



Waste Diversion and Reduction 101

Virtual In-Plant Training

Session 1

Tuesday – April 25, 2023

10:00 am – 12:30 pm EDT

Welcome

Welcome to the virtual INPLT waste training sessions!

- These sessions will consist of eight, two-and-a-half-hour webinars, focused on waste diversion and minimization
- The webinars will provide insights and best practices for managing waste, identifying opportunities for minimizing waste generation, creating strategies for waste diversion, developing methods to measure and quantify waste impacts, and more!
- A reminder that these trainings will be interactive! Each session will have polls and questions throughout, along with a summary quiz at the end and homework to complete prior to the next session



Thank you for your interest!

ORNL Slide

ORNL Slide

DOE's Waste Reduction Network:

- Open to all existing Better Plants partners
- Goals are flexible
- Six goal options based on partner feedback
- Quarterly webinars
- Bi-monthly newsletter
- Access to new waste-related tools, trainings and programmatic elements

Waste Goal Options



Waste Virtual INPLT Agenda

- **Week 1 (April 25th) – Introduction: Waste Diversion and Reduction 101**
- **Week 2 (May 2nd) – How to Effectively Track and Measure Your Waste**
- **Week 3 (May 9th) – Source Reduction and Waste Minimization Techniques**
- **Week 4 (May 16th) – Finding Outlets for Hard to Manage Waste Streams**
- **Week 5 (May 23rd) – Construction Waste Management and Green Building Certifications**
- **Week 6 (May 30th) – Scope 3 Emission Considerations**
- **Week 7 (June 6th) – Implementation of a Waste Diversion Program – Developing a Roadmap to Zero Waste**
- **Week 8 (June 13th) – Conclusions, Summaries, and Wrap up Presentations**

Plan of Action



Today, we will:

- Present an overview of Sustainable Solutions Corporation
- Lecture on today's topic, "Waste Diversion and Reduction 101"
- Conduct a Q&A session
- Test your knowledge with a Kahoot! quiz

Takeaways

Today, you will learn:

- Common terms and acronyms related to sustainability and waste management
- Overview of waste hierarchy
- Common waste streams generated by industry
- Legislation related to waste mitigation and diversion



Background on Sustainable Solutions Corporation



Sustainable**Solutions**
CORPORATION

Presenters from Sustainable Solutions Corporation



**Tad Radzinski, PE, SEP,
LEED AP, SFP**

- Co-founder and President of Sustainable Solutions Corporation
- Formerly the EPA's Waste Minimization National Expert
- Over 35 years of experience in sustainability
- Adjunct professor at Villanova University



**Nick Mummau, LEED Green
Associate**

- Project Manager at Sustainable Solutions Corporation
- Leader of waste diversion and minimization projects for clients in industries such as steel manufacturing, food manufacturing, textiles, and more

About Sustainable Solutions Corporation, Established in 2001



SUSTAINABLE BUILDINGS AND OPERATIONS

Providing tools to building owners and property managers to increase building efficiency and generate value.



CORPORATE SUSTAINABILITY

Empowering businesses to assess, optimize, and capitalize on their processes and products.



TRAINING AND EDUCATION

Setting the foundation for long-term success with training courses tailored to your specific sustainability goals.

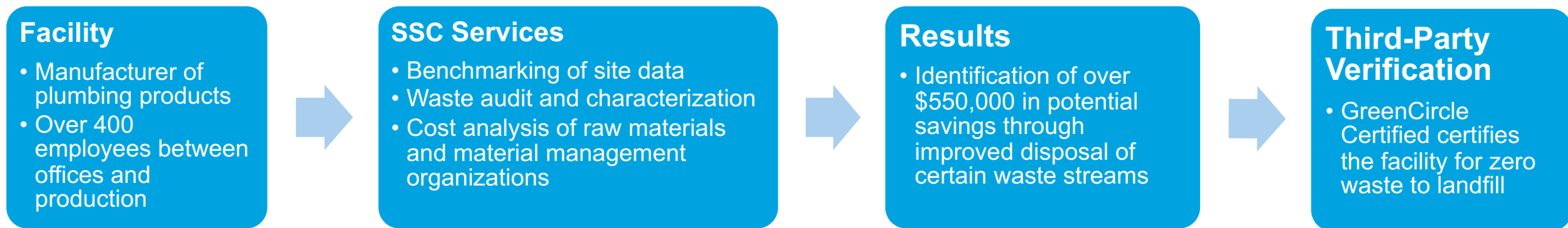
“SUSTAINABILITY DRIVES PROFITABILITY”

SSC Experience in the Manufacturing Sector

- SSC was founded 22 years ago on the belief that organizations can run their business better for the planet, for their bottom line, and for the communities they serve
 - SSC has helped hundreds of clients improve their bottom line and reduce environmental impact
- SSC clients span a variety of industries and operating sizes – regional, national, and global
- Our goal is to provide each client the advantage they need to grow their business in today's evolving marketplace

SSC Experience in the Manufacturing Sector

Case Study: Plumbing Manufacturing Facility Waste Diversion



Poll: What value are you hoping to gain most from these trainings?

Please respond to the Zoom poll

Question: What are some hurdles or setbacks to current waste minimization or diversion efforts at your company?

Please type your answers in the chat

Today's Topic:
Waste Diversion and Reduction 101

Common Sustainability Terms

- ***Sustainability***: meeting the requirements of the present without compromising the needs of the future
- ***Carbon Emissions***: a term which is commonly used in place of greenhouse gas (GHG) emissions
 - Note this is typically measured in CO₂eq – representing all GHG emissions in one equivalency value
- ***Greenhouse Gases***: gases which trap heat in the atmosphere including carbon dioxide, methane, and more
- ***Triple Bottom Line***: a framework of sustainable development including considerations for people; planet; and profit which helps increase economic efficiency while valuing environmental stewardship and social equity

Key Waste Terms

- ***Contamination:*** When multiple waste streams are comingled inappropriately
- ***Material Management Organization (MMO):*** Any organization that hauls, processes, treats, or otherwise manages outgoing material (other than finished product) from the facility
- ***Material Recovery Facility (MRF):*** Facility which sorts and prepares single stream recycling to sell to buyers
- ***Waste Diversion:*** preventing waste from being sent to landfill through various methods
- ***Waste Minimization:*** process of reducing the amount of waste generated

Other Waste Terms

- **Anaerobic Digestion with Energy Recovery:** The process of using microorganisms to break down organic material in the absence of oxygen. The anaerobic digestion process produces a biogas and is considered an acceptable means of waste diversion when the gas is captured and reused as an energy source
- **Alternative Daily Cover:** Material other than earthen material placed on the surface of the active face of a municipal solid waste landfill at the end of each operating day to control vectors, fires, odors, blowing litter, and scavenging
- **Beneficial Reuse:** Reusing a waste material that would otherwise be discarded in a manner that makes it a valuable commodity
- **Commercial and Industrial Waste:** Waste generated in either a commercial or industrial setting
- **Composting:** Process of decaying organic material to be used as plant fertilizer
- **Construction and Demolition Waste (C&D):** Waste generated during construction and demolition
- **Energy Recovery (Waste-to-Energy (WtE)):** Process of generating energy in the form of electricity or heat from the primary treatment of waste
- **Hazardous Waste:** Waste which has substantial or potential threats to public or environmental health
- **Incineration:** The destruction of material through burning
- **Municipal Solid Waste (MSW):** Waste consisting of everyday items
- **Non-Recoverable Materials:** *Materials that cannot be recovered, especially from waste materials*
- **Pyrolysis:** The heating of an organic material in the absence of oxygen
- **Residual Waste:** Non-hazardous industrial waste
- **Universal Waste:** Can include lamps, pesticides, batteries, mercury containing equipment, ballasts, etc.

[EPA Glossary of Sustainable Manufacturing Terms](#)

Poll: Of the types of waste infrastructure listed, which has the most locations in the U.S.?

Please respond to the Zoom poll

Answer: Curbside Recycling

U.S. Solid Waste Infrastructure

U.S. Solid Waste Infrastructure

Infrastructure	Number
Curbside Recycling Programs	9,000+
Material Recovery Facilities (MRF)	586
Transfer Stations	3,350
Compost Sites	2,300
Mixed Waste Processing Facilities & Hybrid MRFs	70*
Anaerobic Digestion (Stand-alone)	25
Waste-to-Energy	76
Landfills	1,908

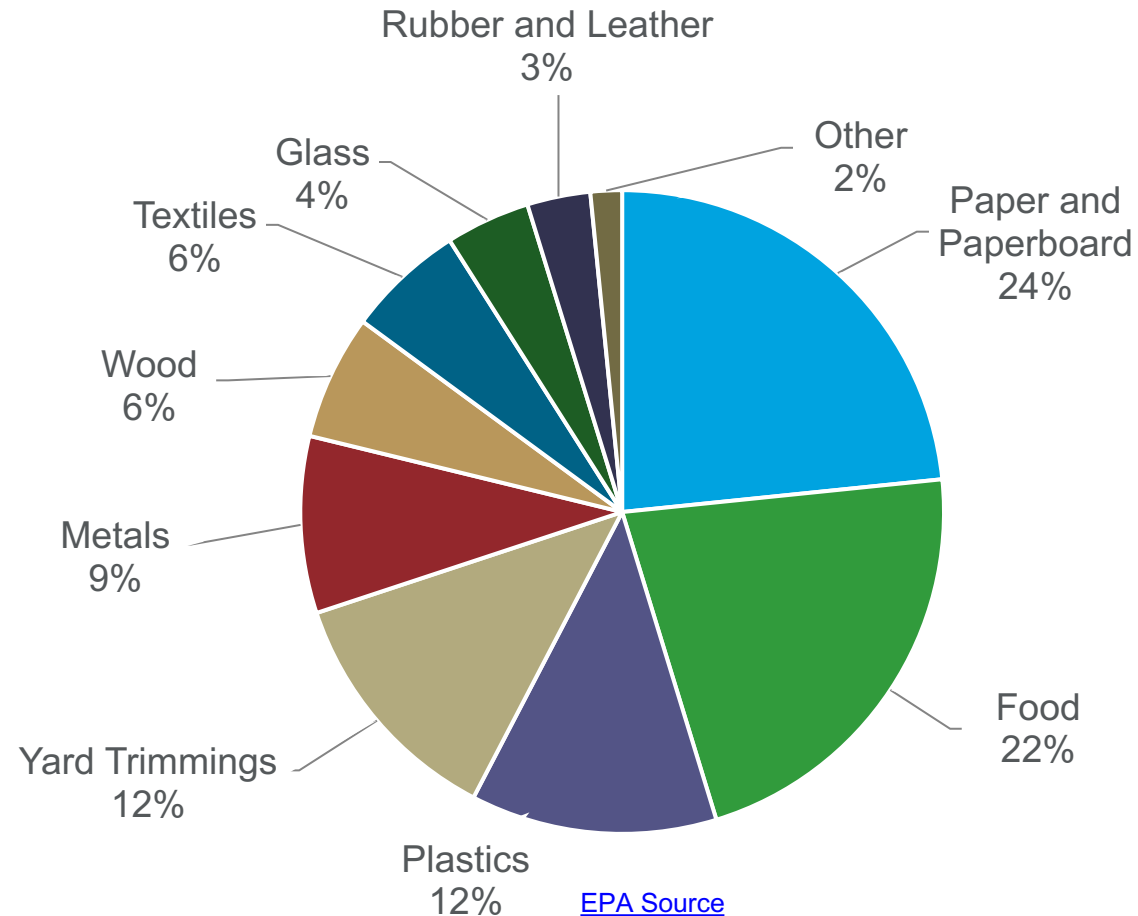
*Excludes facilities that solely produce refuse-derived fuel
Source: GBB, 2017 from various.

