Global Economy and Development at BROOKINGS

JEF Japan Economic Foundation

US – Japan Forum: Uncertain Prospects and Policy Challenges for the Global Economy

A joint conference organized and hosted jointly by the Japan Economic Foundation and the Global Economy and Development Program at the Brookings Institution.

Friday, September 25, 2015
Stein Room, The Brookings Institution, 1775 Massachusetts Ave, NW, Washington, DC

Summary of the Conference

Opening session overview

Seven years after the 2008 financial crisis, the global economy remains mired in sluggish and uneven growth and subject to continued volatility in financial markets. According to the IMF, global growth declined in the first half of 2015 compared to the second half of 2014—reflecting a further slowdown in emerging markets and a weak recovery in advanced economies. World trade growth has sharply decelerated, reflecting weak global demand and lack of progress on trade liberalization. Financial conditions remain easy in most advanced economies but have tightened in emerging markets. Prospects for short- and long-term growth remain uncertain because of a number of risks, including those posed by the growth transition in China, capital flow reversals and funding challenges linked to potential interest rate hikes and dollar appreciation, and volatility in commodity prices. Boosting actual and potential growth is a key challenge for both advanced and emerging economies. This task will require raising investment from its present low levels, and in turn calls for domestic structural reform and a conducive trade and foreign investment environment. Addressing persistent low employment and growing inequality is a shared challenge for many economies. In order to ensure the sustainability of growth, it will be crucial to have climate impact and resilience reflect more clearly in growth strategies and in policies for energy development.

Speakers:

- Kemal Derviş, Vice President and Director, Global Economy and Development, Brookings Institution
- Kazumasa Kusaka, Chairman and CEO, Japan Economic Foundation

Summary of discussion:

The overall growth dynamics of the global economy remain weak. The advanced economies are nowhere close to full recovery. U.S. growth rates are reasonable but not spectacular, and Europe is still struggling. The emerging economies, which were the second engine for global recovery from the crisis, are also slowing down (IMF, 2015b). Income inequality has increased since the Great Recession, possibly adding to the weakened aggregate demand and growth performance and prospects.

It seems paradoxical that despite the prevalent investment friendly conditions (low real interest rates, easy availability of investible capital through quantitative easing policies in most countries, and pipeline of investible projects), there is a persistent deficit of investment that could stimulate aggregate demand and growth across the world. This is especially true for critically needed infrastructure that could address the growing challenges of energy needs as well as mitigating (or limiting) the effects of climate change. The absence of adequate financial instruments, the lack of mechanisms for risk sharing, and maturity transformation—are likely factors preventing investors from exploiting the excess savings into much-needed capital investments.

This is also a key transformative moment in human history, owing to the digital and technological revolution underway. These "digital" developments have fundamentally altered economic, social, and political interactions; business practices; and people's livelihoods and aspirations—and we are just coming to grips with how to account for its influence (Brookings, 2015). For instance, we still lack sophisticated accounting of its impact—resulting in known mismeasurement problems of productivity and GDP growth accounting (particularly in advanced economies).

These digital developments pose another paradox: Great digital technological innovation permeating through all aspects of economic life, while labor productivity (and total factor productivity) has stalled (and slowed in some countries like China). There has also been a deterioration of labor force participation and persistently high levels of unemployment in the advanced economies.

Particularly in the case of Japan, policymakers are still struggling to fashion a coherent policy strategy to address the economic effects of the recession while facing a declining and aging population. The two

concerns may appear to be unrelated to each other, but the implications and their policy responses certainly overlap. Abenomics appears to be bearing some fruit with some positive economic outcomes becoming visible.

The U.S. and India have maintained steady economic growth coupled with growing population. In contrast, China is heading into a major economic transition while still unprepared to face oncoming future demographic shifts and burdens. Collectively, the experiences of these major economies pose questions about these individual economies as well as their impact on the global economy. Identifying the solution to these vexing questions is a massive challenge—and is one of the aims of this forum. But an even greater challenge is to find political will and policy instruments to implement some of those possible solutions—both in the domestic political realm as well as in the international policy arena. Exercises such as this forum are critical in identifying solutions to national and global challenges, in communicating the findings, and thereby in expanding the options available to policymakers.

