GATEWAY HOUSE
INDIAN COUNCIL ON GLOBAL RELATIONS

Parameters for Developing Cross-border Sustainable Infrastructure

by **Jyotsna Bapat**

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ABOUT THE AUTHOR

Professor Joytsna Bapat, has over 34 years of experience in environment and social science sector, with specialization in infrastructure projects. She has led a few funded programs earlier in her career. In most projects funded by multilateral and bilateral agencies she has been a team member on interdisciplinary team. Since 2000 her consultancies related to monitoring and end and program reviews and policy recommendations from a social science perspective for both rural and urban, physical infrastructure programs. She has covered issues related to involuntary resettlement, culture and heritage, social issues of health education, gender equity, poverty, and skill development.

She has life time membership of Indian water works association (IWWA) BNHS, Indian Sociological association and Indian Anthropological association. She is a trustee on the board of Manav Sadhan Vikas Sansthan (MSVS). Was on the National level expert panel of India Heritage Cities Network Foundation to design heritage conservation training program.

She is a free- lance senior consultant over the last 20 years. Was a 'Fulbright Scholar-in- resident' and visiting scholar, at Mac Alester College and Yale University in USA respectively.

Since relocating to Delhi she has worked at a consultant in various prestigious think tanks such as TERI, ICRIER, NCAER, among many others, including UNDP- as resource person and a couple of NGOs.

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The views expressed in the paper are my own. I take full responsibility for them.

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Executive summary[1]

India, till 2014, had bilateral trade and infrastructure agreement treaties with its Asian neighbours. India, through the Ministry of External Affairs (MEA), has been investing in trilateral and multilateral infrastructure projects since 2014, with its littoral (coastal) and inland neighbours in Asia. While it demonstrates the growing potential of infrastructure diplomacy, it also puts India in direct competition with China, which through its own infrastructure initiative, has been involved in building physical infrastructure in India's neighbours.

This paper argues that taking into account environmental security as a parameter for developing cross border sustainable infrastructure, during signing of MoUs in these treaties, will provide a unique opportunity for India to develop norms for environmental and social security framework/ policy, training assistance, and capacity building in its funded projects in other countries.

[1] *This is an interdisciplinary research, in an evolving area of funding provided by India, in trilateral and multilateral projects. Therefore, certain base knowledge of physical infrastructure projects, environmental impacts of physical infrastructure, international relations, India's foreign policy, and Development Assistance Fund of Ministry of External Affairs (MEA) and MEA's organisation of structure, is assumed.*

1. Introduction

With the breakdown of bipolarity, by 2010, international politics saw a rise in regional powers. Infrastructure diplomacy became a new instrument of power and influence for many nations especially when engaged in building infrastructure projects in neighbouring countries and other partner countries. Successful and on-time completion of these projects added to the regional powers' influence.

India and China emerged as growing players in this field with infrastructure investments in South Asian counties. Both have followed similar policy based on building economic ties with regional actors, regardless of existing rivalries, among themselves. This engagement with neighbouring countries is driven not just by economic factors, but also by security considerations. India's strategy is to enhance its strategic autonomy and pursue its development goals in the current volatile and uncertain global circumstances.[2]

Over the last few decades, another trend of countries pool financial resources to build mega infrastructure projects, that cut across nations, became evident. Since 2014, India has been drawn into this trend, with investments being made in trilateral and multilateral infrastructure projects, in its neighbourhood. For example: the North South Corridor (involving India, Iran, Afghanistan, Azerbaijan and Russia), Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) electricity trade (involving Bangladesh, Bhutan, India, Myanmar, Nepal, and Sri Lanka), LNG terminal built for downstream customers by private companies (involving Russia, India and Bangladesh). While considering these infrastructure projects, India has adopted, economic investment as a geopolitical policy, for achieving its strategic interests.

Meanwhile, China through its own physical infrastructure initiative is involved with multiple Asian and European nations to build power plants, road, and rail links.

India contributes financially, to these trilateral and multilateral projects, through Development Assistance Funds (DAF) set up by the MEA (organisation chart available at the MEA website) through its Lines of Credit for Development Assistance Partnership (DAP) projects.[4] This however covers only the financial and economic criteria for funding these projects.

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[2] Khilnani et al. Non Alignment 2: http://www. Cprindia.org>tdf>policy-brief>non Alignment2.pdf

3 Lines of Credit for Development Projects, https://www.mea.gov.in/Lines-of-Credit-for-Development-Projects.html

4 Survival of humankind. We humans are totally dependent for our survival upon the continued functioning of natural systems. Sustainable development, involves environmental sustainability and social sustainability. Environmental sustainability is defined as responsible interaction with the environment to avoid depletion or degradation of natural resources and allow for long-term environmental quality. Social sustainability is defined as the ability of a community to develop processes and structures, which meet the needs of its current generation, and does not compromise the needs of the future generations.
Rasmus Øjvind Nielsen, Agata M. Gurzawska and Philip Brey, 'Ethical Impact Assessment and Conventional Impact Assessment' June 2015 This deliverable and the work described in it is part of the project "Stakeholders Acting Together on the Ethical Impact Assessment of Research and Innovation" -SATORI – funded by the European Commission's Seventh Framework Programme (FP7/2007-2013) under grant agreement # 612231

What is missing currently in India's programs, is an Environmental and Social Security (ESS) Framework/Policy (ESSF/P) as funding criteria for these projects. Such an ESSF/P is essential to ensure sustainable infrastructure development.

Proposed by the author here are norms for social and environmental sustainability in infrastructure projects built or planned by India and partner countries as transnational projects. It is important to have these environmental and social security (ESS) criteria because there is an ethical principle about the future survival of humankind involved, (survival of future of humankind- footnote) linked to the issue of sustainable development.

For this paper, physical infrastructure refers to projects that cover connectivity in transport and energy. These projects involve India and at least two other countries, pooling resources. These can be linear projects cutting across two or more nations, or they could be localised projects, like ports or nuclear power plants, located in one nation. But all these projects involve agreements with more than two countries. The physical infrastructure projects, supported by India in South Asia, are medium-sized projects, in roads, power, irrigation dams or multipurpose projects.

Development Assistance Partnership (DAP) projects are funded by India to increase good will with its partners and neighbours, and as part of the multilateral economic diplomacy. Most of these are financial assistance projects, implemented in the countries of East Africa and South Asia.

Given that these projects are aimed at specific infrastructure sectors and regional economic growth and development, for the countries involved in the project, financial resources are pooled with the better-off countries contributing larger share in the project, rather than taking aid or loans from bilateral or multilateral funding agencies. India as a partner in such projects has made financial contributions and has Indian private infrastructure companies, create infrastructure projects, on Build Own Operate and Transfer (BOOT) and Build Operate and Transfer (BOT) basis.

India, through its experience in infrastructure development projects, should evolve its own norms for Environmental and Social Security Impact Assessment (ESSIA) in the multilateral projects it funds. India has competence to develop such norms. It has developed, through the Ministry of Environment, Forest and Climate Change (MoEFCC), domestic ESSIA norms related to community consultation, Resettlement and Rehabilitation (R&R), bio-conservation and heritage conservation projects carried out within the country, both in urban and rural areas.

These norms are essential for long-term environmental and social sustainability of projects. It minimises the negative impacts of the projects on local ecology and the livelihoods of local people and communities, thereby ensuring that positive impacts altogether outweigh or neutralise the negative.

2. Objectives

As mentioned earlier, the MEA funds DAP projects to increase India's goodwill with its partners and neighbours, and furthers its multilateral economic diplomacy. While these projects consider financial and economic viability along with other strategic considerations, they do not take into account ESSIA dimension, as part of the agreement. Moreover, India does not have a ESSF/P fully spelt out for its DAP infrastructure projects.

