Catalysing Sustainable & Green Infrastructure Financing for Achieving Net Zero[1]

Distinguished guests, participants, colleagues, Ladies and Gentlemen,

Let me at the outset thank the organisers for having me here to share my thoughts on this important topic. Climate risks and green infrastructure financing, as a catalyst for achieving net-zero emissions, has to move over time from the margins of policymaking to the heart of global and national agenda and occasions such as these should help in this endeavour.

2. Climate change is a phenomenon which we are seeing and living through on a daily basis. With each passing year, the extremes of weather patterns are becoming more intense. Whether it is extreme rainfall, droughts, heat waves or cyclones, changes and aberrations have become the norm. The incidents of formation of heat dome over USA or the monsoon rains hitting Mumbai before the scheduled onset reflect recent examples of the climate change. The probability of changing weather patterns is going to be more regular and its economic impact very severe in the times to come. A recent report[2] on economic cost of extreme weather events estimates that over a ten-year period from 2014 to 2023, economic cost associated with climate-related extreme weather events amounted to $2 trillion. Notably, the estimated cost over the last two years taken together i.e., 2022 and 2023, was around $451 billion. Moreover Climate-induced disasters also disproportionately affect the poorest nations and communities.

3. The scale of the impact of events arising out of climate change therefore requires sizeable investments in technology and scale of finance to both build resilience and enable mitigation. As per OECD report[3], the investment required for green and sustainable infrastructure is estimated at around USD 3 to USD 5 trillion per year until 2050. This is not just a nominal allocation of capital resources - it would require a significant shift of financial flows, complemented with appropriate policies,

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[1] Inaugural Address delivered by Shri M Rajeshwar Rao, Deputy Governor, Reserve Bank of India at the Conference on Green Infrastructure Finance on July 03 at College of Agriculture Banking, RBI, Pune in Collaboration with Swiss Agency for Development and Cooperation (SDC) India. Inputs provided by Sunil TS Nair and Saket Kumar are gratefully acknowledged.

[2] https://iccwbo.org/wp-content/uploads/sites/3/2024/11/2024-ICC-Oxera-The-economic-cost-of-extreme-weather-events.pdf

[3] https://www.oecd.org/en/publications/financing-climate-futures_9789264308114-en/full-report.html

and reorientation of institutional priorities. The question is no longer about *if* but *how* to finance this transformation, which must then be our collective resolve going forward. Financing sustainable and green infrastructure can no longer remain a peripheral concern; it has to now become central to achieving both global and national net-zero targets, and for fulfilling the commitments of the Paris Agreement. These aspects are important for climate risk mitigation and facilitating a just transition. While more than 140 countries over the world have made commitments to net-zero targets—the real challenge lies in their achievement. Climate finance remains significantly off-track, fragmented, overly reliant on public funds and often inaccessible to the developing countries that need it most. So, the question before us is both urgent and clear: How do we catalyse sustainable and green infrastructure financing to deliver on the promise of net-zero? Let me share a few thoughts on this.

Sustainable and Green Infrastructure – The need of the hour

4. For, the current period marked by climate related volatility, limited resources and widening inequality, sustainable and green infrastructure is likely to be a necessity. The infrastructure whether in the form of power plants, highways, apartments, commercial buildings, or fuel pipelines, must be taken as steppingstones towards achieving the goal of net-zero in carbon emissions and not emerge as barriers in achieving these targets. According to a World Bank study[4], every single dollar invested in climate-resilient infrastructure can save up to four dollars in avoided losses. Green and Sustainable infrastructure not only improves the quality of life through cleaner air, accessible mobility, and more efficient public services, while remaining climate friendly, it also helps in reducing vulnerability and inequality, particularly in communities that are prone to climate risks. Creation of climate resilient infrastructure reduces disaster risks and prevents catastrophic losses from floods, cyclones, and heatwaves. It also reduces the volatility of losses that may occur on corporate balance sheets in the face of physical climate risks, thereby help in improving financial stability. While the arguments for climate resilient infrastructure are

