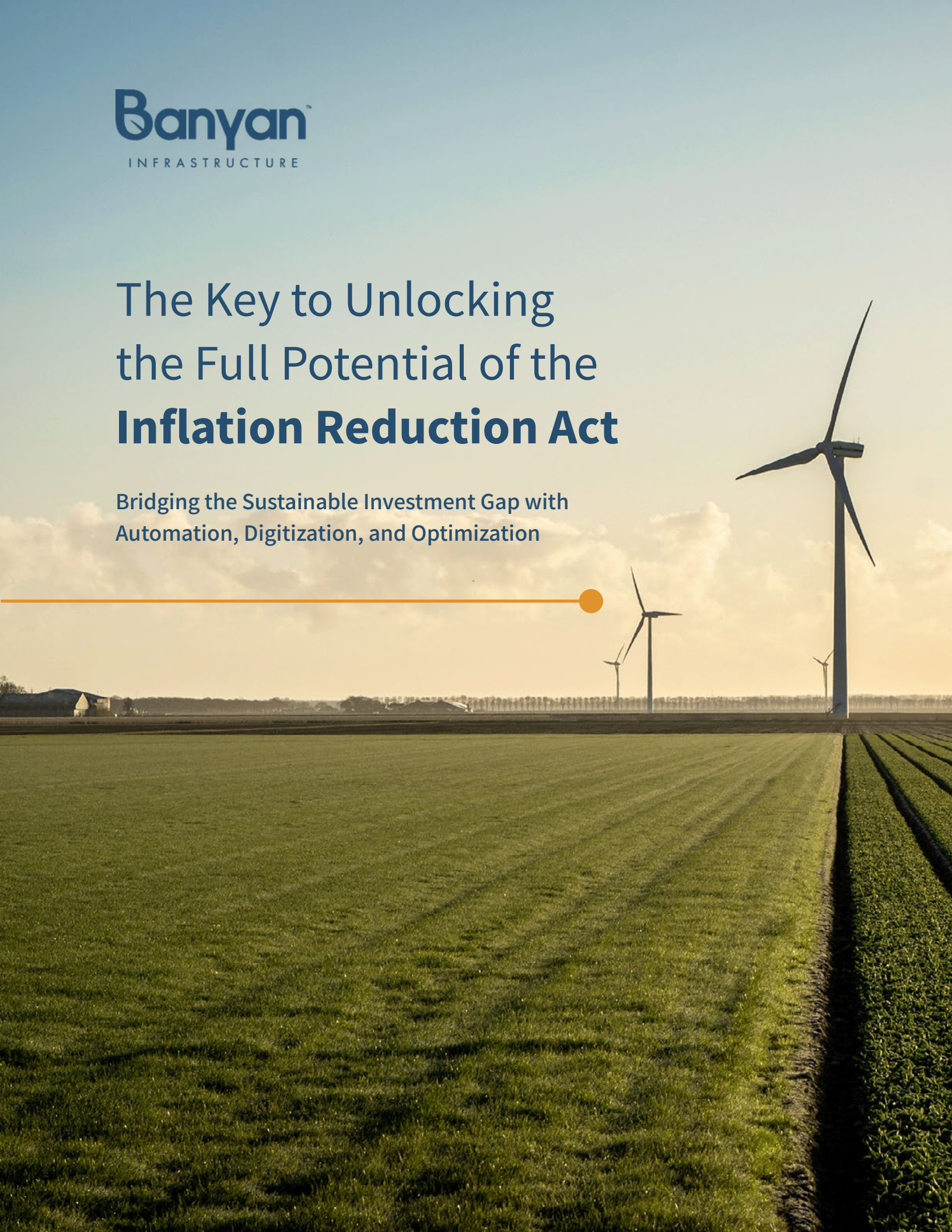
Banyan INFRASTRUCTURE

# The Key to Unlocking the Full Potential of the **Inflation Reduction Act**

## Bridging the Sustainable Investment Gap with Automation, Digitization, and Optimization



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# Executive Summary

**The world is facing an urgent climate catastrophe. To prevent irreversible damage to ecosystems worldwide and ensure a livable, sustainable planet, we must reach net zero global emissions by 2050.**

Sustainable infrastructure will play an increasingly critical – and indispensable – role in significantly reducing carbon emissions across the energy, industry, and transportation sectors. Sustainable infrastructure encompasses everything from established renewable energy sources like wind and solar, to emerging low-carbon energy solutions, to other physical systems that meet essential human needs in an environmentally, socially, and economically sustainable way.

The renewable energy industry holds great promise, as solar and wind capacities have grown over the past two decades, paving the way for emerging low-carbon technologies. However, today sustainable finance is run on antiquated processes and clunky, error-prone tools, which has continued to create a bottleneck for widespread and diverse renewable energy investment. Limited transparency drives up perceived risk, project complexities prevent investment in small deals, and barriers to entry restrict market diversity and liquidity and inhibit deal velocity.

The current investment rate must scale by an additional $3.5 trillion annually to meet global net-zero targets and prevent irreversible climate disasters. Today, $120 trillion in capital is available for sustainable infrastructure projects. However, we will undoubtedly achieve our critical climate goals with streamlined processes and updated tools.

Stakeholders across the sustainable infrastructure ecosystem must work together to close the gap. Those who act now will not only be able to scale to capitalize on the increasing volume of opportunities, but they will gain the flexibility and confidence to invest safely in a broader range of project technologies and sizes.
It must be a collaborative effort to transform this kind of industry.

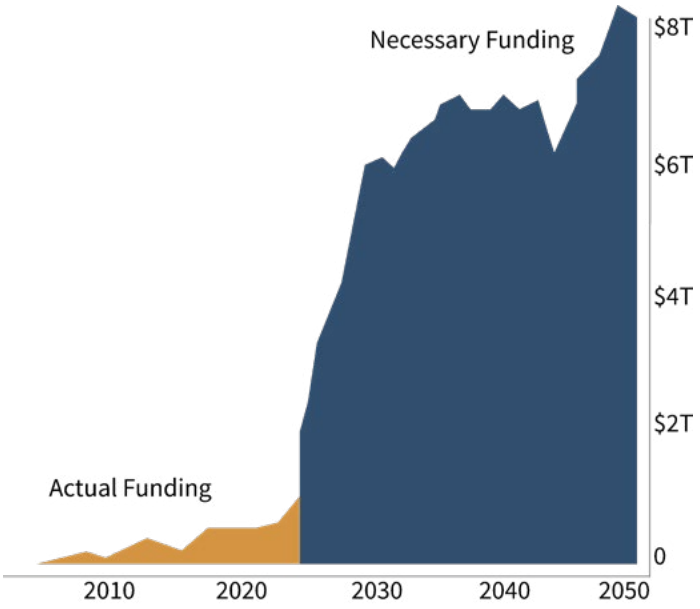
**To bring sufficient capital to meet the growing pipeline of projects, as an industry, we must take three critical steps:**

- Ensure a scalable supply of finance by replacing manual tools with digitized and automated platforms.
- Foster deal velocity of smaller projects by simplifying risk through standardization and reducing overhead through modularization
- Maintain compliance with new requirements by leveraging software for transparency and streamlining fulfillment of new obligations

## Let’s work together to simplify, streamline and scale sustainable infrastructure – and save our planet.

# **Reaching Net Zero:** The Multi-Trillion Dollar Deployment Gap

A recent analysis by McKinsey concludes that for the world to reach net zero by 2050, annual investment in low-emissions capital stock will need to increase by **$3.5 trillion.**[1] Global investment in sustainable infrastructure reached **$755 billion** in 2021, so the capital market must scale more than **100x over the next 20 years to meet this goal.**




The good news? This goal is attainable: Globally, trillions of dollars have been committed and are available to be deployed to climate solutions, and more investors are flocking to the space every day. And with its allocation of $369 billion in capital to clean energy initiatives, the Inflation Reduction Act (IRA) can jumpstart the next phase of the U.S.'s low-carbon future. Depending on the rate of clean energy deployment, experts estimate that the IRA's tax credit and other provisions could provide more than **$1.2 trillion** in direct clean energy support by 2040.[2]

**The industry needs to prepare to handle such investments at scale.** Sustainable infrastructure investors rely on outdated tools and slow, manual processes to collect data and assess risk. These processes create complexity, limit visibility, and make transacting and maintaining deals inefficient and costly.

