conservation can substantially contribute to California's climate mitigation goals PNAS 2017;114:48:12833-12838

D. Richard Cameron<sup>a,1</sup>, David C. Marvin<sup>a,b</sup>, Jonathan M. Remucal<sup>c</sup>, and Michelle C. Passero<sup>a</sup>

<sup>a</sup>The Nature Conservancy, San Francisco, CA 94105; <sup>b</sup>Department of Global Ecology, Carnegie Institution for Science, Stanford, CA 94305; and <sup>c</sup>Jonathan Remucal Consulting, Madison, WI 53705

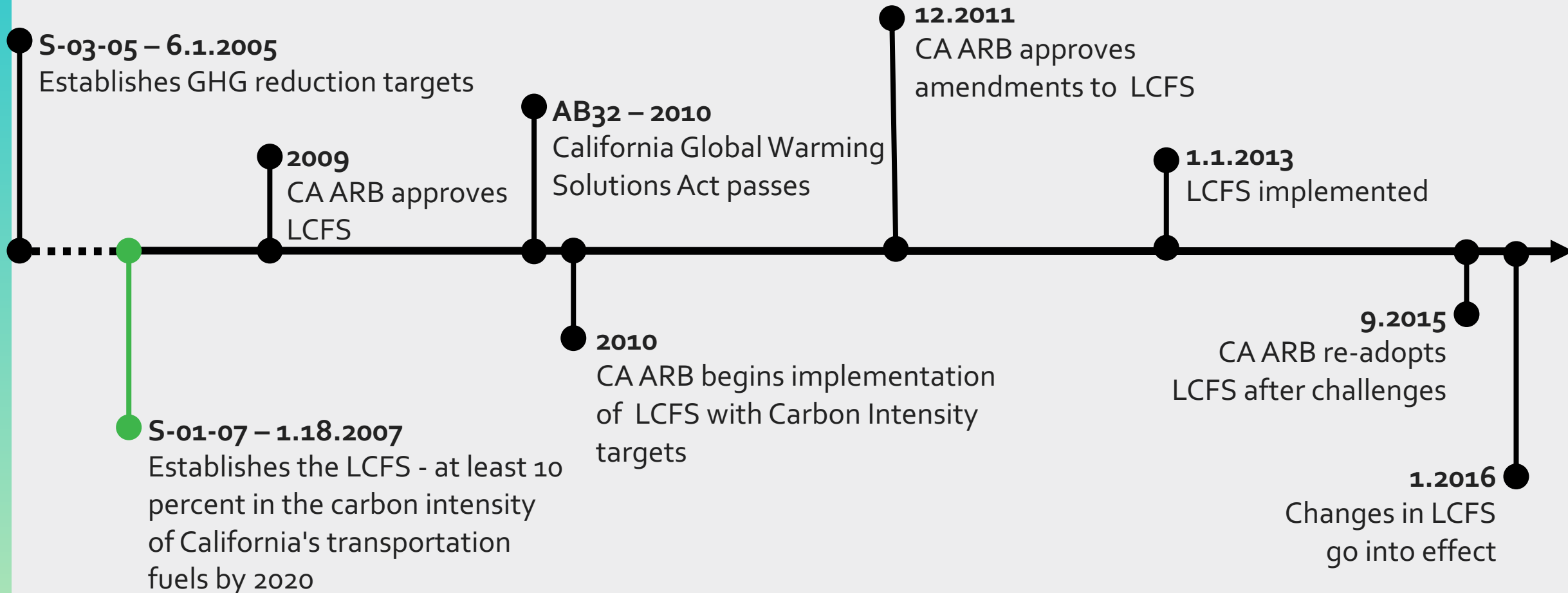
Edited by Pamela A. Matson, Stanford University, Stanford, CA, and approved October 5, 2017 (received for review May 10, 2017)





