G20
SOUTH AFRICA 2025

Solidarity
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MACROECONOMIC POLICIES AND STRUCTURAL REFORMS FOR STRONGER, SUSTAINABLE ECONOMIC GROWTH IN THE CONTEXT OF RISKS FROM SEVERE WEATHER AND NATURAL DISASTERS

1. Stronger economic growth with adaptation and mitigation

Growth has been resilient in the G20 countries, but medium-term prospects remain muted and uncertain. A range of risks threaten the sustainability of economic growth. One set of risks, from severe weather and natural disasters, is already disrupting productivity, investment and trade. Where relevant and considering differences in view of these risks, appropriate policy responses can reduce current transitional and long-run costs, given that the cost of inaction is larger than the cost of action. Economies can better adapt to weather-related and other risks with stronger, sustainable, investment, enabled by sound macroeconomic policies and structural reforms to support growth.

Reducing risks to growth from severe weather and increasing economic resilience to it will often require increased domestic resources and more cross-border investment. Fiscal space in many countries can be improved, and with low and stable inflation, help to crowd-in private investment and encourage stronger potential growth rates in all economies. Together, sound macroeconomic policies and country-specific structural reforms can accelerate and increase returns to investment, enabling stronger, sustainable, balanced and inclusive economic growth, a key objective of the G20 since the global financial crisis.

In considering how the G20 can strengthen growth and make it more resilient and sustainable, country-specific circumstances will frame the challenges and any associated priorities faced by member countries, including in countries where risks and potential risks are seen to be less acute.

This note proposes recommendations and actions that are voluntary and non-binding and should be interpreted in a manner consistent with national contexts.

The note draws on a broad literature and country experiences to explore how macroeconomic fundamentals, monetary and fiscal policies, and structural reforms can support more resilient and sustainable long-term economic growth, building on previous notes produced under the Indian and Brazilian G20 Presidencies.

2. Macroeconomic fundamentals to support growth

Sound macroeconomic fundamentals and fiscal and monetary policies can strengthen economic growth by increasing resilience, moderating risks, and lowering the costs from severe weather and natural disasters.

Shocks to global prices have been large and frequent in recent times, contributing to higher inflation and borrowing costs. Achieving price stability with sound monetary policies focused on low and stable inflation improves economic conditions broadly and indirectly helps to dampen exchange rate volatility and risk premia. More predictable price inflation in turn contributes positively to the investment climate. Investor confidence is strengthened further by appropriate financial regulation and a more resilient financial system.

Sound and sustainable fiscal policy plays a critical role in strengthening potential growth and resilience to shocks. Successive global crises, however, have left public debt levels high and borrowing costs elevated in many countries. Fiscal pressures may be compounded across advanced and emerging economies as populations age. Additional fiscal demands will narrow the room for investment in resilient infrastructure, energy-saving technologies, and social protection and labour mobility.[1] To balance spending pressures and the cost of high debt, many countries may seek to rebuild fiscal buffers and increase potential growth by attracting more investment. Emerging and developing economies can benefit from improving domestic resource mobilisation and greater access to global savings, alongside further discussions on how to reduce information asymmetries that adversely affect sovereign credit ratings.

G20 countries can share knowledge in integrating physical risks into macroeconomic and fiscal analysis, reducing shorter-run economic costs, and accelerating progress towards stronger, sustainable, and balanced growth.[2] Actions include tracking related spending and quantifying physical risks and their fiscal impacts, including on debt trajectories and fiscal effects stemming from sectoral shocks.

3. Strengthening enabling environments to broaden and enhance sustainable investment

Moving to a stronger, sustainable, balanced and inclusive growth path entails increasing investment levels and its value, supported by a range of public policy efforts. Where fiscal space is available, it can directly improve public infrastructure and indirectly encourage more private investment in cleaner energy sources and infrastructure.

Governments can also do more to attract and guide investment by addressing market failures, coordination challenges, and reducing financing barriers, through a broad range of context-relevant policy instruments.[3] Clear policy signals can spur investment and innovation in clean technologies, spurring faster adaptation and more effective mitigation.

The important role of the private sector in adapting to physical risks can be further encouraged with greater policy certainty and use of risk-sharing instruments. The latter are generally effective in incentivising capital-intensive, long-term investments, including into low-emission and lower-carbon technologies, resilient infrastructure and production. In some jurisdictions, clearer pricing of transition risk with better information has raised private investment in cleaner technologies and infrastructure.[4]

Public infrastructure planning can help create pipelines of bankable projects, including

sustainable ones, that attract institutional investors and private finance more generally. Support to R&D, adoption subsidies and, in some countries, lending programmes have accelerated innovation and adoption of key technologies, in particular for those not market-ready or which face adoption barriers.[5]

Where fiscal space is constrained, strengthening financial and capital markets is important. In many emerging and developing countries, underdeveloped financial systems constrain the issuance of local bonds, including thematic bonds, and other relevant and sustainable finance instruments and bankable projects generally. Higher rates of saving would help such markets deepen and encourage local currency capital markets. More robust market infrastructure, in part through transparent standards and reporting frameworks, enhances investor confidence in drawing on local markets.

As discussed in the Joint Framework Working Group (FWG) and Sustainable Finance Working Group (SFWG) meeting on 19-20 May this year, financial market development and sound macroeconomic frameworks are crucial for attracting and allocating sustainable investment efficiently. Recognizing and understanding this two-way feedback is essential for coherent, forward-looking policymaking.

4. Structural policies and sustainable economic growth

Policies that will support economic growth and flexibility in the economy can also help mitigate risks and support adaptation. More flexible product and labour markets, for example, can accelerate investment and climate action by enabling capital and labour to shift more easily toward low-carbon and resilient activities. Declining adjustment costs can further strengthen public support for adaptation and mitigation. Supportive regulatory frameworks in areas such as approvals, insurance and electricity networks can improve the efficiency of transitions where they are being undertaken. G20 members can also take steps to ensure policies and reforms are effective and credible.

While a dynamic and competitive business environment can facilitate the reallocation of resources in the face of shocks, in many countries, regulatory complexity and barriers to entry slow the deployment of good solutions. High regulatory barriers to competition and entry across policy areas underscore the need for targeted reforms in many G20 economies. Structural reforms that simplify administrative processes, reduce state ownership distortions, and promote level playing fields can improve market responsiveness.

Clear and consistent policy signals and predictable and transparent frameworks will aid G20 economies seeking to align long-term investment decisions, mitigate physical risks from extreme weather and achieve their climate goals.[6]

Structural barriers also exist in the informal economy, especially in developing economies and in some emerging markets. Approximately 60% of the global workforce (i.e. two billion workers) is engaged in informal employment that may be less responsive to mitigation and adaptation measures and more broadly contribute less to fiscal revenues[7]. High levels of informality also limit the reach of training, credit, and social protection programmes, increasing vulnerability to

extreme weather events and transition shocks. Structural reforms that reduce informality, such as simplifying tax regimes, enhancing access to finance, and streamlining administrative processes, can ease regulatory burdens and strengthen the effectiveness of other policies.[8]

Education and training systems can also play a central role in preparing the workforce. Persistent skill mismatches reduce the ability of workers to move among industries. Meanwhile, broader inclusion of workers in skills development, particularly in science, technology, engineering and mathematics fields, remains critical to faster job creation generally. Well-designed active labour market policies can also increase the opportunities for formal and informal workers to shift into more sustainable jobs.[9]

Even with active labour market policies, severe weather and climate-related and other risks can entail costs. Well-designed social safety nets, and, where appropriate, direct transfers and subsidies to low-income households, can cushion these impacts and enable more inclusive economic growth. Such programmes should support the labour reskilling and reallocation process, rather than disincentivise workers from moving into productive job opportunities.

5. Conclusion

Severe weather events and natural disasters put economic activity at risk and impose significant economic costs on many countries. As part of the G20's role in promoting strong, sustainable, balanced, and inclusive growth to address global challenges, this note reviewed how sound macroeconomic policies and structural reforms can help countries reduce these costs with more investment, build resilience and increase growth.

Alongside sound, sustainable macroeconomic policies, countries can improve enabling environments and develop appropriate financing vehicles and capital markets. Improving the mobility and allocation of labour and capital to growing desired activities is a consistent feature of structural reforms and can, alongside cost-effective forms of social protection and public services, enhance inclusion. Embedding physical risks in policy consideration may also help countries to better manage economic risks generally and unlock opportunities that help achieve their environmental and development goals.

The "business case" for increasing sustainable investment, mitigating costs and risks and adapting to severe weather can be strengthened by setting clear incentives and signals while avoiding and reducing policy uncertainty. This case can be supplemented by improving data and increasing analytical capacity.

Countries differ in their exposure, their macroeconomic and fiscal position, and institutional capacity, and relevant policies should be flexible and tailored accordingly. In addition, given the macroeconomic importance of severe weather events and natural disaster and the cross-border implications, the G20 should continue fostering a better understanding and exchange of best practices and views on the macroeconomic impacts and policies to address this issue.

