Azadi Ka Amrit Mahotsav

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Economic Advisory Council to the PM

Vasudhaiva Kutumbakam

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INDIA'S G 20 PRESIDENCY

Emerging issues

April 2023

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PREFACE

The global economic and political landscape is rapidly evolving, presenting both opportunities and challenges for nations worldwide. The G20, as the premier forum for international economic cooperation and policy coordination, plays a crucial role in shaping policies to address emerging challenges. With India's G20 Presidency, it is an opportune moment to delve into the economic, political, and technological aspects that will define the future of the G20 and India's potential to influence the global agenda.

This is the second EAC-PM Occasional Paper offering an overview of India's role in the G20, focusing on its unique economic challenges and appropriate policy responses. It analyses the economic, political, and technological aspects that will define the future of the G20, with particular emphasis on India's G20 Presidency and its potential to influence the global agenda.

The financial agenda for the G20 is also explored, emphasizing the need for reforms and innovations to make the global financial system more resilient and equitable. It underscores the importance of coordinating monetary policies among G20 economies to minimize negative spillover effects on emerging economies, drawing on India's experience in bank regulation and supervision to inform best practices. As the world emerges from the pandemic and faces new geopolitical uncertainties, India's G20 Presidency must address pressing issues such as boosting growth while tackling the public debt situation.

The paper also highlights the importance of leveraging the technological revolution that occurred during the pandemic, while pushing for a global regulatory architecture to mitigate risks associated with digitization. It sheds light on the potential of technologies such as CRISPR gene editing and emphasizes the need for a global consensus on their governance to ensure that the ethical and safety concerns are addressed.

Together, these themes provide a comprehensive overview of the challenges and opportunities that lie ahead for the G20 and India's role in shaping the global economic and political landscape. This paper aims to contribute to the ongoing discussion and foster a deeper understanding of the complex interplay between international economic coordination, national policies, and technological advancements in today's increasingly interconnected world.

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Chapter 1
Climate Finance and G20: Key Issues for Deliberation[1]

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The United Nations Framework Convention on Climate Change (UNFCCC) defines climate finance as local, national, or transnational financing – drawn from public, private and alternative sources of financing – that seeks to support mitigation and adaptation actions that will address climate change[2]. Though large financial resources are required for investments in various forms of low carbon resilient infrastructure, including investment in energy efficiency and renewable energy to reduce the sources of GHGs (mitigation) and also to adapt to the adverse effects and reduce the impacts of a changing climate (adaptation). This in turn requires global institutions governing financial flows to be more in sync with the requirements of climate finance.

Three main sources of climate finance for developing economies are:

(i) Financial assistance from developed economies to developing economies in keeping with the principle of 'common but differentiated responsibilities and respective capabilities of Parties to the UNFCCC;

(ii) Public sources; and

(iii) Private sources – both market-based and financial intermediaries-based. For the whole ecosystem to work there has to be a global agreement on what is required, how it will be made available, and that critical information and data are captured and shared credibly.

Making Climate Finance Available to All

Better estimates of global investment needs

First, there is a serious need for making realistic estimates of the external climate finance that will be needed by EMDEs, along with that which will have to be raised domestically.

Second, estimates for external finance, both public and private, and including grants, equity, and debt, have to be macro consistent. The ability of EMDEs to absorb such external capital flows will be limited by the magnitude of current account deficits that they can sustain, and the debt sustainability of additional liabilities incurred.

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[1] By Laveesh Bhandari, Janak Raj and Rahul Tongia (on behalf of Rakesh Mohan, Part-time Member, EAC-PM)

[2] https://unfccc.int/topics/climate-finance/the-big-picture/introduction-to-climate-finance/introduction-to-climate-finance

Third, these considerations would help in arriving at realistic estimates, since similar past commitments for capital transfers to EMDEs have never been achieved.

Therefore, there is a need for a credible mechanism for estimating the requirements both for adaptation and mitigation at the level of each country, both member of the G20 and globally. For this purpose, multilateral institutions, global financial institutions, and intellectual capacity need to be brought together under a common framework for generating and updating investment requirements on a country-wise basis.

Improving the monitoring and accounting framework

It is well recognized that the need for climate-related funds would be significant and, therefore, a large part of such funds is expected to be routed through financial markets. However, their growth and maturing will rest on a globally credible, mechanism of measuring and accounting for what and how much is emitted and saved. This will be true not just at the country level but at the level of companies and productive activities. Already many instances of 'green-washing' are coming to the fore and these will not only lead to sub-optimal fund allocation from a climate perspective but would also slow down the maturing of markets and reduce their ability to contribute to the climate agenda.

The G20 therefore can help set the base for what lies at the core of well-functioning financial markets – credible data and information on climate change-related action. This is a large gap in the global financial order currently. The G20 under India's leadership can set the stage for a great jump in the evolution and maturing of financial markets if it can kickstart the process of a global monitoring and accounting framework on emissions and related actions.

Greater availability of global funds for adaptation and mitigation

Despite it being clear that the advanced countries are responsible for much of the GHG emission and global warming problem, and despite the recognition that EMDEs would require large amounts of funds, little has been made available to the developing world for funding its transition. Moreover, it is not simply the quantity of funds but also their quality, the terms at which they are available, and how might they not create an undue burden on some countries. While all other avenues, including markets, blended finance, etc. are being worked upon, India needs to keep up the pressure on the western world on enabling a greater amount and better quality of funds for EMDEs.

Chapter 2
Energy Transition and G20: Key issues for deliberation[3]

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India has an immense opportunity in taking global leadership in the transition to a low-carbon world economy and an order that enhances the ability of the developing, emerging and the developed world to smoothly undertake the transition. To enable this India needs to further the transition agenda beyond the net-zero date to the transition path and to move the global objectives towards a peaking date for each country, with greater emphasis on adaptation and development, and sharing of technology. Moreover, it needs to enhance the ability of all countries, large and small, developed and developing, in accessing greater funds. This in turn will require a superior monitoring and accounting framework of companies' and countries' emissions – both current and that saved.

India is among the top two most populous countries, is among the fastest growing large economies, and the government has a unique forward-looking science, technology and market-driven agenda. Consequently, India has both the economic and political heft to take the world towards a faster, fairer and more effective transition process.