Firstly, this paper will review the existing ESSF/P and ESSIA guidelines followed by the multilateral and international organisations in different parts of Asia. It will cover United Nations Environment Programme (UNEP) guidelines and initiatives by three relevant multilateral aid agencies: the World Bank (WB), Asian Development Bank (ADB) and Asia Infrastructure Investment Bank (AIIB). This will help in crafting the policy/framework for ESS and ESSIA clauses that would be relevant for India.

Secondly, the paper will look at the governance challenges that arise out of such projects, especially as the DAF projects are not implemented as direct transfer of funds from donor government to receiving government. The new trend is that donor countries transfer funds through special purpose banks to private construction companies, for the implementation of projects in overseas territories.

Finally, the paper will review, through four case studies, where projects have been implemented or are being implemented by India, in partnership with two or more countries. These cases studies pertain to two sectors: transport and power. The projects selected are:

1. Chabahar project, a transport corridor involving India, Iran and Afghanistan;
2. Friendship Road project, involving India, Myanmar and Thailand;
3. Rooppur nuclear power project involving India, Bangladesh and Russia;
4. Power trading initiative involving the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) countries

Drawing on the experience of these case studies, insights would be gleaned on lessons to be learnt. These would be valuable inputs for future investments along with the suggested ESSF/P for India.

3. Global Environment and Social Security Framework/ Policy (ESSF/P) Trends

3.1 United Nations Environment Program:

UNEP, is a global environmental programme that provides the framework for implementing an environmental agenda in development projects across the world. A theme is set for every decade by UNEP to help achieve its environmental agenda. UNEP's work for 'Agenda 2030' has focused on

1) Green economy in the context of sustainable development and poverty eradication and
2) Institutional framework for sustainable development. It has successfully created the framework for environmental governance in the form of ministry of environment in Asian countries in almost all its member countries.

Agenda 2030's theme focuses, among other things, on Goal 9 of the Sustainable Development Goal (SDG) 'Industry Infrastructure and Research' with emphasis on sub-theme 'connectivity.'
Five cross-cutting UN sustainable development goals set the base for connectivity projects globally. These goals are to be incorporated in any connectivity projects, namely poverty eradication (Goal 1), hunger eradication (Goal 2), gender equity (Goal 5), decent labour conditions (Goal 8), and indigenous community (Goal 11), while ensuring environmental sustainability.

Therefore, the global multilateral funding agencies including the WB, ADB and AIIB, have incorporated these environmental dimensions in their Environmental and Social Sustainability Assessments (ESSA) for sustainable development projects funded by them, with some variations.

ESSA Policies:
All the three multilateral funding agencies reviewed here, namely the WB, the ADB, and the AIIB, have invested in a large number of projects in Asia. All three have incorporated ESSA in their policy documents with some differences and under different titles:
WB calls it Environment and Social Framework (ESF) providing the policy framework for the WB as a whole with regional banks adopting their own additional norms relevant to the region they operate in, like Latin America, Africa, Asia, etc.
ADB calls it Environment and Social Protection, and Safeguard Policy Statement (SPS).
AIIB calls it Environmental and Social Security Policy (SSP) and exclusion list.

3.1.1 World Bank Environmental and Social Framework (ESF):

The ESF of World bank comprises a vision, a policy, ESF standards, and a governance mechanism, for a project funded by the World Bank.

A Vision for Sustainable Development which lays out the Bank's aspirations regarding environmental and social sustainability. The two vision goals of environmental and social sustainability emphasise the importance of economic growth, inclusion and sustainability, including strong concerns for equity. Environmentally sustainable growth ensures climate change mitigation and adaptation to ensure wise use of finite resources, without compromising the future of following generations. Social sustainability ensures social development and inclusion of all communities impacted by the development project.

The World Bank Environmental and Social Policy for investment project financing sets out the mandatory requirements that apply to the Bank. At a project level, this translates into development opportunities for all, particularly project impacted communities and conservation or preservation of natural resources and ecosystem services.

The Environmental and Social Standards set out the mandatory requirements that apply to the borrower and projects. There are ten Environmental and Social Standards that each borrowing country has to establish for themselves and the project, to be met throughout the project life cycle, as per the sustainable development goals.

Environmental and social governance:
Local governance mechanisms of the borrower set environmental standards and social standards that are mandatory requirements as conditionalities for receiving finance. This implies that borrowers may set any additional standards that are country specific, so long as they do not contradict these ten standards. Governance mechanisms of the borrower are to be used and enhanced to support collaboration and create a grievance redressal mechanism that includes the judiciary, if needed.

3.1.2 Asian Development Bank:

The Asian Development Bank, as part of the World Bank, follows the World Bank guidelines on the environment and social security framework.

Safeguard Policy Statements (SPS) of ADB:
The Safeguard policy of ADB has the following structure:
1. SPS describes common objectives of ADB's safeguards,
2. Lays out policy principles, and outlines the delivery process for ADB's safeguard policy. The SPS is designed for application to current and future lending modalities like private financial institutions and caters to the varying capacities and needs of developing member country clients in both the public and private sectors.
3. Through their due diligence, review and supervision, ADB staff will ensure that borrowers/clients comply with a set of specific safeguard requirements that they are expected to meet when addressing social and environmental impacts and risks during project preparation and implementation. Over time, ADB may adopt additional safeguard requirements or update existing requirements to enhance effectiveness, respond to changing needs, and reflect evolving best practices.
4. A consolidated Operations Manual section that specifies ADB's internal review procedures for due diligence and for supervision throughout the project cycle.

ADB has three safeguard statements that are consolidated into this policy. These safeguard statements are related to the
– Involuntary Resettlement Policy,
– Policy on Indigenous Peoples,
– Environment Policy.
These assessments are based on equator principles of risk assessment. Equator principles were first used in finance as a risk management technique, for minimum due diligence, required to support responsible risk decision making.

Environmental and social governance:
To ensure proper implementation of policy and borrower compliance, additional training and capacity building is provided by ADB to members of staff in environment governance institutions of member countries. If the standards and laws exist for due diligence, they can be implemented according to member country procedures or upgraded, with mitigation measures simply through knowledge sharing.

Due to the unpredictability of the three risks related to environment - physical environment, affected people and indigenous people - preparing a flexible action plan in advance and constant reviews of mitigation measures, are needed through project life cycles.

3.1.3 Asian Infrastructure Investment Bank:

The Asian Infrastructure Investment Bank provides a multilateral regional financing and investment platform for infrastructure development and enhanced interconnectivity in Asia. It has as its clients both public and private sector companies for project or sub-project funding.

Vision: AIIB's vision for environmental and social development, in addition to sustainable development goals, is to support infrastructure and interconnectivity to promote economic growth and improve the lives of people in Asia – economically, socially and environmentally.

ESIA: Every project, based on its category, will have or not have an ESIA.

ESSF/P: At policy level it has an appropriate ESSF/P. Each project is treated as unique, and bank approval is needed for every ESSF/P before the project begins. For impact risks that cannot be predicted with certainty, flexibility in mitigation measures is adopted.

Environmental and Social Security Policy (ESP):
An environmental and social policy (ESP) sets forth mandatory environmental and social requirements for each project:

1. Environmental and Social Standards. The following three associated environmental and social standards (ESSs) set out more detailed mandatory environmental and social requirements relating to the following:

o ESS 1: Environmental and Social Assessment and Management (ESS 1); impact assessment and its management plan to be part of the Environmental and Social Management Plan (ESMP) covering both environment and social aspects of a project.
o ESS 2: Involuntary Resettlement (ESS 2); including the option of change of location before the project and a financial feasibility study of the actions proposed to look at the viability of the project.
o ESS 3: Indigenous Peoples (ESS 3); including the definition of and emphasis on free, prior and informed consent, and an Indigenous People Plan that is unique to every group impacted by each of the projects.