The world needs global arrangements and agreements to foster and strengthen international cooperation—particularly for increased coordination between countries and governments in dealing with problems that span beyond national borders—such as global economic and energy policies, global environmental issues, and the effective enforcement of such agreements. Countries facing tough domestic challenges of sluggish growth and high unemployment under fiscal and political constraints naturally have a low appetite for international cooperation—when perhaps the world would benefit from more cooperation, not less. International treaties and agreements such as the COP21 negotiations at the UNFCCC Summit in Paris and free trade agreements are helpful in pursuing necessary policies that may be locally unpopular but necessary for greater good in the long run. These agreements also help policymakers counter domestic anti-reform forces and entrenched interests with structured reforms.

In pursuing this path of greater global cooperation, we are retracing the steps of wise world leaders in the past who had the wisdom to create the original international institutions and agreements. We are at a point in time where we need to rethink and reinvest in international cooperation, to deepen and speed up the process.

Session 1: Challenges to the global economy—Perspectives on advanced economies including U.S. and Japan

Session overview

Growth in the U.S. in the first half of the year has decelerated compared to the second half of 2014, but the unemployment rate has fallen to pre-crisis levels while inflation remains below target. In Japan, a strong rebound in the first quarter was followed by a sharp contraction in the second. And in Europe, overall growth remains subdued but with significant variation across countries. Against this backdrop, there is a continuing debate about the appropriate pace of monetary normalization, the role of fiscal policy in supporting growth and demand, and the agenda for structural reforms to boost productivity and growth.

Key issues

- What are the immediate and longer-term prospects for advanced economies, including that of the U.S. and Japan? Are we at a risk of secular stagnation, and what responses are called for?
- What are the implications for normalization of monetary policies and their coordination?
- How can the growth impact of fiscal policy be improved?
- What should be the global trade agenda in light of the prospective mega trade deals?
- What further policy measures are needed to deal with persistent unemployment (including youth unemployment) and growing inequality?

Moderator:

- Kemal Derviş, Vice President and Director, Global Economy and Development, Brookings Institution

Panelists:

- John Lipsky, Distinguished Visiting Scholar, School of Advanced International Studies, Johns Hopkins University; Former First Deputy Managing Director, IMF
- Martin Baily, Senior Fellow, Economic Studies, Brookings Institution
- Takeo Hoshi, Professor, Stanford University
- Yasuyuki Sugiura, President and CEO, Mitsubishi Corporation (Americas)
- Hideo Suzuki, Former Director-General of Trade Policy Bureau, Ministry of Economy, Trade and Industry (METI)

Summary of discussion

The overall growth dynamics of the **global economy** remain weak. The growth targets set in 2014 by the G-20 countries to accelerate growth in member countries have not been met. Recently, growth prospects have been downwardly revised in the IMF World Economic Outlook (2015c). Weakness in investments—both in advanced economies and emerging markets and developing economies (EMDEV)[1] is a key driver in this outlook. It results in weak growth prospects, slows down innovation and adoption of new technology and equipment, and causes stagnation/decline in income and productivity growth. It might also have a hand in rising income and wealth inequality.

As mentioned earlier, poor investment rates under the highly favorable investment conditions (record-low real interest rates, robust availability of capital through quantitative easing, satisfactory consumer sentiment and demand, low energy and commodity prices, low corporate leverage, and record corporate profits) remain a paradox.

Some possible explanations of this paradox could include: the (underestimated) rise of risk aversion post-recession where investors doubt the long-term returns of slightly risky investments (for example: It includes corporations that now have record cash reserves), an aging population in the advanced economies with preference for stable, relatively risk free returns (such as sovereign assets as opposed to high risk-high return commercial assets), and banking sector reforms enacted in the aftermath of the financial crisis that were necessary but that have dampened the willingness of commercial banks to expand their balance sheets (banks now have record reserves).