Transitioning to Low Carbon Global Economic Order

Furthering the transition agenda

While "net-zero" pledges have been the recent focus of both countries and companies, this framework doesn't take account of the cumulative emissions, even prospectively. By focusing on the cumulative emissions (the area-under-the-curve of emissions), each country can carve out its own pathway to reduce emissions within limits cost-effectively. For high emitters, this means that they must reduce absolute emissions (i.e., without offsets) immediately, while for low emitters, they should lower their growth rates of emissions before plateauing and then declining to zero. A global 2050 zero date obviously cannot mean everyone zero at the same time, the developed world with greater resources would be expected to have more aggressive plans as reflected in their transition paths.

The G20 therefore can be the right forum for kickstarting the next natural progression of the net zero discussion – the transition path and peaking date. Even before each country is able to make such commitments,

[3] By Laveesh Bhandari and Rahul Tongia (on behalf of Rakesh Mohan, Part-time Member, EAC-PM)

the necessary discussion, and sharing of challenges and opportunities, at the level of G20 would help set the base for a more precise and credible commitments process.

A more adaptive world

Action on the climate challenge has tended to focus more on mitigation than on adaptation and resilience-building initiatives. Recent experiences have also confirmed that without greater orientation towards adaptation and development (including socio-economic) countries may not be able to manage adequate mitigative action. In other words, while adaptation and development are ends in themselves, without progress on these fronts mitigative action will also be greatly affected.

At the same time, while the bulk of the larger countries (as in G20, but not limited to them) can have a significant impact in reducing global emissions and therefore can impact planetary health significantly, this is less so for the smaller countries. Those countries, therefore, need to focus relatively more on the adaptation process.

Even for the larger countries, adaptation plans need to be evolved and the necessary expertise in such exercises needs to be developed and shared. The G20, given its overarching importance, needs to take leadership and enhance the movement towards a more practical approach to global transition – one where adaptation and resilience measures are given equal importance at the global level, but greater importance for the smaller and more vulnerable countries.

A global technology development sharing order

Major developed and selected developing countries have greater capacity and better head-start in green technologies. Going forward, many smaller economies may not have the necessary wherewithal to access the latest technologies as they are developed and commercialized. While Intellectual Property Rights are important and must be respected globally, there are selected reasons for carveouts and tweaks. Second, if we recognize that climate change is a global emergency, like AIDs and other diseases have been, there are possibilities for updating technology sharing norms. Third, negotiating with IPR holders at the global scale may help many of the smaller and less well-resourced economies access technologies as they emerge on favorable terms.

Therefore, for all these innovations both those that have occurred and those in the future, we need frameworks that enable improved funding and sharing of innovation. These frameworks will need to evolve norms and structures that are relative in nature, and not go by the one-size fits all approach.

Chapter 3
Monetary policy spillovers and coordination of monetary policies in G-20 economies: Banking instability spillovers and sharing of Indian experience in bank regulation and supervision[4]

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Executive Summary

Monetary policies in advanced economies have "spillover" effects, that is, they impact other economies including emerging and developing economies. Similarly, as we saw during the Global Financial Crisis (GFC) of 2007, instability in banking in advanced economies imposes substantial costs on the rest of the world.

There is a case for mechanisms in the G 20 that will help coordinate monetary policies across central banks in the larger interest of the world economy. Likewise, it would be appropriate to share best practices in bank regulation and supervision with G-20 members. India's banking practices – in particular, rule-based regulation and intrusive supervision- need to be widely communicated because these are quite unique and have proved effective over time.

Monetary policy spillovers and coordination of monetary policies in G-20 economies

The policies of any central bank in the world impact several other economies. This is particularly true of the actions of the US Federal Reserve. To illustrate:

When the US raises interest rates, it slows down the US economy and, in the process, reduces imports from other economies. In other words, exports of other countries to the US will fall. In effect, any attempt to reduce aggregate demand in the US also reduces aggregate demand for other countries. In framing their monetary policies to battle inflation at home, other central banks will have to take into account the impact of the policies of the Fed.

Again, when the US raises interest rates, it leads to an appreciation of the dollar. By implication, currencies of other economies depreciate with respect to the dollar. Other economies face costlier imports from the US, which complicates their own attempts to curb inflation. They will be tempted to raise their interest rates to match the increase in US rates thereby causing

[4] By T.T. Ram Mohan, Part-time Member, EAC-PM

a slowdown in growth that is greater than otherwise. Competitive increases in interest rates brought on by the actions of the Fed need to be avoided if global growth slowdowns of unnecessary magnitude are to be prevented.

An increase in US interest rates raises the cost of servicing dollar-denominated debt and has the potential to create a serious debt crisis in other countries which again inflicts serious economic costs on the nations so affected.

UNCTAD's Trade and Development Report (October 2022) quotes studies on the impact of the US interest rate increases on other economies and on the US itself. The study shows that an increase in United States interest rates of 1 percentage point reduces real gross domestic product (GDP) by 0.5 per cent in advanced economies and by 0.8 per cent in emerging economies, after three years.

A one-percentage-point increase in the United States interest rate lowers the United States GDP by almost 1 per cent after 11 quarters. More drastic increases by 2 to 3 percentage points can be expected to depress economic recovery in the emerging economies by another 1.6 to 2.4 percentage points

By coordinating its actions with those of other central banks, the Fed can ensure that the slowdown in global growth is not unduly severe and emerging and developing economies especially do not end up in economic crisis.

The Fed takes the view that its mandate is limited to the US economy and that it cannot be expected to take into account the impact of its policies on other economies. But coordination of monetary policies does not mean that the Fed should not be tough on inflation or that its focus should not be the US economy. It is that the same or better outcomes for the US economy can be produced through coordination with other central banks.

Other central banks cannot be expected to guess the Fed's moves accurately enough. If they get an indication of the Fed's thinking through a process of coordination, they can better judge what sort of monetary tightening they themselves need. In a situation of general monetary tightening, the world can avoid tightening that is more than required for fighting inflation. The slowdown in growth need not be steeper than required.

Coordination of fiscal and monetary policies played an important role in dealing with the aftermath of the Global Financial Crisis (GFC) of 2007. India

needs to get the G-20 to capture the same spirit in dealing with the present global economic situation.

Banking instability spillovers and sharing of Indian experience in bank regulation and supervision

India's banking system has not suffered major bouts of instability as reflected in multiple bank failures over the three decades since banking reforms were initiated. An important reason is that the Indian banking system operates under tighter regulation and supervision than many other economies.

The cause of banking stability worldwide would be better served if India's banking practices were shared with other countries in the G-20. Some of the practices in India are highlighted below:

Monetary policy and bank regulation (as also management of public debt, exchange rate management and financial stability) are under the aegis of the central bank, the Reserve Bank of India. This makes for superior access to information at the central bank and better balancing of the different objectives mentioned above. For example, the effects of monetary policy on financial stability can be taken into account in the conduct of monetary policy.