2. Environmental and Social Exclusion List. The list reflects banned social practices related to indentured labour and child labour and the production of banned substances – according to international treaties – that are harmful to public health, environment and bio-ecologies.

ESS governance strategy:

Environment and social policies of the host government are imposed on the project so far as they are consistent with the AIIB policies. Additionally, AIIB training and capacity building is conducted, for borrowing governments and involved corporations, to update their policies and make them consistent with AIIB policies.

Other commercial banks:

Other commercial banks funding infrastructure projects – like China Construction Bank, Exim Bank of China and India's commercial banks including Exim Bank of India – have been following global trends like CSR and raising green financing since 2014. Global funds supporting infrastructure projects, like insurance companies, also demand environmental reports before investing funds in developing countries' infrastructure projects.

Procedure for implementation:

Local governance mechanisms of the borrower, set environmental standards and social standards for the projects, as long as they are consistent with the multilateral funding agencies' ESP. Where not consistent, the inclusion of bank policies in projects are mandatory requirements that apply to borrowers, as a conditionality for the finance. Any additional standards that are relevant to country specific needs may be added, if the borrower so desires, so long as they do not contradict these five cross-cutting SDGs mentioned earlier.

End of Project review:

Thus, while the technical terms and procedures used by different multilateral funding agencies to plan and implement environmental and social assessment are different, there is a common feature across all of them. This common ensures that the implementation is done by the host country and its governance agency, and there is an end of project review by specialist consultants, not directly associated with the day to day implementation of the project. This is in addition to creating a grievance addressal mechanism which is more a mitigative or adaptive measure, used by the implementing governance agency.

4. India's ESSIA F/P and Governance Policy for Multilateral Projects

India and its Asian neighbours have a long-shared history, culture, people contacts, and similar ecosystems and environments. Till recently India had assisted its neighbours in bilateral projects with federal government partnership for middle level physical infrastructure projects. Therefore, arriving at mutual understanding of project ESSIA, action plan implementation and consultation of local communities is relatively straightforward. For specific infrastructure projects the ESSF/P has to narrow down to specific regional uniqueness, and India's experience in similar projects domestically, is very important.

As India now enters into tri-party treaties for physical infrastructure projects, ESSIA and its implementation becomes more complex. Drawing from ESSIA P/F of multilateral aid agencies, and following their examples of implementation of ESIA and their policy frameworks, and their good practices, India can create its own ESSIA P/F, ESSIA standards, and exclusion list.

4.1 Suggested framework for ESS Policy, standards and governance policy

India's framework for ESS Policy, standards and governance policy is suggested below:

4.1.1 Environmental and Social Standards:

o ESS 1: Environmental and Social Assessment and Management (ESS 1); impact assessment and its management plan to be part of the ESMP
o ESS 2: Involuntary Resettlement (ESS 2); including the option of change of location before the project is finalised and a financial feasibility study of the actions proposed to look at the viability of the project.
o ESS 3: Indigenous Peoples (ESS 3); including the definition of and emphasis on free prior and informed consent and Indigenous People Plan that is unique to every group impacted by the projects.

In addition, unique to India's neighbours India could add a clause on heritage conservation.
ESS 4: Heritage conservation (ESS 4). The region where India has been funding projects in Asian countries have a number of bio diversity forest commons that the local people consider as sacred – groves, sacred water bodies: like rivers, ponds, and tanks that may or may not be linked with religious sites. In addition, these regions have long socio- cultural history and there are man-made heritage monuments and regionally held important heritage sites.

4.1.2 Environmental and Social Exclusion List:

The list reflects banned social practices related to indentured labour and child labour and production of banned substances according to international treaties that are harmful to environment and bio ecologies.

Since the projects considered involve multilateral treaties, such an ESSF/P criteria would have to be consistent with India's foreign policy approach of mutual non-interference in the internal (political) affairs, intervention on request of the countries' government, India to deal with the government-of-the-day.

The project agreement has conditionalities at the signing of MoU. These can include ESS risk assessment along with financial and environmental risk assessment. The ESS risk assessment can be done at the pre-planning stage of the project, by the host countries' environment department, or corporations involved in the project with technical assistance and capacity building (TA and CB) by India, if needed.

When the ESS risk assessment document is drawn up, along with an action plan by the host government, it amounts to non-interference by India. End of project review when India's project funding ends, will ensure feedback and new knowledge for similar projects in future. An end-of-project review by independent ESS specialists will ensure neutrality of review.

Including these clauses in project agreements, when the MoU is signed, is a suggested ESSF/P for India. Ensuring that the existing ESS policies of the borrower government are consistent with these policies is mandatory. India's own project experiences of similar projects can be shared with borrower countries and corporations involved as part of TA and CB.

4.2 ESS Governance policy for India:

The complexity of implementing an ESS policy for a project in lands over which India has no sovereign authority is difficult and tricky. Adding an explicit governance policy in ESSIA consistent with India's foreign policy of equal partnership, is therefore recommended for India.

A recommended governance policy is listed below:

- Adopt territorial approach: for implementation of ESSIA action plans, clearly demark the project impact boundaries
- Clarify involvement of local stakeholders and the role they will play: list who would be local stakeholders in the specific project with the local governance authority and make the project plan, project impact social and ecological environment, and compensation or restoration plans, transparent to them
- List, data monitoring and implementation of action plans: local authority will be responsible for listing of data, monitoring parameters and supervising implementation of action plans.
- Support action of local authorities by federal authorities: local authorities involved in the project must be fully supported by federal authorities to ensure funding allocations through the lifetime of the project.
- Training and capacity building: staff of local authorities, project implementing corporations and funding agencies involved in carrying out the project must all be and their capacity built for carrying out its duties related to ESSIA.

4.3 End of Project review for India:

A mid-term review with the borrowing countries and an end of project review by specialist consultants from the donor country (India), not directly associated with the day to day implementation of the project, is a SoP for all externally funded projects. This will provide lessons for all of India's future projects.

4.4 India's environment policy and competence:

ESSIA is a mandatory process requirement for India's MoEFCC to predict the social and environmental consequences of any development project. In India, it is a statutory requirement mandated by Environment Protection Act (EPA) in 1986. It is initiated at a very early stage at the time of project negotiations, through ESSIA scoping, while examining the economic and financial viability of the project. An ESSIA report is a continuous process that takes into account social and environmental impacts at every stage of the project. Mitigative measures are suggested right at the planning stage, along with risk analysis. These mitigation measures are implemented as the project proceeds.

India has a very comprehensive domestic environment policy, published in 2006, that fills the gaps between six different policies passed in the past. The MoEFCC is the nodal agency that has the power to sanction industrial, infrastructural, forest, and wildlife projects in the country. Depending on the financial investment required for the project, decision-making is done at either the central or state government level.

India has accumulated experience in planning and implementing infrastructure projects with environmental clearance. EIA and SIA are techniques used to predict the the environment and social consequences of any development project. This impact assessment provides a regional approach to sustainable development. The impact assessments are policy tools, a systematic process of identifying and mitigation impacts. These reports of EIA and SIA are made available to the general public, to identify the public objections to a project prior to decision making.

Physical connectivity infrastructure projects in port, road transport, power production and power transmission have been implemented by India and the processes and procedures to be followed through the life cycles,[5] of projects are well known.

