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Abstract: Energy is crucial for a state survival and an economic development and China has created a set of institutions to address this financial need including NDB/BRICS, AIIB/OBOR, and it is allied with specific polices to invest in infrastructure and deeply connect its economy to world economy, as expressed by Xi Jinping's speech at 19th Congress of CCP and at APEC CEO Summit. Concerning the objective of Paris agreement, to answer the combatting mechanism to global warming, the Chinese government understands that they can help to di-risk investment on the new technologies. In harmony with world financial system, which after 2008 economic crisis took a new turn on the way to finance infrastructure, as "Basel 3" and "Solvency 2" that inadvertently limit the ability of institutions like banks and insurance companies to finance long-term infrastructure investments, laying the foundation for a low-carbon future. There is policy obstacle embedded in the financial system and regulations that hamper the supply on long-term finance for instance, the great financial crisis has led to the changes in financial stability rules. This change redefines the matrix of the development in a sense which dictates a tendency beyond time but also size as a collateral effect mostly renewable energy apart from hydroelectric and nuclear energy. What governments will need to understand and correct is the consequences of policy designs and we also need to consider a financial system that ignores climate risk may not end up being stable either.

Key words: energy policy, Chinese investment, one road one belt, development, and renewable energy

# 1. Background

#### 1.1 Global Warming

Global warming, resulting as a consequence of climate change, denote an increase in average global temperatures. According to the Intergovernmental panel on Climate Change (IPCC), a warming planet thus leads to a change in climate which can affect weather adversely in various ways. The United Nations Framework Convention on Climate Change (UNFCC) was created in 1992 with the objective to stabilize greenhouse gas (GHG) concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference and accelerate climate change [1]. The understanding of anthropogenic warming and cooling impacts on climate has moved forward since the Third Assessment Report (TAR); much of the increase in emissions in developing countries comes from the arrangement of basic human needs for an increasing growth in their population while emissions in industrialized nations contribute to development in a standard of living that is already far above an average person worldwide. This will be exemplified toward the tremendous contrasts in per capita carbon emissions between industrialized centres and developing countries. For every per capita emissions of carbon in the U.S. are over 20 times higher than India, 12 times higher than Brazil and 7 times higher than China (UN/IPCC). Around the world,

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global warming has been a scientific consensus, which infers that Earth's climate system may be unequivocally warming and that it is extremely likely, that humans are reason behind most of it through activities that increase concentrations of greenhouse gases in the atmosphere such as deforestation and the burning of fossil fuels [2].

Anthropogenic pressures on the earth system have come to a scale where drastic global environmental change can no longer be excluded. It was proposed by Johan Rockstrom in "Nine Planetary Boundaries" providing humanity an ability to operate safely. Concurring to his hypothesis, humanity has already transgressed three planetary boundaries owing to the Climate Change, rate of biodiversity loss and changes to the global nitrogen cycle [3]. Global warming has been emphasized all over the world at different forums. Paris agreement is such an agreement which understands to reorganize the environmental interaction and worldwide economy in a way to control the antagonistic impact of global warming and the most critical of such reorganization is to convert our energy sources to renewable energy.

#### 1.1.1 Paris Agreement

At COP 21 in Paris, on 12 December 2015, Parties to the UNFCCC reached a landmark agreement to combat climate change and to accelerate and intensify the actions and investments needed for a sustainable low carbon future.<sup>1</sup> The Paris Agreement builds upon the Convention and — for the first time — brings all countries into a common objective to attempt take driven endeavours to combat climate change and adapt to its impacts, enhanced support to assist developing countries to follow the same actions. As such, it charts a modern course in the global climate exertion. On 5 October 2016, the eventual threshold for entry into force of the Paris Agreement was achieved. The Paris Agreement entered into force on 4 November 2016. The first session of the Conference of the Parties

<sup>1</sup> UNFCCC Summary of the Paris Agreement, available online at: http://bigpicture.unfccc.int/.

serving as the Meeting of the Parties to the Paris Agreement (CMA 1) took place in Marrakech, Morocco from 15-18 November 2016.<sup>2</sup>

The Paris Agreement builds upon the Convention and — for the first time — brings all nations into a common cause to undertake ambitious efforts to combat climate change and adapt to its effects, with enhanced support to assist developing countries to do so. As such, it charts a new course in the global climate effort.

