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NEXT DIGITAL FINANCE

Open Banking APIs Worldwide

A country-by-country guide to Open Banking APIs with analysis which regions are driving the global evolution of networked financial ecosystems.

Management Summary

The ripple effects of Open Banking can now be felt across the world. But why is it causing such endemic and sustainable change? According to our analysis, key drivers are: changing customer behaviour, increasing networking among banks, the rise of ecosystems and the emergence of new supporting API technologies.

While some consider PSD2 in the EU as synonymous with open banking, our findings clearly show that it's really only a 'stimulus' to opening-up banks. To this end, similar aspirations for Open Banking APIs are now being seen worldwide – already touching more than 50 countries and affecting more than 10,000 banks.

Open banking is reshaping the banking industry on a local and global level. So widespread and important are these changes, that ndgit is dedicating a second white paper to the topic.

In our first paper „Open Banking – The Global Revolution in Banking", we embarked on a journey around the world by means of qualitative analysis - giving some broad insights on market developments across the various regions. We were delighted with the considerable interest that this content piece received.

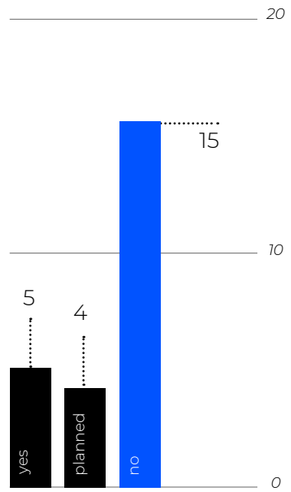
Readers of the new whitepaper can experience a unique country ranking model, developed exclusively by ndgit. This is based on four factors: the spread of Open APIs, regulatory requirements, standardisation initiatives and the presence of a central TPP regulatory body.

ndgit's open banking leader board

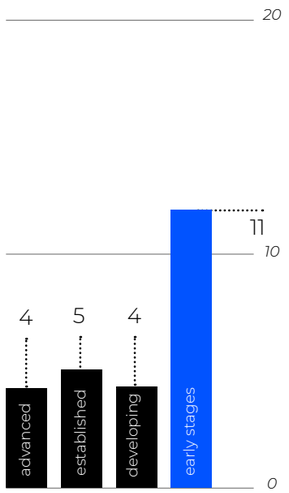
1. EU + EEA + UK
2. Australia
3. Hong Kong
4. Bahrain
5. Japan
6. South Korea
7. Brazil
8. Mexico
9. Singapore
10. Malaysia
11. Canada
12. Thailand
13. Ruanda
14. India
15. Switzerland
16. Indonesia
17. China
18. Kenya
19. South Africa
20. USA
21. New Zealand
22. Chile
23. Nigeria

Open Banking Status

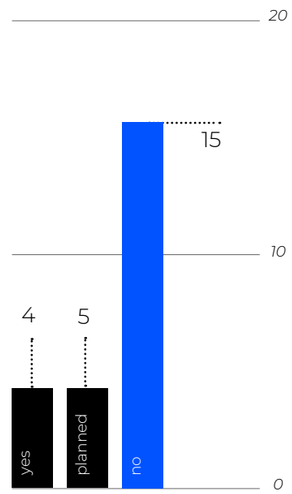
A comparison of Regulatory requirements, Standardisation Initiatives and TPP regulation



Regulatory requirements



Standardisation Initiatives



Central TPP regulation

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Introduction

Banks are already in the midst of digital transformation. Operations and business processes are being digitised, with paper documents being replaced with automated, electronic options. Bank customers are also increasingly benefiting from new online and mobile banking services. Once lengthy and unpleasant procedures, such as loan applications, are now handled much faster, with new features such as digital-identity and video onboarding, verification and authentication reducing time and effort. Chatbots and Robo-Advisory Services offer new levels of consultancy and support. At the same time, payments have been accelerated and simplified with, for example, electronic billing, contactless payment, Apple Pay and Google Pay. With their new, ultra-convenient processes, 'first-pioneers' are slowly creating new customer expectations. Increasing competitive pressure, this is setting new standards for the financial 'experience'. Those that cannot deliver, will fall behind. The wholesale disruption of the financial market – similar to that previously seen in sectors such as the media industry – is already in full swing.

What is Open Banking?

The term open banking is currently used in two different ways. Some banks use open banking to merely publish Open APIs, so third-party providers (TPPs) can access the data. At ndgit, however, we believe that open banking is much more than that as it also involves opening up bank services and infrastructures to TPPs allowing them to develop new innovative applications for their end customers based on Open Banking APIs. This gives bank customers the opportunity to carry out their financial business using new customer-centric applications from non-banks, alongside their own bank's e-banking services.