The economic forecast for the **United States** is more optimistic; a 3.9 percent growth rate is anticipated for this quarter. But this uptick in U.S. economic performance is driven by rises in consumer spending, residential construction, and government expenditure. Business investment on equipment and intellectual property remains weak (less than 0.5 percent growth). And this is cause for concern with regards to the nature of the U.S. economic recovery and its sustainability.

The real GDP growth rate in the U.S. in the last decade has been the slowest in the past decade compared to other decades since 1954 (Harvard Business School, 2015; figure 6 on page 11). Comparing productivity growth and labor force growth in U.S. over time: during the 1950s and 60s, both had strong growth; in the 1970s and 1980s, while productivity growth slowed, labor force growth remained strong; in the mid-1990s, productivity and labor force growth were both strong; since the crisis however, both productivity and labor force growth have been very weak. This trend has resulted in stagnating income and living standards (and declining levels for those at median income and below) in turn causing slower economic growth (through weaker consumer demand) and increased budgetary deficits (lower revenues and higher social program expenditures).

[1] IMF Country Classification

There does not seem to be any obvious remedy. The economy is at 5 percent unemployment, which is low by U.S. standards, and labor force growth is modest. A skill bias in the ongoing technological change is resulting in the replacement of higher productivity jobs with low-wage, low-productivity jobs. Investments in education and skills training can possibly help in the long run; but it is perhaps a necessary condition and not a sufficient one. The challenge for policies is that greater public investments that require budgetary approval do not appear to be likely in the current U.S. political climate; and even then their quality might not allow for commensurate increases in productivity growth that is needed.

In **Japan**, the economic policy package referred to as Abenomics has attempted to address the twin problems of declining potential growth as well as a shortage of aggregate demand in the economy that started to stagnate well before the onset of the global financial crisis. With Abenomics well into its third year, the problem of deflation appears to have been solved through demand-side stimulus. Monetary expansion has helped turn long-term deflation into low inflation recently. The supply-side constraints are the focus of the revised growth strategy of June 2015.

The growth strategy, which attempts to deal with supply-side weaknesses, was first disclosed in June 2013 and thereafter revised every June in 2014 and 2015. The main problem of the growth strategy has been a lack of focus. The latest revision in June 2015 claims to emphasize (1) revolution in productivity through investments in technology and human capital and (2) local Abenomics that would help spread the "revitalization" across geographic regions. But there are numerous sub-items within these two main policies, and their focus is actually less clear than that in the 2014 version.

Japanese corporations are focusing on increasing the pace of innovation and improving corporate governance (in line with the Third Arrow of Abenomics agenda). But their investment strategy remains cautious for multiple reasons: There is less appetite for risk and failure following the financial crisis of 2008-2009; corporations have become more cautious keeping larger cash reserves to avoid the recurrence of the liquidity crunch they faced during the economic downturn; on the other hand, the glut of saving and investible funds have made merger and acquisition activities more expensive; newer international market standards and stipulations have imposed more restrictions on corporate financial activities.

The **Japanese government** has set itself ambitious targets including an annual GDP growth rate of 3 percent, an increasing birth rate and labor force, and a strengthening their social welfare programs. It views the conclusion of ongoing international trade negotiations as catalyst for investments in innovation that would stimulate the productivity revolution it seeks. Deregulation in the domestic market that would create competition could also stimulate innovation and productivity gains. As mentioned earlier, such international agreements are helpful in pursuing policies that may be locally unpopular but necessary, and help to counter domestic anti-reform forces and entrenched interests. Other possible remedies not currently in the program could be the abolition of mandatory age-based retirement, and labor practice flexibility that allows retaining workers with higher productivity and linking wages to productivity rather than to the length of tenure. Raising the productivity of white collar workers in Japan, beyond access to digital equipment, to include decisionmaking authority and flexibility is also needed.

The structural reforms proposed in the Third Arrow are critical to promote a more robust economic recovery, help ensure long-term fiscal sustainability, and close the gap in living standards with the leading OECD countries (OECD, 2015).