The Paris Agreement's central points is to make stronger the worldwide reaction against threat of climate change by avoiding that the global temperature rise above 2 degrees Celsius which is keeping it in a pre-industrial levels for this century and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius for future. Furthermore, the agreement aims to fortify the capacity of nations to deal with the impacts of climate change. To reach these driven objectives, suitable budgetary streams, a new technology framework and an improved capacity building systems will be put in place, in this way supporting activity by developing countries and the most vulnerable countries, in line with their claim national goals. The Agreement also provides an improved transparency of action and support through a more robust straightforwardness system for action and support. The Paris Agreement requires all Parties to put forward their best endeavours through "nationally determined contributions" (NDCs) according to its own sovereignty and to fortify these endeavours in a long term. This incorporates necessities that all Parties report routinely on their emissions and on their implementation efforts. There will also be a global stock every 5 years to assess the collective progress towards achieving the purpose of the Agreement and to inform further individual actions by Parties [4].

1.1.2 Essential Elements of Paris Agreement

The Paris Agreement, adopted through Decision 1/CP.21, addresses crucial areas necessary to combat

<sup>&</sup>lt;sup>2</sup> http://unfccc.int/paris\_agreement/items/9485.php.

climate change. Some of the key aspects of the Agreement are set out below [5]:

- Long-term temperature goal (Art. 2) The Paris Agreement, in seeking to strengthen the global response to climate change, reaffirms the goal of limiting global temperature increase to well below 2 degrees Celsius, while pursuing efforts to limit the increase to 1.5 degrees.
- Global peaking (Art. 4) To achieve this temperature goal, Parties aim to reach global peaking of greenhouse gas emissions (GHGs) as soon as possible, recognizing peaking will take longer for developing country Parties, so as to achieve a balance between anthropogenic emissions by sources and removals by sinks of GHGs in the second half of the century.
- Mitigation (Art. 4) The Paris Agreement establishes binding commitments by all Parties to prepare, communicate and maintain a nationally determined contribution (NDC) and to pursue domestic measures to achieve them. It also prescribes that Parties shall communicate their NDCs every 5 years and provides information necessary for clarity and transparency.
- Sinks and Reservoirs (Art.5) The Paris Agreement also encourages Parties to conserve and enhance, as appropriate, sinks and reservoirs of GHGs as referred to in Article 4, including forests.
- Voluntary cooperation/Market- and non-market-based approaches (Art. 6) — The Paris Agreement recognizes the possibility of voluntary cooperation among Parties to allow for higher ambition and sets out principles — including environmental integrity, transparency and robust accounting — for any cooperation that involves internationally transferal of mitigation outcomes.
- Adaptation (Art. 7) The Paris Agreement establishes a global goal on adaptation — of enhancing adaptive capacity, strengthening resilience and reduction of vulnerability to climate change.

- Loss and Damage (Art. 8) The Paris Agreement significantly enhances the Warsaw International Mechanism on Loss and Damage, which will develop approaches to help vulnerable countries cope with the adverse effects of climate change, including extreme weather events and slow-onset events such as sea-level rise.
- Finance, technology and capacity-building support (Art. 9, 10 and 11) — The Paris Agreement reaffirms the obligations of developed countries to support the efforts of developing country Parties to build clean, climate-resilient futures, while for the first time encouraging voluntary contributions by other Parties.
- Climate change education, training, public awareness, public participation and public access to information (Art 12) is also to be enhanced under the Agreement.
- Transparency (Art. 13), implementation and compliance (Art. 15) The Paris Agreement relies on a robust transparency and accounting system to provide clarity on action and support by Parties, with flexibility for their differing capabilities of Parties.
- Global Stock-take (Art. 14) A "global stock-take", to take place in 2023 and every 5 years thereafter, will assess collective progress toward meeting the purpose of the Agreement in a comprehensive and facilitative manner.
- Decision 1/CP.21 also sets out a number of measures to enhance action prior to 2020, including strengthening the technical examination process, enhancement of provision of urgent finance, technology and support and measures to strengthen high-level engagement.

