Using Open Banking and Open Finance APIs to Build Green Fintech

Data and Trends Report
Q1 2022, released February 2022

platformable.com

Using Open Banking and Open Finance APIs to Build Green Fintech describes how open banking and open finance APIs are being used in Europe and the UK to enable the growth of new financial products focused on improving sustainability. This report looks at key drivers, including the regulatory environment, partnership action, consumer demand, and availability of specific API products from open banking platforms.

Drawing on industry taxonomies for green fintech and areas of impact required for sustainability action, all current API-enabled fintech providers known to be operating in Europe and UK as at the end of 2021 have been included and classified.

This report focuses on sharing current trends and identifying opportunities for the broader open banking and open finance ecosystem to foster further advancement in the availability of digital finance products focused on sustainability.

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Written and researched by Jannika Aalto, Phuong Pham, Spencer Perkins, and Mark Boyd. Design by Rebeca Vittorazo.

Online version created by Alexei Garban. Special thanks to all the Platformable team for contributions to this work.

Contact: jannika@platformable.com

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Platformable Mission

We support open ecosystems that:

- Build economic opportunities
- Solve complex problems
- Enable everyone to participate and co-create their own value.

We do it by:

Building Tools

Sharing Best Practices

Connecting Partners

Measuring Value

Our Team

Mark Boyd
Founder
mark@platformable.com

Jannika Aalto
Open Sustainability
jannika@platformable.com

Phuong Pham
Open Banking
phuong@platformable.com

Alexei Garban
Lead Developer
alexei@platformable.com

Rebeca Vittorazo
Lead Designer
rebeca@platformable.com

Spencer Perkins
Writer/Analyst
spencer@platformable.com

Kryštof Stupka
Data Privacy and
Technology Policy Analyst
krystof@platformable.com

Adrienne Fanning
Data Governance Lead
adrienne@platformable.com

Catalina de Castro
Open Health and
Equity Analyst
catalina@platformable.com

Executive Summary

1 **Open banking and open finance APIs make it possible to create sustainability value and build new green fintech solutions.** There is a clear flow of value that can be harnessed by all stakeholders in the open banking/open finance ecosystem.

Find out more:
Review page 08, 12, 18-24, 29-39

2 **Consumer demand, regulatory and policy drivers, and partnership networks are creating a new green fintech market in Europe and the UK.** Market conditions are ideal for an API aggregator platform or for multiple bank platforms to specifically target innovators looking for a greater catalogue of APIs to help build their products.

Find out more:
Review pages 10-13, 24, 27, 40

3 **Green fintech can use APIs to address key environmental objectives while focusing on the greatest causes of climate crisis and environmental destruction, but greater product ideation and defined business models are needed.**

Find out more:
Review pages 14-16, 27-28, 40

How can APIs make a difference to sustainability goals?

Impactful green fintech requires action for all ecosystem stakeholders

Green fintech are a subset of digital finance products and services that offer features to address sustainability: they seek to enable action towards reducing, adapting or addressing the impacts of the climate crisis, reduce pollution, improve biodiversity and the sustainable use of natural resources, and/or assist with the move to a circular economy in which the full cost of resource use is considered in economic systems.

Open banking and open finance infrastructures enable a greater range of stakeholders to participate in the creation and use of financial services through securely exposing application programming interfaces (APIs) as the building blocks for creation of digital products and services.

The value of APIs for sustainability are described in the value model. From left to right:

API providers (including banks, fintech and other environmental data providers) make APIs available, which are used by ***API consumers*** (such as fintech, API aggregators and greentech) to build new products and services which are then used by ***end users*** (individuals, businesses, enterprises and researchers) to take action to improve sustainability.

These actions lead to impacts on society, local economies and the environment.

Other stakeholders (including ***standards bodies***, ***API tool providers and consultants***, ***incubators***, ***financial inclusion advocates*** and ***fintech and greentech associations***) all play a part in fostering maturity and furthering the growth of this new industry sub-sector.

Open Banking/Open Finance Ecosystem for Enabling Sustainability Solutions

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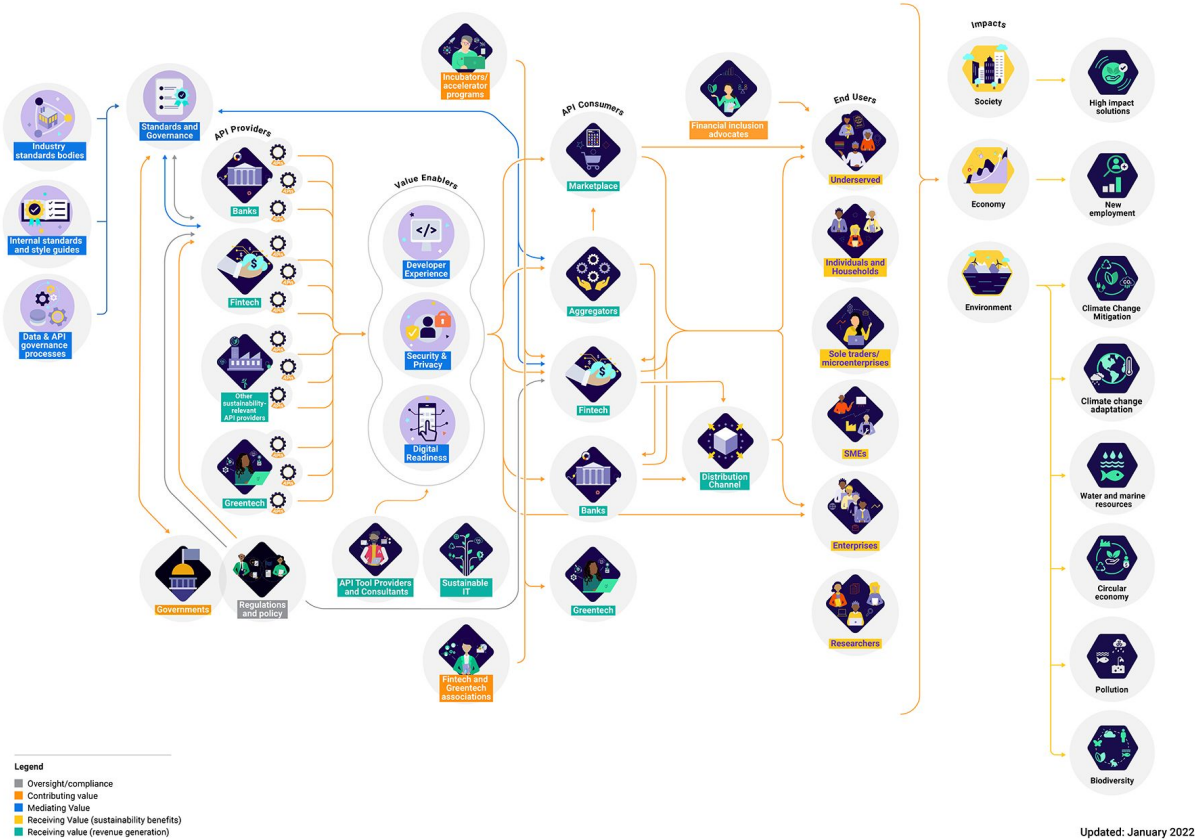


Updated: January 2022

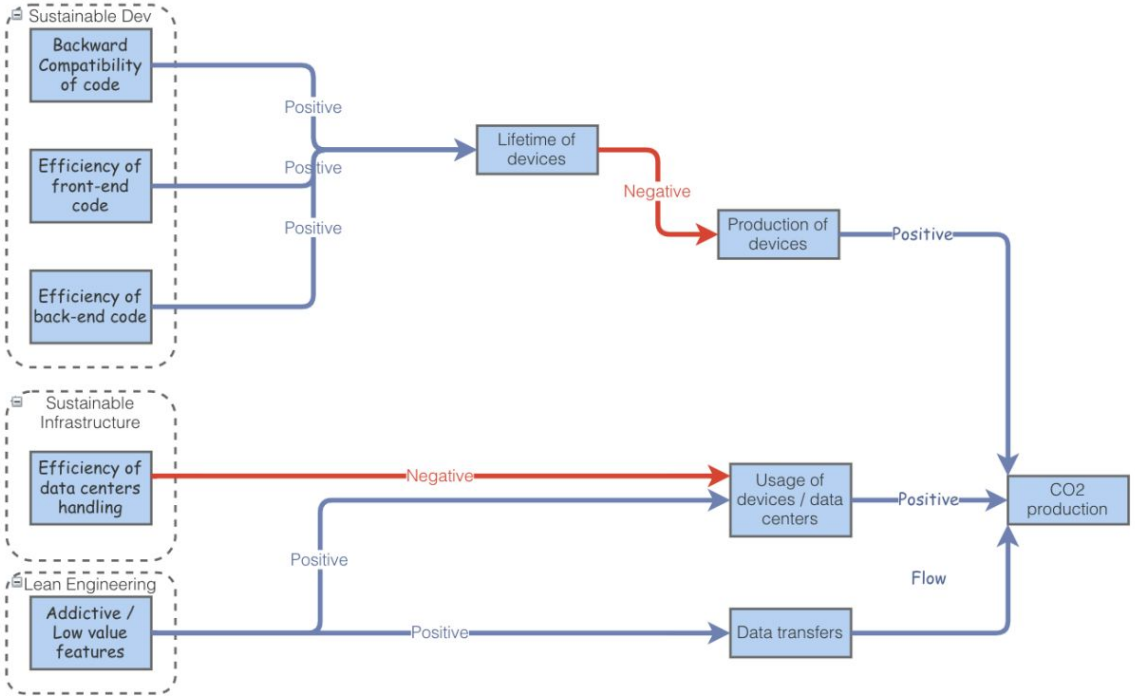
Green fintech needs to be built on sustainable IT practices

While open banking and open finance APIs can support the development of new digital products and services focused on improving sustainability, they will make greatest impact if the underlying technology infrastructures themselves are energy efficient and sustainable.

A white paper on green cloud software practices, published openly in January 2022, and led by tech ethicist Anne Currie, (and discussed by tech journalist Jennifer Riggins in *The New Stack*), outlines key priorities for action to ensure that the IT infrastructure offering sustainable solutions is itself sustainable. The authors note the main approaches for reducing carbon emissions from software products (in order of effectiveness) are:

- Operational efficiency (i.e. improving how software is run)
- Architecting for minimal carbon (improving how software is designed)
- Hardware efficiency (in particular, improving how end user devices are managed)
- Energy efficiency (minimizing CPU/GPU and network use).

To address operational efficiency, the apidays Sustainable Digital Report 2021 describes how designing and writing efficient code, including in API design and delivery, can improve sustainability.



A lean engineering model that describes how operational efficiencies can be introduced into API design and delivery coffee and infrastructure to reduce data centre use and improve sustainable software development.

Source: *apidays Sustainable Digital Report 2021, downloadable from apidays*

Policy and regulation drivers for open sustainability and green fintech

International climate and environmental policy create a global forum for action

The 2015 Paris Agreement set legally binding targets to limit climate change, establishing a target of limiting global warming to 1.5ºC degrees and a need for urgent decarbonisation of the global economy and societies.

Beyond climate change, other global environmental threats are starting to get recognised as having equal importance. The Convention on Biological Diversity is gathering in Kunming, China, in April 2022 to discuss a new global biodiversity framework and to urge global, regional and national policy action to overhaul economic, social and financial models to reverse trends of biodiversity collapse.

The UN Environment Program has proposed a new global digital ecosystem to collect and share data, via APIs, to enable greater collaboration and coordination between stakeholders to address climate and biodiversity impacts.

