

1 SUMMARY

Action Labs are E4S Tech4Impact's multi-stakeholder platforms that gather leading actors from academia, industry, and government to determine a joint vision for a sustainable future in selected key topics. In June 2022, E4S launched the *Action Lab – Scaling Up Green Bonds*, which brings together investors, issuers, NGOs, policy makers and academics to foster collaborative projects around the Swiss green-bond market and bring it to scale. While this market has grown significantly in recent years, its size and transaction volumes remain relatively contained.

In the **first meeting** of the Action Lab (June 14th, 2022) participants identified the main barriers to growth of the Swiss green-bond market, among which were low issuer-investor interactions, high costs for issuers, low reporting standards, and low climate impact of the financed projects. In addition, participants discussed possible general solutions to these issues, namely creating assistance tools for issuers and investors, improving taxonomies, and reporting standards, and promoting reporting of both issuers' climate metrics and the marginal contribution of the project. Lastly, participants proposed some potential collaborative projects that could provide such solutions, namely gathering granular data on the projects financed by green bonds, exploring new types of issuances, and promoting multi-stakeholder platforms to reduce information frictions.¹

During the **second meeting** of the Action Lab (September 12th, 2022), participants built on the findings of the first to develop a first action plan for three main collaborative projects the Action Lab could promote to help the Swiss green-bond market reach scale. This action plan was structured through the lenses of three main questions, i.e., what is the final output, how do we achieve this output, and who are the stakeholders involved.

The first proposed project plans to build an open-source, granular database on the projects financed by green bonds in Switzerland. This database would centralise key project-level metrics, such as specific sectors and topics in which the proceeds are invested (i.e., circular economy), and combine these metrics with firm-level ESG metrics. This database should be built by Swiss universities, which would ideally receive the information directly from the issuers. Furthermore, policy-making institutions like the Federal Office of Environment could provide the online platform to host this database and promote it. Finally, this database should be developed in collaboration with major providers of similar data, such as the Climate Bond Initiative (CBI), the Swiss Stock Exchange (SIX), and International Capital Market Association (ICMA) with the goal of leveraging existing frameworks and maximising outreach.

¹ For a summary of the barriers, solutions and projects discussed in the first meeting, see Table A1 in the Appendix.

The second project, based on the start-up Frigg, plans to assess how to scale up the green-bond market through a decentralised finance (DeFi) framework. As standard green bonds bear generally relatively high issuing and transaction fees, the tokenization of underlying assets allows lower costs and a larger capital market access to the green-infrastructure asset class. Although decentralised finance is very promising, it is not yet established as a traditional financial service. The Action Lab aims to fill in this gap by carrying out a proof-of-concept exercise with market participants, with the goal of divulging awareness about DeFi in the Swiss bond market and possibly leading to new decentralised issuances.

Finally, **the third project** plans to create a network of NGOs and policymakers to increase communication between these two market actors and promote a policy and legislative agenda to improve the market of green bonds in Switzerland. Swiss policymakers, such as State Secretariat for International Finance (SIF), the Federal Office for the Environment (FOEN), and Swiss Sustainable Finance (SSF), and other financial industry associations such as the Swiss Pension Association (ASIP), would lead this project, with the support of NGOs, such as Climate Bond Initiative and Alliance Climatique. Possible actions are to enforce legislation on reporting standards, with a focus on the pre-issuance framework and forward-looking information. Finally, this network could develop a permanent forum for “green funds” that would pull together specific (small) projects at a cantonal or municipal level and promote pooled issuances.

The rest of this document is organised as follows. Section 2 describes the projects and the issues they address. Section 3 details the plans for actions participants proposed for these projects. Section 4 concludes by summarising the next steps towards the realisations of these projects. For all projects, the first step will be a detailed project proposal, followed by a call for interest and commitment for the participants of the Action Lab.

2 MAIN PROJECTS SELECTED IN THE FIRST MEETING

As summarised in Table A1 in the Appendix, the first meeting of the Action Lab identified five collaborative projects. As some topics were overlapping, and to maximise the output of the second meeting, these five projects were merged into three main ones. This section describes these three main projects, and highlights the solutions they attempt to provide, by type of issues of the Swiss green-bond market.

