Recovery Bonds

Innovative Sovereign Bond Structures for Financing a Sustainable Recovery

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May 2021

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ACKNOWLEDGEMENTS

The authors of this paper would like to acknowledge Professor Warwick J. McKibbin, Vice Chancellor's Chair in Public Policy at the Australian National University, for his input and review, as well as CPI colleagues Barbara Buchner, Bella Tonkonogy, and Rob Kahn, for their input, internal review, and editing.

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EXECUTIVE SUMMARY

This paper assesses the potential for Recovery Bonds to help sovereigns raise capital to fund a sustainable and climate-resilient post-COVID recovery. As climate impacts become more severe, countries need targeted approaches to capital borrowing and deployment that is designed to decrease emissions, increase renewable energy distribution and other climate mitigation and adaptation solutions, and create long-lasting green jobs for a secure economy.

Recovery Bonds link a country's borrowing to the targeted deployment of capital, designed to facilitate a low-carbon sustainable recovery that can bring economic, social, and climate priorities together. This paper lays out a prospective blueprint to facilitate the issuance of Recovery Bonds, focusing on two potential use cases: sovereign green bonds as part of issuances financing recovery, and bonds linked to fossil fuel subsidy reform (FFSR).

Sovereign green recovery bonds and FFSR bonds differ in their contractual development, but both produce a climate-beneficial outcome. While green bonds focus on the use of the proceeds that are reserved for qualified projects, a bond linked to the reduction of fossil fuel subsidies focuses instead on how bondholders could be repaid.

OPPORTUNITIES AND CHALLENGES OF SOVEREIGN GREEN BONDS

Sovereign green recovery bonds are similar to traditional green bonds, where the use of proceeds are earmarked for eligible projects with environmental or climate benefits, but issued by national or sub-national governments to finance a sustainable recovery. Previous sovereign green bonds have financed projects such as solar power plants, waterways maintenance, landscape conservation, and waste management. Since 2016, 20 sovereign green bonds worth USD 89.7 billion have been issued to considerable investor demand. Sovereign green recovery bonds could be a suitable financial tool for both developed and developing economies to support a green recovery, as well as an opportunity to demonstrate their commitment to sustainable development and climate resilience.

As sovereign green bonds focus on the development of environmentally-friendly impacts and outcomes, they require both the use of a green bond policy framework

and third-party assurance for the environmental benefits of project outcomes. This blueprint provides a detailed outline of the steps necessary to issue such bonds. A case study is also included on combining a sovereign green recovery bond with performance-based Incentives to accelerate retirement of mid-age coal power plants in India.

OPPORTUNITIES AND CHALLENGES OF FOSSIL FUEL SUBSIDY REFORM BONDS

The International Energy Agency (IEA) estimates that the world spends USD 320 billion annually on fossil fuel subsidies (FFS). By eliminating or reducing FFS, developing economies can use potential future savings from planned FFSR as the notional basis to repay a bond issued today. The FFSR bond is essentially a sovereign bond targeted towards green or SDG-oriented investors with an accompanying narrative of commitment to climate action, as reducing subsidies will reduce fossil fuel use and subsequent emissions.

To date, no country has issued an FFSR bond. Known challenges to FFSR bonds include estimating the right energy prices and subsidies, managing the impact of reforms on current and future energy prices as experienced by consumers, and building political and social support. This blueprint lays out a roadmap for how a country could issue an FFSR bond. Much like a green bond, there is a strong opportunity to invest in green jobs and sustainable infrastructure with an FFSR bond, although it is not a requirement of the bond contract. The removal of FFS is designed to create direct benefits, such as a more level playing field for renewables and clean technologies, while also decreasing the country's exposure to stranded assets.

CONCLUSION

Both sovereign green bonds and FFSR bonds offer a promising framework to deliver sustainable recovery finance. There are significant opportunities for investment in key sectors like renewable energy, clean water supply, and waste management, as well as the potential to reduce reliance on fossil fuels. These sectors are particularly important to a post-COVID-19 economic recovery and will require trillions of dollars of investment over the coming decades. Both bonds have the potential to fund a sustainable recovery with a focus on climate adaptation and mitigation, create long-term jobs in the green energy sphere, and lower country emissions.

TABLE OF CONTENTS

1. INTRODUCTION

The COVID crisis triggered the world's worst recession[1] since the Second World War. Global contraction was projected[2] to be -3.5% in 2020 with up to 100 million people pushed to extreme poverty due to the crisis.[3] More than two decades of progress on Sustainable Development Goals (SDGs) could be wiped out.[4] According to the International Labour Organization (ILO), the equivalent of 225 million full-time jobs were lost in 2020.[5]

The unprecedented nature of the crisis triggered unprecedented responses by governments to limit the human and economic impact. Governments across the globe unleashed massive recovery efforts in the form of direct budget support, public sector loans, equity injections, guarantees and several quasi-fiscal measures. These efforts have already totaled more than USD 10 trillion[6] and continue to rise as further measures[7] are underway. While global economic activity has seen some recovery after pandemic-related health measures were eased, economic recovery remains uneven, uncertain, and largely incomplete.[8]

The COVID crisis has clarified both the risks of climate change and opportunities to address it. As efforts move from immediate crisis containment to recovery, sustainable measures should be made more central to the effort. In addition to the climate and environmental benefits, a sustainable recovery also has strong economic advantage. Green projects create more jobs, generate higher short-term returns, increase long-term savings[9], and have a higher economic multiplier.

The unprecedented financial interventions to deal with the COVID crisis also provide an opportunity to align the financial system and businesses with climate goals and sustainable development. Economic recovery packages need appropriately linked

[1] https://www.telegraph.co.uk/global-health/climate-and-people/pandemic-set-global-development-back-25-years-just-25-weeks/
[2] https://www.imf.org/en/Publications/WEO/Issues/2021/01/26/2021-world-economic-outlook-update
[3] https://www.reuters.com/article/us-health-coronavirus-imf/imf-says-10-trillion-spent-to-combat-pandemic-far-more-needed-idUSKBN23I27P
[4] https://www.telegraph.co.uk/global-health/climate-and-people/pandemic-set-global-development-back-25-years-just-25-weeks/
[5] https://www.ilo.org/wcmsp5/groups/public/@dgreports/@dcomm/documents/briefingnote/wcms_767028.pdf
[6] https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19
[7] The recovery measures however have been concentrated with 88% of the spending in advanced economies. In percentage terms, these recovery packages translate into approximately 5% of GDP for advanced economies and 2.2% of GDP for developing countries.
[8] https://www.bis.org/review/r200914b.htm
[9] https://www.theguardian.com/environment/2020/may/05/green-stimulus-can-repair-global-economy-and-climate-study-says

financial instruments for targeted deployment of capital and to facilitate a low-carbon sustainable recovery that can bring economic, social, and climate priorities together. This paper lays out a blueprint to facilitate issuance of Recovery Bonds, highlighting two variations or "use cases:" sovereign green recovery bonds, and bonds linked to fossil fuel subsidy reform.