[4] https://www.worldbank.org/en/news/press-release/2019/06/19/42-trillion-can-be-saved-by-investing-in-more-resilient-infrastructure-new-world-bank-report-finds#:~:text=WASHINGTON%2C%20June%2019%2C%202019%20%E2%80%93,Reduction%20and%20Recovery%20(GFDRR).

compelling, the hurdles are many. It has been estimated[5] that less than 1.5% of total assets under management (AUM) of global investment funds are aligned with Paris goals. Green infrastructure pipelines in emerging markets remain underdeveloped and the climate finance gap which is estimated at over $2.5 trillion annually[6], is widening.

Financing Sustainable and Green Infrastructure – Issues and Challenges

5. While discussing sustainable and green infrastructure, the first step is to establish a clear definition and reach a consensus on what qualifies as green infrastructure. The green taxonomy plays a critical role in this regard. The government has recently released the draft of the climate finance taxonomy for public consultation, which paves the way for much-needed uniform classification across the economy and financial system. The draft taxonomy lays down four essential criteria viz. avoidance of Green House Gas (GHG) emissions, reduction of GHG emissions intensity, adaptation solutions that reduce the risk of adverse impacts of climate change and research and development, for classification related to climate finance. *But* the key to enable sustainable and green infrastructure is technology. New technologies can lead to reduction in emission intensities, increase energy efficiency, provide alternate energy sources to help avoid GHG emissions, and build innovative solutions to drive adaptation and resilience towards mitigating the perils of climate change.

6. This dependence on technology is however both the enabler as well as the main constraint on the flow of finance. Let me elaborate a bit. Finance always follows the principle of risk and reward. Financial institutions adopt risk-based pricing for financial products, considering both the borrower's risk profile and the inherent risks associated with the proposal. The technologies underlying sustainable and green infrastructure are still evolving and are therefore less reliable regarding their future viability as compared to the traditional technologies, which are comparatively stable and have stood the test of time regarding cash flow generation. There may also be lack of technical expertise and capacity among the creditors in understanding these evolving technologies. Hence, compared to traditional technologies, there are higher perceived inherent risks related to sustainable and green infrastructure technologies

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[5] https://clarity.ai/research-and-insights/climate/only-1-5-of-global-investment-funds-are-aligned-with-a-1-5oc-scenario-and-none-are-aligned-when-scope-3-is-considered/

[6] https://www.un.org/en/climatechange/raising-ambition/climate-finance

which then get reflected in their risk pricing. Sustainable and green projects thus often face higher upfront costs including capex requirements. The perceived risks associated with sustainable and green infrastructure limit access to debt financing for early-stage technologies, highlighting the need for greater equity investment (First Loss Default Capital). Other constraints relate to longer payback periods creating asset-liability mismatches, information gaps, lack of robust assurance and verification functions, which limit understanding and appraisal of these technologies to prepare investment-grade infrastructure projects i.e., those with well-defined cash flows, clear governance, and measurable impact metrics.

7. Climate change risks directly impact the real economy, and the financial sector in turn gets impacted on account of its credit exposure to the real economy. For the financial sector to perform a comprehensive risk assessment, relevant information flow from the real economy i.e. corporate/institutional borrowers in a timely manner is important. Given that climate change and climate risks is likely to impact a business segment consisting largely of MSMEs, unorganised sectors and un-listed corporates, creating an awareness and understanding amongst these borrowers on climate change risks and obtaining the required information becomes important.

8. Understanding climate change is an elaborate process involving the use of complex models to analyse the weather and climate patterns to predict the changes. Along with historical data, projections of climate variables such as rainfall, and temperature, are also inputs for forward looking risk estimations. However, the financial system or financial analysts have limited exposure to climate science. At the same time climate scientists have limited understanding of financial modelling and risk estimations. This creates a gap between these two input streams and that challenges us in accurately estimating the risks associated with sustainable and green infrastructure finance. The availability of climate related data with proper understanding about its sources and methodology of its estimation is essential for financial analysts to aid their decision making.