China intending to take the lead among the world's greatest carbon emitters in ratifying the Paris Agreement ahead of the G20 summit in Hangzhou, does so with good intentions and will for combatting this menace of global warming.

Paris agreement was agreed upon by over 190 members of the United Nations at the end of 2015,

while the government has proposed confirming the determination, according to an earlier report. "The Paris Agreement provides a clear signal to investors that the transition to the low-carbon clean energy economy is inevitable and already under way", the investors wrote to G20 leaders before the Sept 4-5 summit in Hangzhou, capital of Zhejiang province in Peoples Republic of China in 2016<sup>3</sup>. As Chinese President Xi Jinping said in his speech at the opening session of the 19th CPC National Congress, China has taken a driver's seat in international cooperation on climate change and has become an "important participant, contributor, and torchbearer" in the global endeavor for ecological civilization<sup>4</sup>.

#### 1.2 Economic Crises

Global Economy is based on overproduction now a day and is specifically related with global warming in terms of greenhouse gas (GHG) emissions being the result of growing economy in the world. Considering 2008 economic crisis, restructuring the economy towards renewable energy has become inevitable owing to the unfavourable impacts of carbon emissions for future generations. Basel 3 and Solvency 2 are the results of such a conscious and cautious framework for future economy.

#### 1.2.1 Basel 3 and Solvency 2

The fact that Basel II/III and Solvency II have the same three-pillar structure is often mentioned in discussions of Solvency II. Pillar 1 is related to the quantitative requirements concerning required capital and risk measurement, Pillar 2 involves qualitative conditions of risk management, the terms of the supervisory review process as well as the institution's own risk and solvency assessment (ORSA), and Pillar 3 is concerned with disclosure requirements. It is well known that the administrative framework and the way we organize our economies is currently dependent on fossil fuels. From this perception, it is self-evident that we require modifying our controls to empower a low-carbon to emerge. This implies looking beyond just climate policies or energy policies, picking separated the entirety set and address whether the incentives are the right ones across the economy [6].

There is the challenge, nation by nation, of altering our economies to focus away from the use of fossil fuels towards renewable energy sources, as each nation will have distinctive conditions, based on their assets, industrial structures, different rules and institutions bases, but one common boundary is the fragmented approach to climate related policies. For such an assignment a multidisciplinary team is required, with an approach utilizing different ministries. The key objective of such an approach is to empower the advancement of unused innovation and new models which could be counted under the umbrella of renewable energy or environmentally friendly, permitting us to reshape our economies. This will not be conceivable if there are still those boundaries mentioned preventing this process from happening. In particular, this portion coordinates into the administrative structure of all economy based on, long term investment regulations, electricity market design and urban design mobility. To rapidly fit those ventures in this change the IAEA estimates, to make this low carbon world happen, cumulative investment in low carbon energy supply and energy efficiency is needed, this investment needs to reach fifty three trillion dollars by 2035, now that number is only 10% more than the 48 trillion dollars business as usual that would be invested in any case. But we must realize that the genuine difference is not the extra 10% but how all that capital is invested. The off-base choice of nowadays can cost us high greenhouse gas emission pathways for decades to come [7].

<sup>&</sup>lt;sup>3</sup> China takes lead in Paris Agreement ratification, the State Council, The People's Republic of China, Fu Jing. http://english.gov.cn/news/top\_news/2016/08/26/content\_2814 75426219390.htm

<sup>&</sup>lt;sup>4</sup> New Analysis: CPC's governance wisdom leading China to bigger role in global development, *19<sup>th</sup> CPC National Congress*, Xinhua. Available online at: http://news.xinhuanet.com/english/2017-10/22/c\_136698421.htm?client=1.

It is widely accepted that we require mobilizing both public and private investments, as there is more mobility and higher availability of capital to be invested unreservedly by the private sector. Governments can offer assistance to diminish the risk of investment in new technologies. In any case, there are approach deterrents implanted in financial systems and regulations that hamper the supply of long-term finance for instance the great financial crisis has led to changes in financial stability rules.