Solid Waste Management Options

- Solid waste collection
- Recycling
- Organics
- Waste conversion
- Landfilling

US Waste Overview per EPA

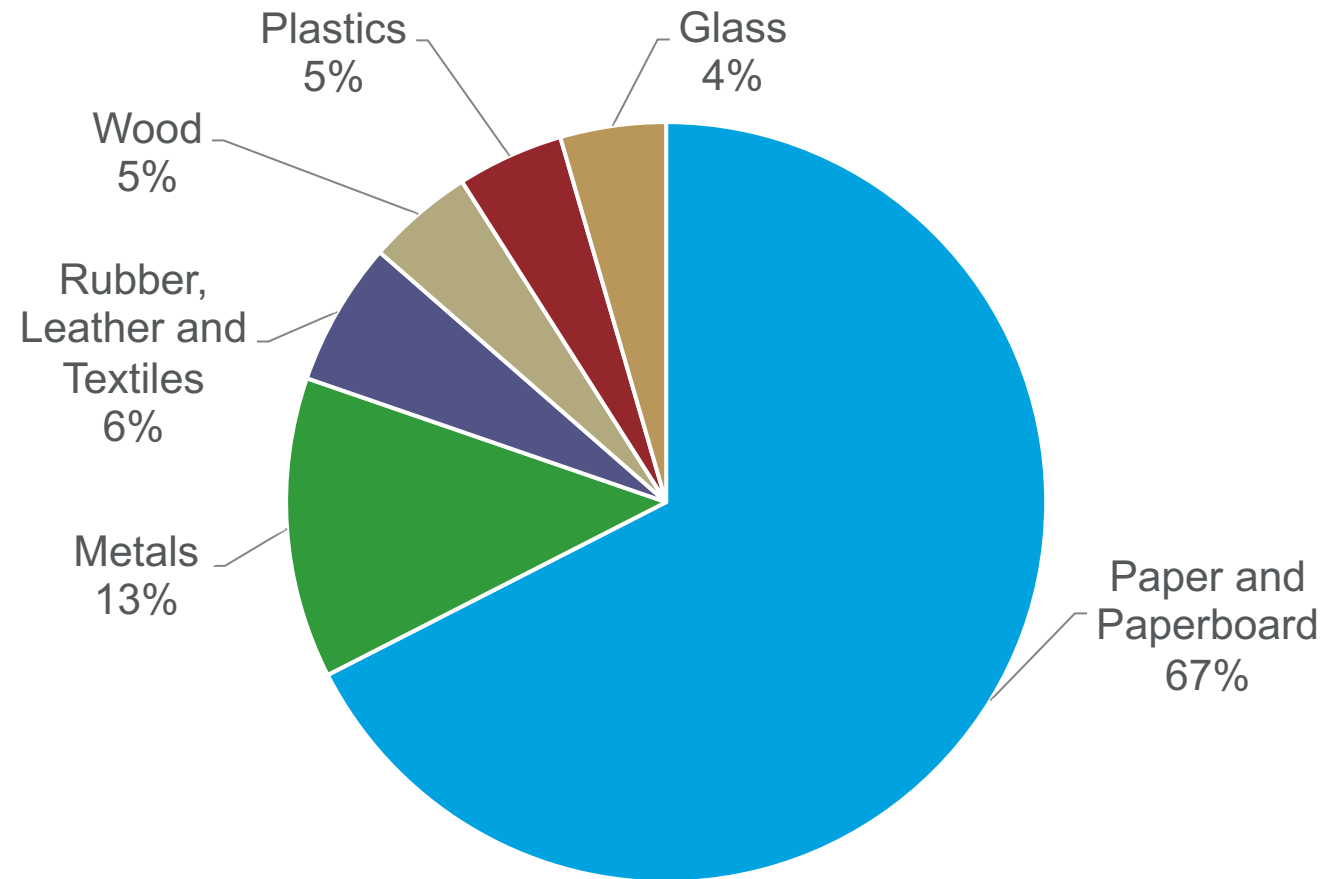
Total MSW Generated by Material, 2018
292.4 million tons



[EPA Source](#)

US Waste Overview per EPA

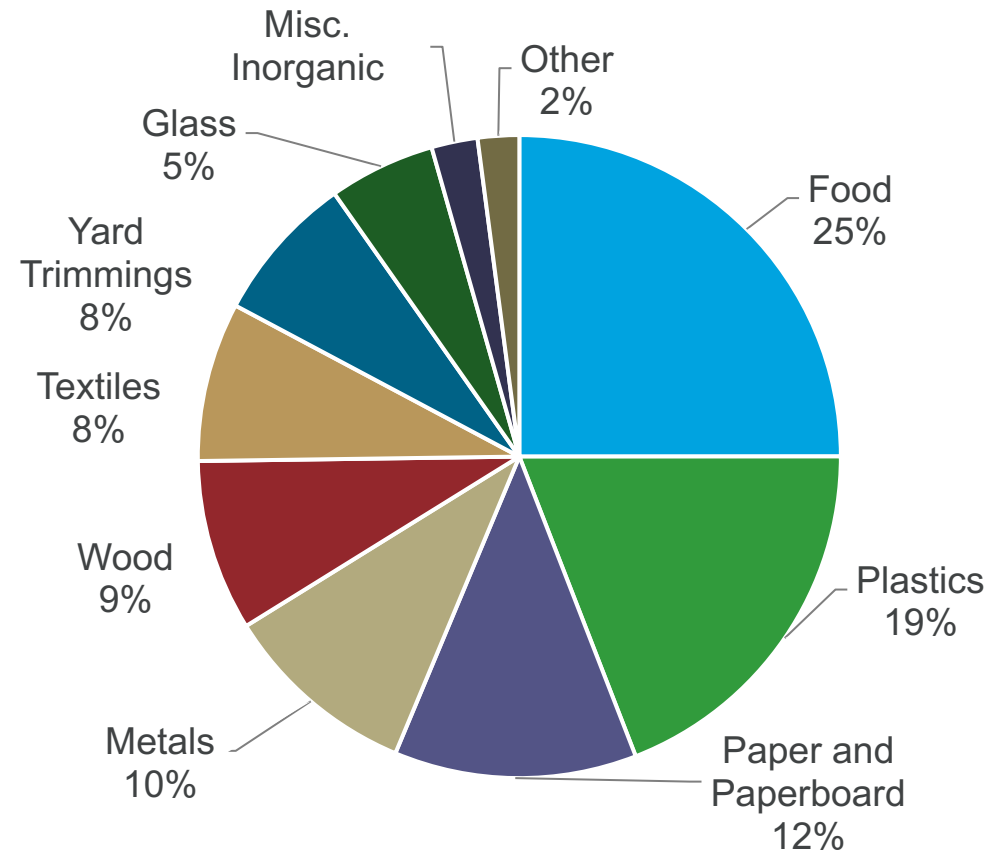
Total MSW Recycling by Material, 2018
69.1 million tons



[EPA Source](#)

US Waste Overview per EPA

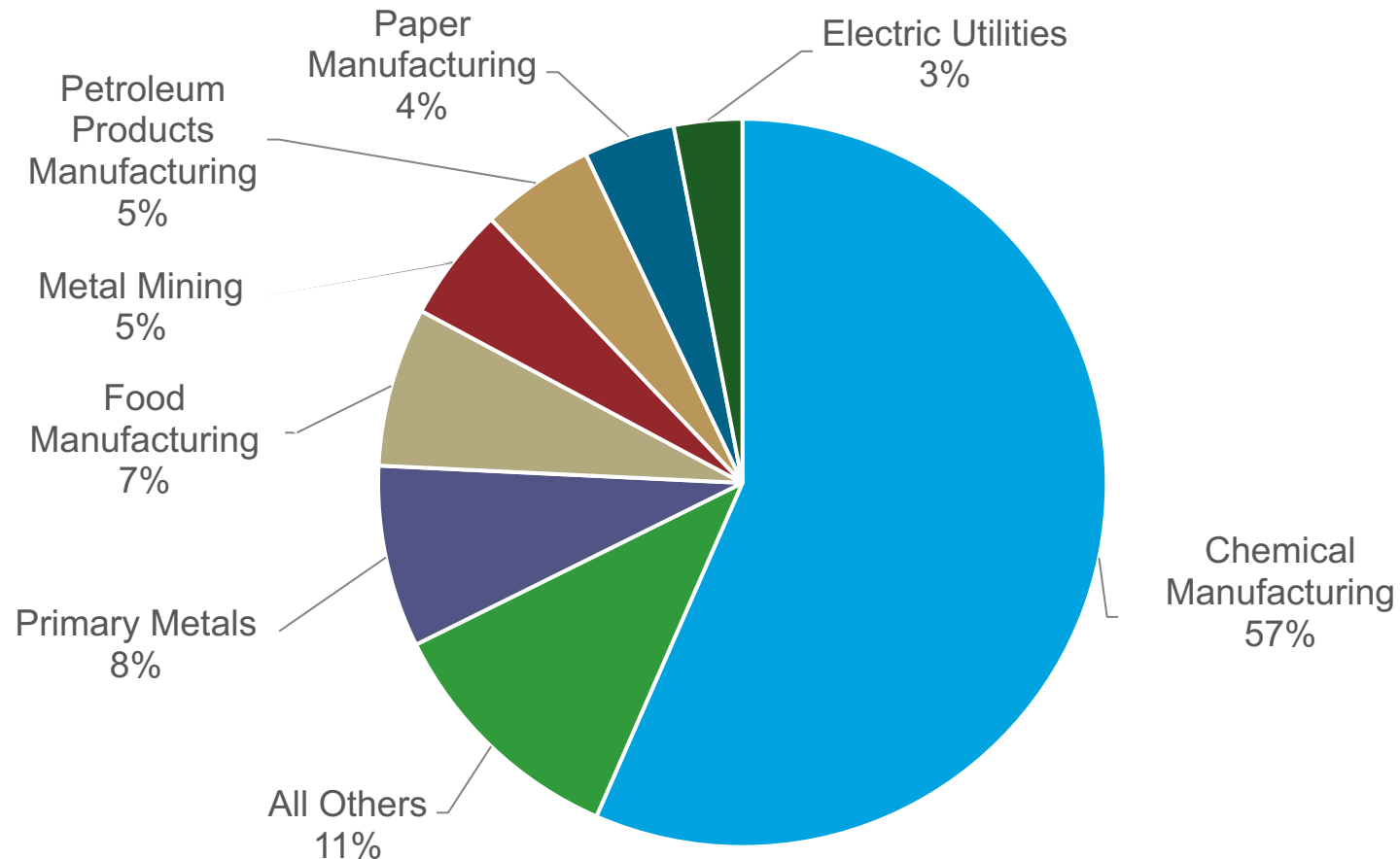
Total MSW Landfill by Material, 2018
146.1 million tons



