Reducing Value Chain GHG Emissions

KEY TAKEAWAYS

- Identify and prioritize the highest-impact scope 3 emission categories using GHG Protocol criteria to focus on areas with significant reduction potential.
- Establish robust measurement methods by selecting appropriate models and collaborating with suppliers to enhance data accuracy.
- Implement a life-cycle approach that reduces embodied carbon through design innovation, low-carbon material selection, and efficient resource use.
- Enhance procurement and supplier engagement by integrating Environmental Product Declarations, low-carbon labels, and sustainability policies into decision-making.

INTRODUCTION

Scope 3 emissions represent the indirect greenhouse gas (GHG) emissions that occur across a utility's entire value chain but are outside its direct control. For many water and wastewater utilities, these emissions are often the largest contributors to their overall GHG footprint. Therefore, addressing scope 3 emissions is critical for utilities seeking to meet ambitious net-zero goals.

These emissions typically arise from upstream activities, like the production of goods and materials, as well as downstream activities, such as waste management and the eventual use of utility services by customers. Specifically, water and wastewater utilities may see significant scope 3 emissions from embodied carbon in purchased goods (e.g., pipes and chemicals), outsourced biosolids management, and downstream emissions related to the treatment and distribution of water at the retail level. By reducing scope 3 emissions, utilities can advance their climate goals while fostering sustainability across their value chains.

ACTIVITIES AND ACTIONS

Identify Key Categories for Immediate Focus

The first step to managing scope 3 emissions is identifying which categories to focus on. This prioritization can be guided by the GHG Protocol's relevance assessment criteria, which consider factors such as the scale of emissions, the ability of the utility to influence reductions, associated risks, and stakeholder concerns. Utilities should aim to focus on categories where reductions will have the greatest impact—like capital projects or materials purchasing—and identify areas that require further exploration, such as outsourcing or complex supply chains.

Tip: *Host an internal workshop with key team members to quickly map and rank your scope 3 emission sources using a simple impact checklist.*

Quantifying Scope 3 Capital and Purchased Goods Emissions

Accurately quantifying emissions related to capital projects and purchased goods is a crucial foundation for managing scope 3 emissions. Utilities can rely on several methods for calculating these emissions, such as spend-based models (e.g., Economic Input-Output Life Cycle Assessment, or EIOLCA), average industry data, supplier-specific data, or hybrid approaches combining these methods. Each method has its trade-offs—spend-based approaches may lack specificity, while supplier-specific data may be hard to obtain. As emissions calculations improve over time, utilities should work closely with suppliers to refine their estimates and increase the accuracy of their scope 3 reporting.

Tip: *Focus on commodities with known high embodied carbon emissions such as concrete, steel, and chemicals.*

Managing Embodied Carbon with a Life-Cycle Perspective

Since these embodied carbon emissions are typically locked in during the design and procurement stages, they are difficult to mitigate later. Therefore, reducing them requires a strategic, life-cycle approach that follows this hierarchy:

- **Use Nothing:** Challenge the necessity of new products or infrastructure. E.g., can the need be met without additional resources? For example, consider repurposing existing structures.
- **Use Less:** Maximize efficiency in existing products or infrastructure, such as optimizing design to use fewer materials.
- **Use Smartly:** Opt for low-carbon, sustainable materials and designs for both products and infrastructure. Incorporate modular construction techniques and select materials with lower embodied carbon.
- **Use Efficiently:** Ensure resource-efficient production, consumption, and end-of-life processes to minimize waste and emissions. Consider circular economy practices, such as designing for disassembly and material reuse.

Tip: *Create a simple poster to hang in cubicles that reminds teams to follow the emissions reduction hierarchy.*

Environmental Product Declarations and Low-Carbon Procurement

Utilities can further manage scope 3 emissions through Environmental Product Declarations (EPDs), which provide transparency about the environmental impact of products. By integrating EPDs into procurement processes, utilities can ensure that they are selecting products with lower embodied carbon. Additionally, utilities should look to adopt low-carbon product labels—like the EPA's Low Embodied Carbon Construction Materials Label—to help identify and specify low-carbon products during procurement.

As utilities adopt low-carbon procurement requirements, collaboration with suppliers is essential. By working closely with suppliers and learning from their efforts to manage scope 3 emissions, utilities can refine their procurement strategies to be more effective. Many suppliers are already innovating to reduce emissions, and by engaging with them, utilities can incorporate these insights to ensure that new requirements are both relevant and achievable. Additionally, utilities should offer resources and training to suppliers to support these goals, ensuring that sustainability initiatives enhance rather than conflict with other purchasing preferences.