2. FINANCIAL INSTRUMENTS FOR SUSTAINABLE RECOVERY: RECOVERY BONDS

The financial resources needed for the post-COVID recovery phase are likely to be large enough to require sovereign borrowing. Sovereign bonds are debt instruments that are issued by national governments to finance their expenses. If a country has sufficient available capacity to take on more debt, then a bond issuance is a convenient way to mobilize financing compared with other means such as raising domestic revenue or improving economic efficiency that would take much longer to materialize. While debt within a limit helps a country to finance development projects and programs, and thereby growth, too much debt could lead to a default[10]. The global public debt-to-GDP ratio is at record levels and recently crossed 100% due to post-COVID borrowing.[11] However, the IMF has come out in support[12] of higher levels of borrowings as a means to fight the pandemic. This is where Recovery Bonds could come into play.

2.1 RECOVERY BONDS

Recovery Bonds refer to sovereign debt instruments issued with the primary aim to aid the economic recovery after the COVID containment phase. Funds raised through recovery bonds could also have direct benefits for climate mitigation and/or adaptation, help countries reach their Nationally Determined Contributions towards Paris Agreement goals, and, depending on the approach, may also be deployed to help struggling businesses, generate employment, improve healthcare infrastructure, and avoid systematic defaults in the financial sector.

[10] A wide range of factors contribute to a country's debt carrying capacity (or to potential default when this debt carrying capacity is exceeded). Some of these factors include quality of institutions, strength of economy, debt management capabilities, fiscal policies and macroeconomic fundamentals.

[11] https://www.iif.com/Portals/0/Files/content/Global%20Debt%20Monitor_Feb2021_vf.pdf

[12] https://www.theguardian.com/business/2020/oct/14/imf-urges-governments-to-borrow-to-fight-impact-of-covid-19

2.2 USE CASE 1: SOVEREIGN GREEN BONDS

Green bonds[13] are bonds where use of proceeds are earmarked for eligible projects with environmental or climate benefits. If sovereigns plan to issue new debt to help fund domestic recovery in the wake of the pandemic, they could consider issuing green bonds as part of the mix of issuances, as these could be a suitable instrument to raise capital to support green recovery for both developed and developing economies. There are likely to be ample opportunities to use funds in a manner consistent with requirements for a green bond and countries could use them to demonstrate commitment to sustainable development and climate goals, targeting both short-term economic recovery and long-term changes aligned with sustainable growth.

In 2019, annual green bond issuances reached USD 257 billion[14], largely driven by corporate issuers. However, the sovereign green bond market is quite small compared to the overall green bond market. As shown in Table 1, sovereign green bonds have been limited to date, accounting for only USD 10.45 billion, or less than 4% of the green bond market, in 2020[15]. However, sovereign green bonds, whenever issued, have attracted strong investor interest with average over-subscription of four times. The three bonds issued in 2021 thus far (as of March 2021), when considered alone, have an over-subscription average of seven times.

Table 1: Key sovereign green bond issuances (2016 – Q1 2021)[16]

Year of issue	**Issuer**	**Amount** (USD eqv. USD Bn)	**Debt securities out-standing** (USD Bn)	**Green bonds as % of debt securities outstanding**	**Oversub-scription of green bonds (multiple)**	**GB potential based on oversub-scription** (USD Bn)
2021	Hungary	1	108	0.93%	7	7
2021	France	8.3	2728	0.30%	4.9	40.67
2021	Italy	10.2	2550	0.40%	9.4	95.88
2020	Luxembourg	1.8	14	12.86%	8.3	14.94
2020	Sweden	2.3	149	1.48%	2	4.6

[13] https://www.icmagroup.org/green-social-and-sustainability-bonds/green-bond-principles-gbp/
[14] https://www.climatebonds.net/resources/reports/2019-green-bond-market-summary
[15] https://www.climatebonds.net/2021/01/record-2695bn-green-issuance-2020-late-surge-sees-pandemic-year-pip-2019-total-3bn
[16] Data compiled from multiple sources

2020	Egypt	0.75	41	1.8%	5	3.75
2020	Mexico	2.1	341.2	0.6%	2.5	5.25
2020	Germany	5.8	1296.6	0.4%	5	29.00
2019	Netherlands	6.7	297.5	2.3%	3.5	23.45
2019	Hong Kong	1	16.3	6.1%	3	3.00
2019	Chile	6.2	55.5	11.2%	4	24.80
2018	Indonesia	2	195.4	1.0%	3.8	7.60
2018	Belgium	8.2	397.7	2.1%	3	24.60
2018	Lithuania	0.0239	11.9	0.2%	4	0.10
2018	Ireland	5.7	119	4.8%	NA	NA
2018	Seychelles	0.015	NA	NA	NA	NA
2017	France	25.5	1,745.1	1.5%	3	76.50
2017	Fiji	0.047	NA	NA	2	0.09
2017	Nigeria	0.0416	NA	NA	1.01	0.04
2016	Poland	4.3	170.5	2.5%	2	8.60

Based on the average oversubscription rate, the immediate potential for sovereign green recovery bonds is around 4% of the sovereign debt securities outstanding. A light-touch extrapolation of this data over just the EU states (as an example) indicates immediate potential to issue USD 350 billion of sovereign green recovery bonds.

Investors in sovereign green bonds usually include pension funds, life insurance funds, commercial banks, central banks, and debt funds looking for relatively safer assets that are also climate friendly. Table 2 illustrates the distribution of participating investors in the green bonds of Indonesia, Belgium, France, and Poland.

Table 2: Type of investors in select sovereign green bonds[17]

	Fund/Asset managers	Banks	Pension funds/Insurance firms	Sovereign wealth funds/Central banks/Official institutions	Hedge funds/Others
Indonesia (2018)	32%	26%	18%	15%	9%
Belgium (2018)	33%	15%	21%	26%	5%
France (2017)	33%	21%	39%	4%	3%
Poland (2016)	66.6%	15.9%	7.8%	9.2%	0.5%

Among official institutions, there is also growing demand for green bonds. The key among these are central banks, whose foreign exchange reserves globally reached USD 12.7 trillion[18] in 2020[19]. Managers of reserves prioritize liquidity and safety in their asset allocation decisions. Therefore, to help central banks incorporate environmental sustainability in their reserve management, the Bank of International Settlements (BIS) launched two open-ended funds for central banks' investments into green bonds, the first in 2019 and the second in 2021, totaling USD 2 billion[20]. The fund expects that, in addition to boosting demand, the aggregated investment power of central banks will help influence the behavior of green market participants and have some impact on further development of green investment standards.

2.2.1 USE OF PROCEEDS AND TRACKING APPROACHES

Table 3 summarizes the use of proceeds and tracking approaches for select sovereign green bonds. The projects financed includes both new projects and operating projects refinanced using proceeds from the green bonds.