2.1 PROJECT 1 – DATABASE FOR GREEN BONDS IN SWITZERLAND

The goal of this project is to build an online database on green bonds and related projects in Switzerland. This database would report all the projects, existing or potential, that either are being or can be financed with a green bond in Switzerland. It would include several project-related metrics such as circularity, biodiversity, and others. Then, it would include reporting standards and best market practices for green bonds. Finally, it would report the issuer's climate metrics and the marginal contribution of the green-bond project to such metrics. The Action Lab would take the leading role of gathering the information on current and potential projects, supported by issuers, investors and policymakers, and partner with NGOs which provide similar databases – i.e., Climate Bond Initiative, Swiss Stock Exchange (SIX), International Capital Market Association.

Overall, this project would represent an open-source assistance tool for issuers and investors that reduces information frictions, helps coordinate reporting standards, and promotes reporting of both issuers' climate metrics and the marginal contribution of the underlying project. It thus helps reduce some of the key barriers of the market, namely low issuer-investor interaction, low reporting standards, transparency, and credibility, and potentially low relevance of green projects' climate impact.

2.2 PROJECT 2- FRIGG: DECENTRALISED GREEN INFRASTRUCTURE BOND ISSUANCE

Frigg is a decentralised-finance start-up that aims to scaling up the green-bond market by tokenizing renewable energy. As standard green bonds bear generally high issuing and transaction fees, the tokenization of underlying assets allows lower costs and a larger capital market access to the green-infrastructure asset class. The venture, co-founded by UZH PhD candidate Philip Berntsen, could be the basis for a multi-stakeholder collaborative project for issuing a green bond through decentralised finance. This would require identifying a green infrastructure asset that seeks financing, lay-out the alternatives for acquiring the funds (traditional vs decentralised finance), depict the cost-of-capital for each alternative (also with the option of associating a carbon credit to the issuance), and substantiate with a proof of concept of a real issuance using Frigg technical infrastructure.

While decentralised finance is still at its infancy, its potential advantages are clear, such as lower costs of issuance and wider pool of investors (allowed by tokenization). A proof-of-concept

issuance via Frigg would highlight what is the discount on issuance costs compared to centralised solutions. If confirmed, a decentralised issuance would represent one possible solution to the high costs of issuance reported by the industry.

2.3 PROJECT 3- SWISS NGO-POLICYMAKER NETWORK

This project would create a network of NGOs and policymakers. The goal is to increase communication between these two market actors and promote a policy and legislative agenda to improve the market of green bonds in Switzerland. NGOs and Swiss policymakers would lead this project and consult with researchers, investors, and issuers to identify the pressing issues and possible policy solutions. To increase the impact and probability of success, network members should partner with initiatives already active in promoting homogeneous taxonomies and reporting standards, such as the Taskforce on Nature-related Financial Disclosures (TNFD) and Climate Bond Initiative. Possible actions are to enforce legislation on reporting standards, with a focus on the pre-issuance framework and forward-looking information and promote homogenous taxonomies at the international level.

Currently, there is no legislation on the requirements green bonds have to abide by – there are market standards and taxonomies, but no actual legislation is in place. This platform would move the first steps towards a legislative framework for green bonds. By doing so, it would increase reporting standards, transparency, and credibility of this type of financial tool, thus supporting its legitimacy and possibly attracting more investments.

Table 1 summarises which issues and general solutions these projects are addressing.

