

# Sovereign SLB: an option for Japan's transition

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Japan has recently announced a significant borrowing programme (GX transition bonds), specifically to support its energy transition.<sup>1</sup> The proposed framework designates proceeds for investment in specific technologies, including hydrogen/ammonia co-firing.

Here we analyse the Japanese transition bond framework, and suggest an alternative - Sustainability-Linked Bonds (SLB), where proceeds are unrestricted and coupon payments linked to transition outcomes.

Using an SLB to finance the Japanese energy transition offers three key benefits:

- There are questions being raised about the carbon reduction and cost of hydrogen/ammonia co-firing as a transition technology. **Issuing an SLB rather than a bond with a fixed use-of-proceeds would give the Japanese government the option to allocate capital to a variety of technologies without locking in choices today.** It is a more flexible instrument than the proposed GX transition bonds, which bet today on specific technologies that may prove uneconomical in future.
- **SLB financing focuses on outcomes rather than investment. This can reassure Japan's partners of its long-term goal of decarbonisation.** Performance targets linked to an ambitious reduction in carbon emissions would provide a strong message about Japan's determination to tackle the sources of climate change. It would also allow commitments to be made beyond the term of a political cycle, as subsequent changes in policy could result in increased financing costs.
- **Transition bonds are not a widely used product; an SLB format could appeal to a broader range of investors.** Use-of-Proceeds (UoP) transition bonds, where funding is used only for specific eligible investments that are not for traditional green projects, have so far found little interest from international investors. An SLB format could attract more interest from global investors, as it can be aligned to international standards. This could create lower funding costs, and more credibility on the global stage for Japan's transition.

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<sup>1</sup> ["Overview of Japan's green transformation \(GX\)"](#), GR Japan, 31 Jan 2023.

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## Introduction

Japan is resolutely moving forward with ambitious plans to significantly lower carbon emissions. The use of hydrogen and ammonia co-firing has long been the mantra of Japanese industrialists to solve the challenges of the carbon transition. Already, some pilot projects are under way.<sup>2</sup> The ultimate objective is to use ammonia as a low carbon fuel to bring down emissions but there are increasing concerns about its viability.<sup>3</sup> Some voices have expressed concern that this shift may not be the best option.<sup>5,6</sup>

Given the sheer size of the financing package that will be required to put this plan in practice, Japan will need to resort to a large package of programmatic issuance in the debt capital markets. The technological choices made today may limit the options of the country in future, as they tend to focus on specific, yet untested technological solutions. Investors can have a material influence on these choices.

In the APAC region, Sustainability Linked Loans (SLL)s have been relatively more popular than SLBs, with 77 issuers of SLLs, versus 10 issuers of SLBs issued cumulatively to December 2022. This compares to 117 issuers having issued the more established green bonds.<sup>7</sup> However, since the successful issuance of sovereign SLBs by Chile<sup>8,9</sup> and Uruguay<sup>10,11</sup>, there is a new focus on the use of these instruments by countries to finance their decarbonisation strategy.

In this piece, we analyse how a sustainability-linked sovereign bond could be a superior instrument to finance the carbon transition in Japan.

## Japan Transition bond framework

Japan has published a “green transformation” framework, which includes several key initiatives.<sup>1</sup> Several commitments have been made, including increasing the share of renewables in the energy mix to 36-38% of by 2030, the restart of nuclear power, a radical shift to electric vehicles, a cut of GHG emissions from shipping and aviation, a reduction of emissions from the built environment, the expansion of green steel and carbon neutral cement, as well as the scaling up of blended finance and climate-related disclosure.

Within this framework, investments into ammonia and hydrogen co-firing and carbon capture technologies are more problematic. Ammonia and hydrogen co-firing in coal power plants will lock-in the use of fossil fuels for longer, reducing the opportunity to cut emissions.

Meanwhile, the global thematic bond markets have grown strongly, backed by very specific international guidelines that promote transparency and a clear definition of the green transition.