The industry must embrace a digital data management and risk monitoring approach to sufficiently bridge the gap between available capital and sustainable infrastructure needing investment. Using existing technology, banks and funds can increase transparency and liquidity, tighten timelines and overhead, and unlock the full potential of the sustainable infrastructure market.

## Sustainable infrastructure is the future

Renewable energy generation capacity in the U.S. has increased five-fold over the last ten years, primarily fueled by technological advancements, renewable energy reaching cost parity or superiority over other energy sources, and increasingly supportive federal and local policy.[3] These factors have improved project economics, diversifying the market beyond large utility-scale projects to include higher penetrations of smaller distributed projects.

Moreover, sustainable infrastructure now reaches beyond established renewable energy technologies like wind and solar to geothermal, hydrogen, anaerobic digestion, and many other technologies that support the decarbonization of food, water, and waste. This broad diversification creates opportunities for new investors to enter the market, increasing the potential for expansion.

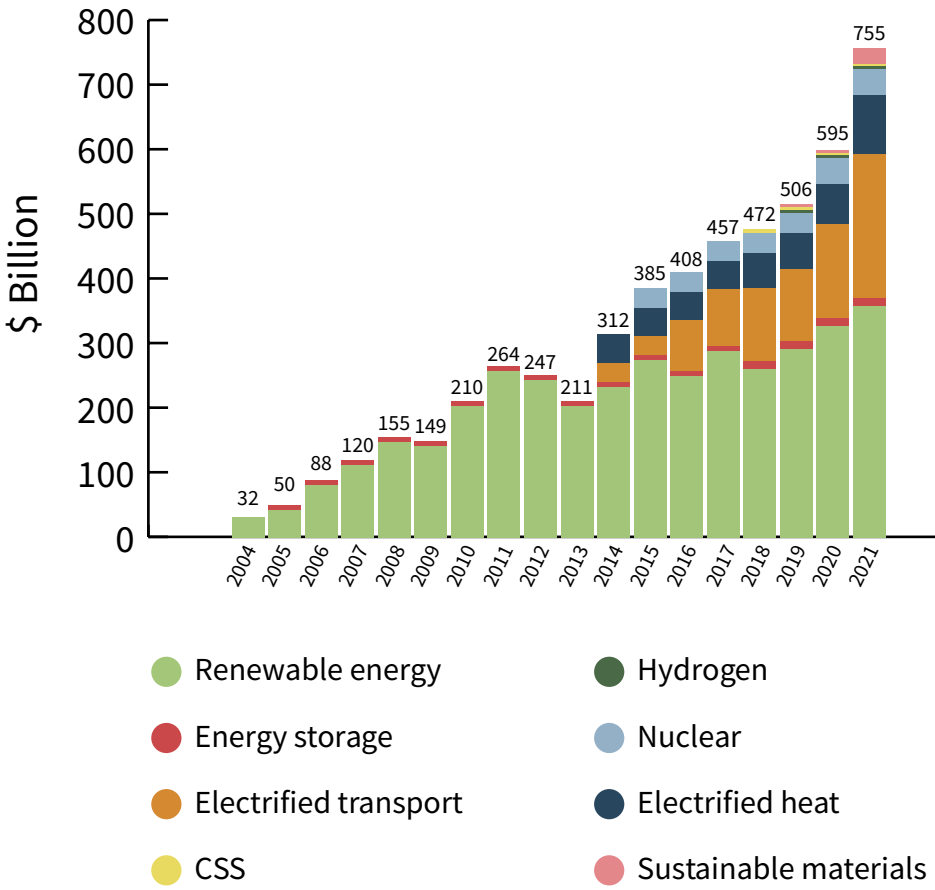



**Figure 2:** Global Investment in the Energy Transition by Sector
(Source: BNEF)

## A boost from the IRA

It is now undeniable that sustainable infrastructure will play a fundamental role in the world's energy future, and the IRA will unlock even greater opportunities for meteoric growth in the U.S. As a direct result of the IRA's solar incentives, for example, Solar Energy Industries Association (SEIA) estimates a 69% increase in new solar installations between 2022 and 2032.[4]

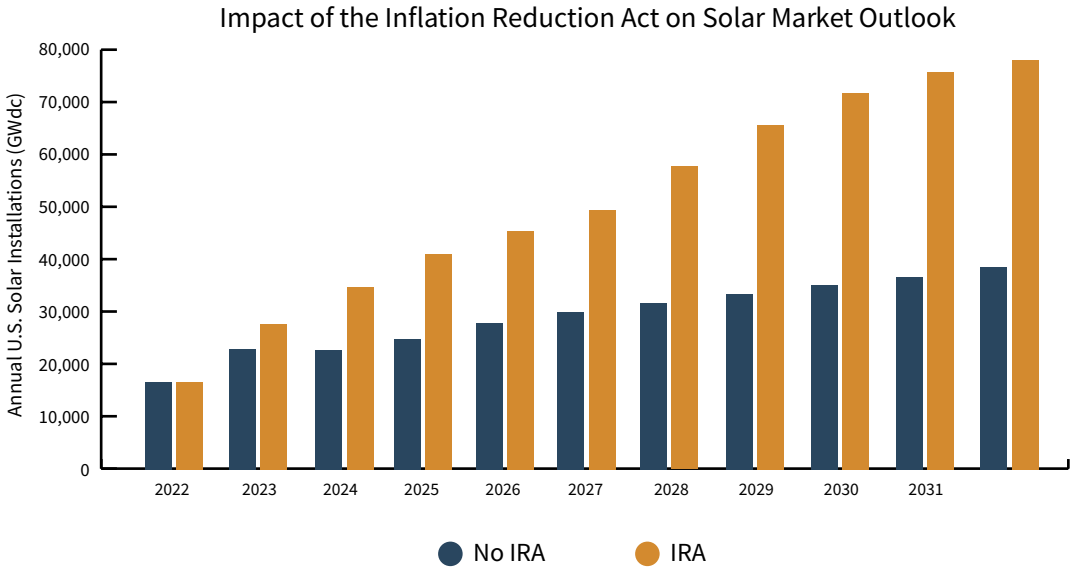



**Figure 3:** Impact of the IRA on Forecasted Annual Solar Deployments
(Source: SEIA)

The IRA has also reestablished and expanded federal investment tax credits for other renewable energy technologies, creating an unprecedented long-term runway of predictable federal support.