Tip: *Integrate Environmental Product Disclosures into your procurement process and host a brief supplier workshop on low-carbon product standards.*

KEY CHALLENGES AND SOLUTIONS

Complexity in Data Collection and Tracking

Collecting accurate emissions data across the value chain, especially from suppliers, is challenging. This complexity hampers the ability to identify and focus on the most impactful reduction opportunities.

Solutions:

- Implement supplier reporting requirements for emissions data.
- Use third-party certification programs to standardize and verify emissions reporting.
- Invest in data management platforms for streamlined tracking and analysis.

Supplier Engagement and Influence

Utilities may have limited influence over their suppliers, making it difficult to mandate emissions reductions.

Solutions:

- Adopt sustainable procurement policies that favor low-emission suppliers.
- Offer training and resources to help suppliers meet the organization's low-carbon procurement goals.
- Partner with key suppliers to collaboratively set emissions reduction targets and procurement standards.

Embedding Scope 3 in Decision Making

Integrating scope 3 emissions management into the utility's overall decision-making process can be difficult, particularly when there are competing operational priorities.

Solutions:

- Set clear internal policies that require emissions considerations in all relevant decision-making processes.
- Develop performance metrics and integrate them into the evaluation of both projects and personnel, ensuring accountability.
- Create a dedicated cross-functional team or task force focused on scope 3 emissions management to facilitate ongoing communication and strategy alignment.

UTILITY SPOTLIGHT

King County Wastewater Treatment Division—Completing the Last Mile with a Scope 3 Emissions Reduction Program

Addressing scope 3 emissions is essential for achieving meaningful climate action. King County Wastewater Treatment Division has taken a proactive approach to scope 3 emissions by setting achievable thresholds, leveraging EPDs, and fostering a culture of education and collaboration. Their strategy demonstrates how utilities can reduce their environmental impact by making strategic procurement and policy decisions.

Taking a Strategic Approach to Setting Thresholds

King County began addressing scope 3 emissions by focusing on concrete due to its high emissions and significant reduction potential. Using published values for embodied carbon from the GHG Protocol Global Warming Potential (GWP) tables, the County collaborated with engineers, other public works agencies, and product manufacturers to set limits on the amount of embodied carbon in concrete products. Suppliers are now required to submit EPDs demonstrating compliance with these thresholds.

This phased approach allows suppliers to adapt and gradually lower their emissions over time. By establishing a clear benchmark, King County ensures that its suppliers have a defined pathway toward more sustainable practices.

> *"We could measure and try to refine the model for all eternity, but we didn't think that working like that would show any outcomes. We know our big categories. We knew concrete was our biggest piece of the pie," said Emily Coleman, a member of the Wastewater Treatment Division Sustainability Program team at King County.*

Key Insight: Setting realistic, phased emissions thresholds provides a manageable framework for suppliers and enables continuous emissions reductions over time.

Engaging Suppliers on EPDs

A critical component of King County's strategy is the use of EPDs. Initially, the county requested EPDs from suppliers voluntarily but found compliance to be low. Recognizing the need for a stronger approach, King County worked closely with suppliers and regional infrastructure agencies like transportation to determine what an achievable initial threshold should be. Once established, EPDs became a mandatory part of the procurement process for larger projects.

By taking this structured approach, the County ensures that baseline data is available for decision-making, ultimately leading to more sustainable construction practices.

"We want to make sure our materials can meet our requirements. Then, as we move forward, we will feel comfortable pulling the thresholds down. But it's hard to know where to set that baseline without baseline data," said Emily Coleman.

Key Insight: Baseline data is essential for setting effective emissions reduction targets. EPDs provide valuable tracking metrics but must be implemented strategically to align with supplier capabilities.