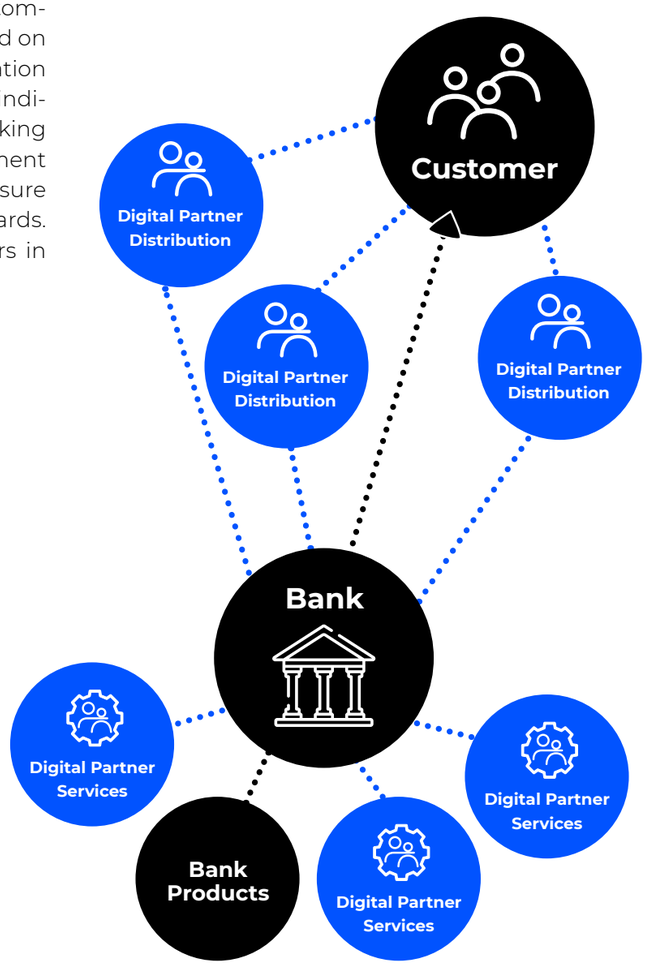
A significant evolutionary step towards this is the second Payment Service Directive (PSD2). Through this, the European Union is committed to providing its banks with Open Banking APIs for regulated third-party providers, starting this year. The resulting PSD2 APIs can be seen as a precursor and important driver for open banking.

Open Banking as a consequence of new value chains

Given these considerations, ndgit defines open banking as a value-adding business model that uses Open APIs to generate new revenue streams.

Open API's are different from regulated PSD2 APIs, as banks can decide for themselves to what extent they open up their bank data and processes. They form the essential basis for implementing future networked business models of banks with the wider ecosystem.

Innovators are already offering their customers new customer-centred services based on Open APIs, thereby promoting innovation and competition in the marketplace. As indicated above, the key drivers of open banking are new customer needs, the development of new technologies, competitive pressure and regulatory requirements and standards. Below we describe the individual drivers in more detail:



New customer needs

Many of the changes delivered through digitisation are driven by shifts in user behaviour. Today, customers can easily search and compare the most attractive and cost-effective products on the market, without having to rely on their incumbent provider. Major technology groups such as Amazon and Google are not only transforming the delivery of services industry-wide, they are using holistic processes to significantly alter customer expectation - it's not just about shopping anymore.

In the meantime, customer-centred financial products are being pushed out to the market by FinTech's. These can be used independently of the user's bank giving them access to a multitude of innovative apps, services and transactional products. This leads to increasing pressure for banks to innovate and forces them to rethink new digital offerings.

A prime example of this can be found in China, where non-banking technology groups such as Alibaba and WeChat have very successfully created digital ecosystems that focus on linking customer-centred services and products. The gradual integration of payment and finance capabilities, now provides customers with a holistic digital customer experience, which delivers more innovative versions of services that were previously reserved for banks. In this way, new entrants continuously supplement and substitute traditional banking products.

New technologies

The networking of value chains, and the emergence of new platforms which are aligned to holistic customer processes, have made IT-side networking a priority for all sectors with API platforms and microservices now a paradigm for the systemic connection of various partners.

Instead of complex interfaces, easy-to-understand and technically designed REST APIs provide easy access for a variety of partners while API management systems ensure easy set-up, scalability, configuration and analysis of the links. Unlike other industries, banks are still in the construction phase of this type of system. The industry-specific requirements for safety and functionality, especially with the introduction of the PSD2, pose major challenges.