[1] Investments in climate-resilient infrastructure often exhibit high returns, especially in low- and middle-income countries (Hallegatte, Rozenberg, Rentschler, Nicolas, & Fox, 2019). Behavioural and organizational measures such as shifting working hours to avoid peak heat or altering crop varieties can reduce productivity losses (Costa, Floater, Hooyberghs, Verbeke, & Ridder, 2016; Day, Fankhauser, Kingsmill, Costa, & Mavrogianni, 2019).

[2] See Annexure A. G20 countries, including Australia, Brazil, Canada, China, France, Germany, Italy, Mexico, Russia and the UK, are integrating climate risks into macroeconomic analysis.

[3] Some member countries have used targeted subsidies, clear regulation, and enhanced use of risk disclosures, taxonomies and communication to help reduce financing barriers. Australia's Sustainable Finance Roadmap also enables informed investment decisions and sustainable activities at the corporate and investor level, including implementation of mandatory climate-related financial disclosures and the sustainable finance taxonomy.

[4] For example, the United Kingdom's Transition Plan Taskforce was launched in 2022 to develop a framework for firms to disclose their plans for transitioning their operations towards a low-carbon economy. As of 2023, 81 countries had implemented 466 climate-related financial policies, with mandatory climate disclosures and sustainability reporting standards emerging as the most commonly used instruments (D'Orazio, A global database for climate-related financial policies, 2023; OECD, 2024). Many CRFPs have demonstrated a tangible impact on reducing emissions (D'Orazio & Pham, Evaluating climate-related financial policies' impact on decarbonization with machine learning methods, 2025) and mitigating financial stability risks (D'Orazio, forthcoming).

[5] Examples include low-interest loans for residential energy efficiency improvements and renewable energy projects provided by the German KfW.

[6] Many countries have made strides in this direction by legislating their climate commitments. For example, Denmark's Climate Act enshrines a 70% greenhouse gas reduction by 2030 and climate neutrality by 2050 into law, providing a clear long-term direction for businesses and investors (D'Arcangelo, Levin, Pagani, Pisu, & Johansson, 2022). International benchmarking efforts, such as the OECD's International Programme for Action on Climate (IPAC), can enhance transparency and accountability of climate mitigation efforts across countries.

[7] Based on estimates by the International Labour Organisation (ILO)

[8] Türkiye, for example, has developed a National Green Taxonomy, which offers a clear classification system that guides sustainable investments and enhances market confidence.

[9] Notable examples include Brazil's mobile training platforms, India's sectoral skills councils, and South Africa's pilot programmes to support transitions among informal workers (OECD, 2020; OECD/Cedefop, 2014; Kiaga & Leung, 2020). In addition, China has been increasing green jobs opportunities, and as of May 2025, 19 new occupations were classified as green professions by the Chinese government.

References

Agarwala, M., Burke, M., Klusak, P., Mohaddes, K., Volz, U., & Zenghelis, D. (2021). Climate change and fiscal sustainability: risks and opportunities. *National Institute Economic Review, 258*. doi:10.1017/nie.2021.37

Baptista, D., Costa, H., & Unsal, F. (forthcoming). A Micro-Based, Bottom-Up Approach to Estimating the Macroeconomic Cost of Climate Change. *OECD Economics Department*.

Batten, S. (2018). Climate change and the macro-economy: a critical review. *Working Paper No. 706*. Retrieved from https://www.bankofengland.co.uk/working-paper/2018/climate-change-and-the-macro-economy-a-critical-review

Berestycki, C., Carattini, S., Dechezleprêtre, A., & Kruse, T. (2022). Measuring and assessing the effects of climate policy uncertainty. In *OECD Economics Department Working Papers*. OECD Publishing, Paris. doi:10.1787/34483d83-en

Berestycki, C., Carattini, S., Dechezleprêtre, A., & Kruse, T. (2022). Measuring and assessing the effects of climate policy uncertainty. In *OECD Economics Department Working Papers*. OECD Publishing, Paris. doi:10.1787/34483d83-en

Burke, M., Hsiang, S. M., & Miguel, E. (2015). Global non-linear effect of temperature on economic production. *Nature, 527*, 235–239. Retrieved from https://www.nature.com/articles/nature15725

CFMCA, C. o. (2025). A Global Survey of Ministries of Finance: The pressing policy questions Ministries of Finance face in driving green and resilient transitions and their use of analytical tools to address them.

CFMCA, C. o. (2025). Economic Analysis and Modeling Tools to Assist Ministries of Finance in Driving Green and Resilient Transitions. *Summary Report from a Global Compendium of Practice*.

CFMCA, C. o. (2025). From Risk to Resilience: Analytical Tools and Emerging Practices for Ministries of Finance to Address Physical Risks and Support Adaptation. *A submission prepared for the G20 Framework Group*.

Costa, H., & Hooley, J. (forthcoming). The macroeconomic implications of extreme weather events. *OECD Economics Department Working Paper*.

Costa, H., Demmou, L., Franco, G., & Lamp, S. (2024). Making the grass greener: The role of firm's financial and managerial capacity in paving the way for the green transition. In *OECD Economics Department Working Papers*. OECD Publishing, Paris. doi:10.1787/cdffe7eb-en

Costa, H., Floater, G., Hooyberghs, H., Verbeke, S., & Ridder, K. D. (2016). Climate change, heat stress and labour productivity: A cost methodology for city economies. *Grantham Research Institute on Climate Change and the Environment Working Paper No. 248*. Retrieved from https://www.lse.ac.uk/granthaminstitute/wp-content/uploads/2016/07/Working-Paper-248-Costa-et-al.pdf

Costa, H., Franco, G., Unsal, F., Mudigonda, S., & Caldas, M. P. (2024). The heat is on: Heat stress, productivity and adaptation among firms. *OECD Economics Department Working Paper No 1828*.

CPI. (2021). *Global Landscape of Climate Finance 2021,* . doi:https://www.climatepolicyinitiative.org/wp-content/uploads/2021/10/Full-report-Global-Landscape-of-Climate-Finance-2021.pdf

CPI. (2023). *Global Landscape of Climate Finance 2023*. doi:https://www.climatepolicyinitiative.org/wp-content/uploads/2023/11/Global-Landscape-of-Climate-Finance-2023.pdf

D'Arcangelo, F., Kruse, T., Pisu, M., & Tomasi, M. (2023). Corporate cost of debt in the low-carbon transition: The effect of climate policies on firm financing and investment through the banking channel. In *OECD Economics Department Working Papers*. OECD Publishing, Paris. doi:10.1787/35a3fbb7-en

D'Arcangelo, F., Kruse, T., Pisu, M., & Tomasi, M. (2023). Corporate cost of debt in the low-carbon transition: The effect of climate policies on firm financing and investment through the banking channel. In *OECD Economics Department Working Papers*. OECD Publishing, Paris. doi:10.1787/35a3fbb7-en

D'Arcangelo, F., Levin, I., Pagani, A., Pisu, M., & Johansson, Å. (2022). A framework to decarbonise the economy. In *OECD Economic Policy Papers*. OECD Publishing, Paris. doi:10.1787/4e4d973d-en

D'Orazio, P. (2023). A global database for climate-related financial policies. *BMC Research Notes, 16*(1). doi:10.1186/s13104-023-06418-8

D'Orazio, P., & Pham, A.-D. (2025). Evaluating climate-related financial policies' impact on decarbonization with machine learning methods. *Scientific Reports, 15*(1). doi:10.1038/s41598-025-85127-7

Day, E., Fankhauser, S., Kingsmill, N., Costa, H., & Mavrogianni, A. (2019). Upholding labour productivity under climate change: an assessment of adaptation options. *Climate Policy, 19*(3), 367-385. Retrieved from ttps://doi.org/10.1080/14693062.2018.1517640

Dechezleprêtre, A., Fabre, A., Kruse, T., Planterose, B., Sanchez Chico, A., & Stantcheva, S. (2022). Fighting climate change: International attitudes toward climate policies. In *OECD Economics Department Working Papers*. OECD Publishing, Paris. doi:10.1787/3406f29a-en

Deryugina, T., & Hsiang, S. M. (2014). Does the Environment Still Matter? Daily Temperature and Income in the United States. *NBER Working paper 20750*. Retrieved from https://www.nber.org/papers/w20750

D'Orazio, P. (forthcoming). Climate risks and financial stability: Evidence on the effectiveness of climaterelated. *International Review of Financial Analysis*.

Fankhauser, S. (2017). Adaptation to Climate Change. *Annual Review of Resource Economics, 9*(1), 209-230. doi:10.1146/annurev-resource-100516-033554

Gassebner, M., Keck, A., & Teh, R. (2010). Shaken, Not Stirred: The Impact of Disasters on International Trade. *Review of International Economics, 18*(2), 351-368. doi:10.1111/j.1467-9396.2010.00868.x

Hallegatte, S., Rozenberg, J., Rentschler, J., Nicolas, C., & Fox, C. (2019). Strengthening New Infrastructure Assets: A Cost-Benefit Analysis. *World Bank Policy Research Working Paper 8896*. Retrieved from https://documents1.worldbank.org/curated/en/962751560793977276/pdf/Strengthening-New-Infrastructure-Assets-A-Cost-Benefit-Analysis.pdf

Hemmerlé, Y., Sunel, E., D'Arcangelo, F., Kruse, T., Haugh, D., Pina, Á., . . . Sarcina, G. (2023). Aiming better: Government support for households and firms during the energy crisis. In *OECD Economic Policy Papers*. OECD Publishing, Paris. doi:10.1787/839e3ae1-en

IEA. (2021). *Net Zero by 2050*.

