

Hungary

External Review of Integrated Green Bond Report 2022

December 11, 2023

This report was produced by Shades of Green using Shades of Green Methodology.
On December 1, 2022, S&P Global acquired Shades of Green from CICERO.

Shades of Green has reviewed Hungary's Integrated Green Bond Report 2022 ("Report"). We review against Hungary's Green Bond Framework (dated May 2020, the "Framework") criteria, and impact metrics for relevance and transparency.

We consider that the allocations in the Report align with the Framework and that the Report utilizes relevant and sufficiently transparent impact metrics. Moreover, we consider the Report aligns with the core principles and recommendations contained in ICMA's Handbook – Harmonized Framework for Impact Reporting (June 2023).¹

Project allocation

Hungary has issued a total of eleven green bonds under the Framework. For the Reporting Period, six bonds were issued under the Framework between 1 January 2022 and 31 May 2023 (the "2022/23 Bonds"). Though issued in various currencies, according to the Report, these total HUF 886.8 billion including the pricing of related swap instruments.

In respect of allocation, the Report covers the allocation of the 2022/23 Bonds. The proceeds of the 2022/23 Bonds have been allocated to investments which Hungary considers eligible green expenditures (i.e. in line with the criteria contained in the Framework) from the budget years 2020 and 2021. Financed projects are materially the same as the projects described in the Integrated Green Bond Report 2021, with minor changes in allocation between project categories and sub-categories. In respect of allocation, Shades of Green considers the Report aligned with the Framework; for a more detailed review, please see Appendix 1.

The Framework was assigned an overall Medium Green in our Second Party Opinion, though proceeds could be used to finance expenditures of all Shades of Green.² In the Second Party Opinion, it was noted that Hungary expected around 90% of proceeds to be allocated to the Clean Transportation project category. Based on the Report, this is the case, with around 89% of proceeds from the 2022/23 Bonds allocated to Clean Transportation projects.

Figure 1 sets out the allocation of the 2022/23 Bonds by Shade of Green.³ The majority of proceeds have been allocated to the Light – Dark Green Clean Transportation project category, with a majority of these likely allocated to Medium Green and Dark Green projects with reimbursement of the operation of the railway network and uncovered costs of railway passenger traffic, and through investments in rail networks and rail-based public

¹ [ICMA Handbook](#)

² [Hungary SPO](#)

³ Note that some expenditure is reported under the incorrect project category. For example, some energy efficiency measures have been financed under projects attributed to the renewable energy project category, and vice versa, or some electric vehicles have been financed under projects attributed to the energy efficiency project category. We consider that the Report is transparent on these, and that these are not material.

transportation. Dark Green allocations relate to Adaptation and Renewable Energy projects, Light – Medium Green allocations relate to Energy Efficiency and Waste and Wastewater Management projects, and Medium Green investments relate to Land Use and Living Natural Resources projects.

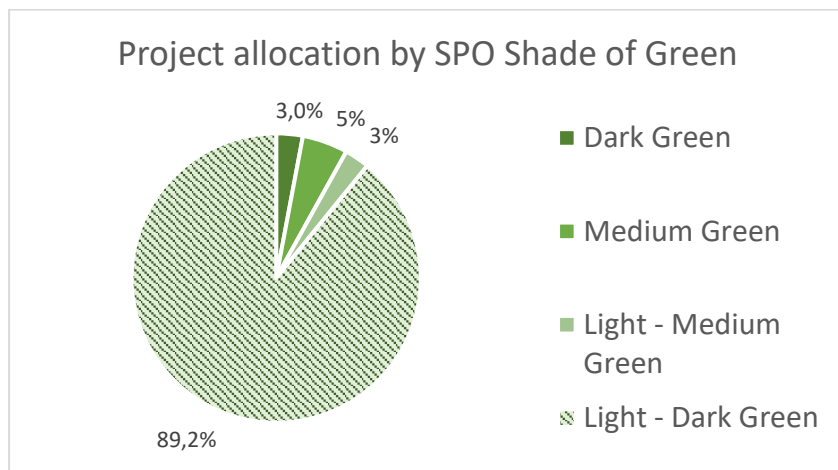


Figure 1: Allocation of 2022/23 Bonds by SPO Shade of Green. Shading is based on evaluation at time of issuance and does not reflect ex-post project verification.

Impact metrics

The Report covers the impacts of the 2022/23 Bonds arising in budget years 2020, 2021 and 2022. Impacts are set out on a project-by-project basis, and at least one indicator is provided for each project (in some case, the only indicator is the number of projects financed and a qualitative description). The Report covers 53 indicators, including core, exemplary and other sector specific indicators contained in the ICMA Handbook, as well as bespoke KPIs. In an update from last year's Integrated Green Bond Report, Hungary has strengthened its impact reporting by including quantitative impacts for projects in its Adaptation project category, and has further included a more detailed qualitative analysis of projects, for example for some projects under the Land Use and Living Natural Resources project category. Hungary has confirmed that impacts have been pro-rated to ensure they do not reflect, for example, earlier green bonds or financing from alternative sources (e.g. European Union funding). In case of impacts where apportionment was possible, impacts have been pro-rated according to their financing intensity attributable to the green bonds.