Table 1: Selected projects and associated goals and issues to address

Project	Goal	Issue Addressed
Project 1 – Database for Green Bonds in Switzerland	Create education or assistance tools for issuers and investors	Lower issuer-investor interaction
	Coordinate and improve taxonomies and reporting standards.	Low Reporting Standards, Transparency, Credibility
	Promote reporting of both issuers’ climate metrics and projects’ marginal contribution.	Low Relevance of Green Projects’ Climate Impact
Project 2 - Frigg: Decentralised Green Infrastructure Bond Issuance	Promote the issuance of new types of green bonds with lower issuance costs	High Costs for Issuers
Project 3 – Swiss NGO-Policymaker Network	Coordinate and improve taxonomies and reporting standards.	Low Reporting Standards, Transparency, Credibility

3 OUTCOME OF THE SECOND MEETING: ACTION PLANS FOR THE SELECTED PROJECTS

During the second meeting, participants laid the groundwork for an action plan for these three main projects. Each project had a working group. At the beginning of the meeting, participants were asked to join the group they wanted to contribute to.² There were approximately eleven participants for project 1 on the database, five participants for project 2 on the decentralised issuance, and five participants for project 3 on the NGO-policy platform.³ The so-formed working

² Note that participants may have selected the project following their personal interest, but this was not a requirement. The general logic was that participants could contribute to any discussion on the day of the event. In the future, all participants will be able to be involved in any of the three projects, not only the one they contributed to during the second meeting.

³ It is normal that project 1 had more participants as it merged together 3 data projects identified in meeting 1.

groups started defining the action plan for the projects by following a fixed conceptual framework, which consisted in answering to each of these three questions in turn:

- What is the final output (of the project)?
- How do we achieve this output?
- Who are the stakeholders to involve?

This exercise helped define the guidelines on what the output of these projects should look like, what are the steps needed to get there, and which stakeholders should be involved, with concrete examples. This section summarises the answers of participants to these questions. These answers will be instrumental for the detailed proposals that will be drafted for each of these projects in the next stage of the Action Lab.

3.1 ACTION PLAN FOR PROJECT 1 – DATABASE FOR GREEN BONDS IN SWITZERLAND

What is the final output?

An open source or free Swiss online database on green bonds and other sustainable debt instruments, such as social- or sustainability-linked bonds.

More specifically the database would report:

- All the projects, existing or potential, that either are being or can be financed with a green bond in Switzerland. It would include several project-related metrics such as circularity, biodiversity and others;
- Reporting standards and best market practices for green bonds;
- The issuer’s climate metrics and the marginal contribution of the green-bond project to such metrics;
- “Shades of green” for green bonds, computed with post-issuance reports – i.e. green bonds that are investing in projects with large environmental impact would be dark green.

How do we achieve this output?

- To ensure the database is accessible to anyone freely, issuers should send their reports directly to a designated entity that will centralise the data. This entity could be for example a government entity and academic.
- Moreover, to ensure that this platform distinguishes itself from other such databases (e.g., the subscription-based platform by Nasdaq) information on harmonised reports should be very granular, i.e., project and outcome specific with an exclusive Swiss focus.
- As mentioned above, within the database a distinction should be made between green bonds and sustainability-linked bonds. The latter should list industry targets, benchmarking to science-based targets (SBTs), real impact and track records.
- To create a transparent way to capture green bond project impacts and define appropriate KPIs, one participant proposed to use the framework of the Impact-

Weighted Accounts developed by Harvard Business School, which currently only applies to companies' financial, social, and environmental performance.

Who are the stakeholders involved?

- Issuers should provide information on the impact of their ESG-labelled bonds.
- Academia, such as E4S, could analyse the impact reports and create the database by sector.
- Government entities, such as the Federal Office of the Environment (FOEN) could provide the platform.
- Investors should ensure that others are made aware of the existence of the platform, such that it gains more traction.

Additionally, to make this project a success we should leverage existing resources provided by major sustainable debt market actors such as CBI, SIX Group and ICMA. The Action Lab would take the leading role of gathering the information on current and potential projects, supported by issuers, investors and policymakers, and partner with NGOs which provide similar databases.

3.2 ACTION PLAN FOR PROJECT 2 – FRIGG: DECENTRALISED GREEN INFRASTRUCTURE BOND ISSUANCE

What are the final outputs?

- Surveys among stakeholders in Switzerland on centralised vs decentralised issuances
- Analyse of DeFi vs. Traditional Finance issuance:
 - Use the surveys' answers to conduct an analysis to estimate (ex-ante) the monetary benefit from tokenization versus traditional financing schemes (via a Real Options Analysis model available at University of Zurich and Frigg)
- Proof-of-Concept issuance:
 - Compare the results of the model with an actual issuance of a green bond in the decentralised market

How do we achieve this output?

- Select an issuer/developer of a sustainable infrastructure with an interest in issuing a Digital Green Bond (e.g., an operational solar or hydropower plant that can be re-financed to support project development of other renewables by the same developer)
- Determine the optimal terms for the Digital Green Bonds through framed interviews with involved stakeholders
 - Investors/Asset Managers: determine their willingness to pay (i.e., lower threshold for yield, and tenure)
 - Politicians/regulators: determine minimum bond disclosure requirements. In particular, what type of information should at least be included as part of the Digital Green Bond issuance, e.g., access to operational data such as real-time IoT data tracking carbon avoidance or produced electricity.

- Issuers/Project developers: the upper threshold on the cost of capital (i.e., upper threshold for yield, and tenure of the bond)
- Other stakeholders: may include guarantors or insurance companies, that hedges issuer default risk, liquidity providers, underwriters, audit, accounting, local community, etc.
- Use the Frigg software to operationalise the Digital Green Bond and substantiate the claim that Decentralised Finance (DeFi) can help scale green bonds compared to Traditional Finance (TradFi)
- Summarise findings in academic paper

Who are the stakeholders involved?

- Custodian banks should develop the deployment of the Digital Green Bonds with the guidance of
 - Institutional investors, such as pension fund or insurance companies
 - SECO
 - Issuers
- Other Stakeholders
 - Pioneers of the finance industry that entered the crypto business should support other less experienced stakeholders to ensure trust in the decentralised system
 - Development agencies should participate as consultants when a project is located in a developing country.

3.3 ACTION PLAN FOR PROJECT 3 – SWISS NGO-POLICYMAKER NETWORK

What is the final output?

A platform for NGOs and policymakers to increase communication between these two market actors and promote a policy and legislative agenda to improve the market of green bonds in Switzerland.

- Possible actions are to enforce legislation on reporting standards, with a focus on the pre-issuance framework and forward-looking information and promote homogenous taxonomies at the international level.
- Participants highlighted that this network should aim at increasing the credibility of green bonds. The focus should be enabling investors to identify whether an issuer is effectively invested in reducing emissions or not (risk of greenwashing).
- Additionally, this network could develop a permanent forum for “green funds”. As such it may be used to bridge financing issues for specific (small) projects at a cantonal or municipal level, following the Swedish example of Kommuninvest.

How do we achieve this output?

- Participants expect this network to convene at least on a biannual basis

- This network should consist of an exchange platform which informs the public about regulatory developments.
- Moreover, the network should target different divisions of the public sector to ensure greater participation rate among policymakers.
- Workflows could be developed like the one provided by the Swiss Climate Scores, which establish best-practice transparency on the Paris Alignment of financial investments. That could foster global standards and regulations.
- These workflows could also consider other collaborative projects such as the ones proposed during the Action Lab, that could benefit from the broad support of policymakers.

Who are the stakeholders involved?

- To support this network a broad range of stakeholders should be involved.
- On the administration side, to induce cooperation between these policy stakeholders, and promote harmonisation of departments, one may include the State Secretariat for International Finance (SIF), the Federal Office for the Environment (FOEN), and Swiss Sustainable Finance (SSF).
- Additionally, other financial industry associations could be included such as the Association Suisse des Institutions de Prévoyance (ASIP), and others.
- It would be beneficial to also include the public, civil society, journalist, or citizen forums.

Table 2 summarises the three action plans described above.

Table 2: Summary of the projects' action plans

Project	Final Output	Steps to Final Output	Stakeholders Involved
Database for Green Bonds in Switzerland	Open-source database on green bonds and other sustainable debt instruments (all projects that are being or will be financed by green bonds, project level metrics, issuer-level metrics, “shades of green”)	Create a platform	Government entities, such as the Federal Office of the Environment (FOEN) could provide the platform.
		Issuers send reports to designated entity that will centralise the data	Issuers (should provide information on the impact of their ESG-labelled bonds)
		Apply the framework of the Impact-Weighted Accounts	Academia (e.g., E4S) could analyse the impact reports and create the database by sector
		Advertise the platform	Investors should ensure that others are made aware of the existence of the platform, such that it gains more traction.
Frigg: Decentralised Green Infrastructure Bond Issuance	Surveys among stakeholders in Switzerland on centralised vs decentralised issuances, analyse of DeFi vs. Traditional Finance issuance and Proof-of-Concept issuance	Select an issuer with an interest in issuing a Digital Green Bond	Frigg, issuers
		Determine the optimal terms for the Digital Green Bonds through framed interviews with involved stakeholders	Custodian banks, institutional investors, issuers, SECO, other stakeholders (including pioneers of the finance industry that entered the crypto business, development agencies)

		Use the Frigg software to operationalise the Digital Green Bond	Frigg, academia
		Summarise findings in academic paper	Frigg, academia
Swiss NGO-Policymaker Network	Platform / Network for NGOs and policymakers (the platform would enforce legislation, fight greenwashing, establish a permanent forum for “green funds”)	Establish bi-annual meetings	State Secretariat for International Finance (SIF), the Federal Office for the Environment (FOEN), and Swiss Sustainable Finance (SSF)
		Establish an exchange platform to inform the public about regulatory developments	
		Involve different divisions of the public sector	
		Develop framework for workflows, along the line of the Swiss Climate Scores	

4 CONCLUSIONS AND NEXT STEPS

The second meeting of the *Action Lab - Scaling Up Green Bonds* has highlighted key solutions in the Swiss green-bond market, which may solve barriers to sustainable investments and for the market to reach scale. Participants covered their expected outputs of the collaborative projects, how to achieve those, and identified key stakeholders needed to implement the solutions.

Project 1, the open-source database on green bonds and other sustainable debt instruments, aims to solve the barriers of low issuer-investor interaction, reporting standards, transparency, credibility, and relevance of green project's climate impact. As such government entities such as the FOEN could provide the platform, academia could analyse the impact reports, provided by issuers, and organise the database by sectors. In parallel, to ensure a high participation level of both issuers and investors, the latter should ensure awareness of the existence of the platform among their stakeholder groups.

Project 2, the decentralised financial infrastructure for green bonds provided by Frigg, aims to curb the cost of green bond issuance through tokenization of infrastructure projects. Thus, one needs to determine the optimal terms for the Digital Green Bonds through framed interviews with involved stakeholders and select an issuer/developer of a sustainable infrastructure with an interest in issuing a Digital Green Bond. To ensure a successful outcome multiple stakeholders should be involved in the deployment of the system. Custodian banks could develop the deployment of the Digital Green Bonds with the guidance of institutional investors, SECO, and issuers. Stakeholders involved in the crypto and finance industry should foster trust in the decentralised system by supporting less experienced stakeholders. If a project is located in a developing country, development agencies should be consulted.

Project 3, the Network of Swiss NGOs and policymakers, aims to coordinate and improve taxonomies and reporting standards. During the bi-annual meeting which involve difference divisions of the public sector, like SIF, FOEN and SSF, stakeholders in consultation with NGOs will develop a framework of workflows, along the lines of the Swiss Climate Scores, to reinforce legislation, fight greenwashing and create the permanent hub for "green funds".

Moving forward, the Action Lab proposes the following timeline (Figure 1). The Action Lab organisers will disseminate the first project proposal among participants by February 1st, 2023. Participants will then ask to state whether they would like to actively participate in the collaborative project(s) by answering the call for interest by March 1st, 2023. Interest may be expressed in the form of commitments such as monetary or non-monetary resources (time, data, network, etc.). The first collaborative project kick-off is set to be launched by April 15th, 2023. Finally, the third Action Lab will aim to present all project developments and results to participants by August 2023. This would facilitate the continuation of the dialogue which is vital for the development of new ideas that help strengthen the Swiss green-bond market.

Figure 1 – Next steps of the Action Lab – Scaling Up Green Bonds



5 APPENDIX

Table A1: Summary of the Issues, Solutions and Collaborative Projects discussed during Meeting 1

Issue	Solution	Action Lab Collaborative Project	Type of Tool
Low Issuer- Investor Interaction	Create education or assistance tools for issuers and investors	Create a database on present and potential green-bond projects in Switzerland	Database
High Costs for Issuers	Promote the issuance of new types of green bonds with lower issuance costs	Create new green bond linking the proceeds of green bonds with carbon pricing	New Financial Instrument
	Create pools of issuers to issue a single green bond	-	-
	Create government-supported programs to reduce transaction and issuance costs.	-	-
Low Return for Investors	Promote use of green bonds as collateral for central-bank funds	-	-
	Implement penalties for missed targets	-	-

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Table A1: Summary of the Issues, Solutions and Collaborative Projects discussed during Meeting 1 (continued)

Issue	Solution	Action Lab Collaborative Project	Type of Tool
Low Reporting Standards, Transparency, Credibility	Coordinate and improve taxonomies and reporting standards	Create a network of NGOs and Swiss Policymakers	Networking Platform
		Create a database on reporting standards and best market practices for Switzerland	Database
	Create a pre-issuance transparency framework	-	-
	Promote forward-looking reporting	-	-
Low Relevance of Green Projects' Climate Impact	Promote reporting of both issuers' climate metrics and the marginal contribution of the project	Conduct research to assess the marginal climate impact of the project on the issuer's overall climate or ESG performance (additionality)	Research / Report
		Create a database combining issuers' total climate metric and the project's marginal climate impact for Switzerland	Database
	Promote frequent impact-report publications to ensure investments are having an impact	-	-

Table A2: Participants of the first meeting of the Action Lab

First name	Last name	Organization
Philip	Berntsen	University of Zürich
Sophie	Bürgin	E4S
Edoardo	Chiarotti	E4S
Jean-Pierre	Danthine	E4S
Julien	Daubanes	Université de Genève
Alice	Eliet-Doillet	EPFL
Aurelia	Gerber	EUROFIMA
Jonas	Grunder	SECO
Thomas	Hohne-Sparborth	Lombard Odier
Florence	Hugard	E4S
Eric	Jondeau	Université de Lausanne
Lucretia	Landmann	DETEC
Sandro	Leuenberger	Alliance Climatique
Alexia	Luyet	Vontobel
Luca	Manera	Asteria Investment Managers
Benoit	Mojon	BIS
Marina	Parashkevova	Symbiotics
Patrick	Reichert	IMD
Jean-Paul	Renne	UNIL
Philippe	Spicher	Amos Advisory
Virginie	Vandoorn	Conser
Sarah	Wilkin	FlyGreen Alliance

Table A3: Participants of the second meeting of the Action Lab

First name	Last name	Organization
Philip	Berntsen	University of Zürich
Julia	Bory	E4S
Sophie	Bürgin	E4S
Edoardo	Chiarotti	E4S
Jean-Pierre	Danthine	E4S
Julien	Daubanes	Université de Genève
Jean-Philippe	Desmartin	Edmond de Rothschild
Alice	Eliet-Doillet	EPFL
Leonie	Engelhardt	UNIGE
Olivier	Hildbrand	Pictet Asset Management
Florence	Hugard	E4S
Eric	Jondeau	Université de Lausanne
Dimitri	Lepoutre	Zero Emission Group
Sandro	Leuenberger	Alliance Climatique
Alexia	Luyet	Vontobel
Antoine	Mach	Covalence
Luca	Manera	Asteria Investment Managers
Shema	Mitali	EPFL
Matthias	Ogg	Zürcher Kantonalbank
Derek	Queisser de Stockalper	Qanalytics
Andrea	Rangle	Université Savoie Mont-Blanc
Patrick	Reichert	IMD
Alessandra	Rojas	E4S
Leila	Sassi	Holcim Ltd
Philippe	Spicher	Amos Advisory
Erika	Wranegard	Lombard Odier