Regulations: the UK

The UK was the first to legislate a net-zero target in 2008 with the Climate Change Act. The Environmental Act of 2021 has now set additional targets for air and water quality, waste and biodiversity loss. A due diligence requirement for larger businesses was also introduced to require supply chain monitoring in order to address issues related to illegal deforestation globally.

Regulations: EU

European Union member states account for 8% of all global CO2 emissions annually. The EU has committed to becoming the first climate neutral continent by 2050, with a radical reduction in GHG emissions required by 2030. The European Green Deal, widely supported by the European public, is the main strategy for transforming the Union into a modern, resource-efficient and competitive economy. It encompasses a wide range of regulations and directives, including:

- European Climate Law establishes the framework for achieving climate neutrality in the Union by 2050 and a reduction of GHG emissions of at least 55 % compared to 1990 levels by 2030.
- The Non-Financial Reporting Directive (NFRD) requires large, public-interest companies to self-declare their performance related to environmental and social matters. A proposal to expand its scope was adopted in April 2021 and the proposed replacement, Corporate Sustainability Reporting Directive (CSRD) is expected to be adopted during 2022. The CSRD would expand the definition of companies required to report on sustainability performance, introduce a third-party audit requirement, and unify reporting standards. The European Securities and Markets Authority has also released a roadmap for sustainable finance, which prioritises assessment of greenwashing, and identifying innovative use cases, amongst others.
- EU Taxonomy regulation, a classification system for economic activities, includes definitions and rules to determine which economic activities are environmentally sustainable.
- The EU's digital strategy recognises the enabling nature of digital in accelerating the sustainable transformation through things like improved connectivity and infrastructure and an access to high-quality and interoperable data - examples of setting to spur new product development.
- The Circular Economy Action plan, adopted in 2020, includes 35 actions and initiatives along product life cycles to maximise resource efficiency and improve circularity rates in resource intensive sectors such as electronics, textiles, packaging and construction.

How global, European and UK regulations can drive action

The setting of commitments, and new requirements for businesses and companies to report on Environmental, Social and Governance (ESG) impacts and monitor their supply chains creates new opportunities for fintech and business-focused products that address these regulatory requirements in new digital products. Such regulations also help open up new markets by creating demand and encouraging the development of new solutions that help stakeholders comply with the new regulatory context.

93% of Europeans consider climate change a serious problem and are demanding sustainable products and solutions

Consumers are increasingly demanding more sustainable digital products and services, including in their finance choices. Combining sustainable and digital transformation future-proofs a business and enhances market strength.

Environmental concern and demand for "green" products is high

A 2021 Eurobarometer survey found that 93% of Europeans consider climate change a serious problem. Another survey by YouGov stated that three quarters of Europeans believe that governments can have a big or fairly big impact, while 4 in 5 say businesses play an important role in addressing climate change.

A 2021 UK study by Deloitte found that:

- 8% of survey respondents had already changed some or all of their personal finance investments to ethical or sustainability-related options
- 34% of respondents had specifically chosen brands because of their environmentally sustainable practices and values.

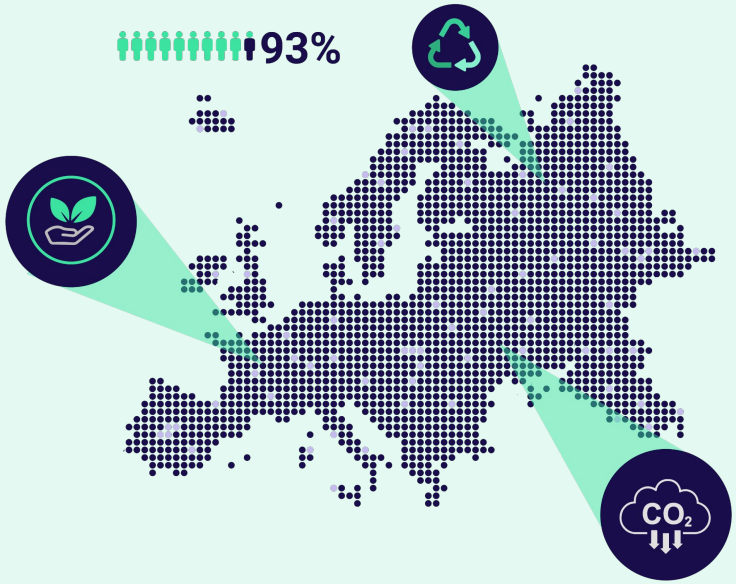
Digital and sustainability transformation for business success

Digital transformation has proven essential since the onslaught of the COVID-19 pandemic, with the World Economic Forum noting that 65% of the world's GDP will be digitised by the end of this year. Businesses coupling sustainability with digital transformation are forecasted to be 2.5 stronger as market performers than businesses that do not align their business processes with sustainability models.

The Green Digital Finance Alliance has commenced a number of initiatives focused on supporting consumer behaviour towards sustainable action via use of fintech solutions:

- The ***Every Action Counts coalition*** seeks to empower 1 billion global consumers to take daily actions to support sustainability, partly through greater adoption of green fintech products and services
- The ***Nordic Energy Efficient Mortgages Hub*** notes the potential for fintech to overcome current barriers in energy efficiency uptake by consumers, in part by addressing the lack of finance-ready data to support consumer choices.

93% of Europeans consider climate change a serious problem and are demanding sustainable products and solutions
as at Q1 2022 (N= 26,669 survey respondents)



Source: Special Eurobarometer 513, page 22, Climate Change, March-April 2021

11 European and UK banks explicitly seek climate action opportunities for their API programs

Core open banking API products like PSD2-mandated payments and account information can assist green fintech to start building new digital products and services.

Open banking platforms that seek to support green fintech to build innovative solutions are going beyond mandated APIs in three ways:

- **By describing potential sustainability use cases** that their existing API functionalities can help build. Commerzbank's corporate payments API, for instance, has helped Energie Revolt build an energy prepayment solutions for their end- SMEs and enterprise customers.
- **By building specific sustainability product offerings.** KBC, for example, offers bicycle and green energy loans solutions that allow merchants to offer their end customers credit financing for their purchases at the point of sales, in store or online.
- **By creating partnership opportunities** where banks work with third parties to explore sustainability solutions (e.g. Standard Chartered). Some banks have opened incubation programs (e.g. ABN Amro, Bankia, Natwest Group) or acquisition tracks (e.g. Societe Generale) to recruit fintech partners for a number of areas, including sustainability solutions. These partners can access the banks' resources to build and test their products.

European and UK bank platforms exploring sustainability solutions

Q1 2022 (N = 11)

Methodology: Platformable tracks all open banking platforms across Europe and UK. Focusing on those with a developer portal, we reviewed where banks described how their API product offerings could be used for sustainable solutions, whether their API catalogues included any specific APIs that support sustainability, and whether their API initiatives are seeking to build partnerships with green fintech.

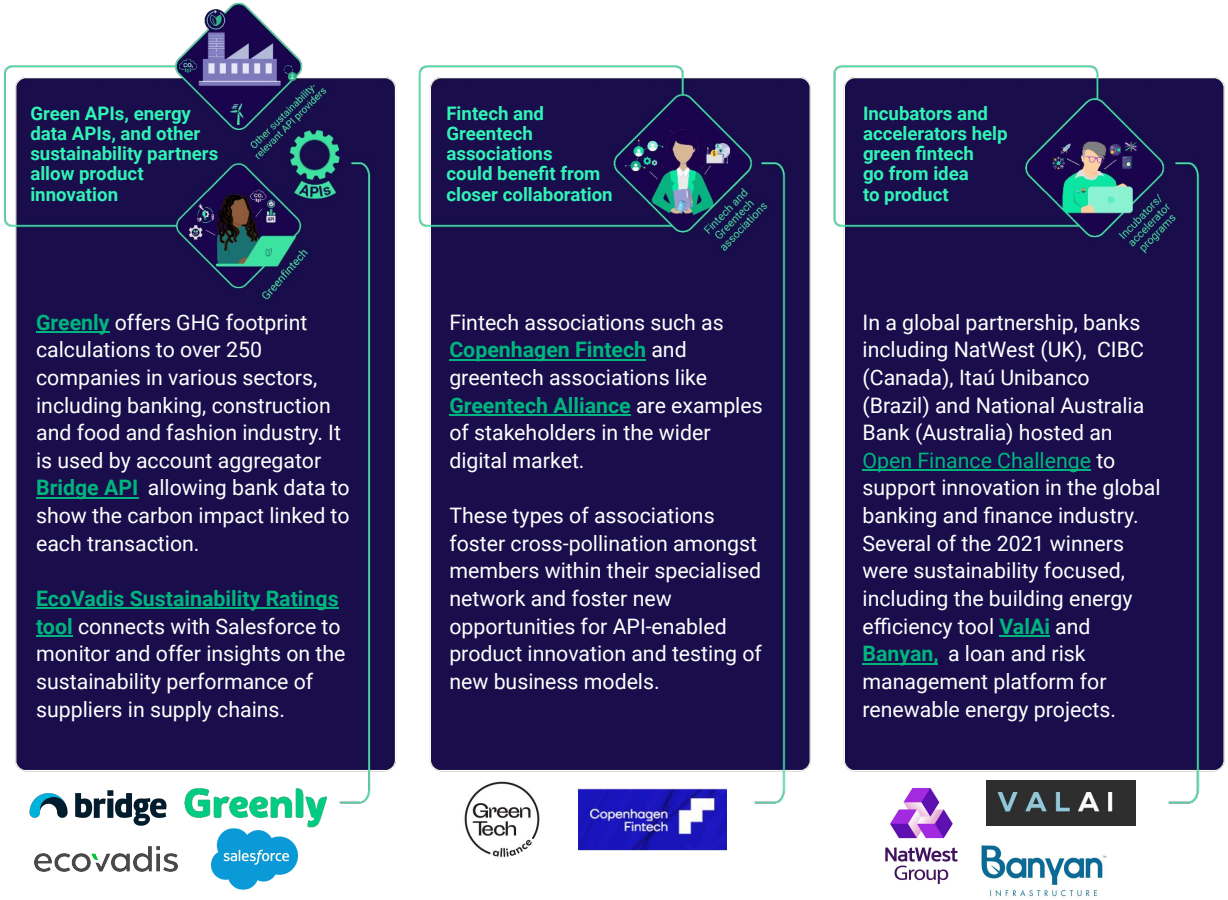
Creation of green fintech products requires collaborative action by more stakeholders

To create truly impactful green fintech products will require collaboration amongst a greater range of stakeholders.

Green APIs expose specific sustainability-focused functionalities or data, and coupled with bank or fintech APIs can allow more innovative products to be built. Energy switching functionalities, carbon accounting algorithms, and ESG data aggregation services are examples of green APIs that can be consumed by fintech to create sustainability impacts.

Fintech and greentech associations build networks, showcase actions and best practices, promote challenges, and encourage their members to partner on solutions.

Incubators enable product ideation and fund emerging initiatives. Their role is particularly important in young industries, where a lot of trial and error is required to create business-viable and impactful products and services. **Accelerators** provide business support to the most promising ideas, and enable teams to reach product and scale-up stages. They often operate with direct pipelines to potential VC funding.