Historically, barriers to sustainable infrastructure development and capital investment have dragged down the market growth rate by limiting deal transparency, hampering efficiency, and driving up project risk. The industry must take action to streamline processes and leverage new technologies that simplify and standardize sustainable infrastructure investing and open the doors for a diverse, liquid, and scalable market.

**To unlock the full potential of the IRA – and to achieve global carbon emission reduction goals – the industry has to overcome these barriers.**

## Barriers to industry growth

Sustainable infrastructure development is capital-intensive, complex, and riddled with potential risk at every step. For renewable energy projects, interconnection, permitting, and construction delays can take months to resolve, driving up costs and stunting ROI. Development risk, complicated by tricky tax equity structures, has made investors hesitant to allocate development capital. A National Renewable Energy Laboratory (NREL) survey found that raising capital and obtaining tax equity were top barriers to small-and large-scale solar project development.[5]

In recent years, the COVID-19 pandemic, macroeconomic trends, and supply chain issues have only made development riskier by creating massive project delays and draining returns. Legislative uncertainty also plagued the industry, creating more investor hesitation as federal tax credits slowed down and expired. New renewable energy tax credit packages stalled in the Senate. In early 2022, the American Council on Renewable Energy (ACORE) reported that 63% of respondents in its annual investor survey expected 50% or more of their renewable energy investments would delay due to legislative uncertainty.[6]

## It's time to evolve

With the boost from the IRA and an expanding, diversifying market that's attracting new investors, the industry needs to evolve. By adopting a digital strategy, sustainable infrastructure investors can automate critical operations, accelerate deal velocity, and maintain compliance with new requirements, which will, in turn, increase both profitability and market share and unlock access to the growing range of projects within the market.

This white paper introduces three key barriers to sustainable infrastructure investing. It identifies critical strategies for how existing technologies and processes can lay the foundation for an efficient, transparent, and scalable project finance ecosystem that supports global decarbonization. Fundamentally, improved data management and processes are critical in deploying the allocated capital in the IRA to its full potential.

Improved Data Management is Critical for Increasing Capital Deployment

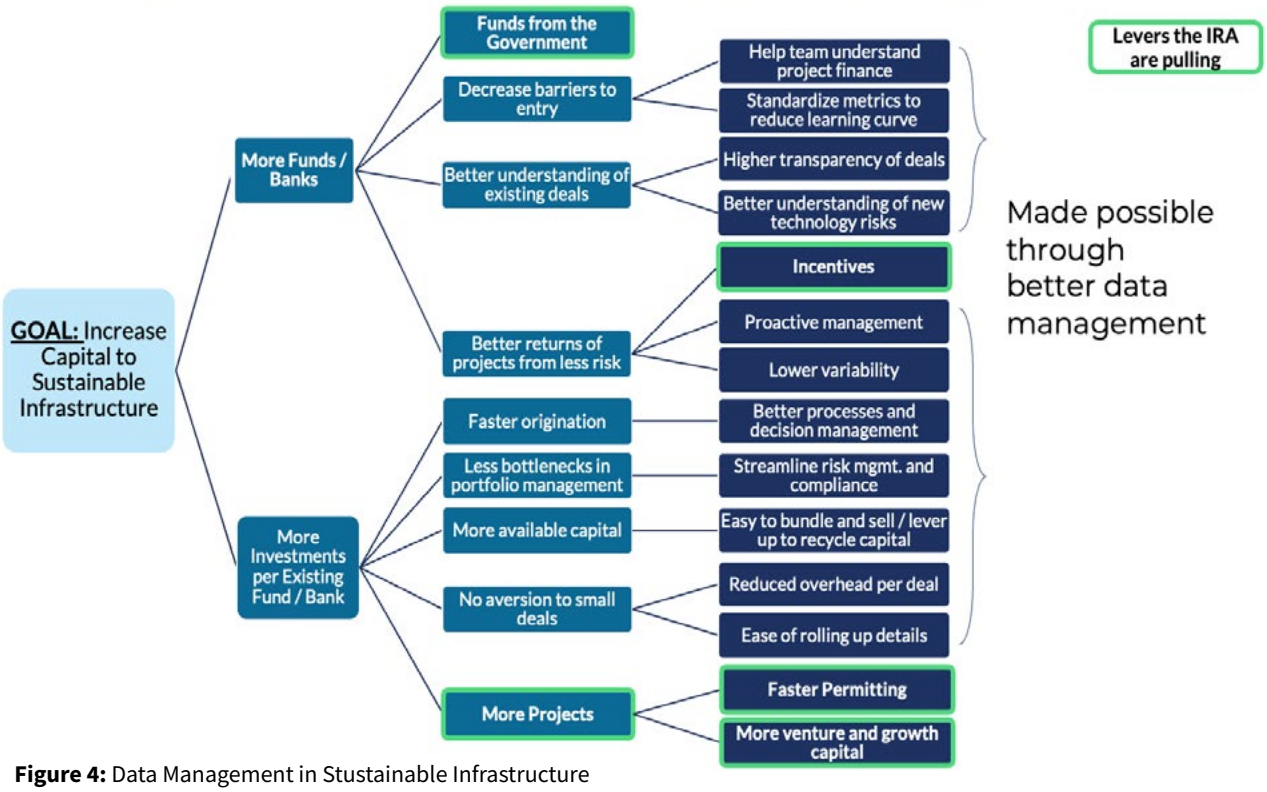



**Figure 4:** Data Management in Stustainable Infrastructure
(Source: Banyan)

# Financing Barrier #1:

## Processes are manual and time-consuming, creating barriers to scalability.

Sustainable infrastructure encompasses a wide range of technologies and applications, which means each project is a unique opportunity, with little standardization across the board – and little insight into how, where, and what to standardize.

Moreover, manual data gathering and reporting create opacity when getting deals done. Deals are also complex, involving multiple counterparties, siloed systems, and spreadsheets, and require tedious manual workflows to share and verify information in every stage of the loan cycle. This process drives up costs and increases complexity, **losing up to 70 bps and wasting ~150 hours for a single loan.**