The RBI practices rules-based regulation as distinct from principles-based or 'light touch' regulation. While regulators elsewhere have moved towards rules-based regulation post the GFC, it is doubtful that their rules are as all-embracing as those of RBI. In addition, the RBI's supervision is of the intrusive variety.

A few examples of the RBI's approach to regulation and supervision:

Appointments to the posts of Chairman and Managing Director of a private bank require the prior approval of RBI. The regulator has age limits in place for these positions. The RBI may or may not accept the bank's recommendations on tenure of a Chairman or MD.

The RBI has norms for the composition of bank boards. It insists on the inclusion of specialists in areas such as risk management, accounting, MSMEs, etc.

The RBI has norms for both fixed and variable pay for CEOs at private banks. It will not permit fixed pay that is out of alignment with its norms. For variable pay, it insists that banks have suitable metrics in place. The total pay, fixed and variable, for a given year has to be approved by RBI once the financial year is over and the audited results are available.

The RBI has sweeping powers to remove the CEO and the entire board of a private bank and these powers have been exercised over the years.

Banks are required to submit their budgets and targets for a coming financial year to RBI. The RBI reserves the right to send a budget back for reconsideration and seek changes in the budget. Of late, the RBI has been looking into business models of banks as well.

We are today seeing the chain of events set in motion by the collapse of Silicon Valley Bank (SVB). SVB's failure has been followed by that other banks. A major international bank, Credit Suisse Group AG, has had to be rescued through acquisition by another Swiss major, UBS.

In the Indian approach to regulation and supervision outlined above, it is plausible that the likelihood of such failures is smaller. Let us examine some of the factors responsible for SVB's failure and how these would play out in the Indian regulatory context:

SVB is widely perceived to have collapsed because of a mismatch in maturities between assets and liabilities. It used short-term deposits to invest in long-term government securities. Nearly 50 per cent of its assets comprised government bonds. In India, the statutory requirement of holding of government securities is 18 per cent and the average in the Indian banking system today is 29 per cent, a far cry from the predicament in which SVB found itself. Eighty per cent of government securities held by Indian banks are held to maturity and hence not subject to market risk. (Source: report by Jeffries, March 12, 2023).

There was concentration of credit risk at SVB through exposure to one segment, namely, start-ups. The RBI monitors concentration of risk by sector and geography and seeks corrective action where there is excessive concentration of risk. The RBI has in place a Large Exposure Framework that mandates that a bank's exposure to a business group must not exceed 25 per cent of its capital. Its exposure to a single entity must not exceed 20 per cent of its capital. The RBI also has norms for bank exposure limits to "sensitive" sectors, namely, real estate, stock market and commodities.

There was excessive dependence on "bulk" deposits, that is, large value deposits that are at negotiated interest rates and not at the card rates. Less than 5 per cent of deposits at SVB was of value less than $250,000 which is the upper limit for deposit insurance. The RBI monitors banks' dependence on "bulk" deposits. Where the proportion of such deposits is above a certain

threshold, the RBI seeks a plan from banks for reduction in bulk deposits. The RBI also monitors the proportion of retail deposits below Rs 20 million and alerts banks if they deviate too much from the proportions of retail deposits to total deposits at peer banks.

SVB was considered as not systemically important under legislation passed by Congress in 2018 whereby the threshold for systemically important banks from $50 bn to $250 bn in 2018. Banks that are not systemically important qualify for lower capital and liquidity requirements than those that are. And yet when SVB failed, the authorities moved swiftly to protect depositors in full. The RBI's regulations in recent years reflect a heightened sensitivity to issues of systemic risk. The RBI has tightened regulation of shadow banks or Non-banking Finance Companies (NBFCs) as they are known in India. Deposit-taking NBFCs qualify for more stringent regulation than others. Lately, the RBI has taken the view that it is desirable for NBFCs above a certain size to convert themselves into banks and bring themselves under greater scrutiny.

SVB's failures are not just those of management but of regulation and supervision. A more stringent regulatory and supervisory regime can help prevent the build-up of risks of the sort seen at SVB.

The RBI's approach to regulation and supervision is contrary to the notion that matters, such as the ones mentioned above, are best left to market discipline, with analysts and investors exercising the necessary scrutiny over bank management and boards. Experience has shown time and again that such scrutiny is inadequate whether at banks or at non-banks. Boards of directors have been found wanting time and again. A complication in banking is that problems or losses can remain hidden for years until it is too late to address these.

The RBI's approach rests on the premise that that an additional layer of scrutiny of key business decisions and risk management is required. The costs of firm failure and of instability in banking are so large that stringent regulation and tight supervision are an imperative for any economy.

To sum up, regulatory and supervisory failures in the advanced economies impose significant economic costs on the world at large. Emerging and developing economies, in particular, end up paying a steep price for such failures. India must use its present leadership at G-20 to push for an overhaul of bank regulation and supervision in ways that will conduce to greater stability in banking. The RBI's regulatory and supervisory practices have much to offer on that count.

Chapter 4
Priorities for the G20 Finance Track[5]

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Summary

Emerging markets and developing economies are currently facing major challenges from global shocks including: a slowdown in global growth; food and energy price increases; a decline in risk appetite of international investors; unsustainable debts in low-income countries; and ongoing climate risks. To be sure, emerging-market economies in particular have made significant progress in strengthening their policy frameworks and institutions overthe past two decades. They have brought down formerly high rates of inflation, often through the adoption of inflation targeting as a monetary framework, and by strengthening the independence of their central banks. They have turned to greater exchange rate flexibility to facilitate adjustment; and have accumulated foreign exchange reserves to allow intervention. They have strengthened fiscal rules and institutions, and have maintained sustainable public- debt-to-GDP ratios. They have embraced macro-prudential policies, and have communicated well their monetary, fiscal and regulatory policy frameworks and actions to financial marketsand other stakeholders.

Yet progress at the national level alone is not enough. These efforts need to be complemented by changes in the global economic and financial architecture, as a part of the G20 discussions and other wider engagements, designed to make the world a safer place. Inthis paper, we focus on the financial aspects of this agenda, important aspects of which have remained unaddressed. The financial agenda as we see it has six key elements: (i) reform ofcentral bank swap lines; (ii) reform of IMF-contingent credit lines; (iii) SDR reallocation; (iv) reform of credit rating agencies; (v) inclusion of climate-resilient debt clauses in new debt instruments; and (vi) steps to streamline the debt restructuring process.