Measuring the impact potential of green fintech

Measuring the impact of green fintech products

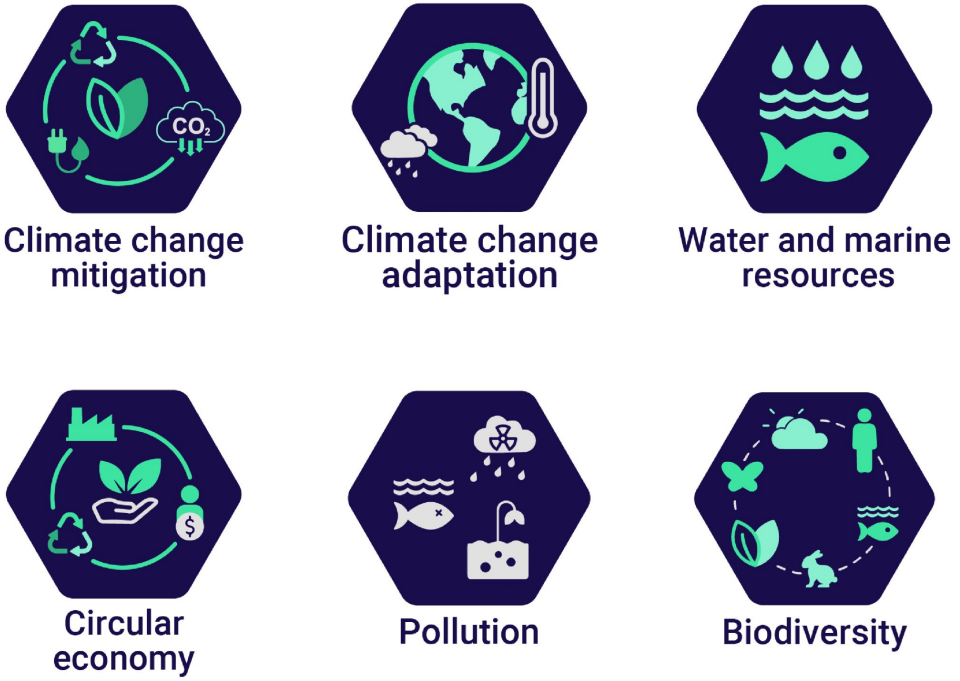
There are 6 sustainability impacts, based on the classification from the **EU's six environmental goals**:

1. Climate change mitigation
2. Climate change adaptation
3. The sustainable use and protection of water and marine resources
4. The transition to a circular economy
5. Pollution prevention and control
6. The protection and restoration of biodiversity and ecosystems.

These impact categories are used to classify positive sustainability and environmental impacts created with green fintech products and solutions. The model looks at environmental well-being beyond the narrow scope of climate change mitigation and carbon dioxide to include moves towards better management of water and marine resources, generating a circular economy and reducing the risk of biodiversity collapse.

The impact categories are not mutually exclusive but often reinforcing.

For example, the ecosystem regeneration service **SUGi**, increases climate change mitigation by adding forest cover, but also seeks to protect biodiversity and help local communities adapt to climate change.



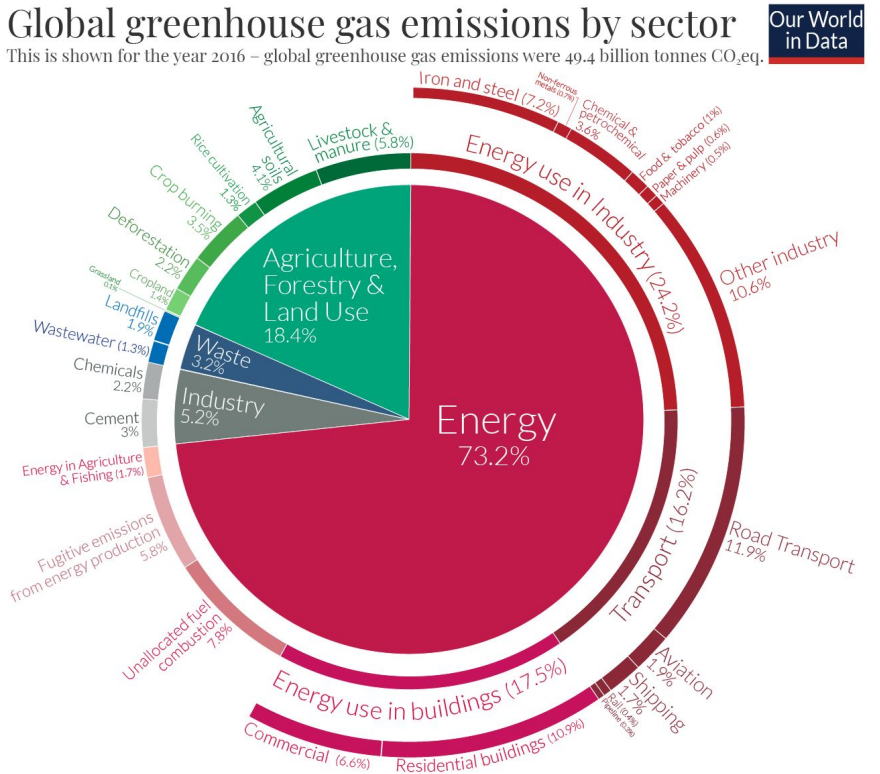
Green fintech solutions must focus on energy use, transport and agriculture

Globally, the majority of greenhouse gas emissions come from four high-impact sectors:

- energy use in industry
- transport
- energy use in buildings and
- agriculture and land use change

In order to deliver the ambitious emissions reductions needed, these sectors should be the main focus of sustainability solutions.

To generate the greatest sustainability impacts, emerging green fintech — and existing fintech adding new sustainability features to products — will need to focus on these key areas.



Source: Our World in Data

Green fintech landscape - Europe & UK

8% of all European and UK fintech using Open Banking APIs have a sustainability product

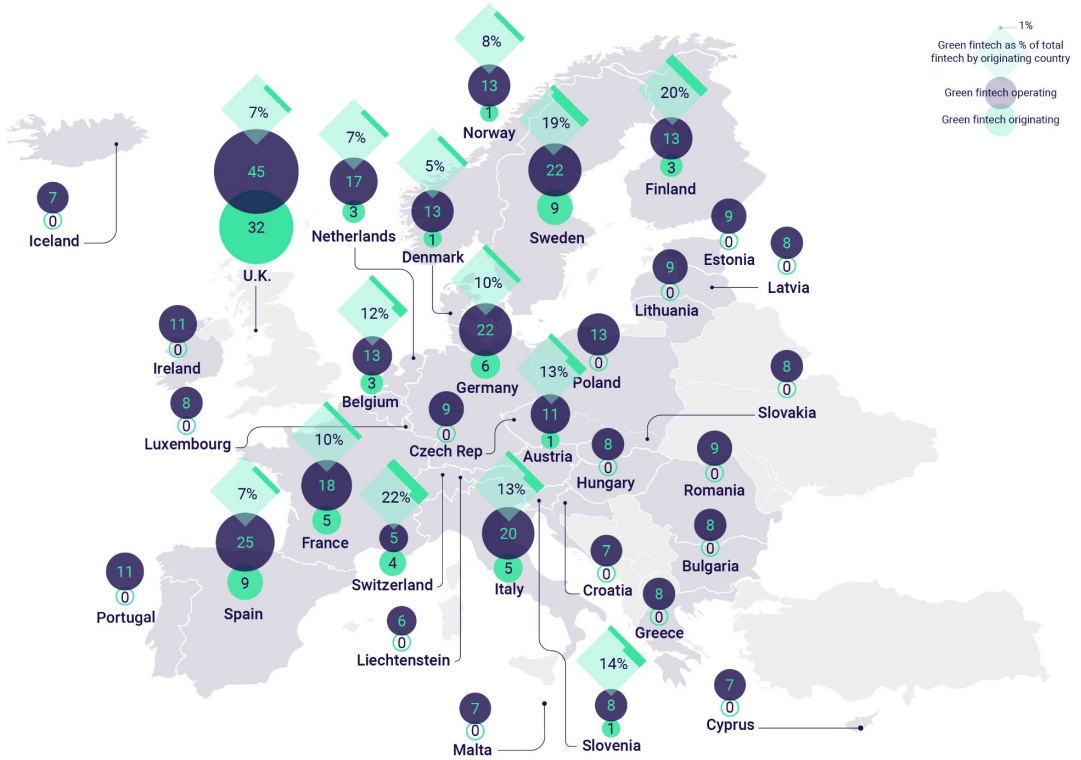
93 green fintech (out of 1,133 European and UK-based API-enabled fintech) offer products or solutions that focus on creating environmental value and sustainability benefits.

On a country level, the UK offers 32 home-grown green fintech, with 45 operating in the country. Spain, Sweden, Germany and Italy each count between 20 and 25 green fintech operating in each country.

Switzerland, Finland and Sweden have the greatest proportion of all home-grown fintech with a sustainability product offering (with 19-22% of all fintech originating in each country having a sustainability focus or feature-set). Nordic countries' long-term commitment to environmental protection appears to have impacted on the fintech cultures of Finland and Sweden, in particular.

UK's open banking standard, which enables fintech to integrate APIs from all banks more easily using a consistent API template, and the level of fintech expertise in the UK has spurred this leadership position in the absolute number of green fintech products made available (32 products).

European & UK green fintech (originating and operating)
as at Q1 2022 (N=93 green fintech)



Methodology: Platformable reviews all fintech using bank and finance APIs. Using the Green Fintech Alliance taxonomy, we have categorised each fintech that provides sustainability-related products.

The Green Fintech Taxonomy describes 8 product categories

Green fintechs are categorised into 8 categories based on their sustainability product focus. Categories used for the Green Fintech Taxonomy are based on the Green Digital Finance Alliance's work.

A fintech is considered a green fintech if it offers features that address sustainability as a part of its product or service.

We are seeing fintech enter the sustainability space in a number of ways:

- Some fintech are entering directly and are building green fintech as their main product
- Some fintech with an existing product range are adding a dedicated secondary product that has a sustainability focus
- Some fintech are adding sustainability features to their core product.

In each of these cases, the products is counted as green fintech.

This research focuses on measuring green fintech built on open banking and open finance APIs (that is, those operating in the open banking/open finance ecosystem). This is a smaller subset of the larger, digital sustainability/climate tech market.

Green Fintech Taxonomy

Platformable

Platformable's Green Fintech Taxonomy is drawn from the Green Digital Finance Alliance's categorisation of green fintech products.

40% of green fintech products are payment and account solutions

PSD2 Accounts and Payments APIs have enabled the greatest category growth, with 40% of green fintech products (37 in total) in the Green Digital Payment and Account Solutions category.

Products in this category include:

- Adyen (a payment back-end and infrastructure solution) which has built integrated donation features to allowing customers to donate to environmental restoration projects.
- Carbon footprint calculator Svalna allows banks, other fintechs, financial institutions and merchants to quantify account transaction data by their potential carbon footprint.