So far, there are only a few suppliers in the market, which can provide both the required technical and banking expertise as a whole. Open APIs place high demands on IT secu-

rity. Regulations and standards for the implementation of open banking require a wide range of complex security functions from the banking systems. While these are partly fixed, banks are able to select some within a certain framework and are responsible for the appropriate security concept. To this end, countries such as Switzerland and Nigeria have pushed ahead with the introduction of security standards for the exchange of sensitive data to simplify the implementation and use of new security technologies.

Competitive pressure

Historically, banks have been more cautious and conservative in responding to market changes. They often focus on smaller innovations such as banking apps, electronic bank statements or providing extended banking functions of FinTech partners. However, their primary business models, products, and services have remained unchanged.

So far, they have been able to afford this type of approach due to the lack of innovative providers and competitive pressure. In markets dominated by a few banks, monopolistic conditions have further weakened the pressure to innovate. But that is changing.

New, disruptive providers of financial services are entering the market, creating unprecedented momentum. Next generation challenger banks and FinTechs are creating a new competitive landscape, forcing traditional banks to create new digital services. If they don't change, they risk losing their customer channel to third parties.

We have already seen the development of this type of innovation-promoting competitive landscape in the UK. Here, the Competitions and Market Authority (CMA) has committed the nine largest UK banks to implement pre-defined Open APIs to drive competitive and innovation pressure in the financial sector.

Regulatory specifications and standards

Internationally, Open Banking APIs are now being created on all continents. They are either initiated by regulatory bodies, e.g. PSD2, or by market-driven standards. The aim of the regulators is twofold - to open up payments to non-banks and facilitate alternative business models; and to promote consumer protection and increase pressure on suppliers to create fairer price structures.

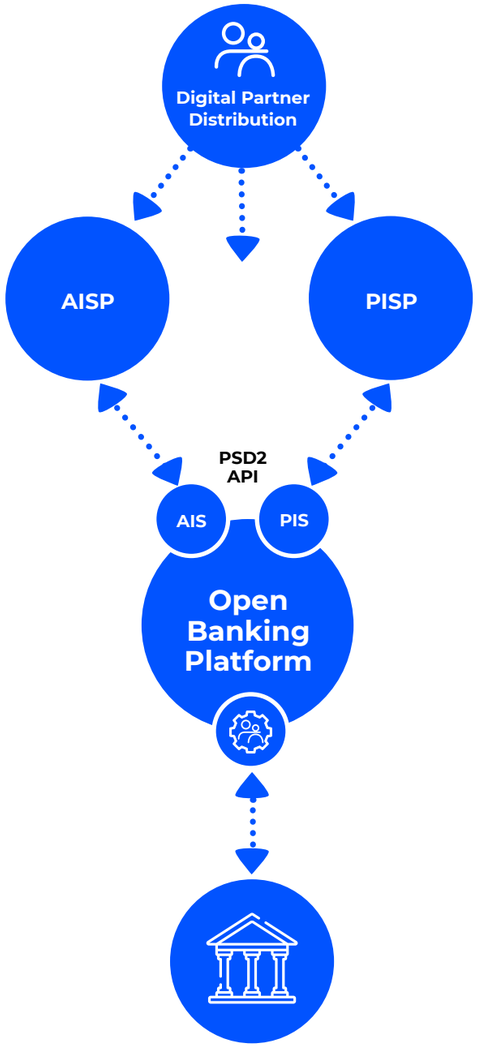
The EU, Hong Kong and Australia are governed by regulatory requirements. Mostly, these focus on payment transactions and only a limited range of banking services. Nevertheless, they are an important cornerstone for the spread of the open banking philosophy. With them, banks develop technical understanding and technical prerequisites to become open banking providers and to offer their own services to customers and partners.

It's clear that Open banking is much more than just a „buzz word". It marks a global evolution in the financial market, which will gather increasing momentum with or without regulatory requirements.

From Open Banking APIs to ecosystems

For many banks, the path to open banking begins with the introduction of regulated or market-standard Open APIs, which can then be progressively developed in the direction of networked banking and the design of ecosystems.