Session 2: Challenges to the global economy—Perspectives on developing economies including China and India

Session overview

Growth in emerging markets has slowed and is characterized by marked differences across regions and countries. In China, while growth in the first half of 2015 was largely in line with previous forecasts, recent signs of weakness and a sharp fall in equity prices have raised concerns about the growth transition and

financial vulnerabilities. Growth has also fallen sharply in some other major economies including Brazil, Russia, South Africa, and Turkey, with the potential for regional spillovers. On the other hand, growth in India, Southeast Asia, sub-Saharan Africa, and some countries in Latin America remains robust. The outlook for the future is uncertain given weak and uncertain commodity prices, capital flow volatility and exchange rate pressures, and the impact of the weak global recovery and lower growth in China.

Key issues

- What are the prospects for the major emerging markets including China and India? What is underlying the significant variation across regions and countries?
- What are the policy implications and potential spillovers of China's growth transition and financial vulnerabilities?
- What is the impact of lower and volatile commodity prices?
- How are emerging markets likely to be affected by the normalization of trade policies?
  - What are the implications for emerging markets and developing countries of the Trans-Pacific Partnership (TPP) and the Transatlantic Trade and Investment Partnership (TTIP)?

Moderator:
- Takeo Hoshi, Professor, Stanford University

Panelists:
- Ayhan Kose, Director, Development Prospects Group, The World Bank
- Naoyuki Yoshino, Dean, Asian Development Bank Institute; Professor Emeritus, Keio University
- Rakesh Mohan, Executive Director, IMF
- David Dollar, Senior Fellow, Foreign Policy, and Global Economy and Development, Brookings Institution

Summary of discussions

Emerging markets and developing economies (EMDEV) are facing a synchronized growth slowdown, although the levels remain high (about 6 percent per annum growth rate). While growth projections have been revised downwards for advanced economies, this revision is even more acute for EMDEV economies where the growth rates have been lower than their long-run average during 1980-2008. This slowdown has also been persistent: It is the third consecutive year of declining growth rates (The World Bank, 2015b).

Global trade growth has also been declining since 2011, and it actually declined in levels in the first half of 2015. The decline in commodity prices (including petroleum) by nearly 40-50 percent over the same period has also dampened the export earnings of EMDEV countries. Productivity growth rate too has stagnated in developing countries, and is below the long-term trend growth rate. As a result, there has been a decline in both actual and potential growth.

EMDEV countries now face higher risks from multiple sources: greater political risk; greater financial market volatility risk; uncertainty from the effects of U.S. monetary policy (the possible tightening of monetary policy in the future); a weak external demand from a slowdown in the advanced economies; and also the impact (real and/or perceived) of a disorderly slowdown of the Chinese economy.

These financial and exchange rate uncertainties amplify the risks faced by countries with large foreign currency denominated debt. And there is a fear that the combination of internal (systemic/structural) and external risks might combine to create a perfect storm—perhaps for any one particular country and have a contagion effect on other EMDEV countries that have lower buffers to protect their economies due to their growth slowdown.

There are unique country-specific domestic conditions that compound the external challenges faced by the EMDEV countries. Since these economies by definition are smaller than the advanced economies, the impact of external influences is also very large on them (except for a few large countries such as China, India, and Brazil).

Possible remedies through structural reforms to overcome these structural maladies would involve monetary policies (to stimulate growth while finding the balance to contain inflation; to stabilize financial flows while controlling the risks) and fiscal policies (to increase public investments in infrastructure as well as human capital to raise productivity levels). The success of such reforms will critically depend on setting the correct balance in monetary policies, creating the required fiscal space, and generating the appetite for fiscal reforms.

Some EMDEV countries may not have the fiscal space for infrastructure expenditure, but even others who might be in a position to exploit the favorable investment environment must first demonstrate the capacity to absorb such investments and the existence of governance structures to enable such expansion efficiently. These prerequisites for efficient infrastructure investments are typically lacking in EMDEV economies. Infrastructure investments should extend to developing human capital that have medium- to long-run returns but may not help mitigate the short-term cyclical component of the slowdown.