The MoEFCC has created handbooks to be followed for ESSIA in domestic infrastructure projects. India can, therefore, create training and capacity building programs, if needed, to share its experience with other countries. Thus, India has the necessary competence in all the projects it has taken on, multilaterally, to fill in the missing policies, if any, for partner governments' environment and social security departments.[6]

5 The life cycles of projects include the following stages: pre-planning, planning, construction, operation, and end of program monitoring.
6 The National Environment Policy, 2006 https://www.india.gov.in/national-environment-policy-2006 https://ibkp.dbtindia.gov.in/DBT_Content_Test/CMS/Guidelines/20190411103521431_National%20Environment%20Policy,%202006.pdf MoEFCC as nodal agency: http://moef.gov.in/rules-and-regulations/environment-protection/ (Bikram Kumar Dutta, Sanhita Bandyopadhyay 2010 Environmental Impact Assessment and Social Impact Assessment - Decision Making Tools for Project Appraisal in India World Academy of Science, Engineering and Technology 39 2010 pp 1116- 1121

5. Case studies

Given the 2030 Agenda on transport and power connectivity, India has supported multilateral projects with its neighbourhood countries. The four case studies take into account security concerns of India and China, before reviewing the details of the projects. It then elaborates on the missing dimension of ESSIA and India's competence to provide it in each of the case studies that follow.

5.1 Chabahar Multimodal Transport Project (Iran)

India:

India's primary interest in its investment mission is to safeguard India's geopolitical security, economic security and energy security. India's total trade with Iran in 2018 was $17.03 billion and $900 million with Afghanistan. India imported crude oil from Iran and exported wheat to Afghanistan. Iraq accounted for 23% of India's crude imports.

After American troops started to withdraw from Afghanistan on 31 December 2016, India has exported wheat to the country on humanitarian grounds. It also has plans for developing trade with Afghanistan in the future. But India faces a logistical challenge in this, as the distance between India and Afghanistan is 990 km. India has repeatedly asked Pakistan to grant permission to supply wheat to Afghanistan via road, but to no avail.

According to media reports, after the UN imposed sanctions against Iran for its nuclear program in 2018, India managed to get a special waiver or "carve-out" and continued to import oil from Iran but volumes crashed 79% y-o-y in 2019 to 5.4 mln. tonnes, from 25.5 mln. tonnes in 2018.

Given the territorial conflicts with Pakistan and China, India needed an alternate route for energy and economic security. A major trade and connectivity hub on Iran's southern coast in the form of Chabahar port in the Hormuz strait not only gives India an alternative route to Afghanistan, bypassing Pakistan, but also has the potential to provide an Indian strategic counter to Pakistan's Gwadar port, being developed by China about 70 km east of Chabahar. As for Afghanistan - which, crucially, imports half of its oil from Iran, Chabahar port can connect it to the Arabian Sea via Iran, thus relieving its dependence on Pakistan.

China:

As mentioned earlier, China has developed Gwadar port in Pakistan about 70 km east of Chabahar port. Gwadar Port is owned by the government-owned Gwadar Port Authority and operated by China Overseas Port Holding Company (COPHC), a state-run Chinese firm. Media reports claim Pakistan owes a $10 billion debt for the construction of the Gwadar port and other projects built by China under the aegis of the China-Pakistan Economic Corridor (CPEC).

Gwadar is a key trans-shipment hub linking China to Central Asia and the Persian Gulf. An estimated $54 billion worth of infrastructure projects have been planned for this stretch under the China-Pakistan Economic Corridor, which is part of China's Belt and Road Initiative. China now has a direct access to the Arabian Sea after its 3200 km long road connection from Xinjiang to Gwadar port became partly operational in 2020.

The project:
In May 2016 India Iran and Afghanistan signed the Chabahar Treaty. The treaty is signed to establish and operate a multimodal transport and transit corridor that connects port of Chabahar in Iran, to Afghanistan. Chabahar port is to be used as one of the regional hubs for sea transportation in Iran. An elevated road from Chabahar through Tehran to Zaranj on the Afghanistan border, into Kandahar and Kabul, facilitates multi-modal transport of goods (vehicles) and passengers (visa, passport, papers for travel, cargo services) across the three nations.

India has signed the contract to operate five berths of the Shahid Beheshti port, of Chabahar, commencing in 2019 for 18 months. India has invested $85.21 million in this project contract to be operated by a private company (Interview with Senior MEA official, 21/4/2020).

ESSIA
Adding an environmental and social sustainability policy in the triparty treaties is not very difficult. Iran has a Department of Environment (www.doe.ir), and the necessary organisational structure and process for impact assessment needed for any infrastructure project. It is also signatory to major environmental conventions including UNCLAWS (United Nations Convention on Laws of the Seas). In addition, local governance of these policies is considered an equally important aspect of implementation of ESS. Afghanistan is in the process of establishing its own organisational structure introduced in 1994. India could follow the example of other multilateral aid agencies for ESS, in its DAF projects, and ensure that and ESSIA is prepared and shared by Iran for this project. Gaps can be filled though TA and CB by India.

India's ESSIA responsibility for the project:
India is entering an operations and maintenance phase in the trans-border connectivity project. This mainly involves operating the facility and data management related to traffic parameters. Additional environmental impacts due to the increased traffic in sea and on road of the project at point of entry and exit of the trans-border connections can be monitored and mitigative actions predicted.

The corresponding local governance authority across which the trans-border road passes can be involved in data collection and monitoring of traffic and monitoring environmental parameters. Hence, India's ESSIA is limited to an increase in air and sea water pollution due to increased traffic.

Possible environment impacts: At a macro level a status document for the Chabahar port project and its possible environmental impacts may have been listed with Iran's department of environment,[7]which India can use. Chabahar is the first deep sea port on the west coastline of Iran, created in 1983. The marine biota was undisturbed till the port was created. Based on similar studies and drawing on the status of the region before the port possible environmental impacts it may have had are as follows:

- *Tribal fishing villages and related marine biota:* Along the coast there are poor tribal fishing villages where fish is their main source of living. The port is located along fishing villages sparsely populated by indigenous tribal fishing communities, along the southwestern coastline of Iran. These are very poor communities using boats for fishing within 20 km of the coastline. With a deep sea port already in place, fish processing is a major industry at the economic zone at Chabahar.

With increased large ship activity and large mechanised trawler fishing, if the fishing takes place too close to the coastline the fish breeding grounds get destroyed. With dredging, oil spills, and the depletion of the fish catch, the communities' only known source of livelihood will be destroyed. The big issue is loss of income, due to reduced fish catch. This is the only major source of livelihood known to the community in its neighbourhood. This would lead to displacement of the villages, leading to an increase in urban migration out of desperation.

- *Dredging and marine pollution and oil spills:* Dredging of the sea bed for shipping, and oil spills have two major impacts on marine biota. Dredging destroys the sand bed which supports different types of marine biota like molluscs, sea weeds and corals. Oil spills leave behind a thin film of oil that makes the sea water turbid and depletes oxygen in the sea water, bleaching corals and killing all life forms like fish, crabs, oysters, and molluscs.

Smuggling and piracy: There are many tribes in the upper and lower middle level of socio-cultural hierarchy, but at the bottom are former slaves from eastern Africa that had been brought by colonialists and Arab traders, especially Omanis, to the Makran Coastal area. These tribes are known as Darzada, Nokar, Sheedi and Gholams. But very little is known about them or their status in the city. They, most likely, live in the slum surrounding the city. These settlements have very little basic services like drinking water, sanitation and garbage collection. Some have moved into the free economic zone (FEZ) that has not yet developed, and sell smuggled goods. This further encourages piracy, causing a security issue for the ships sailing to the port.