# WHEN?

One analogy: a rough timeline for Low Carbon Fuel Standard

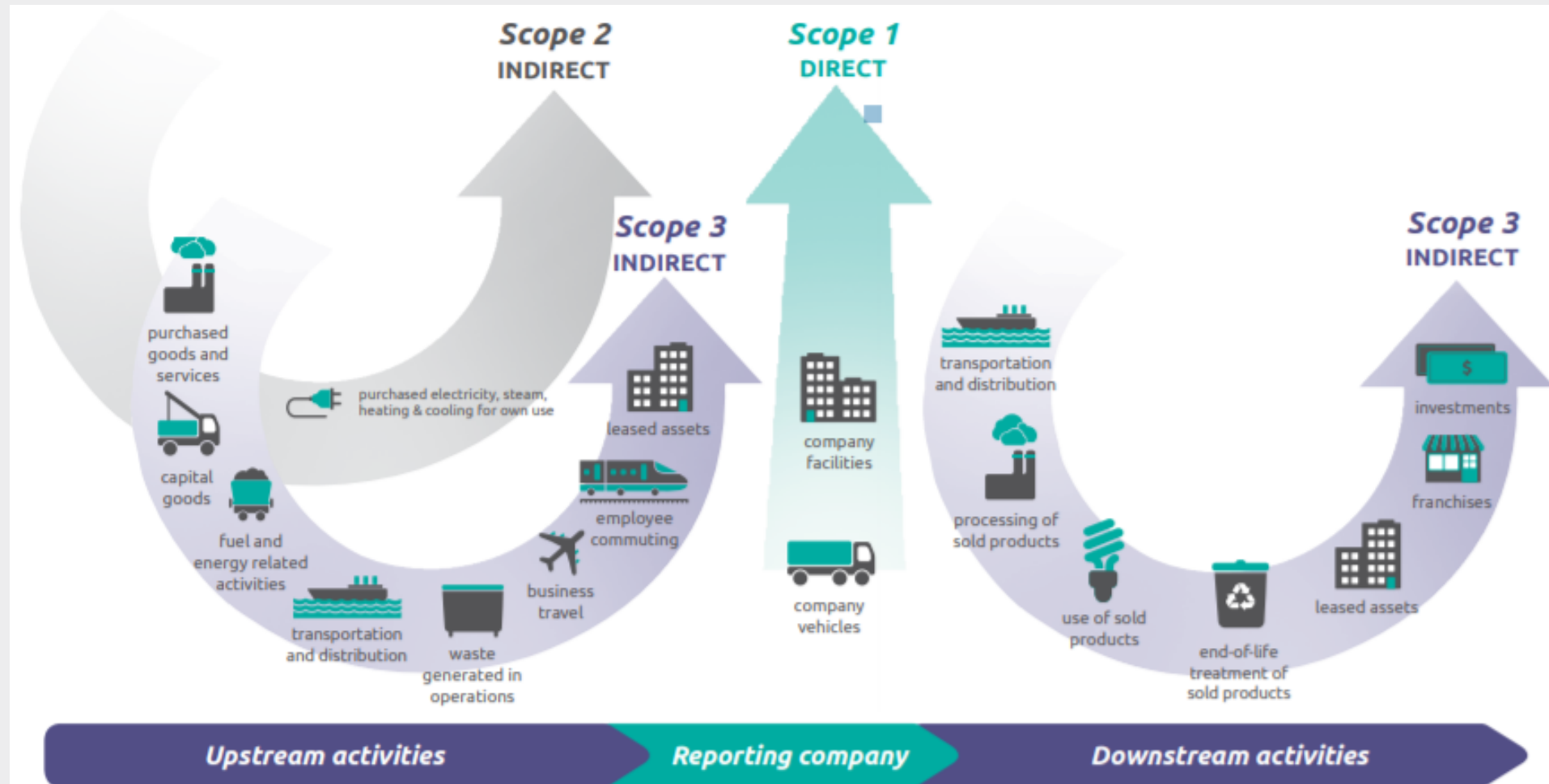




# A VALUE CHAIN VIEW: *SCOPE* EMISSIONS



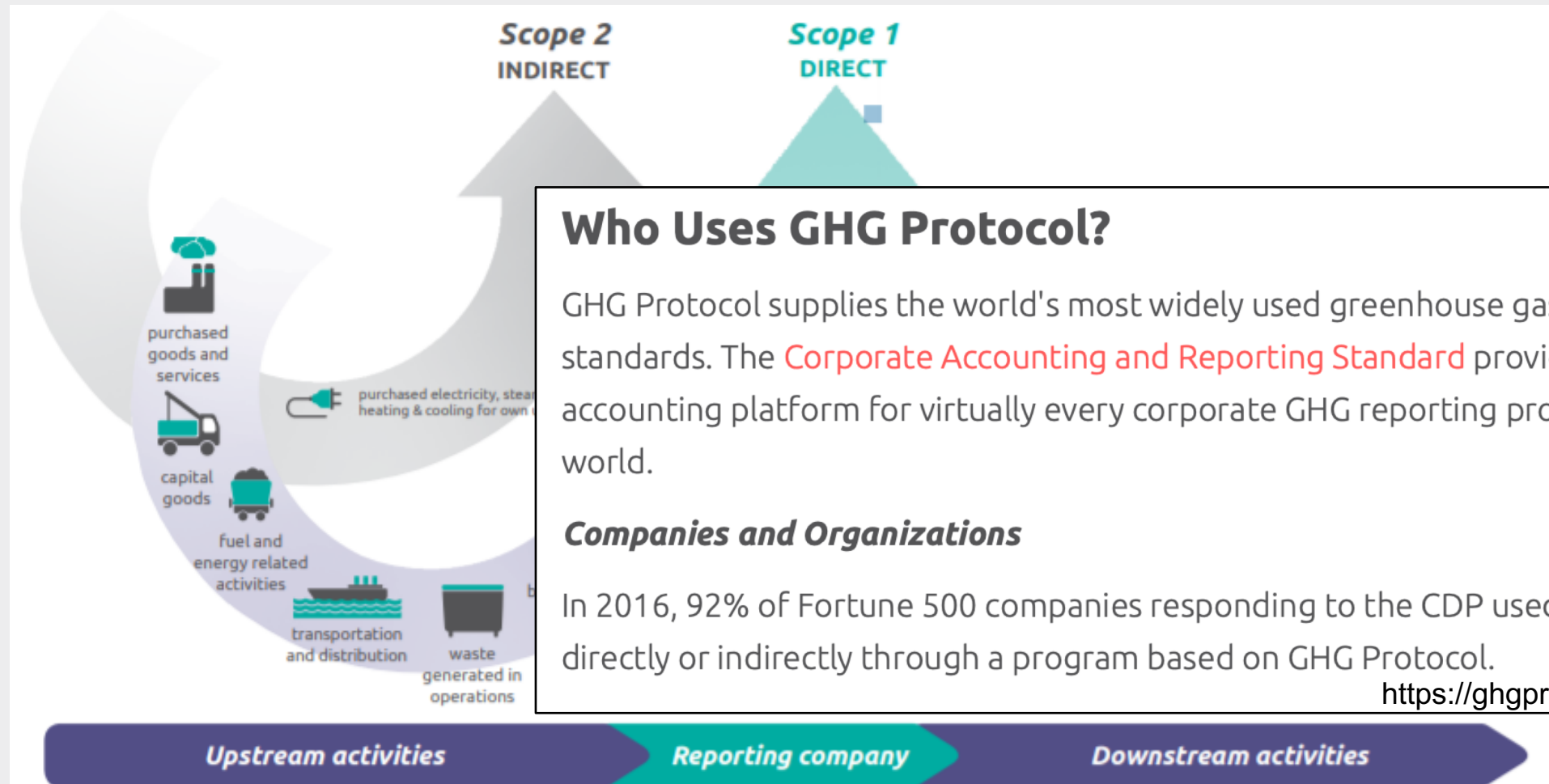
<https://ghgprotocol.org/>





# A VALUE CHAIN VIEW: *SCOPE* EMISSIONS

<https://ghgprotocol.org/>



## Who Uses GHG Protocol?

GHG Protocol supplies the world's most widely used greenhouse gas accounting standards. The **Corporate Accounting and Reporting Standard** provides the accounting platform for virtually every corporate GHG reporting program in the world.