Legally driven minimal approach

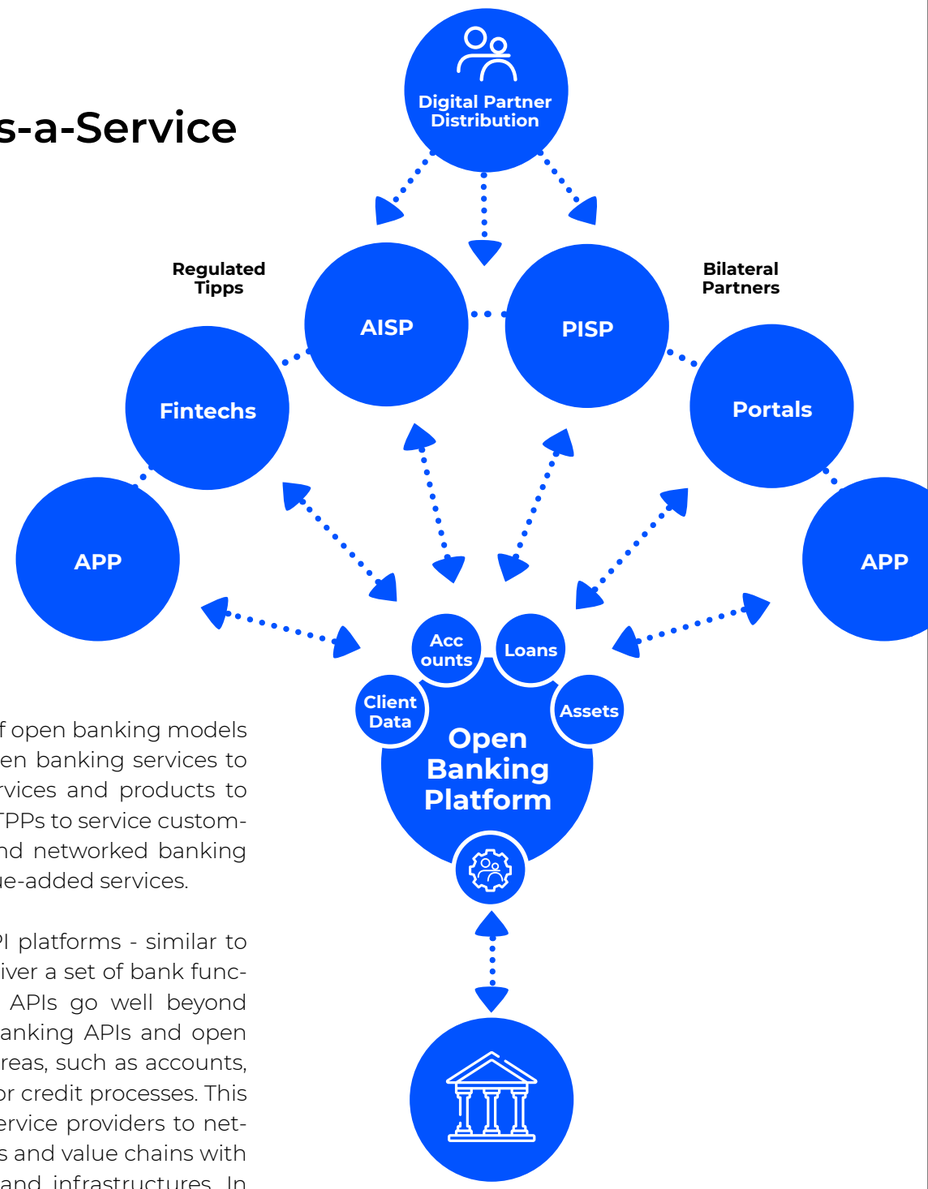


In the EU, PSD2 demands that from September 2019 banks must have PSD2 APIs to allow third-party providers to access account information and trigger payments. While it provides a set of requirements, it leaves enough scope for individual markets to define the interfaces themselves. To make the task easier for banks and to avoid a jumble of thousands of individual solutions, various standardisation bodies have emerged. One of these is The Berlin Group, whose framework has become the leading standard for PSD2 and which, according to the European Banking Association, is now used by 78% of EU banks.[1]

For thousands of banks, the regulated introduction of PSD2 APIs represents the starting point of API banking. Other international financial markets already have comparable regulations and market standards for PSD2-like Open APIs for third-party providers. To ensure their long-term competitiveness, many future-oriented financial institutions already rely on the extensible base technology of API platforms when implementing PSD2 APIs. This makes it quick and easy to upgrade to open banking.

[1] Source: EZB survey: https://www.moneytoday.ch/news/berlin-group-und-der-weg-zur-psd3/

Banking-as-a-Service (BaaS)



The next generation of open banking models will further extend open banking services to enable third-party services and products to be released enabling TPPs to service customers with integrated and networked banking services known as value-added services.

As a rule, they use API platforms - similar to a marketplace - to deliver a set of bank functions. These banking APIs go well beyond the PSD2-like open banking APIs and open banks in all product areas, such as accounts, investment products or credit processes. This enables new digital service providers to network their applications and value chains with banks' services, data and infrastructures. In this way, external third-party vendors become new channels between the bank and the customer, thereby scaling the reach of the bank.