[EPA Source](#)

Waste by Industry per EPA

Production-Related Waste Managed by Industry, 2020
28.3 billion pounds



Chemical industry includes:

- Pharmaceuticals
- Cleaning and personal care
- Coatings and adhesives
- Basic chemicals
- Resins and synthetic rubber

[EPA Source](#)

Waste and Sustainability

Sustainability

Economic Performance

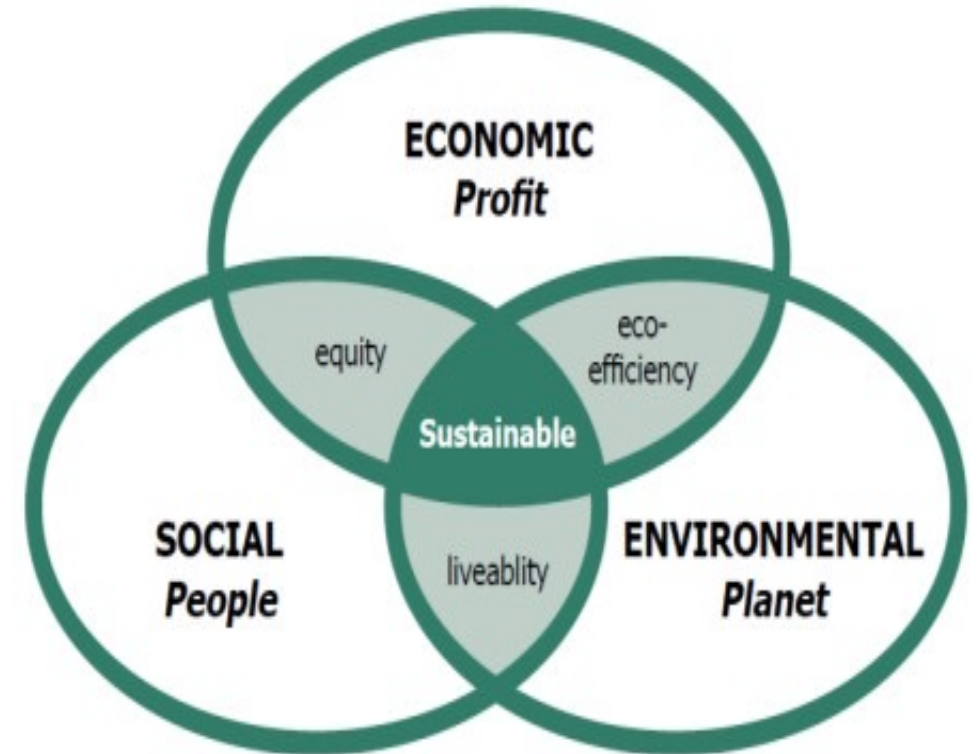
Sustained profits, increased market share, shareholder value, innovation

Environmental Performance

Reduced waste, resource and energy consumption equals significant cost savings

Equity/Social Performance

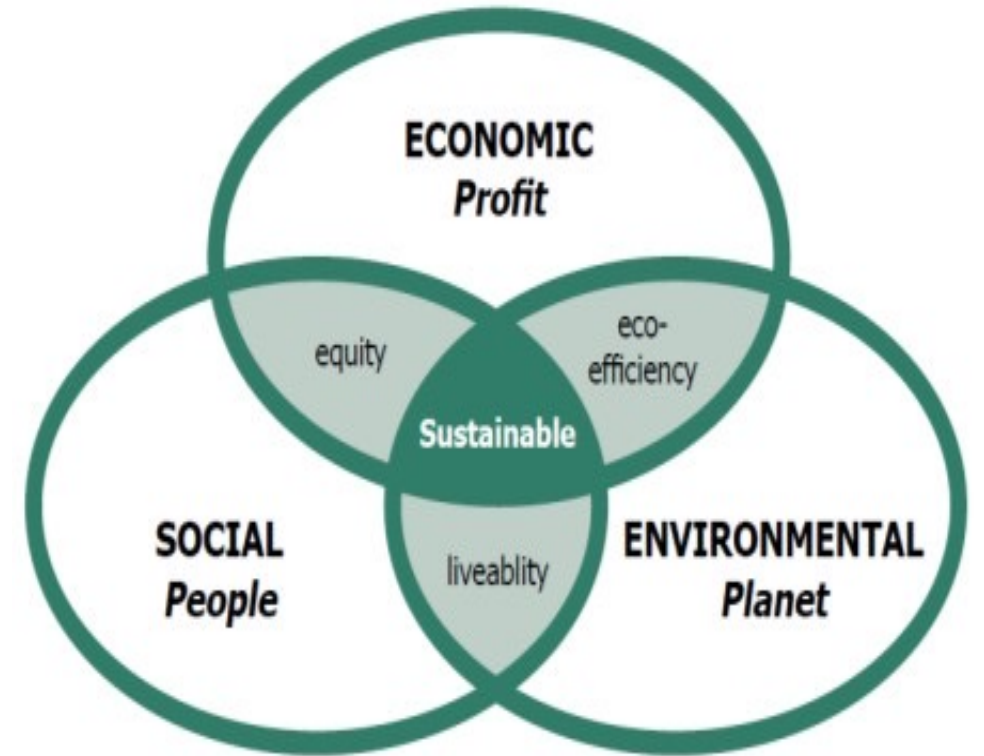
Customers, employees, community connections



Sustainability

Just as the Triple Bottom Line categories overlap to represent sustainability, many concepts in waste diversion and minimization overlap as well

As such, some information will be repeated and presented alongside different topics in various weeks to show how interconnected sustainability truly is



Question: What does waste mean to you and your company?

Please type your answers in the chat

Waste and Lost Resources

- Any input that does not end up in the final product is “waste”
- Waste equals lost profit and includes:
 - Waste heat, energy, and water
 - Scrap raw materials and support materials
 - Waste product
 - Air and water emissions
 - Inefficiency
 - Waste packaging

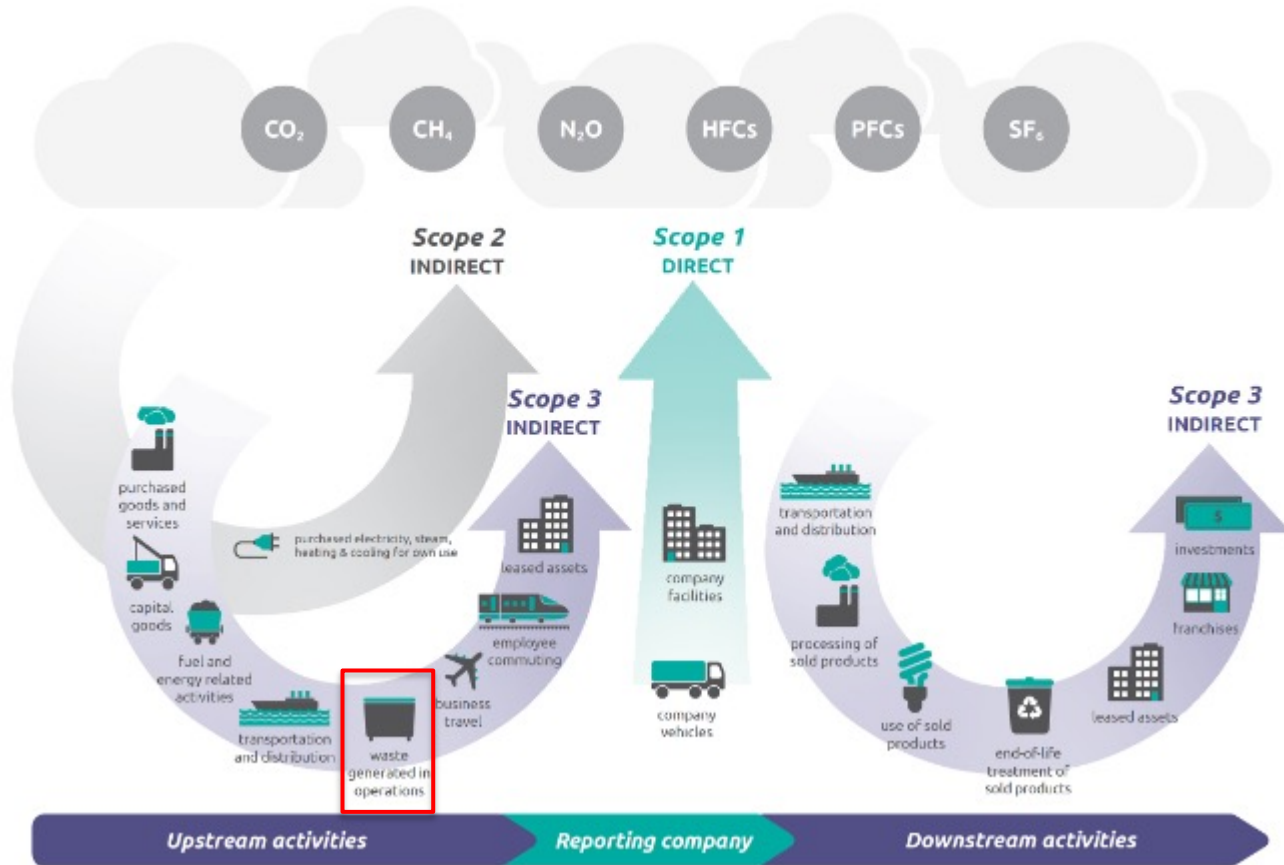


Benefits to Waste Minimization

- Reduce disposal and management costs
 - Improve worker health and safety
 - Reduce impacts of regulatory requirements
 - Minimize potential environmental liability
 - Reduce company emissions
 - Demonstrate environmental leadership to stakeholders
 - Improve public image
- 

Scope Emissions

Overview of GHG Protocol scopes and emissions across the value chain



OWNED DIRECT EMISSIONS

Scope 1: GHG emissions from sources owned and controlled by the company

OWNED INDIRECT EMISSIONS

Scope 2: GHG emissions from utilities purchased by the company (electricity, steam, heat, etc.)