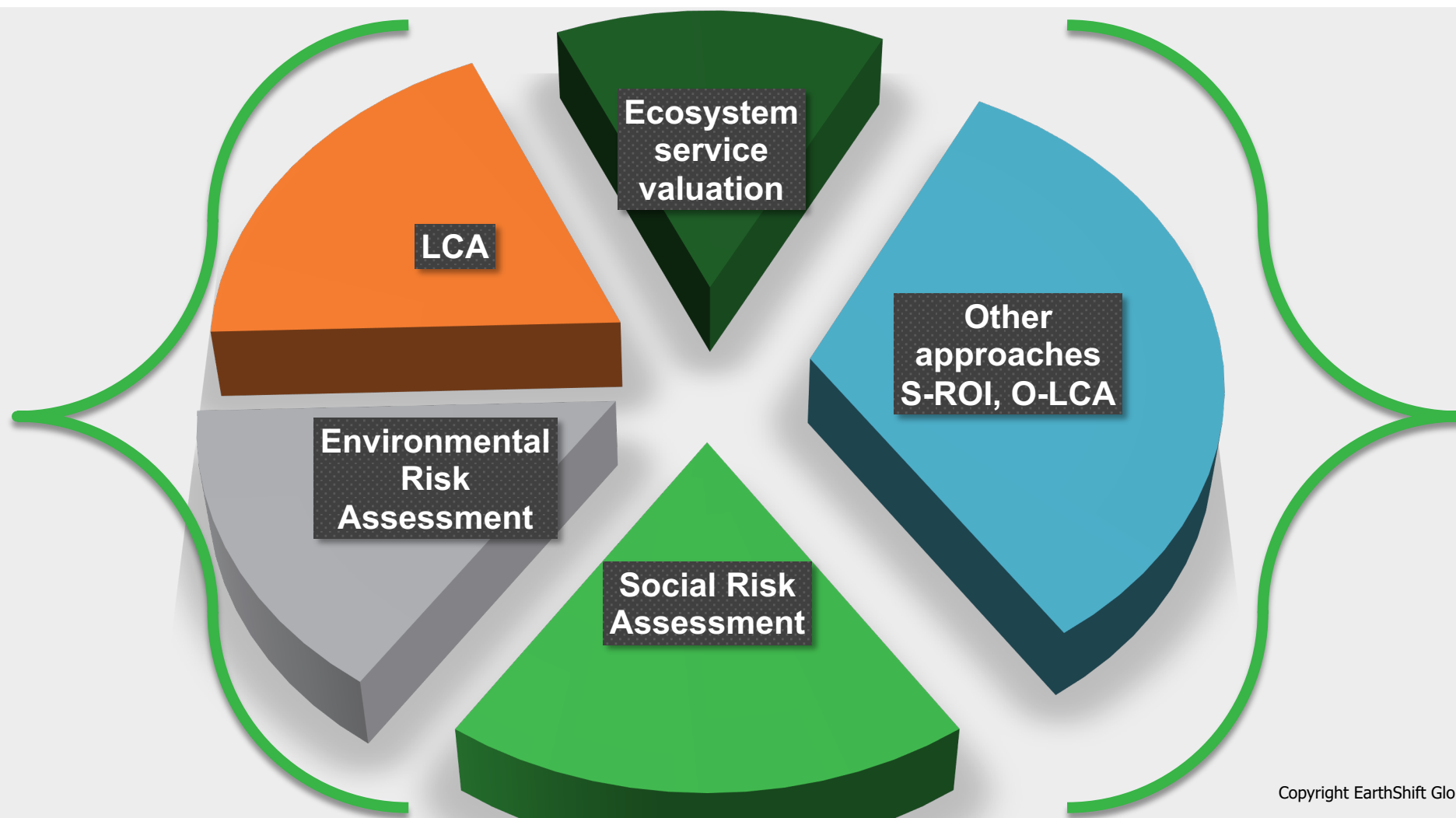
### ***Companies and Organizations***

In 2016, 92% of Fortune 500 companies responding to the CDP used GHG Protocol directly or indirectly through a program based on GHG Protocol.