17 Green Digital Investment Solutions are available:

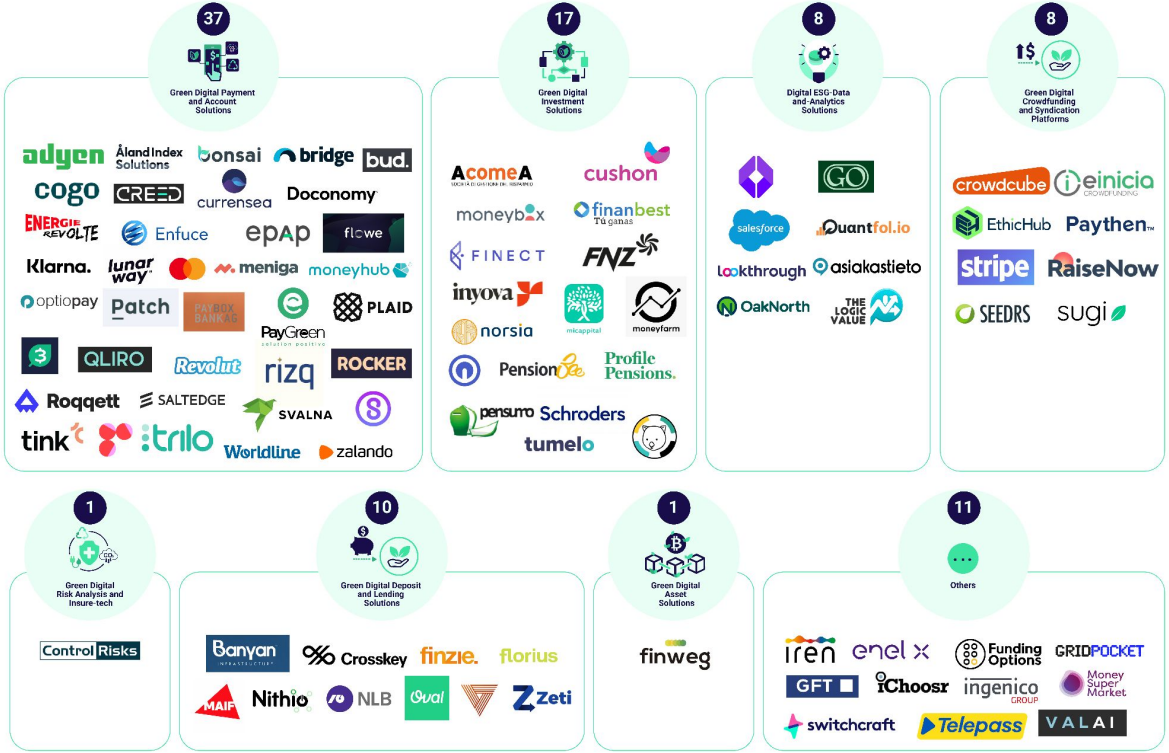
- Sustainable investment service Micappital Eco
- Climate friendly pension funds, such as PensionBee's Fossil Fuel Free Plan

The 'Others' category includes 11 services where the initiating action comes from outside finance, but financial services then enable action to be taken, for example:

- GridPocket analyses energy consumption to identify energy switching options
- iChoosr, a group-buying solar energy purchase scheme offered to households via local councils.

European & UK green fintech by sustainability product category
as at Q1 2022 (N=93 green fintech)

Platformable



Platformable's Green Fintech Taxonomy is built on Green Digital Fintech Alliance's categorisation of green fintech products.

Individuals and households are the biggest target market for green fintech, which limits potential to create the greatest impact

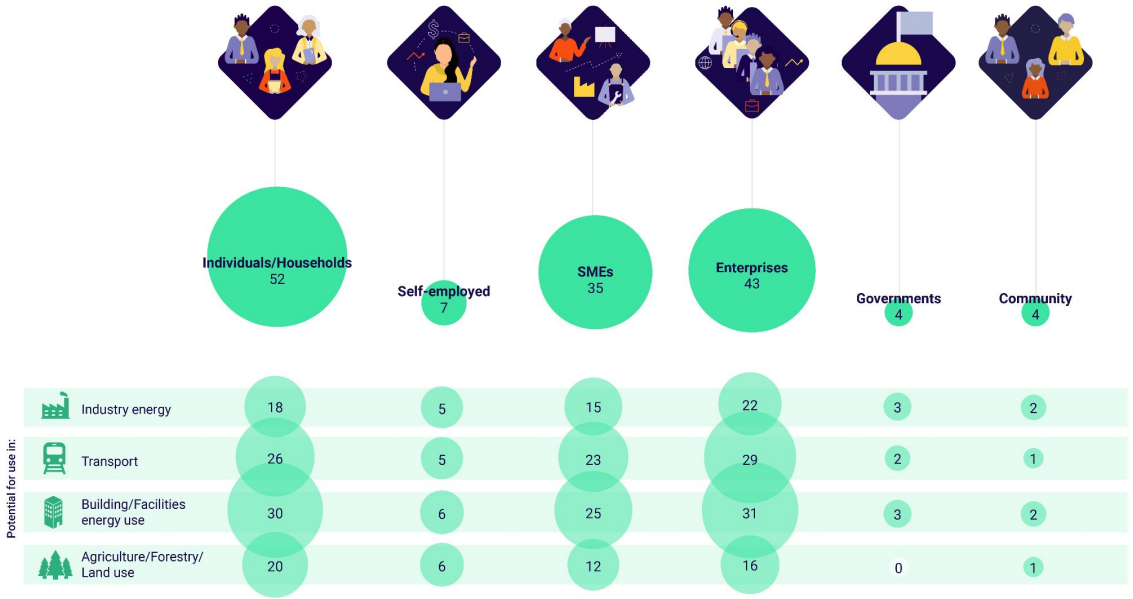
Current offerings skew towards individual action
While some green fintech targets both individual consumers as well as business and enterprises, in absolute numbers there are more products (52) focused on the individual/household market. Just over a half of those have the potential to be used to reduce emissions from transport (26 products) and/or building energy use (30 products), for instance, by removing upfront costs from household solar panel installations or by financing electric vehicles.

Unrealised potential for emission reductions
Overall, only around 30% of products target each of the greatest causes of greenhouse gas emissions. This reflects an ambition gap as some of these sectors, such as industry energy use, will be challenging to decarbonise.

Recent policy and regulatory drivers across Europe, in particular, may see the creation of new product markets addressing the circular economy and sustainable supply chain management, however, this is not evident in current green fintech developments.

European & UK green fintech by target markets and potential use in high-impact categories
as at Q1 2022 (N=93 green fintech, multiple target markets permitted)

Platformable



Methodology: Platformable reviews all fintech using bank and finance APIs and tallies those that provide sustainability-related products according to our Sustainability Impacts Model and Green Fintech Taxonomy. We also measure other characteristics, such as their target customer segments and their potential use in high impact sectors based on Our World in Data's 2020 GHG inventory report.

90% green fintech solutions focus on climate change mitigation

The overwhelming majority (90%) of the 93 API-enabled green fintech operating in the UK and Europe, focus on climate change mitigation. Green fintech were categorised according to the environmental objectives defined by the EU Taxonomy Regulation passed on 18 June 2020, which found that in addition to 'climate mitigation' around a third described other potential areas of impact. Overall, the majority of green fintech used generic terms such as "green", "sustainable" or environmental" action to describe their potential impact.

For instance, many digital investment and ESG data and analytics solutions state a broad ESG focus in their fund allocation and data collection strategies. Detailed information on which companies are being invested in, or the exact ESG data points being collected, was often not available.

Therefore, unless otherwise specified, these solutions are coded to contribute towards all 6 categories. Current policy and regulatory work in Europe is aimed at improving assessment of impact claims made by green fintech.

European & UK green fintech by type of sustainability impact created
as at Q1 2022 (N=93 green fintech)

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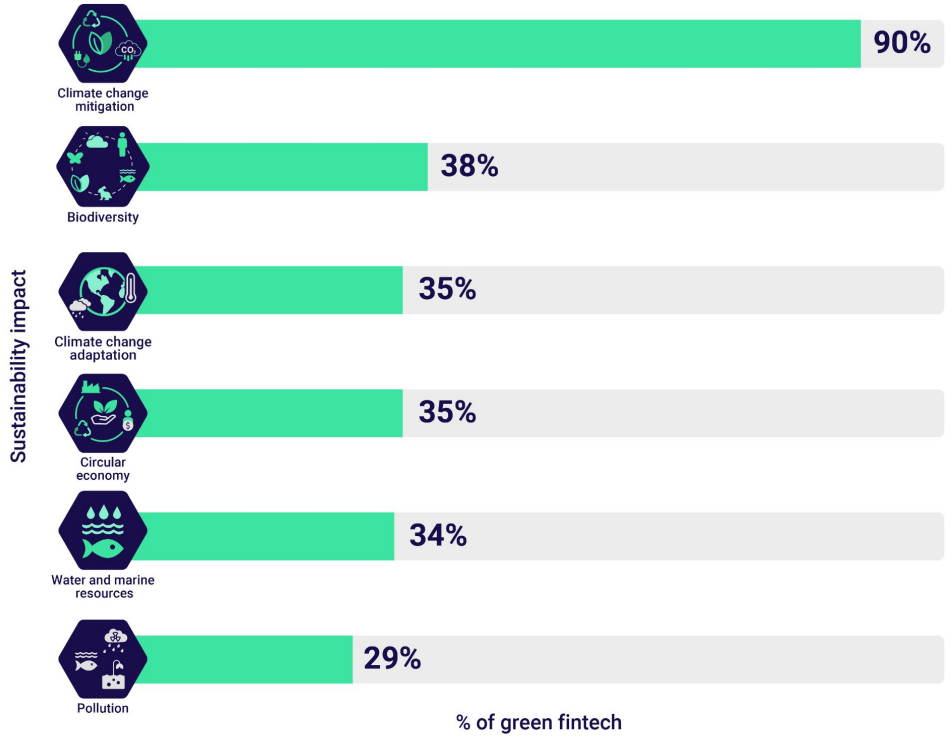


Methodology: Using product information on fintech websites and industry discussions where possible, Platformable assesses green fintech against their potential to positively create impacts using the EU's Taxonomy Regulations, which describe these 6 environmental objectives.

17% of all green fintech rely on offsets, an as-yet unproven solution

The EU Taxonomy Regulation describes potential impacts of products as 'enabling' and 'contributing'. As at Q1 2022, 23 green fintech products have an enabling, awareness raising focus. Enabling actions are informative but not directly actionable, for instance, personal carbon footprint calculators or an enterprise ESG data dashboards that show a performance baseline.

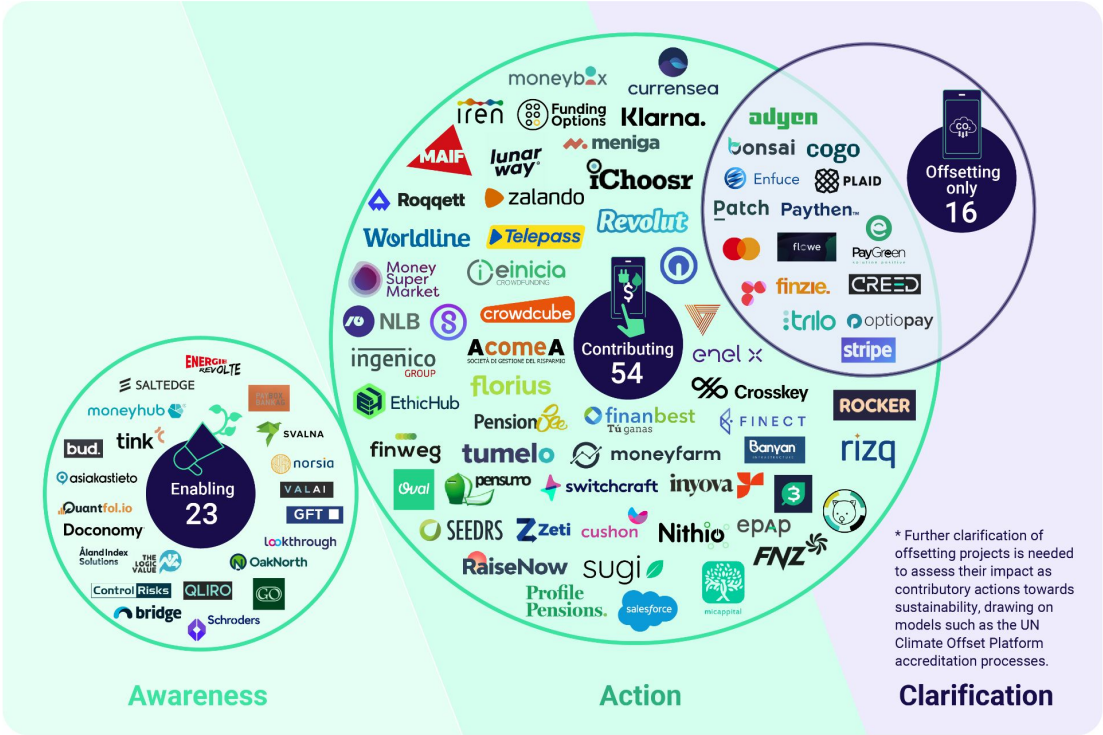
Contributing actions allow the end user to take action within the product, such as comparing and switching to a green energy tariff or pension funds that let savers transfer their contributions to fossil fuel free funds.