The **financial architecture in Asia** is markedly different from that of advanced economies, and these peculiarities impose additional challenges for the developing countries in this region. Access to financial institutions is uneven across the region and strikingly low in many countries; commercial banks (and other depository institutions) dominate the landscape with very low penetration of institutional investors (such as mutual funds, venture capital etc.); local informal financial intermediaries (loans sharks) thrive in this environment of scarce formal and regulated financial service providers. These realities highlight of some structural and institutional deficiencies in the financial system that limit the extent to which household and corporate savings can be harnessed into productive investments, and also explain why they are conservative in their investment choices. Alternative service providers have just begun emerging, exploiting some of the potential of the digital economy (e.g., mobile banking and post office banking).

Large needs of infrastructure investments in the region remain unmet due to lack of fiscal space of governments. Additional tax revenue mobilization is an ongoing effort, but immediate debt financing has limits. The possible solution may be through channeling domestic savings (Asia has high domestic savings rate), but it lacks the instruments and conditions conducive to utilizing this source of finance. Small and medium enterprises (SMEs) (the drivers of small business growth) face greater hurdles in accessing finance and pay higher financing premia. Hometown Investment Trust Funds are one such financial innovation that help bridge the gap to SMEs and riskier projects while still being bank managed and hence being formal and regulated.

China and India both have growing impact on the region as well as in the health of the global economy. **China** has undergone a significant shift in its growth model—from an investment-led growth model (where investments were 50 percent of total GDP) to a more balanced growth strategy. The costs of the previous lop-sided investment-led growth strategy are now beginning to appear: Marginal returns to investments have diminished; productivity gains have slowed down (and may have possibly declined); there is excess capacity in real estate and industrial sectors; and local budget deficits have grown. And since investments have slowed down, the growth rate has also slowed down (as it accounts for such a dominant proportion of the total growth). In the last few years, as investment rates have dropped, so have savings rates (but not as much), and consumption rates have increased.

Chinese trade balance remains at a record high (estimated to be about $600 billion in 2015); exports are growing at about 2 percent (remarkable, given declining global trade volumes); but imports are particularly down (less investment and lower commodity prices lowering import costs of these items).

The renminbi has moved from a pegged exchange rate to a managed float regime, but its current value remains artificially depreciated vis-à-vis its optimal market valuation against other major currencies. This has resulted in large foreign currency accumulation by the People's Bank of China (PBoC) and to distortions that are partly responsible for fueling the recent real estate bubble in China. While the PBoC has now abandoned its policy of promoting real estate loans, commercial banks and local governments (that derive revenues from property tax) still have incentives to sustain real estate booms—now with private non-institutional finance. This practice makes private individuals more exposed to the market volatility. A major highlight of China's recent economic performance is the slowdown in industrial growth rate (nominal) from 20 percent to about 2 percent in 2015—and this is a source of concern. Services grew at about 12 percent (nominal). Overall, the GDP growth rate is about 7 percent with household incomes rising, and 7 million new jobs being created—all in the first half of 2015.

The concerns regarding the Chinese economy stem from the signaling effect of government intervention in the Shanghai Stock Market when its market valuation declined by 40 percent, as well as the subsequent devaluation of the renminbi. It has created uncertainty in the financial markets about the stability of the economy, the orderliness of government policies to steer the economy, and the prospect of additional devaluations. These jitters have triggered a net capital outflow of almost $800 billion in the last six months. The financial markets are also very nervous about unsystematic and ad hoc government interventions, and perceive greater risks when such instances occur (for example, the recent equity market and exchange rate interventions).

There is scope for structural reforms in the Chinese economy: Opening up the domestic economy to protected sectors (such as agriculture, health) can increase competition, efficiency, productivity, innovation, and investments. Some of these sectors are managed by less efficient state-owned enterprises (SOEs). Competition can only help stimulate productivity gains that have otherwise stagnated. These structural reforms may also reverse some of the recent capital flight by encouraging long-term capital inflows, and thereby counter-balance some of the current account imbalance.