UNOWNED INDIRECT EMISSIONS

Scope 3: All other GHG emissions that are linked to the company but do not fall into the other categories; they can occur upstream and downstream

Landfill Waste = Future Scope 3 Methane Emissions

5 WASTE

5.1 CH₄ EMISSIONS FROM SOLID WASTE DISPOSAL SITES

5.1.1 Methodological issues

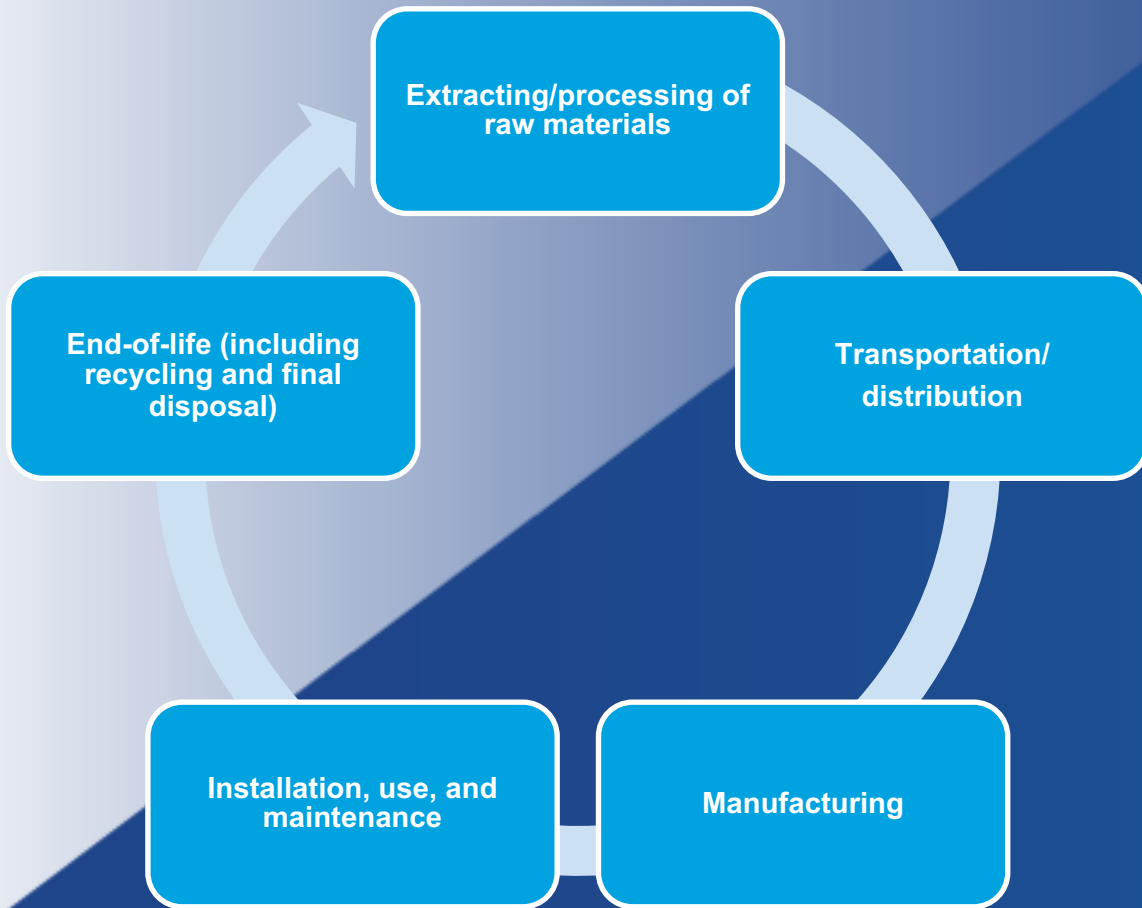
Methane (CH₄) is emitted during the anaerobic decomposition of organic waste disposed of in solid waste disposal sites (SWDS). Organic waste decomposes at a diminishing rate and takes many years to decompose completely.

5.1.1.1 CHOICE OF METHOD

The *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories* provides several methods to estimate CH₄ emissions from solid waste disposal sites. The first-order decay (FOD) method (Tier 2) is the most commonly used. It produces a time-dependent emission profile that better reflects the actual decomposition process, whereas the default method is based on the assumption that waste is disposed of. The default method will give a re

- Methane (CH₄) is estimated to have a GWP of 27-30 over 100 years ([Learn why EPA's U.S. Inventory of Greenhouse Gas Emissions and Sinks uses a different value.](#)). CH₄ emitted today lasts about a decade on average, which is much less time than CO₂. But CH₄ also absorbs much more energy than CO₂. The net effect of the shorter lifetime and higher energy absorption is reflected in the GWP. The CH₄ GWP also accounts for some indirect effects, such as the fact that CH₄ is a precursor to ozone, and ozone is itself a GHG.

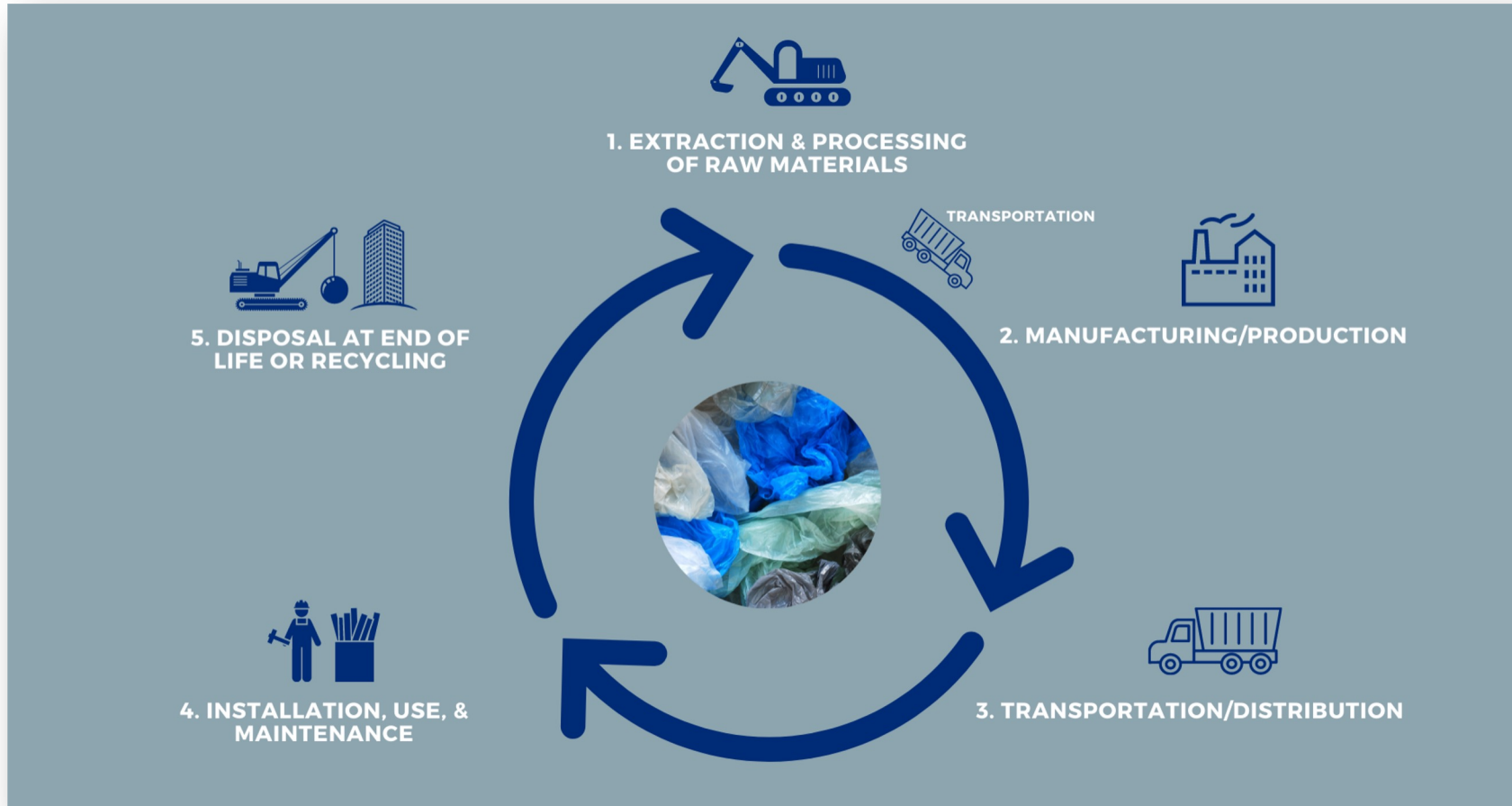
What is Life Cycle Assessment?



