

InstarAGF Asset Management

Cracking the sustainability code

What next steps are needed to ensure a safe, resilient future? While new technologies are likely to play a key role, says Gregory J. Smith, CEO of InstarAGF Asset Management, we can't underestimate the value of holistic policies, city planning and community engagement.

How are you seeing traditional approaches to infrastructure change as the asset class matures and the socioeconomic landscape shifts? What is emerging as a priority?

The relationship between infrastructure and the environment is evolving, reflecting the need to address the increasing social and environmental challenges of urbanization. Eighty percent of North Americans currently live in cities, where much of our critical urban infrastructure earns a failing grade. With the pace of urbanization accelerating around the world — creating the equivalent of one new city of 1 million people every five days between now and 2050 — communities, governments and the private sector have an unprecedented opportunity to reshape the landscape, both in terms of environmental impact and quality of life.

Building a strong foundation for our communities to thrive will require scalable infrastructure, integrated technologies, resilient networks and strategic cross-sector collaborations, beginning with innovation at the local level. Our local governments are tasked with the responsibility of maintaining and building essential infrastructure on a budget of less than 10 cents per every tax dollar. As the infrastructure deficit reaches trillions of dollars, our municipalities and core public institutions require more support than ever before from private-sector investment.

This need is increasingly critical as environmental disasters become more frequent: over the last three years alone, the United States experienced 45 separate billion-dollar weather disasters. We are seeing a convergence of government, community and private-sector support for climate change solutions, led in large part by cities at the local level. With cities accounting for about 70 percent of carbon emissions in the United States, the Carbon Disclosure Project reports that nearly 50 cities in the United States have pledged to transition to 100 percent renewable energy for environmental, economic and public health reasons.

Looking specifically at the private sector, how are environmental imperatives shaping the discussion?

When you look at infrastructure, you're looking at naturally long life cycles that demand a plan for safe, reliable, efficient operations for future decades. Creating this type of strategy requires an in-depth and complex understanding of the sector, using operational, maintenance and service expertise alongside an ability to identify the path of trends in the marketplace.

The private sector is uniquely positioned to provide the knowledge, network and analysis required to manage complex solutions, mitigating risk and ensuring reliable delivery and operations of infrastructure projects to the community, while delivering a positive return to the environment. We partner with communities and governments to transfer risk and responsibility to the private sector, leveraging outside expertise and capital while increasing technological capacity and performance.

Taking environmental and social initiatives into consideration has become a fundamental component of value creation. There



District energy systems more wisely use and conserve energy, increasing access to renewable fuel stocks and enhancing resilience to extreme weather events.

is an emerging consensus in the marketplace that our infrastructure must become more sustainable. With diverse sector expertise, access to funding and the ability to bring best practices, the private sector has an important role to play in effecting this transition. As a result, PricewaterhouseCoopers reports that approximately 81 percent of private capital investors are adopting a responsible investment policy, shaping the opportunities reviewed and the projects that reach development.

Even as we work to lower emissions, population growth continually increases our energy consumption. How will that affect access and reliability in the coming years?

Current energy generation and consumption is unsustainable for our ecosystem. Finding solutions that will reduce emissions for an even larger population will be one of the greatest challenges of our century. Energy and utilities infrastructure will need to address what is expected to be a global energy consumption increase of 50 percent over 30 years.

The solutions that will best future-proof our cities will be reliable, scalable and tailored to local environments. As rural and urban communities alike face power fluctuations, outages and poor-quality power due to natural disasters, we are seeing a shift away from centralized energy distribution to more flexible solutions, such as district energy and microgrids. Such decentralized energy harnesses the power of localized areas amongst a connected network, providing economic and environmental benefits, enhancing the ability to integrate new renewable energy sources, allowing scalable additions to accommodate future city growth, and ultimately reducing grid strain and unreliability.

In the case of Creative Energy in Vancouver, for example, the district energy network connects more than 215 buildings in the downtown area, eliminating the need for individual boilers and stacks in each building, and lowering energy costs. This simultaneously works to reduce the city's greenhouse-gas emissions, build a system capable to quickly incorporate improved technologies and renewable power sources, and provide 99.9 percent energy reliability.