Chinese authorities have undertaken substantial financial sector controls and prudent market-oriented structural reforms (such as elimination of interest rate ceiling and interest rate controls, institution of deposit insurance, introduced more flexibility in stock market trading), and opening up of capital account, ahead of reforms in other sectors. The PBoC is attempting to stimulate the economy without resorting to any additional monetary stimulus; it is stabilizing the debt to GDP ratio. PBoC officials insist that the sale of treasury assets by PBoC is an effort to sterilize the growth of capital in the domestic economy through lower reserve requirements of commercial banks.

India has had an extended period (35 years; 1980-2015) of sustained growth with growth rates exceeding 6 percent per year, with some fluctuations within that period. Although the growth rate remains above 6 percent per year, it has slowed down in the last three years. The challenge now is to re-energize the economy to a growth rate of 8 percent per year and sustain it for 20 years. The slowdown in global growth of aggregate demand and trade makes the challenge for India even tougher. The economic reform agenda of the past that had been successful then now needs to be revised to achieve the government's stated target.

The Golden Era of Growth in India (2003-2008) where growth was around 9 percent per annum was marked by:

- Prudent fiscal policies (the government reduced fiscal deficit by half, improved tax revenue collection, controlled subsidies, increased public investments, and stimulated public sector savings),
- Well-managed monetary policies (that resulted in low inflation and interest rates, steady financial flows, strengthened banking regulations and supervisions, and high growth in credit demand),
- Well-managed and efficient banking and corporate sectors (with sustained growth in profits and savings, and investments not being crowded out by government expenditures), and

- A robust household sector (with increased financial savings, strong consumer demand, and rising housing investments).

The challenge is to restore that growth trajectory but with a different mix of policies to remain effective. The new areas of emphasis are:

- Achieving additional fiscal consolidation (reducing subsidies and raising tax recovery rates further),
- Increasing investments to bridge the large unmet needs in infrastructure as the primary drivers of the economy in the next few years—particularly in transport and energy sectors,
- Stimulating additional household savings through new instruments—especially among the traditionally "unbanked" sections of the society,
- Improving foreign savings and capital account management

Additional structural reforms (ongoing) are needed in the labor market, including stimulus targeted for special export zones (SEZs)—especially the ones that are labor intensive manufacturing; land reforms—both urban and rural; and environmental reforms.

Session 3: Challenges of climate change and energy

Session overview

The coming two decades will be pivotal for arresting and reversing greenhouse gas emissions if the world is to have a reasonable chance to restrict global warming to the 2 degree Celsius target. At the same time, there will be a large increase in energy demand in the emerging markets and developing countries to meet their growth and development aspirations. Reconciling both these goals is one of the most important but complex challenges of our time. The upcoming climate summit in Paris in December provides an important opportunity to reach agreement on a new and ambitious approach. An effective framework of action will require concerted actions by countries to reorient their growth, consumption, and investment strategies, and enhance international cooperation including on finance and technology.

Key issues

- What should be the aspirations for the Paris COP21 Summit?
- How should countries reorient growth and investment strategies to enhance sustainability and climate resilience?
- How can large energy demands be met while ensuring more sustainable approaches? What are the lessons from recent shifts in energy strategies in major economies?
- How should the framework for international cooperation be strengthened?