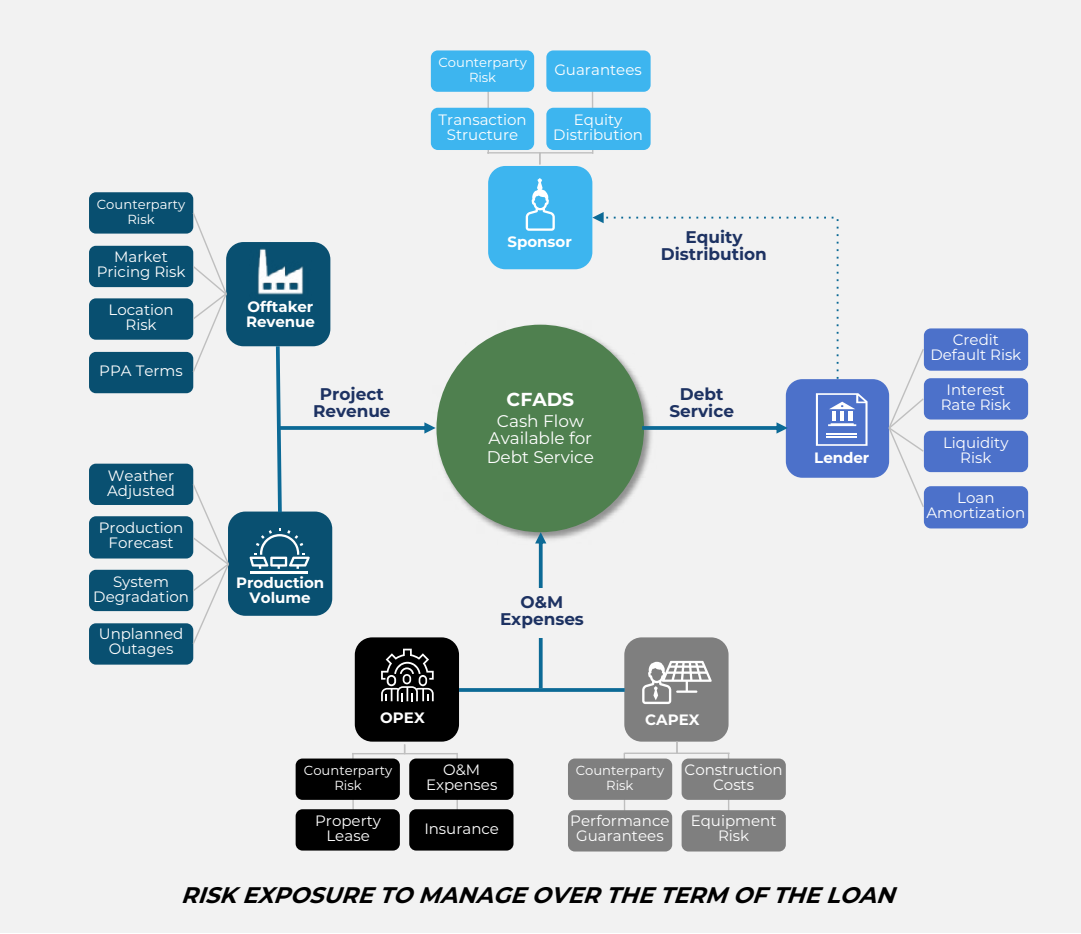



**Figure 5:** Risk Exposure to Manage over the Term of a Loan
(Source: Banyan)

Banks clinging to yesterday's tools and legacy systems will be underprepared to scale efficiently for tomorrow's challenges and capitalize on the climate tech industry's imminent explosive growth.

To address increased capacity, traditional investors often default to hiring more analysts to work through the same manual processes. This strategy is slow and expensive: It doesn't improve efficiency or address systemic issues and wastes valuable time and talent. Moreover, specialized talent isn't readily available, causing bottlenecks for those looking to grow but unable to find the internal capacity to process transactions.

A 2022 study by Deloitte underscores this issue: When asked about the top drivers for hiring accounting and finance talent, the top answer from hiring managers was resounding "the need for more headcount in existing areas where workloads are increasing." At the same time, 82% of big employers stated that hiring and retaining much-needed accounting and finance capacity is challenging.[7]

Instead of injecting more human capital into a flawed system, banks need to leverage today's digital technology to streamline processes and implement automation. **We need a digital solution to address increased capacity and advance meaningful market growth efficiently.**

## **The Solution:** Initiate digitization today to build the foundation for future workflow automation.

**Achieve efficiency and scalability through digitization & automation.**

The path to rapid scalability starts with simple data digitization which eliminates the risk of errors, inconsistencies, and redundancies that come from manual copying and pasting. Data should be stored in a unified cloud-based location so that different stakeholders can simultaneously access the same up-to-date information instead of juggling multiple static documents. This single source of truth not only provides an infallible system of record for all involved, but it also enables asset performance optimization through real-time analysis and in-depth reporting insights.

Digitized data stored in a single source of truth paves the way to process automation, which creates faster, more flexible processes and allows skilled workers to spend less time in the back office. Upgrades like form auto-population, compliance automation, and automatic report creation can save a typical lender hours on a single deal.

**Let's take commercial lending as an example.**

Historically, traditional banks have relied too heavily on legacy systems and lengthy approval processes necessitated by limited visibility to critical information, making commercial lending labor-intensive, slow, and expensive for all parties. Some organizations use upwards of ten systems to process loans from start to finish![8]

The 2008 financial crisis gave rise to fintech, which leverages innovative digital technologies to create new business models and tools that decrease overhead and reduce barriers for borrowers and lenders. For example, a single Small Business Administration (SBA) application typically takes 10 to 14 business days to be reviewed by a traditional bank. By digitally collecting and analyzing data, fintech start-ups have reduced application processing costs and improved visibility to borrower information, creating more lending opportunities and significantly decreasing application wait times. Today, it can take **minutes** for a business to apply and approve a $150,000 line of credit, thanks to automated processes that pull and verify essential digitized information.[9]

By adopting automation advancements, commercial lenders have achieved low cost of capital and high velocity while simplifying and speeding up the loan process – and there's still considerably more progress. In 2020, Deloitte found that lenders spent up to 40% of all resource time in commercial lending on manual tasks.[10]

**Similarly, sustainable infrastructure lenders can leverage fintech advancements to enhance visibility, streamline processes, and establish a solid foundation for future growth.**

# Achieving Efficiency Improvements for Green Bank with $1.7B in AUM

**The Client will save over 1,400 processing hours across more than 30 reduced steps by replacing its manual systems with Banyan Infrastructure's Project Finance software.**

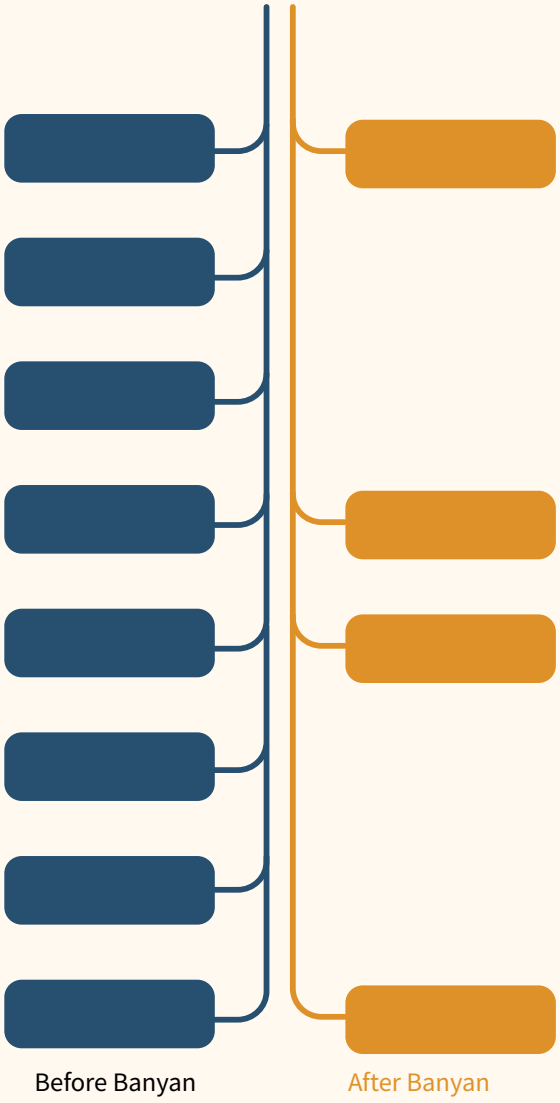
## Key Results

- 1,400+ person hours saved per year
- 30+ fewer steps needed
- 2+ systems eliminated
- 10+ features added

## The Challenge

A sizable green bank with $1.7 billion in assets under management approached Banyan Infrastructure with a scalability issue. The Client, like other banks in the sustainable infrastructure space, is facing a growing number of reporting covenants to track. However, its on-premise system is already becoming an acute pain point, as it is cumbersome and time-consuming to maintain. It also needs more flexibility and provides more visibility to stakeholders.