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<sup>2</sup> “[JERA and IHI move up the start of large-volume co-firing of fuel ammonia in the demonstration project at Hekinan Thermal Power Station](#)”, Jera, 5 May 2031.

<sup>3</sup> “[Will Japan run on ammonia?](#)”, C&EN, 23 Apr 2022.

<sup>5</sup> For our analysis on a corporate UoP bond investing in Ammonia please see “[MHI: The wrong kind of transition](#)”, AFII, 6 Sep 2022.

<sup>6</sup> “[G7 climate ministers challenge Japan’s energy strategy](#)”, Financial Times, 13 Apr 2023.

<sup>7</sup> “[ASEAN State of the market 2022](#)”, Climate Bonds Initiative, 30 May 2023.

<sup>8</sup> “[Sustainability-linked bond](#)”, Chile Public Debt Office, accessed on 8 Jun 2023.

<sup>9</sup> “[Chile sustainability-linked bond: optionality analysis](#)”, AFII, 5 Apr 2022.

<sup>10</sup> “[Uruguay’s sovereign sustainability-linked bond](#)”, Uruguay Sovereign Debt Management Office, accessed on 8 Jun 2023.

<sup>11</sup> “[Uruguay’s sustainability-linked bond: market update](#)”, AFII, 5 Jun 2023.

The development of green taxonomies around the world is proof that regulators and market practitioners are in demand of specific definitions to guide the allocation of capital. Around the world, the growth of “transition”, use-of-proceeds bonds has been lacklustre. While green bonds and sustainability-linked bonds have grown to a total issuance of \$2.2trn and \$204.2bn, respectively, as of 31 December 2023, transition bonds stand at only \$12.5bn.<sup>12</sup> A lack of definition and standards could be responsible for this slow growth.<sup>13</sup> In Japan however, these instruments have been promoted actively by the authorities.<sup>14</sup>

According to some market participants, the GX bonds are unlikely to follow ICMA’s Green Bond Principles.<sup>15</sup> A number of market participants have questioned the confusion that such offering could cause among investors.<sup>16</sup> Even though the first transition bond was issued by Spanish oil and gas company Repsol in 2017, they have not become mainstream, as have green, sustainability and sustainability-linked bonds.<sup>17</sup>

Table 1. Japan’s first sovereign transition bond package and its objectives. Source: METI, AFII

Annual Investment	Objective	Examples
5 trillion JPY	Decarbonisation of power supply	Renewables, hydrogen, ammonia, batteries
2 trillion JPY	Decarbonisation of manufacturing processes	Carbon neutral power, industrial heat pumps, cogeneration
4 trillion JPY	End-use sector	Energy-efficient homes and buildings, next-generation vehicles
4 trillion JPY	Infrastructure	Grid reinforcement, charging stations, data centres, semiconductors
2 trillion JPY	Research & development	Carbon recycling, hydrogen reduction steelmaking, nuclear, CCS
17 trillion JPY		

## Transition bonds do not offer flexible financing

The government plans to raise “a new type of sovereign debt” to be redeemed by 2050 using revenues from a new carbon pricing mechanism. This may also involve the financing of sectors with “higher business risks” through debt guarantees. It has announced a package of JPY150trn (\$1trn) of private-public investment to deliver Japan’s green transformation (“GX”). This program includes several commitments in key sectors, including energy, transportation, built environment and the industrial sector. The JPY150trn will be spread over the next 10 years starting with a JPY20trn (\$144bn) package in the current fiscal year (starting in April 2023). A first Sovereign transition bond is expected to be issued between October 2023 and April 2024.<sup>15</sup>

Japan’s transition bonds have been an outlier in the thematic bond markets, by not experiencing high growth. Indeed, as previously mentioned, only \$12.5bn has been issued as of 31 Dec 2022.<sup>12</sup> In 2022, these bonds have mainly been sold by heavy industry players from Japan and China, following a more geographical split in the prior years. The Japanese offerings have been done in