IEA. (2022). *World Energy Investment 2022*. doi:https://www.iea.org/reports/world-energy-investment-2022

IMF. (2023). *Emerging Economies Need Much More Private Financing for Climate Transition*. https://www.imf.org/en/Blogs/Articles/2023/10/02/emerging-economies-need-much-more-private-financing-for-climate-transition.

IPCC. (2022). *Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the*. (D. R. H.-O. Pörtner, Ed.) Cambridge University Press. Cambridge University Press, Cambridge, UK and New York, NY, USA. doi:doi:10.1017/9781009325844

Kiaga, A., & Leung, V. (2020). *The transition from the informal to the formal economy in Africa*.

Natoli, F. (2023). The Macroeconomic Effects of Temperature Surprise Shocks. *Bank of Italy Working Paper no 1407*. Retrieved from http://dx.doi.org/10.2139/ssrn.4160944

NGFS. (2025). *Damage functions, NGFS scenarios, and the economic commitment of climate change: An explanatory note*.

OECD. (2015). *Climate Change Risks and Adaptation: Linking Policy and Economics*. OECD Publishing, Paris. doi:10.1787/9789264234611-en

OECD. (2017). Mobilising Bond Markets for a Low-Carbon Transition. In *Green Finance and Investment*. OECD Publishing, Paris. doi:10.1787/9789264272323-en

OECD. (2020). Making the Most of Technology for Learning and Training in Latin America. In *OECD Skills Studies*. OECD Publishing, Paris. doi:10.1787/ce2b1a62-en

OECD. (2022). Green, social, sustainability and sustainability-linked bonds in developing countries: How can donors support public sector issuances? In *OECD Development Perspectives*. OECD Publishing, Paris. doi:10.1787/22d93a4d-en

OECD. (2023). Economic Policy Reforms 2023: Going for Growth. doi:10.1787/9953de23-en

OECD. (2024). Accelerating Climate Adaptation: A Framework for Assessing and Addressing Adaptation Needs and Priorities. *OECD Economic Policy Papers No.35* . Retrieved from https://doi.org/10.1787/8afaaeb8-en

OECD. (2024). Accelerating climate adaptation: A framework for assessing and addressing adaptation needs and priorities. In *OECD Economic Policy Papers*. OECD Publishing, Paris. doi:10.1787/8afaaeb8-en

OECD. (2024). Climate Adaptation Investment Framework. In *Green Finance and Investment*. OECD Publishing, Paris. doi:10.1787/8686fc27-en

OECD. (2024). Climate Finance Provided and Mobilised by Developed Countries in 2013-2022. In *Climate Finance and the USD 100 Billion Goal*. OECD Publishing, Paris. doi:10.1787/19150727-en

OECD. (2024). OECD Employment Outlook 2024: The Net-Zero Transition and the Labour Market. doi:10.1787/ac8b3538-en

OECD. (2024). OECD Review on Aligning Finance with Climate Goals: Assessing Progress to Net Zero and Preventing Greenwashing. In *Green Finance and Investment*. OECD Publishing, Paris. doi:10.1787/b9b7ce49-en

OECD. (2024). Pro-competitive industrial policy. In *OECD Roundtables on Competition Policy Papers*. OECD Publishing, Paris. doi:10.1787/7c6b4708-en

OECD. (2025). *Finance and investment for climate goals*. https://www.oecd.org/en/topics/policy-issues/finance-and-investment-for-climate-goals.html.

OECD. (forthcoming, a). *OECD Economic Outlook 2025*.

OECD. (forthcoming, b). *The Role of Product and Labor Market Reforms in Supporting Climate Transitions*.

OECD/Cedefop. (2014). Greener Skills and Jobs. In *OECD Green Growth Studies*. OECD Publishing, Paris. doi:10.1787/9789264208704-en

Oh, C., & Reuveny, R. (2010). Climatic natural disasters, political risk, and international trade. *Global Environmental Change, 20*(2), 243-254. doi:10.1016/j.gloenvcha.2009.11.005

Osberghaus, D. (2019). The Effects of Natural Disasters and Weather Variations on International Trade and Financial Flows: a Review of the Empirical Literature. *Economics of Disasters and Climate Change, 3*(3), 305-325. doi:10.1007/s41885-019-00042-2

Tol, R. (2024). A Meta-Analysis of the Total Economic Impact of Climate Change. *Energy Policy, 185*. doi:https://doi.org/10.1016/j.enpol.2023.113922

UNEP. (2023). *Adaptation Gap Report 2023: Undefinanced. Underprepared. Inadequate*. Nairobi. doi:https://www.unep.org/resources/adaptation-gap-report-2023

Unsal, F., Ozcan, G., Hinkelmann, S., & Baek, S. (forthcoming). Macro-Structural Climate Framework. *OECD Working Paper*.

Vivid Economics. (2017). Impacts of higher temperatures on labour productivity and value for money adaptation: lessons from five DFID priority country case studies. *Report prepared for the UK Department for International Development*. Retrieved from https://assets.publishing.service.gov.uk/media/59e0a95f40f0b61ab035cb3d/VIVID_Heat_impacts_on_labour_productivity_and_VfM_adaptation.pdf

ANNEXURE A: G20 MEMBER AND INVITED COUNTRIES EXPERIENCES

Experiences shared by members on heterogenous within-country impacts of climate change

1. Australia

- The RBA is **building its capacity to conduct analysis and research** into how climate-related risks and opportunities will affect the structure and operation of the economy and the implications for monetary policy.
    - This has included analysis to understand the likely direction of structural change in the Australian economy and developments in energy markets. The Bank's liaison program has complemented their data analysis.
- The RBA is also developing capacity to model the macroeconomic implications of different types of climate risk for the economy and the setting of monetary policy.
- The RBA monitors and analyses climate-related investment trends and their implications for the cost and availability of green and sustainable finance in Australia.
- As a member of the Council of Financial Regulators (CFR), the RBA is working alongside other agencies to create a framework to enable participants in the financial system to manage their climate-related risks and opportunities, which will support the transition to a lower emissions economy.
- The CFR's Climate Working Group is focussing on the following areas:
    - Exploring the impact of severe weather through scenario analysis, monitoring climate-related trends in domestic financial markets, and enhancing climate modelling capability.
    - Improving transparency and consistency of sustainability-related information by promoting good governance, disclosure, and compliance with existing laws while progressing the implementation of internationally aligned climate-related financial disclosure requirements.
    - Supporting the development of an Australian sustainable finance taxonomy; and
- Continuing Australia's domestic and international engagement on sustainable finance. This includes RBA participation in the Network for Greening the Financial System (NGFS), the Sustainable Finance Working Group of the G20, and the FSB's Climate Vulnerabilities and Data Working Group.

2. Brazil

- Brazil has a series of policies and structural reforms underway that seek to strengthen the national economy in a sustainable, environmental, and social way.
- Among international climate finance initiatives, Brazil will host in November 2025 COP-30, and in April 2025 has launched the COP30 Circle of Finance Ministers to support the Baku to Belém Roadmap to USD 1.3 trillion, to address the urgent need for scaling climate finance to developing countries from all public and private sources to meet the goal of at least USD 1.3 trillion per year by 2035.
- The following are among the priorities of the COP30 Circle of Finance Ministers, i) Reforming Multilateral Development Banks (MDBs); ii). Expanding concessional finance and climate funds, such as the Tropical Forest Finance Facility (TFFF) to foster forest preservation iii) Creating country platforms and boosting domestic capacity to attract sustainable investments; iv). Developing innovative financial instruments for private capital mobilization; v). Strengthening regulatory frameworks for climate finance.
- When it comes to national climate finance initiatives, Brazil has designed the **Ecological Transformation Plan (ETP) New Brazil**. A national development plan that aims to promote a change in economic, technological, and cultural paradigms in favour of development through sustainable relationships with nature and its biomes, enabling the generation of wealth and its fair and shared distribution, with improvement in the quality of life for present and future generations. It prioritizes three main objectives: employment and productivity; social justice; and environmental sustainability.
- The ETP will be implemented through a series of regulatory and tax policies approved by the National Congress in a gradual yet intensive manner.

Among the various policies aimed at by the plan, some can be highlighted.

- A **regulated carbon market**, establishing a Brazilian emissions trading system for greenhouse gases: creating a regulated carbon market. Brazil enacted Law 15.042 creating a regulated carbon market in Brazil and setting greenhouse gas emission limits. Regulatory definitions must be finalized within 12 months (extendable by another 12 months). The system is expected to be fully operational by 2030. The initiative supports standardized global frameworks for carbon markets, enabling cross-border interoperability and integration between registries and platforms to facilitate the seamless transfer of high-integrity carbon credits.
- The issuance of **sustainable sovereign bonds**, Two issuances have already been launched since November 2023, totalling US$ 4 billion, with new rounds of emissions planned. The **Brazilian Framework for Sustainable Sovereign Bonds** serves as a guide for issuing sovereign debt instruments backed by budgetary expenditures that directly promote sustainable development.
- The **national sustainable taxonomy**, which incorporates ecological and social criteria to classify economic activities as sustainable or not, enabling various other policies.