Increase in urban air pollution: Increased heavy vehicle traffic due to cargo movement on the elevated highway is inevitable. With increased traffic there will be increase in air pollution in major cities like Tehran. This leads to increased health hazards, mainly due to increased upper respiratory track infection related morbidity. This requires strict monitoring of air pollution and strict implementation of pollution control norms.

Ruins of archaeological importance: Iran is discovering eco-tourism as a form of development and Chabahar has developed some resorts along its coast line between Chabahar and the nearby ancient settlement of Tis which has heritage resources, including ruins. Tis was a major trading port before Chabahar and is of historical archaeological importance. With increasing eco and heritage tourism Tis could become a major economic development centre. But if not managed sustainably, it could destroy the heritage resource.

India's competence:
India has experience of over ten years for managing deep sea ports and over twenty years of building highways, which has resulted in EIA handbooks by the DOEFCC. Deep sea ports had similar impacts like oil spill, marine biota conservation, and fishing villages of poor fish-workers for which DOEFCC has suggested EIA, with mitigation and adaptation measures. These are implemented in Indian ports in Tadadi, Karwar district, Karnataka and in Dharma Port, Bhadrak district, in Odisha which can be used for training programmes.

7 Ali Paka, Manuchehr Farajzadehb,_ Iran's Integrated Coastal Management plan: Persian Gulf, Oman Sea, and southern Caspian Sea coastlines, https://www.sciencedirect.com/science/article/abs/pii/S0964569107000166

Urban air pollution and its mitigation has been implemented in major metropolitan cities in India. Through various development aid funds provided by World Bank, various missions for providing basic services to rural villages and urban slums, are implemented though the Atal Mission For Rejuvenation And Urban Transformation (AMRUT) and the Swachh Bharat Mission in India.

Various success stories in environmental improvements and governance strategies from India, can be shared with the recipient countries for their capacity building through tailored training and capacity building programmes for specific needs for this project and future similar projects, specific to the stage in project cycle the development assistance is provided. A review of ongoing project at fixed intervals, in addition to end of project review would benefit trilaterally.

5.2 Friendship Road (Myanmar)

India:

India shares 1643 km of border with Myanmar. The North Eastern border is extremely porous due to the mountainous terrain. India's total trade with Myanmar was U$194.6 million and $12.46 billion with Thailand in 2018, as per the MEA website (http://meadashboard.gov.in/indicators/92 country wise breakup).

Land-based trade and connectivity between Myanmar and Thailand, not only gives India, an alternative to the sea route to ASEAN, but also has the potential to provide an Indian strategic counter to development projects promoted by China, which has always maintained a friendly relationship with the military junta.

China:

China shares a 2,129 km border and is a major trading partner with Myanmar. Access to Myanmar's ports and naval installations provides China with strategic influence in the Bay of Bengal, in the wider Indian Ocean region and in Southeast Asia. As China is landlocked on its south western and western borders, these are important. China recently funded road construction linking the New Yangon City project and the deep-sea port at Kyaukpyu, providing the shortest route from landlocked Yunnan province from southern China to the Indian Ocean. China had trade worth $4.44 billion with Myanmar in 2011.

With the new democratic government in Myanmar post 2015, all the major Chinese mega-projects related to hydro-power Myitsone, Sittwe port projects were halted, but the gas pipelines from Sittwe and Kyaukpu to Yunnan province in China are functional. Some projects have been reviewed. A case in point is the Yangon city project as per media report. Myanmar government has decided to open up the New Yangon city project to other foreign firms besides China Communications Construction Company (CCCC), as it is not keen that one single company dominate the mega project according to recent media reports.

The Project:

The Friendship Highway between Myanmar and Thailand, not only gives India, an alternative to the sea route to ASEAN, but also has the potential to promote in land trade for Myanmar with a free economic zone along the road's connectivity. India, Myanmar and Thailand have a trilateral agreement to construct a 1360 km Friendship Highway,[8] so as to upgrade road connectivity – to convert a two lane into a four lane transport and transit corridor between them, that would facilitate movement of goods service and people.

The Trilateral Highway would run from Moreh in India to Mae Sot in Thailand through Bagan in Myanmar. The border posts for regulating and facilitating movement of cargo and passenger vehicular traffic would be at Moreh in India and Mae Sot in Thailand, protocol for which is in the making. The Trilateral Highway represents the most significant step in the establishment of connectivity between India and the South East Asian countries.

Ensuring project continuation: While this project was being implemented, Myanmar, in 2014, expressed its inability to continue participation in the project on financial grounds and backed out of its commitment. India then offered to expedite the project by taking over the commitment of complete project and offered to take on the construction of the road.

Since 2017 India has taken on its construction of two sections of the Trilateral Highway in Myanmar namely:

1. Construction of 120.74 km Kalewa-Yagyi road section,
2. Construction of 69 bridges along with the approach road on the 149.70 km Tamu-Kyigone-Kalewa (TKK) road section.
3. Both these tracks pass through the mountain ranges and hill slopes and through rain forest with indigenous settlements along the way.
4. Private enterprise partnership with the government for transboundary projects is standard operating procedure (SOP) for such ventures, going by other development aid funding agencies.

The work on both these sections were awarded on Engineering, Procurement and Construction mode, in May 2018 for the Kalewa-Yagyi section and November 2017 for the TKK section. The scheduled time for completion of both the sections are three years from the date of commencement at the project site by the executing agency.,[9]

The funds released by Ministry of External affairs through its DAF is $24.47 mln. (Rs. 188.32 crore) out of the approved cost of $197.34 mln. (Rs. 1459.29 crore) for the Kalewa-Yagyi road section (to be completed by 2021) and $0.65 mln. (Rs. 4.84 crore) out of the approved cost of $50.25 mln. (Rs. 371.58 crore) for the 69 bridges along with approach road on the Tamu-Kyigone-Kalewa (TKK) road section to be completed by 2023. Both the projects are being funded by Government of India under grant assistance to the Government of Myanmar.

8 (Ministerial meeting 23 Dec 2003- media centre https://www.mea.gov.in/press-releases.htm?dtl/8948/ministerial+meeting+on+-trilateral+highway+project+among+indiamyanmarthailand+on+december+232003

9 Shri Mansukh L Mandaviya, MoS, Road Transport & Highways gave this information in 'Reply to Lok Sabha question (Press Information Bureau, Government of India, Ministry of Road Transport & Highways, 03-January-2019 17:03 IST Ref: India-Myanmar-Thailand Trilateral Highway. https://mea.gov.in/press release).

The contracts for the projects have been given to Indian companies. This will be followed by a tri-partite agreement for motor vehicles, with protocols for regulating and facilitating movement of cargo and passenger vehicular traffic, subsequently. India is sensitive to indigenous communities and their needs as well as the need to conserve local forests, fauna and flora. There was a delay in project in the construction phase of the project, as the local indigenous community in a settlement wanted a realignment of the road construction.

Environment and Social Security Impacts:
The two road projects are an mainly expansion of existing roads and building of new bridges parallel to existing bridges. But both these roads pass through mountain ranges and tropical monsoon forests and affect indigenous communities occupying the buffer zones of these forests.

The SoP for the construction phase of projects that India is involved in requires environment and social sustainability, and impact assessment, monitoring and mitigation as these involve sensitive ecosystems and indigenous communities. India reviews the ESSIA status at the construction stage and prepares mitigation action plans which involve mid-project reviews, if demanded by indigenous communities, sometimes causing delays in project implementation.