In this paper we detail this agenda, and urge the G20 members to get on with it. Our mainrecommendations are detailed below.

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[5] By Barry Eichengreen (eichengr@berkeley.edu) who is at the University of California, Berkeley, and Poonam Gupta (pgupta@ncaer.org) is a Part-time Member, EAC-PM and at the National Council of Applied Economic Research. The authors thank Prof. Sanket Mohapatra for sharing the data on credit ratings, and Ayesha Ahmed, Aakansha Atal, S. Priyadarshini, and Sakshi Rathee for valuable research assistance.

Generalize central bank swap lines

Central bank currency swaps have been shown to have positive effects of financial stability and financial efficiency in periods of significant volatility. The G20 should therefore encourage central banks to broaden their networks of currency swaps. The Federal Reserve can extend swaps to additional central banks. Other central banks with partners that do business in their currency can provide swaps more widely. Temporary swaps can be made permanent.

Central banks with ample dollar reserves can make these available to partners. Such arrangements should be formalized where they are ad hoc, and the terms should be made transparent. This would help to fill the gaps in the global financial safety net.

Reform IMF-contingent credit lines

The G20 should endorse measures to enhance the role of IMF-contingent credit lines, another important element of the global financial safety net. The IMF could prequalify countries rather than requiring them to apply. It could include in the Article IV report whether a country qualifies or not and the amount of the credit line. Charges attached to initial qualification could be eliminated. Lines could disburse automatically when there is an "EM sell off" identified by IMF staff and verified by the Executive Board.

Reallocate SDRs

The historic decision of IMF members to authorize a new $650 billion allocation of Special Drawing Rights (SDR) in response to the COVID-19 economic crisis was supposed to be accompanied by reallocation of those SDR resources to low-income countries in balance-of-payments and fiscal distress. Yet more than a year later, there has been little such reallocation.

To facilitate that reallocation process, the IMF agreed to create in October 2022 the "Resilient and Sustainability Trust", or RST. This is progress, but relative to ambitions attached to the 2021 SDR allocation the RST remains underpowered. Among the measures that can be taken are: the 150 percent of quota cap can be lifted; conditions attached to the associated staff monitored programs can be further simplified and streamlined; the G20 can resolve that additional advanced-country governments beyond the pioneering six should contribute to the trust.

Relatedly, the imbalance between the votes and voices of advanced and emerging G20 members in the IMF has continued to grow, rather than shrink. Continued quota reformshould be an integral element of the G20 agenda.

Reform rating agencies

Compared to advanced G20 countries, emerging markets receive lower ratings, which remain inexplicable even after accounting for a comprehensive set of debt and macroeconomic indicators. Emerging markets with no history of debt default receive lower ratings than what their observed debt loads and macroeconomic performance would otherwise lead one to expect.

Statistically, this differential can be accounted for by institutional and governance indicators. But the weight attached to such indicators is arbitrary and opaque, and the measures are of dubious quality. Concerns that credit ratings are arbitrary and unfair for emerging markets are fueled by rating agencies' lack of transparency and by their reluctance to acknowledge uncertainty surrounding their judgments.

Addressing these concerns requires efforts on the part of multilaterals and others to improve the quality of the institutional/ governance measures they produce, while being more transparent about how they produce them. It requires more transparency on the part of rating agencies to indicate exactly how they use the resulting measures and other indicators in their assessments.

Insert climate-resilient debt clauses into debt contracts

The G20 countries should include climate-resilient debt clauses in their own bilateral, regional and multilateral lending to climate-sensitive low-income countries in order to deepenthe market and reduce any adverse signaling. They could use regulation to persuade and incentivize private creditors to do likewise. They could subsidize the interest premium for such contingent lending through multilateral institutions. A standard template for such bonds will make for a more homogenous, liquid market. It will reduce the transactions cost of issuance. The G20 should encourage and endorse this initiative.

Create hedging instruments

Many low-income and middle-income countries have no choice but to borrow in foreign currencies. This exposes them to financial risk and economic dislocation from exchange-rate volatility. Hedging instruments at the relevant maturities and affordable costwould help to mitigate these dangers. Developing such markets for additional countries andcurrencies would be a significant step toward reducing financial fragility. A G20 agreement to provide the funding needed to scale up hedging significantly would help to address the currency mismatch problem that creates financial fragility.

Create a more efficient mechanism for restructuring debts

The World Bank and IMF have suggested that distressed debtors seeking relief under the Common Framework should receive statutory protection from asset seizures by national courts when suspending debt service payments. But that protection needs to be implemented by creditor-country governments through legislation or an executive order. The G20 can adopt a resolution to this effect.

Beyond the immediate need to fix the Common Framework, there is a need to addressthe increasingly diverse and fragmented nature of the creditor base, which heightens free- rider problems and complicates debt restructuring. To this end, new creditors such as Chinashould be admitted as official members of the Paris Club.

Most new debt issues by emerging markets and developing countries now include collective action clauses (CACs). However, other instruments such as newly-issued syndicated loans and foreign-law-governed sub-sovereign bonds still do not include CACs; these should be added. More creditor countries can adopt “anti-vulture fund” legislation, along the lines of acts adopted by the United Kingdom, Belgium and France. Doing so willprevent private creditors from holding up renegotiation.

In 2021, the OECD launched a “Debt Transparency Initiative” encouraging private creditors to provide more complete information on their loans and investments. Few privatecreditors have participated so far. The G20 governments can make this a regulatory requirement.

Chapter 5
India's G20 Presidency: Positioning for a Post-Pandemic Planet[6]

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With the pandemic retreating, the effects of the Russia-Ukraine war on food and commodity prices progressively abating, and advanced-economy central banks getting closer to the end of the rate hiking cycle, the impact of the triple shock that has confronted emerging markets (EMs) finally seems to be fading.

But that simply means EMs will need to pick up the pieces from the triple-shock and re-boot for a post-pandemic world. To that end, EMs will need to simultaneously contend with (i) scarring from the last few years which will leave them, in general, about 4-5% below their pre-pandemic GDP path; (ii) elevated levels of public debt, the interest on which crowds out productive spending and constrains fiscal space to respond to new shocks; and a (iii) more balkanized, de-globalized, protectionist world that creates headwinds for future exports.

Against this backdrop, the Indian G20 Presidency must focus on priorities that together will boost potential growth and employment through public and private investment across countries, ensure that elevated public debt is dealt with so that macro and BoP crises are minimized/avoided, capitalize on the technological revolution during the pandemic to push for deeper and broader services trade between countries, even while pushing for a global regulatory architecture to mitigate attendant digitization risks (cryptos, cyber crime, data integrity). In so doing India – as a leader of the Global South – will be leaving a crucial imprint on the key opportunities and challenges that will confront the global economy for the rest of this decade.