Life Cycle Assessment (LCA)

- An analytical tool used to comprehensively **quantify** and interpret the **environmental impacts** of the entire life cycle of a product or system
- Methodology used to determine the embodied carbon, or **greenhouse gas (GHG) emissions** associated with the life cycle of a product
- Basis for the development of **Environmental Product Declarations**
- Requires specific and detailed information on raw materials, supplier locations, manufacturing/processing procedures, waste generation, transport, and end of life

Product Life Cycle



What is the Circular Economy?



LINEAR

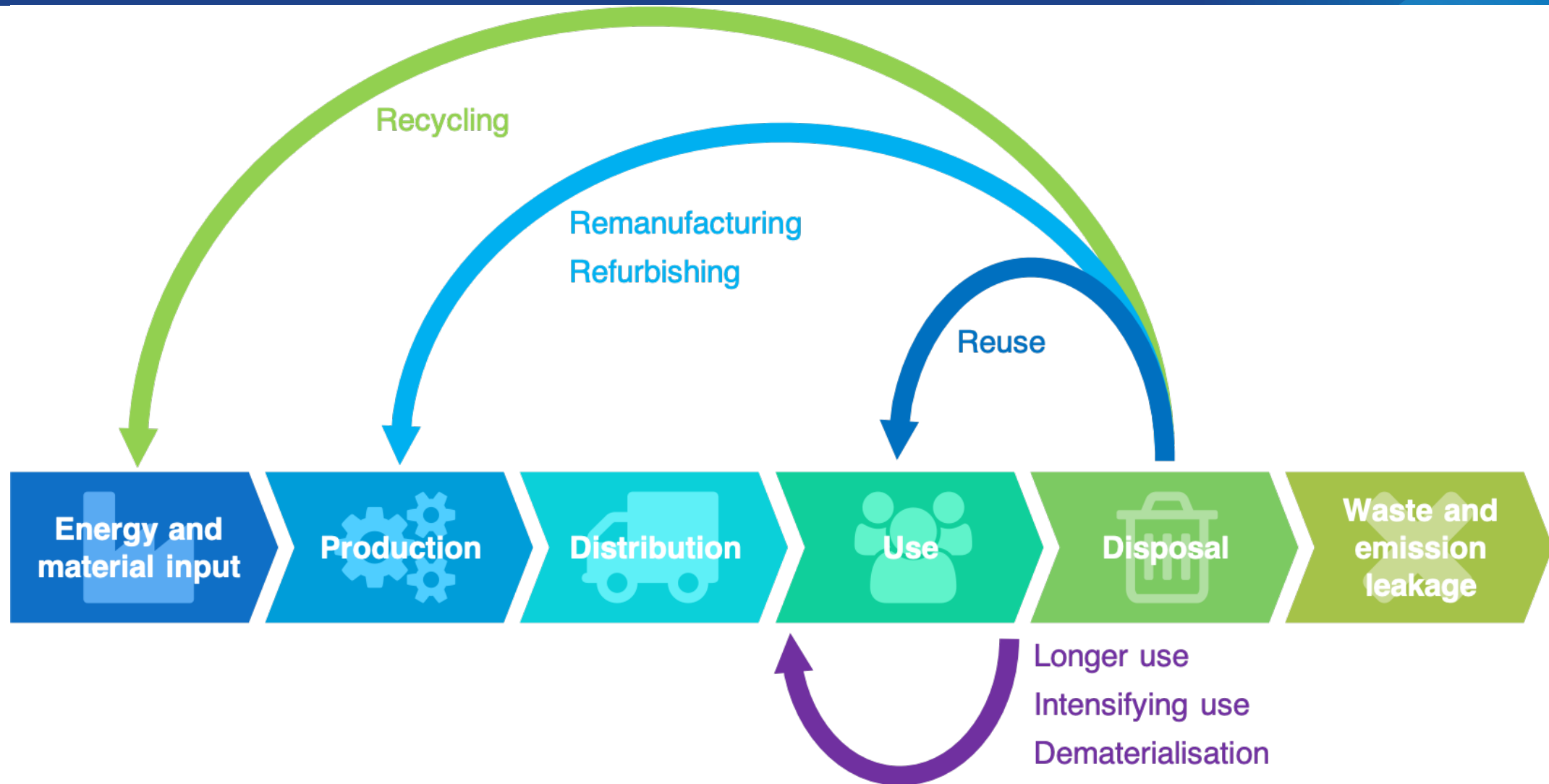


CIRCULAR

Evolution from a linear system to a circular approach

- Change does not occur only through recycling – it requires life cycle thinking and multiple strategies and approaches

What is the Circular Economy?



Waste Diversion Hierarchy

Poll: Which of the following is the least preferred method of waste diversion?

Please respond to the Zoom poll

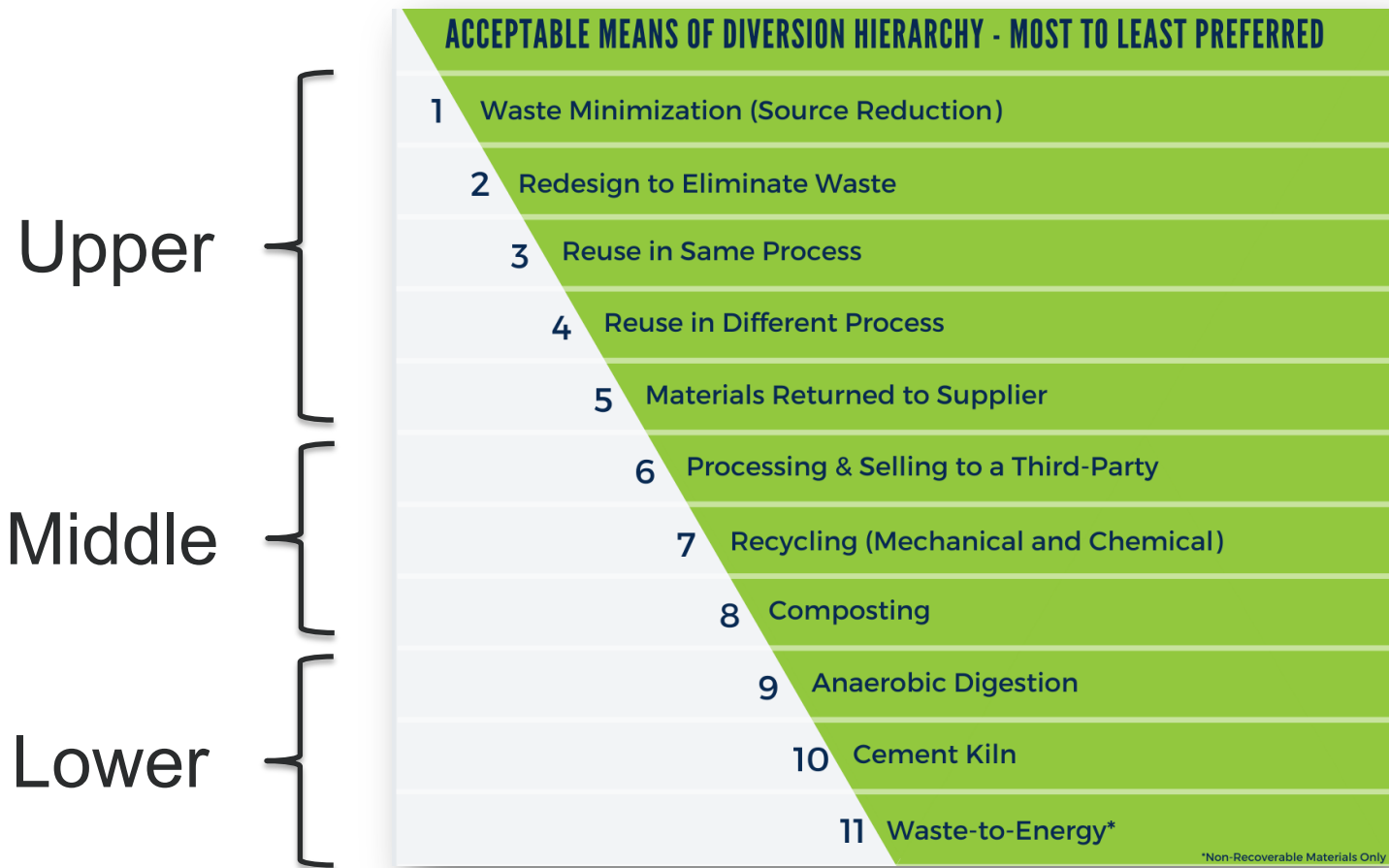
Answer: Waste-to-energy

EPA Waste Management Hierarchy



[EPA Waste Management Hierarchy](#)

Sustainable Solutions Corporation Waste Diversion Hierarchy



Question: Why are some strategies listed higher than others on the waste diversion hierarchy?

Please type your response in the chat

Answer: Strategies higher on the hierarchy keep materials in use while reducing raw material consumption and cost. Middle-tier strategies also help reduce raw material consumption; however, materials may need processed or reprocessed. Strategies near the bottom do not keep waste in a reusable state, but avoid landfill emissions.