Currently, what is missing at the DAF funding phase is this environmental sustainability dimension. This leaves India vulnerable to the criticism of not managing its DAF projects in an environmentally sustainable manner.

ESSIA during the project that will need monitoring, mitigation and action plans:
Myanmar has a Ministry of Natural Resources and Environmental Conservation combined with Ministry of Mines. It has the necessary organisational structure and processes required for any infrastructure project impact assessment. It is capable of status documentation and environmental impact assessment of the road project across India and Thailand. Therefore, the ESSIA monitoring and mitigation and actions plans can be prepared by them with the help of additional TA and CB, as needed, by India.

Air pollution: Increase in particulate matter and carbon dioxide due to heavy machine operations in construction phase – Monitoring and mitigation.

Water pollution: Given the heavy rainfall in the tropical rainforest surrounding the road way, mud and silt over flowing from construction site will end up polluting small and large water streams – Monitoring and mitigation.

Land slide risks: During the various phases of construction and subsequent operation phase of the road project, landslides are often inevitable due to road widening in the hilly regions. The road is widened towards the slope of the hills. Mountain ranges are also subject to earthquakes and hence need – Monitoring and mitigation.

Social security of indigenous communities: Indigenous communities along North-Eastern part of India, northern belt of Myanmar and Northern Thailand, described as Zoomia or Zoram, are neither primitive nor backward nor underdeveloped, as per academic scholars,[10]. They live mainly in the forested hills practicing slash and burn agriculture along with a hunting and gathering lifestyle. This lifestyle is a conscious choice by these indigenous communities, to resist domination by Myanmar. They, even now, continue to resist Chinese mega projects and are responsible for halting these projects, as per media reports.

Of interest, for the current project, are the Rakhine and Chin communities occupying territories along the road projects. Displacement and resettlement due to infrastructure projects is a serious issue as their lifestyles are dependent on the hilly forests they occupy. Their demand is much more than just resettlement and rehabilitation, they want autonomy, territorial protection and an equal share in profits from the project.

For example, in the Kalewa-Yagyi road section the local community demanded realignment of the road, once the project work had already begun. The demand could not be met, as the new alignment of road would pass though protected forests. But the demand had to be reviewed by both the countries, which caused a delay (MEA Official interviewed 2020, March). Thus, a detailed action plan in consultation with the impacted indigenous people, and their settlements boundaries, could have avoided project such delays.

Forest impact: Forest and indigenous communities are intertwined in a complex way. The forest area (% of land area under forest) in Myanmar, as per media reports, was 43.63 as of 2016 and housed over 30 species of wild life. These primary forests, in particular tropical moist forests, include the most species-rich, diverse terrestrial ecosystems in Myanmar, with minimal human activity. There are five national parks, 30 conservation parks, and four nature parks, in Myanmar.

Deforestation and smuggling of teak wood, is a major cause of loss of biodiversity. Habitat conservation is vital for stemming this loss. Conservation efforts have focused on protecting areas of high biodiversity. Efforts are made to conserve these forests but with the unstable political situation in the region, it is difficult to reverse the rapid ongoing deforestation.

Strict adherence to the boundaries that cover the core areas and the buffer zones is essential to ensure their protection. Ensuring forest protection will require a 'forest action plan' in consultation with the impacted indigenous people of those regions. These negotiations, which require diplomatic handling, often cause project delays.

India's Competence:

India has, since its independence, been dealing with the indigenous tribal communities living in similar ecosystems, in states in its North Eastern regions. India has dealt with tribal unrest and arrived at peaceful negotiations in these states. Mizoram with Khasi tribes has been supporting the Friendship Road connectivity. Moreh, in the state of Manipur, is designated to be the last stop on India's side of the road.

10 James C. Scott. 2009. 'The Art of Not Being Governed'. Yale University Press ISBN 9780300152289)

India has a large forest reserve, a National Forest Conservation Policy, 1988, and a Ministry (MoEF-CC) that deals with forest conservation. It also has a website created to deal with acts, rules, protected species etc. including user manuals for environment forest and wild life (single window) clearance for projects (http://parivesh.nic.in/acts.aspx?id=FC). India has nature parks, protected forest and biodiversity conservation areas that it has taken care of. Issues of shared benefits with local communities in buffer zones are dealt with through community forestry plans. Profit sharing with local communities through CSR of major infrastructure projects in India by private companies investing in these projects, is now a best practice.

Negotiating with tribal communities (Ministry of tribal affairs, GoI, https://tribal.nic.in/), along with non- state actors (NGOs), and ensuring willing participation at the EIA stage, results in an action plan, that is implemented throughout the project lifetime. These action plans include indigenous communities and are recognised and accepted by tribal communities, where relevant. India has ensured this across multiple projects, in the states of Orissa, Maharashtra, Madhya Pradesh and the NE states, in its public sector iron and steel industry, trans-state highways, and oil and gas projects.

Thus, India has experience in dealing with forest conservation and dealing with indigenous communities in its domestic projects, over the last several decades. These experiences can be shared to train officials and stakeholders in Myanmar and Thailand, through capacity building training programs and ongoing project reviews, in addition to an end of project review.

5.3 Rooppur Nuclear Power Plant (Bangladesh)

India:

Besides geopolitical security, ensuring energy security is an important aspect of India's security strategy. Energy security is defined as uninterrupted supply of energy sources, at affordable prices. This involves creating multiple resources mix, reducing cost by using energy efficient technologies, and creating indigenous competence in technologies imported into the country- nuclear energy is one of them.

For years, India has been trying to make a mark in the global nuclear commerce market that is worth multi-billion dollars without a lot of success, since it is not a member of the Nuclear Suppliers Group (NSG). Entering the international nuclear energy trade is important for India's rising ambition of being an emerging power in Asia.

China/ Pakistan:

China is a recognised as a 'nuclear weapon state' as per the nuclear non-proliferation treaty. Media reports state that China desired to cultivate Pakistan as a strategic partner in South Asia as part of its regional balance of power strategy vis-à-vis India. In 2015, China offered to fund and build a nuclear power plant in Bangladesh, but the project did not go through. Media reports now say that China is offering Bangladesh a second nuclear power plant, to be built and funded by China.

China has the technology to produce nuclear power plants and nuclear weapons. It helped Pakistan to set up its nuclear power plants. In 1991, China agreed to supply Pakistan with its indigenously developed Qinshan-1 nuclear power plant. Construction on Chashma Nuclear Power Plant-1 (CHASNUPP-1 or C-1) began in 1993, and the 300 MWe reactor became operational in May 2000. Since then three more units in Chasma are under construction in Karachi and are scheduled to be operational in 2021 with that Pakistan will be producing 3,346 MWe of nuclear energy by 2022[11].

The Project:

With the Rooppur project India gains a foot hold in the nuclear commerce. This is the first joint initiative by India and Russia to undertake atomic energy projects in developing countries. India is not a member of the Nuclear Suppliers Group (NSG) and hence cannot participate directly in the construction of atomic power reactors. This will also be the first time Indian companies will be able to participate in a nuclear power project, in another country.

Bangladesh has framework agreements for peaceful nuclear energy applications with the US, France and China. India's investments and development projects are based on the development priorities of the country concerned and these, stand firmly on their own merits. India, has regularly extended financial and development assistance to Bangladesh.

A third Line of Credit (LOC) of $4.5 billion to Bangladesh was announced in April 2017 during Bangladesh PM Sheikh Hasina's visit to India. This $4.5 LOC was the biggest LOC that India has so far extended to any country. This covers a wide range of areas, such as power supply, port development, connectivity (rail and road), civil nuclear energy etc.