Accordingly, this note lays out four suggested priorities for India's Presidency:

Build Back Broader: An *Integrated* Physical, Social, Digital, Environmental Infrastructure Push

An *integrated* infrastructure push is imperative to helping achieve the Global South's post-pandemic imperatives – growth, employment, sustainability and equity.

[6] By Sajjid Z Chinoy, Part-time Member, EAC-PM

The World Bank (2021) estimates that in the first half of 2020, private sector investment in infrastructure projects in developing countries dropped by 56 percent from the same period in 2019. Furthermore, public investment -- with the exception of India -- has also got squeezed in many developing countries under the weight of other fiscal priorities during the pandemic. So resuscitating private sector participation in infrastructure and increasing public investment across physical, social, digital, green infrastructure projects is key to boosting growth and productivity, creating jobs, reducing the digital divide, increasing financial inclusion and making headway towards different countries' respective net zero targets.

An integrated approach will allow an identification of linkages, complementarities, trade-offs and feedback loops across the different arms of infrastructure. Once such a framework is created, a better understanding of where the private sector can be leveraged and where market failures necessitate public funding will emerge.

In the near term, the binding constraint is likely to be funding. With most economies incurring significant public debt during the pandemic, there is a growing risk that much-needed public investments in the coming years will be crowded out for want of fiscal space. Therefore, the Indian Presidency can help identify funding gaps so as to raise awareness about external multilateral and bilateral funding that will be necessary/available for infrastructure provision in many developing economies. For example, significant gaps still remain to meet the pledge of US$100 billion in financing per year – a quantum itself considered grossly inadequate -- from public and private sources towards adoption of green technologies.

All told, India's presidency, can (i) elevate the need for a big infrastructure push (ii) emphasize the need for an integrated approach across physical, social, digital and green dimensions; (iii) raise awareness about fiscal constraints and funding gaps so as to attract more resources for developing economies.

A focus on infrastructure also ties in nicely with India's current policy priorities (physical infrastructure push, financial inclusion through the JAM trinity) and expertise (digital infrastructure in the form of the Unified Payments Interface and the India stack).

Dealing with a Legacy of Public Debt

The need for unprecedented fiscal support during the pandemic has meant most economies will be left with a significant overhang of public debt after the pandemic. The IMF estimates 2020 witnessed the largest one-year debt surge since the Second World War, with global debt (both public and private) rising to $226 trillion. Consequently, public-sector debt increased to 100% of GDP in 2020 and, while it has modestly declined over the last two years, is expected to rise back up to 100% of GDP by 2027, according to the IMF (WEO, 2023).

The IMF also estimates that about 60 percent of low-income countries are in or at high risk of debt distress, double the fraction that existed in 2015. The Fund believes these and many other economies will need a combination of revenue mobilization and more grants and concessional financing, to help with debt sustainability.

Resolution of this challenge will entail reinvigorating the G-20 Common Framework for Debt Treatment and making the Debt Service Suspension Initiative (DSSI) framework available to a wider range of highly indebted countries. As the IMF's 2023 World Economic Outlook emphasized, *"Improving the Group of Twenty (G20) Common Framework with greater predictability, earlier engagement, a payment standstill, and further clarification on comparability of treatment can help."* Therefore, reforming the Common Framework – so that it actually works for highly indebted countries – should be a key imperative of India's G20 Presidency.

More generally, dealing with the legacy of public debt around the world – so that it does not lead to a BoP crisis in Frontier markets or crowds out much-need public investment in emerging markets -- will need to be a key focus of the G20.

Doubling-Down on Services Trade: A New Growth driver for the Global South

The acceleration of digitalization during the pandemic has expanded the quantum of services previously thought to be non-tradable (health, education, legal, consulting, financial, advisory) but are now deemed tradable, and create exciting new growth prospects for the Global South.

Even as goods trade is at risk of slowing (from increased protectionism and re-shoring), the G20 can catalyze growing services trade that has become possible from the increased digitization and emphasis of work-from-home (which has increased the attractiveness of offshoring) during the pandemic. A G20 working Group can help promote services trade by:

Identifying a broader menu of tradeable services

Documenting the benefits of increased service trade

Creating appropriate global standards and regulatory frameworks (i.e. data integrity, warehousing) to facilitate services trade

Pledging to minimize protectionism on the services front

India's success in the Information Technology sector makes it a natural leader to document best practices and identify growing opportunities across services trade. India's net services exports have jumped from $85 billion pre-pandemic to ~$150 billion in 2022-23 – a 75% increase in just 3 years. India therefore brings credibility and expertise in making this a new growth driver for the Global South.

Central Bank Digital Currencies, Crypto Assets and the need for a Global Regulatory Framework

- How are different economies regulating crypto assets?
- How many central banks plan to issue CBDCs?
- What inter-operability issues could arise?
- What are the macroeconomic implications of legitimizing crypto assets and/or issuing CBDCs?
- What global regulatory architecture should this call for?
- What risks could emerge in the absence of a global architecture?

A Working Group to flesh out these issues so as to arrive at a common understanding of risks and the need for a global architecture to deal with crypto assets and CBDCs is crucial given the natural externalities involved (one country's ban on cryptos will simply induce a migration to another country)

Post-Script: Since "Global Health Architecture" and "Sustainable Energy Transition" were already overarching themes in the Indonesian Presidency, there is likely to be a lot of work already conducted in these areas. This note therefore consciously emphasize other areas of importance that should constitute India's priorities as G20 President.

Chapter 6
India G 20 Presidency[7]

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India took over the leadership of the G20 after Indonesian President symbolically handed over the gavel to the Prime Minister of India on November 16. As India will be assuming presidency of G20 on 1st December, it will be at the forefront of establishing consensus among the developed and developing countries on the issues of global importance over the next year. It is a real opportunity for India to show Global Leadership.

This presidency has come at a time of crisis and chaos when the world is confronted with the after-effects of the disruptive, once-in-a-century pandemic, conflicts, as well as a lot of economic uncertainty.

The G20 is a grouping of 19 of the world's most powerful countries, as well as the European Union. They account for 85 per cent of the global GDP, 75 per cent of global trade, and 66 per cent of the global population. The G20 Summit is now a forum for discussing some of the world's most pressing issues.

Despite the fact that the G20 is a blend of developed and developing countries, India will primarily represent the voice of the developing world. The Prime Minister of India has rightly said that India must set the agenda. This is significant because, in the past, the developed world used to decide what is right for the developing world. This is one of those times when India is setting the agenda for the world, getting other countries to react and building consensus on a wide range of issues.

The challenge for India at this point in time will be to ensure that the G20 presidency will be inclusive, ambitious, decisive and action-oriented. There will also be a challenge to accelerate the pace of SDGs as we are almost mid-way to 2030.

India has created a unique model of digital transformation. Based on digital public goods, India has created a digital identity and has allowed the private sector to innovate. It has created a digital empowerment protection architecture for citizens as well as fast payments. Normally, technological innovations come from the developed world; however, this is the first time they are developing in an emerging market like India.

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[7] By Pawan Kumar Sain, Joint Secretary, EAC-PM and Akansha Saini, Young Professional, EAC-PM

India is also an important theme in this aspect as what India has achieved in less than a decade would have taken many decades and therefore by building a digital identity it has been able to ensure that it is able to put money into the bank accounts of citizens, the total number of women who have bank accounts has grown from 19 to 56 per cent. Between 2014 and 2018, India created 55 per cent of all bank accounts worldwide.

The challenges before the world are that close to 2 billion people do not have a bank account, fast payments are available in only 55 of the 186 countries of the world and therefore the world working together will accelerate the pace of growth through digital transformation.

When it comes to climate action, India is the only country that has met its NDC targets nine years ahead of schedule, as promised at Cop 21. India is now attempting to establish itself as a global production hub for green hydrogen. Thus, it can use this opportunity to make a mark by pushing for green developments across the world.

Throughout the presidency, meetings will be held with the working groups as well as the engagement groups - business 20, youth 20, think 20, women 20, and so on. India's Sherpa Amitabh Kant recently mentioned during one of his interviews that as India will be hosting G20 for the first time, the meetings will not be urban-centric i.e. restricted to Delhi and Mumbai. So, to make this a wholesome experience, these meetings will be held in 32 different sectors in 55 different locations across the country like Kumarakom in Kerala, Nagaland, Manipur, Andaman, Udaipur and so on and in this process all the citizens of the country will be a part of this national integration.

The challenge for India is to ensure that every visitor who comes to India during this time period leaves completely spiritually reenergized, mentally rejuvenated, and physically elevated. As a result, India will try to create an experience that is rich in culture, cuisine, and a diverse range of activities. This will necessitate the preparation of infrastructure as well as active citizen participation.

In addition to the international organizations such as the United Nations, World Bank, IMF, WTO and ILO and chairs of regional organizations, India will be inviting nine other countries – Bangladesh, Egypt, Mauritius, the Netherlands, Nigeria, Oman, Singapore, Spain and the United Arab Emirates as guest countries to represent their voice in the G20. This will be a unique opportunity for India to create a lasting legacy.

A year from now, India's presidency will have made the world realise with the theme ‘Vasudhaiva Kutumbakam’ that we all are citizens of the world, that we are able to spread the feeling of one family, one Earth, and that when we work together, we truly build a future that is inclusive, resilient, and sustainable. It will be interesting to see how India can redefine G20 and make a difference for the citizens of the world.

Chapter 7
India's tryst with a Circular Economy[8]

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India, like many other countries, has been following a linear economic model for several decades. This model, which involves extracting resources, using them to produce goods and services, and then disposing of them after use, has led to the depletion of natural resources and the accumulation of waste. However, India's rapidly growing population and economy have led to increased resource consumption and waste generation, making it imperative to transition towards a circular economy. In this paper, we will explore India's current position as a linear economy and how it could transition to a circular economy.

India's Linear Economy Position:

India's current economic model is largely linear, where resources are extracted, processed, and transformed into products that are sold to consumers. After use, these products are disposed of, leading to a significant amount of waste generation. According to the Central Pollution Control Board (CPCB), India generates over 62 million tonnes of waste every year, and this is expected to increase to 165 million tonnes by 2030. The majority of this waste is disposed of in landfills or dumped in open spaces, leading to environmental degradation and health hazards.

India's Transition to a Circular Economy:

India has taken several steps towards transitioning towards a circular economy. In 2015, the Indian government launched the Swachh Bharat Abhiyan (Clean India Mission), which aims to make India clean and free of open defecation by 2019. The mission also includes initiatives to improve waste management, such as setting up waste processing and recycling facilities and promoting the use of composting and biogas technologies.

In addition, the Indian government has introduced policies such as the Plastic Waste Management Rules, 2016, which require producers to take responsibility for the end-of-life disposal of their products. The government has also launched the National Clean Energy Fund to promote the use of renewable energy sources such as solar and wind power.

[8] By Shankar Prasad Sarma, Director, EAC-PM and Shalini Goyal Bhalla, MD, International Council for Circular Economy

India has also seen an increase in the adoption of circular business models, such as product-as-a-service and sharing models, which help reduce resource consumption and waste generation. Many start-ups in India are also working towards developing sustainable products and services that are designed to be reused, repaired, or recycled.

However, India still faces several challenges in transitioning towards a circular economy. One of the biggest challenges is the lack of adequate infrastructure for waste management and recycling. India needs to invest in waste processing and recycling facilities and improve waste collection and segregation systems to enable the efficient and effective processing of waste.

Another challenge is the lack of awareness and understanding of circular economy concepts among businesses and consumers. The government needs to create awareness campaigns and education programs to promote the adoption of circular economy practices and encourage consumers to adopt sustainable consumption patterns.

India's transition towards a circular economy will require a concerted effort from all sectors and stakeholders. The government needs to create a supportive policy environment and invest in infrastructure and research and development to enable the transition towards a circular economy. Businesses need to adopt circular business models and incorporate sustainable practices into their production processes. Consumers need to adopt sustainable consumption patterns and support the development of sustainable products and services. By working together, India can transition towards a circular economy and create a sustainable and resilient future.

Barriers in India that limits its circular transition

There are several barriers that limit India's transition towards a circular economy:

(i) Lack of awareness and understanding: There is a lack of awareness and understanding among businesses, policymakers, and consumers about the benefits of circular economy and the need to transition towards it.

(ii) Limited infrastructure: India has limited infrastructure for waste management and recycling, which makes it difficult to implement circular economy practices.

(iii) Inefficient waste collection and segregation: In many parts of India, waste collection and segregation are inefficient, which hinders the recycling process and leads to the disposal of valuable resources.

(iv) Limited availability of recycled materials: There is a limited availability of recycled materials in India, which makes it difficult for businesses to incorporate recycled materials into their production processes.