<https://ghgprotocol.org/about-us>



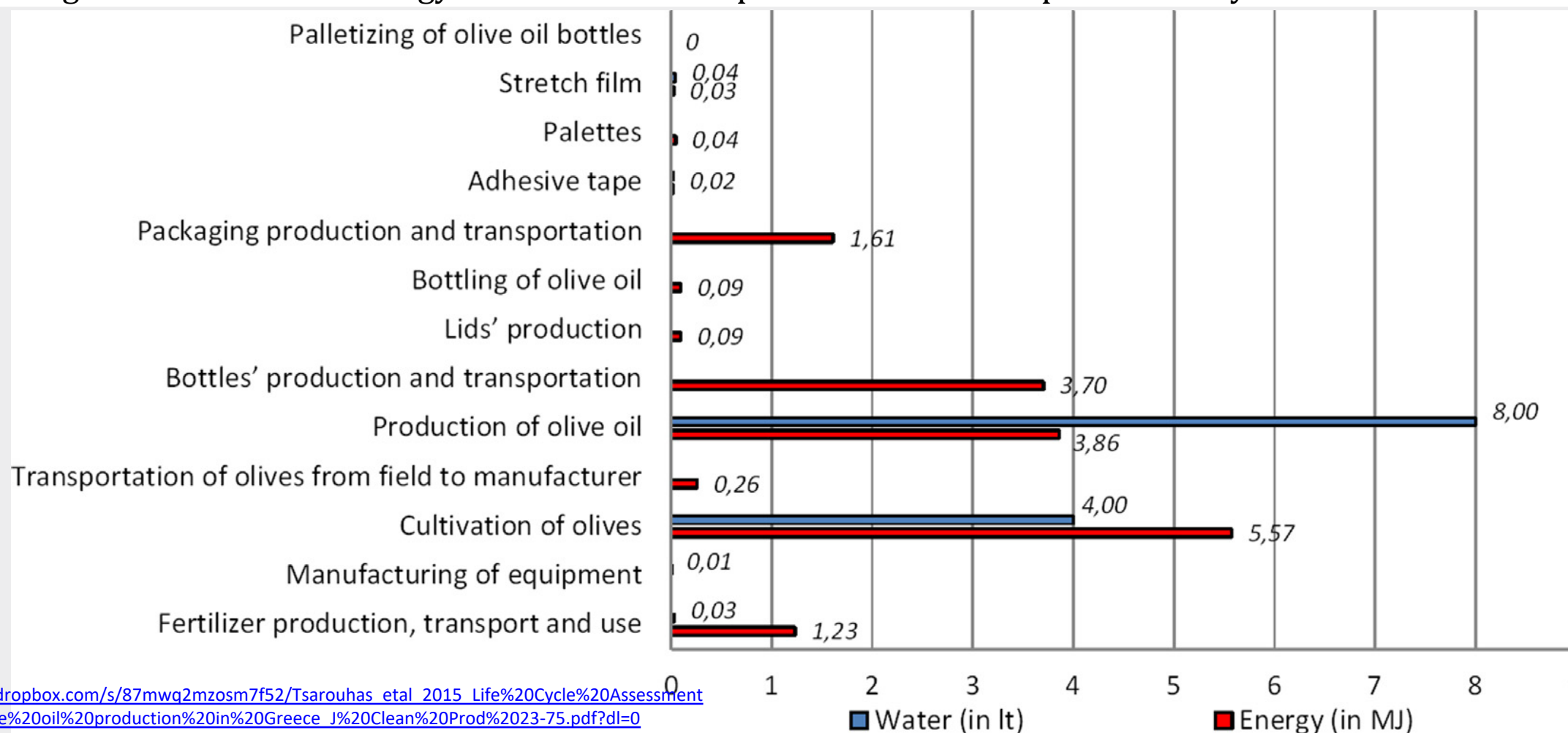
# LIFE CYCLE ASSESSMENT IS PART OF A TOOLKIT USED TO EVALUATE SUSTAINABILITY PERFORMANCE





# A GLANCING EXAMPLE – GHG IMPACTS OF OLIVE OIL PRODUCTION IN GREECE

Fig 3. Distribution of energy and water consumption in the olive oil production system.