Moderator:

- Amar Bhattacharya, Senior Fellow, Global Economy and Development, Brookings Institution; Former Director, G-24 Secretariat

Panelists:

- Yoriko Kawaguchi, Professor at Meiji Institute for Global Affairs; Former Minister for Foreign Affairs; Former Minister of the Environment, Government of Japan
- Charles K. Ebinger, Senior Fellow, Energy Security and Climate Initiative, Brookings Institution
- Timmons Roberts, Nonresident Senior Fellow, Global Economy and Development, Brookings Institution; Professor, Brown University

Summary of discussion

The magnitude of the **climate change** challenge is immense: to restrict global warming to 2º Celsius, a 9 percent reduction in greenhouse gas emissions will be required each year. This translates to reducing per capita greenhouse gas emissions by more than 50 percent from existing levels in large greenhouse gas emitting countries such as U.S., China, and Japan, but also by other developed and developing countries alike. The credibility of the 2º Celsius warming target should be questioned since we are already on a path to exceed that level and are witnessing widespread environmental devastation triggered by just 0.8º Celsius warming. The observed impacts of warming are now occurring at the lower ends of temperature rise. So the basis for climate change mitigation approach might be flawed and precarious at best.

On the positive side, climate change mitigation, resilience, and adaptation are now key elements of U.N. Sustainable Development Goals (SDGs). And the COP21 conference is more than a forum for reaching an agreement on a multilateral framework to meet the climate change challenge and achieve $100 billion in targeted climate finance commitments. This conference is a landmark opportunity to rethink future growth and development strategies with climate change considerations as a central component of that process. Much of this emphasis is reflected in the background work leading to the summit, as well as in the country-specific Intended Nationally Determined Contributions (INDCs) that are being announced.

The INDCs are encouraging—particularly in the more ambitious targets committed to by U.S., China, and other major countries. But the cumulative INDCs pledged so far falls short of the required levels; they will still amount to an estimated 2.7º Celsius warming (Climate Action Tracker, 2014) as opposed to the 3.6 º Celsius warming resulting from current policies. Nonetheless, these pledges are setting the stage for ongoing negotiations and for more ambitious targets in future—notably, beyond COP21 and 2030 time horizon. The challenge therefore is to devise a system that generates a virtuous cycle of growth, development, and climate change control concurrently.

A meaningful agreement at Paris would need to fulfill a set of objectives. The instruments should be applicable to all major countries; the measurement regime needs to be effective and transparent for accountability, and the outdated UNFCCC differentiated responsibilities framework needs to be updated to reflect the altered realities since they were adopted in 1992.

The agreement should aim to:

- Seek co-benefits (positive externality benefits) from the strategies and actions,
- Encourage innovations in new technology and those that promote energy use and other resource use efficiency,
- Strongly pursue de-carbonization of energy, and
- Set up systems and instruments to fund technology transfers—particularly to developing countries.

The COP21 conference is an opportunity to become a watershed moment—to set carbon price corridor and signals, and to invest the revenues collected through taxation for improving efficiency of existing energy streams and develop renewable energy sources. Such efficiency gains and new investments can thus generate new jobs and offer higher growth prospects. Countries are committing large deployment of resources and shifts into renewable and forms of clean energy through their INDCs. This is bound to lower costs of these energy sources as well as stimulate technological innovations and accelerate ambitions.

Energy policy is a key element of the climate change response strategy, given the technological changes occurring and growing needs of the developing countries. Energy investments made now will have long-term lock-ins. There has been a gradual shift in energy preference—from conventional fossil-fuel based systems to towards renewable and more efficient technologies. But their adoption may need to be accelerated with matching aggressive development of systems and instruments (including financial) that can facilitate their adoption.

Pricing distortions in the energy sector are key drivers of continued suboptimal (and incorrect) investment choices made in this sector. In 2011, total post-tax energy subsidies amounted to $4.9 trillion and are expected to reach $5.3 trillion in 2015, amounting to 6.5 percent of global GDP (IMF, 2015a). These subsidies are prevalent in both advanced and developing countries, in oil-producing as well as non-oil producing countries and are particularly large in EMDEV (and MENA). Fossil-fuel subsidies (a subset of energy subsidies) were about $548 billion in 2013, the bulk of which were in OPEC countries and China (for oil), and Russia (for natural gas) (IEA, 2015b).