- The **Brazilian Sustainable Taxonomy** is a classification system designed to define activities, assets, and projects that contribute to environmental, climate, and social objectives. It aims to provide transparency, integrity, and a long-term vision for sustainable economic and financial activities. Serves as a common framework for businesses, investors, and policymakers. Enhance investment coordination, promotes sustainable economic growth, and ensures regulatory compliance. The taxonomy aligns Brazil with global sustainability standards, reinforcing its leadership in the green economy.

- **Eco Invest Brazil**, is a program designed to protect foreign investors from currency volatility while investing in long-term ecological transformation projects. Developed in collaboration with the IDB and the World Bank, it focuses on mobilizing foreign private capital and currency coverage within the National Climate Change Fund.
- In parallel to the ETP, it can also be highlighted policies such as the **Brazil Climate and Ecological Transformation Investment Platform (BIP)**. BIP connects transition-aligned projects with domestic and international financial institutions. It focuses on key sectors like energy, industry and mobility, and nature-based solutions, fostering collaboration between the public and private sectors to unlock funding for impactful, sustainable projects.
- Over the years, within its mandate, the BCB has implemented a broad set of actions with concrete results, incorporating sustainability aspects to several of our decision-making processes: regulation; supervision; instruments and policies; internal measures; among others.

  Key highlights include:

  - Improvement of regulation on socio-environmental risks. Financial institutions must identify, measure, evaluate, monitor, report and control or mitigate these risks, while also incorporating them into their stress testing analyses;
  - Enhancement of the Social, Environmental, and Climate Risk Supervision Process;
  - Establishment of the requirement for financial institutions to adopt a Social, Environmental, and Climate-related Responsibility Policy;
  - Reduction of the environmental impact associated with banknote processing;
  - Review of BCB's Socio-Environmental Responsibility Policy;
  - Development of BCB's Report on Social, Environmental and Climate-related Risks and Opportunities.
- Another ongoing initiative by BCB´s is the Green Bureau. This initiative aims to establish sustainability criteria for rural credit concessions by introducing stricter requirements and restrictions—particularly for areas under environmental embargoes and undesignated public forests. It enables the identification of operations with social, environmental, or climate-related characteristics, to ensure that investments are aligned with sustainability standards.

- In Brazil, the implementation of climate stress testing is at an advanced stage. The BCB has conducted three different climate assessments, two dedicated to physical risk exposures and one analysing the impact of banks' expected losses from a carbon tax. The BCB indeed devotes special attention to possible impacts on inflation caused by climate risks.

3. Canada

- The Bank of Canada (BoC) has refined its modelling tools to better capture complex economic relationships and how those relationships are changing because of the physical risks of climate change and the transition to a low-carbon economy. This work is important for the Bank's understanding of the possible impacts on inflation and output.
- As well, the BoC has continued to incorporate the implications of climate-related impacts into its economic outlook. For example, BoC staff incorporated the influence of climate policies on total factor productivity and business investment in the 2024 assessment of potential output in Canada.

4. China

- China has taken multiple fiscal policy measures to address climate-related risks. China's National Carbon Emission Trading System stared trading in July 2021. It currently covers four key industries namely; power generation, steel, cement and aluminium smelting. It is the world's largest carbon market by volume of greenhouse gas emissions covered.
- In recent years, China has established a **fiscal framework promoting resource efficiency and green development**, while guiding financial authorities across all levels to implement policies supporting carbon peaking and carbon neutrality goals.
- China **enhanced financial support** to explore diverse effective clean heating solutions, established specialized funds for electronic waste disposal, and advanced resource recycling and circular development.
- Additionally, China has **strengthened diversified investment mechanisms** and leveraged private capital toward green and low-carbon related sectors. Meanwhile, China has put forward a series of policy measures to simultaneously address climate risks, economic growth and employment promotion.
- The People's Bank of China (PBoC) has been actively working on mobilizing private funds for responding to climate change. The PBoC has improved green finance framework and promoted the rapid development of green finance market.
- Structural monetary policy tools have been launched to guide more financial resources towards green development and low-carbon transformation activities. Green bond policies framework has been improved to enhance incentive mechanism. By the end of 2024, the balance of green loans was 36.6 trillion yuan, increased by 21.7% year-on-year. By March 2025, a total of 4.3 trillion yuan of

green bonds has been issued, 1.8 trillion of which are green financial bonds, providing a stable source of funding for Chinese financial institutions to issue green loans.

- To encourage and guide a broader range of industries and enterprises to participate in greenhouse gas emission reduction efforts, China actively developed and officially launched the national voluntary greenhouse gas emission reduction trading market in January 2024, effectively incentivising the development of carbon reduction and sink enhancement projects.
- In 2024, China has introduced guiding opinions on promoting high-quality employment, and **increasing green jobs opportunities** has been identified as a priority area.
- Last May, 19 new **occupations were officially classified as green professions** by the Chinese government, such as energy storage facility operators, power quality management specialists.
- China has classified 134 occupations as green professions, which has created a favourable environment for promoting green employment, offering guidance for accelerating the cultivation of urgently needed talent in green industries to meet the demands of both emerging low-carbon industries and the upgrading of traditional industries.

5. Egypt

- Egypt has implemented several economic reforms aimed at improving macroeconomic stability and enhancing climate related investments. The country has transitioned to a flexible exchange rate regime to stabilize the foreign exchange market and reduce inflationary pressures. This stabilization has helped regain investor trust, attract foreign direct investments into green sectors and ensure financial resources for climate-related projects.
- Sustainable financing activities are highly encouraged by the Central Bank of Egypt (CBE) through issuing the Sustainable Finance Guiding Principles in Jully 2021 for the Egyptian banking sector, aimed at deepening the understanding and adoption of sustainable finance practices. These principles highlight the importance of managing environmental and social risks effectively highlighting climate change risk management (Principle 4).
- Following the issuance of Sustainable Finance Guiding Principles and the gap analysis conducted in 2022, CBE issued its Sustainable Finance Binding Regulations in November 2022 mandating Egyptian Banks to integrate sustainable finance into their policies and procedures and lending decisions. Additionally, banks are required to consult environmental experts for significant projects, marking a proactive approach towards environmental stewardship. CBE also mandates banks with reporting framework encompassing quarterly report to assess sustainable finance portfolios and semi-annual report to assess the adherence to guiding principles, and compliance with international sustainability standards, along with an annual report prepared per GRI standards. These reports

serve to enhance the CBE's data infrastructure on sustainability and the future regulatory decisions.

- Moreover, CBE has recently released its Carbon Border Adjustment Mechanism (CBAM) Directive in June 2025 to further enhance sustainable finance and ensure the alignment of the banking sector with international developments, where banks are required to review their credit portfolios related to export companies and gather related data. This will improve the risk management process associated with the application of the mechanism, and support in making more accurate decisions complying with sustainability standards.
- The Ministry of Finance is currently pursuing technical assistance and capacity development from the IMF, other IFIs, and development partners to strengthen its analysis of fiscal risks pertaining to sever weather and natural disasters and their effects on major macroeconomic variables including GDP growth, expenditure and revenues, and debt levels.

Policy Framework

- Egypt issued its National Climate Change Strategy (NCCS) 2050 in May 2022 as a roadmap for meeting the challenges of climate change within the framework of Egypt Vision 2030. This strategy consolidates climate-related aspects and ensures that the climate change dimension is integrated into national planning across all sectors.
- In addition to enhancing adaptive capacity and resilience to climate change, the strategy seeks to reduce the negative effects and promote sustainable economic growth and low-emission development across various sectors.
- Meanwhile Egypt has launched the Country Platform for the Nexus of Water, Food, and Energy (NWFE) in July 2022, which aims to provide opportunities for mobilizing climate finance and private investment to support Egypt’s national climate agenda.
- Additionally, it aims to maximize resource use, transition to low-emission infrastructure, and improve water and food security. Aligned with the 2050 and the Nationally Determined Contributions (NDCs), NWFE Program focuses on projects that cater to the needs of adaption and mitigation in order to achieve low-emission development and sustainable economic growth, while strengthening Egypt’s adaptive capacity and resilience to severe weather and natural disasters.
- In light of the announcement and implementation of the NWFE platform, Egypt successfully leveraged concessional and private financing to cover development financing needs in nine sectors that were deemed sustainable and would reinforce Egypt’s mitigation efforts against climate change. For further information on the NWFE Country Platform, please visit the following link: https://moic.gov.eg/page/nwfe.
- Moreover, the Hafiz Platform is another platform that has been developed to provide private businesses with access to tall MDBs that offer financing and technical assistance matching private companies in the right funding partners and capacity-building institutions to help them achieve their green transition.

- Egypt's Government has also shown commitment to the climate agenda by hosting the 27th Conference of Parties under the UN Climate Change Convention (COP27) in November 2022. Additionally, the country has defined quantitative goals for reducing greenhouse gas emissions of three major sectors (energy, transport, and oil).