With white-label banking, APIs allow banks, B2B organisations and digital partners to access products and individual processes and API platforms provide the scalable deployment of white-label accounts or depots. In this way, banks can provide the required banking licenses, compliance and risk management experience, and generate new attractive revenue streams in an expanded distribution channel. In turn, third-party vendors can flexibly serve existing customers from their own and their partners' products to create added value.

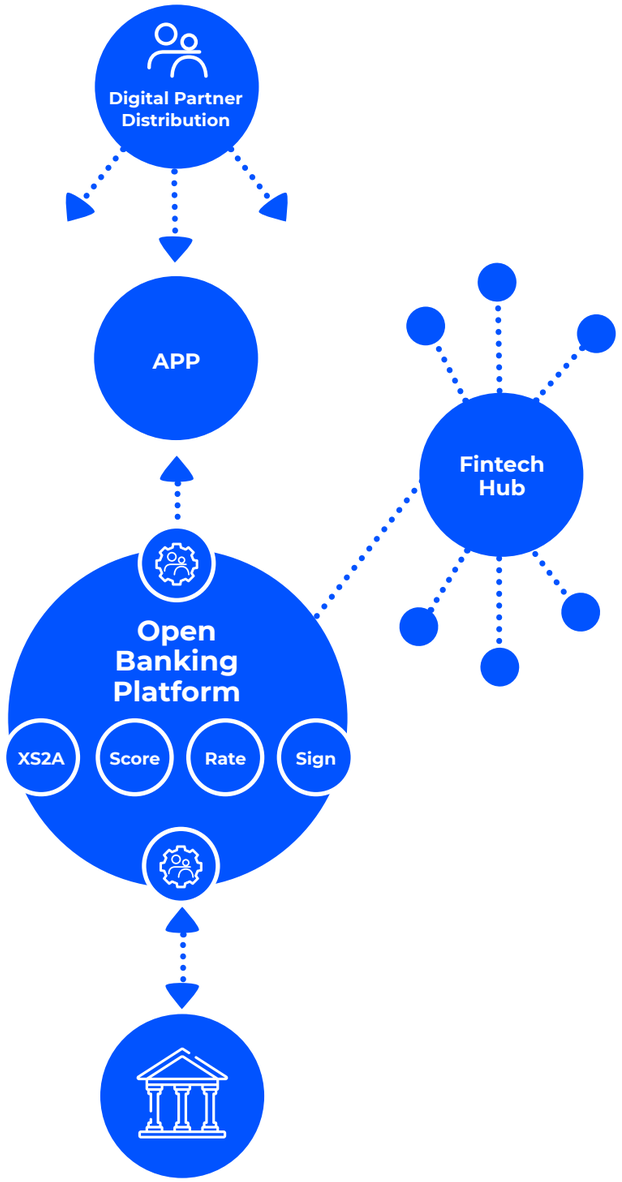
In Switzerland, for example, customers of the TPP 'neon' will automatically also become customers of the supporting bank, Hypothekarbank Lenzburg.

Innovations with fintech apis

Some banks are already employing FinTech innovations and partner modules in their end-user applications. In particular, to cover functions that they would only be able to offer with great effort, such as account aggregation, financial management or robo-advisory. Increasingly, these services are based on PSD2-regulated account access with which data from any third-party banks of the customer can be included. Easy access is made possible by quickly and flexibly integrable APIs.

Consequently, these modules are rapidly becoming essential building blocks of banks' new digital strategies and customer journeys. Customer-centric applications with innovative sub-features can now be developed faster and more flexibly, keeping the bank on par with innovators. Imagine fully digitised credit processes with access to third-party accounts, financial analysis, credit history, and digital signatures that seamlessly accelerate the user from application to approved credit - all via FinTechs and powered by APIs.