They needed to address this issue quickly. If not, it would cost them considerable overhead and employee time, increase the risk from opacity and manual data entry, and stymie their ability to scale and capitalize on industry growth. The Client knew it must initiate an incremental innovation rollout with new software supporting long-term scalability and improved efficiency.

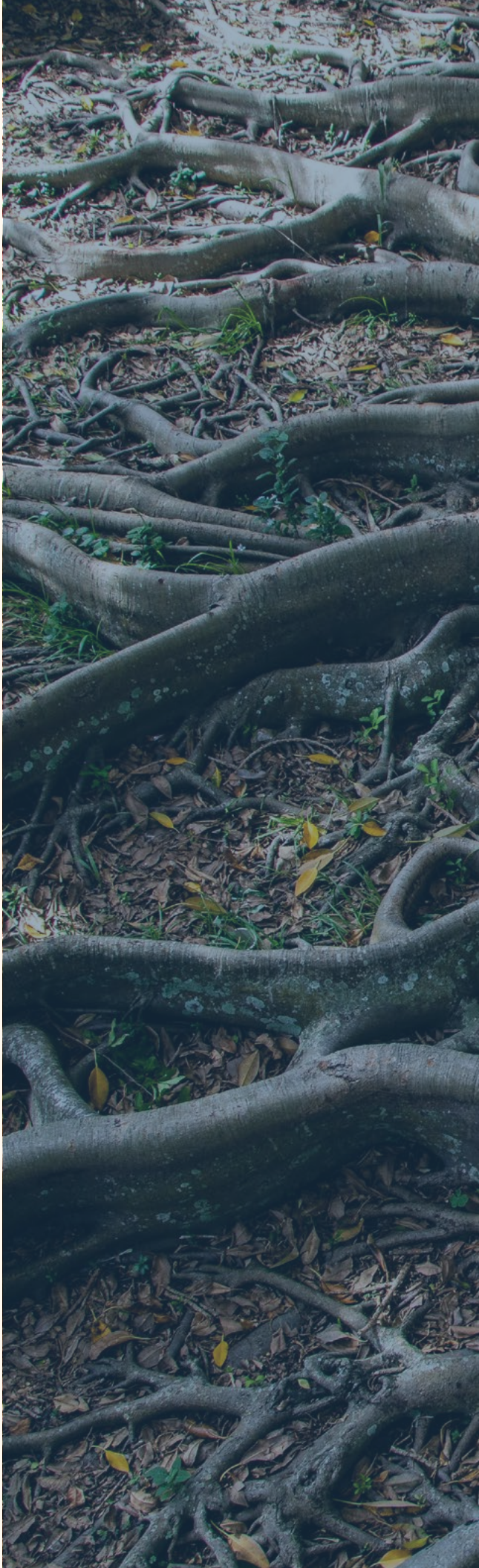



## The Solution

Banyan Infrastructure worked with the Client to test and prove that there would be dramatic efficiency gains when the Client transitioned from its on-prem system to Banyan Infrastructure's software.

Banyan Infrastructure's software will automate calculations, filing, report creation, and other manual workflows, which frees the Client's time to assess loan and portfolio health instead of data scrubbing. Using Banyan Infrastructure's single source of truth, the Client can cut out unnecessary systems and avoid risky, time-consuming data transfer steps.

Next, Banyan Infrastructure will work with the Client to launch the system, providing training and continuous support to ensure streamlined change management.



# Financing Barrier #2:

## Project complexities prevent efficient investment in small to medium deals.

Sustainable infrastructure projects are typically capital-intensive and often require specialized expertise to successfully deliver maximum returns to project stakeholders. As a result, more extensive projects, which benefit from economies of scale for both soft and hard costs, have historically been the most attractive for developers and investors alike. In 2020, the U.S. Department of Energy (DOE) reported that the overhead for a 5-megawatt (MW) C&I ground-mounted system was $0.68 per watt, more than three times the estimated $0.21/watt required for a 100-MW utility-scale system.[11]

As the renewable energy industry has grown over the last decade, a 60% reduction in solar installation costs has opened the door for a wider range of project sizes to pencil. By the end of 2022 Q3, SEIA estimates that more than 135 gigawatts (GW) of solar capacity was operational in the U.S., with almost one-third attributed to commercial, residential, and other behind-the-meter projects.[12]

But even as smaller project economics have improved, overhead and other soft costs remain a barrier for both developers and investors. Small deal complexities and the need for project customization mean more costs, potential delays, and greater risk. These costs make pushing small deals through the pipeline difficult, even if they are high-impact and will ultimately produce favorable returns.

"The lack of reliable metrics to track and predict the outcomes of renewable energy assets is a significant barrier to sustainable infrastructure investment. Existing tools, such as FICO scores, have been shown in numerous studies to be inaccurate in predicting credit default risk in sustainable lending. There is a pressing need for a new utility risk metric, similar to a FICO score, that applies to distributed and community energy.

Banyan and technology players are well-positioned to pioneer new risk metrics that can successfully predict repayment given the digitization of loans and the ability to ingest data that can account for several economic factors. By addressing risk scoring efficiently and accurately, we can accelerate, and reduce the cost of capital into sustainable infrastructure investments, supporting the energy transition."

**Kareem Dabbagh & Dr. Joseph Goodman,**
**Volo Earth**

Why does this matter? While the IRA's incentives benefit a wide range of investments, small to medium projects are getting the largest boost. With the support of the IRA, projects in the one to five-megawatt range that previously were unprofitable are now bankable. Thanks to the IRA's lucrative tax credits and establishing a $27 billion green bank, smaller deals will flood the market – and they'll be moving relatively quickly as developers capitalize on this opportunity.

**Banks and funds that can quickly and efficiently invest in smaller deals will win in this new landscape**. However, resource constraints, inefficiencies, and project complexities can still create barriers to investment in even the most financeable, high-impact deals, so preparing for the sheer volume of opportunities coming down the pipe is imperative.

**The current process can't scale to meet future demand.**
To illustrate, let's imagine a bank with one billion dollars to invest in sustainable infrastructure. The capital was previously invested in a single billion-dollar coal plant, and the bank is now deploying it to one thousand small million-dollar solar facilities.

**That's a 1000x increase in the volume of deals** – and without any changes to current processes and tools, assuming similar time and attention required per deal, it could mean a 1000x increase in hours to close all of them. For even a 20-person team working around the clock, this increased need is impossible to meet.

While the above example is a gross oversimplification, it illustrates the importance and urgency of the massively scaled, highly efficient system needed to support the industry's explosive growth. For some investors today, even a $50 million deal is too small and difficult to process; these are the ones that will fail to capitalize on the small to medium deal market growth – and these are the ones that will fall behind.

## **The Solution:** Use technology to reduce risk, create standardization and minimize overhead costs to open doors to small, distributed investments.

Standardization across smaller deals will make bundling them into more significant investments easier, creating an inclusive investing landscape and empowering smaller and local banks to participate in and facilitate a more liquid marketplace.