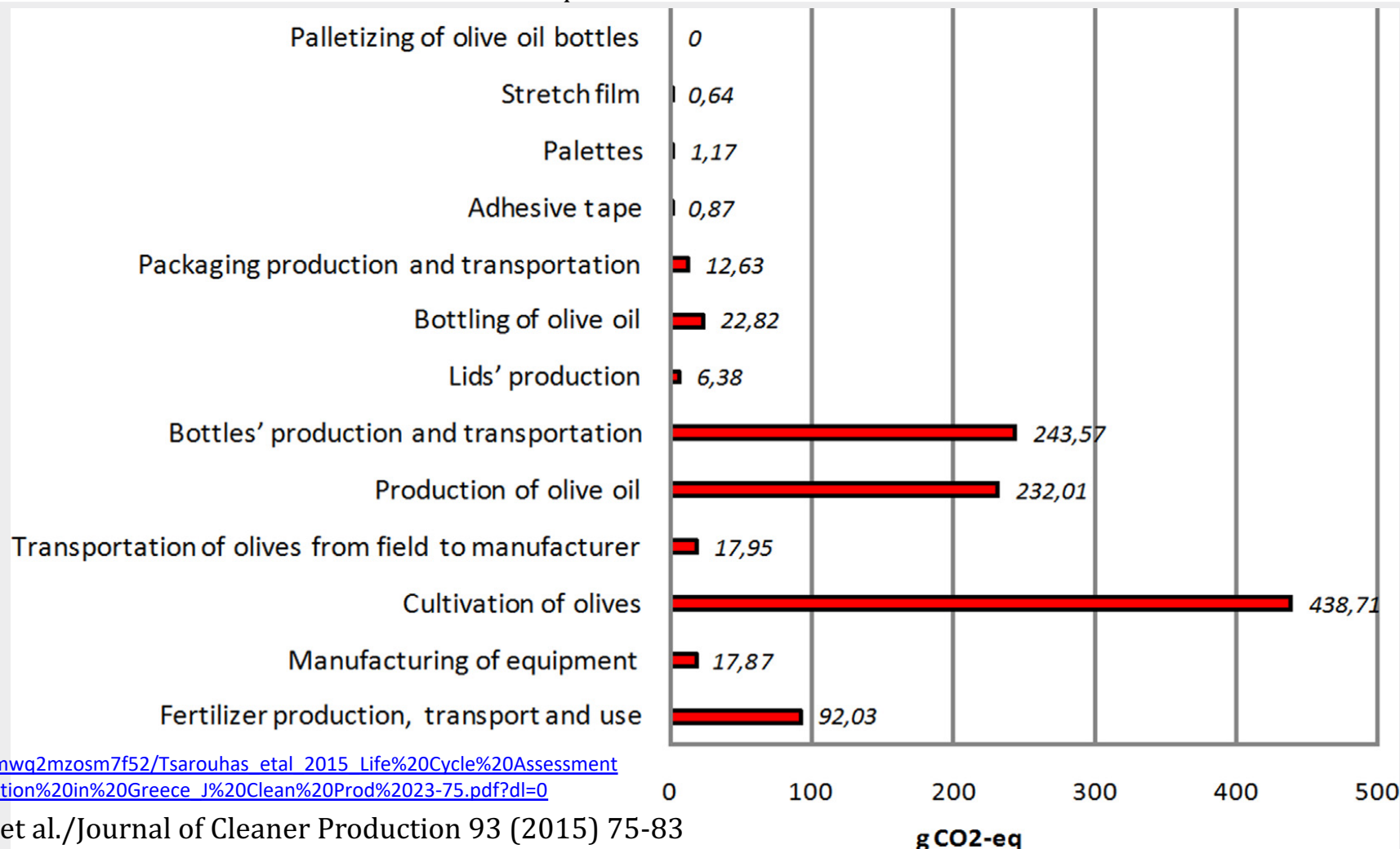


[https://www.dropbox.com/s/87mwq2mzsm7f52/Tsarouhas\\_et al\\_2015\\_Life%20Cycle%20Assessment%20of%20olive%20oil%20production%20in%20Greece\\_J%20Clean%20Prod%2023-75.pdf?dl=0](https://www.dropbox.com/s/87mwq2mzsm7f52/Tsarouhas_et al_2015_Life%20Cycle%20Assessment%20of%20olive%20oil%20production%20in%20Greece_J%20Clean%20Prod%2023-75.pdf?dl=0)



# A GLANCING EXAMPLE – GHG IMPACTS OF OLIVE OIL PRODUCTION IN GREECE

Fig 4. Carbon intensity expressed as g<sub>CO2-eq</sub> per subsystem.



