WHITEPAPER

Accelerating climate tech adoption in the building industry

A framework for owners, investors and practitioners

SUFFOLK

AMERICA'S CONTRACTOR

Challenge

The building industry is at a critical juncture in addressing climate change. With nearly 40 percent of global greenhouse gas emissions attributable to the construction and operation of buildings, the sector must act decisively. Recent advancements in climate technology offer promising solutions to mitigate emissions, enhance resilience, improve performance and create economic value. However, adoption remains slow and fragmented, hindered by factors such as outdated regulations, entrenched procurement norms and lack of standardization.

Background

To underscore the built world's pivotal role in addressing the global climate crisis and determine our industry's direction, Suffolk Technologies and Suffolk Sustainability convened the Suffolk Climate Tech Forum, gathering a cross-section of the industry — including startups, investors, contractors, designers, and public officials. In his opening remarks at the Forum, Suffolk Chairman and CEO John Fish emphasized the critical importance of resiliency, particularly in the face of increasingly severe weather events. He expressed concern about the vulnerability of regions like Suffolk's headquarters in the state of Massachusetts, highlighting the potential for "catastrophe" due to a lack of adequate resilience measures. Fish's observations, drawn from his personal experience, vividly illustrated the tangible impacts of rising sea levels and extreme weather, reinforcing the need for proactive strategies to protect both physical infrastructure and the economic stability of communities.

"The number one exposure in the Commonwealth of Massachusetts is a lack of resiliency," Fish said. "I would argue that every single day that goes by, we're losing time." Reflecting on the broader implications, he added, "As I think about this issue of resiliency and the importance it is to our economy, to our civilization, I think about the most important thing—our next generation."

Fish's remarks align with a growing consensus within the industry: climate change is no longer a distant threat, but an immediate challenge that demands bold and adaptive action. Ryan Dings, President of Connecticut climate tech incubator Climate Haven, echoed and expanded on the theme of resilience during his keynote remarks at the event. He framed resilience as a multifaceted concept, encompassing the resilience of the building tech sector itself, the resilience integrated into buildings and the resilience of the individuals driving change. Dings highlighted the need to prepare for "global weirding," a term he used to describe the increasing unpredictability and severity of weather patterns, and to design buildings that are "stronger, more enduring, safer and more flexible." Furthermore, he emphasized that resilience in the built environment extends beyond physical structures to include social resilience, stressing the importance of creating spaces that foster community and combat loneliness.

In navigating these challenges, the power of partnerships emerged as a crucial enabler of progress. Dings underscored that collaboration is not merely beneficial but essential in the building tech sector, given its multidisciplinary and business-to-business nature. Drawing on his experience, he illustrated the potential pitfalls of neglecting partnerships, recounting a company's struggles to scale due to a failure to cultivate relationships across the supply chain.

This emphasis on collaboration is reflected in the Forum's main takeaway: our "Playbook for Adoption," which advocates for assembling multi-stakeholder teams from the outset of projects to facilitate effective implementation of climate tech solutions. By fostering open communication, knowledge sharing and aligned incentives, the industry can overcome barriers to adoption and accelerate the transition towards a more sustainable and resilient built environment.

The role of stakeholders in scaling climate tech

Accelerating climate tech adoption requires coordinated action across the entire building value chain. Each stakeholder group — from owners to builders — plays a distinct and essential role in driving innovation from concept to construction. The Forum highlighted how alignment, accountability, and early engagement among these actors can unlock measurable progress toward decarbonization and resilience goals.

Here are considerations for key stakeholders:

- **Owners and developers:** As primary allocators of capital and project scope, owners can embed sustainability in the DNA of a project. Forum discussions highlighted examples of how integrating climate tech solutions, such as Pretred's recycled rubber barriers and Pozzotive's glass pozzolan, into early design specifications can achieve both sustainability and lifecycle cost-effectiveness. Owners must make sustainability a non-negotiable criterion for contractor selection and material sourcing, prioritizing climate performance from predevelopment through operations.

- **Investors and financial stakeholders:** Investors not only fund startups but influence how capital is distributed across the built environment. With demand for novel decarbonization solutions on the rise, firms are backing scalable solutions like Sublime Systems' low-carbon cement and Bedrock Energy's geothermal approach, which reflect a growing appetite for infrastructure innovation. Participants called for better coordination between early-stage venture funding and long-term project finance, reducing risk and bridging commercialization gaps.