16 products offer carbon offsets as their primary or only sustainability action, 13 of which are payment and account solutions. There are qualitative differences between offset methods, but globally, the large majority of current offset projects raise environmental and social integrity issues. Several providers select carbon offset initiatives that have been accredited under the UN's Climate Offset Platform, but further clarification is needed to assess offset-only actions integrated into green fintech products.

Greater guidance is expected in future to assist with more accurately assessing green fintech as having an enabling or contributing impact, and to resolve concerns regarding the quality and potential of carbon offset initiatives.

European & UK green fintech by impact potential
as at Q1 2022 (N=93 green fintech)

Platformable



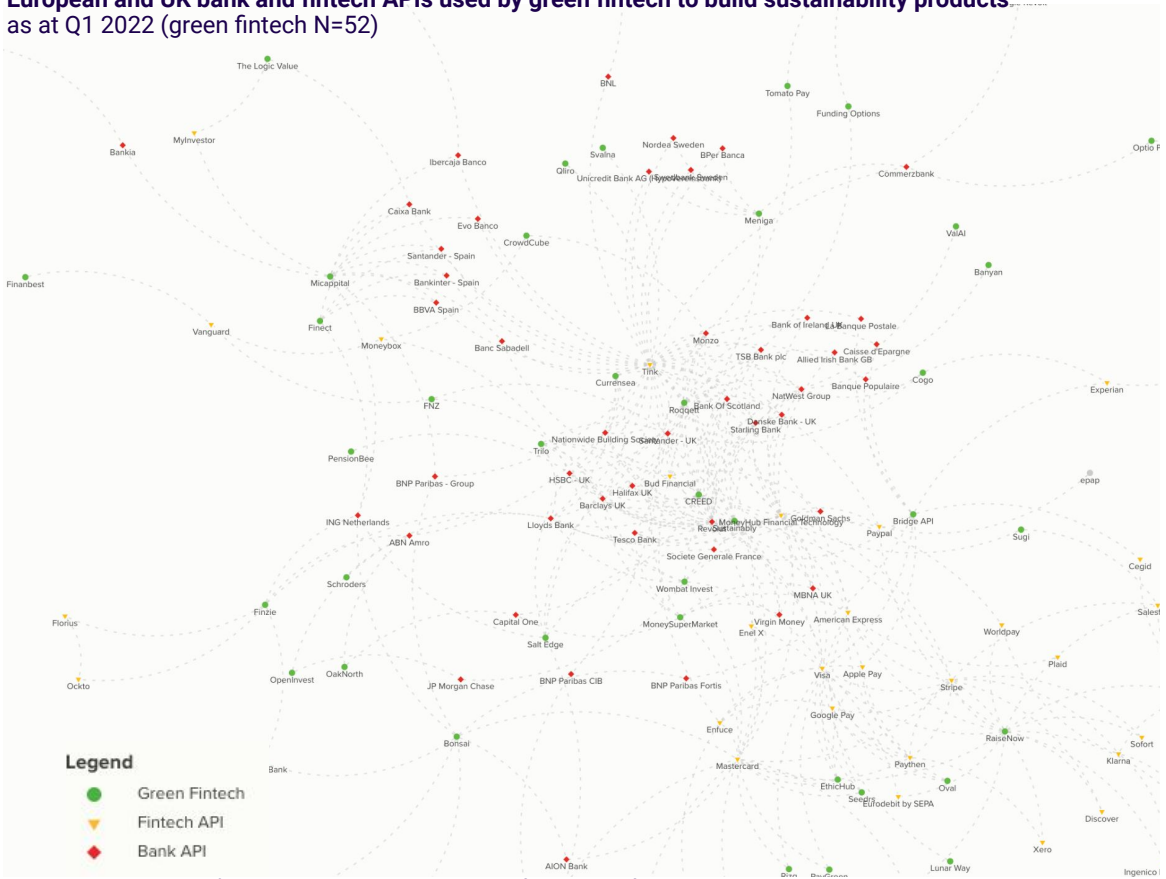
Methodology: Platformable reviews all fintech using bank and finance APIs. Using the Green Fintech Taxonomy and the EU Taxonomy Regulation, we have categorised each fintech that provides sustainability-related products. The products are categorised into 'enabling', 'contributing' or 'offsets only' based on their impact potential.

Banks and API aggregators can play a more active role in the open sustainability ecosystem

Open ecosystems foster relationships between various stakeholders, ranging from collaboration, complementary actions, co-creation, coordination and competition. 52 of the 93 green fintech identified in this research have more than one relationship with another stakeholder in the open banking ecosystem. An analysis of current relationships found:

- **Only a few bank platforms approach green fintech** as a specific target segment. The majority do not currently go beyond making open banking APIs available for all fintech, including green fintech, to integrate with and build new digital products.
- **API aggregators could offer green fintech multi-bank account integration and data capabilities.** Only 6 out of 57 API aggregators operating in Europe and the UK appear to have green fintech integrations.
- **Account aggregators could actively target green fintech as a use case** to encourage building innovative solutions:
  - They could describe sustainability use cases for their existing API offerings
  - They could create partnership opportunities to build green solutions.

European and UK bank and fintech APIs used by green fintech to build sustainability products
as at Q1 2022 (green fintech N=52)



Methodology: Platformable tracks all European and UK green fintech and the fintech and bank APIs they use to build their products. We recorded this relational data for all fintech with more than one connection (52 out of 93 green fintech) and used the online graph tool Kumu.io to visualise relationships.

Green fintech is more diverse than broader fintech, but improvement is needed, especially in management diversity

Only two thirds of green fintech have women in leadership

68% of European and UK green fintech have women in their leadership teams. The situation is more balanced than is seen in fintech overall, where only 57% of all fintechs have women in management or leadership teams.

Green fintech is more diverse, but most teams are still all white

Understanding diversity management is challenging as business registration data in Europe or the UK does not collect data on the ethnicity or race of founders or management teams. Using a consistent methodology to identify management team composition, 42% of all fintech have some degree of ethnic or racial diversity in their leadership teams, compared with only 34% of fintech overall.

Proportion of European & UK fintech and green fintech with women and diverse management in leadership

as at Q1 2022 (N=93 green fintech, N=1113 all fintechs)

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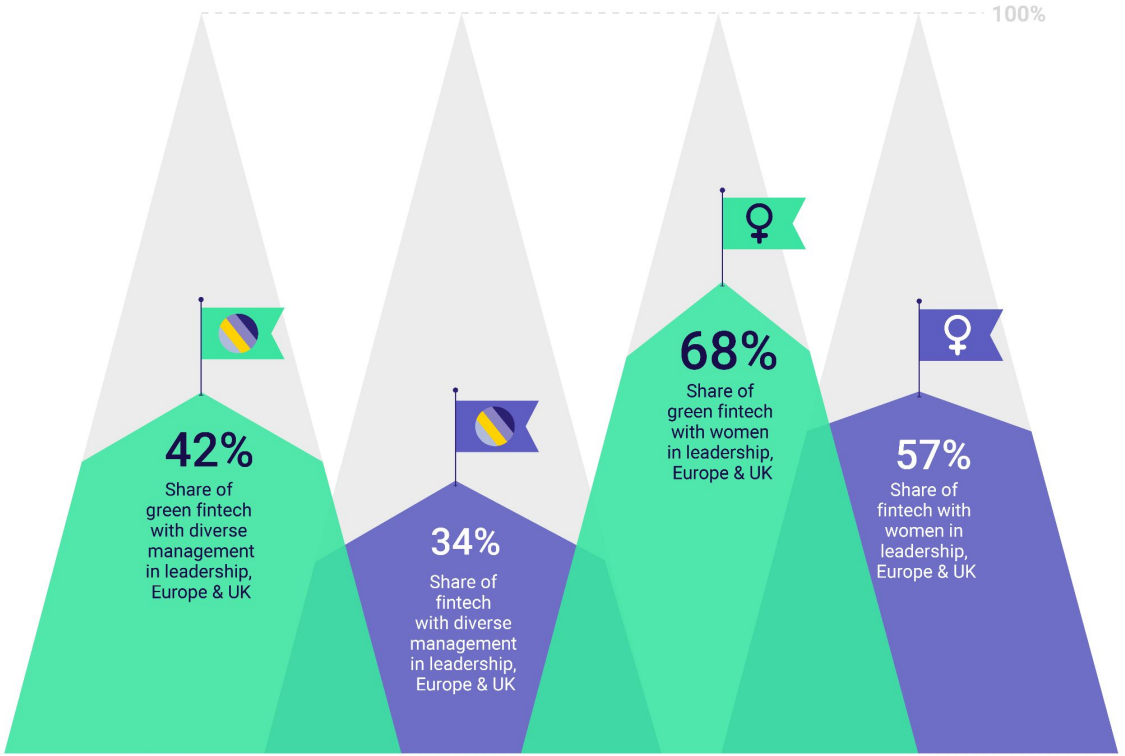


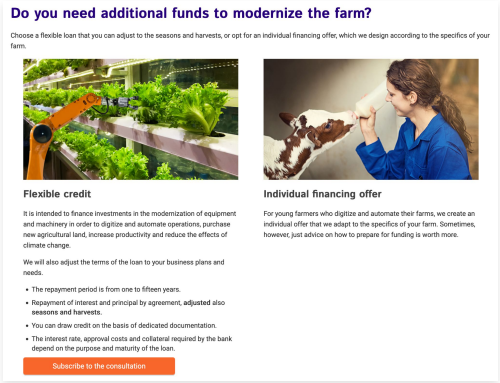
Methodology: Platformable reviews all fintech using bank and finance APIs and tallies those that provide sustainability-related products according to our Sustainability Impacts Model and Green Fintech Taxonomy. We also measure other characteristics, such as their target customer segments and gender balance in management.

Green fintech could play a part in reducing climate impacts on underserved populations

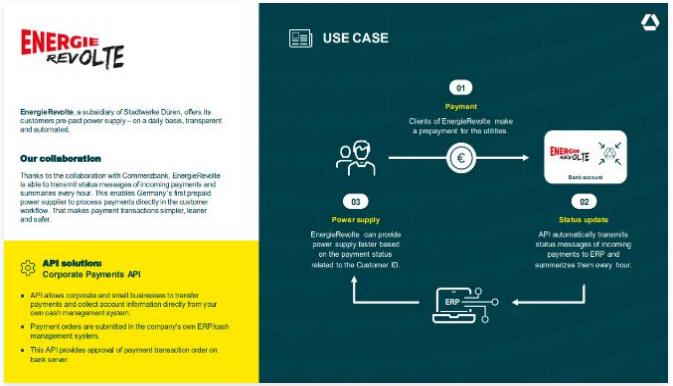
Climate impacts are disproportionately felt by already marginalised groups and communities. Some initiatives (although very few at this stage) are focusing on addressing this inequality risk in their products:

- **NLB Agro** in Europe provides access to finance for young and early-career farmers to adapt their farming practices to climate change.
- The prepaid electricity provider **Energie Revoltie** allows people with lower incomes to control their electricity bills.
- Carbon calculator **Doconomy** has partnered with the UK based Algbra to enable 'financially overlooked' customers to measure their carbon footprint.