9. Since sustainable and green infrastructure technologies contribute to the reduction or avoidance of greenhouse gas emission intensity, a critical consideration for financing entities is to address the risks of green washing. For a creditor to fund any project which is intended to achieve reductions in GHG emissions, there is a need

to clearly understand how these projected reductions are being quantified. It would also require a robust and independent Monitoring, Reporting, and Verification (MRV) function. Standardised processes and databases to inform and quantify such benefits would be necessary to increase the funding avenues for such infrastructure projects.

10. There are several building blocks or ecosystem enablers which are required to be fostered and promoted to remove the bottlenecks surrounding sustainable and green infrastructure projects. Without innovative financial instruments to mitigate early-stage risks, lack of availability of avenues for blended finance, many projects lack the scale or bankability needed to attract private capital. These limitations are further exacerbated in case of emerging market economies as inadequate financial instruments, and fragmented institutional coordination are critical constraints that are further exacerbated by poor sovereign ratings which leads to further increase in risk premium particularly when trying to access global funds. Global funding, where available, is predominantly denominated in foreign currencies, exposing borrowers to exchange rate risks and consequently increasing the cost of financing - despite their need to access low-cost funds. Moreover, globally climate finance availability is spread across several funds which have different application procedures, eligibility criteria, and reporting standards, which makes it onerous and time consuming for ensuring flow of such funding. These factors lead to institutional paradox with capital seeking sustainability, while sustainable assets seeking capital are unable to scale up and access these funds.

Catalysing the finance to Sustainable and Green infrastructure

11. Given the issues and challenges, our focus should be on identifying effective ways to mobilise the financing required to transform our infrastructure landscape toward green and sustainable development. Let me float a few ideas for you to ponder on. To unlock the required flows into green and sustainable infrastructure, we need a holistic reconfiguration of the financial ecosystem - one that rewires risk, institutionalises sustainability, and aligns incentives. We need to follow a building block approach whereby the ecosystem enablers are first put in place, thereafter harmonised and made consistent across all the sectors. We could categorise these enablers in two categories as endogenous and exogenous enablers. The endogenous enablers refer to the requirements of information flow, data gap bridging, MRV

requirements, and building up of technical expertise. They can then act as the lynchpin between the availability and requirement of credit flow and cover the entire ecosystem right from the appraisal to disbursement and monitoring of finance related to sustainable and green infrastructure projects. These enablers will prepare the financial system to cater to the financing needs and facilitate the flow of funds with greater certainty.

12. The exogenous enablers would involve mechanisms that can be built to cater to the innate risks associated with green and sustainable infrastructure, which is requirement of risk capital, first loss default capital, concessional funding, quantum of funding, global funding, public and private capital mobilisation. Blended finance, which combines concessional public finance with private capital, is essential for bridging the bankability gap of green and sustainable infrastructure. There is a need for an adequate mix of public and private funding where the public funds crowds in the private funds through appropriate incentive structure. Specific mechanisms need to be enabled wherein global funds scale their mandates from project-level support to market-shaping interventions, also targeting underdeveloped sectors like adaptation infrastructure, and nature-based solutions. There is also requirement for Multilateral Development Banks (MDBs), Development Financial Institutions (DFIs), National Development Banks (NDBs) and Vertical Climate and Environmental Funds (VCEFs) to harmonise approach and operations and enable joint funding to enable shift from being direct lenders to catalytic partners and bring in economies of scale in sustainable and green infrastructure projects financing. Instruments like first loss guarantees, and subordinated debt, which can de-risk early-stage investments and crowd in institutional capital are also required.