[17] Data compiled from annual reports on green bonds of given countries
[18] https://www.bis.org/publ/qtrpdf/r_qt1909f.htm
[19] https://data.imf.org/?sk=E6A5F467-C14B-4AA8-9F6D-5A09EC4E62A4
[20] https://www.bis.org/press/p210125.htm

Table 3: Use of proceeds and tracking approaches in select sovereign green bonds

Sovereign Green Bond	Examples of projects financed[21]	Tracking approach[22]
Indonesia (2018)	Solar power plants, mini-hydro power plants, smart street lighting, double track railways, solid waste management	Proceeds managed within the government's general account from where the disbursements to relevant ministries are done for funding projects. The line ministries track and report to Ministry of Finance on use of proceeds.
France (2017)	Tax credit for organic farmers, waterways maintenance, conservation of landscapes and biodiversity, energy transition tax credit, energy access	The proceeds are managed in the general account with full transparency on allocation of proceeds. The settlement finance bill presented in the parliament is used to prepare a report on green eligible spends which is reviewed by external auditors.
Fiji (2017)	Clean water supply, cyclone rehabilitation, emergency road works, access to clean energy, forest conservation and waste management	A designated 'ring-fenced' account was opened by the Ministry of Economy to receive the proceeds. The eligible expenses are tracked by the Ministry.
Poland (2016)	Modernization of railway lines, organic farming program, renewable energy projects	The proceeds are managed in a separate 'green cash account' from where it is disbursed to eligible projects.

2.2.2 SOVEREIGN GREEN BOND ISSUANCES DURING THE COVID CRISIS

Germany issued USD 5.8 billion equivalent of green bunds (Bunds are German's federal foreign bonds) in September 2020.[23] The green bund was twinned with a conventional bund – same maturity and coupon, albeit the green bund had a smaller issue volume.[24] The two bonds were made interchangeable to increase liquidity for the green bund (although it also means that there was no significant price differential). The first green bund is a 10-year federal security with a 0% coupon.[25] The German government aims to issue green bunds every year going

[21] Information compiled from annual allocation reports on green bond of given countries
[22] Green Bond Proceeds management and Reporting, IBRD (2018)
[23] https://www.ft.com/content/39bd3613-2843-459c-bd6b-c625b6843fef
[24] https://www.nnip.com/en-INT/professional/insights/german-government-to-introduce-concept-of-green-twin-bonds
[25] https://www.deutsche-finanzagentur.de/en/institutional-investors/federal-securities/green-federal-securities/

forward. The German government has also published a green bond framework[26] that is in line with the Green Bond Principles,[27] which are managed and published by the International Capital Markets Association (ICMA) and also designed to be in compliance with the EU Green Bond Standard.[28] The eligible projects for the use of proceeds under the framework for green bunds can be broadly categorized in two areas:[29] (1) energy and industry, and (2) agriculture, forestry, natural landscape, and biodiversity.

One of the notable recovery efforts to help mitigate the shock from the COVID pandemic includes the *Next Generation EU Recovery plan.*[30] The plan includes EUR 750 billion in economic stimulus and a EUR 1.1 trillion multi-year budget aimed at addressing the economic and social impact caused by the crisis, kick starting recovery, and building a better future. The plan envisages investment in a green, digital, social, and more resilient EU.[31]

Under the *Next Generation EU Recovery plan,* the European Commission would raise EUR 750 billion for 2021-2024 in the financial markets to leverage its high credit rating to secure low borrowing costs. **For the first time since the European Commission came into existence, it will be borrowing collectively.**[32] This is combined with the long-term EU budget for 2021-2027 of EUR 1.1 trillion, thereby bringing the total financial power of the plan to EUR 1.85 trillion. The fund would be disbursed to the EU members hit hardest by the COVID crisis.

Around EUR 250 billion under the plan will be dedicated to green investments.[33] Thus, the Commission will be issuing[34] **sustainable or green bonds** for the same, which are expected to be consistent with the EU Green Bond standard that uses the EU

[26] https://www.deutsche-finanzagentur.de/fileadmin/user_upload/institutionelle-investoren/pdf/GreenBondFramework.pdf
[27] https://www.icmagroup.org/assets/documents/Regulatory/Green-Bonds/Green-Bonds-Principles-June-2018-270520.pdf
[28]https://ec.europa.eu/info/sites/info/files/business_economy_euro/banking_and_finance/documents/190618-sustainable-finance-teg-report-green-bond-standard_en.pdf
[29] https://www.deutsche-finanzagentur.de/fileadmin/user_upload/institutionelle-investoren/pdf/GreenBondFramework.pdf
[30] https://ec.europa.eu/info/sites/info/files/factsheet_1_en.pdf
[31] https://www.europarl.europa.eu/news/en/headlines/economy/20200513STO79012/covid-19-the-eu-plan-for-the-economic-recovery
[32] https://www.economist.com/europe/2020/07/21/the-eus-leaders-have-agreed-on-a-eu750bn-covid-19-recovery-package
[33] https://www.euractiv.com/section/energy-environment/opinion/commission-must-issue-green-bonds-to-finance-the-green-recovery/
[34] https://www.bloomberg.com/news/articles/2020-09-16/eu-plans-to-sell-225-billion-euros-of-green-bonds-for-stimulus

sustainable finance taxonomy and associated environmental objectives.[35] This will make the European Commission the biggest issuer of green bonds.[36]

Another recent issue of sovereign green bonds includes Egypt's USD 750 million issuance in September 2020, making Egypt the first issuer of a green bond in the Middle East and North Africa (MENA) region. [37] The five-year bond carried a yield of 5.25% and was oversubscribed by 5 times. The bond is supposed to have garnered a green premium or "greenium" of 50 basis points. [38] The proceeds from the bond will be used for clean transportation, renewable energy, energy efficiency, water management, and climate change adaptation.

2.2.3 ISSUING A SOVEREIGN GREEN BOND: STEPS AT A GLANCE & RESOURCES AVAILABLE

This section discusses the broader steps in issuing a sovereign green bond[39], taking cues from past transactions, particularly the issuance by Fiji (2017) that was actively supported by the World Bank Group (IFC, 2018).[40] Resources available to support issuance of sovereign green bonds are summarized in the Annex.

Table 4: Timeline of green bond issuance by Fiji (2017) [41]

July 2017	July 2017	August 2017	Sept 2017	Oct 2017	Nov/Dec 2017	April 2018	Oct 2018	Nov 2018
Announcement by the government to issue sovereign green bond	Formation of steering committee	Green bond framework developed	Second opinion on framework from Sustainalytics	Green bond prospectus developed	Tranche 1 and 2 issued	Listed on LSE	Third party audit conducted	First impact report released

[35] https://ec.europa.eu/info/sites/info/files/business_economy_euro/banking_and_finance/documents/200309-sustainable-finance-teg-final-report-taxonomy_en.pdf

[36] https://euobserver.com/green-deal/149430

[37] https://uk.reuters.com/article/egypt-bonds-int/egypt-to-become-first-arab-country-to-issue-green-bonds-idUSKBN26K1MJ

[38] Greenium refers to the premium that green assets may exhibit over traditional assets with same risk and return profile. Consequently, if greenium exists then the cost of debt for an issuer of green bond decreases.