Reducing Embodied Emissions by Changing Organizational Culture

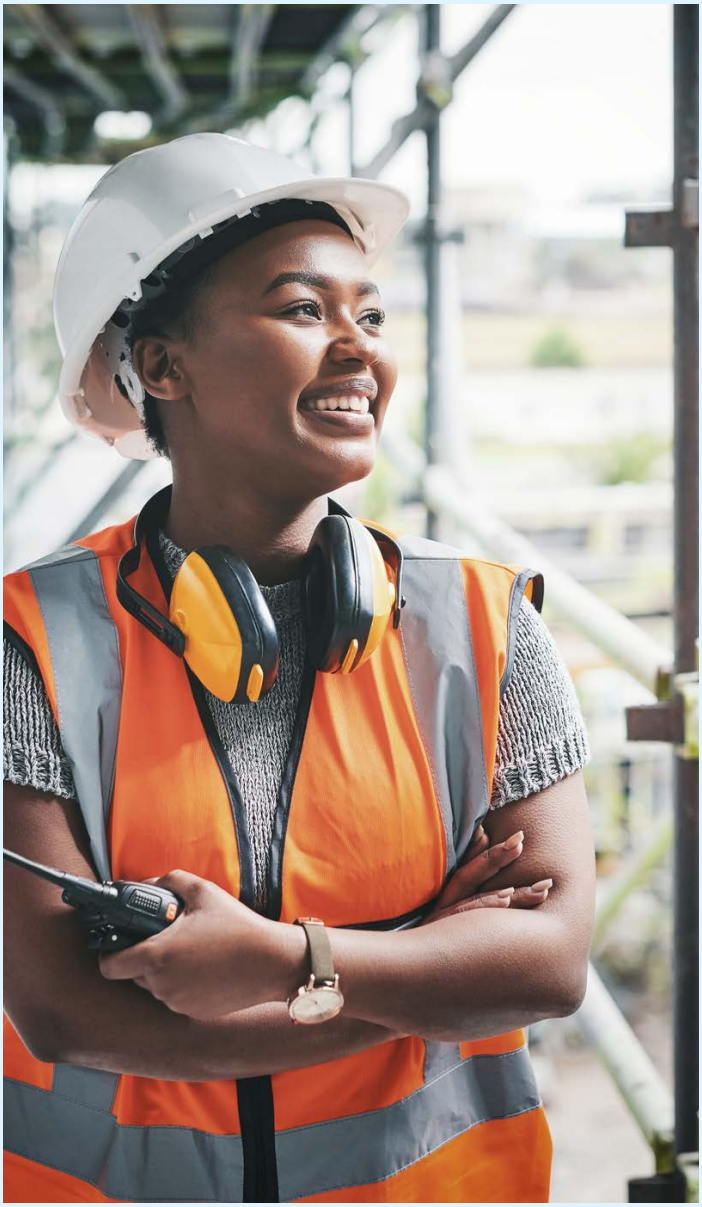
King County's embodied emissions program is built on the principle that successful project management extends beyond traditional scope, schedule, and budget considerations. Ongoing education is a key part of this strategy, which ensures that engineers, project managers, and staff understand embodied emissions and have the tools needed to integrate emissions reductions into decision-making. To facilitate this shift, the county has integrated emissions thresholds into design specifications, requires a sustainable infrastructure scorecard for projects, and created a dedicated staff position focused on embodied carbon to support all County departments.

By embedding sustainability into standard procurement and project management practices, King County ensures that emissions considerations become a natural part of infrastructure planning.

"A successful project is meeting all parts of our mission. This is an environmental benefit, and if wastewater's mission is to protect public health and the environment, then what we're doing here is that," said Carl Grodnik, Energy Program Lead at WPD.

Key Insight: Embedding emissions considerations into procurement, staff education, and project management simplifies adoption and ensures lasting impact.

King County's leadership in scope 3 emissions reduction highlights the power of strategic procurement, supplier engagement, and internal education. By integrating EPDs into purchasing decisions and fostering a culture of sustainability, the County has established a scalable model for reducing embodied carbon. Their approach demonstrates that emissions reduction is not just about targets—it's about creating a framework that ensures continuous improvement while aligning with broader environmental and operational goals.



ADDITIONAL RESOURCES AND REFERENCES

1. Learn about inventorying your embodied emissions from EPA's Scope 3 Inventory Guidance.
2. Use Anglian Water's Whole Life Carbon Playbook for guidance on integrating whole life carbon and cost into infrastructure design and planning.
3. Read the Carbon Neutral Cities Alliance's City Policy Framework for Dramatically Reducing Embodied Carbon, which offers 52 policies to help cities construction-related carbon emissions.
4. Review King County's Sustainable Infrastructure Scorecard Guidelines to learn about partnering with your suppliers to source low-embedded carbon materials into capital infrastructure.
5. Join the Carbon Leadership Forum and find resources for reducing your embodied carbon.

This paper is part of Net Zero Fundamentals, a collection of action-oriented briefs designed to help water and wastewater utilities cut climate pollution and chart a clear path to net zero. Each brief delivers practical insights, real-world utility examples, and implementation guidance for immediate impact. Access the collection of briefing papers on the US Water Alliance website.

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