13. Scalability of finance towards any cause comes either from policy nudges or market mechanisms that adequately incentivises risk taking. Once the endogenous enablers are in place, supported by exogenous enablers, innovative financial instruments such as sustainability linked loans, transition finance instruments, green debt securities etc., can get the required traction for enabling the flow of finance. Digital solutions are changing the way traditional finance works and that innovation needs to be channelised to the cause of sustainable and green infrastructure. Digital tools to automate MRV requirements, and data and information flows, can bring down

compliance costs substantially. I would request all the tech enthusiasts to innovate and bring in solutions in this regard. To foster tech-based innovation in finance, RBI has instituted a regulatory sandbox wherein innovative solutions can be tested to provide market wide scalable solutions. RBI has also allowed 'Theme Neutral' applications as part of the 'On Tap' facility under the regulatory sandbox under which application containing any technology / theme can be made under various topics including sustainable finance and climate risk mitigation. Tokenization may soon enable fractional investment in infrastructure, opening new liquidity channels and investor bases. This approach needs to be explored for sustainable and green infrastructure. Fintech, blockchain, and AI have the power to streamline project verification, improve traceability, and democratise access to green and sustainable finance. We must capitalise on these efforts to establish an infrastructure pipeline of sustainable and green projects, a repository of vetted, investment-ready projects across sectors and regions. We must also empower local governments, indigenous communities, and civil society to lead climate infrastructure efforts. This may include decentralised renewable energy systems, sustainable land use practices, and community-based adaptation projects.

14. No country can achieve net-zero in isolation. Climate change is the quintessential global challenge and so too our response. There is a requirement of enhanced global cooperation in this regard which must also extend to technology transfer, R&D funding, and skills development to enable development of technical expertise to identify, design, and structure bankable sustainable and green infrastructure projects. The focus needs to shift from project-based finance to overall market development with policy reforms, development of a project pipeline, and consistent regulatory frameworks, creating systemic conditions for fostering sustainable and green infrastructure finance. The international financial architecture also needs to be reoriented toward sustainability. The de-risking of sustainable and green infrastructure can work best when national, local, and multilateral institutions co-invest, signalling policy credibility and technical robustness. MDBs and global climate funds may need to revisit their governance structure to reflect the voice of recipient countries, particularly the global south and not just donor countries. Innovative financial instruments such as debt-for-climate swaps and climate-resilient debt clauses must also be scaled up to create fiscal space for green investments. We

all need to work towards the creation of a reformed, empowered, and climate-aligned multilateral financial system.

Conclusion – Financial Leadership - Call to Action

15. The transition to net-zero is not just about finance, but also about knowledge, trust, and solidarity. We are at the crossroads or in climate terms nearing a tipping point. This is a moment not only for climate policy, but for the financial leadership to act together. A sustainable and green infrastructure is the best legacy we can pass on to the future generations. As finance professionals and leaders, we need to act in unison to foster endogenous and exogenous enablers and build a robust ecosystem to scale climate finance to catalyse green and sustainable infrastructure in a prudent manner. We need to align our mandates and approaches with the country's net-zero pathways, innovate and strategise and collaborate globally, even as we may act locally. The Reserve Bank of India has been proactive in its resolve to facilitate creation of a robust ecosystem wherein the assessment and mitigation of climate change risks are fostered and its impact on the economy and financial system is curtailed. In this context, we have followed a building block approach, focused on wide stakeholder consultation, capacity development, channelising flow of credit towards green finance, efforts to bridge limitations such as climate data gaps and modelling challenges, and building a conducive regulatory framework for risk assessment balancing compliance and conduct.

16. We need bold and urgent action to finance the future requirements. There is a need to catalyse the capital that helps to build the world we need**.** Sustainable and green infrastructure is the foundation of climate action, economic resilience, and social justice. It is a significant lever for us to achieve net-zero targets, protect our communities, and create a more equitable world. The future has been built and will continue to be built, one way or another. The question is: will it be sustainable? And what can we do to ensure it?

Let me leave you with these thoughts and wish you all successful deliberations and fruitful outcomes during these meetings.

Thank you.