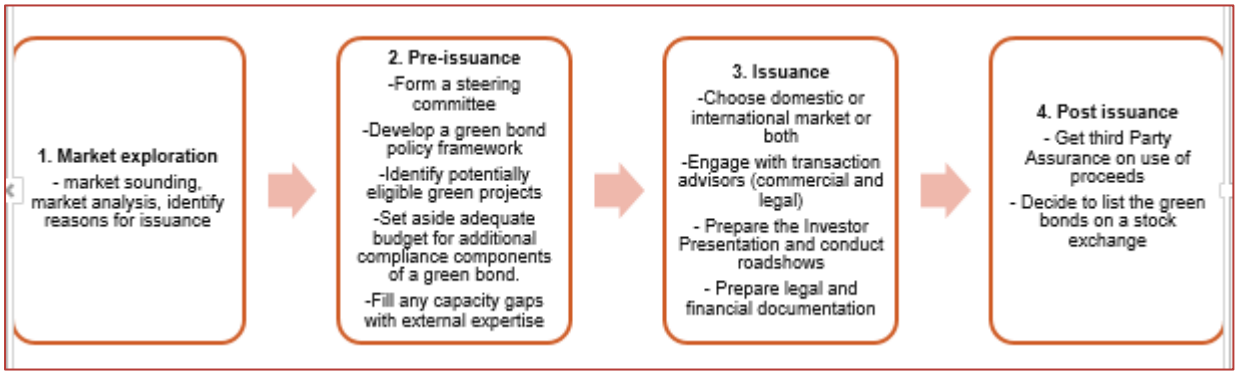
[39] While this section discusses the steps to issue green bonds by sovereigns, these are broadly applicable to other green bond issuers too such as state owned enterprises or corporates subject to few changes such as to who would constitute the steering committee.

[40] https://www.ifc.org/wps/wcm/connect/f9f126e3-4536-470b-934c-e826f426b50d/20180320_Guidance-for-Soverign-Green-Bond-Issuers_v1.pdf?MOD=AJPERES&CVID=m940tsS

[41] https://www.rbf.gov.fj/wp-content/uploads/2020/03/Fiji-Sovereign-Green-Bond-Impact-Report-2018.pdf

Figure 1 outlines the steps involved in issuing a sovereign green bond which includes: (1) Market exploration; (2) Pre-issuance; (3) Issuance; and (4) Post-issuance stages. More detail on each stage is included in Annex 1.

Figure 1: Steps in issuing a sovereign green bond



In addition to the IFC and World Bank that have provided technical assistance for sovereign green bond issuances, Annex 2 mentions some of the consultants, external reviewers, lead managers and law firms who have advised on past sovereign green bond transactions along with the links to the respective green bond frameworks. This list is not intended to be exhaustive and other similar organizations are also available to support design and issuance.

2.3 CASE STUDY: COMBINING A SOVEREIGN GREEN RECOVERY BOND WITH PERFORMANCE-BASED INCENTIVES TO ACCELERATE RETIREMENT OF MID-AGE COAL POWER PLANTS IN INDIA

CONTEXT

Per its Nationally Determined Contribution (NDC) committed under the Paris Agreement, India plans by 2030 to lower the emissions intensity of its GHG by 33-35% from 2005 levels, increase the share of non-fossil fuels to 40% of total power generation capacity, and create an additional carbon sink of 2.5 to 3 $GtCO_2eq$. With an installed renewable energy (RE) capacity of 139 GW (including large hydro) and its ambitious renewable energy target of 450 GW by 2030, India is on track to meet its NDC commitment of 40% of energy generation capacity from non-fossil fuels. However, to meet the NDC commitment of lowering emissions intensity and to

accelerate the transition to a low carbon economy, India's energy system will have to transition away from fossil fuels.

India, like several other countries, has made retirement of coal power plants a key priority. Of the ~200 GW coal power plant fleet in India, the National Electricity Plan (NEP) released in 2018 has identified ~40 GW thermal power plant capacity for early retirement by 2027. The identified set includes plants over 25 years age and those which are unfit for retrofitting for flue gas desulphurization (FGD). While a plan to retire these aging, inefficient power plants is a step in the right direction, more substantial emission reductions could be achieved by decommissioning younger plants, between 15-25 years age, because of the following considerations:

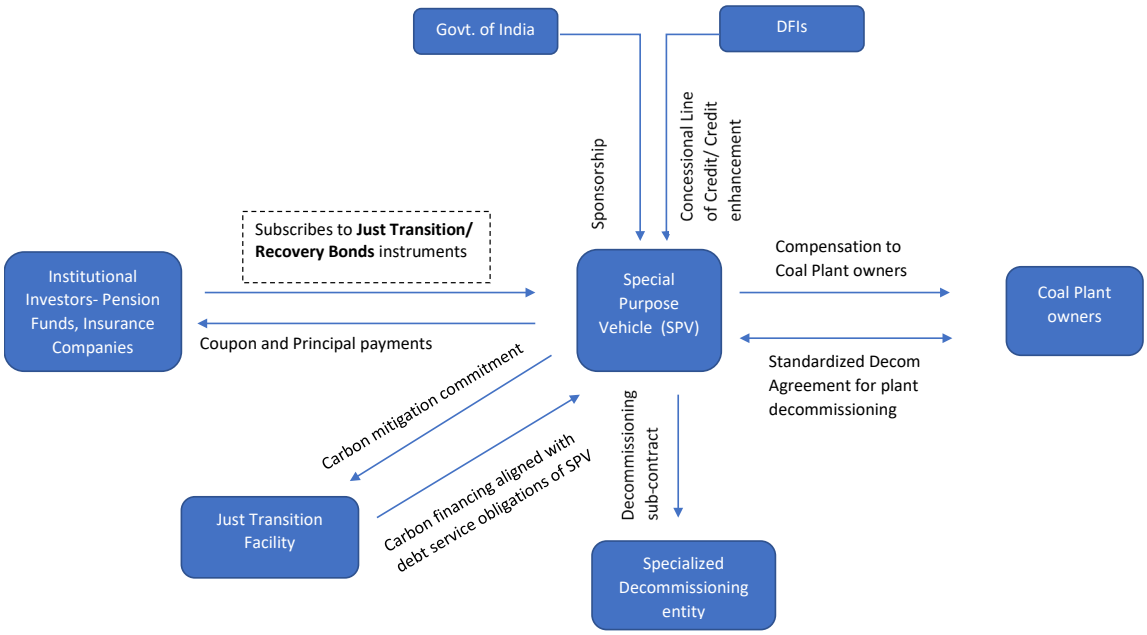
1. Higher cumulative GHG emissions from younger plants given long remaining lifetime (additional 15-25 years);
2. Likely severe adverse impact on continued commercial viability due to rapid climate transition risk;
3. Uncompetitive tariffs, in certain cases, compared with prevailing RE tariffs; and
4. Availability of (concessional) funding and interest from global donors and investors is likely to be higher for retirement of younger plants, which corresponds with the need for incentives for early retirement of younger plants than retirement of already old, inefficient plants.