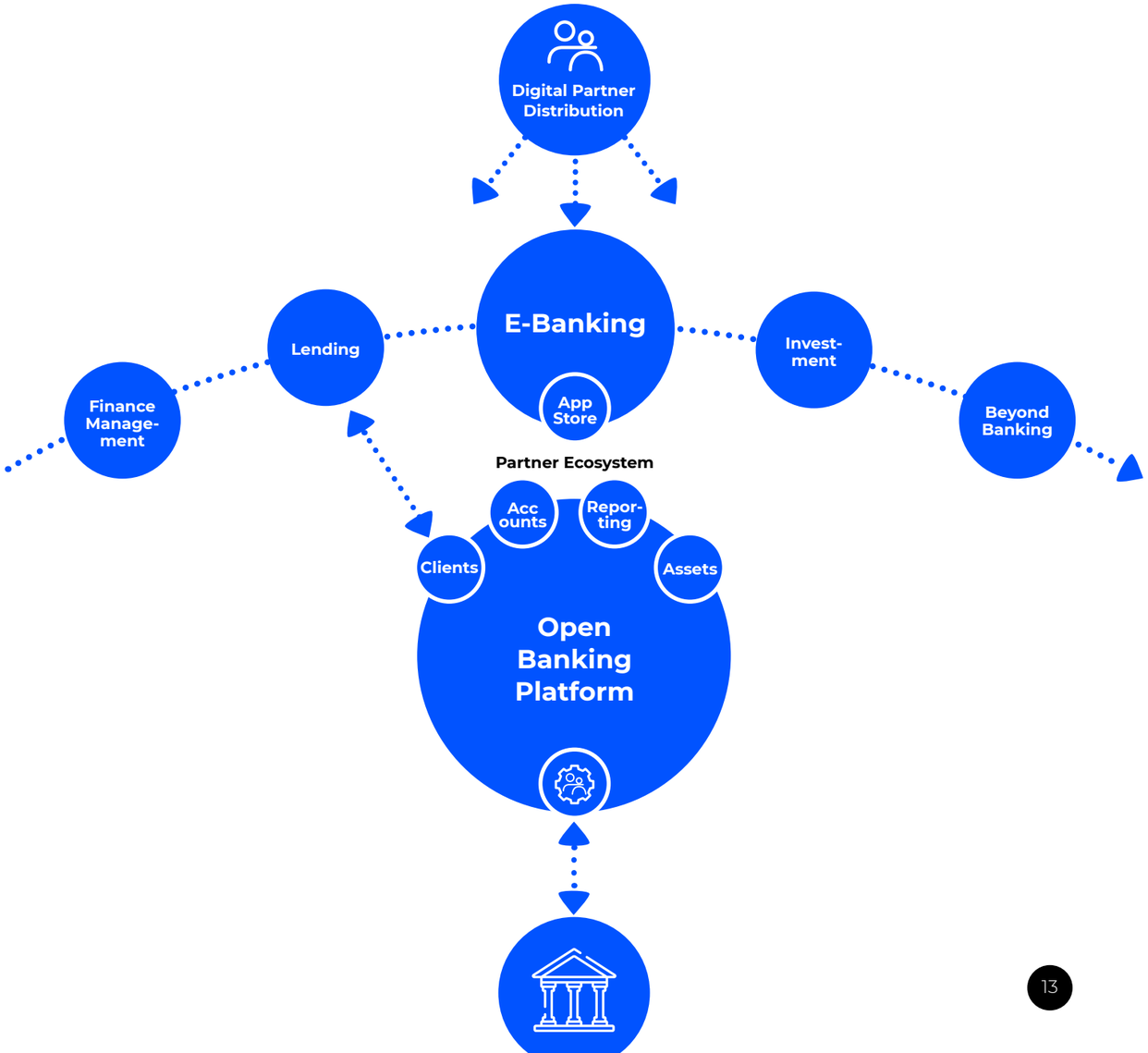
Alternatively, banks with PSD2-based account access can also reuse their own complex services and offer them, via licensing models, to digital partners. Examples include customer ratings, onboarding or real estate and property valuations. This allows the exclusive knowledge contained within specialized departments to be scaled, shared and monetized across a broader target group.



Banking Ecosystems

Ecosystems are the last development stage of open banking. With their help, banks can differentiate themselves from their competitors by being able to offer affiliated partner services to specific customer target groups. Complementing their own digital offerings to create comprehensive end-to-end financial services with holistic customer-centred processes. In addition, they can use these to innovative non-banking services and build a new type of experience for the customer – similar to a smartphone App Store. Customers can choose which partner functions they want and, depending on the agreement of the two partners, these white label services are delivered under the brand umbrella of the bank or reveal themselves as their own brand. This type of ecosystem, will finally realise the so-called platform economy, where the bank becomes the navigator for all online financial services for the customer.

They are the expression of value chains in which the bank no longer offers its own services, but networks with third-party products and services via banking APIs.