### Modularize project components to simplify risk assessment

Currently, each bank assesses sustainable deals uniquely, relying less on uniform analysis from deal to deal and more on existing relationships to create trading opportunities.

Sustainable infrastructure development encompasses various project sizes and technologies, each with nuances and complexities. It seems futile to fully standardize them into a single formula. While this may be true, some modularization of these deals is possible. By finding standard components among seemingly disparate projects, banks and funds can start standardizing an approach to each. That way, each new deal can be addressed not as a unique snowflake but as a deal with familiar components and risks.

Decreased complexity and greater predictability result in inefficiency gains and lower perceived risk, lowering barriers to investment. Like how a FICO score is used to standardize risk assessments, sustainable banks and funds can and should begin normalizing other key metrics – and how they are calculated – across the industry. Standardization creates better predictability, which boosts collective confidence and clarifies expectations, resulting in a lower cost of capital and better bankability.

### Collaborate to create an inclusive investing landscape

On a macro level, a modularized structure across sustainable infrastructure deals will open the doors for different types of lenders and technologies to participate in a more inclusive, diverse market. In particular, green banks and smaller financial institutions like local credit unions or community banks will more easily enter the market by rolling up smaller deals into a single large one – bundled into a syndicated loan portfolio or security – and pitching it to larger banks.

This kind of market transformation will be most efficiently and effectively achieved through collaborative efforts between multiple stakeholders in the industry. Static documents and siloed tools will inhibit and slow dynamic cross-collaboration. Instead, a digital cloud-based single source of truth can ensure that the same up-to-date information is shared and accessible by all involved.

A liquid marketplace for investors to move in the capital stack will also be critical in lowering barriers to entry and fostering long-term scalability. By establishing its federal tax credits' transferability, the IRA facilitates market liquidity and lender and developer diversity. Many industry experts agree that the flexibility of transferable tax credits will result in higher velocity and more opportunities for different market participants.

Tax equity is critical in renewable energy investment, representing about 35% of the capital stack for a typical solar plant and 65% for a typical wind plant. [13] Tax credit transferability enables financiers to access the tax equity part of the capital stack, which means that deals will no longer be monopolized by those who understand the specialized complexities of tax equity. Developers can avoid the delays and costs that come with tax equity uncertainty, and smaller or newer developers without established tax equity relationships will no longer be at a disadvantage.

For sustainable infrastructure investors to scale to meet critical demand, they need to foster a liquid, diverse market where every financial institution wanting to invest in sustainable project finance can do so with minimal barriers. A modularized deal approach paired with new digital tools can reduce barriers and foster opportunities for new entrants to participate, unlocking much-needed market liquidity and deal velocity.

# Financing Barrier #3:

## Tax credit requirements are complex, making compliance challenging to manage and track.

One year after the landmark passing of the IRA, a lack of clarity around project eligibility and compliance has resulted in a tax credit market that needs to be faster to transact. For example, more than nine months after the IRA, the IRS proposed guidelines on direct pay – a fundamental mechanism of IRA tax credits. These new guidelines have meant that while many of the IRA's tax credits create significant financial benefits for sustainable infrastructure projects, it's been difficult for financiers and developers alike to decipher a given project's eligibility for tax credits and their various adders.

Beyond whether or not a project qualifies for specific tax credits, it is also critical for project developers and financiers to understand what is required to access the credits and maintain compliance with credit requirements. This process involves navigating through a maze of documentation creation and tracking, data integration from various sources like payroll, and other data management tasks that must be actively maintained and auditable throughout a project.

While the tax credit market has lagged, deals have skyrocketed: By April 2023, a staggering $150 billion in capital investment in domestic utility-scale renewable energy projects and manufacturing facilities had already been announced, totaling nearly 96 GW of renewable energy capacity.[14] This massive inflow of projects translates to mountains of data and documentation that deal teams must manage and organize to track and measure project tax eligibility requirements. Already small and overworked teams can't keep up with new deals and project-level data, not to mention efficiently and accurately preparing relevant documents for timely submission.

It's becoming increasingly clear that current processes and systems do not provide sufficient support for growing operations to take full advantage of IRA tax credits while meeting all fundamental requirements and presenting auditable and organized documentation.

**New tools are needed.**

While the IRA has been an incredible financial boost to the industry, the reality is that only some organizations can take full advantage of its tax credits. As with the first two financing barriers discussed in this paper, the current processes and tools will not solve current problems. Critically, a single source of truth can enable organized and transparent obligation tracking while minimizing the risk of manual error or missing required documents.

Dependence on static tools also limits the ability of the industry as a whole to evolve

with new financial opportunities like the IRA. By embracing project finance solutions, the industry will scale and develop a more diverse, liquid, and lucrative market.

## **The Solution:** Digitize compliance to take advantage of tax credits and manage ongoing requirements.

The industry must adopt current technologies to increase transparency around requirements and ongoing obligations through automated risk management.

**Increase transparency and centralize tracking and preparation of ongoing obligations.**

A centralized approach will allow companies to execute sustainable infrastructure deals efficiently and accurately and track and report the ongoing tax credit compliance critical to project economics. Today, companies store essential documents for deals in disparate folders and systems. Some entities even still have printed documents organized in filing cabinets. As the market continues to grow, it will become increasingly unmanageable to organize critical information for larger volumes of deals.

A single cloud-based source of truth for documents can simplify data collection and provide 360-degree visibility to facilitate real-time collaboration amongst key stakeholders. Evaluating project tax credit eligibility, tracking against ongoing or one-time milestones, and other critical steps for portfolio management are all made more accessible and more efficient with a single source of truth.

For those awaiting IRS guidelines – or clearer, more specific guidelines – for IRA tax credit compliance, a single source of truth makes it easy to have a clear audit trail of various documents as an essential form of insurance against future updates or released guidance. For example, for compliance, the IRS's initial November 2022 guidance regarding prevailing wage stated that projects should retain "sufficient records."[15] While the Department of Labor provided a few examples of wage records that could be acceptable, developers and financiers alike await more clarity from the IRS before this requirement takes effect in January 2024. In the meantime, creating an organized single source of truth with comprehensive documentation is the best way to minimize risk and hedge against future guidance.

Lastly, given the sheer volume of projects that qualify for tax credits, adding automation to compliance tasks adds certainty that everything will stay intact to make the applicant ineligible for any tax credits. Using automation includes creating custom alerts, automating data collection, and setting the appropriate level of controls on document and report submissions.

**Take direct pay as an example.**

Temporary requirements were released by the IRS in June 2023 (a year later), which outline the required steps for direct pay. After satisfying project requirements, the next step involves a mandatory prefiling registration process that requires document requests

for more than 20 project data points, including project permits and financial structure. It's important to note that a project's registration number is only valid for one taxable year. Companies must first renew the registration on time to be eligible for direct pay the following year. Despite a few critical details like these, the pre-filing process is not yet straightforward, as no online registration portal is available. Especially given this ambiguity, a data room with all relevant documentation will be vital for any entity intending to file direct pay efficiently and accurately.