PROPOSED MECHANISM

Given the need for accelerated retirement beyond the planned decommissioning targets, CPI carried out an analysis for this blueprint to identify potential coal power plants between 15-25 years that may be suitable for accelerated retirement. The analysis considered a 90 GW sample set of coal power plants, out of the 200 GW installed coal power capacity, whose tariff and FGD suitability data were available. Based on the age filter, 45 plants with an aggregate capacity of 14 GW were identified with 15-25 years age. Additional filtering criteria such as a) threshold tariff of INR 3.60/kWh or about USD 0.05/kWh (tariffs above this threshold are likely to be uncompetitive compared to tariff from RE projects); and b) lack of suitability for FGD installation, were considered to shortlist 30 coal power plants with ~8.2 GW capacity as candidates for accelerated retirement. Further refinement of the potential set using additional filers such as low/no outstanding debt, higher capacity charges, and plant location (water stress, vicinity to pollution hotspots, etc.) could also be done.

To facilitate a just transition, there is a need for concessional climate finance that not only funds the technical costs of decommissioning (such as dismantling and disposal of equipment, compensation for loss in revenue under existing off-take arrangements, and other liabilities), but also addresses the Resettlement and Rehabilitation costs, workers compensation, and re-skilling as appropriate. An innovative financing mechanism using "jurisdictional no-coal credit" offsets could be structured on the following lines to mobilize climate financing:

- A Special Purpose Vehicle (SPV), owned by the Government of India or one of the sovereign corporations like NTPC, is set up to raise financing and carry out the decommissioning process
- The SPV raises financing through a "Just Transition Recovery Bond" - issued as a (sovereign) green bond - from institutional investors, pension funds, and insurance companies to meet the decommissioning costs
- The SPV enters into a separate agreement with potential donor funders and investors of a "Just Transition Facility" to raise carbon financing based on a pre-agreed and validated methodology and appropriate pricing. Methodology development of a "jurisdictional no-coal credit" offset consistent with use for net zero activities globally will be key
- Carbon financing raised by the SPV is utilized to partially meet the debt service obligations (at least the interest component) of the Just Transition Recovery (Green) Bond
- To provide appropriate credit enhancement to support issuance of the Just Transition Recovery Bond, Development Financial Institutions (DFIs) may provide a concessional line of credit to the SPV
- Government of India takes necessary steps to facilitate setting up of RE projects as replacement capacity for the retired coal power plants and to be financed by RE Independent Power Producers



IMPACTS

Our analysis shows that the proposed mechanism can result in an annual savings to the Distribution Companies of USD 365 million annually, arising out of lower cost of power procurement from RE projects, and an avoided retrofit cost on account of FGD installation of USD 440 million.

It would also result in greenhouse gas emission reductions of 35 million tonnes per annum, as well as other environmental and economic benefits such as reduction in air pollution, water usage, and boost to local economy.

2.4 USE CASE 2: FOSSIL FUEL SUBSIDY REFORM (FFSR) BOND

Governments can also demonstrate their climate-aligned credentials to potential bond investors in other ways. One such approach could be to issue a Fossil Fuel Subsidy Reform (FFSR) Bond, wherein a government commits to undertaking FFSR and reduces (if not eliminates) consumption subsidies for fossil fuels.

The IEA estimates that the world spends USD 320 billion[42] annually on fossil fuel subsidies (FFS) – almost all of it on consumption in developing economies. With an oil forecast of moderate per-barrel prices in the long term and a sustained near-term reduction in demand,[43] governments could potentially reduce these subsidies domestically and notionally use future savings from reduced subsidies to repay a bond issued today.

While green bonds focus on the use of proceeds that are earmarked for eligible projects with environmental, social, or climate benefits, a bond linked to reduction of fossil fuel subsidies would instead focus on how the bond holders are notionally repaid. Although not a green bond in the classic sense of the instrument as defined and understood by the industry, the FFSR Bond would signal an alignment of the government's policies with reducing emissions. This narrative could be as important and interesting to green and sustainable development-oriented investors even without an explicit contractual link between reducing subsidies and using those future savings to pay back the bond. In fact, such an explicit link could complicate the pricing of the bond given the complexities associated with FFSR as discussed later.

Use of proceeds from such a bond could be used for green activities as in the case of a regular green bond, but could also be used to finance other needs including enhancing a country's safety net, improving health infrastructure, and addressing other needs related to post-COVID recovery (as long as the projects financed meet minimum social and environmental standards). However, it may be beneficial to consider climate-smart uses for at least part of the proceeds because analysis shows that just reinvesting 30% of FFS in energy efficiency and renewable energy could reduce carbon emissions 18% by 2050.[44]

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[42] https://www.iea.org/topics/energy-subsidies
[43] https://www.reuters.com/world/middle-east/opec-raises-2021-oil-demand-growth-forecast-hopes-virus-impact-wanes-2021-04-13
[44] http://documents1.worldbank.org/curated/en/958771530881102150/pdf/ESRAF-note-2-Assessing-the-Fiscal-Cost-of-Subsidies-and-Fiscal-Impact-of-Reform.pdf

An FFSR bond has no precedent. Given that the FFSR bond would essentially be a sovereign issue, with a narrative attractive to SDG-oriented investors, it would have the same credit rating of the underlying country. However, initial discussions with market experts suggest that subsidy reforms could be a credit-positive event for the country.[45] If the structuring of the FFSR bond is made more complex by committing to repay the bond using future savings from consumption subsidies that are ring-fenced for this use in the expenditure budget, it may provide additional credit comfort to investors and potentially make the FFSR bonds cheaper than a normal sovereign issue. However, any pricing benefits from a structure like this are more than likely to be offset by pricing the higher risk associated with the ability of the government to sustain FFSR over the lifetime of the bond, as also the need for FFS in the longer term given rapidly declining costs of alternative energy.

To date, no country has issued an FFSR bond, so this section describes how one might be issued and what advantages and challenges it may have.

2.4.1 REFORMING FOSSIL FUEL SUBSIDIES

Global FFS are massive and continue to dwarf the subsidy support to clean energy. Although consumption subsidies to fossil fuels declined in 2019 due to lower oil prices, IEA estimated them to be around USD 320 billion,[46] which was more than three[47] times the subsidy support to renewables. Consumption[48] subsidies refer to subsidies directly consumed by end-user (in oil and gas) or consumed as inputs to power generation (International Energy Agency, 2019). A separate estimate by the IMF that accounts for environmental costs and other externalities puts the global fossil fuel subsidy at USD 5.3 trillion. However, for the purpose of analysis in this paper, only consumption subsidies have been taken, as they are a direct budget item and reducing these can make cash available in the future - unlike implicit subsidies or multipliers. Even a fraction of reduction in the total FFS can result in future savings through avoided expenditure. This can be harnessed to support a low-carbon recovery. Further, moderate crude oil prices and reduced oil demand can

[45] Based on the discussion with experts from a multilateral institution and a rating agency, fossil fuel subsidy reforms are likely to be a credit positive event for the underlying country. Although it may or may not lead to a change in the sovereign rating of the country, it could improve the rating's outlook and commentary which may be received positively by the potential investors. Subsidy reform would reduce subsidy burden, improve economic efficiency by reducing leakages and could lead to GDP gains (Whitley and De Burg, 2015 https://newclimateeconomy.report/workingpapers/workingpaper/fossil-fuel-subsidy-reform-from-rhetoric-to-reality/)

[46] https://www.iea.org/topics/energy-subsidies

[47] https://www.theguardian.com/environment/2019/aug/01/fossil-fuel-subsidy-cash-pay-green-energy-transition

[48] https://www.imf.org/en/Publications/WP/Issues/2019/05/02/Global-Fossil-Fuel-Subsidies-Remain-Large-An-Update-Based-on-Country-Level-Estimates-46509

potentially make it politically easier[49] for countries to phase out fossil fuel consumption subsidies as the elimination of subsidies at such a time are likely to have a reduced effect on prices paid by end-consumers.

