

# Trends in Global Supply Chain Management

August 7, 2018

## Webinar Agenda

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- 1. Introduction of today presenters & webinar logistics** – Dirk Dusharme, Editor in Chief, Quality Digest
- 2. Trends in Responsible Supply Chain Management** – Alexis H. Bateman, PhD, Director, MIT Sustainable Supply Chains, Research Scientist, MIT Center for Transportation and Logistics, MITx MicroMasters Course Lead
- 3. Value Chains Disrupted - Game-changing innovation driving hyper-transparency in the supply chain** – Tom Gosselin, Director of Supply Chain Services, DNV GL Business Assurance North America
- 4. Q&A**

# Introduction

- Who am I?



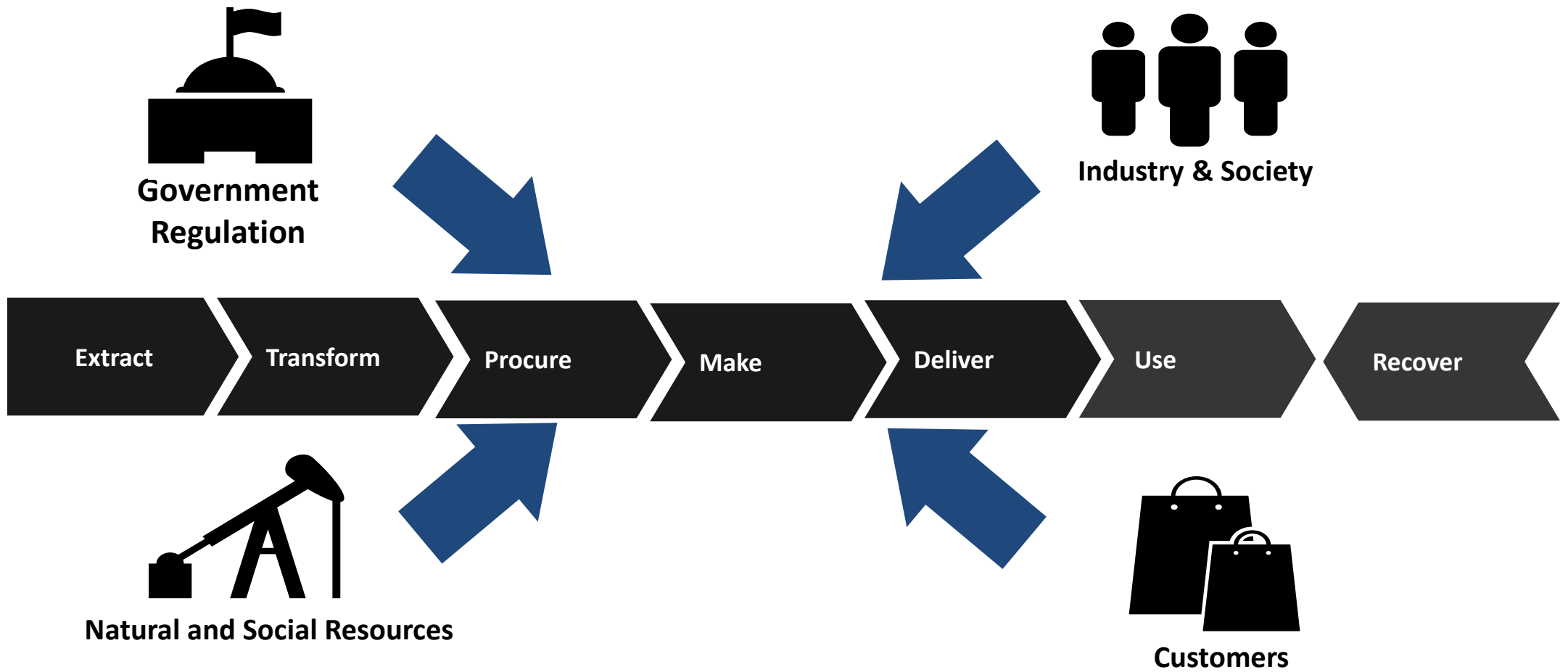
**MIT** Center for  
Transportation & Logistics



**Sustainable  
Supply Chains**



**MITx MicroMasters**



# Types of Regulations – by Mechanism

Type	Description	Examples
Absolute Mandates or Command & Control	Strict rules or “Bright Lines” about what is allowed, what is not and how to act.	Endangered Species Act, Electronic Logging Devices (ELD), Seatbelt Laws, Emission Standards, RoHS
Liability Regulations	Companies or other parties can be held responsible for actions locally or internationally, currently or in the past.	Foreign Direct Liability, CERCLA Act (Superfund), Product Liability Act
Performance Based or Incentive Regulations	Governments set a standard to achieve but firms have flexibility on how to achieve them	Clean Air and Clean Water Acts, Extended Producer Responsibility (EPR), Take-back Laws
Market Based Regulations	Regulations that encourage behavior through market signals (incentives and penalties) and allow for trading and credits	Greenhouse Gas Emissions, Ethanol, Cap & Trade
Disclosure & Transparency	Regulations that do not dictate behavior, but require specified disclosure about product content/performance and/or business processes/practices.	Modern Slavery Act, REACH, Conflict Minerals Act