The three-country treaty was signed on 1 March 2018 between India, Russia and Bangladesh. According to Rosatom, the Russian company providing the reactor for the power plant, the agreement allows Indian firms in construction and installation works in the "non-critical" category for the Rooppur plant.

The plant with the capacity for power production of 2.4 GW is being set up in Rooppur, in the Ishwardi sub-district of Pabna district, on the bank of the river Padma, 121 km west of Dhaka, in northwest Bangladesh. Construction began in 2017 and the first unit is expected to complete by 2023 and the second unit by 2024. The total estimated investment is of $12.65 bn. The agency implementing the project is the Bangladesh Atomic Energy Commission. As mentioned earlier, the reactor is being supplied by Rosatom, a Russian state corporation, headquartered in Moscow that specialises in nuclear energy.

11 (https://mea.gov.in/lok-sabha.htm?dtl/31574/QUESTION_NO2840_INFRASTRUCTURE_DEVELOPMENT_IN_BHUTAN_AND_BANGLADESH LOK SABHA Question)
12 Essam E. El-Hinnawi. 'Review of the Environmental Impact of Nuclear Energy' May 1977. https://inis.iaea.org/search/search.aspx?orig_q=RN:8303221)

Environmental social security impact:
Here, the focus is only on possible environmental impacts 'onsite', and will not take into account fuel milling, mining, and manufacture of fuel elements, and its environmental impacts, before the fuel arrives at the reactor site in Bangladesh. ESSIA is taken very seriously hence listed in details below.

Advantages:
There are certain advantages to own a nuclear power plant in comparison with coal fired plant producing same amount of energy. Whereas a nuclear power plan has certain possible advantages as listed below.[12]

For generation of 1000-MWe of electricity generated by a coal-fired plant and a nuclear power plant:

Table 1: Electricity generated by a coal fired and nuclear power plant

	Coal fired power plant	Nuclear power plant: Light Water Breeder Reactor (LWBR)
Effluent (waste water generated)	Millions of tons	1500 ton/alpha particle
Land use	330 to 400 acres	70 to 140 acres
Per unit water consumed (in Cubic Meters per second Cu.Sec)	100 Cu. Sec	140 Cu. Sec

Thus, there is reduced land use in a nuclear plant and reduced effluent discharge in the environment in a nuclear power plant. Bangladesh, with high density of population of 1,115.62 people per square kilometer (2020 census data), power projects needing less land is a preference. Given that the Ganga and its tributaries are perennial rivers and crisscross the country, the extra water requirement for the project is not a concern.

Possible disadvantages of a nuclear plant:
There are International Atomic Energy Agency (IAEA) guidelines for a nuclear power plant to which strict adherence is expected. With India partnering and being more familiar with development and environment issues, certain mitigation measures are possible for Bangladesh, against such a strict adherence. These are listed below:

Exclusion Zone area: These exclusion zone areas are marked in concentric circles of 2.5 km radius, 5 km radius and 30 km radius from the site of the nuclear plant. No population habitation is allowed between a 5–30 km radius other than plant employees who are allowed within a 2.5 km radius.

Given the high density of population in Bangladesh, such an exclusion zone restriction would imply displacement and relocation of 10,000,000 people living in the surrounding areas, as rescuing them in case of disaster will be very difficult. These zonal restrictions of habitation are revised by India, which is a densely populated country. Bangladesh can adopt these revised norms given similar geoclimatic regions. [13]

Disposal of spent water into the water body: Hot water generated out of cooling of the nuclear reactors and steam used for turbines is about 30 to 40 degrees Celsius when disposed into the water body, in this case the Padma river – a tributary of the Ganges river. This causes thermal pollution in water body, leading to a rise in pH levels and a reduction in dissolved oxygen, killing fish and other aquatic life forms leading to eutrophication, that does not support any life forms other than algae and aerobic microbes.

Natural disasters: Earthquakes are a major risk factor. An earthquake beyond 7 on the Richter scale can cause serious damage but the Rooppur plant site is seismically quiet. Tsunamis are a major threat to nuclear power plants. A powerful tsunami in the sea could launch enough water through a major river to flood a power plant. But the Padma river is a tributary of the Ganga and not a very big river.

Disposal of spent fuel nuclear waste: Around 20–30 tons of high-level waste is produced per month per nuclear reactor. Radioactive waste generates gamma ray radiation – a direct radiation hazard. Such radioactive fission products could pose a direct radiation hazard, contaminate soil and vegetation, and be ingested by humans and animals. Human exposure at high enough levels can cause both short, and long term illness and exposure to radiation can affect multiple generations. At present this waste is stored safely on-site.[14]

Terrorism: There is a serious risk of weapons-grade plutonium being stolen, and providing an opportunity and motive for nuclear blackmail. This risk has been mitigated by protecting the site via a series of physical barriers, employing strict security measures, a trained security force and making pre-hiring investigation and training mandatory.

Accident: If a nuclear power plant accident occurs, the environment and surrounding people could be exposed to high levels of radiation and this could result in exposed sickness for generations due to gamma ray radiation.

India's competence:
India has set up its nuclear power plants in the past with Russia. The most recent, Kudankulam Nuclear Power Plant (KNPP), in Tamil Nadu, is one of two AES-92 design VVER-1000 units under construction under the aegis of the of the Russia-India project, and commissioned in two phases, in 2013 and 2016 respectively. These are similar in design and technology to the ones developed by Russia for Bangladesh. They use boiling water to cool the core reactor when operational.

13 Tausif Ali, Mohammad Shidujaman et all (6 others) 'Feasibility Study of RNPP Rooppur Nuclear Power Project in Bangladesh'. January 2013 https://www.researchgate.net/publication/276421020_Feasibility_Study_of_RNPP_)

14 Md. Mosaddequr Rahman Ferdous Ahamed 'Biodiversity in the Padma Distributary of the Ganges River, Northwestern Bangladesh: Recommendations for Conservation'. December 2012

Indian companies have participated in construction and installation works in the "non-critical" category for nuclear the KNPP power plant. This includes every construction outside the main core reactor building, such as the setting up of a compound wall, building roads, some security systems, residential areas and office blocks, and subsequently constructions for storage and disposal of spent fuel etc. as well as creating and maintaining a green buffer zone.

India is familiar with the ESSIA planning and implementation procedures which require a very detailed risk analysis that covers the risk of weapons-grade plutonium being stolen, and a detailed disaster management plan. Armed with this experience, and with a similar sociocultural, economic and environmental profile to Bangladesh, India has the competence to take on the ESSIA and implement it.

In addition, in case of Bangladesh, there would be training and capacity development (T&CD). This will be for the staff that would be operating the nuclear power plant as well as awareness creation for information sharing, and preventive practices for disaster management, for the local community around the nuclear plant. Since Bengali, the national language of Bangladesh, is also one of the state languages in India, such a training would be facilitated further. (Interview with MEA official May 2020) Thus, India will play a significant role in the tri-party nuclear power agreement.

5.4 BIMSTEC Electricity Sharing (Myanmar and Thailand)

India:

All the well-established examples of regional energy cooperation, like the European Union, the South African Power Pool, or the Gulf Cooperation Council, have the underlying foundation of regional stability and peace as one of their enablers and drivers. The "South Asian Association for Regional Cooperation (SAARC) Framework Agreement for Energy Cooperation (Electricity)" was signed by all SAARC member states including India on 27 November 2014 during the 18th SAARC Summit, held in Nepal for cross border electricity trade, with the underlying foundation of regional stability and peace as the enabler. [15]

Under this framework, the High Voltage DC (HVDC) station in Bheramara, in Bangladesh was inaugurated on September 2018, to provide a safe and reliable interconnection of the power grids of India and Bangladesh, which will enable supply of 500 MW of power from India to Bangladesh [16]. This marked a new beginning in cross border trading of electricity, which will take care of peak demands in Bangladesh. The alternative is, increasing generation costs to peak capacity, as most of these power plants are old and ageing or build new power plants.