Phasing out FFS has several economic and climate advantages:

- Between 1980 and 2010, 36% of global carbon emissions were driven by global fossil fuel subsidies. [50] FFSR, if implemented now, can reduce global carbon emissions by 6.4% in 2050. [51]
- FFSR can lead to substantial fiscal gains. At global level, it could lead to USD 3.2 trillion[52] in revenue gains.
- FFSR could create a more level playing field[53] for renewables to compete with carbon-intensive sources of energy. It could also thus increase investment in cleaner technologies.
- FFSR could increase social welfare. Evidence suggests that middle- and higher-income groups accrue most of the benefit of the fossil fuel subsidies while the cost of subsidies is borne by the entire population. According to the IMF, in developing countries only 7% of the FFS benefit reached the poorest strata of the society[54] that comprises 20%.
- FFSR could decrease the risk of growing stranded assets[55] as FFS elimination would direct more capital towards clean energy instead of to fossil fuel projects.
- FFSR could facilitate more efficient allocation of resources leading to global GDP gains of up to 0.7%[56] per year to 2050.
- Fossil fuel subsidies crowd out[57] investments in important sectors such as healthcare. The reforms could thus provide more resources for public spending.

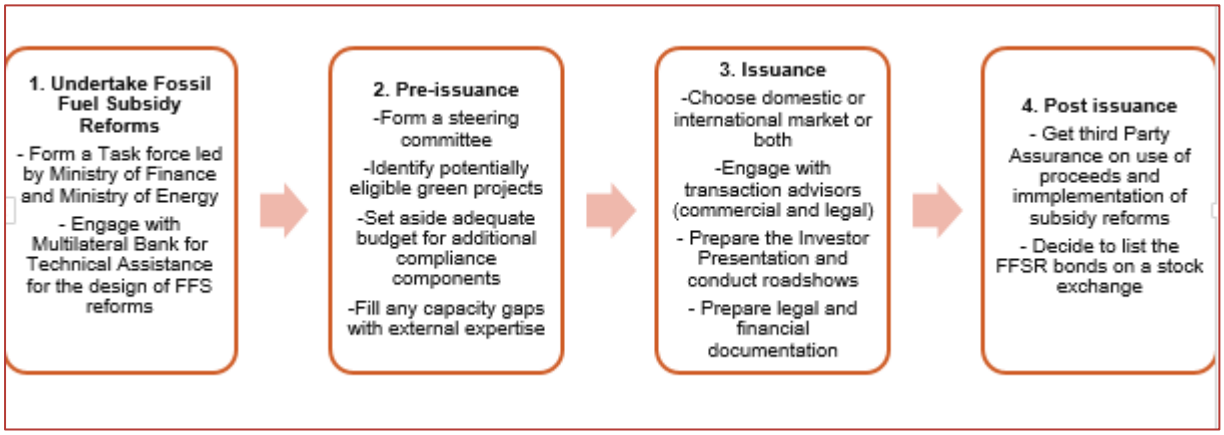
[49] https://www.iea.org/articles/low-fuel-prices-provide-a-historic-opportunity-to-phase-out-fossil-fuel-consumption-subsidies
[50] https://www.tandfonline.com/doi/full/10.1080/14693062.2016.1169393
[51] https://www.tandfonline.com/doi/full/10.1080/14693062.2016.1169393
[52] https://www.imf.org/en/Topics/climate-change/energy-subsidies
[53] https://newclimateeconomy.report/workingpapers/workingpaper/fossil-fuel-subsidy-reform-from-rhetoric-to-reality/
[54] http://newclimateeconomy.report/2015/wp-content/uploads/sites/3/2015/11/Fossil-fuel-subsidy-reform_from-rhetoric-to-reality.pdf
[55] https://blogs.lse.ac.uk/businessreview/2020/05/11/the-covid-crisis-will-delay-but-not-derail-the-energy-transition/
[56] http://newclimateeconomy.report/2015/wp-content/uploads/sites/3/2015/11/Fossil-fuel-subsidy-reform_from-rhetoric-to-reality.pdf
[57] https://newclimateeconomy.report/workingpapers/workingpaper/fossil-fuel-subsidy-reform-from-rhetoric-to-reality/

However, implementing such reforms has its own set of challenges. These can be broadly categorized as:[58]

1. estimating the right energy prices and subsidies (while IEA estimates provide reasonable ball-park figures for fossil fuel subsides, its methodology is contested by a few countries);
2. managing the impact of reforms, particularly on current and future energy prices to the consumers; and
3. canvassing support for reforms to manage the political economy challenges, including ensuring that commitments made by a government are sticky and remain in place even with changes caused by the usual political cycle.

2.4.2 ISSUING FUEL SUBSIDY REFORM-BACKED RECOVERY BONDS: STEPS AT A GLANCE

Figure 3: Steps in issuing a fossil fuel subsidy reform bond



The first step in issuing an FFSR bond is to implement subsidy reforms. Designing the fossil fuel subsidy reforms would require technical expertise. Given the nature of reforms with fiscal, welfare, social, consumption, and other interacting variables, the efficient design of FFSR is critical to realize the intended benefits. A multilateral institution may be best suited to provide such expertise particularly given their experience of working with the governments. Within the government, the key ministries to drive the reforms would be Ministry of Finance and Ministry of Energy.

Subsidy reform is followed by pre-issuance, issuance, and post-issuance stages as described for the sovereign green bond – with the exception that a green bond

[58] https://www.iisd.org/gsi/sites/default/files/ffs_gsibali_meetingreport.pdf

framework will not be required for the FFSR bond as it does not necessarily have to be a traditional green bond.[59]

2.4.3 TARGET MARKETS

Each country is unique with respect to FFS. Therefore, the duration of implementation, the quantum of subsidy that could be phased out, the products that could be targeted first, and the tools to smooth the price shock (when crude oil prices rise) would vary depending on the status quo. Similarly, the amount of capital that could be raised through FFSR bonds is also linked to the appetite and size of the capital markets and the existing debt dynamics of the country.

There are 26 countries with FFS of more than USD 1 billion per annum and an additional 13 countries with fossil fuel subsidies more than USD 100 million per annum. Around 60% of the global FFS can be attributed to oil-producing nations. The FFS in these nations are mostly implicit, as they are based on the difference between the price at which the fuel is sold by the country internationally versus domestically. Further, a significant amount of subsidy is also from states where any negotiation to phase out subsidy can be arduous due to other political factors (e.g., Iran, Venezuela). Thus, both oil-producing nations and politically difficult states have not been included in the analysis for target markets for FFSR bonds.