<sup>12</sup> [“Sustainable debt – global state of the market 2022”](#), Climate Bonds Initiative, 31 May 2023.  
<sup>13</sup> [“Sustainable finance: why transition bonds and loans are not popular even as demand for green and sustainable products is growing”](#), South China Morning Post, 2 Feb 2022.  
<sup>14</sup> [“Why Japan embraces transition bonds”](#), Capital Monitor, 18 Jan 2023.  
<sup>15</sup> [“Investors, NGOs raise questions ahead of Japan GX bond issuance”](#), Responsible Investor, 2 Jun 2023.  
<sup>16</sup> [“Investors wary of greenwashing in Japan’s \\$140 billion bond plan”](#), The Japan Times, 18 Nov 2022.  
<sup>17</sup> [“Repsol oils way for green bond first”](#), Global Capital, 9 May 2017.

Japanese Yen to domestic institutions, which have taken comfort of their alignment with METI's guidelines.<sup>18</sup>

Committing to technologies that are yet unproven is a major risk for Japan's carbon transition. Technological progress is often nonlinear. Japanese automakers have long betted that hybrid vehicle technology would be the leading choice in battery-powered vehicles, only to do a U-turn after the demand for electric vehicle far outpaces hybrid models.<sup>19</sup> Similarly, the sector of camera manufacturing was once the hot bed of Japanese firms, until the shift to digital caused a widespread clean out of the sector.<sup>20</sup>

Japan, like other countries, is exposed to the risk of making technological choices today without the ability to know beforehand whether these technologies will be economical and competitive in the face of global competition. Yet, it is in the interest of the world and of Japan in particular to make significant progress on the path to "net-zero".

These proposed UoP GX bonds are likely to follow a similar focus on carbon-intensive sectors and encourage investments into technologies like carbon capture, ammonia and hydrogen co-firing in coal power plants and other carbon dioxide removal technologies. Yet, these technologies are far from being accepted internationally as a credible transition option. At a recent G7 ministerial gathering, Japan's climate plans have been criticised due to its bet on ammonia as a low-carbon energy source.<sup>21</sup>

By pursuing this option, Japan could be penalised in several ways. First, the country will lock itself into specific capital expenditures over long periods, as specified in the financing program. There is no guarantee that the yet-unproven technologies will deliver the carbon reduction outcomes that are promised in the country's nationally determined contribution. If these technologies are found ineffective, the financing package will have been wasted.

An alternative would be to Japan to issue a Sovereign sustainability-linked bond, which has some potentially beneficial features. The proceeds from a SLB do not need to be decided today, as the capital raised can be used for "general corporate purposes". Japan will also have more flexibility to switch to other solutions, if she finds that the currently advocated technologies are ineffective or uneconomical.

**A sovereign sustainability-linked bond (SLB) will open a broader range of possibilities for Japan's carbon transition. There will be no determined capital expenditures plan from the outset, leaving the door open to new options for decarbonisation.**

## A sovereign SLB issue can set long-term climate objectives

Public policies implemented to avoid climate change can have certain political consequences for the policy makers in charge of steering the course of nations. Japan, like other democratic nations, is subject to a political cycle that can interfere with long-term plans of decarbonisation.<sup>23</sup>

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<sup>18</sup> ["Transition Finance"](#), METI, accessed 7 Jun 2023.

<sup>19</sup> ["Toyota's \\$5.6bn battery bet marks closing of the hybrid era"](#), Nikkei Asia, 8 Sep 2022.

<sup>20</sup> ["The changing fortunes of Japanese camera manufacturers"](#), PetaPixel, 24 Oct 2022.

<sup>21</sup> ["Expensive and very dirty. BNEF slams Japan's plans to burn hydrogen-derived ammonia with coal for power production"](#), Recharge News, 29 Sep 2022.

<sup>23</sup> ["The feasibility and future of Japan's climate policy"](#), Heinrich Boell Stiftung, 30 Apr 2022.