Regulatory Environment

- Egypt has streamlined the regulatory environment to increase green projects, leverage domestic and foreign stakeholders, and engage private and public organizations. This includes the Investment Law No. 72/2017, that facilitates approvals of the establishment, operation, and management of renewable energy projects and offers incentives for them. In addition the Waste Management Law No. 202/2020, that improves waste management practices and encourages the use of eco-friendly alternatives.
- Recent regulations also require that all ministries submit their budgets with programme matrices that provide detailed information on programmes related to the green economy and environmental projects to ensure consistency with Egypt's Vision 2030
- The Egyptian Financial Regulatory Authority (FRA) has also issued decrees in 2021 requiring listed companies and non-banking financial institutions (subject to a specific threshold) to publish annual disclosures pertaining to ESG and TCFD reporting under given criteria. These efforts aim to strengthen market transparency, and foster investor confidence in ESG-aligned instruments across Egypt's financial system.
- Additionally, in December 2022, the Egyptian Financial Regulatory Authority (FRA) established a voluntary carbon market platform within the Egyptian Stock Exchange (EGX0 for the trading of carbon emissions reduction certificates (CERs).

Sectoral Adaptation Measures

- Egypt has identified priority sectors for adaptation interventions based on vulnerability assessment studies, including agriculture, coastal zones, aquaculture and fisheries, water resources, human habitat and settlements, and human health. This is over and above the projects that Egypt is undertaking for sea level rise in the North coast.
- The government is investing in modern irrigation techniques and advanced technologies to increase water use efficiency under the SCALA programme through collaborating with FAO and UNDP to accelerate climate solutions in the most vulnerable sectors. Also, cropping patterns are being revised to prioritize drought-tolerant varieties.

Climate Finance Mobilization

- Egypt is utilising several fiscal tools to promote sustainable energy and support its transition and was the first country in the Middle East and North Africa (MENA) to issue sovereign green bonds in September 2020. These bonds are allocated to finance green projects, such as renewable energy and energy efficiency. Major banks have recently issued green bonds as an innovative and efficient tool for sustainable finance in Egypt.
- The Ministry of Finance also issued the Sovereign Sustainable Finance Framework in November 2022 to align with the three main dimensions of the National's Sustainable Development Strategy.
- Egypt has also issued the first sustainable "Panda" bond in the Middle East and Africa. It was issued in the Chinese financial market and was allocated to finance sustainable projects and the Sovereign Sustainable Finance Framework.
- The IMF approved Egypt's request for an arrangement under the Resilience Sustainability Trust (RST) fund worth $1.3 billion on the back of a comprehensive climate mitigation and adaptation program that rests on 3 major reform areas: (1) accelerating Egypt's decarbonization efforts, (2) analysing and reporting climate related fiscal risks, strengthening the management of climate related data and risks, and building resilience, and (3) enhancing the resilience of the financial sector to climate shocks and supporting climate finance.

6. European Union

- Proactive policies that mitigate risks through early and coordinated action can stabilise the economic environment, support sustainable investment, and prevent long-term output losses.
- The transition adds to the fiscal challenges most economies are facing. **Carbon pricing and environmental levies offer immediate revenue recycling potential** that can be used to support those most affected by the transition.
- **A coherent fiscal strategy** must anticipate these shifts, broaden tax bases, and deploy tools such as blended finance, public guarantees, and climate-aligned budget frameworks. Reporting requirements on climate-related fiscal risks in national fiscal frameworks apply to all EU Member States to the extent possible, in line with the 2024 amendments to Council Directive 2011/85/EU. The legal transposition of these requirements in national law is the first step of the process and is due by the end of 2025, with the practical application of these provisions expected afterwards.
- Delivering the scale of investment needed requires smart structural reforms. **Streamlined permitting, green budgeting, integrated planning**, and support for project preparation, especially at local level, are critical to de-risk and crowd in capital. At the same time, reforming fossil fuel subsidies and aligning public procurement with climate objectives strengthens the economic case for green investments while correcting market distortions.
- Rather than decoupling green and digital, the opportunity lies in their convergence. **Smart grids, precision agriculture, and AI-optimized energy**

systems can accelerate decarbonization and efficiency gains. But harnessing these gains requires investments in skills, social protection, and education to ensure a fair and inclusive transition.

- The EU is focused on putting the policies needed to support up and reskilling, support affected regions; and enhance the mobility of workers through various initiatives and funds.

7. France

- France relies on a policy mix combining carbon pricing with targeted support schemes to mitigate the distributive impacts of the transition.
- Measures such as the **renovation grant and the electric vehicle leasing scheme** are designed to ease the burden on low- and middle-income households.
- The government also introduced a **Multi-annual Financing Strategy for the Ecological Transition** to provide visibility and coordination between public and private financing.
- Low-carbon innovation is central to the transition's economic success and requires specific government support such as through the France 2030 investment plan and the EU's Innovation Fund.

8. Germany

- Germany has the ambition to shape the process of climate transformation in a sustainable, resilient, and responsible manner. The German government is undertaking a three-tiered approach toward growth: to invest, to reform, and to consolidate. First and foremost, Germany is focusing on rapidly and significantly expanding public investment, particularly in infrastructure, as well as in defence and security. Second, alongside these investments, Germany is promoting growth through targeted structural reforms. The third part of this approach involves setting spending priorities and reviewing government functions in order to ensure fiscal sustainability and efficiency, and making sure that every euro is spent wisely.
- Besides the objective of mitigation, it is equally important to foster the adaptation to severe weather.
- Germany published recently **a national strategy for adaptation to sever weather and natural disasters**, which lays out several objectives and action points to improve the resilience of the economy and society and thereby also the resilience of labour markets. It emphasizes a forward-looking perspective on climate risks in terms of risk assessment and prevention.
- To achieve the strategies' goals, Germany implemented the **Adaptation Action Plan IV (APA IV)** that defines concrete measures and policy instruments. It presents the federal government's current and future measures for adapting to climate impacts.

- In addition, **high-quality and sustainable employment** can be an objective of support programs for the decarbonization of industries. These programs can focus on human resource development to make sure workers receive the re- and upskilling they need.
- A German example currently in the roll-out is the **Carbon Contracts for Difference** programme that pairs industry support with HR development.
- The German government is currently evaluating the introduction of a system whereby new building insurance policies have to include natural hazards coverage and all existing building insurance policies will be expanded to include natural hazards insurance.

9. India

- India recognises the growing macroeconomic risks posed by climate change, including persistent inflationary pressures driven by extreme weather events. In this context, macroeconomic policies and structural reforms have been actively aligned to support climate resilience and foster strong, sustainable growth.
- Without significant international flows of public and concessional finance, India's climate action is mainly funded by domestic budgetary resources, finance mobilisation based on policy and regulatory measures, and market-based finance for green projects.

Domestic budgetary resources

- The Government of India has adopted a mission-mode approach under the National Action Plan on Climate Change (NAPCC), encompassing nine national missions covering solar energy, water, energy efficiency, forests, sustainable habitat, sustainable agriculture, the Himalayan ecosystem, strategic climate knowledge, and more recently, human health. States and Union Territories have been encouraged to prepare State Action Plans on Climate Change (SAPCCs) aligned with the overarching NAPCC framework to reflect local vulnerabilities, priorities, and capacities. This sub-national climate planning framework ensures decentralised action and strengthens India's climate resilience from the ground up.
- As of July 2024, thirty-four SAPCCs have been formulated and are under implementation. Budgetary support is also channelled through production-linked investment schemes to promote manufacturing of high-efficiency solar PV modules and enhance the production of electric and hydrogen fuel cell vehicles, along with support for the off-grid adoption of solar, incentivising adoption of EVs, National Bio Energy Programme, solarisation of agricultural pumps, viability gap funding for offshore wind, the national green hydrogen mission, and the national nuclear mission.

Finance mobilization

- In terms of finance mobilisation, the Reserve Bank of India (RBI) has implemented the Framework for Acceptance of Green Deposits for the Regulated Entities to develop a green finance ecosystem in the country. It also promotes renewable energy through its Priority Sector Lending (PSL) rules.
- The Energy Conservation Act 2002 was amended in 2022 to introduce the Carbon Credit Trading Scheme (CCTS), an extension of the Perform, Achieve and Trade (PAT) scheme, initially launched in 2012. Nine sectors, including Aluminium, Cement, and Steel, have been identified for inclusion under CCTS. Furthermore, energy efficiency is actively promoted through schemes such as the UJALA scheme, which has led to widespread adoption of LED lighting, thereby reducing household electricity consumption.
- The Star Labelling Programme for appliances promotes the use of energy-efficient appliances across residential and commercial sectors. The Union Budget 2024-25 announced the intention to develop a taxonomy for climate finance to enhance the availability of capital for climate adaptation and mitigation to support the achievement of the country's climate commitments and green transition. Work on the taxonomy is currently underway.

Market-based finance for green projects

- India has also taken several steps to catalyse market-based finance for climate-relevant projects. The Government of India has included Sovereign Green Bonds (SGrBs) in its overall market borrowings to mobilise resources for green infrastructure. SGrBs with maturities of 5, 10 and 30 years have been issued.
- Additionally, the Securities and Exchange Board of India (SEBI) has been one of the early adopters of sustainability reporting. In 2022-23, SEBI made the Business Responsibility and Sustainability Report (BRSR) mandatory for the top 1000 listed entities. In July 2023, SEBI introduced the BRSR Core for ESG disclosures for value chains. From 2024-25, these disclosure requirements apply to the top 250 listed companies and will be phased in for the top 1000 listed entities by 2026-27.