The result of the financial crises on the investments can be seen clearly on the "Basel 3" and "Solvency 2" that inadvertently limit the ability of institutions like banks and insurance companies to finance long-term infrastructure investments essential to developing a low-carbon future. What governments require to consider and rectify is the consequences of policy designs and also the need to consider a financial system which ignores climate risk may not end up being exceptionally steady either. Concerned with the objective of Paris agreement, to address the right combatting methodology for global warming, the Chinese government understands that they can offer assistance to di-risk investment on innovations. In harmony with world financial system, which after 2008 economic crises took a new turn on the way to finance infrastructure, on "Basel 3" and "Solvency 2" that inadvertently limit the ability of institutions like bank and insurance companies to finance long-term infrastructure investments, essential to a low-carbon future. This change redefines the matrix of the development in a sense which dictates a tendency beyond time but also size as a collateral effect mostly renewable energy but lass hydroelectric and nuclear [8].

# 2. Chinese Government Policy Analysis

The "One Belt, One Road" (OBOR) initiative is an action plan for a Silk Road concept offering considerable potential in several economic, environmental, political, cultural, and strategic realms;

China's strategy proffers motivating vision of common development of up to 80 countries based on infrastructure development and common standards involving existing structure and new rail lines, highways, pipelines along with an area that convers 55 per cent of world GDP, 70 per cent of global populations, and 75 per cent of known energy reserves. China's financial commitments to the project area estimate to \$300 billion in infrastructure financing from China in the coming years. Beijing's current exertion is to improve ties and stimulate growth and development along its geographic outskirts, facilitating land-based trade across the Eurasian landmass, promoting infrastructural development and connectivity, and fortifying economic integration. Asian Infrastructure Investment Bank (AIIB) and New Development Bank agreed upon by BRICS countries are two practical examples of Chinese future intentions towards robust actions for combatting global warming and taking the lead in restructuring world economy towards renewable energy.

#### 2.1 Asian Infrastructure Investment Bank (AIIB)

Asian Infrastructure Investment Bank (AIIB) is a new multilateral financial institution founded to bring countries together to address the daunting infrastructure needs across Asia. Headquartered in Beijing, AIIB's mission is to improve economic and social development in Asia by investing in high quality, financially viable and environmentally friendly infrastructure projects. Some light had been shed below on the main objectives of the environment and social framework of AIIB below [9];

(a) Objectives of Environment and Social Framework of AIIB

The objectives of this Environmental and Social Framework are to:

- Reflect institutional aims to address environmental and social risks and impacts in Projects
- Provide a robust structure for managing operational and reputational risks of the Bank and its

shareholders in relation to Projects' environmental and social risks and impacts.

- Ensure the environmental and social soundness and sustainability of Projects.
- Support integration of environmental and social aspects of Projects into the decision-making process by all parties.
- Provide a mechanism for addressing environmental and social risks and impacts in Project identification, preparation and implementation.
- Enable Clients to identify and manage environmental and social risks and impacts of Projects, including those of climate change.
- Provide a framework for public consultation and disclosure of environmental and social information in relation to Projects.
- Improve development effectiveness and impact to increase results on the ground, both short- and long-term.
- Support Clients, through Bank financing of Projects, to implement their obligations under national environmental and social legislation (including under international agreements adopted by the member) governing these Projects.
- Facilitate cooperation on environmental and social matters with development partners.

Some of the objectives of the energy sector strategy of AIIB are also highlighted below;

Incremental levels of access

(b) Objective of the Energy Sector Strategy:

The objective of the Strategy is to provide the framework, principles, and operational modalities to guide the Bank's energy sector engagement, including the development of its project pipeline and future subsector lines of business. The Strategy embraces, and is informed by, the principles underpinning SE for ALL, the 2030 Agenda for Sustainable Development, and the Paris Agreement. It lays the framework for the Bank to support its client countries to [10]:

(i) Develop and improve their energy infrastructure;

(ii) Increase energy access;

(iii) Facilitate their transition to a less carbon-intensive energy mix; and

(iv) Meet their goals and commitments under these global initiatives.