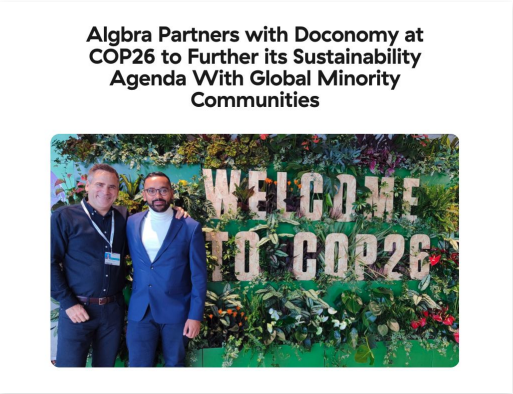
"Whilst climate change is an inescapable global crisis impacting everyone, the burden of climate change falls disproportionately on already marginalized groups, both in developed and developing contexts. Algbra is proud to partner with Doconomy to give our consumers the tools they need to start visualising their carbon footprint, and is just the beginning of our journey as an ecosystem that commits to equipping communities to doing more."
- Nizam Uddin OBE, Chief Strategy Officer of Algbra in press release on partnership with Doconomy, announced at COP26



https://www.nlb.si/agro



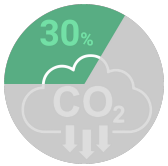
https://developer.commerzbank.com/shared/documents/EnergieRevolte_Use_Case_One_Pager.pdf



https://www.algbra.com/news/algbra-partners-with-doconomy-at-cop26-to-further-its-sustainability-agenda-with-global-minority-communities/

The European and UK green fintech ecosystem is just commencing, but needs greater clarity of vision to become impactful

Overall, it is promising to see the open banking and open finance industry actively working on sustainability. However, there are real concerns that should be carefully addressed as market activity increases.



More product ideation needed on high-impact use cases

At best, 30% of emerging green fintech products currently target the greatest causes of greenhouse gas emissions. The majority of these are focused on individual awareness or action, which can further limit the impact potential of the new green fintech products and services being provided. While raising awareness for all, including individual and household consumers, is important, greater steps forward can be taken by supporting businesses, enterprises and industry sectors to adapt their spending habits or operational processes to improve sustainability outcomes. The number of transport and building energy green fintech solutions in particular could be improved.

Offsetting solutions need to be accredited and carefully assessed

17% of current green fintech products and services focus solely on supporting business-as-usual models that rely on the logic of cleaning up afterwards via paying for offsets as a sustainable solution. There are offset projects with real impact potential: for example, the Stripe Climate initiative which allows businesses to dedicate a percentage of revenue to fund carbon removal projects provides much needed funding for technologies and brings them towards market maturity faster. However, the more commonly promoted tree-planting programmes should be more closely scrutinised. Some are certified to meet high quality criteria, but many are associated with human rights concerns and biodiversity threats and may ultimately end up doing more harm than good.

Lack of transparency may weaken consumer trust and market growth

It is difficult to assess the sustainability claims of several green fintech products solely from their product features and descriptions. It is not clear how the products operate, and vague marketing language ('green benefits, eco-friendly' etc) without metrics describing impacts is common. As an emergent industry, it is understandable that there are limitations in the metrics able to be reported on impacts to date. However, if this trend continues, it can slow down adoption by weakening consumer trust in the market overall. Regulatory initiatives including UK guidance within the consumer protection law to reign in businesses making misleading or baseless environmental claims and the EU Taxonomy Regulation on sustainable investments and an upcoming Green Claims Initiative are expected to strengthen business accountability and offer clarity for consumers. Green fintech can start by sharing data on the evidence that was used to define their sustainability approach and report regularly, through blog posts or updates to product feature pages, on the impacts-to-date amongst their early adopters.

Business and pricing models for green fintech are at a nascent stage and need to be market-tested

Only 1 in 5 (19%, or 18 products) of green fintech currently describe a pricing model for their products and services.

Of these, transaction volume is the most common form of pricing model (8% of all green fintech, or 44% of green fintech with a clear pricing strategy) and is used by 8 payment and investment-related products.

2 loans products charge interest rates as their revenue source.

5 products offer subscription-based pricing and 3 have a flat-fee charged on completion of a service delivery event.

The World Economic Forum recommends six key actions to identify potential business models for sustainability-focused products and services, as shown at right.

5. Business models

Successful transformations require the role of technology to be reimagined as a driver for new digitally enabled business models. The transition to digital-at-the-core business models, typically based on service offerings rather than products, not only opens new market opportunities, it also yields environmental efficiencies through the orchestration, optimization and dematerialization of resources and assets. Corporate leaders should consider implementing the following actions to adopt more environmentally sustainable digital business models:

- Build the capabilities needed to adopt digital business models that improve environmentally sustainable resource use (e.g. materials, energy, water) through intelligent provisioning, coordination or optimization
- Enable data-sharing across isolated organizational groups to optimize and track the environmental and economic savings realized by digitally enabled business models, and to understand the aggregated impact of these outcomes
- Facilitate a data-sharing and digital economy with real-time analytics and optimization to match supply and demand – resulting in improved resource use such as the elimination of waste in perishable supply chains or a reduction in car ownership in cities
- Store, access and view all customer data in one location, designed with API interoperability and security by design, to enhance the customer experience while protecting customer trust
- Run design-thinking and innovation workshops to develop environmentally sustainable value propositions mapped to stakeholder needs, and rapidly prototype ideas that will transform the way products, services and processes are developed
- Use digital platforms and channels to collect more distributed, inclusive customer feedback for environmentally sustainable digital business model innovation

Source: *Bridging Digital and Environmental Goals: A Framework for Business Action*, March 2021, World Economic Forum

Banking APIs and green fintech profiles

A small number of banks are opening APIs and partnering with fintech to help create sustainable products and services

Banks	Country	Predominant Business Models
COMMERZBANK	Germany	Open and Premium APIs, Partnerships model
KBC	Belgium	Open and Premium APIs, Partnerships model
NatWest Group	UK	Open and Premium APIs, Partnerships model

Open banking business models: Platformable's taxonomy

Open Platforms
Open banking platforms with a catalogue of APIs is available to test and use by any fintech (Production use must be approved by the bank)

Premium APIs
Banks make high value product APIs available to potential API consumers for a price, for example, a tiered subscription-based on number of API calls made (production use must be approved by the bank)

Partnership Platforms
Banks seek out fintech partners with non-competitive products and use partner APIs with selected fintech to extend product range to their consumers

Incubators and Acquisitions
Banks offer a pool of funding to early stage startups to help them build new products and mentor/advisee them along the way. Banks acquire existing fintech in order to extend their API capabilities or infrastructure

Banking-as-a-service
Banks provide full range of white-labelled core functionalities in order for fintech and enterprises to build their own customer-facing bank offerings built on the bank's infrastructure

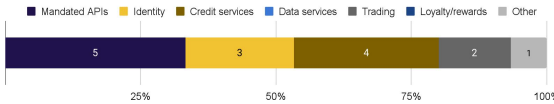
Marketplace
Banks that offer marketplaces that include third party apps and providers

Commerzbank

COMMERZBANK

Embracing an open ecosystem approach for climate action

API products by category as at Q1 2022 (N = 15)



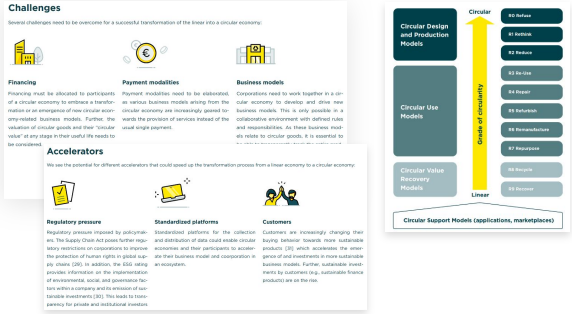
Known fintech API consumers

finleap connect, meniga, ecospend, optiopay, treefin, Fondy, GARMIN, Finanzguru, tink, isabel group, caspian one

Known green fintech integrators

ENERGIE REVOLTE

Leveraging API program and fintech partnerships to drive new sustainable business opportunities

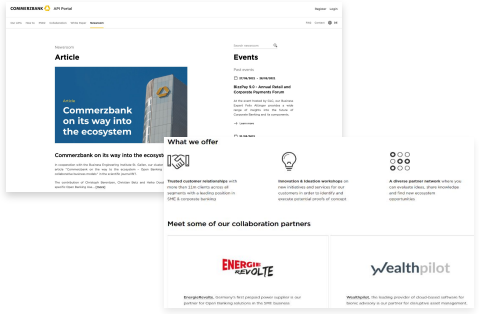


Commerzbank sees API-based ecosystems as fundamental to move towards a circular economy.

In the first-of-its-kind paper, Commerzbank released a white paper describes three key accelerators: regulations, standardized platforms where data and APIs can be shared to help build new green fintech products, and customer demand.

> *"Ecosystems based on APIs are going to be integral in the transformation from traditional economy models into new business models, as they are founded through collaboration. They will not only allow for sustainable services but also reusing and sharing already established competencies and services between participants – as in a circular economy business model."*
>
> - Commerzbank White Paper: *How API-based Ecosystems Can Serve the Circular Economy* (page 13)

P2B payment API integration to enable pre-paid power supply



Commerzbank includes a collaboration section on their developer portal, highlighting their partnership with the pre-paid power supplier **Energie Revolte**, uses Commerzbank's Corporate Payments API to offer an instant payment method to their energy customers. The API provides almost real-time updates on payment notifications, enabling faster energy supply to their customers as prepaid energy payments are confirmed.

A recent webinar with API management provider Axway also described a proof of concept product focused on supporting companies to ensure a sustainability-focused supply chain.

KBC

A first mover in creating API products that drive sustainability actions

API products by category as at Q1 2022 (N = 13)

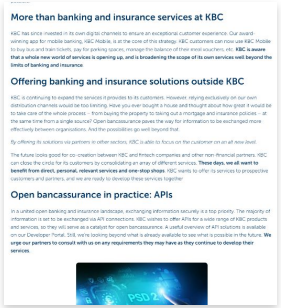
Known fintech API consumers

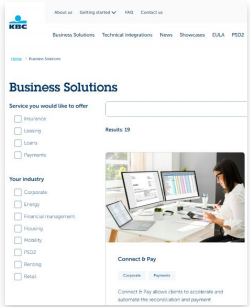
enable:Banking, bangware, isabel group, token, bonsai, cake, YTS, MultiSafepay, MY FUND BOX, Paymentwall, Bancontact Payconiq Company

Known green fintech integrators

Bike REPUBLIC, FIETSEN GAETHOFS, iChoosr, velodome

Putting customers' end-to-end journey at the focal point

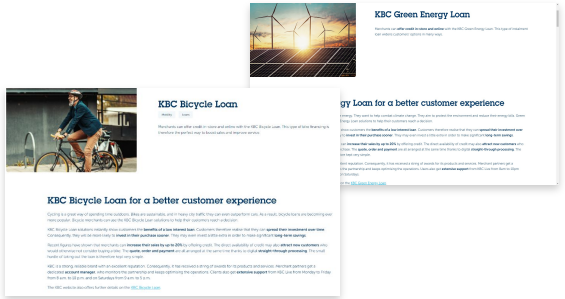




KBC takes a consumer-centric business and design thinking approach to its API product innovation, creating three specific APIs that create sustainable solutions:

- KBC Green Energy Loans APIs build on market interest amongst home owners to reduce their carbon footprint and promote the circular economy.
- KBC Bicycle Loans APIs target health- and environment-conscious, and convenience-oriented individuals.
- Energy Mobility APIs allow enterprises to integrate their HR management with worker payments to provide green incentives to their employees including vehicle leasing, public transport and bike budgets.