After filing with the IRS on time with the unique project registration number, the entity must ensure that ongoing requirements are met or risk penalties. In particular, failing to meet the domestic content requirement – or prove it is being met – results in losing up to 40% of the credit. A single source of truth for all project data will enable this kind of project oversight that will be critical for ongoing tax credit eligibility and, thus, for healthy project returns.

| Step | Requirements | Requirement Frequency |
|---|---|---|
| **Satisfy project requirements** | Measure the project against project requirements to determine if the project meets the requirements | **One time:**<br>If projects don't change |
| **Pre-filing with the IRS** | • Submit pre-filing application (includes document requests for 20+ project data points)<br>• Obtain a unique project registration number | **One time:**<br>If used in same tax year<br>**Ongoing renewal:**<br>If used in subsequent tax years<br>**Ongoing amendments:**<br>If project changes |
| **Filing with the IRS Compliance** | • Ensure a timely filing<br>• File with unique project registration number | **One time** |
| **Monitoring and Compliance** | • Ensure no project changes that would require an amendment to the filing<br>• Ensure ongoing requirements are met | **Ongoing** |

# What is tax credit direct pay?

In addition to tax credit transferability, the IRA established tax credit "elective pay," commonly known as "direct pay." Direct pay enables eligible entities that do not owe federal income taxes to take advantage of 12 of the IRA's tax credits, including clean energy production tax credits, investment tax credits, and credits for carbon sequestration. When building qualifying clean energy projects, these entities can file a tax return to receive a payment equal to the total value of the tax credits from the IRS. Eligible entities include:

- **State, local, and territorial governments**
- **Tribal and native entities**
- **Rural energy cooperatives**
- **Other tax-exempt entities**

**Fundamentally, direct pay enables tax-exempt entities like local governments and nonprofits to demonstrate climate leadership and take an active role in bringing clean energy projects into their communities.** Direct pay, in turn, provides local economic benefits like job creation and workforce training, environmental and health benefits, and environmental justice advancement.

Despite guidance released by the IRS, keeping track of eligibility, forms, documents, and other requirements for monetizing tax credits under the IRA can take time and effort. For organizations exploring direct pay and transferability, it's important to use systems and tools that make it easy to navigate the process while tracking and managing compliance. The automation, 360-degree visibility, and seamless collaboration features of cloud-based software like Banyan Infrastructure will be critical as each organization scales to address increasing numbers of projects.

# What is tax credit transferability?

Historically, there have been two distinct U.S. federal tax credits for renewable energy projects. In 1992 a production tax credit (PTC) was enacted for wind projects and expired at the end of 2021. The solar investment tax credit (ITC), first enacted in 2006, is widely credited as one of the vital policy mechanisms that drove the massive growth of the solar industry over the last 15 years. Under the IRA, the wind PTC and solar ITC were restored and extended for several years.

The IRA allocated roughly $43 billion to sustainable infrastructure tax credits. Developers can now earn credits using domestically manufactured equipment, ensuring fair wages and apprenticeships, and siting projects near frontline communities. More than a dozen renewable energy technologies, including electric vehicles, green hydrogen, hydroelectric, carbon sequestration, and more, are eligible.

**In addition to extending and expanding the suite of tax credits for sustainable infrastructure projects, the IRA includes a critical measure that could lower project barriers and enable a more liquid market: tax credit transferability.**

# Additional Barriers

Financing is not the only part of sustainable infrastructure that needs a technological boost. Similar process barriers remain in other stages of project development that could limit the ability to scale efficiently and maximize the economic benefits of the IRA.

The IRA's renewable energy tax credits include several bonus adders that can boost the total awarded credit to 50% or more. With this boost, project economics could produce unprecedented gains. Developers and lenders meeting the required criteria will gain the competitive advantage of an accelerated return on investment.

## Manufacturing Barriers

One adder provides an additional 10% for projects constructed with a minimum percentage of domestically manufactured equipment. China currently dominates the solar manufacturing market, with a supply anticipated to **grow from 80% of global demand to 95%** in the next few years. However, imported materials are vulnerable to the impacts of global economic and political trends, and solar is one of the many industries that is still reeling from supply chain delays due to COVID restrictions, recent policies, and other factors. In the second half of 2022, more than 1,000 shipments of solar equipment were rejected from U.S. ports, where **12 gigawatts of solar modules** could be held up from entering the U.S..
Focusing instead on domestic supply chains will enable developers to capitalize on the IRA tax credit adder while minimizing the risks and costs associated with international fulfillment delays and increased prices. While domestic solar manufacturing is still limited, several prominent American manufacturers recently announced intentions to develop large-scale facilities over the next few years.

To streamline processes and ensure transparent supply chain tracking, developers should turn to industry-specific platforms that integrate procurement, supply chain logistics, and other development services or leverage more general supply chain software platforms used by industries worldwide.

## Land Siting Barriers

Another critical tax credit adder provides a 10% tax credit bonus for projects in specific high-impact or disadvantaged communities. While renewable energy site selection has evolved to rely in part on tools like Google Earth and GIS data, much time-consuming manual work is often needed to fill in the gaps and compare sites.

Developers can use site selection software to minimize overhead and standardize processes and proactively identify qualifying parcels that will give their projects an economic boost. A wide range of purpose-built software platforms offer customizable analysis and filtering options to help developers find the optimal land based on environmental, technological, and other constraints. Socioeconomic factors like area median income are also used to find sites that meet the criteria for the tax credit adder.

## Transmission Barriers

Grid infrastructure - transmission and distribution lines, substations, transformers, and other grid equipment - plays a critical role in sustainable infrastructure growth. An increased number of sustainable infrastructure projects necessitates expanding transmission infrastructure and likely upgrading some existing equipment to accommodate energy transport at scale. As of September 2022, companies and governments have proposed more than 21,000 miles of transmission infrastructure additions or upgrades across 350 projects to meet roughly 320 GW of planned wind and solar capacity.[16]

A fully funded and seamlessly developed project can still hit significant delays and raise costs if it needs the physical infrastructure to transport its produced energy to the end consumer. As a high volume of smaller renewable energy projects has flooded the grid in recent years, grid congestion has increased drastically, raising costs in most ISO regions across the U.S.