Other policies:

- To support a transition towards a low-carbon economy, India is progressing towards a diversified energy mix comprising renewable energy, bioenergy, nuclear, and storage solutions. As of February 2025, non-fossil fuel sources account for 47.4 per cent of total installed electricity generation capacity.

Major initiatives include:

- Development of Solar Parks and Ultra Mega Solar Power Projects: The scheme provides centralized solar parks with shared infrastructure, streamlined land acquisition, and faster clearances to reduce costs and expedite project development.

- PM-KUSUM: It aims to provide energy and water security to farmers, enhance their income, and reduce diesel use and pollution. It includes three components: setting up decentralized solar power plants, installation of stand-alone solar pumps with up to 50% financial assistance, and solarisation of grid-connected pumps through individual and feeder-level modes.
- PM Surya Ghar- Muft Bijli Yojana: It aims to provide free electricity to 10 million households by March 2027 through rooftop solar panels, offering up to 40% subsidy and significantly boosting solar adoption across the country.
- PM JANMAN: It includes a New Solar Power Scheme with a ₹5.15 billion to electrify 0.1 million un-electrified households and provide solar lighting to 1,500 Multi-Purpose Centres in Particularly Vulnerable Tribal Groups areas through off-grid solar systems.
- The Viability Gap Funding scheme, with a total outlay of ₹74.53 billion, aims to boost India's offshore wind energy sector by providing financial support for the installation of 1 GW capacity off the coasts and for upgrading ports to handle project logistics. This initiative seeks to launch India's offshore wind industry, attract investment, and support its clean energy goals while lowering emissions.
- The National Bioenergy Programme, with an outlay of ₹8.58 billion for Phase I (2021-2026), aims to optimise the use of biomass and waste resources to support India's energy transition. This initiative promotes clean bioenergy, offering social, environmental, and economic benefits, including pollution reduction, job creation, and energy independence.
- The National Green Hydrogen Mission aims to produce 5 million metric tonnes of green hydrogen per annum by 2030. The Nuclear Energy Mission, announced in the Union Budget 2025–26 with a ₹200 billion outlay, seeks to develop Small Modular Reactors and increase nuclear capacity to 100 GW by 2047. Coal-based power will continue to ensure energy security, especially for meeting base-load demand, with ongoing efforts to improve the efficiency of thermal power generation through supercritical, ultra-supercritical, and Advanced Ultra Supercritical (AUSC) technologies.

Policy and Regulatory Initiatives by the Reserve Bank of India (RBI)

- RBI joined the Network of Central Banks and Supervisors for Greening the Financial System (NGFS) in 2021 and established a Sustainable Finance Group (SFG) within its Department of Regulation to spearhead regulatory actions. In 2023, the RBI implemented a Framework for Acceptance of Green Deposits by Regulated Entities to promote green finance and encourage credit flow to climate-aligned projects.
- To strengthen risk assessment, the RBI is actively developing the Climate Risk Information System (RB–CRIS), a data repository to enhance risk assessment and mitigation. It's also fostering innovation via an ‘on Tap’ cohort focused on climate change risks and sustainable finance under its Regulatory Sandbox, alongside a ‘Greenathon’ to spur green finance solutions. In 2022, the RBI piloted a climate

vulnerability assessment and stress testing (VAST) exercise to evaluate banks' exposure and vulnerability to climate-related risks.

- Furthermore, in February 2024, the RBI issued a draft framework mandating regulated entities, including banks and large NBFCs, to disclose climate-related financial risks. This framework aligns with global standards like TCFD, emphasizing governance, strategy, risk management, and metrics/targets. The RBI recognizes climate change, especially extreme weather events, as potential supply-side shocks causing persistent inflation and is exploring incorporating climate risks into monetary policy for price stability.

10. Indonesia

- Indonesia has demonstrated strong commitment to climate control and sustainable development through fiscal and monetary initiatives such as green sukuk, SDGs Bonds, blue bonds, climate budget tagging, carbon market development, fiscal incentives for renewable energy, Climate Risk Stress Testing (CRST) guidance for banks, and sustainable finance taxonomy, These efforts support inclusive economic growth while integrating ESG principles.

11. Italy

- Italy aims for carbon neutrality by 2050. It is on track to reach its 2030 targets for emissions reductions and energy efficiency, aiming to reach 30% of renewables in total energy consumption and 55% of renewables in electricity generation.
- Italy has recently updated its **National Energy and Climate Plan (NECP)**, introducing a wide range of economic and financial instruments to enhance climate resilience.
- Italy has also adopted a plan to phase out existing coal-fired power plants by 2029. As part of this plan, it has been established that the portion of the proceeds from the auctioning of allowances under the EU Emission Treading System that exceeds €1,000 million will be allocated to the "**Fund for Energy Transition in the Industrial Sector**", for the conversion of employment in areas where coal-fired power plants are located and to support the transition of workers to new employment opportunities.
- In 2025, a compulsory **national insurance scheme** to protect firms against natural disaster risks, based on a public-private partnership model, became operational. Businesses will be required to purchase insurance coverage for damages caused by natural disasters. Insurance companies will offer policies with risk-based premiums, while Italy's export credit agency, SACE, will cover up to 50% of potential losses incurred by private insurers and reinsurers.
- In parallel, the Ministry of Environment and Energy Security launched a **G7 Adaptation Accelerator Hub** to enhance the implementation of climate change adaptation efforts in developing countries. Its objectives include accelerating, strengthening, and mobilizing support for adaptation action, advancing viable

investment plans, and prioritizing the needs of vulnerable nations, especially from Africa, Least Developed Countries (LDCs), and Small Island Development States (SIDS), for sustainable responses to climate change.

12. Korea

- Korea has established its **2030 Nationally Determined Contribution (NDC)** and implementing it to achieve the goal of carbon neutrality by 2050. The 2030 target is to reduce greenhouse gas emissions by 40% compared to 2018 levels, and related policies are being pursued to achieve this. In addition, to meet the target, the share of renewable energy in power generation is planned to be gradually increased from 9.6% in 2023 to 21.7% by 2030.
- To achieve the reduction target, both **carbon pricing and non-pricing policies** are being implemented in parallel.
    - A representative carbon pricing policy is the **Emissions Trading Scheme (ETS),** which has been implemented since 2015 for companies emitting more than 125,000 tons annually, and currently manages 73.5% of the nation's total emissions under the scheme.
    - As for non-pricing policies, the government is expanding financial support for carbon-neutral R&D and operating the **Climate Response Fund**. It is also operating emission demand management systems such as the Target Management Scheme and the Low-Emission Vehicle Supply Target System, targeting small-scale emission sources.
- In June 2023, the government also released the N**ational Climate Crisis Adaptation Plan** to strengthen resilience to extreme weather events.
    - In the agriculture and fisheries sectors, Korea is enhancing technologies to predict and evaluate changes in crop cultivation zones, developing climate-resilient crop varieties, and establishing stable supply systems.
    - In the industrial sector, adaptive capacities are being reinforced, and climate vulnerabilities of power facilities are being addressed.
    - To prepare for climate-related disasters such as droughts, typhoons, and floods, the government is **upgrading infrastructure for prevention and reviewing disaster response systems** and victim support mechanisms.
- Korea is also working to **support vulnerable industries and groups** that may be disproportionately affected by the transition to a low-carbon economy.
    - **Transition assistance and employment stabilization funding** are being provided to industries such as coal power that are expected to be impacted.
    - For vulnerable groups such as the elderly and low-income households, the government is offering relocation support and implementing energy efficiency improvement programs to help alleviate climate inequality.

13. Mexico

- Between 2000 and 2023, over 15 million people in Mexico were affected by disasters, with damages exceeding USD 55.7 billion, and annual losses from storm risks are projected to reach USD 3.58 billion.

Some examples of the Ministry of Finance's actions are:

- **Issued a Cat Bond** to cover risks associated with natural disasters. In 2020, the bond was issued for USD 485M and renewed in 2024 for a total of USD 595M. This Cat Bond was activated in October 2023 (Hurricane Otis).
- **Issued SDG-linked and green sovereign bonds**. Within the framework of the Mexican Sustainable Financing Mobilization Strategy, these bonds attract international investors committed to sustainability, without jeopardizing the fiscal discipline.
- Channelling resources towards vulnerable communities through locally led adaptation programs and decentralized climate finance.
- Implementing a green budget tagging system and establishing a **Sovereign Bond Framework** with Allocation and Impact reports. Mexico among the first countries in Latam to implement these instruments, both aligned with international best practices to enhance transparency and accountability in climate-related public spending.
- Considering climate effects on specific projected variables in the baseline macroeconomic scenario contemplated for the annual budget planning cycle. Climate information comes from the USA National Oceanic and Atmospheric Administration on extreme climate phenomena.
- Integrating climate scenarios into its medium- and long-term fiscal and development planning. This implies the alignment of public spending with environmental goals and strengthening its resilience to extreme weather events and economic shocks, even within tight fiscal constraints.
- The MoF actively collaborates with the Coalition of Finance Ministers for Climate Action (CFMCA) to develop a strategic roadmap of adaptation measures based on analyses that recognize the different levels of regional biodiversity and exposure to physical climate risks that Mexico faces.