- **Architects and designers:** Design decisions can lock in a significant portion — up to 80 percent — of a building's environmental impact. Architects at the Forum noted that traditional specifications often default to familiar materials, excluding innovative and sustainable alternatives. A greater emphasis on performance-based design, deconstruction planning, and lifecycle assessments is essential to minimize environmental impact and promote circularity. Encouragingly, firms are starting to specify carbon metrics and prioritize circularity — key enablers for the adoption of novel materials like Glavel's foam glass aggregate.

- **Contractors and builders:** Construction teams are the gatekeepers of implementation, playing a crucial role in integrating climate tech solutions into building projects. However, Forum discussions revealed that site teams often lack exposure to or authority over new technologies, creating a barrier to adoption. Tools like Green Badger's LEED compliance platform and Voyage Control's logistics software aim to simplify this transition by streamlining processes and improving efficiency. Nonetheless, widespread adoption requires top-down mandates and better change management practices to support construction professionals on the ground.

Solutions for increased sustainability

The Suffolk Climate Tech Forum showcased a range of innovative climate tech solutions that have the potential to transform the building industry in a variety of sustainability areas.

Circularity: Reuse, recycling and waste reduction

- **Wasted**: Offers a circular approach to jobsite toilets that avoids harmful chemicals and transforms human waste into fertilizer.
- **Pretred**: Manufactures traffic barriers from recycled tires, offering competitive pricing, long-term durability and approval for use on U.S. roadways. This solution diverts 65,000 tires per mile, cutting 9,000 pounds of carbon dioxide per unit.
- **Pozzotive**: Converts post-consumer glass into high-performance pozzolan for concrete. Used in projects like JPMorgan Chase's headquarters at 270 Park Avenue, Pozzotive's concrete saved significant amounts of carbon dioxide equivalent and reduced heat island effects due to its higher albedo.

Industrial and energy decarbonization

- **Sublime Systems**: Replaces traditional limestone-based cement with electrochemically synthesized alternatives, with potential to reduce emissions by more than 90 percent and offering a feedstock-agnostic approach for consistent product quality and lower embodied carbon.
- **Glavel**: Produces foam glass gravel derived from recycled glass, offering thermal insulation and structural integrity. This material replaces foam board and rigid insulation, cutting carbon emissions and simplifying installation processes.
- **Bedrock Energy**: Combines oilfield drilling precision with artificial intelligence to make geothermal heating and cooling fast, affordable, and scalable. Their system significantly reduces drilling time and enables deployment in dense urban sites.

Technology and software solutions

- **Tangible**: Offers AI-powered tools that streamline building lifecycle assessments, helping designers evaluate carbon impacts and optimize material choices for more sustainable designs.
- **Green Badger**: Simplifies sustainability documentation and LEED reporting, reducing friction in project workflows and improving efficiency.
- **Voyage Control**: Provides real-time logistics management. Originally marketed for its sustainability benefits like carbon tracking, Voyage Control has found broader traction by demonstrating a strong return on investment in operational efficiency while still maintaining its environmental modules.

Looking ahead: Future directions in climate tech

The building industry's commitment to sustainability is poised to deepen through several emerging trends. Advancements in AI and machine learning and an emphasis on circular economic principles emerged as two of the most significant themes that Forum attendees are tracking.

AI showed up in multiple places at the Forum. The technology is set to revolutionize decarbonization in many ways, including with building operations by enhancing energy efficiency. While not covered at the Forum, AI-driven systems can optimize heating, ventilation, and air conditioning (HVAC) operations, leading to significant energy savings. We expect to see more companies operating in this space in the near future.

The focus on designing buildings for deconstruction and material reuse is intensifying within the sector. Embracing circular economy principles ensures that materials have extended lifecycles, reducing the demand for virgin resources and minimizing waste generation. This approach aligns with global efforts to create more sustainable and resource-efficient building practices.

Challenges and opportunities in adoption

While the promise of climate tech is clear, bringing these innovations to scale requires navigating a complex set of regulatory, market and cultural barriers. Forum discussions surfaced recurring pain points in the following arenas — as well as strategic opportunities — that stakeholders must address to accelerate adoption across the building sector.