A sustainability-linked bond is typically issued with reference to Key Performance Indicators (KPIs) and Sustainability Performance Targets (SPTs). These are usually disclosed in a public framework disclosed by the issuer in line with the Sustainability-Linked Bond Principles published by ICMA.<sup>24</sup> While the KPIs set the long-term data points that must be considered, the SPTs can vary from one issuance to another and set the level ambition at different levels. It is not uncommon to see successive issuances set the bar for the SPTs at different levels, as the issuers makes progress on its decarbonisation pathway.

A sovereign SLB could anchor public policy with a focus on the reduction of carbon emissions for the long-term, allowing this commitment to continue beyond the political cycle. By issuing such instrument with explicit KPIs and targets that can be adjusted through time, Japan will be able to have a more flexible policy response and adjust to the changes of its political cycle, as well as the evolution of international competitive conditions.

A higher cost of financing due to missed sustainability target can drive the discussion to the political arena and force political change towards decision makers that are more pro-active. An SLB financing by a sovereign issuer will lead to a raised interest rate servicing charge for the country, if the carbon emission reduction targets are not met. As such, it will provide some arguments to opposing parties, in the event that an incumbent government is failing to deliver on certain GHG emission reductions.

As an example, the French government is under pressure due to an increased debt burden that threatens to overtake spending on education, thus entering the political debate.<sup>25</sup> This is particularly acute for vulnerable developing nations.<sup>26</sup> For a political party advocating action against climate change, it can become an argument against a more climate-sceptic opposition.<sup>27</sup>

Sovereign bonds represent 45% of the \$150trn global debt market. Yet, the sovereign debt management offices are worried about covenants linking debt issuance to sustainability performance targets: they fear the failure to meet the targets, the targets are at risk of political reversal after elections, there is potentially a misalignment between taxpayers, investors and “sustainability interests”, while a failure to decarbonise could result in a deterioration of the fiscal situation.<sup>28</sup>

A sovereign SLB presents several advantages. The outcomes that will form the Sustainable Performance Targets (SPTs) can be aligned with the long-term commitment of the country’s nationally determined contribution of a 26% reduction in GHG emissions by 2030, relative to 2013.<sup>29</sup> A sovereign SLB will also remain outstanding beyond the current government and can therefore prolong transition policies beyond the political cycle. A sovereign SLB will focus the country on positive environmental outcomes and less on technological investment, which can change over time. A coupon step-up due to failed environmental targets will bring the awareness to the general public, as voters will be questioning why debt servicing is going up.

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<sup>24</sup> [“Sustainability-Linked Bond Principles”](#), ICMA, accessed 7 Jun 2023.

<sup>25</sup> [“Cost of France’s public debt started rising again in 2021”](#), Le Monde, 16 May 2022.

<sup>26</sup> [“Climate change is driving debt for developing countries”](#), UNFCCC, 3 Jul 2018.

<sup>27</sup> [“Trump moves decisively to wipe out Obama’s climate-change record”](#), The Washington Post, 28 Mar 2017.

<sup>28</sup> [“World Bank’s new SLB platform for sovereigns”](#), Natixis, 4 Nov 2022.

<sup>29</sup> [“Submission of Japan’s intended nationally determined contribution”](#), Ministry of Environment, accessed 7 Jun 2023.

**In summary, a sovereign SLB is focused on sustainability outcomes, with financial penalties for not achieving them. This can provide a hedge against policy changes, as it reduces the incentives of an incoming government to roll-out previous policies, given the additional cost burden that such actions would cause.**

## Foreign capital could help support a credible transition in Japan

Japan's government bonds, or "JGBs", have become increasingly attractive to foreign investors, although they still represent a relatively small share of the total, at 14.1% in December 2022.<sup>30,31</sup> In the past, international investors have, at times, been the major holders of Japanese T-bills.<sup>32</sup> They can again be a significant force as a marginal buyer, having shifted their holdings earlier this year.<sup>33</sup> There are reports that global institutions are getting ready for an increased activity in the Japanese bond markets.<sup>34</sup> Focusing on environmental outcomes can create a new source of interest.