The Strategy is consistent with the Bank's "Lean, Clean, and Green" core values and its institutional goals. The Strategy encapsulates the Bank's three thematic priorities: sustainable infrastructure, cross-country connectivity and private capital mobilization. According to the IEA, accomplishing universal electricity access for basic human needs by 2030 (Fig. 1) would increase global greenhouse gas emissions by just 1.3 per cent and that is what the main objective of the energy sector strategy of AIIB emphasizes on. Fig. 2 shows the proof of the results materializing due to such tremendous efforts by AIIB and various other platforms for leading the world towards renewable energy and making it safer for future generations.

Level 1	Level 2 Productive uses	Level 3 Modern society needs
Basic numan needs		Modern energy services
Electricity for lighting, health, education, communication and community services (50-100 kWh per person per year)	Electricity, modern fuels and other energy services to improve productivity eg. - Agriculture water pumping for irrigation, fertilizer, mechanized tilling - Commercial: agricultural processing, cottage industry - Transport: fuel	for many more domestic appliances, increased requirements for cooling and heating (space and water), private transportation (electricity usage is around 2000 kWh per person per year)
Modern fuels and technologies for cooking and heating (SO-100 kgce of modern fuel or improved biomass cook stove)		



# A major shift in investment towards low carbon sources of energy



Fig. 2 Increased low-carbon energy production.

# 2.2 BRICS (Brazil, Russia, India, China and South Africa)

New Development Bank (NDB) is the first multilateral development bank established by developing nations and emerging economies - Brazil, Russia, India, China and South Africa. The NDB will mobilize assets for infrastructure and sustainable development projects in BRICS countries and other emerging economies and developing countries, complementing the existing endeavor of multilateral and regional financial institutions for global growth and developing. In 2016, the NDB Board of Directors approved seven projects in all member states, for a total of 1.5 \$Billion in the areas of renewable and green energy, and transportation.

2.2.1 Roles and Responsibilities of NDB

NDB is responsible for [11]:

(a) Screening each project to assign a category to it;

(b) Undertaking due diligence review of the Client's environmental and social assessment reports, to ensure compliance with country and corporate system and consistency with key requirements of NDB's ESS;

(c) Determining the feasibility of NDB financing for the project;

(d) Monitoring and supervising the Client's compliance with its environmental and social obligations under the legal agreement between NDB and the Client, throughout the project implementation period,

(e) Working with the client to strengthen the country systems; and

3% more energy

improved wind and solar technology

Renewable power spending was flat from 2011-2015 but produced one third more electricity thanks to smarter deployment of

(f) Knowledge sharing with clients on international good practices.

2.2.2 Roles and Responsibilities of the Client envisaged by NDB

The Client is responsible for:

(a) Conducting its environmental and social risks and impacts;

(b) Developing management plans to avoid, minimize and/or otherwise compensate the adverse impacts;

(c) Engaging with people affected by the project and other stakeholders, through information disclosure, meaningful consultation and informed participation;

(d) Monitoring the environmental and social performance throughout the project implementation to ensure the compliance with agreed documents/plans, and providing periodical reporting to NDB as per legal agreement; and

(e) Establish and maintain a fair and effective grievance redress mechanism for environmental and social safeguards.

So the New Development Bank — more popularly known as the BRICS Bank — proposes to be different from other multilateral funding institutions in its focus, speed and risk appetite, and earmark as much as 60 per cent of its lending for renewable energy. "Our focus is on sustainable development and sustainable infrastructure", said President K. V. Kamath in an interview at the bank's headquarters in Shanghai. The

National Financial Institutions (NFI) needs to have suitable system to manage the environment and social impact of activities financed by NDB funds to comply with principles of NDB's environment and social framework. Arrangements for managing environment and social impacts will be assessed and agreed during appraisal of the facility [12].

### 3. Conclusion

Global warming as an adverse consequence of climate change is a global phenomenon no longer to be ignored with a dire need for restructuring global economy based on renewable energy seems only inevitable solution. China has emerged as the global leader in its initiative of bringing sustainable development based on renewable energy economic paradigm. This is evident from China's recent developments in the form of OBOR, AIIB and BRICS and its tremendous efforts in bringing the world together on economic fronts and sustainable energy resources eventually. AIIB and NDB are making these objectives possible and practical by re-rooting the global economy towards renewable energy sources.

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