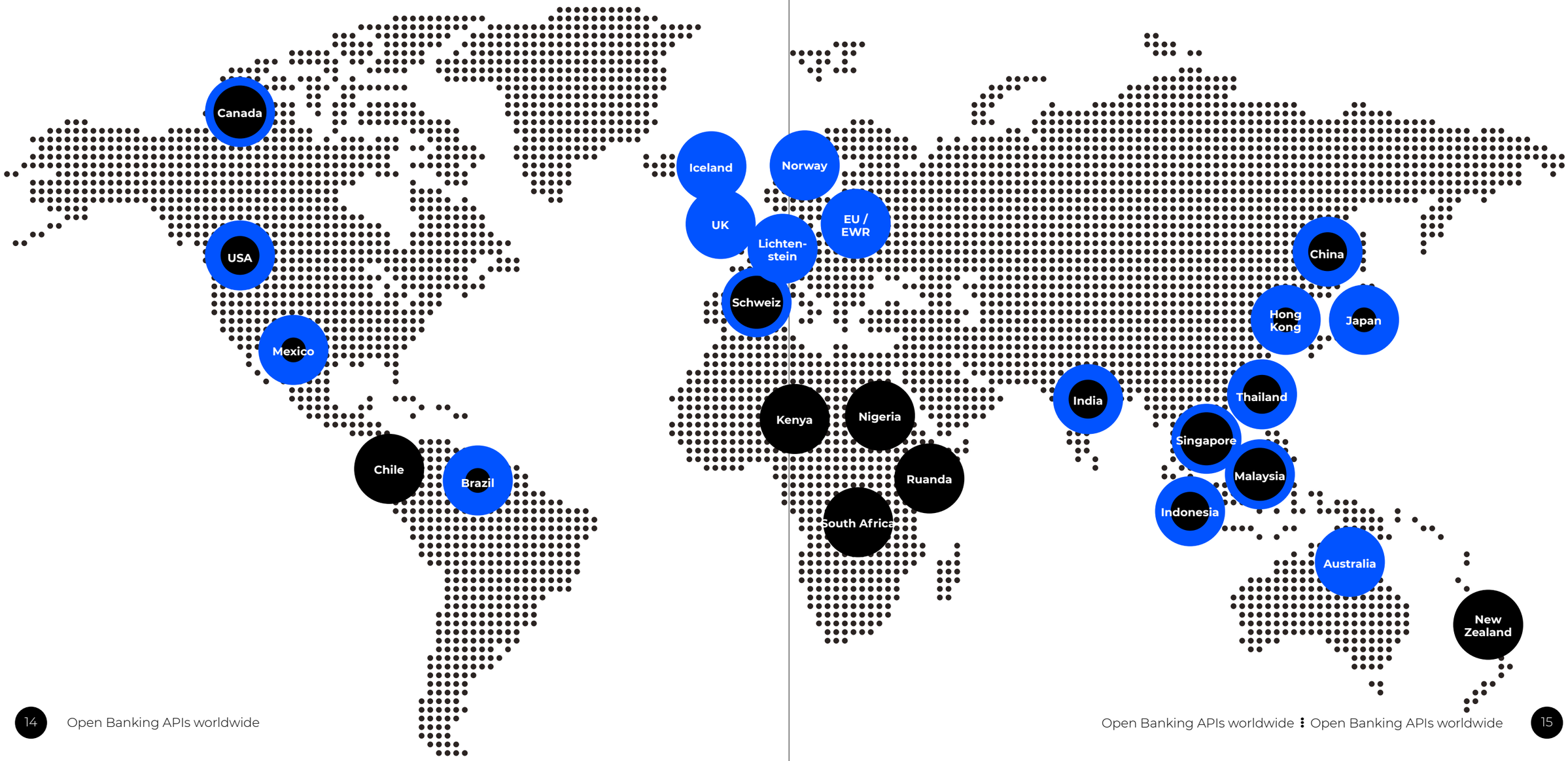


Open Banking APIs worldwide

The opening up of the banking market - by regulators on the one hand and market standards on the other - is constantly advancing worldwide and already extends to more than 50 countries. Outside the EU countries, there are currently six more markets where legislation is being developed and more than ten others where market standards for open banking are being worked on.

While the EU has been responsible for most of the current regulatory requirements, the UK and Australian regulations are the most developed in terms of content. The UK Open Banking Standard went live with the CMA9 banks as early as 2018 and subsequently inspired regulators and others worldwide.

In Australia and Mexico. The most widely used standard is now the NextGenPSD2 of the Berlin Group, which is used by a majority of banks in the 28 EU countries. It is based on the experience with the FinTS standard for account access and payment initiation services, which was established 20 years earlier and is still used by most German banks.