There are three critical criteria to consider for the market opportunity for FFSR bonds:

1. quantum of FFS that could be realistically phased out;
2. country's alignment to FFSR; and
3. presence and access to adequate capital market to support issuance of FFSR bonds

[59] The use of proceeds could be used for green investment, but it doesn't need to as long as the projects financed meet minimum social and environmental standards, or "do no harm".

Table 5: Parameters and assessment for market opportunity for recovery bonds

Parameter	Assessment
The quantum of FFS that could be realistically phased out	The total FFS must be greater than USD 100 million per annum so that the FFSR bond issuance could be sizable (i.e., at least USD 500 million based on notional savings over 5 years). Further, within the FFS product-wise distribution, the more subsidy is to oil/gas compared with electricity, the easier it may be to implement FFSR as, unlike electricity prices, low crude oil prices have a direct impact on oil/gas prices.
The country's alignment to FFSR	There are 13 countries[60] that have made commitments/mention of FFSR in their Nationally Determined Contributions (NDCs) – list included in Annex 3. Furthermore, G20 has made similar commitments. Thus there are 32 countries (in addition to EU) where the motivations for FFSR align.
The presence and access to adequate capital markets to support issuance of FFSR bonds	Quantum of outstanding public debt (domestically and internationally), as well as size of annual sovereign issuances i provides a good indication of the country's access to capital markets. Further, discussion with internal experts at CPI was used to identify the suitable markets for FFSR bonds.

Based on the three criteria discussed in Table 5 above, the following countries were shortlisted with cumulative potential for recovery bonds worth USD 500 billion dollars.

Table 6: Potential target countries for FFSR bonds

Countries	FFS (USDBn 2019)[61]	GDP growth (Apr-Jun 2020)[62]	Covid crisis induced job losses (million people)[63]
China	30.48	3.2%[64]	89.0
India	21.85	-23.9%	120.0
Indonesia	19.22	-5.3%	13.0
Mexico	3.28	-17.3%	12.0
Vietnam	0.27	0.4%	1.0

[60] https://www.iisd.org/sites/default/files/publications/fiscal-instruments-indcs.pdf
[61] Fossil fuel consumption subsidies (IEA, 2019)
[62] Data compiled from multiple sources
[63] Data compiled from multiple sources
[64] Unlike several other countries, China saw the peak impact of Covid crisis on its GDP during Q1 2020 when its GDP contracted by -6.8%.

Table 7: FFSR bond potential for target countries

Country	Sovereign rating (S&P)	Recovery bond weighted average maturity (WAM)	Total Potential size (USDbn) based on FFS[65]	International gov't debt securities[66] (USDbn 2019)	Total gov't debt securities USDbn[67]	Average change in debt securities/ year (USDbn)[68]
China	A+	7	209.1	24	5644	NA
India	BBB-	7	141.4	0.4	923	46
Indonesia	BBB	7	131.9	72	273	13.4
Mexico	BBB	7	22.5	77	914	17.5
Vietnam	BB	4	1.1	2	NA	NA
Total			**506.0**			

[65] The potential size of FFSR bond issuance is estimated based on annual fossil fuel subsidies over weighted average maturity, discounted by relevant discount rates.
[66] These refer to debt securities issued in international markets. As a policy choice, India does not have any outstanding sovereign dollar bond (USD0.4 Bn figure refers to Masala bonds). Data taken from BIS database.
[67] As recovery bond is a debt security, for the purpose of this analysis only debt securities have been taken from the total debt of each country. On the other hand, total debt includes loans, currency and deposits; debt securities, insurance, pensions and standardised guarantee schemes, and other accounts payable. Data taken from BIS database.
[68] https://www.bis.org/statistics/secstats.htm

3. CONCLUSION

In addition to the climate and environmental benefits[69], a greener recovery can also have strong economic advantages. Green projects create more jobs and generate higher short-term returns with increased long-term savings,[70] with renewable energy and energy efficiency generating about 7.5 full-time jobs per million dollars of investment and fossil fuels only about 2.6 jobs.[71]

Green stimulus policies also have advantages over traditional economic stimulus due to their higher economic multiplier. The economic multiplier refers to the effect that increases in fiscal spending have on the nation's output or gross domestic product. Renewable energy is able to offer higher short-term and long-term economic multipliers[72]. During slowdowns, fiscal stimulus are known to generate even higher long-term[73] multiplier in the range of 2.5-3. For every dollar spent on renewable energy projects, the output effect on the economy could be up to three dollars or even more.

Sovereign green recovery bonds function by reserving proceeds for projects with environmental or climate benefits, such as renewable energy and energy efficiency, and are therefore primed to take full advantage of the economic multiplier effect. The three sovereign green bonds issued in Q1 2021 had considerable demand, demonstrating an appetite for these bonds with pension funds, asset managers, and bank treasuries. Sovereign green bonds could be a useful tool for both developed and developing economies to maximize the benefits of a green recovery while investing in long-term climate adaptation and resilience.

The fossil fuel subsidy reform-backed bond could be a powerful approach for economic recovery while potentially offering twin benefits of making both the notional source of repayment and use of proceeds climate friendly. On one hand, phasing out fossil fuel subsidies has several economic and social advantages along with the climate benefits, while on other hand the use of proceeds for social or climate friendly projects can drive additional impact in employment generation,

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[69] A green recovery that invests just 1.2% of global GDP or USD 1 trillion in low-carbon technologies and does not support bailouts for fossil fuel companies can cut[69] global warming by 0.3 degree Celsius. Given that global recovery packages have crossed USD1 0 trillion, the amount of USD 1 trillion is not too ambitious.

[70] https://www.theguardian.com/environment/2020/may/05/green-stimulus-can-repair-global-economy-and-climate-study-says

[71] https://www.smithschool.ox.ac.uk/publications/wpapers/workingpaper20-02.pdf

[72] https://www.smithschool.ox.ac.uk/publications/wpapers/workingpaper20-02.pdf

[73] https://www.imf.org/external/pubs/ft/tnm/2014/tnm1404.pdf

emissions reduction, and economic growth. A pilot issuance of FFSR bond in one of the potential target countries identified in this paper could set a strong precedent and provide a template to other countries to follow.

While countries can always borrow (as possible within their debt sustainability parameters) as they usually do to help with short-term COVID recovery, issuing a variant of a Recovery Bond can help with these objectives, while demonstrating their commitment to sustainable development and addressing climate change and its impacts.

4. ANNEXES

4.1 ANNEX 1: FRAMEWORK FOR ISSUING A SOVEREIGN GREEN BOND

The process of issuing a sovereign green bond starts from **market exploration** that has three key aspects:[74]

- Identifying reasons or motivation for issuing a sovereign green bond. This could vary from demonstration of climate leadership (as done by Fiji as the President of COP23) to enlarging the investor pool (as achieved by Egypt[75]). However, cheaper financing should not be the primary driver for issuance unless backed by enough evidence.[76]
- Market sounding: This is the activity undertaken to gauge initial interest in the market or among investors for the sovereign green bond issuance.
- Market analysis: This involves analysis around issues such as the current debt situation, interest rates and tenures, the time period of issuance and the potential quantum of debt issue.