There are several benefits to getting a broader interest from international investors. It diversifies the sources of capital available to Japan to finance its energy transition. Politically, it makes it more acceptable to finance the transition by another tranche of borrowing. It also helps put Japan's climate change commitments on the international scene. Broadening one's investor base could also deliver cheaper financing, although we recognise that the interest rate environment in Japan is already the lowest in the world.

Global investors appear to have received previous sovereign SLB offerings favourably, as measured in terms of oversubscription rates in those deals.<sup>35, 36</sup> Previous sovereign SLBs have been issued by Chile and Uruguay.<sup>37,38</sup>

A Japanese sovereign SLB could be received positively by the global community of investors. Japan can monetise the option value of its ambitious targets by offering its sovereign SLB at a yield lower than market rates, as investors will get the benefit of the coupon step-up, should Japan fail to deliver on its SPTs.<sup>39</sup> A coupon step-up structure may be an obstacle for buyers in Japan, but a payment to achieve specific outcomes can be used as an alternative.<sup>40</sup>

A sovereign SLB presents several advantages. It builds on the rising appetite for JGBs by foreigners and their appetite for climate-aligned instruments if they align with internationally recognised principles. SLBs focusing on environmental outcomes have been an instrument that investors feel

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<sup>30</sup> "[Turning Japanese: changing perceptions in JGBs](#)", Euroclear, 13 Mar 2023.

<sup>31</sup> "[Who are the leading players in the cash-JGBs market](#)", Market News & Insights, 15 Jun 2022.

<sup>32</sup> "[Foreign investors hold more JGBs than do Japanese banks](#)", Nikkei Asia, 27 Dec 2017.

<sup>33</sup> "[Foreign investors dumped Japan bonds in record sell-off in 2022](#)", Nikkei Asia, 13 Jan 2023.

<sup>34</sup> "[Banks bet Japan's sleepy bond market is waking up](#)", IFR, 28 Apr 2023.

<sup>35</sup> "[Uruguay's experiment in sovereign sustainability-linked bonds](#)", Columbia Threadneedle, 12 Dec 2022.

<sup>36</sup> "[Sovereign bond supports the Republic of Chile's climate ambition](#)", PR Newswire, 4 Mar 2022.

<sup>37</sup> "[First ever sustainability-linked sovereign bond supports the republic of Chile's climate ambitions](#)", PR Newswire, 4 Mar 2022.

<sup>38</sup> "[Uruguay issues global sustainability-linked bond, with IDB support](#)", IDB, 24 Oct 2022.

<sup>39</sup> For more details see "[Notes on risk-neutral pricing of SLBs and step-down structures](#)", AFII, 29 Oct 2022.

<sup>40</sup> Please see "[Sustainability-Lined Bonds: alternative steps](#)", AFII, 22 May 2023.

can deliver tangible carbon reductions for hard-to-abate sectors.<sup>41</sup> Finally, examples of sovereign SLBs have shown a strong response from global investors.

**An ambitious sovereign SLB could open the door to broader investors, who will be reassured by the commitment to the reduction of carbon emissions and bring credibility to Japan’s transition plans on the international stage and provide a stable source of capital.**

## Conclusions

The transition financing package announced by the Japanese government designated investment only into specific technologies that are not yet proven to deliver a credible transition.

Such financing could instead be done via an ambitious sovereign Sustainability-Linked Bond, which would offer the following advantages:

- **Investment could be made in a broader set of decarbonisation options, rather than the use-of-proceeds bonds that lock in capital expenditures in unproven technologies.**
- **A sovereign SLB will anchor public policy for the long-term with a focus on outcomes, rather than the means to reach them.**
- **By innovating with a new SLB structure, the Japanese government can open the pool of investors that will be interested to contribute to the long-term decarbonisation of the Japanese industrial complex.**

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<sup>41</sup> We do see more issuance from SLB in hard-to-abate sectors compared to green bonds. For the analysis please see “[SLBs: complementary, my dear Investor](#)”, AFII, 13 Apr 2023.



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