In respect of impacts, Shades of Green considers that the Report is generally transparent, supplementing relevant quantitative impacts with qualitative descriptions and case studies; for a more detailed review, please see Appendix 1.

Terms

S&P Global Ratings Shades of Green provides a review of Hungary's annual reporting based on documentation provided by Hungary and information gathered during teleconferences and e-mail correspondence with Hungary. Hungary is solely responsible for providing accurate information. All financial aspects of the sustainable finance reporting - including the financial performance of the bonds and the value of any investments in the bonds - are outside of our scope, as are general governance issues such as corruption and misuse of funds. Shades of Green does not validate nor certify the existence of investments and does not validate nor certify the climate effects of investments. Our objective has been to provide an assessment of the extent to which the bond has met the allocation and reporting criteria established in the Framework. The review is intended to inform Hungary, investors and other

interested stakeholders in Hungary's green bonds and has been made based on the information provided to us. Shades of Green cannot be held liable if estimates, findings, opinions or conclusions are incorrect. Our review does not follow verification or assurance standards and we can therefore not provide assurance that the information presented does not contain material discrepancies.

Appendix 1 - Detailed Review

Category	Description	Review against framework criteria	Impact Metrics	Relevance of metrics	Transparency considerations
Renewable Energy	- Subsidized loans for renewable energy use in buildings - Subsidized loans for increased energy efficiency and renewable energy use in residential buildings	No discrepancies identified - Loans for increased energy efficiency are not necessarily linked to the use of renewable energy, for example the installation of heat pumps, and would likely not qualify for the Dark Green shading allocated to this project category. These likely fall under the energy efficiency project category in the Framework, however. - Waste to energy projects are excluded under the Framework and Hungary has confirmed that proceeds have not been allocated to such projects.	- Annual electricity generation (MWh) - Total installed capacity (MW) - Avoided GHG emissions (tCO₂eq) - Number of projects - Number of households with improved energy classification	✓ Metrics are relevant and generation, capacity, and avoided emissions are listed as core indicators in the ICMA Handbook – Harmonized Framework for Impact Reporting.	✓ Some information on methodology is included in the Report, regarding avoided emissions for this project category. ✓ Hungary has confirmed that changes in building performance are measured by comparing energy certificates prepared pre and post investments.
Energy Efficiency	- Energy efficiency grant scheme - Tax allowance for energy efficiency improvements	No discrepancies identified Most proceeds were allocated to tax allowances. There is no specific energy efficiency threshold to qualify for these. These can also include elements of renewable	- Total energy savings (MWh) - Total renewable energy production (MWh) - Total GHG emissions avoided (tCO₂eq)	✓ Metrics are relevant and energy savings and avoided emissions are listed as core indicators in the ICMA Handbook – Harmonized Framework for Impact Reporting.	✓ Some more information could be included in respect of how energy savings are calculated. ✓ Hungary has informed us that companies that utilize the tax allowance

	Investment expenditure for agriculture	- energy and clean transportation, e.g. purchase of electric vehicles. - While energy efficient improvements are needed across all sectors, livestock farming is typically heavy emitting sector and lower consumption of meat is necessary in a 2050 future.	- Number of environmentally friendly vehicles deployed - Number of beneficiaries - Number of projects	scheme must undergo an independent energy audit about consumption before and after the investment – it is these figures that form the impact calculation for those allocations. ✓ Note that there are different methodologies for calculating energy savings across this project category. The Report is generally transparent on these differences. ✓ The validation of data reported by beneficiaries in respect of agricultural investments under this project category is particularly welcome.	
Land Use and Living Natural Resources	- Nature protection and biodiversity - Education and awareness raising - Sustainable agriculture	No discrepancies identified - Most proceeds were allocated to sustainable agriculture and nature protection and biodiversity. - Hungary has confirmed that no proceeds have been allocated to meat production or the purchase of livestock.	- Habitats of community interest with an improving conservation status - Species of community interest with an improving conservation status	✓ The ICMA Handbook – Harmonized Framework for Impact Reporting notes that, for living natural resources and land use projects, ‘providing qualitative information ... appears to be of particular relevance’.	✓ For many projects, only qualitative impacts are reported. Given the breadth of the project category, more quantitative reporting would be useful, where feasible. For some projects the Report states