Instituting Waste Diversion Hierarchy Strategies

Upper Tier

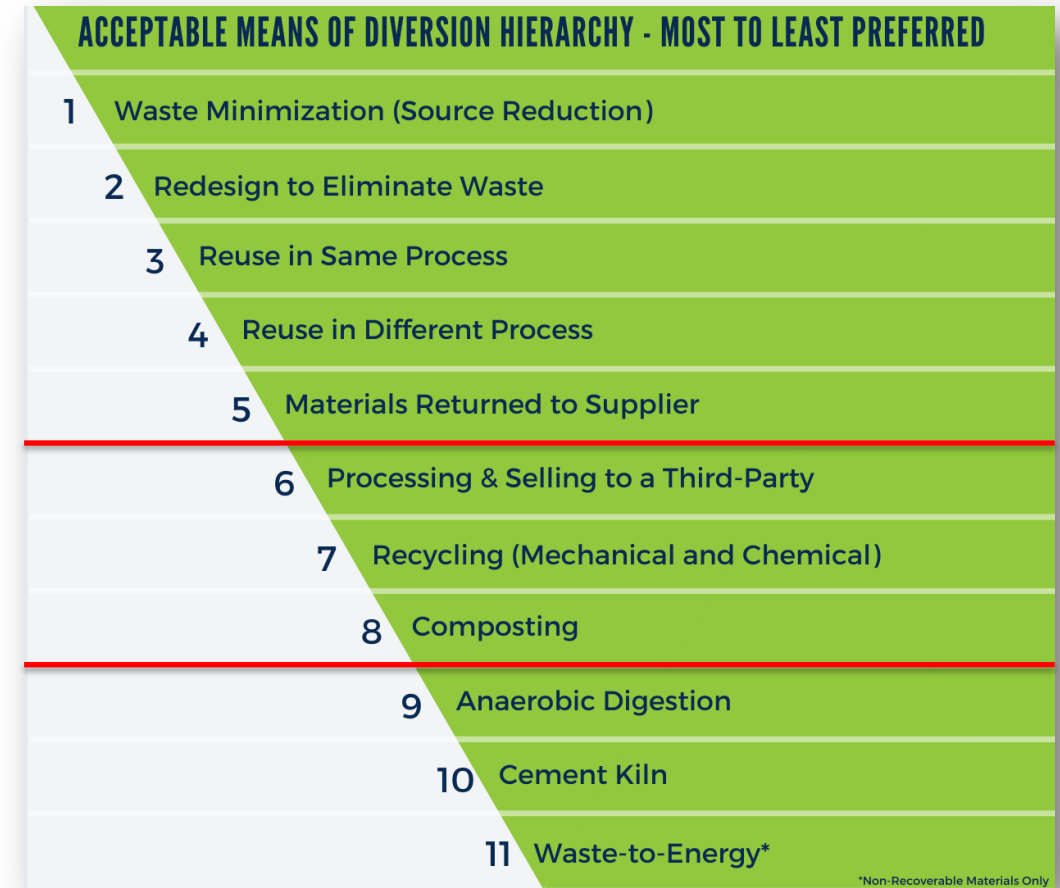
- Requires a critical review of current processes and procedures
- Multiple personnel may need to be involved to create a resolution
- May require coordination with supply chain

Middle Tier

- Identification of outlets
- Increased coordination of material segregation on site

Lower Tier

- Less availability
- Increased coordination of material segregation on site



Sustainable Materials Management – Decision Matrix Case Study

	Desirability	Feasibility	Viability	Impact
Pyrolysis	Low/Medium	Low	Low	High
WtE	Medium	High	High	Medium
Recycling	High	Medium	Medium	Low
Composting	High	Low/Medium	Low	N/A
Landfill	Low	High	High	High

- Pyrolysis is difficult to execute at this point, in addition to having poor desirability and higher impacts
- Waste-to-energy is a more affordable and easily accessible option; however, the associated environmental impacts are greater and has less desirability than other options
- Recycling is very desirable and has lower impacts, but it is more expensive and complicated to execute
- Composting is desirable, but nationwide coverage is limited, and compostable materials are expensive

Source Reduction

- Purchase materials in bulk where feasible to reduce packaging
- Purchase materials in divertible packaging to reduce landfill waste
- Capture spilled materials during loading and unloading
- Reduce startup and shutdown waste
- **Examples:**
 - Install silos or holding tanks onsite to reduce packaging waste
 - Purchase grease in drums and not individual tubes
 - Install conductivity meters on chemical tanks
 - Institute customer takeback program



Hierarchy Overview

Redesign

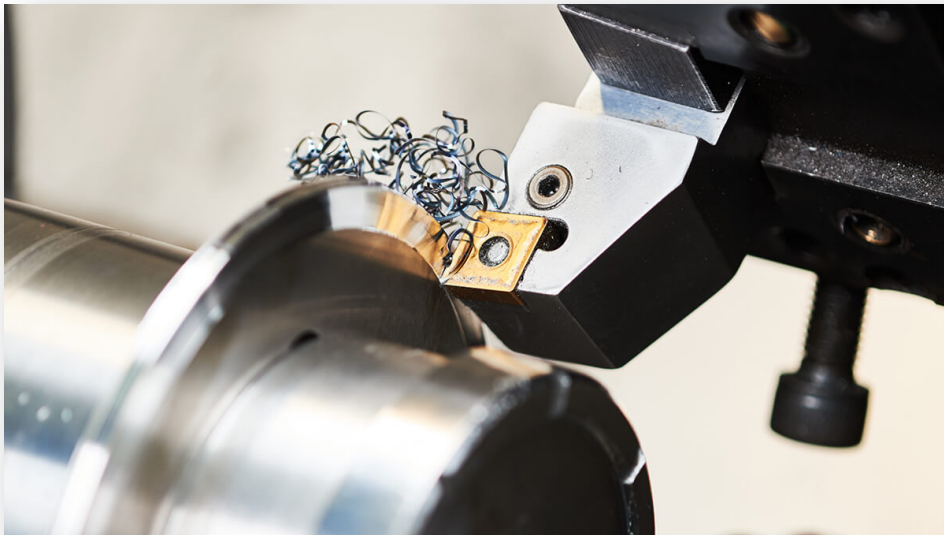
- Institute methods to capture production waste
- Establish standards to maximize use of materials
- **Examples:**
 - Design system or product to utilize recycled materials
 - Adjust packaging design to utilize less raw materials
 - Institute laser or sensor measurement to reduce wasted raw materials from operator discretion
 - Change procedures to increase quality checks to reduce reworking of materials



Hierarchy Overview

Reuse in Same Process

- Capture production waste for reuse in same process
- Reuse pallets
- **Example:**
 - Collect trimmings, shavings, turnings, etc. to be remelted and mixed with raw materials
 - Collect production scrap to regrind and mix with raw materials



Reuse in Different Process

- Using biproduct or scrap as an ingredient for manufacturing a different product
- Send unneeded pallets to other facilities
- **Examples**
 - Fly ash used in cement
 - Scrap plastics remelted and used as raw material
 - Rubber from tires used on playgrounds



Hierarchy Overview

Materials Returned to Supplier

- Return totes, supersacks, drums, pallets, etc.
- Develop reusable and returnable packaging program with suppliers
- **Examples**
 - Collect and return cardboard cores
 - Return wood from shipping crates



Hierarchy Overview

Processing & Selling to Third-Party

- Work with a third-party to use scrap as a raw material in their product
- **Example**
 - Send scrap metal to steel mill
 - Send plastic to company that makes products out of recycled plastic
 - Send unwanted aggregate to be used in roads



Hierarchy Overview

Recycling

- Identify recycling outlets for waste streams
 - Segregate recyclable materials if necessary
- Bale recyclable materials
- **Example**
 - Bale cardboard, film, paper



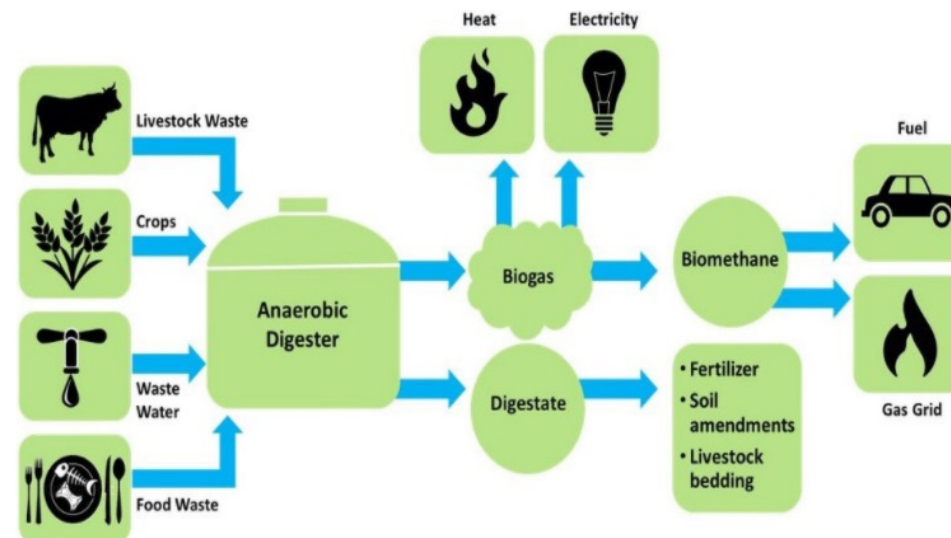
Composting

- Institute compost collection in break rooms
- **Note**
 - Many compost outlets are small and can handle low-volume breakroom waste



Anaerobic Digestion

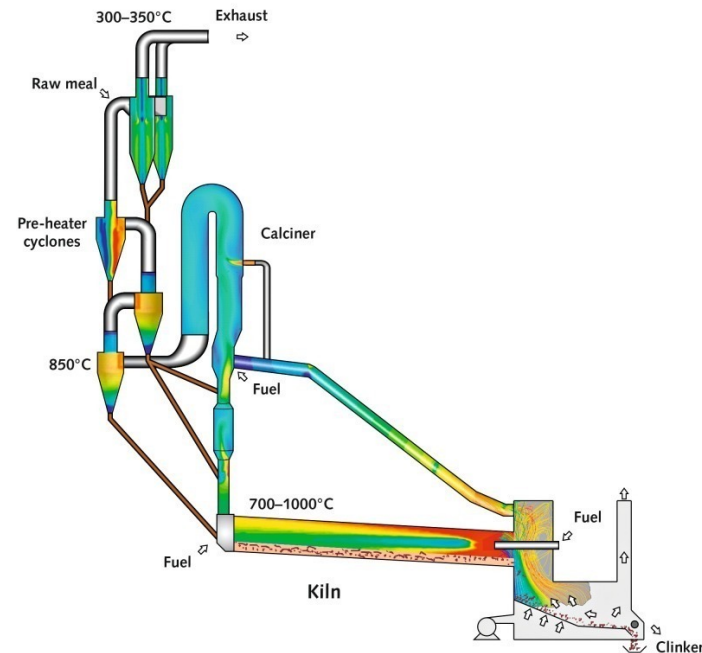
- Institute compost collection in break rooms
- Install small system onsite
- **Recall**
 - There are not many anaerobic digestion sites in the US (about 25)