[https://www.dropbox.com/s/87mwq2mz0sm7f52/Tsarouhas\\_et al\\_2015\\_Life%20Cycle%20Assessment%20of%20olive%20oil%20production%20in%20Greece\\_J%20Clean%20Prod%202023-75.pdf?dl=0](https://www.dropbox.com/s/87mwq2mz0sm7f52/Tsarouhas_et al_2015_Life%20Cycle%20Assessment%20of%20olive%20oil%20production%20in%20Greece_J%20Clean%20Prod%202023-75.pdf?dl=0)



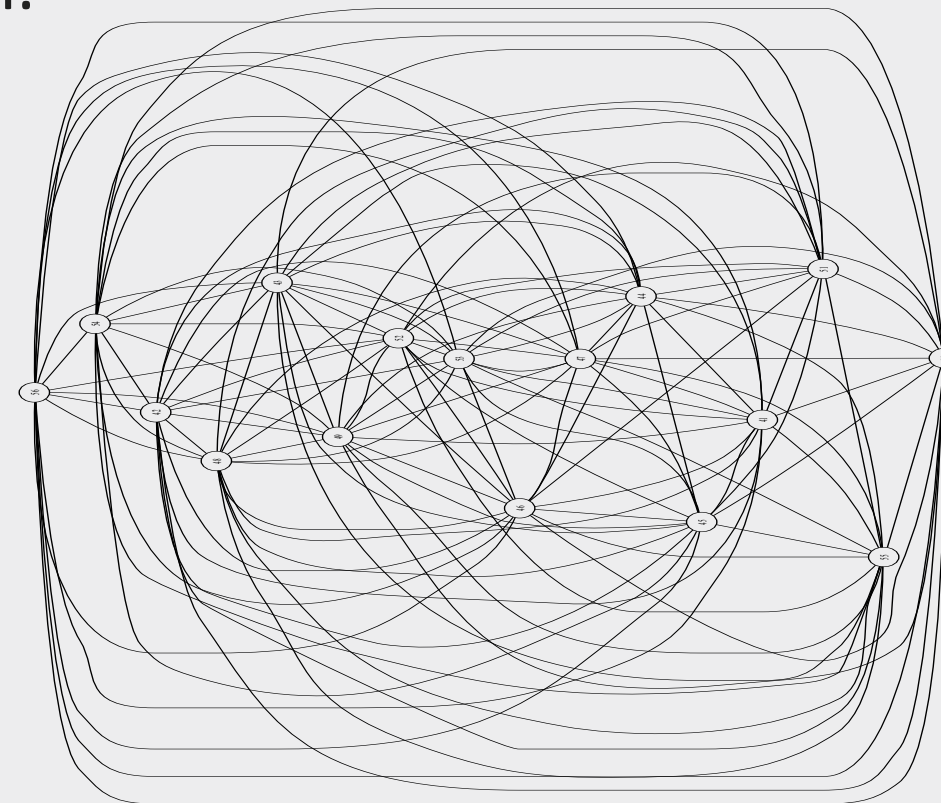
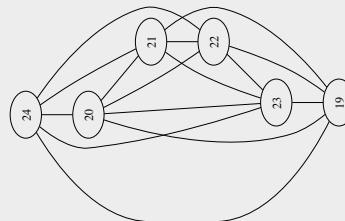


# WHAT ARE THE CHALLENGES THAT THIS BRINGS?

Data, compliance, reporting, verification...

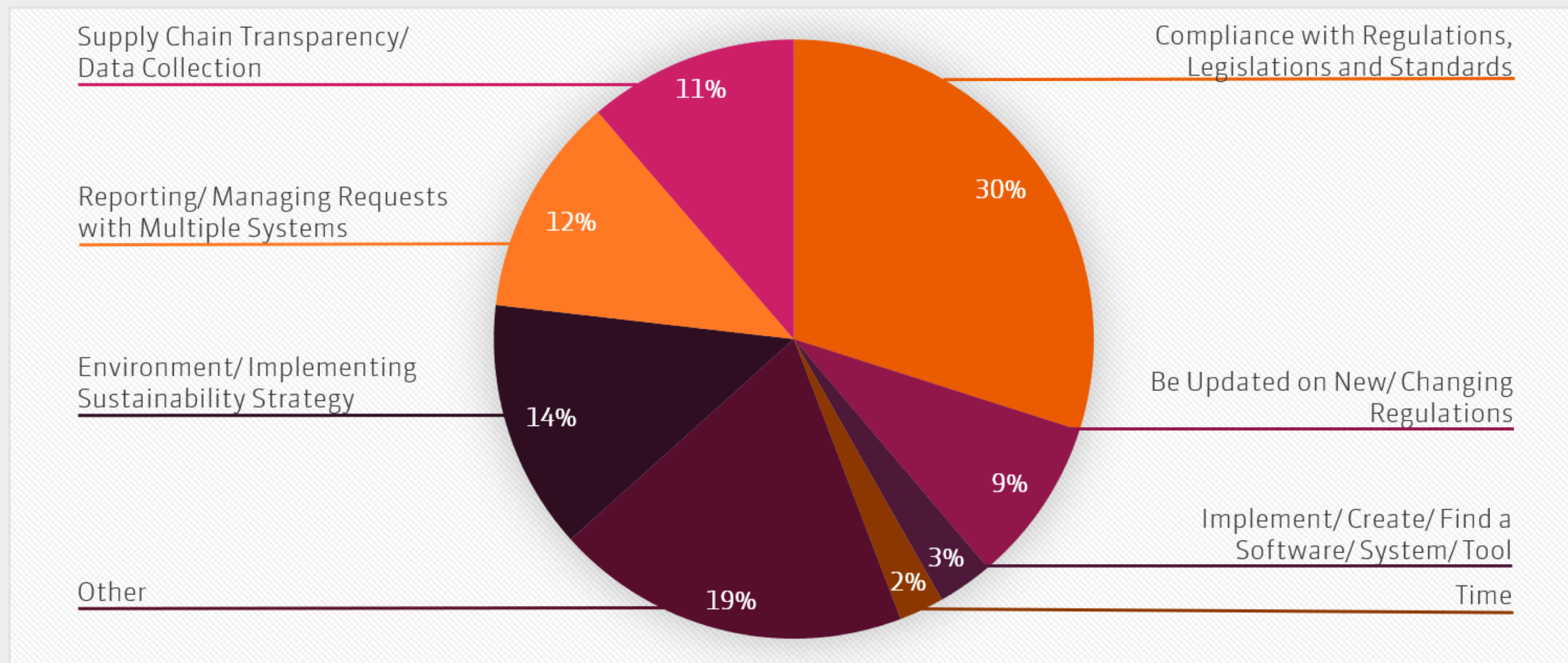
**Data** has to be aggregated along the supply chain.

- Who is going to do that? How?
  - Is every end-point going to ping their vendor(s) who will then ping theirs who will then ping theirs, who will...?
  - Who will verify?





# COMPANIES' MOST IMPORTANT SUSTAINABILITY AND COMPLIANCE CHALLENGES IN 2018







# WHAT DOES THIS MEAN FOR COMPLIANCE?

- Hard to say – it's early days still.
- Certainly, there will be an accounting for GHG emissions that must be filed.
- What will be included? How much of the value chain?
- How will it assessed?
- What other metrics are required, other mechanisms unclear?
- Who will be obligated, at what level?
- What about other externalities?
- What will the regulatory & compliance burden look like?





# PAUL POLMAN ON SUSTAINABILITY-DRIVEN INNOVATION

CEO of Unilever, past chair of the World Business Council on Sustainable Development and board member of the UN Global Contract and the Consumer Goods Forum

“Looking at the world through a sustainability lens not only helps us 'future proof' our supply chain, it also fuels innovation and drives brand growth.”





*Thank you for your time.*

Caroline Taylor, PhD

Director of R&D

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- CA SB-100: [https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill\\_id=201720180SB100](https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180SB100)
- CA B-55-18: <https://www.gov.ca.gov/wp-content/uploads/2018/09/9.10.18-Executive-Order.pdf>
- Top sustainability purchasing drivers, Nielsen report 2015 <https://www.nielsen.com/ma/en/insights/news/2015/green-generation-millennials-say-sustainability-is-a-shopping-priority.print.html>
- Corporate sustainability gains steam over last five years, Nielsen report 2018 <https://www.nielsen.com/us/en/insights/reports/2018/the-education-of-the-sustainable-mindset.html>
- Companies' most important sustainability and compliance challenges in 2018 <https://www.ipoint-systems.com/blog/sustainability-and-compliance-trends-2018/>