(v) Lack of incentives: There is a lack of incentives for businesses to adopt circular economy practices, such as tax credits or subsidies, which makes it more expensive for them to implement circular practices.

(vi) Limited research and development: There is limited research and development in the field of circular economy, which hinders the development of new technologies and solutions for recycling and waste management.

(vii) Socio-economic factors: In many parts of India, poverty and low levels of education limit the adoption of circular economy practices.

(viii) Lack of concerted efforts- Efforts are more individual driven and in silos. A cumulative effort engaging all stakeholders is a must to drive the national mission Circular economy.

To overcome these barriers, India needs to focus on creating awareness and education programs, improving infrastructure for waste management and recycling, providing incentives for circular economy practices, and promoting research and development in the field of circular economy. It will also require a multi-stakeholder approach and collaboration between government agencies, businesses, NGOs, and consumers to address these barriers and accelerate the transition towards a circular economy.

Major steps that India should take to transition towards CE

Transitioning towards a circular economy requires a systematic and integrated approach involving various sectors and stakeholders. Here are some major steps that India could take to make this transition:

(a) Develop a comprehensive circular economy policy: India needs to create a policy framework that outlines the goals, strategies, and mechanisms to transition towards a circular economy. This policy should be based on extensive research and stakeholder consultations to ensure that it is effective and feasible.

(b) Promote waste reduction and management: India needs to focus on reducing waste generation and managing waste more efficiently. This could include measures such as promoting recycling, composting, and waste-to-energy conversion.

(c) Encourage sustainable production and consumption: India should encourage the production and consumption of sustainable products and services that are designed to be reused, repaired, or recycled. This could be achieved through measures such as tax incentives, product labeling, and awareness campaigns.

(d) Develop circular business models: India should encourage businesses to adopt circular business models, such as product-as-a-service, leasing, and sharing. This could help reduce resource consumption and waste generation, while also creating new business opportunities.

(e) Invest in innovation and technology: India should invest in innovation and technology to develop new circular solutions, such as advanced recycling technologies, sustainable materials, and renewable energy sources.

(f) Collaborate with stakeholders: India should collaborate with various stakeholders, including government agencies, businesses, NGOs, and consumers, to create a shared vision and work towards a common goal.

(g) Monitor and evaluate progress: India should establish a monitoring and evaluation system to track progress towards a circular economy and identify areas where additional action is needed.

Overall, transitioning towards a circular economy requires a concerted effort from all sectors and stakeholders, and India should take a holistic approach to create a sustainable and resilient future.

Policy focus that India needs to change to enable circular economy

To enable the transition towards a circular economy, India needs to shift its policy focus towards the following areas:

(i) Reducing waste generation: India needs to focus on reducing waste generation by promoting waste reduction strategies such as reduce, reuse and recycle. The government should also introduce extended producer responsibility (EPR) regulations to make producers responsible for the end-of-life disposal of their products.

(ii) Promoting sustainable consumption and production: India should encourage sustainable consumption and production patterns by promoting the use of eco-friendly products and sustainable manufacturing practices. The government can also introduce policies

that incentivize sustainable practices in industries, such as tax credits or subsidies for environmentally friendly businesses.

(iii) Supporting circular business models: India needs to support circular business models such as product-as-a-service, leasing, and sharing. The government can do this by providing financial support or incentives to companies that adopt circular business models.

(iv) Improving waste management infrastructure: India needs to improve its waste management infrastructure to enable the efficient and effective collection, segregation, and processing of waste. This could include investing in recycling facilities and waste-to-energy technologies.

(v) Creating a favourable regulatory environment: India needs to create a regulatory environment that supports the transition towards a circular economy. This could include introducing regulations that promote the use of recycled materials or require companies to report on their environmental performance.

(vi) Encouraging innovation and research: India should encourage innovation and research in the field of circular economy to develop new and more efficient recycling and waste management technologies.

Overall, India needs to adopt a multi-stakeholder approach and collaborate with various stakeholders, including government agencies, businesses, NGOs, and consumers, to create a supportive policy environment for the circular economy.

Chapter 8
Reimagining “Data for Development”: India’s G20 Presidency and the Global Conversation on Biological Data[9]

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The increasing salience of G20 as the consensus-builder of the international community is a manifestation of a world undergoing economic and (consequently) political rebalancing. The 2008 economic crisis was the watershed moment in which this transition to a more multipolar world was visible when G20 replaced G8 as the premier institution to coordinate international action and tackle the economic contagion.

The world in 2023 is more complicated, difficult and interesting than 2008. While multipolarity has grown stronger, multilateralism has weakened because of an increasingly nationalistic approach to international relations. The breakdown of the UNCLOS regime which governed the oceans of the world is a case in point. The triple whammy of covid pandemic, Afghanistan withdrawal and war in Ukraine has frayed international consensus and cooperation that were key hallmarks of the response to earlier shocks like 9/11 and the 2007-2008 financial crisis.

Even as we recover from the damage to the rules-based global order due to these multidimensional crises, a new set of challenges have emerged on the horizon which can only be solved with international cooperation. These *grey rhinos* (highly probable and highly impactful but neglected threats) include climate change, uncontrolled migration, maritime security, changing nature of terrorism and radicalisation due to the rise of social media, economic inequality between and within nations, resilience of global supply chains, demographic imbalances and disruptive technologies. None of these challenges are new but their urgency and intensity has become louder since 2008 when G20 first rose to prominence.

And at precisely the moment we need pragmatic and steady hands around the world to navigate these cascading challenges, international governance is under strain even as global institutions like the UN remain unreformed and unrepresentative of the contemporary realities. This explains the gradual expansion of the G20 agenda from one narrowly focussed on economic and financial cooperation to one which covers some of the issues highlighted in the above paragraph. It is a sign that G20 has now become the preferred platform for meaningful and actionable discussion on global challenges.

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[9] By Apurv Kumar Mishra, Consultant, EAC-PM

This is the challenging context in which India assumes its presidency. The moment is unique in several respects. It is a sign of global rebalancing because this is the first time that both the presidency of G20 and G8 (Japan) is with Asian powers. The troika of countries which drive the agenda of G20 (Indonesia as the past president, India and Brazil as the next president) all belong to the global South. Finally, India is uniquely placed to contribute to the global agenda in both ideas and capabilities given its unique ability to find convergence with the West (shared values of political democracy, market economy and plural society), global South (history of shared struggle against colonialism) and other Asian powers (common geography).