Hierarchy Overview

Cement Kiln

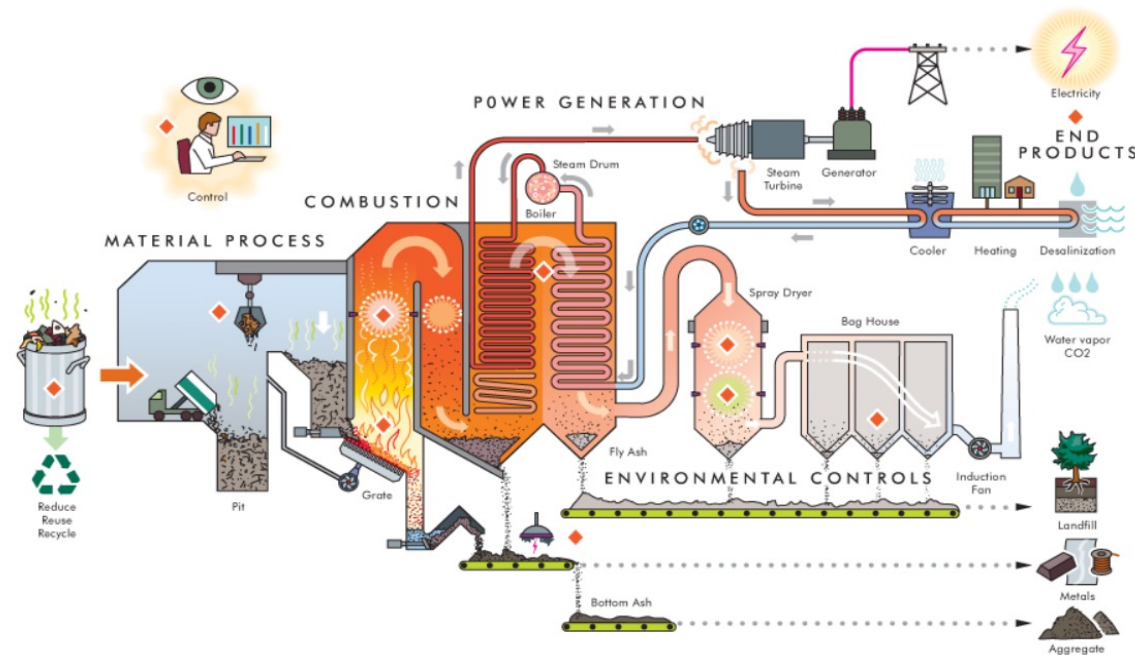
- Collect the following materials to send to cement kilns
 - Oils, fuels, filter cakes, rubber, absorbents, wood, and more
- **Note**
 - Cement kilns will not accept
 - Hazardous waste, food waste, construction and demolition materials, metals, and municipal solid waste



Hierarchy Overview

Waste-to-Energy

- Segregate waste streams acceptable for waste-to-energy from other waste streams
- **Note**
 - Waste-to-energy is an acceptable means of diversion when there is no other way to recover the material
 - There are not many waste-to-energy sites in the US (about 76)



Poll: True or false – there is little to no overlap between waste diversion strategies listed on the hierarchy.

Please respond to the Zoom poll

Answer: False

Waste Streams by Industry

Question: What are the biggest waste streams (by weight) generated by your company?

Please type your response in the chat

Question: What are the most expensive waste streams to dispose of for your company?

Please type your response in the chat

Waste Streams Generated by All Industries

Waste Stream	Location/Processes
Plant trash	<ul style="list-style-type: none"> • Production areas • Breakrooms
Organics	<ul style="list-style-type: none"> • Breakrooms
Cardboard	<ul style="list-style-type: none"> • Packaging
Pallets	<ul style="list-style-type: none"> • Packaging
Wood	<ul style="list-style-type: none"> • Packaging
Scrap metal	<ul style="list-style-type: none"> • Equipment maintenance or upgrades
Plastic film	<ul style="list-style-type: none"> • Packaging
Paper	<ul style="list-style-type: none"> • Packaging • Offices

Waste Stream	Location/Processes
Miscellaneous plastic	<ul style="list-style-type: none"> • Breakrooms • Packaging
Glass	<ul style="list-style-type: none"> • Breakrooms • Testing containers
Foam	<ul style="list-style-type: none"> • Packaging
Oil/grease	<ul style="list-style-type: none"> • Equipment maintenance and use
Rags	<ul style="list-style-type: none"> • Cleaning • Maintenance
Electronic waste	<ul style="list-style-type: none"> • Building upgrades
Work attire/PPE	<ul style="list-style-type: none"> • Production areas • Testing

Waste Streams Generated in Many Industries

Waste Stream	Location/Processes	Waste Stream	Location/Processes
Aerosol cans/filters	<ul style="list-style-type: none"> Maintenance 	Start-up and shutdown packaging waste	<ul style="list-style-type: none"> Packaging
Batteries	<ul style="list-style-type: none"> Equipment 	Degreasers	<ul style="list-style-type: none"> Water treatment
Filters	<ul style="list-style-type: none"> Baghouse HVAC 	Solvents	<ul style="list-style-type: none"> Water treatment Product quality check Material treatment
Baghouse dust	<ul style="list-style-type: none"> Baghouse 	Lacquer	<ul style="list-style-type: none"> Product finishing
Supersacks	<ul style="list-style-type: none"> Packaging for raw materials 	Miscellaneous chemicals	<ul style="list-style-type: none"> Water treatment Product quality check Material treatment
Plastic straps	<ul style="list-style-type: none"> Packaging for raw materials/finished product 	Hazardous waste (general)	<ul style="list-style-type: none"> Chemical use
Plastic totes	<ul style="list-style-type: none"> Raw material transport 		
Cardboard gaylords	<ul style="list-style-type: none"> Raw material transport 		

Waste Streams Generated by Specific Industries

Waste Stream	Industry	Location/ Processes
Sludges and swarf	<ul style="list-style-type: none"> Heavy manufacturing <ul style="list-style-type: none"> Steel mills Automotive Biomedical 	<ul style="list-style-type: none"> Quenching
Blasting agents	<ul style="list-style-type: none"> Heavy manufacturing 	<ul style="list-style-type: none"> Material/product work
Grinding wheels/saw blades	<ul style="list-style-type: none"> Heavy manufacturing 	<ul style="list-style-type: none"> Material/product work
Refractory	<ul style="list-style-type: none"> Steel mills 	<ul style="list-style-type: none"> Furnaces
Filter cakes	<ul style="list-style-type: none"> Chemical 	<ul style="list-style-type: none"> Filtering liquids
Paint/ink	<ul style="list-style-type: none"> Automotive Textiles Building products 	<ul style="list-style-type: none"> Finishing product

Waste Stream	Industry	Location/ Processes
Single use manufacturing materials	<ul style="list-style-type: none"> Pharmaceutical 	<ul style="list-style-type: none"> Manufacturing
Ancillary transportation plastics	<ul style="list-style-type: none"> Automotive 	<ul style="list-style-type: none"> Transport
Production purge	<ul style="list-style-type: none"> Textiles Building products 	<ul style="list-style-type: none"> Extrusion
Metal grindings, shavings, dust, and trimming	<ul style="list-style-type: none"> Heavy manufacturing <ul style="list-style-type: none"> Steel mills Automotive 	<ul style="list-style-type: none"> Material/product work
Spoiled ingredients	<ul style="list-style-type: none"> Food manufacturing 	<ul style="list-style-type: none"> Storage
Off spec or out of date materials	<ul style="list-style-type: none"> Pharmaceutical 	<ul style="list-style-type: none"> Storage
Scrap materials or products		<ul style="list-style-type: none"> Production scrap Quality check

Question: What are some waste streams that are specific to your site, company, or industry?
Please type your response in the chat

Key Legislation and Regulations

Question: Are there any rebates or incentives you receive for waste mitigation or diversion (internally or externally)? If so, what are they?

Please type your response in the chat

Resource Conservation and Recovery Act (RCRA)

- Gives EPA authority to control hazardous waste
 - Requirements for generation, transport, treatment, and disposal
- Plethora of resources available including:
 - Standards and regulations for
 - Generators, transporters, disposal facilities, waste management programs, and more
 - Information on individual waste streams
 - Explanation of the stream itself, general insights on stream volume, generation, waste regulations, etc.
 - Amount of information varies by stream
 - Guidelines and resources for non-hazardous waste collection, storage, and disposal

[RCRA Laws and Regulations](#)

Resource Conservation and Recovery Act (RCRA)

Categories of generators

- Volume generated per month determines which regulations apply to the generator
- Very small, small, and large quantity
 - Very small
 - May not accumulate more than 1,000 kg of hazardous waste at a time
 - Someone onsite must be authorized to manage waste stream
 - Small
 - May not accumulate more than 6,000 kg of hazardous waste at a time
 - Restriction of the amount of time waste can be onsite
 - Compliances including preparedness and prevention
 - Large
 - No limit on amount of hazardous waste accumulated at a time
 - Shorter timeline waste can be onsite
 - Increased compliances for preparedness and prevention

Resource Conservation and Recovery Act (RCRA)

Exemptions for

- Domestic sewage, irrigation return flows, and mineral extractions
- Closed loop recycling
 - If waste by-product is captured and reused within 90 days in the same process
- Generator Controlled Exclusion
 - Excludes wastes that are legitimately reclaimed under the control of the generator
- Transfer-Based Exclusion
 - Exempts materials transferred to a third-party for recycling or reclamation
 - Generator must show that transfer leads to legitimate reuse

Securities and Exchange Commission

SEC Proposes Rules to Enhance and Standardize Climate-Related Disclosures for Investors

FOR IMMEDIATE RELEASE

Registrant Type	Disclosure Compliance Date	
	All proposed disclosures, including GHG emissions metrics: Scope 1, Scope 2, and associated intensity metric, but excluding Scope 3	GHG emissions metrics: Scope 3 and associated intensity metric
Large Accelerated Filer	Fiscal year 2023 (filed in 2024)	Fiscal year 2024 (filed in 2025)
Accelerated Filer and Non-Accelerated Filer	Fiscal year 2024 (filed in 2025)	Fiscal year 2025 (filed in 2026)
SRC	Fiscal year 2025 (filed in 2026)	Exempted

Filer Type	Scopes 1 and 2 GHG Disclosure Compliance Date	Limited Assurance	Reasonable Assurance
Large Accelerated Filer	Fiscal year 2023 (filed in 2024)	Fiscal year 2024 (filed in 2025)	Fiscal year 2026 (filed in 2027)
Accelerated Filer	Fiscal year 2024 (filed in 2025)	Fiscal year 2025 (filed in 2026)	Fiscal year 2027 (filed in 2028)

Defense Acquisition Regulations System Department of Defense (DoD)

SUMMARY:

To facilitate implementation planning for Executive Orders, DoD would like to know the views of interested parties on sustainability initiatives including climate-related disclosures.