- **Regulatory and policy landscape:** Forum participants stressed the lag in regulatory adaptation. While jurisdictions like the Massachusetts Department of Transportation are making progress, many codes are outdated. Harmonizing specifications and accelerating pilot approvals are critical. Public-private collaboration was cited as vital.

- **Market readiness and demand generation:** Startups often encounter the "first project" challenge, where despite demonstrating superior performance or cost advantages, they face resistance due to procurement inertia. Firms like Pretred and Glavel, for instance, have faced challenges in overcoming this inertia. Educating procurement teams and aligning incentives across the value chain are critical to address these barriers and create market demand for sustainable solutions.

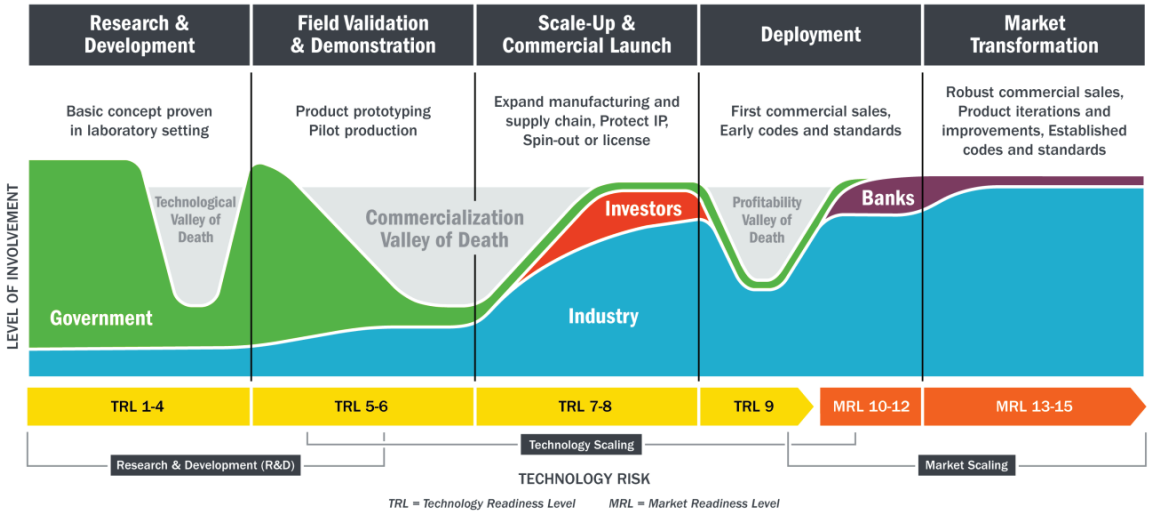
- **Scaling pilots to industry-wide implementation:** The transition from successful pilot projects to widespread industry adoption necessitates effective knowledge sharing and standardization. Breakout discussions underscored the need for knowledge sharing and the development of centralized databases to document pilot outcomes and material performance. Tools like Tangible's AI-powered lifecycle assessment software can play a key role in standardizing and disseminating learnings from pilot projects, promoting broader implementation.

- **Overcoming cost and risk perceptions:** The perception of climate tech solutions as high-risk investments and costly alternatives persists in the building industry. However, many of these technologies offer cost neutrality or even savings when considering factors such as labor, logistics, and material lifecycle costs. For example, Glavel's foam glass aggregate reduces labor time and eliminates the need for multiple insulation layers, presenting both economic and environmental advantages.

The Playbook for Adoption

Climate tech encompasses a wide range of innovations, from physical products and infrastructure ("hard tech") to digital platforms and software-based tools ("soft tech"). While software adoption tends to follow more predictable and well-understood trajectories, often illustrated by S-curves like those published by the Department of Energy, hard tech adoption is inherently more complex. Physical technologies typically require longer development timelines and higher capital investment, and they must overcome hurdles related to manufacturing, certification and regulatory compliance. These distinctions matter when strategizing for scale.

Recognizing these nuances, the following "Playbook for Adoption" offers a five-step framework grounded in insights from Forum participants and the investment experience of the Suffolk Technologies team. Though presented sequentially, these steps often occur in parallel and should be viewed as overlapping stages rather than a linear path. This flexible, systems-oriented approach is meant to guide the successful scaling of both hard and soft climate tech solutions within the building industry.