# Industry & Society

- Media
- NGOs
- Think tanks, academic institutions
- Business partners & competitors
- Shareholders, analysts, capital markets, insurers, and banks



# Natural and Social Resources



- Natural Resources
  - Finite and Limited
  - Tragedy of the Commons
  - Water, energy, materials
- Social (Human) Resources
  - Working Hours & Conditions
  - Child Labor
  - Slave Labor & Human Trafficking

# HUFFPOST BUSINESS

## The Coffee Industry Is Worse Than Ever For The Environment

Posted: 04/29/2014 7:36 am EDT | Updated: 05/29/2014 12:59 pm EDT

theguardian

The Washington Post

Slavery and trafficking continue in Thai fishing industry, claim activists

Why your morning cup of coffee may not be as Earth-friendly as you think

FORTUNE

Inside Big Chocolate's Child Labor Problem

theguardian

Leading brands unsure if palm oil in products comes from rainforest land

TIME

The Surprising Link Between Trans Fat and Deforestation

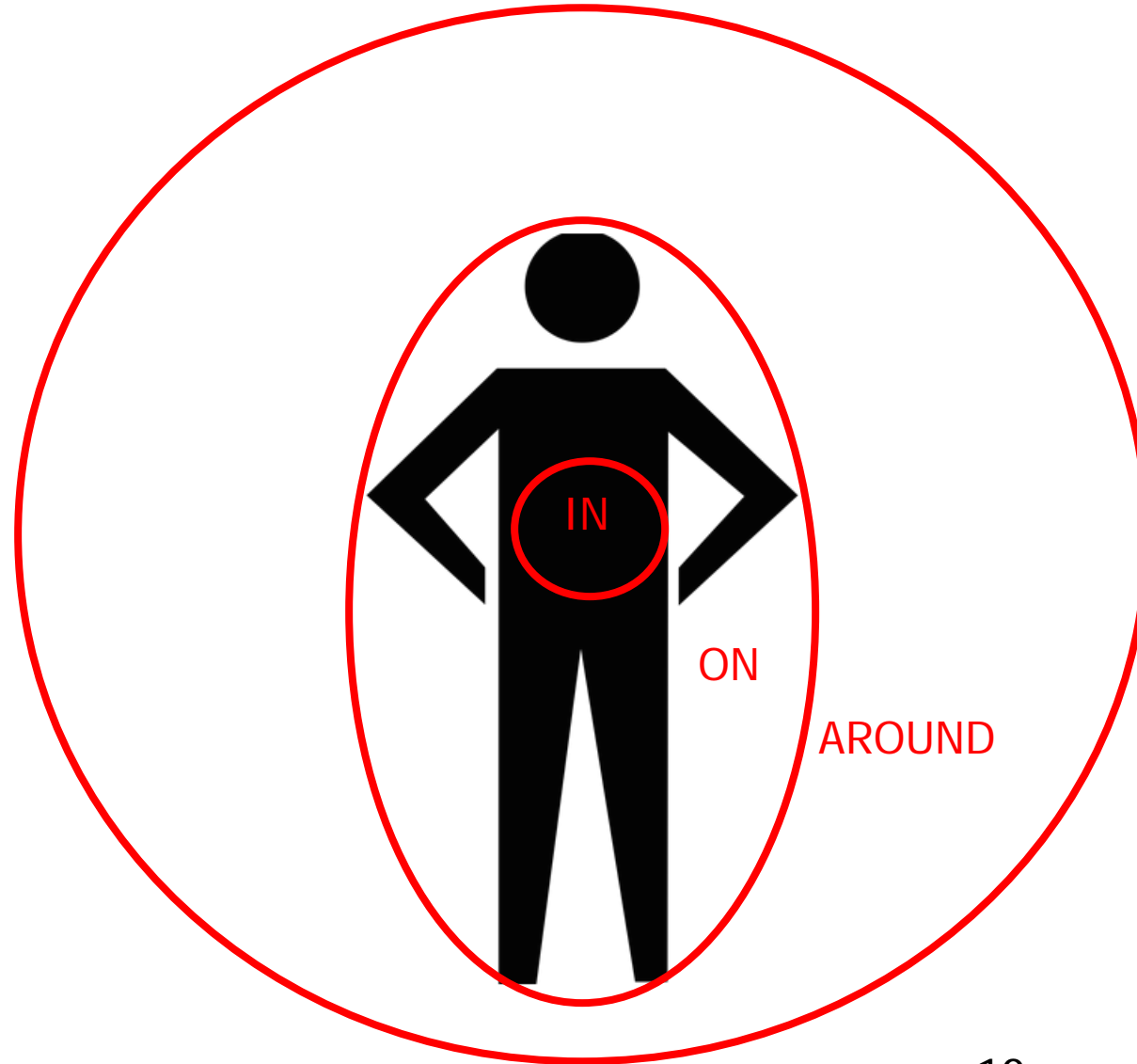


# Customers

- Business to Business
- Consumers & community
- Changing values
  - Higher Awareness
  - Cost Conscious
  - Transparency
  - Trust



# Customer Priorities



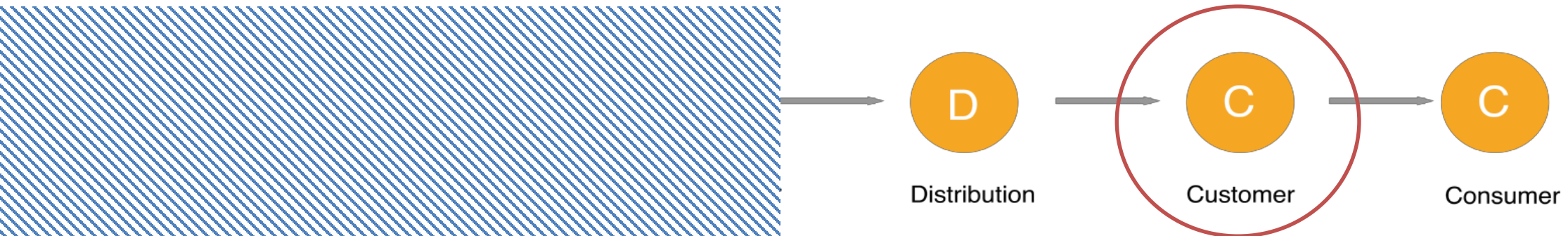
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# Responsible Supply Chain Strategies

- **Efficiency focused:** strategies are those that contribute both to sustainability and, at the same time, to profits -- typically, through cost reductions
- **Insurance focused:** strategies that seek to prevent social and environmental related disruptions; this includes supply risks in the form of license to operate/local regulation, demand risks of stakeholders, enabling end to end supply chains
- **Growth focused:** Based on end to end view of their practices and processes, leading companies are committed to reduce relative social and environmental footprint; also aim to achieve absolute reductions in their footprint while achieving aggressive growth targets

# Visibility

- Half of global manufacturers don't have visibility beyond direct suppliers
  - Audit first tier suppliers but cannot see beyond them to suppliers' supplier

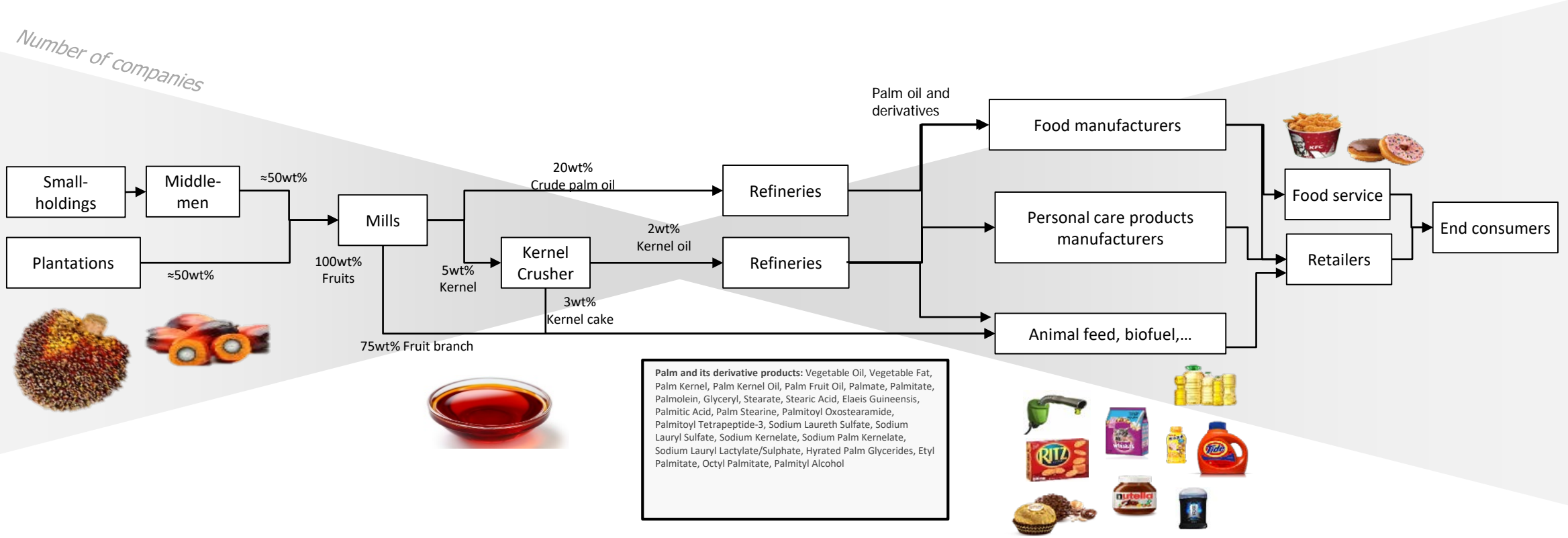


[https://commons.wikimedia.org/wiki/File:Supply\\_chain\\_network.png](https://commons.wikimedia.org/wiki/File:Supply_chain_network.png)

# Transparency

- **Myriad of terms** and language in this space – moving towards a common understanding:
    - Transparency    Traceability    Visibility
  - “Transparency includes not only **reporting to stakeholders**, but **actively engaging stakeholders** and using their feedback and input to both secure buy-in and improve supply chain processes. (...) Transparency can be improved through vertical coordination across a supply chain as well as horizontal coordination across networks.”
- (Carter and Rogers, 2008)
- Transparency captures the extent to which **information** about the companies, suppliers and sourcing locations is readily **available to end-users and other companies in the supply chain.**

# Palm Oil Supply Network



# Information Gaps and Data Handling

- Major information gaps
  - Boundary movement
  - Multiple tiers, third parties
- Lack of standardized systems to collect, validate, and distribute data
  - Different SC systems
  - Poor transfer of data – highly manual
- Legacy systems poorly handle growth of data and formats
- Low absorptive capacity for new info

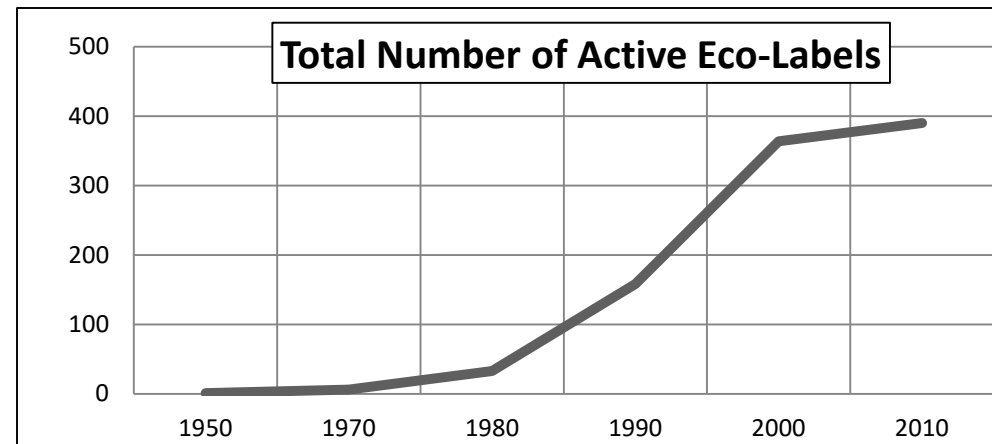
# Supply Chain Visibility – Different Technologies

- Capture & Translation
  - Transforming the physical data (location, time, temperature, status, etc.) into digital data
  - Examples: Barcodes, Scanners, RFID, Smartphone, Internet of Things
- Transmission & Upload
  - Moving the digital data from a local source to global or cloud system and/or database
  - Milestone versus Real Time systems
  - Examples: Electronic Data Interchange, Application Programming Interface, Global Positioning Systems
- Access & Actionability
  - Providing access to and ability to conduct other actions using the data
  - Examples: Supply Chain Execution Systems, Transportation Management Systems, Control Towers, Platforms, Blockchain




- Requires mapping of supply chains (how far down? Tier 1, 2, n?)
- Efforts for increased visibility
- Added vendor/supplier compliance vetting – inclusion of a “Supplier Code of Conduct”
- Risk assessment
- Contracting and use of 3<sup>rd</sup> party auditing firms/organizations
- Supplier training and collaboration

SAMPLE POLICY AREAS THAT ALIGN WITH THE UN GLOBAL COMPACT TEN PRINCIPLES	
<p><b>Human Rights and Labour</b></p> <ol style="list-style-type: none"> <li>1. Forced labour</li> <li>2. Child labour</li> <li>3. Working hours</li> <li>4. Wages and benefits</li> <li>5. Humane treatment</li> <li>6. Nondiscrimination and equality</li> <li>7. Freedom of association and collective bargaining</li> <li>8. Occupational health and safety</li> <li>9. Emergency preparedness</li> <li>10. Occupational injury and illness</li> <li>11. Fire safety</li> <li>12. Building structure and integrity</li> <li>13. Industrial hygiene</li> <li>14. Leave entitlements</li> <li>15. Freedom of speech</li> <li>16. Human trafficking</li> <li>17. Privacy</li> <li>18. Minority rights</li> <li>19. Rights of specific stakeholder groups: indigenous people, women, children, older workers, workers with disabilities, migrant workers</li> </ol>	<p><b>Environment</b></p> <ol style="list-style-type: none"> <li>20. Material toxicity and chemicals</li> <li>21. Raw material use</li> <li>22. Recyclability and end of life of products</li> <li>23. Greenhouse gas emissions</li> <li>24. Energy use</li> <li>25. Water use and waste water treatment</li> <li>26. Air pollution</li> <li>27. Biodiversity</li> <li>28. Deforestation</li> </ol> <p><b>Anti-Corruption</b></p> <ol style="list-style-type: none"> <li>29. Conflict of interest</li> <li>30. Gifts, meals and entertainment</li> <li>31. Bribery and kickbacks</li> <li>32. Accounting and business records</li> <li>33. Protecting information</li> <li>34. Fair competition</li> <li>35. Reporting misconduct</li> </ol>

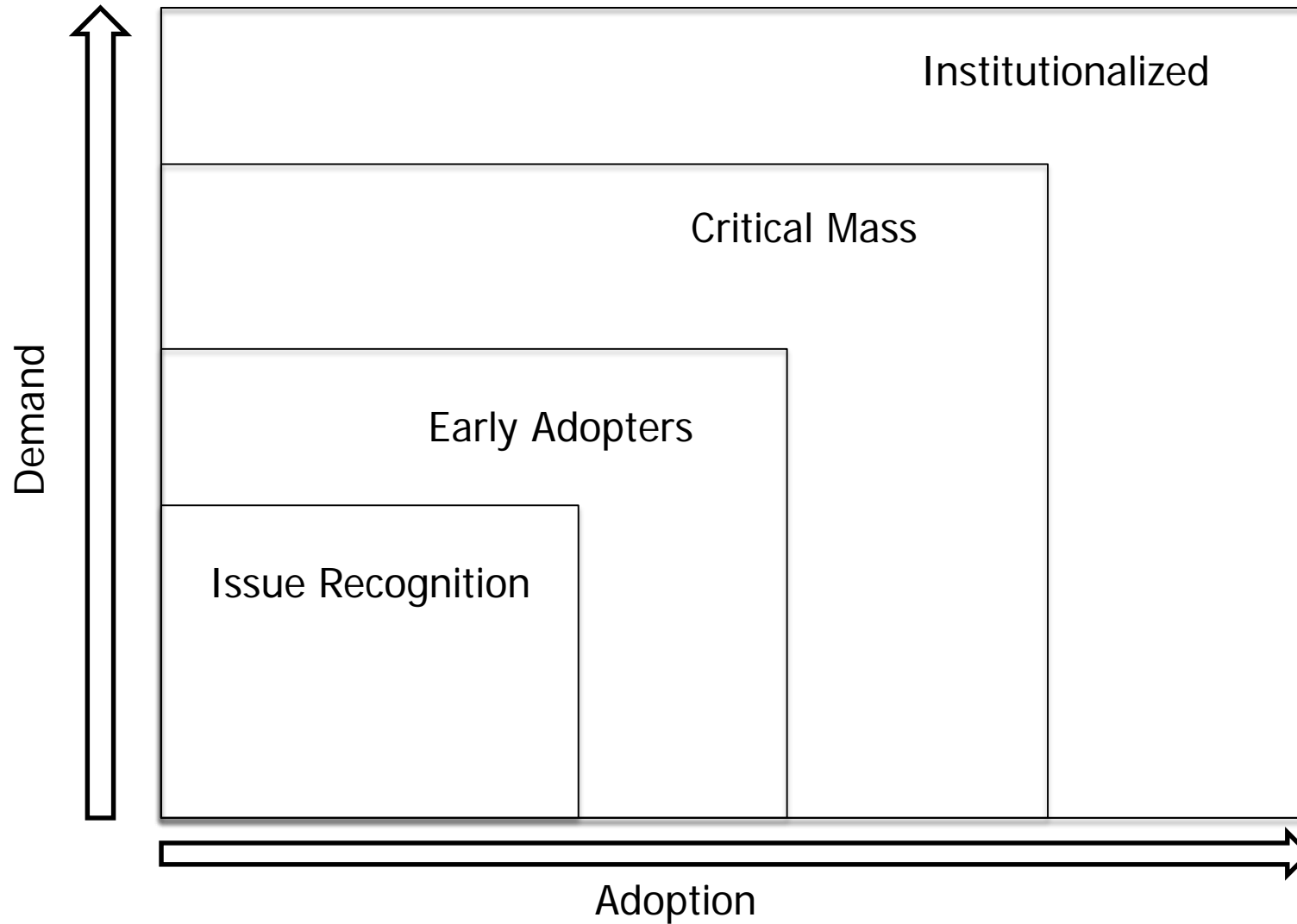




# Brand Examples

	Nationality	Size	Orientation	Suppliers published?	CoC published?	Audits published?	Full-cost Published?	Purchasing Practices Published?
	Sweden	100k	Trend	✓	✓	✗	✗	✓
 BURBERRY	UK	10k	Neutral	✗	✓	✗	✗	✓
	USA	100	Sustainability	✓	✗	✗	✓	✗

# Demand and Adoption



# VALUE CHAINS DISRUPTED

Game-changing innovation driving hyper-transparency in the supply chain

August, 2018

## DNV GL - Global reach – local competence



**150+**  
years

**100+**  
countries

**100,000+**  
customers

**12,500**  
employees

# Enabling sustainable business performance

## Creating value

While meeting the world's economic, social and environmental needs.

## Bridging today and tomorrow

Manage operational challenges today – building sustainable value over time.

## Assuring performance

Along entire supply chains to build sustainable performance and stakeholder trust.



# The Evolution of Supply Chain Management

- Old Model:
  - Cost as primary risk
  - Availability considered on a short-term basis
  - Redundancy and waste as internalized costs (to buyer)
- Emergence of Supply Chain Management
  - Just-in-time logistics
  - Outsourcing of operational and core process functions
  - Globalization and the new risk paradigm
- From Risk Management to Value Added
  - Outsourcing of functions, not responsibilities
  - New boundaries of responsibility
  - New decision-making tools (e.g. LCA, footprinting, SROI)

## TECHNOLOGY OUTLOOK 2025

### TRENDS

- » Society
- » Economy
- » Geopolitics
- » Environment



### DRIVERS

- » Policy & Regulation
- » Sustainable use of resources
- » Climate change
- » Digitalization



Global population will add 80 million a year between now and 2025

Asia's share of global exports will double to 39% by 2030

Almost 2 in 3 people could face water stress conditions by 2025

Internet of Things will encompass up to 1 trillion devices

Economic impact: 2.7 to 6.2 trillion USD

Welcome to the sharing economy and the circular economy



### TECHNOLOGIES BY 2025



HEALTHCARE



3 billion wearable health sensors



3D bio-printing of organs on demand



FOOD SUPPLY



Agbots: Dozens or hundreds of agricultural robots on farms



DNA tracking and organic sensors monitoring food quality and composition



SHIPPING



Digital twins of vessels as a virtual test bench for design and operations enhancement



A large share of new commercial ships deploying hybrid power generation systems



POWER



Onshore wind and solar PV cheapest source of electricity in many countries



Omnipresent sensors in power grids for control of variable renewable energy sources



OIL & GAS



Automated drilling reducing drilling time and cost by 30-50%



Operational analytics for smarter subsea tie-ins and simpler, smarter completions

## From Visibility to Transparency in the Supply Chain

- New Boundaries of Responsibility:
  - The emergence of commodity product Chain of Custody standards (RSPO, FSC, ASI, etc.)
  - Need for traceability and visibility among sometimes porous chains
  - The new verticality, creating upstream value
  - Shared responsibility, working collaboratively with competitors
- The era of Hyper-transparency:
  - Marfrig & Greenpeace Reports
  - My Story – A Digital Assurance Solution
  - The Ocean Cleanup





## Challenges in Assuring Supply Chains

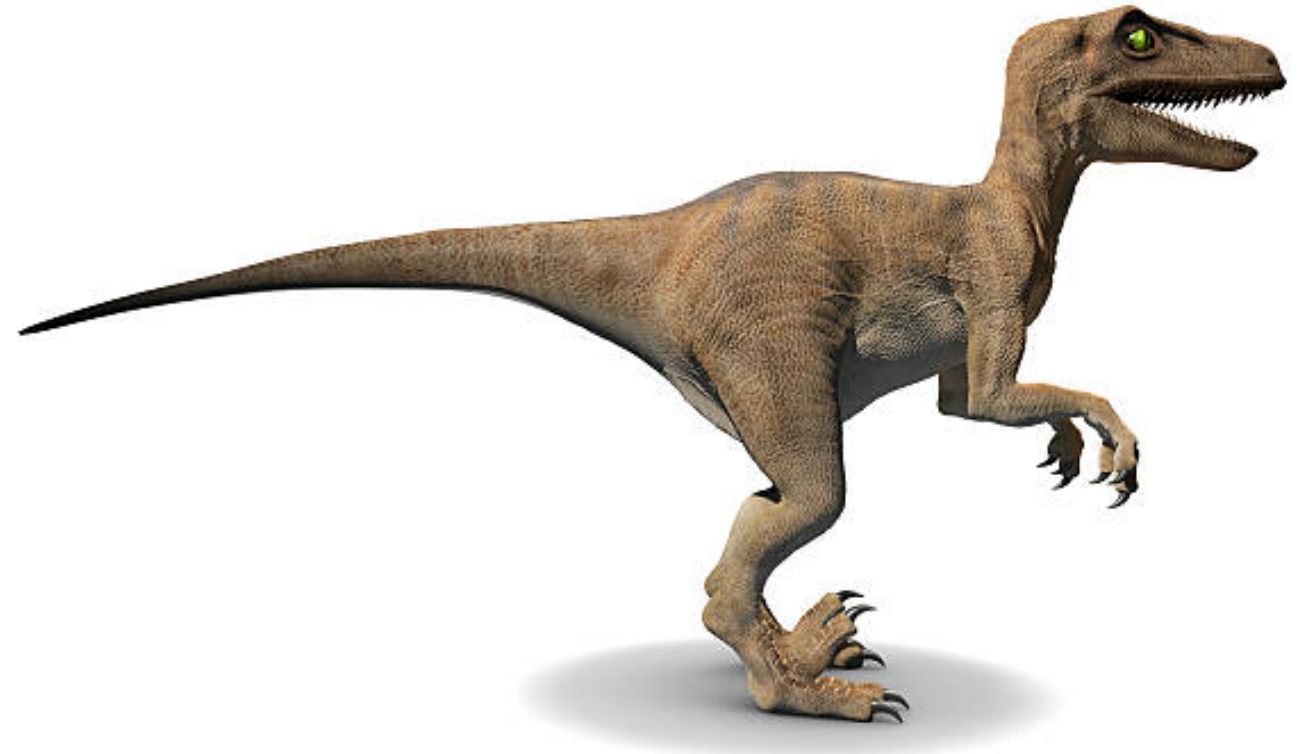
- Accuracy & Traceability
- Complexity and speed (e.g. electronics)
- Remote locations (e.g. agriculture, mining)
- Trading models (e.g. growers, co-operatives, brokers, commodity exchanges, blenders, etc)
- Timing (peak seasons, perishability)
- Availability



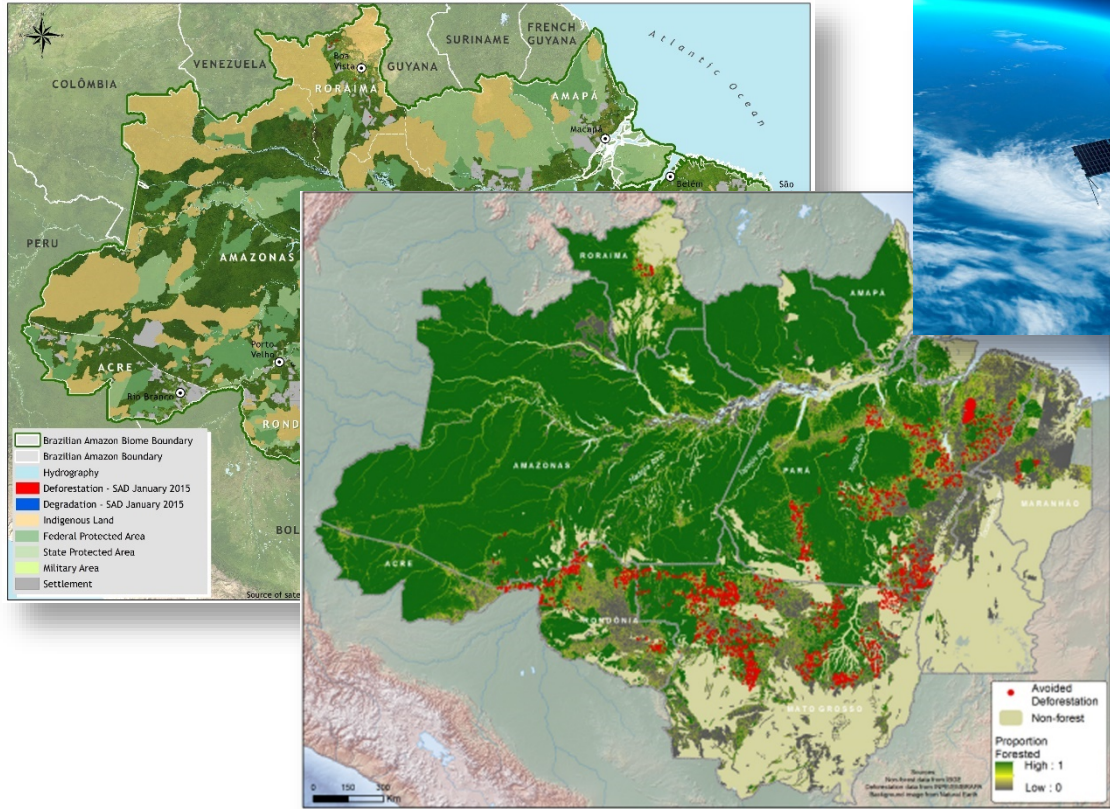
## Disruptors & Enablers of Digital Assurance

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- Blockchain
- Augmented Reality (AR)
- Virtual Reality (VR)
- Artificial Intelligence (AI)
- Internet of Things (IoT) –
  - Satellite Imagery & cameras,
  - GPS,
  - Sensors