A. Disclosure of Greenhouse Gas (GHG) Emissions

- Does your organization measure and report Scope 1 and Scope 2 GHG emissions in line with the GHG Protocol Corporate Standard or equivalent? If not the GHG Protocol, which standard(s) are used?
- Does your organization currently report Scope 3 GHG emissions? If so, which Scope 3 categories are reported and which methodologies and/or standards are used?
- Does your organization publicly report your GHG results either through a third-party organization or as part of an external corporate sustainability report?
- Does your organization disclose its GHG emissions inventory on an annual basis? If so, where or by what platform?
- Does your organization set and disclose targets for GHG emissions reduction and/or science-based targets? If so, are these targets reviewed or verified by a third party?
- Does your organization report climate risk-related information as part of your standard financial reporting disclosures?
- Would your organization be willing to participate in a pilot program involving voluntary disclosure of actual GHG emissions and GHG emission targets?

B. Environmental, Social, and Governance (ESG)—General

- Does your organization participate in ESG reporting? If so, which sustainability standards or platforms does your organization use (*e.g.*, Carbon Disclosure Project (CDP), Global Reporting Initiative (GRI), Science Based Targets initiative (SBTi), Supplier Ethical Data Exchange (SEDEX))?
- What is the role of third-party verification in your ESG activities?
- Does your organization's ESG-related reporting include accounting for and addressing disparate impacts on disadvantaged communities and communities of color?
- Does your organization's ESG-related reporting include creation of jobs associated with the shift away from carbon-intensive energy sources?

C. Supply Chain GHG and Risk Management

- Does your organization have the ability to provide customers with GHG emissions information specific to their purchases or contracts? If so, at what level can your organization provide this information (*e.g.*, by customer on an annual basis, contract, item)?
- Does your organization collect GHG emissions information from your suppliers? If so, what systems, standards, or instruments are used to collect this information? If so, how is this information used?
- Do you require your suppliers to set GHG emissions reduction targets or related targets (*e.g.*, energy efficiency, clean electricity)?



FEDERAL REGISTER
The Daily Journal of the United States Government



Methane Emissions

- **Inflation Reduction Act**

- Applicable to petroleum and natural gas production, transport, and storage
- Fees will be applied to companies that report over 25,000 metric tonnes of CO₂e per year that are exceeding acceptable thresholds for methane emissions

- **Global Methane Pledge**

- 115 countries commit to reduce their methane emissions by 30% by 2030

- **Declaration of North America (DNA)**

- Vowed to reduce methane emissions from solid waste and wastewater by 15% by 2030 from 2020 levels

State Legislation – New Jersey



State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF SOLID AND HAZARDOUS WASTE

401 East State Street

P.O. Box 420, Mail Code 401-02C

Trenton, New Jersey 08625-0420

Tel. (609) 984-4250 • Fax (609) 777-1951

www.nj.gov/dep/dshw

Food waste that ends up in a landfill generates methane, a potent greenhouse gas contributing to global warming. This Law is intended to increase the amount of food waste that is recycled and converted into products like renewable energy, compost, and fertilizer. Therefore, whether or not you are required to comply with this Law, reducing and/or recycling your food waste is beneficial for the environment.

- An Act focused on reducing methane emissions related to food waste
 - Requires qualifying establishments to separate and divert their food waste
- A state goal of reducing food waste by 50% by 2030 from 2017 food waste emissions levels
- Plans to optimize energy recovery in wastewater treatment

Bipartisan Infrastructure Law

- EPA released a [national recycling strategy](#) to help build a more circular economy
- Funding is being put forth to increase solid waste infrastructure for recycling
 - Grants are available for states and local governments
 - \$275 million for solid waste infrastructure for recycling
 - \$75 million for recycling education and outreach
 - \$10 million for battery collection best practices \$15 million for labeling guidelines

Executive Order: Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability

- Sec. 207. Reducing Waste and Pollution:
 - Each agency shall minimize waste, including:
 - The generation of wastes requiring treatment and disposal
 - Advance pollution prevention
 - Support markets for recycled products
 - **Promote a transition to a circular economy**
- Sec 208. Sustainable Acquisition and Procurement:
 - Agencies shall reduce emissions, promote environmental stewardship, support resilient supply chains, drive innovation, and incentivize markets for sustainable products and services by prioritizing products that:
 - Can be reused, refurbished, or recycled
 - Maximizing environmental benefits and cost savings through use of **full life-cycle cost methodologies**
 - Purchasing products that contain recycled content, are biobased, or are energy and water efficient
 - Purchasing sustainable products and services identified or recommended by the EPA

[Executive Order](#)

European Green Deal: Benefits



fresh air, clean water,
healthy soil and
biodiversity



renovated, energy
efficient buildings



healthy and affordable
food



more public transport



cleaner energy and
cutting-edge clean
technological
innovation



longer lasting
products that can be
repaired, recycled and
re-used



future-proof jobs and
skills training for the
transition

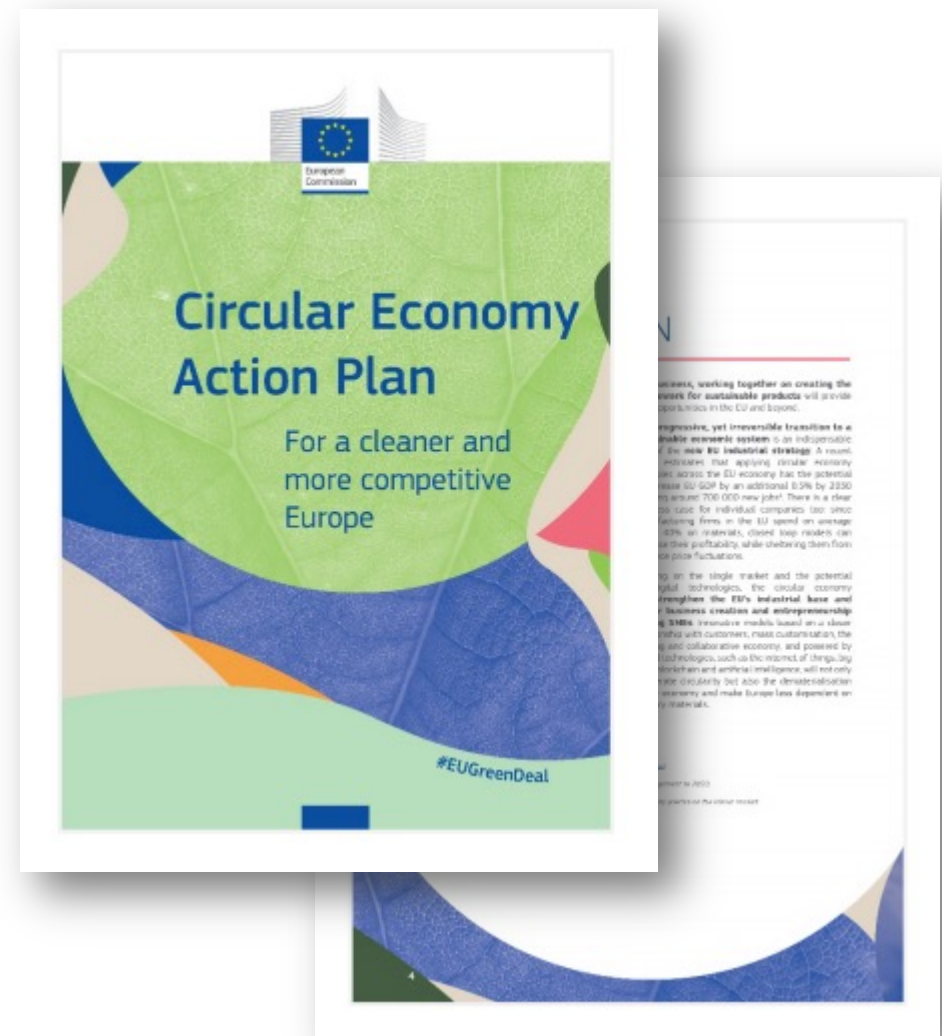


globally competitive
and resilient industry

Circular Economy Action Plan

Presents measures to:

- Make sustainable products the norm in the EU
- Focus on sectors that use the most resources and have a high potential for circularity:
 - Electronics
 - Batteries
 - Vehicles
 - Packaging
 - Textiles
 - Building products
 - Food
- Pushing the commission to launch sector-specific concrete actions and requirements
- Addresses product attributes such as:
 - Reuse
 - Recycled content
 - Recyclability
 - Biobased
 - Biodegradable
 - Etc.



Closing Remarks

ACCEPTABLE MEANS OF DIVERSION HIERARCHY - MOST TO LEAST PREFERRED

- 1 Waste Minimization (Source Reduction)
- 2 Redesign to Eliminate Waste
- 3 Reuse in Same Process
- 4 Reuse in Different Process
- 5 Materials Returned to Supplier
- 6 Processing & Selling to a Third-Party
- 7 Recycling (Mechanical and Chemical)
- 8 Composting
- 9 Anaerobic Digestion
- 10 Cement Kiln
- 11 Waste-to-Energy*

*Non-Recoverable Materials Only

- Summary
 - Introduction to SSC
 - Common acronyms and terms
 - Waste hierarchy
 - Waste streams generated by industry
 - Waste legislation and regulation
- Homework!
- Next training:
 - How to effectively track and measure your waste
 - May 2, 2023

Homework Overview

- Homework will:
 - Engage participants in the topics to be discussed in the following session
 - Serve as a guide for waste diversion and minimization
- If a homework is completed, please send to presenter, Nick, at nick@sustainable-solutions.com
 - Please use the subject “Better Plants Session # Homework: Complete – Company Name”
 - Participants will be asked to share their learnings and experiences in session 8, and if you would like to participate in this, please reach out to Nick

Homework Review

Assignment

1. List all waste streams generated onsite.
2. For which waste streams is data actively collected and tracked?
3. Review waste data. Are there any notable trends from the last year for any specific stream? Were there any anomalies that required corrective action or should have but did not?
4. Look into a general trash dumpster. What kinds of waste streams are present? Are any of them divertible from landfill? If so, which?

Goal

- Compile basic information related to waste
 - Utilize critical review to work on identifying issues related to waste from the data
- Prepare for today's session by reviewing waste containers onsite
 - Observer segregation, availability of containers, and container consistency

Q&A

Kahoot!

Quiz link: