Banking Environment Initiative

Understanding investments' sustainability performance to enable more sustainable investment choices

Concept note

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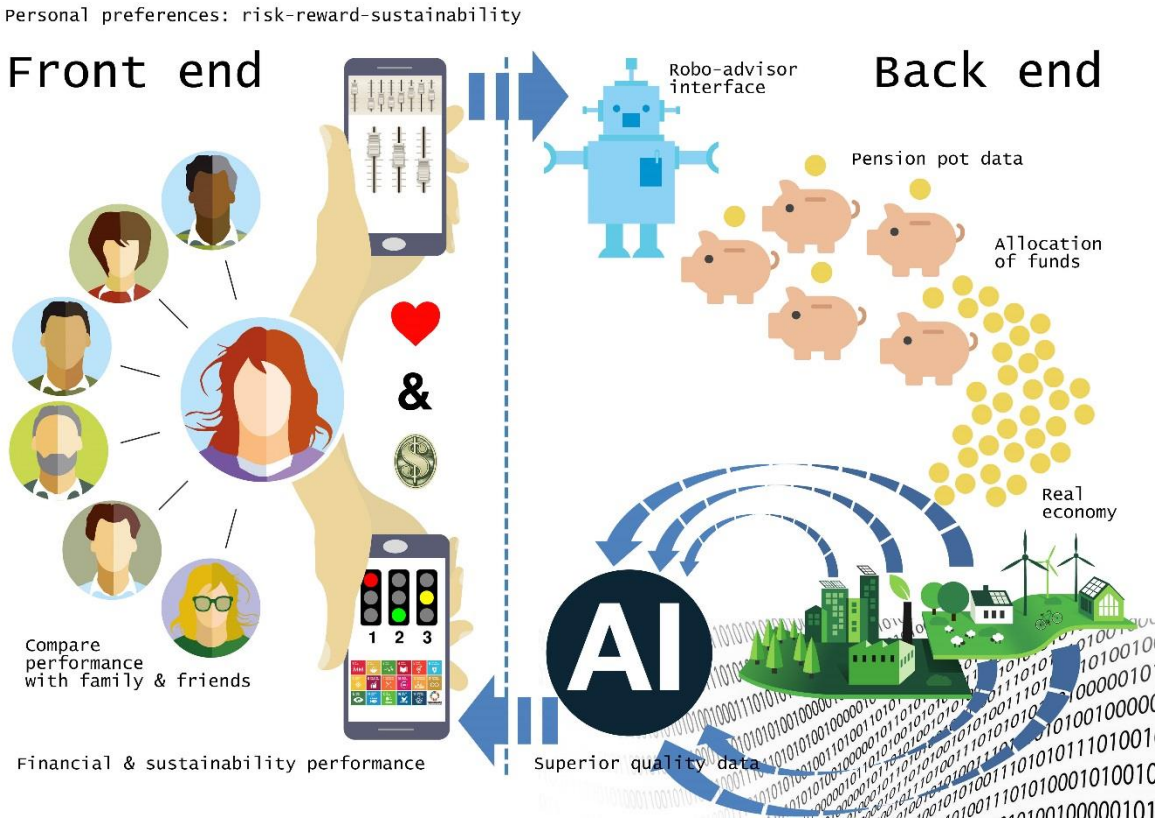
INSTITUTE FOR SUSTAINABILITY LEADERSHIP

Management summary

This note proposes a concept that would provide better information to pension investors about the sustainability impacts they have through their choice of pension investments. The end goal is to enable better decision-making for pension beneficiaries specifically with Defined Contribution (DC) schemes, although other retail investors may also find it useful. The solution would be an application which combines 1) a user-friendly and personalised front end with 2) an overview of beneficiaries' pension accounts and 3) a smart bundling of information on the sustainability performance of the funds in these accounts.

Functionality and added value

The concept would add value by overcoming the combined pension market problems of sustainability opacity and one-sided communication. It would offer pension members an interface that easily enables them to understand both the financial and sustainability performance of their investment portfolios. The information provided would be superior to what is currently available, both in terms of data quality as well as understandability. This way it would counter the opacity. In order for the proposition to work, its usability, or user experience (UX) design, would need to be of high quality. Also the solution would enable social interactions around individuals' sustainability preferences to overcome pension apathy.



Background to this concept's development

The concept results from the work of a sub-team of the Banking Environment Initiative's Fintech Taskforce consisting of BNP Paribas, BNY Mellon, the University of Cambridge Institute for Sustainability Leadership (CISL), Legal & General Investment Management and PGGM. The concept is aligned with the mission of the Banking Environment Initiative and should be of interest to the market units of banks, investment managers, pension funds, consultants, NGOs and government agencies.

Core hypotheses

The core hypotheses of the concept are threefold:

1. Improving availability and understandability of information allows pension beneficiaries to more consciously make investment decisions.
2. More conscious investment decisions will increase demand for investment opportunities with better sustainability performance.
3. Emerging technologies in the financial sector (fintech) could enable the above if such technologies are applied well.

The development team is convinced that:

- the market potential of solutions inspired by this concept is very large – global DC markets amount to several trillion US dollars
- a major societal opportunity can be grasped
- to succeed, collaboration is required within the financial sector and between the financial sector and the public sector.

Concept phase now, much work still to be done to materialise

The current concept is the result of an idea-forming process. In parallel, a clickable design for a smartphone application has been developed. As yet it is not certain that the concept can work, so a fact-finding project phase would be needed next: a set of follow-up processes with the objective to validate/invalidate the hypotheses that are part of the concept.

Remainder of the document

The remainder of this document consists of the following parts:

- a more elaborate description of the business rationale for the concept
- an initial scan of available components
- an inventory of stakeholders that will need to be engaged in order to reach scale, including government entities
- proposed next steps for taking the concept further
- appendices and sources.

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Business rationale

Problem definition

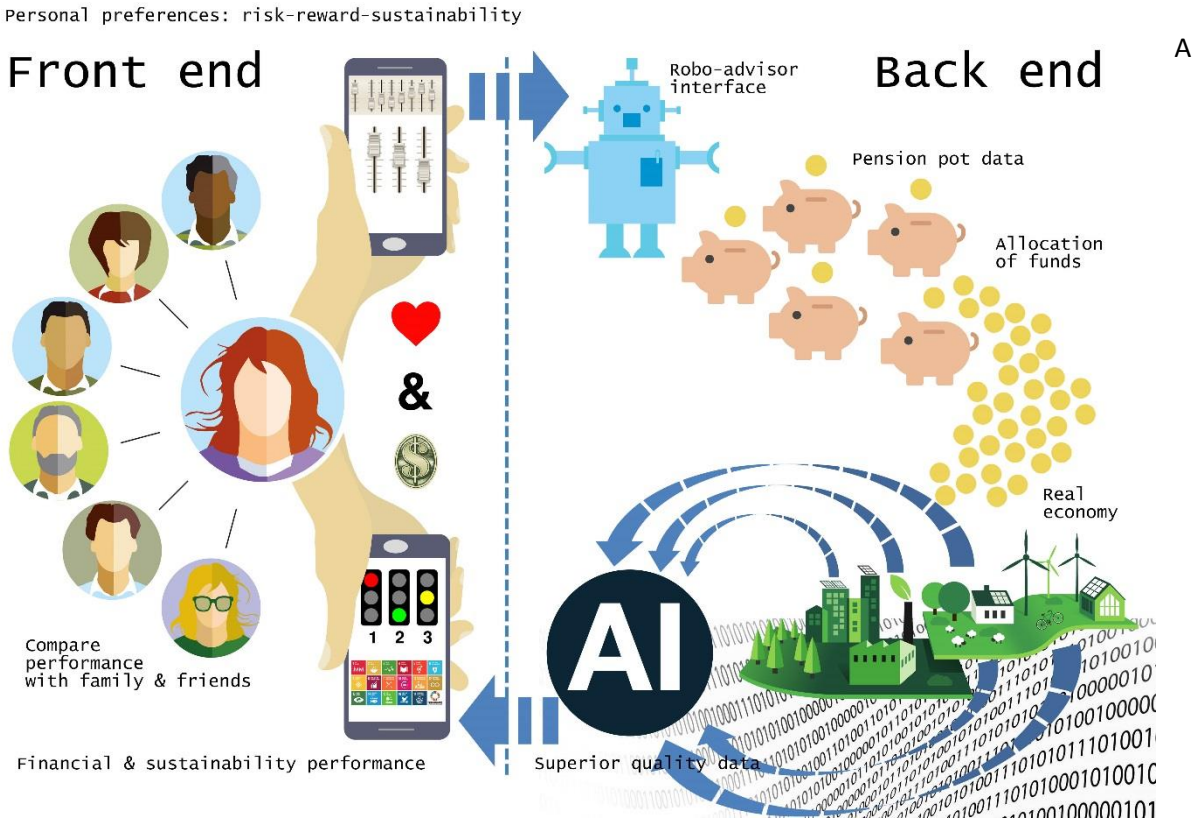
This concept note proposes an approach to help solve a problem in Defined Contribution (DC) pension markets. Pension beneficiaries in such markets currently are insufficiently able to make well-informed decisions regarding the sustainability performance of their pensions. This is problematic from a perspective of sustainability, but also from the perspective of servicing individuals to achieve the aspirations they hold on the future for themselves and their surroundings.

The concept in this note proposes to tap into the trend in the asset and wealth management industry in which clients express interest in more sustainable investments. Pension products that provide investors with possibilities to invest pension savings based on personal values and sustainability goals are in line with this trend.

The fundamental hypotheses in this concept are the following:

- improving information available allows pension beneficiaries to more consciously make investment decisions
- more conscious investment decisions will increase demand for investment opportunities with better sustainability performance
- emerging technologies in the financial sector (fintech) could enable the above if such technologies were to be applied well.

Figure 1 – Illustration of the functionality and high-level components of the proposed solution



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further important hypothesis in this note is that products that enable informed sustainability choices, ie choices about what type of world beneficiaries want to retire in, are also likely to increase individual beneficiaries' pension awareness. If validated, this effect would offer the added benefit of helping people to prioritise saving for their retirement age, a time in the future that is currently of low interest to most individuals.

Proposed scope – Defined Contribution pension schemes

The initial scope of the concept is DC pension schemes. The target group are pension beneficiaries who are members of such DC schemes and who have various 'pension accounts' (or 'pension pots'). This scope is proposed because of benefits outlined below but should not limit the applicability of the concept or its underlying technologies to other types of pension beneficiaries or investors. The concept would be less suited for implementation in respect of so-called Defined Benefit (or DB) schemes where the investment power is vested in trustees on behalf of underlying members.

The DC pension market is an appropriate market to develop a concept such as this, because in DC schemes people need to explicitly choose the funds within their DC pension pots. The concept aims to improve pension beneficiaries' ability to do just that. Currently some 98 per cent of people in DC schemes choose the default fund options.[1] If it can be made easier for beneficiaries to understand the sustainability performance of their investment choices this should help them to take a much more active role in choosing the investment funds which they think align with their values.

Typically, DC beneficiaries tend to build up several pension accounts during the course of their working career. This is because DC schemes align with labour market mobility, something that is relevant to younger clients who tend to be more mobile.[2] Normally when a beneficiary switches jobs the build-up in their current pension account ends and the build-up in a new pension account starts. After people have switched jobs a couple of times it can become challenging for the beneficiary to keep track of their pension investments. An added benefit of the solution proposed is that it would help beneficiaries keep track of their overall pension pot.

Why this is a problem worth solving – societal and commercial opportunities, and changing political landscape

This project identified four reasons why this is a problem worth solving:

- major societal opportunities can be grasped
- major commercial opportunities can be grasped
- the political and regulatory landscape is ripe for this type of market solution
- too few effective solutions are being offered to clients.

Major societal opportunities can be grasped by contributing to solutions for urgent and material sustainability issues. Sustainability issues form and are at the root of many major global challenges.[3]

[1] Source: The Pensions Regulator. (2018).
[2] Benefits in these types of plans accrue more evenly through their career and are portable should the worker separate from the sponsoring firm or leave the workforce for a period. Source: Broadbent, Palumbo & Woodman, 2006.
[3] This interrelatedness of sustainability issues is one reason why the UN's Sustainable Development Goals are a *collection* of goals for a diverse set of interrelated issues. See also Nilsson, Griggs & Visbeck, 2016.

Maintaining investment in current economic structures on a 'business as usual basis' entails the risk of prolonging and exacerbating such issues. Notwithstanding the importance of delivering sustainability-supporting finance, the contribution from the side of asset owners and the investment industry to solutions has been underwhelming to date. This concept aims to make such contributions practical and commercially relevant to the industry. A hypothesised added benefit of the concept is that increased insight on sustainability performance would help beneficiaries to engage more with their pensions and the world they hope to retire in.

Major commercial opportunities can be grasped by tapping into changing consumer preferences in a major market. DC pension schemes are offered in 28 of the 35 OECD countries. In a subset of 15 of these countries provided by the OECD the 2016 total amount invested in DC schemes exceeded USD 8 trillion.[4] Consumer research by market parties indicates a shift in consumers' preference for sustainable products.[5,6] Recent surveys and questionnaires have revealed that people, particularly younger generations, are becoming aware of the importance of their investment choices to sustainability issues, and that better options/information may be available.[7] Academic studies have so far not falsified such practitioner findings and tend to be inconclusive on the extent to which sustainability performance matters for actual investor behaviour.[8]

The political and regulatory landscape is changing, with global, continental, national and local governments and regulators stepping up fast. It is increasingly being recognised in the political and regulatory arena that the current investment market is not going to materially contribute to solving the above issues on its own. This is why governments and regulators are stepping in.[9] Also, in the past decades governments globally have enacted DC scheme supporting measures such as auto-enrolment.[10]

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[4] See Appendices 2 and 3 of this note.

[5] The Natixis Mind Shift study surveyed 7,100 individual investors in 22 countries. It highlights how an increasing number of individuals want their investment to represent their personality and values. Source: Natixis, 2017.

[6] Legal & General Investment Management found in a 2016 online survey it commissioned that 97 per cent of respondents wanted to hear updates from their workplace pension on its philosophy, actions, where the money is invested and the sustainability performance those investments have. In the same research 96 per cent of respondents voiced their desire for their pension to be aligned to their personal values. Also, 79 per cent indicated that they would think somewhat more positively towards an employer that offers a pension investment that is aligned to the needs of the future of its employees. Research was conducted online by FTI Consulting, October 2016/1,681 UK respondents (1,076 with either a Defined Contribution or a Defined Benefit pension). Source: Legal & General, unpublished.

[7] Morgan Stanley found in a survey it conducted that 90 per cent of millennials indicated interest in pursuing sustainable investments as part of pensions. On the point of sustainability performance, 75 per cent agreed that it is possible for "my investment decisions to influence the amount of climate change caused by human activities", which is an indication of respondents being conscious, over and above the financial returns of their investments, that their choice can change the ecological trajectory. Source: Morgan Stanley Institute for Sustainable Investing, 2017.

[8] For example the Investment Leaders Group (ILG), convened by CISL, performed a meta-analysis of so-called 'experimental studies' and 'attitude studies' on consumer preferences. This analysis found that existing studies are inconclusive on actual investor behaviour due to 1) a lack of sufficiently large sample sizes and/or 2) measurement of investor attitude instead of actual investor behaviour. The conclusion of the study was that more research was needed. Source: CISL, forthcoming.

[9] A leading example is the European Commission's Action Plan for Financing Sustainable Growth. This plan is being closely watched by regulators globally and it is likely that its example will be followed in jurisdictions outside of the EU. The EU's plan consists of developing an EU-wide taxonomy for 'green assets', green investment product labelling, obligatory incorporation of sustainability in investment advice, and providing a clarification of sustainability duties of institutional investors and asset managers. Other government initiatives which are related to providing asset owners with more clarity on sustainability exposures are the Financial

Too few effective solutions are being offered to clients. Notwithstanding the three reasons mentioned above, the project team found that beneficiaries currently have a limited set of platforms available to reflect their prioritisation of sustainability performance.[11] They also have few, if any, outlets through which to influence fund managers to improve performance in this respect. Pension providers, asset managers and insurers would gain by helping clients and savers make informed choices about the management of their savings and investments, including on social and environmental performance of funds. Supply and demand signals do not seem to sufficiently meet in this case. If correct, this points towards a failure of the market mechanism, the resolution of which this concept aims to contribute to.

Hypotheses on problem causes: opacity, one-sided communications and pension apathy

Based on industry experience and literature study, the team that developed this concept identified three possible causes for the lack of beneficiaries' agency:

1. Sustainability performance opacity: relevant data based on broadly accepted standards on sustainability performance is by and large unavailable to industry parties and private beneficiaries.[12]
2. One-sided communication focus: investment communications tend to predominantly focus on financial returns. They do not sufficiently provide understandable sustainability performance information, to the extent that such information is at all available. This is a wider sector issue which goes beyond the pension market.
3. Pension apathy: beneficiaries by and large do not engage with pension information which is available.[13] This applies to both financial and non-financial information about pensions.

Stability Board's (FSB) Task Force on Climate-related Financial Disclosures (focusing on forward-looking disclosure of climate-related financial risks), the G20 Study Group on Green Finance (focusing on methodologies) and the UK government's Green Finance Taskforce (focusing on fostering sustainable finance opportunities). At all of these levels of government measures have been taken or are being prepared to regulate for a sustainable financial system, including transparency on sustainability performance for asset owners and the wider financial sector.

[10] For example, the UK's Pensions Act 2008 made auto-enrolment in a pension scheme obligatory. Most of these enrolments are in DC schemes. This arrangement has led to millions more people in the UK building up DC pensions, many of whom are at the lower end of income and education scales.

[11] A notable exception in this respect is the PensionBee Future World Plan, which invests in companies generating revenue through low carbon activities. Pension savers' money is invested across the globe in over 3,000 companies, and any that fail to meet the scheme's minimum environmental standards are excluded altogether from the fund.

[12] This is a wider sector issue which goes beyond the pension market. In order for financial information to be widely understood by retail investors and beneficiaries such information should be offered at a maximum of Grade 3 rating level. Source: research by the ILG, convened by CISL, unpublished.

[13] For more information on pension apathy see Whitehouse, 2000 and Harrison, Waite & White, 2006.

Proposed solution

What is the proposed concept?

The concept this paper proposes entails an investment solution that would easily enable pension members to choose the level of sustainability performance they wish to invest in. The proposition would do this by overcoming the combined problems of opacity and one-sided communication. It would offer pension members an interface which easily enables them to understand both the financial and sustainability performance of their investment portfolios. The information provided would be superior to what is currently available both in terms of data quality as well as understandability. In order for the proposition to work, its usability, or user experience (UX) design, would need to be of high quality. Also the solution would enable social interactions around individuals' sustainability preferences to overcome pension apathy.

What would the concept do?

The solution would be an application which combines 1) a user-friendly and personalised front end with 2) an overview of beneficiaries' pension accounts and 3) a smart bundling of information on the sustainability performance of the funds in these accounts.

Onboarding of the user would be both social and centrally facilitated. This means that initial onboarding could take place through marketing which activates beneficiaries' social networks and through so-called gamification. Once a beneficiary has decided to participate the solution should overcome a 'one-to-many' problem; it will need to get access to the user's pension pots with a minimum of effort. Ideally the onboarding of a user's pension accounts would take place in one swoop instead of painstakingly one by one. The latter would pose a barrier to adaptation as individuals would probably be hesitant to do this themselves. If true, this would decrease the commercial viability of the solution.

A solution could be that the data of an individual's various DC accounts would be uploaded via a central interface with social security or tax authorities' information systems. This way the solution would help pension beneficiaries to sort out the status of their various pension accounts by providing a combined overview of these accounts. Such a combined social-centralised approach to onboarding would be helpful to pension beneficiaries that like convenience, find it hard to relate to their pension but find it easy to be motivated by engaging with their social network. The project team working hypothesis is that the majority of pension beneficiaries like convenience, find it hard to relate to their pension and are reachable via their social networks.

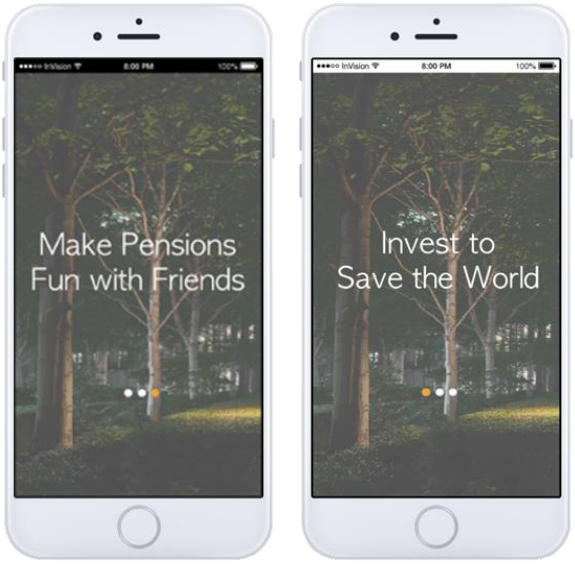
The UX would need to be of high quality. UX relates to a user's subjective evaluation of their interaction with a system.[14] The next page contains some visuals of what the UX could look like. Once a user is onboarded the actual engagement within the application would take place via a so-called robo-advisor. This is a class of low-cost, easy-to-use financial advice service with moderate to minimal human intervention. A shared aim of parties offering robo-advisory is to increase accessibility of investing to a broader market and to do so relatively more cheaply than the traditional existing channels.[15] Many parties have entered the robo-advisory market in recent years. [16] Robo-advisors provide digital financial advice based on mathematical

[14] Source: Knijnenburg, Willemsen, Ganter, Soncu & Newell, 2012.

[15] Source: OECD, 2017b. This OECD report concludes that "Robo-advice platforms have the potential to deliver financial advice that is objective, consistent and transparent." The report also concludes that "Regulators and supervisors will need to have processes in place to ensure that the algorithms that these platforms use are accurate and robust."

[16] Examples of well-known robo-advisory propositions that optimise personal investment portfolios are: Betterment, Nutmeg, SigFig and Wealthfront. Many incumbent financial institutions offer robo-advisory as well.

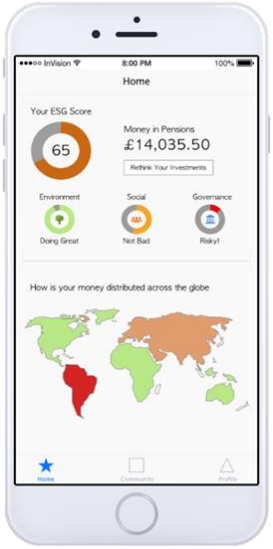
rules or algorithms. Based on beneficiaries' stated preferences the robo-advisor would advise a fund allocation which is aligned with their values and financial preferences.



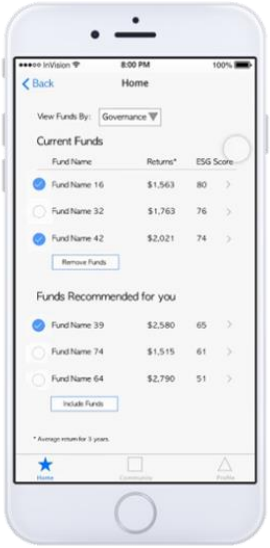
Welcome screens convey the value proposition

Simply indicate preferences based on personal values

Direct overview of various pension accounts



Visually grasp sustainability performance of aggregated accounts



Check and reallocate individual fund investments

Compare sustainability performance with family and friends

The back end of the application would be fed data by various sources that use existing and available advanced data-sourcing technologies (sometimes called artificial intelligence *-AI-,* even though this is a rather wide-ranging term). Such data sources would be unlocked for both financial and sustainability performance data.

As such data requires a means of measurement in order to be created, and a means of measurement requires a context in order for it to be transformed into information, a suitable metrics systems would need to be used to make the information conveyed widely acceptable, informative and comparable. Identifying an appropriate (set of) data structure consisting of standards would be an important next step.

How would this be different from existing DC offerings?

The proposed solution would provide a number of benefits absent from existing DC offerings.

Firstly DC offerings typically do not provide retail investors with information on sustainability performance. Less still do they offer such information in a user-friendly and actionable manner.

The second way in which this concept is different is that DC offerings normally do not provide social network functionalities; allowing people to engage their friends and family in navigating the pension decisions which are important to their future. A thesis of this concept is that providing information relevant to loved ones, and involving these loved ones, will help to address pension holder indifference.

The third way in which this proposition would be different from current offerings is the user-friendly interfacing providing an easily digestible overview of various pension accounts, their financial performance and their sustainability impact scores. Providing such an overview would help solve the problem of the complexity with which pension information is presented and communicated. It again will help the individual beneficiary by facilitating the choice process which they inherently have to go through in a DC scheme.

The fourth way in which this proposition is different from current offerings is that it compiles the information it provides through additional sources of data. These sources provide data which is accurate, timely, granular and customisable. By sourcing such data superior to current offerings, compiling this data into information by use of a standardised method and offering this information through a user-friendly interface, the problem of opacity could be diminished in a meaningful way.

What would be the concept's specifications?

In order to deliver on the vision for this concept certain specifications would be required with respect to 1) data accessibility, 2) data quantity and quality and 3) technology availability.

Combined view of all pension accounts
Access to pension account data registered with social security departments' or tax authorities' IT systems would be needed in order to enable beneficiaries to easily keep track of their various pension accounts. For example, in the UK that would be the National Insurance & PAYE Service (NPS), the system behind the UK's National Insurance Number. This system is administered by tax authority HM Revenue & Customs (HMRC), and to allow adoption at scale access to DC account data would need to be granted by government agencies such as this.

Robo-advisory enables personalised automated analysis and advisory
A robo-advisor would be a component of the application's technology suite. The automation robo-advisory entails could make a concept such as this commercially viable. It would do so by providing users with low-cost personalised analysis and advisory on how they could match their investments with their risk-return and sustainability-performance preferences.

Superior quality and quantity of sustainability data
DC pension beneficiaries would not require access to all data as granular as described below, but in order to be able to correctly inform them at an aggregate level sufficient data granularity at the lower level would be required.

Clarity on comparative financial performance

Providing transparency on the financial performance of various investment products in the same view as these products' sustainability impacts will allow investors to do their own benchmarking of products. It can also help investors understand for themselves whether there is a premium, or a discount, in terms of the financial performance of sustainable investment products.

Go beyond current corporate reporting
The quantity and quality of the data sourced by the application would need to go beyond what is currently made available through corporate reported information. The reason for this requirement is that while the amount of sustainability information reported by corporates is larger than ever, this information still provides a limited visibility on the sustainability impacts per dollar invested. Also most of the information provided by corporates follows these firms' reporting cycle and is therefore by default not in real time and up to date.

Real-time analysis
The data feeds would need to be as much in real time as possible. DC beneficiaries would need to be able to freely allocate and reshuffle their portfolio composition using up-to-date data for decision-making. By providing data feeds and analyses which are as close as possible to real time, pension beneficiaries would be provided with an accurate overview of the state of their portfolio.

Granular assessments at facility level
The data feed into the solution's back end would need to enable as much as possible a granular assessment of sustainability performance data at companies' industrial facilities level. Given that companies' industrial facilities vary from site to site in terms of their sustainability performance, such granular data would allow the front end of the solution to break down data by country, sector, etc. Such granularity would also help to increase trust and confidence in the data used. For example, in the case of an electricity plant such facilities-level data could be the planned future capacity of the asset.

Include forward-looking analysis in line with the TCFD
The forward looking analysis on climate change exposures which the Financial Stability Board's Task Force on Climate-related Financial Disclosures (TCFD) advises firms to disclose would feed into the data suite of the application. By making the firms' own forward-looking analysis accessible and comparable to investors, the solution could compile benchmarks on firms' own projected future prospects and help beneficiaries inform their decision-making.

Preliminary analysis of concept components currently offered in the market

The solutions available in the market today vary far and wide in terms of addressing the previously described technical and data specifications. Conventional sustainability performance assessments provided by firms run short of aligning with these specs. An analysis of the more advanced advertised market propositions seems to indicate that most components required to compile the proposed concept are readily available. However, a further assessment of whether these propositions deliver upon their promises would be required.

Shortcomings of conventional sustainability performance assessments

While the environmental, social and governance (ESG) market is evolving rapidly, the team developing this concept observed that the offerings of traditional ESG data providers tend to not be aligned with the requirements of this concept. Most corporates' ESG assessments use traditional metrics generated by traditional tools and traditional methodologies. The information resulting from this approach tends to lack

timeliness, granularity and customisation for at-scale retail investment decision-making. Moreover, the interfaces by which this information is offered tend to lack intuitive usability and customisation.

The problem with timeliness stems from incumbent ESG data providers relying primarily on corporate reported information. Such information is compiled by aggregating data at the corporate level. As a result, companies' sustainability performance information provided to the market tends to consist of a snapshot at some arbitrary point in time defined by firms' reporting cycles. An example relating to climate risks is the climate change indicators that are used to assess companies' performance (such as carbon emissions). Typically data providers use historical data. Therefore these performance indicators look backwards instead of forwards. Also typically there is a lack of granularity in the data used for these impact indicators to enable a very accurate analysis of exposure. The result is that investors are not provided with a clear indication of how well a company is prepared to address future risks and impacts related to climate change and other sustainability issues.

The problem with customisation is that ESG assessment providers are usually not designed for end users. Indeed, on the retail investor front, there is no standard method, set of metrics or systematic engagement on what retail investors' extra-financial preferences would be in terms of investments. Some work has been done by industry bodies such as the Investment Leaders Group, convened by CISL, but that work is still in its early stage of development.[17] In addition, currently provided ESG analysis of companies is not always accompanied by visualisations of results that would help to increase retail investors' understanding.

Initial screening of relevant available solutions

Based on this high-level diagnostic, the project team has conducted an initial screening of the solutions currently offered in the market. The objective was to try to identify potential components that would address the specifications listed above.

Through an analysis of the fintech ecosystem a number of offerings were identified in the market which could be used as partial solutions to overcome the challenges identified above. The offerings can be grouped in the following categories:

1. **Solutions enhancing sustainability data quality:**
   - **'Climate risk' fintechs** that offer solutions to assess a portfolio's exposure to climate risks. This pertains to both physical and transition risks. Such solution providers typically apply a bottom-up approach, using the most granular data possible at facilities level and aggregating it to company and portfolio level. The **2 Degrees Investing Initiative** (transition risk), **Four Twenty Seven** (physical risk) and **Carbon Delta** (transition and physical risks) are examples of organisations developing these types of solutions.
   - **'Climate risk & opportunity' fintechs** that offer solutions which take *both* the financial opportunity and risk side of climate change into account. Some do this by scanning available products for retail investors and banks for both risks and opportunities. Another project of the **2**

[17] Source: CISL, 2016.

Degrees Investing Initiative, called KliFin-Scanner, is developing such a proposition.[18]

- **'Artificial intelligence' fintechs** which offer solutions that enable by-passing a company's self-reported information though natural language processing. Typically this involves browsing through thousands of online sources (news websites, NGO websites, etc.) on a real-time basis to extract the sustainability performance information on thousands of companies. A downside of this approach is that it could be reliant on fickle online sentiment. Examples of solutions are **TruValue labs**, **Motif**, **Who's Good** and **Arabesque**.
- **'Satellite'-based fintechs** that develop solutions to extract sustainability performance data directly from satellite imagery. In particular, some satellites to be launched over the coming years will integrate new detection technologies allowing carbon emissions to be measured at physical asset level. Such satellites would enable measuring on a real-time basis the emissions associated with any physical asset around the world (power plants, etc.). If this technology delivers on its promises it would pose a breakthrough. This is because the number of companies' emissions disclosures could markedly decrease since measurement would take place directly at the most granular level and linkage of emissions to companies could be automated. The technology suite for such a solution is not yet mature but some organisations are making strides in this field, including the **GFW application of the World Resources Institute** and the work of **Oxford University**.

2. **Personalisation solutions that address retail customers' customisation needs:**
   - **PensionBee** provides access through an online tool which combines various pension pots and enables users to see the balance and projected retirement income. It allows users to set and update contributions directly through its online tool.
   - **Ant Financial** operates an online payment platform on which it has developed an 'Ant Forest' app. Ant Financial engages customers in addressing sustainability issues by calculating emissions avoided though their lifestyle choices as identified by analysis of their payments history (eg buying a metro ticket instead of fuel for a car). The company uses a gamification approach to engage customers. Users are rewarded by 'green energy points' which enable them to grow 'virtual trees'. Once fully developed the virtual trees will be matched by real trees, resulting in a reforestation programme for the Mongolian desert. The company partners with environmental NGOs to achieve this.
   - **Robo-advisory fintechs** which offer personalised and automated services for retail investors are active in the market but most are not yet mature. Nonetheless, certain solution providers are well placed to take a lead in the robo-advisory market for retail investors. For example, the **2 Degrees Investing Initiative** and **OpenInvest** seem to be well placed. The project team sees robo-advisory solutions as highly disruptive for the market in the medium term.

[18] KliFin-Scanner aims to develop a non-financial objectives questionnaire for retail investors. The objective is to allow retail investors to create their individual non-financial objectives investment profile, which can then be matched to financial products.

Motives for collective action towards this concept

This concept was developed by a group of organisations in a joint ideation and preliminary design process. There are multiple reasons for organisations choosing to jointly approach the problem set which this concept aims to solve. These have to do with a portfolio approach to technology and market development, distribution of development risk, shared access to data and shared management of dependencies.

The potential market for solutions such as this is very large, while currently the development of this market is in its infancy. In order for the market to develop to its full potential an extensive learning and development trajectory by stakeholders will need to take place. Various AI methods, configurations and/or algorithms will need to be developed and tested before scalable products can be launched in the market. As this trajectory will be riddled with uncertainties it makes sense to stimulate a portfolio approach where several versions of the concept are developed in parallel. This might be summarised as undertaking a strategy of letting many flowers bloom.

Another reason for collaboration is to enable data standardisation and shared access to data. If every firm on its own develops a data structure, the comparability and legitimacy of each product offering will be low. Standards require collective acceptance and there is no such thing as a 'standard of one'. Sharing access to data also entails a decrease in costs. Both legitimacy and cost might provide compelling motivations for an open data approach, which could be facilitated by public sector entities such as governments.

This bridges us to the third reason for collaboration in the development of concepts such as this, and that is government engagement. In order for this concept to be implemented in a commercially viable manner facilitation by public entities would be a requirement. And governments could find facilitating this within their scope of action because of the societal importance of allocating capital towards sustainable economic development. Government engagement would probably focus on:

- the provision of access to DC account data (legislation similar to the EU's Payment Service Directive II but for pension data might be helpful), development risk facilitation
- working with regulators and supervisors to comply with their assurance processes for accurate and robust robo-advisory algorithms[19]
- sharing of development risk.

Looking forward

What types of financial businesses could benefit from developing a solution such as this?

While working on this concept the team came to the insight that solutions such as this have the potential to evolve in new markets if they are developed with an eye to scale. These markets could stretch beyond the initial focus of DC pension schemes. For this potential to materialise it is crucial that the concept developers involve important market stakeholders such as regulators and standard-setting bodies early on. Also, those entities that engage with pension beneficiaries and others as their clients should be engaged, eg companies providing administration services.

Moreover, the team identified a non-exclusive list of commercial market players that might support the development of such markets as they would probably stand to benefit.

[19] Source: OECD, 2017b. The report concludes that "Regulators and supervisors will need to have processes in place to ensure that the algorithms that these platforms use are accurate and robust."

OECD country pension funds, because a solution such as this could be offered on a white label basis to better serve their members. Also these organisations are within reach of the new sustainable investing regulations emerging from the EU's Action Plan for Financing Sustainable Growth. This plan particularly focuses on providing individual investors with the agency to make investment choices while taking into account sustainability performance.

Parties providing corporate trust services, because using the combination of technologies in this concept would help corporate trusts to provide sustainability-related services in escrow, project finance and structured finance. One application could, for example, be the servicing of green bond issuers and holders.

Parties providing investment management, since providing usability and clarity on sustainability performance is an offering which can also be relevant to investors other than DC beneficiaries.

Parties offering wealth management services, as the combined technologies of this concept could be relevant to provide next-generation high-net-worth (HNW) individuals with quality insights for better-informed decisions.

Parties that provide asset servicing, as the solution could be applied to other clients besides pension funds and beneficiaries. It is likely that various jurisdictions will take on the recommendations of the TCFD and make these legally binding. In such a scenario the back-end system could be used to help asset issuers comply with such, then legally obliged, sustainability reporting.

What steps are needed to realise the concept?

Currently this concept is in the idea-forming phase. The first results of the team's work are this concept note and a UX design (or 'clickable demo'). To develop the concept further a next phase would need to be about fact finding: a set of follow-up processes with the objective to validate/invalidate the hypotheses that are part of the concept. For this the following steps will be required:

Front-end and commercial development

- Select technologies on offer for testing.
- Develop the clickable demo in a minimal viable product (MVP).
- Test the concept's assumptions with clients through the MVP.
- Subsequent, larger, test rounds of evolved MVPs with clients.

Back-end development

- Design a data structure for the solution.
  - This would entail a mapping of data definitions, data gathering and data analysis.
  - It would also entail defining a set of more or less standardised sustainability performance metrics.
- Design a functional as well as a technical architecture for the solution.
  - This includes an application programming interface (API) for sourcing the external data.
- Perform a deep dive on the methodologies underpinning the data of various market offerings (garbage in = garbage out).
- Obtain clarity on the degrees of confidence of back-end data analyses.
  - Test data quality.
  - Test relevance and correctness of data analyses.
  - Identify what (if any) caveats need to be integrated in client communications.
- Select technologies on offer for testing.
- Integrate the system.

Market development

- Ensure that the knowledge on the concept and product development is publicly shared for client appetite to materialise and a breadth of market solutions to develop.
- Involve government.
    - Engage tax authorities to access pension account data. A first step could be to engage HMRC in the UK to obtain relevant information using clients' National Insurance Numbers.
    - Engage with relevant government agencies and industry parties to align possible solutions such as this concept with market developments.
    - Engage with other market practitioners such as pension administration companies and consultants to allow for a smooth adoption.

Choose or develop a robust performance metrics system

- Determine the time horizon for performance.
    - ESG investments tend to perform better in the long term than the short term.
    - Communicate an explicit time horizon for evaluation.

Process learnings relevant to next steps

In this project, the team greatly benefited from learning about each organisation's touch point with pension savers' investments. The team members were cognisant of the pitfalls of the currently available data related to investments, but through research and discussion, were able to envision a concept that has the potential to unearth the opportunity to link 'money with the planet'. Team members' day-to-day job experience, interaction with clients and the research suggest that this is a concept that is fit for the future and ripe for development.

Encouragingly, during the project period, a number of high-profile and market-shaping government initiatives such as the TCFD, the EU Action Plan and the UK's Green Finance Taskforce focused on the importance of sustainable data and its application for the investor community.

The project has reinforced the importance of knowledge sharing and collaboration across organisational, and industry, barriers with other interested parties. For this project it was necessary to find (and the team succeeded in this) a common and shared language in the pursuit of offering better information on investments and allowing individuals to make more informed choices.

Decisions

The continuation of this concept development in the context of the project's team by the organisations comprising the group will be the first decision after publication of this concept paper.

If and how to involve important societal stakeholders such as relevant government agencies would be another decision that will have to be made.

Appendices

Appendix 1: Defined Contribution (DB) and Defined Benefit (DB) pension schemes compared

Globally, the offerings in occupational pension schemes can largely be divided into two types: Defined Benefit (DB) and Defined Contribution (DC) schemes. In the past decades many countries and sectors have moved away from DB to DC schemes, primarily on grounds of cost.

Upon retirement DB occupational pension schemes pay a guaranteed, inflation-linked income for life. In these final salary schemes individuals are not required to actively make investment choices. Their trustees make such choices for them.

In DC schemes, the responsibility for choosing falls to individuals themselves. They need to decide to allocate the amount of money to pension savings that is sufficient for them to retire. Also, the choice of the types of investment funds in which these savings are invested falls to individuals.

The transition from DB to DC plans in private sector pensions has shifted investment risk from the corporate sector to households.[20] Practice learns that from the perspective of practicality most people find it challenging to understand, or spare the time for absorbing, large quantities of investing literature in order to make informed pension/investment decisions. It is easy for individual beneficiaries to become overwhelmed by the sheer number of choices and options available. Maybe it is therefore not surprising that, for example, in the UK market 98 per cent of members of DC schemes are invested in the scheme's default strategy.[21]

[20] Source: Broadbent, Palumbo & Woodman, 2006.
[21] Source: The Pensions Regulator, 2018.

Appendix 2: Types of pension arrangements available in the OECD area and selected non-OECD jurisdictions according to OECD taxonomy, 2016

A. OECD countries

		Occupational plans			
		DB only	**Both DB and DC**	**DC only**	**None**
Personal plans	**Yes**	Finland, Germany, Israel, Switzerland	Australia, Austria, Belgium, Canada, Denmark, France, Iceland, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Turkey, United Kingdom, United States	Chile, Greece, Hungary, Latvia, Poland, Slovenia	Czech Republic, Estonia, Slovak Republic
	No				

B. Selected non-OECD jurisdictions

		Occupational plans			
		DB only	**Both DB and DC**	**DC only**	**None**
Personal plans	**Yes**	Nigeria	Brazil, Costa Rica, Gibraltar, Hong Kong (China), India, Indonesia, Jamaica, Kenya, Malta, Mauritius, Namibia, South Africa, Suriname, Zambia	Albania, Bulgaria, Croatia, FYR of Macedonia, Ghana, Serbia, Thailand	Armenia, Colombia, Lithuania, Maldives, Peru, Romania, Uruguay
	No		Liechtenstein, Malawi		

Notes: In Chile, AFPs (Administradoras de Fondos de Pensiones) manage Collective Voluntary Pension Savings that are occupational plans. Germany has recently adopted a law introducing occupational DC plans. This law came into effect in early 2018.

Source: OECD, 2017a.

Appendix 3: Size of Occupational DC markets for selected OECD countries, 2016 – USD billion

OECD countries	Total 2016 pension investment in USD billion*	% split of pension assets by type of funded and private pension arrangement, 2016**			Size of Occupational DC market for selected OECD countries, 2016 (in USD billion)***
OECD countries		Occupational DB	Occupational DC	Personal	
Australia	1,523	9.6%	30.5%	59.8%	465
Austria	22				
Belgium	31				
Canada	2,404	59.8%	4.8%	35.4%	116
Chile	174			100.0%	-
Czech Republic	16			100.0%	-
Denmark	612	1.4%	69.1%	29.6%	423
Estonia	4			100.0%	-
Finland	135	89.4%	0.6%	10.0%	1
France	230	17.1%	72.9%	10.0%	168
Germany	224				
Greece	1				
Hungary	5			100.0%	-
Iceland	32				
Ireland	118	25.5%	59.5%	15.0%	70
Israel	177	62.6%		37.4%	-
Italy	165	5.6%	64.8%	29.6%	107
Japan	1,355				
Korea	365	22.9%	10.8%	66.4%	39
Latvia	3		2.0%	98.0%	0
Luxembourg	2				-
Mexico	157	14.2%	1.0%	84.9%	2
Netherlands	1,335				
New Zealand	45				
Norway	37				
Poland	41		6.7%	93.3%	3
Portugal	21	71.3%	18.7%	10.0%	4
Slovak Republic	10			100.0%	-
Slovenia	3				
Spain	164	40.8%	6.3%	52.9%	10
Sweden	389	17.6%	25.5%	57.0%	99
Switzerland	904	89.0%		11.0%	-
Turkey	35	47.9%	5.1%	47.0%	2
United Kingdom	2,274				
United States	25,127	33.1%	26.1%	40.8%	6,555

*Total investment of providers of funded and private pension arrangements, in USD million, 2016. Source: OECD Pension Markets in Focus 2017 - Table A.2

** Split of pension assets by type of funded and private pension arrangement, 2016. Source: OECD Pension Markets in Focus 2017 - figure 5

*** Multiplication of total investment and percentage of occupational DB

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