China:

Concurrent with 2014 SAARC framework agreement, China has invested in new projects producing power in Nepal, Myanmar, Sri Lanka, and Bangladesh, with loans from its China Exim Bank and using its own construction company.

According to media reports on November 18 2019, Nepal's China-funded 60MW Hydropower Project in Upper Trishuli 3A Hydropower Project was inaugurated. The project which was developed by Nepal Electricity Authority (NEA), and constructed by China Gezhouba Group Company, is located at the border of Rasuwa and Nuwakot districts in the central region of Nepal. NEA is to repay the concessional loan of around $116 million from China Exim Bank, of the total cost of $125 million, over 25 years at 1.2% interest per month.

The media also reported on 13 March 2020 that China had been negotiating with Myanmar for a power transmission connection from its Yunnan province to Kachin district in Myanmar, and an MoU has been signed for new power projects across Myanmar, enabling China to export surplus electricity at at concessional rates. This would reduce the need for power imports from Thailand through the grid interconnection that already exists under BIMSTEC.

In April 2019 and October 2019, respectively, Payra 1320 MW Thermal (Coal) Power Plant Project (1 and 2 Phases) were commissioned in Bangladesh as a joint venture created on a turnkey basis between Bangladesh-China Power Company (Pvt) Limited (BCPCL) with an investment of $500 million by the Chinese government. The project faced environmental protests. China is negotiating with Thailand for a future renewable energy project. [17] By providing the capital and technology, China is helping these countries achieve 100% energy coverage, thus eliminating the need for trading energy within the region as initiated by India.

The project:

Bay of Bengal Initiative for Multi Sectoral Technical and Economic Cooperation (BIMSTEC) is a regional organisation consisting of seven members located in the littoral and adjacent areas of the Bay of Bengal – Bangladesh, Bhutan, India, Myanmar, Nepal, Sri-Lanka and Thailand. The MoU signed among these nations is to provide a broad framework for parties to cooperate over grid interconnections for the trade of electricity, with a view to promote rational and optimal power transmission in the BIMSTEC region.

An MoU signed on August 8, 2018, provides a broad framework for "Plan of Action for Energy Cooperation in BIMSTEC", ensuring grid interconnection in electricity, across nations. It provides a broad framework for "Plan of Action for Energy Cooperation in BIMSTEC", ensuring grid interconnection in electricity, across nations.

India is the largest country in the region in terms of geography (67%) population (80%) and GDP (74%), followed by Thailand in terms of GDP, Myanmar in terms of area, and Bangladesh in terms of population. India is therefore is playing key role in driving energy trade in the region. Except for Thailand and Bhutan, none of these countries have 100% access to electricity.

The justification for power trading is that it helps the socio-economic development of nations. Bangladesh offers the best illustration of relationship between, electricity access per capita consumption and economic grown. Between FY2015-FY2019 it has increased its power access from 75% to 95%, its per capita power consumption from 251-375 MWhrs (Mega Watt hours) and its GDP growth rate increased from 6.55% to 8.13% in five years.[18]

15 (SAARC Framework Agreement for Energy Cooperation (Electricity) 27November 2014 https://powermin.nic.in/en/content/saarc-framework-agreement-energy-cooperation-electricity

16 (Remarks by Prime Minister at the Inauguration of India-Bangladesh Grid Interconnection, Bheramara & Laying of Foundation Stone of Thermal Power Project, Rampal, Bangladesh, September 2018 https://mea.gov.in/Speeches-Statements.htm/dtl/22289/remarks+by+prime+minister+at+the+inauguration+of+indiabangladesh+grid+interconnection+bheramara+amp+laying+of+foundation+stone+of+thermal+power+project+rampal+bangladesh

17 Payra Power Plant https://www.nsenergybusiness.com/projects/payra-power-plant/

Environmental and social security impacts:

In a power trading project, cross border interconnections have already been established between India-Bangladesh, India-Bhutan, India-Nepal, India-Myanmar, and Myanmar-Thailand. The biggest environmental impact of a grid interconnection is the building of additional transmission lines if needed and power substations where needed.

The ESSIA for these multilateral treaties need to incorporate resettlement impacts and indigenous community impacts for grid connectivity. Special sensitivity is needed to right of way for animals and communities during the laying of transmission lines and the construction phase. Terrestrial and biological biodiversity mitigation measures must also be taken into account while laying the High Voltage Transmission Lines (HVTL).

Disaster risks due to tower construction, and high-tension wire breaking away, mainly during natural disasters, is another risk. These environmental risks are of particular importance and need to be taken into account, as there would be new construction of transmission lines and substations created for such trading and hence, should be an important part of power transmission agreements. This needs to be worked out in consultation with local governance authorities that the communities accept and respect, especially when dealing with indigenous communities.

A common environmental code across borders is important when cross-border trading is established, as each country is allowed to retain their local codes and laws within the country. The legal details are being worked out under BIMSTEC for creating a common minimum grid code to further this grid connectivity. India can take the lead in this ESSIA common minimum code for environmental and social safety impact assessment with the Department of Environment of partner countries' department of environment.

India's Competence:

MoEFCC has recommended a hand book for power transmission that can be used as a guideline for environmental impacts of high voltage transmission lines and HVDC substations to be laid for grid interconnections across different countries. India has the relevant experience in ESSIA for transmission lines to produce connections across HVDC substations. India has put up these lines across the country while conducting ESSIAs across all aspects, including social impact assessment, and passage way for terrestrial animals and human communities along the transmission lines. This is a very relevant for TA and CB in grid connection projects. [19]

Modern technology applications, like fuel cells, clean coal technologies, energy storage, energy integration with biofuels, smart grids etc. are new solutions emerging specific to a fuel use, in developing local markets for energy.

18 Prospects for Regional Energy Cooperation and Cross Border energy Trading in the BIMSTEC region. https:/BIMSTEC+background+paper&rlz=1C1CHBF_enUS753US753&oq=BIMSTEC+background+paper&aqs=-chrome..69i57j33.17873j0j7&sourceid=chrome&ie=UTF-8

6. Conclusion

As the case studies indicate, none of projects are 'green field' projects. They involve intervention in different phases of ongoing projects, making skilful diplomacy a critical element in each task, as follows:

1. Operation and Maintenance phase in multimodal transport project in the Chabahar treaty with Iran and Afghanistan.
2. Construction phase, in two sub-projects in the tri-party road connectivity project with Myanmar and Thailand.
3. Construction of non-critical construction and installation works for the nuclear reactor, in Bangladesh.
4. Details pre-planning and planning phase, and operation phase of BIMSTEC.

It is possible to add an appropriate ESSF/P at the MoU stage, along with financial and economic criteria in India's DAP projects. While other security and strategic concerns for selecting the countries and projects may be the prime motive for project selection, ensuring best practices in ESSF/P in India's funded projects will be a good strategy in the long run. This is consistent with India's foreign policy as well as with the globally signed treaties, for environmental sustainability. It is also a best practice adopted by other multilateral banks. Insurance and pension funds, and more recently, commercial banks lending for infrastructure projects, are also moving in that direction. It would be the next step in DAP project funding.

19 Environmental and social Impact Assessment of 220 kV Power Transmission line: Manali to Nalagarh, Himachal Pradesh India 2014, for AD Hydro Power Ltd. WWW. Erm.com