A growing population necessarily means more waste production. How can responsible infrastructure address this challenge?

A system of continually producing, consuming and discarding is not sustainable. Looking at food waste, which is a growing area of focus for governments, it is estimated that 40 percent of all food produced in the United States goes uneaten.

Our infrastructure needs to be designed with the future in mind, addressing macro trends such as technology, urbanization, population growth and sustainability. Bioenergy represents a conversion of these priorities, providing a pathway for cities to convert an overwhelming waste problem into a reliable energy solution. As an energy source, bioenergy is able to deliver renewable baseload power, including from waste-to-energy and anaerobic digestion facilities, and ancillary environmental, economic and social benefits.

There are a number of interesting examples, including Gresham, Oregon's wastewater treatment facility, which now produces more energy than it consumes by using the biogas produced from anaerobic digestion to generate its own energy. In the United States alone, an estimated 8,100 dairy and swine operations could currently support biogas recovery systems — this would be enough energy to power 1.5 million American homes each year.

Establishing systems to collect organic materials, such as food scraps and agriculture by-products, to be used as an energy source has enormous potential for meeting renewable energy mandates and decarbonizing the broader economy.

How can cities look to address environmental concerns?

As cities and citizens seek ways to reduce their environmental impact and create sustainable communities, trends in urban development and green infrastructure are helping neighborhoods to build in climate resiliency. An estimated 60 percent of global greenhouse-gas emissions are associated with our existing stock and use of infrastructure, creating a significant opportunity to reimagine and design our transportation, energy and water infrastructure for a more sustainable future.

We're entering an era of prevention over maintenance, building durable and flexible infrastructure to withstand decades of environmental and social needs, particularly as climate change worsens and population growth increases. Cities around the world are incorporating green infrastructure into modern urban design so they can reclaim and reuse water, better manage stormwater and waste, modernize the transporta-

tion sector, extend the useful life of essential infrastructure, and create more livable community spaces in dense urban areas.

The city of Philadelphia, for example, is undergoing a city-wide Green City, Clean Waters initiative to utilize greenery to divert storm water from sewers, reducing stress and damage to roadways, bridges and pipes, as well as filtering and reducing the runoff of pollutants — all of which will save the city an estimated \$6.5 billion in construction costs over building traditional infrastructure.



Bioenergy facilities provide the dual benefits of reducing waste and methane emissions while producing a sustainable energy source.

Looking to the future, where do you see infrastructure moving to in the years ahead?

Communications infrastructure — digital and telecom, cloud computing and data gathering — and analytics on infrastructure use and performance have presented opportunities that we never would have imagined 20 years ago, when infrastructure first emerged as an asset class. These technologies allow us to collaborate more closely with the end users, carefully tailoring the design and development process to specific needs and patterns of use. Understanding how people interact with one another and their surroundings gives us critical insight into which systems are essential, and which need to be made more sustainable.

In addition, the social nature of these technologies is enabling citizens, developers, utilities and policymakers to directly express their views, further helping to customize a city's infrastructure to match the experience of the people living there. With active dialogue and transparent engagement among all stakeholders, we can ensure regulations, policies and developments set the stage for our communities to grow and prosper.

While technology will help to revolutionize the essential building blocks of society, it's our approach and implementation of those systems, and ability to constructively engage with stakeholders, that will determine success.

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Gregory J. Smith is president and CEO of InstarAGF, where he brings more than 25 years of experience in the investment, operation, acquisition and financing of private equity investments, including public and private infrastructure, real estate, power and utility businesses. Smith was previously managing partner and head of Brookfield Financial's Global Infrastructure Advisory Group. He also

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CORPORATE OVERVIEW

InstarAGF is building a North American investment platform focused on infrastructure, real assets and private equity investments in the middle market. Our team's significant depth of sector and investment expertise, relationships, and global reach empower InstarAGF to help investors meet their investment goals.

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