Given its natural strengths in information technology and building digital public goods, India is rightfully making technology governance an important agenda item of its presidency through the paradigm of "data for development", first articulated by Prime Minister Modi at the G20 summit last year. This essay argues that apart from building consensus on bridging the digital divide in countries around the world, there is a need to equally build awareness and collaborate in technologies which allow us to manipulate biological data. The combination of these two technologies - artificial intelligence/machine learning and genetic engineering - will drive some of the biggest disruptions in the coming decade and fundamentally change what it means to be a human. They will also be instrumental in helping us develop solutions to fulfill the Sustainable Development Goals (SDGs).

In the field of genetic engineering the development of CRISPR-Cas9 tool remains a seminal moment in our journey as a species since it allows scientists to tinker with the genetic code of every species on the planet with almost the same ease as one edits a document on a word processor. Therefore, with genetic engineering we are today at the same moment where the computer industry was in 1977 when 3 companies launched the first ever personal computers or the internet was in 1993 when CERN decide to make World Wide Web available to the public or social media was in 2003-4 when in a span of 12 months Friendster, Orkut and Hi5 were launched.

At each of these moments, enough technological advancements had happened for experts to realize that personal computers, internet and social media would change the world but no one could possibly comprehend the extent to which they would affect the life of every human being. Like these industries existed long before these game-changing developments, gene editing has been around for almost 5 decades now. CRISPR is epochal because it is exponentially simpler, cheaper and more precise than other existing

techniques. It is the difference between editing a book one page at a time using a typewriter versus editing it one letter a time using a word processor in a book with 6 billion letters.

And more importantly, lab kits using CRISPR are being built so that in the near future you don't have to be an expert to manipulate biological data. Before personal computers were invented, you had to be a highly trained scientist working in an expensive lab to use a computer. Today we can engage with digital data using a PC, internet and social media without understanding the underlying technology. It will be possible in the very near future to engage with biological data without expertise.

Several fields can potentially be revolutionized by the CRISPR-Cas technology, ranging from biological research, agriculture and human medicine. While it is still early days for CRISPR technology, the range and impact of its applications to plant, animal and human genome is already mind-boggling.

For example, it will exponentially increase our knowledge of the relationship between an individual gene and an observable trait in a species, what biologists call the relationship between genotype and phenotype. While scientists have mapped the human genome since 2000, so far precise tools were not available to study the effect of each gene on human behavior. With CRISPR it is possible to snip an individual gene and observe which trait is affected. This will inevitably set the research agenda for human medicine in the foreseeable future.

The world will need to produce 50% more food by 2050 in more extreme weather conditions to feed the growing population. In countries around the world, the most fertile farmland is already being used. Therefore, we need new technology to help us produce more food on the same amount of land. CRISPR can help us achieve this goal and already scientists have used this technology to edit plant genomes to grow disease-resistant and more nutritious crops.

Some of these products are now even available in markets. For example, in September 2021, Japanese startup Sanatech Seed began selling a variety of tomatoes that had been edited using CRISPR to contain high amounts of gamma aminobutyric acid (GABA) which is helpful in treating high blood pressure, insomnia and other health problems.

Similarly, in the animal kingdom, CRISPR has been used to create micro pigs which can be sold as pets, goats with more muscle and more hair, hornless cattle and even attempts to resurrect extinct species like the woolly mammoth. With gene drives using CRISPR-edited insects, it is possible to eradicate invasive species, eliminate diseases and reverse pesticide resistance. Small-scale experiments in each of these applications have been successful. For example, making the Anopheles mosquito infertile or ensuring that within a few generations all its offsprings are male, to eradicate malaria.

However, it is in the field of editing the human genetic code that the promise and peril of CRISPR is at its greatest. There are over 10,000 inherited diseases which are monogenetic i.e. caused due to 1 defective gene. It is like a typo in a book with 6 billion letters. CRISPR's ability to edit DNA in a precise and simple manner renders every such disease with a genetic origin into a potentially treatable disease. Scientists in China have already used the technology to "create" HIV-resistant babies and there are several experiments underway to use CRISPR for treating cancer patients instead of current approaches such as chemotherapy which are often unspecific and relatively toxic.

Even more dramatic than the somatic changes in the genome of fully-developed human beings are the possibilities of using CRISPR to make germline changes in the human DNA which will permanently alter the genetic makeup of future generations. Germline therapy could potentially prevent inheritance of diseases but certain thought leaders have highlighted the possibility that germline therapies would inevitably lead to demands for genetic enhancement by individuals who can afford it i.e. the use of genome editing to change traits which have no medical relevance, such as eye colour, hair colour, athletic ability or height. As one can imagine, the ability to create such "designer babies" raises serious ethical questions, apart from substantial medical risks. There are also dangers from the weaponization of this new technology by rogue actors to recreate diseases like smallpox which have been already eradicated or build super-soldiers who have a higher pain threshold or lesser sleep requirements.

As Jennifer Doudna (one of the co-founders of CRISPR technology who won the Nobel prize in 2020) and Samuel Sternberg explain in their book *A Crack in Creation - The New Power to Control Evolution*:

> *"The issue is this…Now for the first time ever, we possess the ability to edit not only the DNA of every living human but also the DNA of future generations - in essence, to direct the evolution of our own*

species. This is unprecedented in the history of life on earth. It is beyond our comprehension. And it forces us to confront an impossible but essential question: What will we, a fractious species whose members can't agree on much, choose to do with this awesome power?"

Given the potential of this new technology to reshape humanity by leveraging the predictive analytics of artificial intelligence and vast reservoirs of computing power of advanced supercomputers, it is imperative that global leaders reach a consensus on how to govern the various applications of CRISPR gene editing technology. Different levels of risk are associated with its use on plant, animal and human genome. In each case, a tradeoff must be reached between presumed efficiency on one hand and unintended harmful consequences on the other hand. Most jurisdictions today, for example, don't allow gene editing experiments on viable embryos but there are a few notable exceptions.

Despite the fracturing of international consensus due to the war in Ukraine, the technological agenda of G20 has remained on track with even the Leader's Declaration at Bali last year stressing on the need for member countries to promote mutually beneficial technology cooperation. The time to decide the rules of the game and draw moral red lines as far as gene-editing is concerned is now, when the CRISPR technology is still in its early stages and the potential for damage is minimal. As the global community discovered with its l*aissez-faire* approach to social media in the first two decades of this century, there is no going back once the genie is out of the bottle. The principle of "data for development" is an integral component of India's G20 presidency. We must expand this principle to include not just digital data but also biological data and start a global conversation to build consensus on the way forward for genetic engineering.