The market exploration is followed by the **pre-issuance** stage that involves the following:

- Given the complexity of the actors and stakeholders involved in issuing an SGB, it is critical to form a steering committee early on to guide (1) development of a green bond framework specific to the country, (2) preparatory work, and (3) other administrative tasks. The steering committee could be led by a powerful institution such as the central bank of the country[77] (as in the case of Fiji) or the ministry of finance.

[74] https://www.ifc.org/wps/wcm/connect/f9f126e3-4536-470b-934c-e826f426b50d/20180320_Guidance-for-Soverign-Green-Bond-Issuers_v1.pdf?MOD=AJPERES&CVID=m940tsS

[75] The larger investor base helped Egypt achieve a greenium of 50 basis points

[76] Among the fourteen 500m+ SGB issuances, only four have demonstrated a greenium or a cost advantage over traditional sovereign issues.

[77] The steering committee could involve members from the following stakeholders depending on the need: (1) Different arms of the government that deal with bond issuances such as Ministry of Finance and Central bank (2) Technical experts on use of proceeds that may include representatives from sectors such as environment, infrastructure and climate change (3) Legal department for drafting the green bond prospectus (4) Consultants for second opinion on green bond framework, third-party verification of use of proceeds and impact reporting (5) Investors, both domestic and international.

- A critical aspect is the development of a green bond policy framework that must be aligned with an internationally recognized set of principles[78] such as the Green Bond Principles[79]. A second opinion from an external assessor is also required for the green bond framework. Table 8 lists some consultants involved in external assessment of select SGB transactions.
- Early identification of the eligible projects to be financed. These could include both new projects and operational projects that could be refinanced using the proceeds from the green bond. Table 3 illustrates the examples of projects financed using proceeds from select sovereign green bonds.
- It is important to set aside sufficient budget for compliance related to green bonds. The green bonds will have additional costs compared to traditional sovereign issue. These include the costs related to (1) the development of green bond framework (2) Second party opinion on the green bond framework (3) Internal staff allocation within the government for administration of proceeds and selection of projects (4) Third party assurance on use of proceeds.
- The steering committee should tap external expertise wherever needed. Multilateral Financial Institutions have played a role in providing technical advisory to several countries issuing sovereign green bonds.

The pre-issuance stage is followed by **issuance** stage:

- There are different paths for domestic issuances and international issuances. The choice of path is dependent on myriad of reasons such as the motivation for issuance and market conditions.
- Engaging with transaction advisors (commercial and legal) to proceed with issuance. Table 8 lists the transaction advisors on select SGB transactions. The transaction advisors may be selected based on prior experience of SGB transactions, cost effectiveness and strong regional presence.
- Preparation for investor presentation and conducting roadshows
- Preparation of legal and financial documentation

The issuance is followed by **post-issuance** stage:

- Given that transparency is critical to the success of the green bonds, the use of proceeds must be monitored and reported according to recognized standards like the Green Bond Principles. Third party assurance on use of proceeds is

[78] Green Bond Principles have five components: (1) Use of proceeds (2) Project evaluation and selection (3) Management of proceeds (4) Reporting and (5) External Review
[79] https://www.icmagroup.org/green-social-and-sustainability-bonds/green-bond-principles-gbp/

needed. Table 8 lists some organizations used for external assessment in select SGB transactions. Further, the impact of the projects financed by the proceeds will also need to be tracked and reported for additional transparency to investors.

- The sovereigns could choose to list the green bonds on a stock exchange. Listing could assist transparency in pricing and improving global exposure of the bond. Fiji listed its sovereign green bond on the London Stock Exchange, while Indonesia chose to list its green bond on Nasdaq Dubai.

4.2 ANNEX 2: CONSULTANTS AND SERVICE PROVIDERS ON SELECT SOVEREIGN GREEN BOND TRANSACTIONS[80]

Table 8: Representative consultants/advisors on some recent sovereign green bond transactions.

SGB Transactions	Role	Consultants/Service providers	Green bond framework
Hong Kong (2019)	Lead manager/book runners	Credit Agricole CIB, HSBC	https://www.hkgb.gov.hk/en/others/documents/GBF_finalised_dated_28_March_2019.pdf
	Law firm	Linklaters	
	External assessment	Vigeo Eiris	
	Credit rating	Fitch, S&P	
Netherlands (2019)	Lead manager/book runners	Credit Agricole CIB, Dutch State Treasury Agency	https://zoek.officielebekendmakingen.nl/blg-879136.pdf
	Law firm	Simmons & Simmons	
	External assessment	Sustainalytics, NN Investment Partners	
	Credit rating	Moody's	
Chile (2019)	Lead manager/book runners	Credit Agricole CIB, JP Morgan, HSBC, BNP Paribas, Santander, Societe Generale	https://old.hacienda.cl/english/public-debt-office/green-bonds/green-bonds-framework.html
	Law firm	Cleary Gottlieb Steen & Hamilton LLP, Morales & Besa	
	External assessment	Vigeo Eiris	
	Credit rating	Moody's	
Indonesia (2018)	Lead manager/book runners	HSBC, CIMB, Citigroup, Dubai Islamic Bank PJSC and Abu Dhabi Islamic Bank	https://www.djppr.kemenkeu.go.id/uploads/files/dmodata/in/6Publikasi/Offering%20Circular/ROI%20Green%20Bond%20and%20Green%20Sukuk%20Framework.pdf
	Law firm	Clifford Chance	
	External assessment	Cicero	
	Credit rating	Moody's, S&P, Fitch	

[80] Information compiled from multiple sources

4.3 ANNEX 3: COUNTRIES ALIGNED TO FFSR IN NDC/G20 COMMITMENTS

Table 9: Countries aligned to FFSR in NDC/G20 commitments

Countries	FFS (USD Bn 2019)	Sovereign rating (S&P)	FFS reforms in NDC or in G20 commitment	Oil/Gas dependent economy
Iran	86.1	WR		Y
China	30.5	A+	✓	
SaudiArabia	28.7	A-	✓	Y
Russia	24.1	BBB-	✓	Y
India	21.8	BBB-	✓	
Indonesia	19.2	BBB	✓	
Egypt	15.8	B	✓	Y
Algeria	13.1	NR		Y
Venezuela	12.8	SD		Y
Iraq	7.4	B-		Y
UAE	5.7	AA	✓	Y
Kuwait	5.5	AA-		Y
Libya	4.5	WR		Y
Argentina	4.3	SD	✓	
Mexico	3.3	BBB	✓	
Nigeria	1.8	B-		Y
Bahrain	0.8	B+		Y
Qatar	0.5	AA-		Y
Vietnam	0.3	BB	✓	
Ghana	0.1	B	✓	
Gabon	0.1	CCC+ (Caa1)		Y
Oman	0.1	BB-		Y

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