	Remediation, environmental projects		- Number of projects and measures - Number of beneficiaries - Number of participants in trainings or consultancy services - Area supported		that impacts will be measured at project completion, expected or target outcomes would improve transparency.
Waste & Water Management	- State reconstruction fund for water utilities - Subvention for waste separation and reutilization as energy resource - Supporting waste management tasks - Monitoring remediation, efficient water use in agriculture	No discrepancies identified - Waste to energy projects are excluded under the Framework and Hungary has confirmed that proceeds have not been allocated to such projects. - While general investments in water utilities can have positive environmental impacts (lower leakage, better handling of waste etc), the Green Bond Principles emphasize that investments must be <i>sustainable</i> in and of themselves. The Report could provide more information on this.	- Households connected to drinking water system - Households connected to the sewage system - Length of sewage system per kilometer of the drinking water system - Number of supported projects - Annual gross amount of waste collected and treated or disposed of.	✓ The ICMA Handbook – Harmonized Framework for Impact Reporting recognizes improved water supply infrastructure and improved sanitation as ‘other sustainability indicators’.	✓ For subvention of waste separation and monitoring and remediation, the Report states that impacts will be provided on completion of financed projects. Hungary could consider providing ex ante impacts / expected impacts in the meantime. ✓ Given the long time-horizon for Hungary’s ‘Rolling Development Plan’ for water utilities (15 years), expected or target outcomes would improve transparency. ✓ For its remediation of water project in the Upper Tisza region, the Report contains qualitative and expected impacts – this is

welcome. A case study is also provided.

Clean Transportation	- Reimbursement of the operation of the railway network - Reimbursement of the uncovered costs of railway passenger traffic - Modernization of rail transportation - Electrification of railway lines - Rolling stock development - Tax exemptions of environmentally-friendly vehicles - Modernization of urban public transport	No discrepancies identified - Operating expenditure under this project category did not include elements related to fossil fuel. - In respect of rolling stock, electric multiple unit carriages (EMUs), tram-train vehicles and intercity carriages were purchased. - According to Hungary, the tram-train vehicles financed use electricity on tram line sections, but are diesel powered when running on train line sections. We therefore note a minor inconsistency from the Second Party Opinion, where Hungary confirmed that diesel rail infrastructure would not be financed. Fossil fuel powered public transportation is typically more exposed to climate risks. At the same time, we acknowledge the climate benefits of public transport and that zero tailpipe emission vehicles are not feasible or available in all situations. Allocation to such	- Passenger kilometers and passengers - Total length of reconstructed or upgraded railway, metro, or tram lines (km) - Number of upgraded key railways infrastructure elements - Total length of electrified rail lines (km) - Avoided GHG emissions (tCO₂eq) - Number of environmentally friendly trains, carriages, vehicles deployed	✓ Metrics are relevant and are included in the ICMA Handbook – Harmonized Framework for Impact Reporting as either core or ‘other sustainability indicators’.	✓ For measuring avoided emissions from modal shift from car to rail, the Report includes details on methodology and assumptions e.g. that passengers who use rail have shifted from car. ✓ Hungary calculates that 66.5% of avoided emissions can be attributed to the 2022/23 Bonds. The Report details this reasoning. ✓ For measuring avoided emissions from the shift to ‘environmentally friendly vehicles’, the Report includes details on methodology and assumptions. This is necessarily different than the modal shift to rail and the impact on comparability of impacts should be noted.
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vehicles amounted to 0.505% of the 2022/23 Bonds.

- Environmentally friendly vehicles include hybrids. Though aligned with the Framework, hybrids are a transition technology and not part of a 2050 future.
- Compressed natural gas (CNG) buses have been financed.

Adaptation	• Development of monitoring stations for the implementation of the Water Framework Directive • Water management developments for sustainability • Hungarian Meteorological Service	No discrepancies identified • According to Hungary, to improve sustainable water management, some diesel-powered equipment was financed to implement parts of the construction. • As well as adaptation benefits, the Report states that the rehabilitation of the Mosoni-Danube entails social, ecological, and biodiversity benefits.	• Number of supported projects and developments • Additional water stored (m³) • Reduced water loss (m³) • Reduced hail damage (ha)	The ICMA Handbook – Harmonized Framework for Impact Reporting notes that, for adaptation projects, ‘providing qualitative information ... is of particular relevance’. Metrics are relevant and reporting on reduced water loss and additional water stored are listed as exemplary indicators in the ICMA Handbook – Harmonized Framework for Impact Reporting.	The body of the Report contains qualitative and descriptive impacts and expected impacts – this is welcome. A case study is also provided. It is welcome that qualitative and social impacts (co-benefits) are reported in some instances. Hungary has for the first time included quantitative impacts for the project category, for example it reports estimated reductions in water loss and amount of additionally available water for the Ancient Drava Programme.
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