Some examples of the Bank of Mexico's actions:

- Promoting macroeconomic stability and favourable financing conditions. By strengthening economic and financial resilience, the Bank of Mexico helps better absorb climate and weather shocks and sustains investment, consumption, and long-term growth.
- Implementing monitoring frameworks to detect emerging risks and engage economic agents. The Bank of Mexico has **conducted surveys** to capture

businesses' perceptions of climate impacts to understand firms' adaptation and mitigation strategies.

- The Bank also publishes analytical boxes on its Financial Stability Report and is developing a platform to foster capacity building in the country to provide authorities and the private sector with greater expertise in understanding and managing nature-related risks.
- Qualitatively assessing the economic impacts of climate-related disruptions to enable better decision-making. For example, the Bank has assessed the impact of tropical cyclones and droughts on food prices and the effects of extreme temperatures on working hours, especially in the informal sector.

14. Norway

- Emphasize education and social welfare, as insurance against severe weather and natural disasters and transition, making the labour force and the economy more resilient to change.
- A national insurance system also increases resilience and reduces direct fiscal costs of disasters.
- An experience from the transition that we were facing when oil prices fell in 2014. This resulted in about 40 per cent of the employed in the Norwegian petroleum industry, many of whom were in the same, small city, having to find new work, which they did, mostly in other industries.

15. Russia

- In recent years, Russia has pursued an active climate policy. The target of achieving carbon neutrality by 2060 has been formally established.
- A range of legal acts were developed in the field of limiting greenhouse gas emissions and adaptation, a pilot project to regulate greenhouse gas emissions was launched in Sakhalin Region. A legal infrastructure was created for the implementation of climate projects and the development of a domestic voluntary carbon market.
- In line with the **Nationally Determined Contribution (NDC**), as well as the Presidential Decree "**On Reducing Greenhouse Gas Emissions**", by 2030 the level of emissions should be limited to 70% of the 1990 level. The Climate Doctrine of the Russian Federation, the new version of which was published in October 2023, provides additional measures aimed at emission reduction.
- In August 2025, a new climate target was announced to reduce greenhouse gas emissions by 65-67% by 2035, relative to 1990 levels. The new target will be included in the updated NDC, which will be submitted before COP30.
- At present, Russia is implementing a plan of measures for the second stage of adaptation to climate change, including: improving insurance mechanisms in the context of adaptation to climate change; identifying the most effective Russian and international practices of adaptation to climate change in economic sectors,

including best practices of corporate governance in terms of climate strategy; creating science-intensive technological solutions aimed at studying the climate, mechanisms for adaptation to climate change and its consequences.

- In 2023, the Bank of Russia introduced a risk-sensitive incentive-based banking regulation for projects of technological sovereignty and structural adaptation. The list of eligible projects and technologies includes a range of 'green' and transitional activities, for instance, technologies related to hydrogen energy and renewables. Subject to pre-defined conditions, banks may apply lower risk weights for loans that comply with the taxonomy requirements when estimating credit risks. Recently, the Bank of Russia has **expanded the program** on national green taxonomy for financing priority sustainable development projects. As part of the changes, a risk sublimit of 30% of the total capital savings limit will be provided.
- To assess the possible consequences of the materialisation of climate-related risks, the Bank of Russia conducts climate stress tests (as for now, three in total: in 2021, in 2023 and in 2024).
- In 2023, Russia conducted a top-down assessment of climate transition risks to the financial sector. By adapting NGFS scenarios, two climate transition scenarios for the Russian economy with a horizon to 2040 were assessed within the exercise. The results as well as the methodology for the stress-test which can be used by companies in conducting their own climate risk analysis, are publicly available.
- In 2024, the Bank of Russia carried out a bottom-up climate stress-test and is now exploring ways of including physical risks in its future climate stress-tests. Looking ahead, priorities include developing sector-specific climate risk metrics and supporting capacity-building for scenario analysis.
- The Bank of Russia has been actively working to guide businesses through climate transition.
    - In 2023, the Bank of Russia published **Recommendations for public companies and securities issuers** on working out sustainable development and climate transition strategies.
    - The Bank of Russia also issued comprehensive **Recommendations on Climate Risk Management for Financial Institutions**, which emphasize the importance of creating transition plans and assessing clients' climate commitments. The follow-up survey on financial sector shows that while awareness has increased, adoption remains uneven.
    - Based on the results of the financial sector survey, the Bank of Russia plans to refine its recommendations, and provide more detailed descriptions of approaches to assessing climate-related risks.
    - Additionally, the Bank of Russia intends to develop guidelines for credit institutions on managing climate risks within the Internal Capital Adequacy Assessment Process.

- There are also plans to collaborate with market participants and relevant authorities to create a unified climate data portal for risk assessment purposes.

16. Saudi Arabia

- Saudi Arabia has established the **Saudi Green Initiative (SGI)** which was launched in 2021, the SGI aims to increase the commitment to environmental sustainability.
  - It includes goals such as planting 10 billion trees, rehabilitating 40 million hectares of degraded land, and reducing carbon emissions from various sectors. This initiative is part of a broader vision to transition to renewable energy and improve air quality while enhancing biodiversity.
- Saudi Arabia also invested heavily in renewable energy projects, aiming to produce 50% of its energy needs through renewables by 2030. Initiatives such as the **National Industrial Development and Logistics Program (NIDLP)** exemplify efforts to promote sustainable industrial practices and green technologies, enhancing the country's capacity to adapt to severe weather and natural disasters.

As part of the Middle East Green Initiative, Saudi Arabia launched:

- The **Regional Climate Change Center**, focusing on research and policy coordination in climate resilience.
- The **Regional Center for Early Warning of Sand and Dust Storms**, enhancing predictive capabilities for extreme weather events and protecting public health and critical infrastructure.
- The **Regional Cloud Seeding Program**, to address water scarcity and support regional rainfall enhancement efforts.
- KSA is positioning CCUS as a key component of its circular carbon economy strategy, aligned with its 2060 net-zero target:
  - The world's largest CO_2 purification plant to SABIC, capturing up to 500,000 tons of CO_2 annually for reuse in methanol and urea production.
  - Saudi Aramco's enhanced oil recovery project using CO_2 injection in the Ghawar field – a flagship for CCUS application in hydrocarbon context.
- The establishment of a **Carbon Capture, Utilization, and Storage** (CCUS) hub in Jubail Industrial City in 2023 aims to Capture up to 9 million tons/year by 2027 and scale up to 44 million tons/year by 2035.Supported by partnerships with SLB and Linde and aligned with global best practices on measurement and verification.

- Structural reforms to incentivize private sector investment in CCUS infrastructure, including regulatory clarity, offtake agreements, and potential under voluntary carbon market frameworks.
- In 2023, Saudi Arabia launched an initiative to establish green metals value chains, leveraging: Domestic mining potential, processing capacity, and regional trade connectivity. Identification of enabling technologies, industrial inputs, and investment incentives needed for value chain integration across the GCC and broader Middle East.
- Reforms under the Saudi Mining Law (2021) emphasize: Long-term security of tenure, investment protection, and ESG compliance. Streamlined licensing and transparent governance mechanisms to foster investor confidence and promote critical minerals needed for clean technologies like batteries and solar panels.
- Establishment of the **Sustainable Finance Framework** and ongoing green budget tracking pilot, to identify and align climate-relevant expenditures with national planning and economic diversification targets.
- Investment in public-private partnerships (PPPs) for climate-resilient infrastructure, including water desalination powered by renewable energy, and sustainable urban transport systems under Vision 2030.
- Enhancing regional climate finance collaboration under SGI/MGI, offering financial and technical support to neighbouring economies for low-carbon and resilient growth pathways.

17. South Africa

- South Africa's approach to sustainable finance is guided by the National Treasury (NT) technical paper on Financing a Sustainable Economy (2021), which sets out a series of recommendations which are aligned with the focus areas of the G20 SFWG Roadmap. The approach considers the multifaceted nature of sustainable finance, being a holistic pursuit of multiple objectives, as well as a combination of risk management and opportunity pursuit.
- Since 2021, South Africa has made progress on a number of sustainable finance initiatives, including: Green Finance Taxonomy; Guidance on climate-related disclosures for banks and insurers; Plans to implement ISSB standards in a phased and proportionate manner started with large, listed companies; Research on economic and financial impacts of severe weather and natural disasters, including climate risk scenarios and vulnerability analysis; Just transition country platform and financing mechanism
- South Africa's Green Finance Taxonomy (GFT) is voluntary and was developed by a multi-stakeholder working group chaired by the National Treasury. The GFT was finalized and published as version 1 in April 2022. South Africa's GFT contributes substantially towards at least one environmental objective, in terms of Mitigation and/or Adaptation.
- South Africa's GFT requires companies to implement governance mechanisms that align with international principles and guidelines on labour conventions such

as by the International Labour Organisation (ILO) and the Organisation for Economic Cooperation and Development (OECD).