Evidence of pricing distortions can be seen most acutely in EMDEV countries where coal-based energy is still rising. The transportation sector remains tied to petroleum, and the liquefied natural gas (LNG) market is oversaturated with excess supply and capacity but yet has been unable to substitute out coal and petroleum. Nuclear energy, a viable hydrocarbon free alternative, faces fierce opposition in many countries. Bio-fuel subsidies are also contributors to pricing distortions—notably in encouraging encroachment of forests that otherwise help in natural carbon capture.

Global energy demand is estimated to grow by 37 percent by 2040 (IEA, 2014 and 2015a). While energy demand growth in advanced economies is expected to begin tapering off, the bulk of energy-demand growth will be in EMDEV countries, and estimated to account for about 95 percent of projected energy consumption in the next 20 years (BP, 2015).

Poor investment choices now due to carbon pricing distortions will lock-in the energy infrastructure in bad conditions for the foreseeable future, and make the prospect of meeting climate change goals even more difficult (or impossible). Hence tackling prevalent subsidies to conventional fossil-fuels, and the creation of a carbon price corridor should be a priority in policy strategies and COP21 negotiations.

Effective and successful carbon reduction strategies will have to incorporate the following elements:

- Reforming energy pricing—reducing fuel and energy subsidies would make consumption patterns reflect their true cost to the society,
- Improving energy efficiency—such as mandating "green" building codes for all new and large commercial construction,
- Fostering the development of effective renewable energy projects—with easier land availability, grid connectivity, and proper pricing schedules,
- Changing the modes of transport that will in turn alter the needs profile for the sector, and
- Incorporating the UN-REDD+ (Reducing Emission from Deforestation and Forest Degradation) framework, that has already been agreed to in Bonn earlier this year, into a comprehensive strategy.

There have been additional positive developments recently in the energy space. They include:

- Recent energy shifts, giving renewable sources greater leverage against conventional and fossil-fuel industries,
- Slump in commodity prices that have forced reforms in fossil-fuel subsidies—notably in OPEC countries (World Bank, 2015a). There has been growing social and political acceptance of such pricing reforms when done gradually, systematically, and transparently; where people see such reforms (which may increase their short-term fuel prices) as part of a systematic and meaningful process,
- Developments in carbon capture and sequestration (CCS) technologies as a cost-effective tool to lower net emissions, and the rise of a market for "captured carbon," and
- The emergence of more assertive corporate sector, subnational entities, and NGOs in their participation beyond pursuing energy efficiency. These entities are seeking greater participation in policies and practices that improve their operating environment, while simultaneously highlighting the expansion of the corporate social responsibility envelope.

On the other hand, challenges to energy sector reforms remain. Some of them are:

- Financial institutions such as the multilateral development banks (MDBs) need to further align themselves and their financial instruments to achieve the synergies in climate space and energy sector reforms.
- The INDCs focus on country responsibilities perhaps neglects cross-border cooperation efforts that also need to be incorporated.
- The undiminished demand for conventional fossil-fuels; the use of coal is rising in the developing countries (except in China). On the supply side, nuclear energy invokes deep opposition from local communities. Natural gas, while cleaner than coal, is nonetheless a fossil-fuel.
- The process of large-scale switching of energy supply from coal and oil has yet to manage the impact of such transition on local communities of those who are employed in these sectors.

The **U.S.-China (G-2) bilateral commitment pledges** have been a boost in the build-up to the COP21 Summit. Their joint declaration marks the resolution of long-standing differences between the countries, sets the platform for convergence on some key positions, and announces their shared vision for (and expectations from) the COP21 conference (The White House, 2015). This agreement is also a statement of intent that seeks to persuade other countries to follow their ambitious lead. Such understanding between the two largest emitters of greenhouse gasses bodes well for the negotiating process in COP21, as long as this initiative remains complementary to the global agreement process and does not become an exclusive arrangement.

China has also announced that it will henceforth prioritize green and renewable energy sources in its usage mix for its existing grid and reduce transportation emission. It has pledged $3.1 billion to dedicated climate finance through South-South cooperation. Further, it has committed to strictly control financing of coal-based energy projects in the rest of the world, thereby aligning its policies with that of U.S. and other advanced economies.

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