STEP 1 | Identifying the barriers

- This step does not directly relate to identifying the climate problem, but understanding the unique barriers a solution faces as it scales.
- Identify high-friction processes and uncover the specific challenges faced by each stakeholder group. A deeper understanding of these pain points strengthens collaboration and reveals critical opportunities for streamlining and innovation.
- Map the steps needed to achieve the common goals of all stakeholders and hypothesize steps that can be eliminated or automated with technology.

STEP 2 | Building the right teams early

- Assemble multi-stakeholder teams, including developers, architects, general contractors and subcontractors, at the project's inception to foster collaboration from the outset.
- Encourage open dialogue, knowledge sharing and active participation among stakeholders to align expectations, build trust and facilitate effective implementation.
- Treat your pilot customers as strategic partners. Cultivate a shared ownership of successes and advancements in the development of the business and achievement of shared business value.

STEP 3 | Measure what matters

- Define and meticulously track performance metrics across key areas such as carbon savings, return on investment, installation timelines and regulatory compliance to quantify the benefits of climate tech solutions.
- Implement a standardized framework to compare pilot project outcomes across various technologies, enabling objective evaluation and demonstrating creditability to future adopters.

STEP 4 | Unlock funding and policy levers

- Leverage a combination of funding sources, including green banks, state tax credits and incentives, Commercial Property Assessed Clean Energy (C-PACE) programs, utility incentives and public-private partnerships, to finance climate tech projects and reduce financial barriers to adoption.
- Advocate for policies that promote tracking and valuing carbon and the procurement of low-carbon materials, creating a supportive regulatory environment and driving market demand for sustainable solutions.

STEP 5 | Scaling beyond the pilot

- Go beyond marketing climate benefits alone. Position your technology as a tool that enhances workflows, reduces friction and delivers tangible operational and economic advantages. Emphasize time savings, labor efficiency, and ROI wherever possible.
- Design pilot projects that create compelling narratives and case studies. Choose early adopters strategically and focus on use cases that are scalable, repeatable and clearly impactful.
- Recognize that technologies rarely become industry standards through mandates alone. They succeed by proving their value across diverse project types and stakeholder groups. Remove friction from the adoption process by offering implementation support, data transparency and proof of performance to make uptake as seamless and rewarding as possible.

Key Takeaways and Next Steps

Breakout insights from the Forum

- Implementation gaps are more cultural than technical.
- Strong executive sponsorship and contractor buy-in are prerequisites for successful pilots.
- Real-world stories (e.g., DOT adoption of Pretred; Bedrock's urban geothermal installs) build legitimacy.
- Policy alignment, capacity building and standardized performance benchmarks were seen as essential to systemic change.
- Many participants stressed that climate tech must move beyond "innovation theater" to embedded practice, supported by clear incentives and accountability frameworks.

Stakeholder recommendations

- **Owners**: Require climate tech in RFPs/specs.
- **Designers**: Shift to performance and circularity.
- **Builders**: Pilot early and train site teams.
- **Investors**: Fund post-pilot growth with blended capital.

Suffolk encourages industry-wide participation in evolving the Playbook for Adoption. Upcoming forums will focus on shared data, policy collaboration and matchmaking for pilot projects.

Conclusion

The building industry is both a major contributor to climate change and a key lever for solving it. As emphasized during the Suffolk Climate Tech Forum, this dual role creates an urgent call to action. As John Fish noted in his opening remarks, we have a need for swift, sustained progress — not just for today, but for future generations.

Ryan Dings expanded on this by describing resilience as a multilayered imperative: for the sector, for our buildings, and for ourselves. "It's that resilience," he said, "which I believe gives the building tech sector an opportunity — and everybody in this room an opportunity — to succeed."

These ideas permeate the recommendations in this white paper: that successful adoption of climate tech is not just a matter of policy or product, but of process, partnership, and persistence. From the pilot-level learnings to the Playbook for Adoption, what emerged is clear: the biggest barrier is no longer technology — it's change management. As one participant noted during a breakout session, "When sustainability is optional, it's easy to skip. But when it's required, it becomes an engine for innovation."

Let this white paper serve as a guide — and an invitation — to build smarter, build together and build with the long-term in mind. The opportunity is in front of us. Let's act with the resilience this moment demands.

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