- To govern domestic efforts, South Africa has an Intergovernmental Sustainable Finance Working Group, with members from government and regulators, and a Sustainable Finance Initiative for engagement with financial sector industry associations.
- South Africa has a Technical Handbook on Issuance of Sustainable Municipal Bonds.
- The handbook sets out detailed, accessible, practical steps involved in sustainable bonds issuance and discusses the associated tasks and activities to provide South African municipalities with a comprehensive view of the process entailed in the preparation, issuance and management of a sustainable bond. The Handbook was published on 31 March in 2022 and supports line departments and municipalities in mainstreaming climate risk into their financial planning and investment decisions.
- South Africa's National Treasury is developing a sustainable bond framework for consideration of issuing a sovereign sustainability bond.
- South Africa has a Disaster Risk Financing Strategy – to be finalised and published in the 2025/26 financial year. The strategy aims to:
    - Introduce disaster risk financing instruments, including climate insurance products, to improve response time and predictability of funding. https://www.treasury.gov.za/comm_media/press/2025/2025080101%20Media%20statement-%20Enhancing%20South%20Africa's%20approach%20to%20disaster%20risk%20insurance.pdf
    - Embed disaster risk management in grant frameworks, particularly those for infrastructure and local government. https://www.treasury.gov.za/comm_media/press/2025/Annexure%20A%20Disaster%20Response%20Financing%20Strategy%20v8.pdf
- South Africa's Companies and Intellectual Property Commission (CIPC) is incorporating the ISSB's IFRS S1 and S2 standards into its XBRL taxonomy. The XBRL Taxonomy, rolled out on 1 October 2024, has been updated to allow voluntary early adopters of ISSB IFRS S1 and IFRS S2 to tag their sustainability-related financial disclosures.
- The CIPC, in collaboration with the Department of Trade, Industry and Competition (DTIC), is conducting a regulatory impact assessment to determine the feasibility and implications of making sustainability reporting mandatory in South Africa.
- The Johannesburg Stock Exchange launched its voluntary Sustainability Disclosure Guidance in June 2022. Link: https://group.jse.co.za/sustainability/climate-disclosure-guidance

Central Bank

- The South African Reserve Bank (SARB) has a Research Programme which covers 7 thematic areas: Regulation, Supervision, Stress testing, Macroprudential framework, Structural changes, Monetary policy guidelines, Net zero for central banks. https://www.resbank.co.za/en/home/about-us/climate-change.
- The SARB has commissioned and undertaken numerous research on the implications of policy levers.
- SARB undertook a macroprudential climate risk stress test (CRST) which was completed in 2025.
- The CRST covered the six South African banks designated as Systemically Important Financial Institutions (SIFIs) under section 29 of the FSR Act. The primary goal of the CRST was to test the resilience of the banking sector to physical and transition risks by evaluating SIFIs' exposures. As the first exercise of its kind in South Africa, the CRST included the secondary objective of assessing banks' data and methodological processes for considering weather-related risks. https://www.resbank.co.za/content/dam/sarb/publications/reviews/finstab-review/2025/financial-stability-review/First%20Edition%202025%20Financial%20Stability%20Review.pdf
- The South African Reserve Bank's Prudential Authority released Guidance Notes on climate disclosures by banks and insurers which are aligned to ISSB S2. Whilst the Guidance Notes are voluntary, many large domestic banks and insurers climate disclosures are using ISSB S2. While not enforceable, the PA will monitor the implementation of these Guidance Notices. The Guidance Notices are aligned with IFRS S2 and start with climate-related risks. Other environmental risks and sustainability disclosures may be considered in the future, where relevant to the PA's mandate. https://www.resbank.co.za/en/home/what-we-do/Prudentialregulation/climate-related-risk

18. Türkiye

- Türkiye has submitted its updated Nationally Determined Contribution (NDC), committing to reduce greenhouse gas emissions by 41% by 2030 compared to 2012. This forms part of the country's broader strategy to achieve net-zero emissions by 2053.
- Türkiye's 2030 **Energy Efficiency Strategy** targets a 16% reduction in primary energy consumption, backed by $20 billion in planned investments.
- Türkiye's **Long-Term Climate Strategy** (LTS) outlines a national vision based on sector-specific priorities and national circumstances:
    - Energy: Emphasis on energy efficiency and renewable generation.
    - Industry: Emissions reductions of 75–100% targeted in hard-to-abate sectors.
    - Buildings: Gradual regulatory reform aiming for near-zero emissions.
    - Transport: Focus on electrification and modal shift to sustainable options.
    - Waste & Agriculture: Methane reduction through circular economy and sustainable

  - Agriculture & Forestry: Enhanced forest management via R&D and policy reforms.
- Türkiye has developed a draft National Green Taxonomy, offering a clear classification system that guides sustainable investments and enhances market confidence.
- The forthcoming Türkiye Climate Law will establish legally binding emissions targets and a robust institutional framework for implementation.
- Türkiye is launching an Emissions Trading System as a central element of its 2024–2030 Climate Strategy, creating market-based incentives for reducing greenhouse gas emissions.
- Türkiye implements public-private insurance models to enhance resilience:
  - TARSIM, the **agricultural insurance system**, covers meteorological risks, with government support covering around 50% of premiums.
  - The **Turkish Catastrophe Insurance Pool** (TCIP), originally designed for earthquakes, is being expanded to cover all natural disasters, including floods.
- Türkiye's **Green Industrial Transformation Initiative** promotes sustainable production methods and circular economy practices.
- Through the **Smart Agriculture Practices Program**, Türkiye supports digitalization and efficient irrigation to increase climate resilience and food security.
- The CBRT actively contributes to the Network for Greening the Financial System (NGFS) and co-authors reports on climate-related financial risks. Since November 2023, the CBRT has published weekly data on domestic ESG debt instruments, improving transparency in sustainable finance markets.
- The **Advance Loans Programme** provides targeted credit to green investments, contributing to the financing of Türkiye's climate goals.

19. United Kingdom

- The **Climate Change Act 2008** places a legal duty on the UK Government to build preparedness and resilience to climate risks, including by publishing a risk assessment (CCRA) every 5 years and responding to the risks and opportunities identified through a National Adaptation Programme (NAP).
- The **UK's Third National Adaptation Programme (NAP3)** was published in 2023, setting out planned actions over a 5-year period to address the 61 climate risks and opportunities facing the UK identified in CCRA3.
- As part of this, the government is taking steps to improve the evidence base to inform adaptation policy. In 2024, as part of the £5m Maximising UK Adaptation to Climate Change programme, a adaptation hub was launched, designed to accelerate adaptation research and build further evidence on the efficacy of adaptation interventions.

- The UK is committed to delivering the transition in a way that supports sustainable and resilient long-term growth. Making Britain a clean energy superpower is a key element of that ambition, one of five missions that make up the UK's Plan for Change.
- The government has committed to working in partnership with businesses and the clean energy sector and providing long-term clarity. Catalytic public investment via the UK's National Wealth Fund will also serve to crowd in vital business investment.

Net zero review

- The macroeconomic implications of the Net Zero transition are complex, uncertain and challenging to assess. As such, developing and publishing the Net Zero Review in 2021, which explored these issues in substantial depth, was an important experience for the UK. The document was published to inform the UK Government's delivery of its legally binding target to reach Net Zero Greenhouse Gas (GHG) emissions by 2050.
- To tackle the challenge of analysing impacts on households, the Review made use of a novel set of analytical tools, cooperating across government bodies to work through complexities and support consideration of the distributional aspects of the transition in UK policymaking.
- The Review found a range of factors affecting the degree to which a household in the UK is exposed to the macroeconomic impacts of the transition, and the pace at which they may start to realise the benefits of a low carbon economy.
- In the UK context, a household's exposure to the costs of the climate transition is likely to be felt particularly strongly through the channels of power, housing, and electric vehicles.

Sustainable finance policy to manage climate risks

- Given the global nature of financial systems, harmonisation and interoperability between jurisdictions remains key for the UK in developing our approach. We continue to advocate for globally interoperable frameworks and minimum baselines in sustainability reporting. This is why the UK is currently consulting on the UK Sustainability Reporting Standards (UK SRS), which are based on the internationally interoperable disclosure framework from the International Sustainability Standards Board (ISSB).
- Greater use of the ISSB's standards internationally will maximise the consistency of information for investors, allowing them to deploy their funding to maximum effect.
- The UK is also currently consulting on its approach to transition planning, which will aim to drive transparency and mobilise finance. Credible transition planning can support better allocation of capital and build confidence in the market, as well as enable business and investors to manage the risks and seize the opportunities presented by the transition to net zero, and a more sustainable and resilient economy.

The role of the central bank

- The Bank of England plays a key role in providing the macroeconomic stability required for both public and private capital flows to finance the transition. Through its focus on its primary objectives of price and financial stability, it provides businesses and government with a stable macroeconomic foundation for investment. Secondary to its objectives of maintaining price and financial stability, the Bank also has an objective to support the economic policies of the UK government, including the transition to net zero.
- The Bank of England is an active member of the Network for Greening the Financial System (NGFS), where it works with other central banks to develop scenarios, share modelling expertise and undertake research and analysis on the aspects of severe weather and natural disasters that affect its core objectives, including the potential monetary policy trade-offs arising from physical risks and transition policies. The NGFS works closely with its partner group, the Coalition of Finance Ministers for Climate Action (CFMCA) to share modelling expertise and best practice.