Bicycle and green energy loan APIs for integration at the point of sale



By integrating with KBC bicycle loans and green energy APIs, bicycle retailers and green energy technology merchants can offer their customers credits to finance their purchases at the point of sale, in store or online.

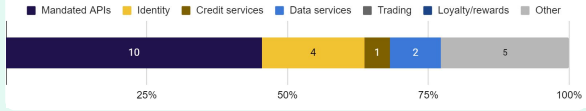
The APIs are free to use, but merchants and retailers are required to sign a partnership agreement, whereby they will either act as a referrer or a credit intermediary of KBC. As a result:

- KBC can generate new validated loan customers at lower acquisition costs
- Merchants tend to increase their sales by 20% if customers can access credit at the point of purchase.

Natwest Group

Combining customer-centric business approach with fintech partnerships

API products by category as at Q1 2022 (N = 22)



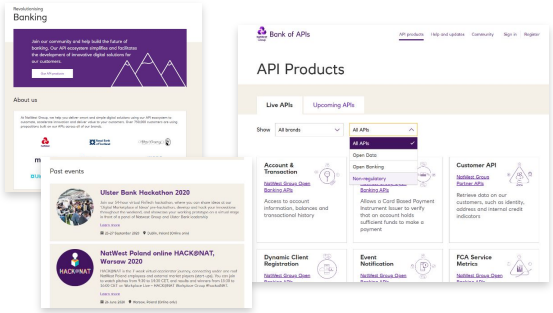
Known fintech API consumers

reflow, YTS, Banked, Fluidly, QUICKFILE, banjo, currensea, Funding Xchange, TRUELAYER, cleo., ecospend, snoop, RAIDIAM, fintify, Money Dashboard, friendly score, YAPILY, Revolut, tink, darwinex, Fondy, currensea, Payit

Known green fintech integrators

ValAi, Banyan INFRASTRUCTURE

Opening several acceleration tracks to recruit fintech partners

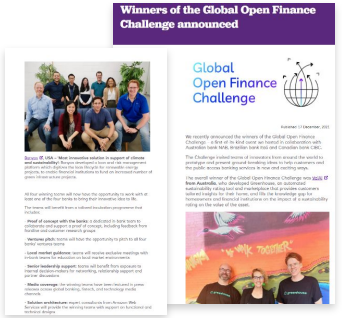


Natwest Group specifically targets businesses, offering access to the banking group's 10 million customers. It pledges to partner with fintech for shared revenue creation.

Half of their non-mandated API catalogue are "Partner" APIs, including those providing access to customer identity and internal credit rating, illustrative loan quotes, and the bank's internal financial crime database.

Up until the onset of the pandemic, Natwest Group was active in organising hackathons to identify and recruit potential fintech partners. The bank has also recently organised global open finance challenge - a tailored incubation programme in collaboration with some other banks.

Global collaboration for climate solutions



Green fintech solutions were amongst the four winners of the global open finance challenge:

- ValAI developed an automated sustainability rating tool and marketplace that adds insight into sustainability rating on the asset values
- Banyan developed a loan and risk management platform for renewable energy projects.

The Natwest Group and its collaborating partner banks offer a secure sandbox environment for fintech to develop their solutions. The sandbox combined open banking, open finance and experimental services, an essential component needed to support green fintech to test and build their solutions.

Green fintech profiles and how they are building solutions with bank and finance APIs

The following pages describe some of the green fintech products (or features from more generalised fintech) that leverage open banking and open finance APIs.

These products address one or more of the environmental objectives as defined under the EU Taxonomy Regulation.

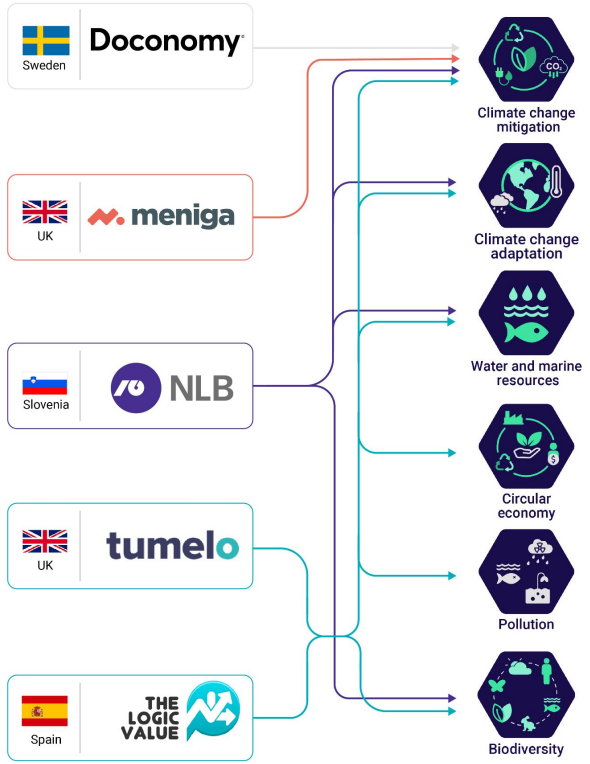
Find out more: Page 35

Find out more: Page 36

Find out more: Page 37

Find out more: Page 38

Find out more: Page 39



Doconomy

Doconomy

Green Digital Payment and Account Solutions

Doconomy's **environmental impact calculator API is well connected to the open banking and open finance ecosystem** to offer insights to a wide range of stakeholders.

Sustainability impact alignment

Climate change mitigation

Known bank/fintech APIs used

Åland Index Solutions

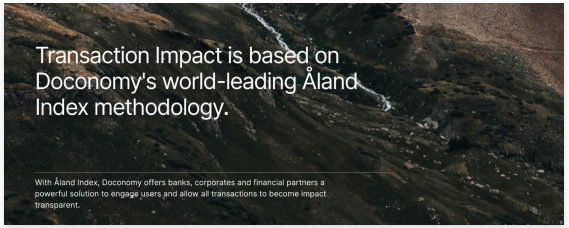
Crosskey

fabrick

Belfius

BNP PARIBAS CORPORATE & INSTITUTIONAL BANKING

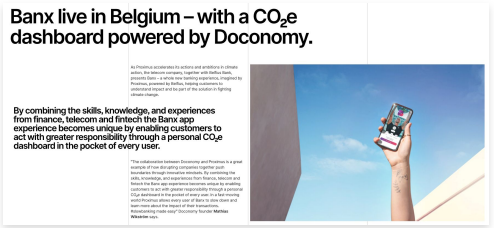
Creating awareness through Impact-as-a-service API



Referred to as 'Impact-as-a-Service', Doconomy's Transaction Impact API and the underlying Åland Index can be used to calculate the greenhouse gas and water use impact of digital financial transactions. One of the most mature carbon accounting calculators in the industry, it has been developed with Ålandsbanken and is an example of successful bank/fintech collaboration in developing API-enabled green fintech.

Doconomy's carbon calculation service is made available on API marketplaces such as the Crosskey Open Banking Market.

Levering the wider open ecosystem for greater reach



Digital bank Belgium Banx is powered by the banking services of Belfius and the telecom company Proximus, and connects with Doconomy to offer GHG insights to end-users.

> ***"Doconomy's off-the-shelf solution Åland Index has played a crucial part when developing Banx. The solution has been easy to connect to our own digital ecosystem, is scalable and gives us the opportunities to actually make our visions fly."***
>
> *Tom Discart, Banx lead at Proximus Group*

**"Banx live in Belgium – with a CO_2e dashboard powered by Doconomy" blog, October 2021*

Meniga

meniga

Green Digital Payment and Account Solutions

Meniga offers a **carbon calculator for banks**, so bank customers can **measure their carbon footprints** and **take sustainable action.**

Sustainability impact alignment

Climate change mitigation

Known bank/fintech APIs used

UniCredit, Nordea, National Bank of Greece, Swedbank, mBank, Santander, Groupe BPCE, CA Crédito Agrícola, HypoVereinsbank UniCredit Group, Intesa Sanpaolo, Commerzbank, BPER: Banca

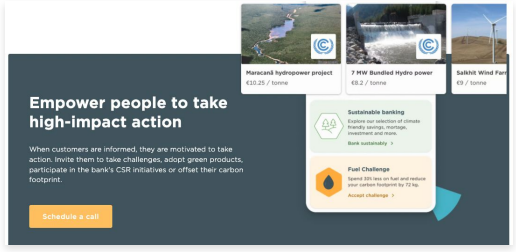
Helping banks launch green products

Íslandsbanki launches Meniga's 'Carbon Insight' service to help customers fight climate change

Customers are increasingly demanding sustainability from the products and services they use, and banking and finance are no exception. Personal finance and banking services provider Meniga and their carbon footprint solution enables banks to create appealing new green products in response. Some banks that are using the tool are one of the largest banks in Iceland, Íslandsbanki and Portuguese national financial group, Crédito Agrícola Group.

Making use of open banking infrastructure, the service enriches transformational data by adding a carbon footprint layer on personal financial transactions.

Empowering users to take action to reduce their carbon footprint



Beyond information, customers are offered options to compensate for the negative environmental impacts of their purchases and financial transactions.

Banks can surface their climate friendly product offerings such as savings, mortgage or investment products.

Carbon offsetting via certified programs is also an alternative, although the industry as a whole needs to exercise greater caution over offsets as the only or preferred action due their questionable potential to create long-term positive sustainability impacts.

NLB Agro

Green Digital Deposit and Lending Solutions

While NLB is a bank, NLB Agro is a **financing solution for farmers** that can be connected via payments APIs to help farmers modernise equipment, increase productivity and **reduce the effects of climate change.**

Sustainability impact alignment

- Climate change mitigation
- Climate change adaptation
- Water and marine resources
- Biodiversity

Known bank/fintech APIs used

flik

Responding to farmers' challenges

NLB Group is the largest banking and financial group in Slovenia, providing a wide range of services and solutions in southeast Europe. Their offering, NLB Agro, is designed to help farmers modernise their operations and deal with the growing challenges in a climate changing world.

Farming is a very particular business model with its unique challenges: increasingly common extreme weather can wipe out yields and therefore profits, and many smaller farmers in particular are struggling with digitalisation. NLB Agro's tailored financing and flexible credit and individualised advisory services is designed to respond to these challenges and helps farmers build business capacities required to succeed.

Making use of digital services

As the farming industry gets ready for a generation change, younger farmers are well positioned to make use of digital services. Other NLB services available for farmers include point-of-sale card services that allow customers to pay cashless and digitally, and leasing solutions for agricultural equipment, which removes some of the upfront costs associated with purchasing costly machinery.

It appears that farmers could make use of NLB's financial services by connecting through FlikPay (operating as NLB Pay) to enable instant payments and cashless transactions.

Tumelo

tumelo

Green Digital Investment Solutions

Tumelo enable **investors and pension holders** to **have a say** in **how their money is invested** to create and benefit from a more sustainable investment system.