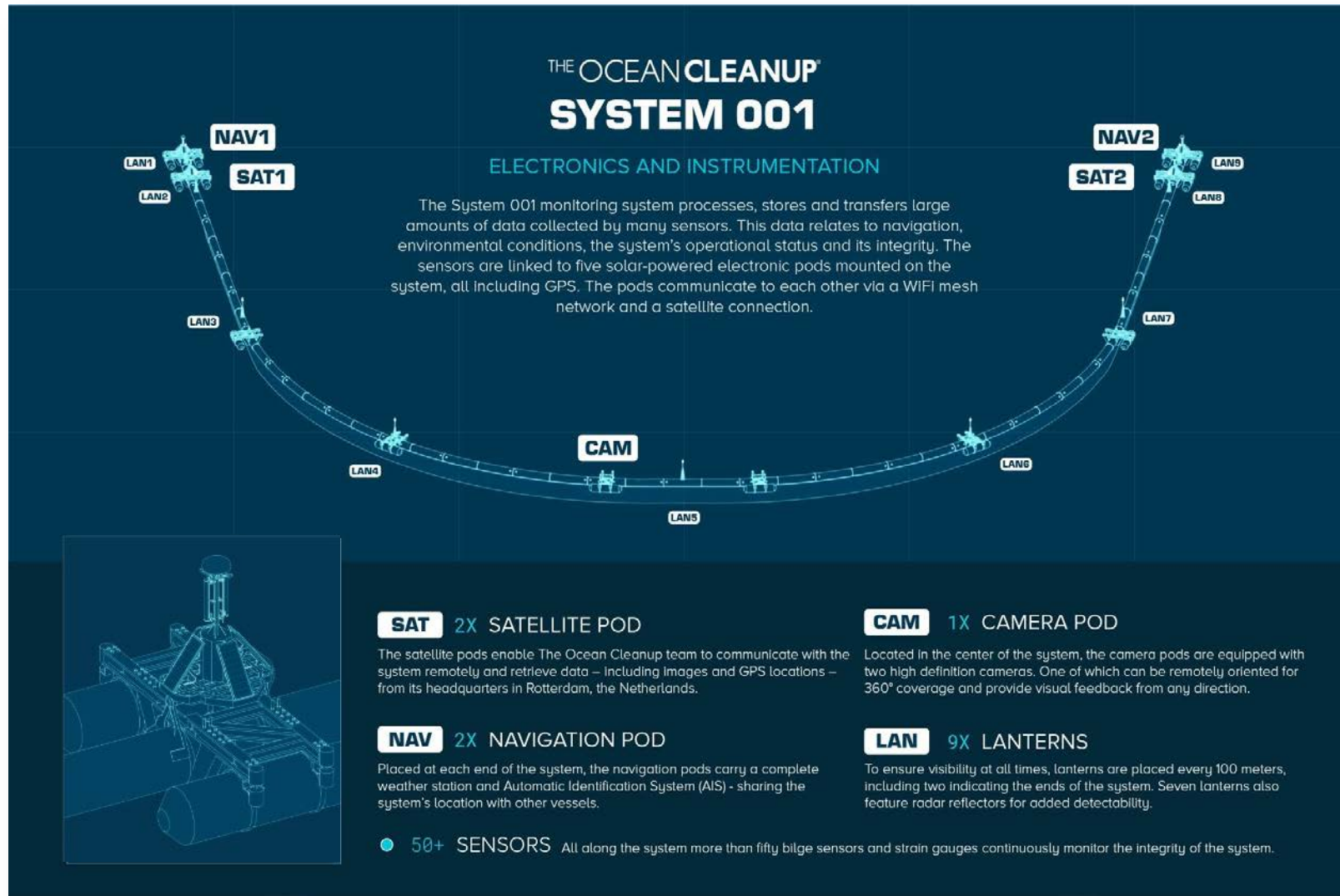
# Tracking Beef and Deforestation



*"My Story illuminates products and their supply chain for the benefit of consumers, who will have instant and in-depth access to key products characteristics such as quality, authenticity, origin, ingredients, water and energy consumption and more, all verified by DNV GL along the entire transformation process."*



# The Ocean Cleanup – Digital Assurance of High Seas Plastic Waste



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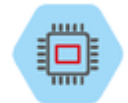
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### **What is your influence on supply chain management?**

- 1) I write and enforce requirements to my suppliers.
- 2) I handle requests for audits from my clients.
- 3) I conduct audits of our suppliers.
- 4) None

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Thanks! Questions?

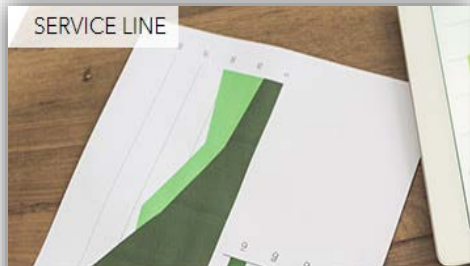


# Contact Us

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SERVICE LINE



**Report assurance**  
Good communication helps you to manage the expectations of a wide range of stakeholders

SERVICE LINE



**Sustainable sourcing**  
Demonstrate to your customers that your products are sustainably and responsibly sourced

SERVICE LINE



**Sustainability strategy**  
Sustainability leaders put sustainable practices at the heart of their business model



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