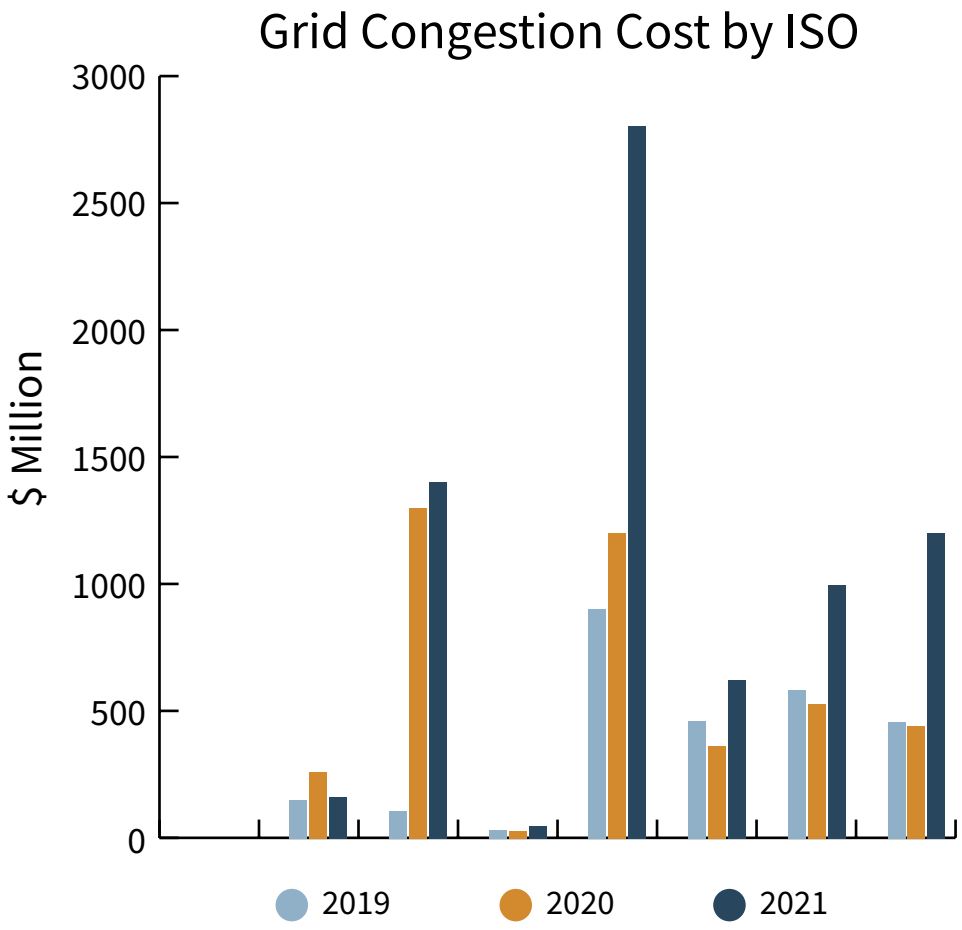



**Figure 6:** Grid Congestion Costs by ISO/RTO
(Source: S&P Global)

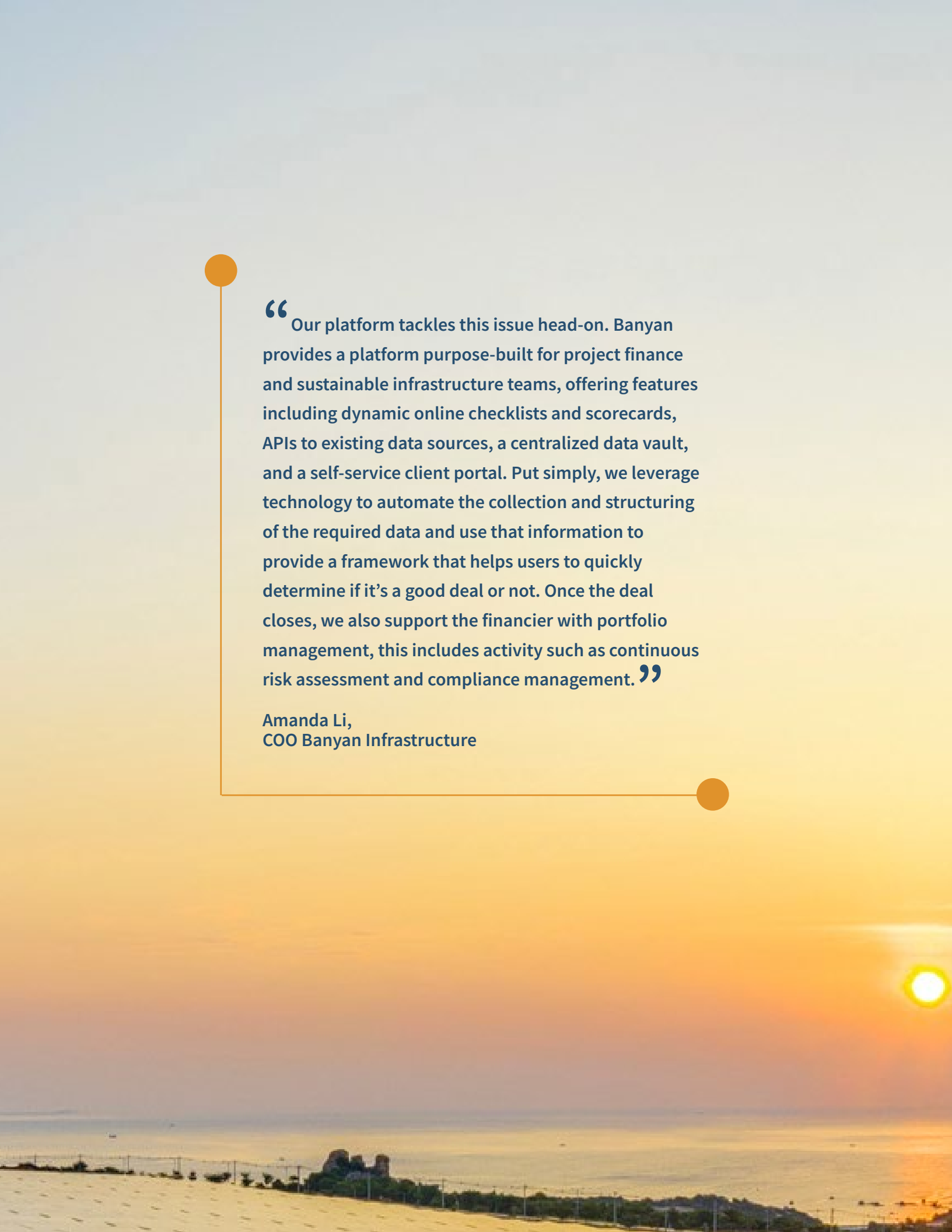
# The time to act is now.

Today, the sustainable infrastructure industry is full of promise. Now at cost-parity with fossil fuels, established renewable energy technologies like wind and solar are proliferating and reaching new customers; emerging technologies like battery energy storage, green hydrogen, and carbon capture have also started to gain traction. Smaller distributed project economics have improved and are getting a big financial boost from the Inflation Reduction Act. The market is poised for massive growth and diversification, and developers, financiers, and the entire global community will benefit from it.

**There remains a considerable gap between deployable capital and the increasing volume of projects that need funding**. Despite advances in data availability and technology, investing in sustainable infrastructure consists mainly of manual and inefficient processes that depend on spreadsheets and siloed systems. The industry needs proper data digitization, cloud-based software, and automated processes necessary for deal transparency, velocity, and a diverse, liquid market.

Sustainable investing is time-consuming and costly, and its lack of efficient scalability will continue to hinder the urgently-needed acceleration of the sustainable infrastructure industry. While the IRA will undoubtedly inject much-needed capital into the renewable energy industry, the full potential of global decarbonization will not be realized until existing barriers to financing and development are addressed head-on.

**By leveraging technology to vastly increase access to data that can accurately inform a range of investment decisions, the industry can improve transparency and standardization, decrease overhead, and bring capital more efficiently to sustainable infrastructure projects - ultimately, help bridge the gap to achieve global net-zero targets.**



> “Our platform tackles this issue head-on. Banyan provides a platform purpose-built for project finance and sustainable infrastructure teams, offering features including dynamic online checklists and scorecards, APIs to existing data sources, a centralized data vault, and a self-service client portal. Put simply, we leverage technology to automate the collection and structuring of the required data and use that information to provide a framework that helps users to quickly determine if it’s a good deal or not. Once the deal closes, we also support the financier with portfolio management, this includes activity such as continuous risk assessment and compliance management.”

Amanda Li,
COO Banyan Infrastructure

# Endnotes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# Unleash the power of sustainable capital.

Banyan is the only end-to-end software platform that is purpose-built to simplify, scale, and streamline sustainable infrastructure finance.

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