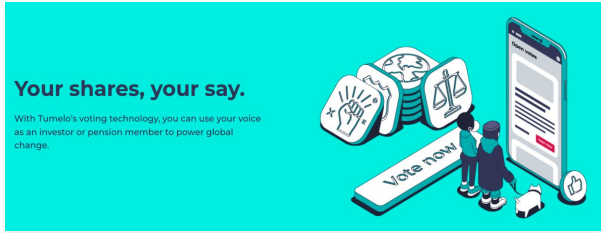
Sustainability impact alignment

- Climate change mitigation
- Climate change adaptation
- Water and marine resources
- Biodiversity
- Circular economy
- Pollution

Known bank/fintech APIs used

seccl, penfold, cushon, Wealthyhood, THE BIG EXCHANGE

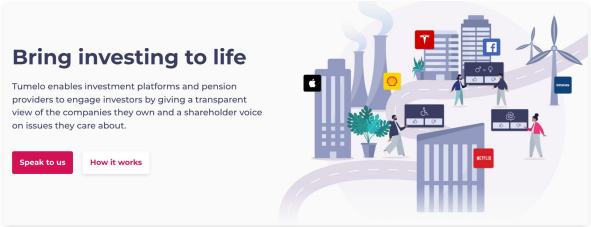
API-enabled transparency on how pensions and savings are invested



Almost two thirds of savers or pension holders want more transparency from financial service providers on environmental issues, but many are unaware of how their savings are invested. The UK founded company **Tumelo** addresses this by giving savers and investors visibility over what companies their savings are invested in, and allows them to vote on sustainability related decisions.

The fintech offers two API products, Transparency API and Voting API, which serve both the individual and enterprise target market via investment platforms and pension schemes. They partner with various UK pension providers, such as Aviva and the net zero pension provider Cushon.

Over 30,000 stakeholders have voted in corporate AMGs



The Transparency API shows a full breakdown of companies that a fund or portfolio is investing in. With that knowledge, end users can vote on ESG issues in Annual General Meetings of those companies via the Voting API. Over 30,000 votes has been enabled to date.

> ***"Investors are increasingly wanting to understand what companies they own and influence some of the biggest decisions they make. These features are becoming table stakes for the everyday investor in this new, transparency driven market." ****
>
> *Will Goodwin, Tumelo co-founder*

**"Tumelo and Seccl team up to better engage with investors" article, May 2021*

The Logic Value

Digital ESG-Data and-Analytics Solutions

The Logic Value **assesses ESG regulatory compliance** to help redirect capital towards sustainable companies and activities.

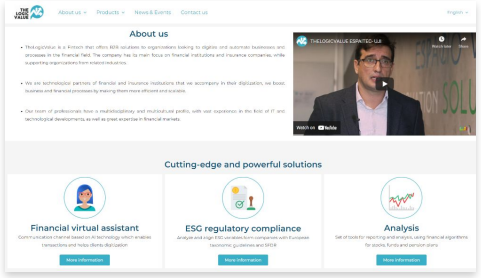
Sustainability impact alignment

- Climate change mitigation
- Climate change adaptation
- Water and marine resources
- Biodiversity
- Circular economy
- Pollution

Known bank/fintech APIs used

myinvestor

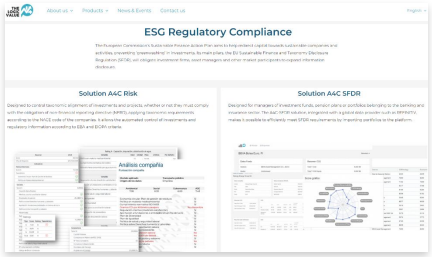
Using AI to assess climate metrics in risk management decisions



Founded in 2012, TheLogicValue provides B2B financial digitalisation solutions to enterprises, primarily banks and insurance companies. Participation in Bankia's innovation program in 2017 accelerated its expansion beyond Spain.

TheLogicValue's primary product offering is a virtual AI-based financial advisor solutions that enable banks and insurance companies to enhance their customer engagements. The fintech has also been partnering with Bankia to incorporate AI and climate metrics into its credit risk assessment toolings used by the bank's risk department. Such solutions - so called ESG regulatory compliance - can also help integrate climate risk management in an enterprise's supply chain oversight.

ESG regulatory compliance solution allows climate risk assessment for financial institutions



ESG data solutions incorporates the EU's Sustainable Finance Disclosure Regulation (SFDR) and EU Taxonomy for sustainable activities and assesses whether a business complies with their reporting requirements.

- Solution A4C Risk allows automated control of investment s and regulatory information according to the EBA and EIOPA criteria.
- Solution A4C SFDR integrated with global data provider such as Refinitiv to enable investment funds, pension plans to meet its SFDR requirement.

Where to next: How can green fintech explore product ideation to ensure impact of solutions

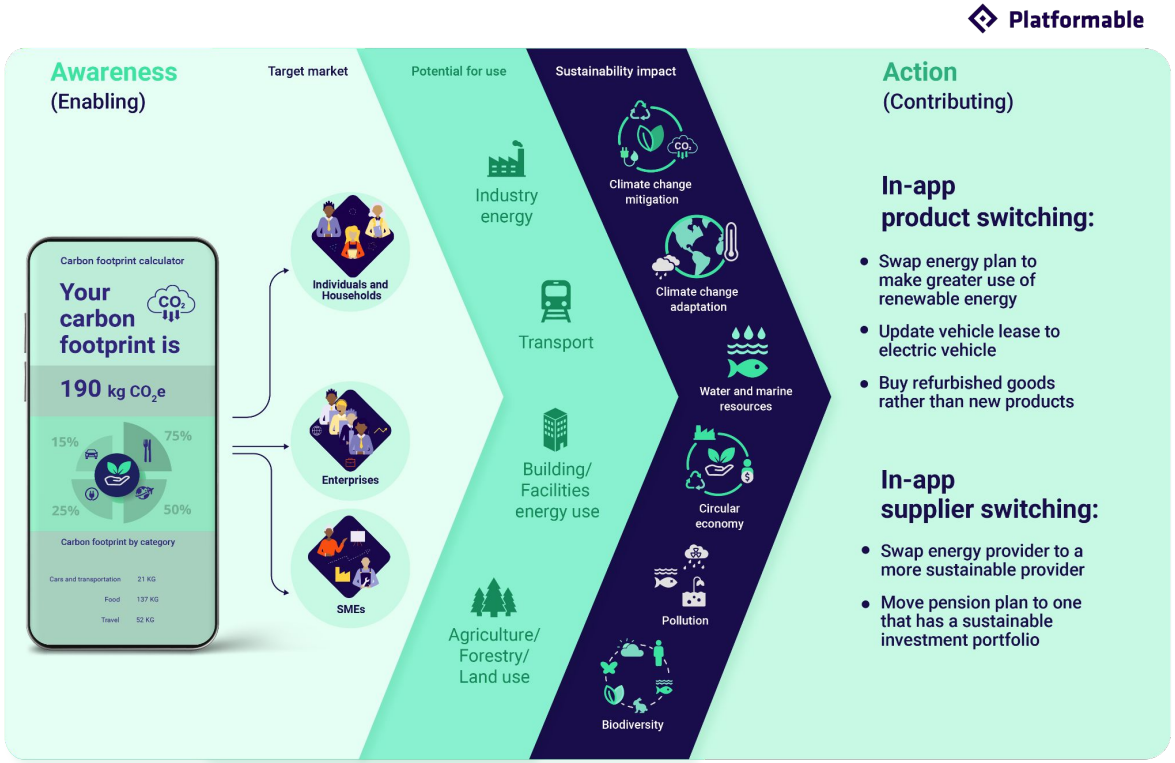
Consumers are aware of the benefits of green fintech and are demanding new solutions. Regulations are also requiring businesses and enterprises to act, and industry sectors such as agriculture are facing daily examples of the need to revitalise and re-imagine operational processes to improve environmental impacts.

After understanding consumer needs and the regulatory context, green fintech can benefit from exploring potential products and use cases based on available APIs, and drive the development of next generation solutions beyond existing products. One example of creating an impactful product ideation design flow is given at right, in which expanding on a carbon footprint calculator is discussed.

1. Consider wider target market segments
Green fintech can identify user needs and use case journeys beyond an individual/household focus to building products that support sustainability actions by businesses, enterprises, and industry sectors.

2. Focus on high-impact categories
Consider in which area of activity the product can facilitate action and what environmental objectives to focus on when considering the potential impact of a solution.

3. Create features to facilitate action
Products can move beyond awareness-raising to facilitate action. For example, products can enable in-app product and supplier switching to more sustainable solutions.



Sign up for an API-enabled Green Fintech Product Ideation Workshop

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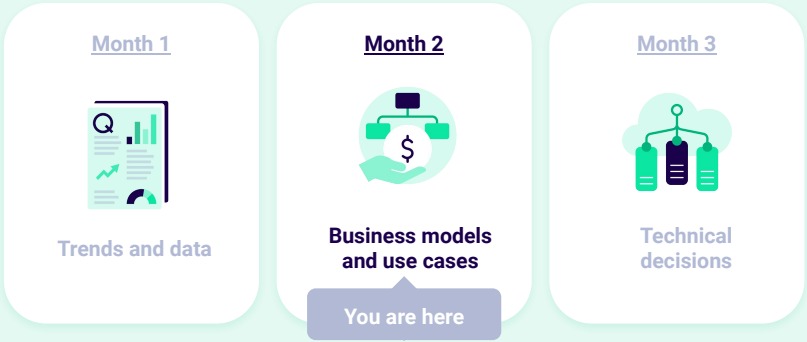

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Methodology

At Platformable, we have:

Defined the open banking and open finance value flow for sustainability. Drawing on industry and academic research, as well as our own datasets and analytics techniques, we have documented how value flows to various stakeholders in an open banking/open finance ecosystem and is being used to create positive sustainability impacts on the environment.

Researched and defined taxonomies for key data model elements including: value stakeholders, sustainability impact value categories, bank types, bank platform business models, API product categories, API product pricing models, fintech categories, green fintech categories, and environmental objectives.

Identified primary and supplementary metrics for ongoing measurement. For each node in the ecosystem, we have defined primary indicators/metrics and secondary data points. These assist with measuring impact of the ecosystem elements overall on generating and distributing value. We are also testing scores for key components of the open banking ecosystem so that we can create scorecards and rankings of where open banking maturity is progressing.

Created a regular data collection system. We now have processes in place to continually collect and monitor how value flows in the global open banking ecosystem.

Regular data collection

We use alerts, scraping bots, data subscriptions, regulatory datasets, and manual data collection processes to identify banking platforms and API-enabled fintech and green fintech. On a rolling weekly basis, we update aspects of our datasets and conduct global scans in the month prior to each trends report release to review any potential gaps or new entries our alerts, etc may not have picked up.

Particular aspects of our data model and data collection can be improved as we continue to develop our open sustainability work.

Green Fintech Taxonomy and sustainability product categorisation. Our Green Fintech Taxonomy draws from the Green Digital Finance Alliance's work and is closely aligned with existing fintech product taxonomies. Open sustainability and green fintech is still a relatively new industry sub-sector, and some of the emerging and innovative green fintech products and solutions, particularly in energy and mobility sectors, do not fit well in existing categorisations. Additionally, banks and fintechs may have separate sustainability APIs for more specific use cases or purposes, which may differ from the overall fintech categorisation. We are working on updating and expanding our taxonomy to better reflect these use cases.

Sustainability impacts alignment with other existing taxonomies. Our sustainability impact model draws on industry and academic research, and is aligned with the European Union's Taxonomy Regulation and environmental goals. In the next phases of our work, we are looking to align this model with frameworks such as the UN Sustainable Development Goals to improve the interoperability of our model.

Gender and diversity data: At present, we collect binary data (women/men) as the availability of more diverse gender data is limited.

We will be creating mechanisms to invite greater community and industry consultation on our data models and methodologies over 2022.

Please contact jannika@platformable.com to be involved in upcoming consultations.

Contact us

platformable.com
mark@platformable.com
linkedin.com/company/platformable/
@mgboydcom

Platformable