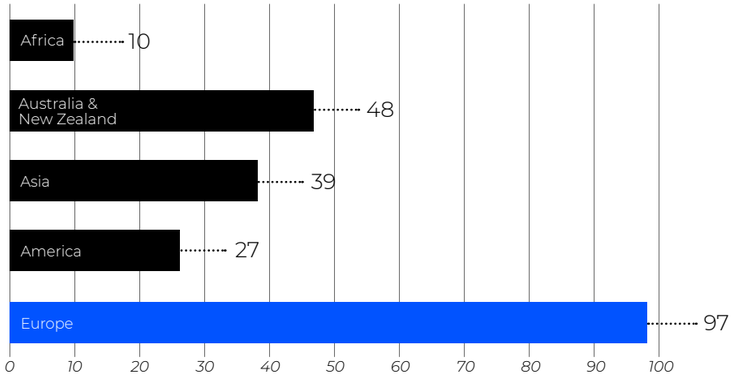


Pioneer
Follower
Converter
Riser
Beginner

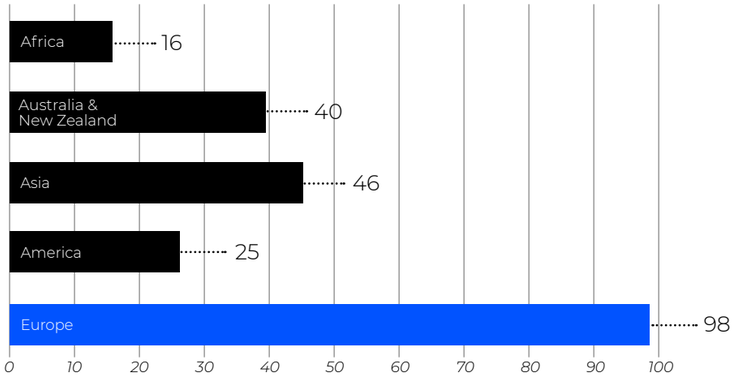
Open Banking APIs

A comparison of markets and countries

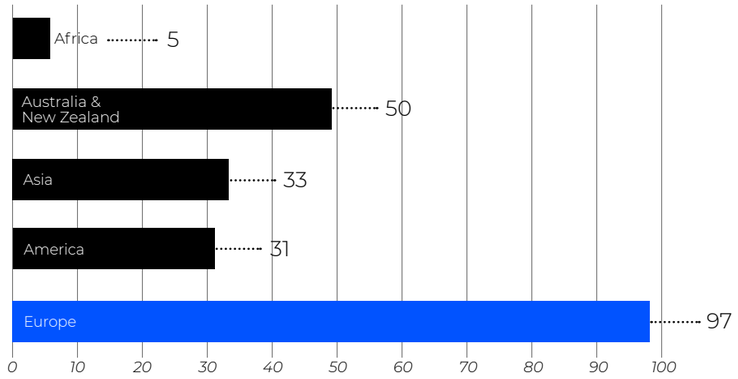
Open Banking Status



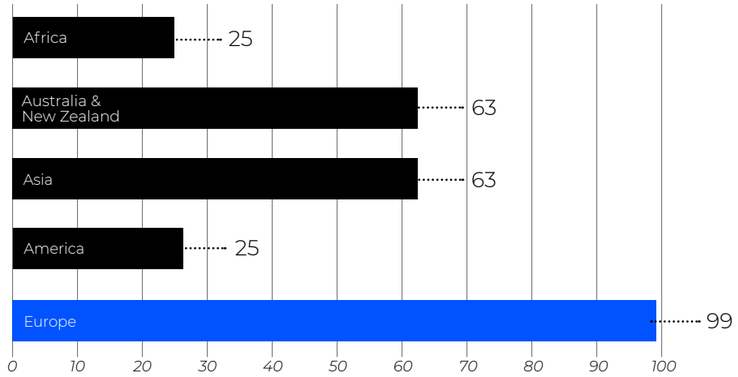
Distribution



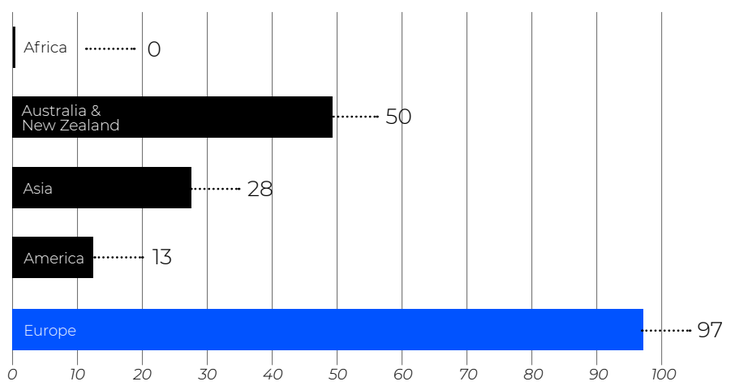
Regulators



Market Standards



TPP-Regulation



Market research results in detail

ndgit carried out global market research to identify the proliferation of Open Banking APIs, the existence of regulatory requirements and market driven initiatives, third-party regulations, and the scope of Open APIs offered. In case of the absence of API standards, we have focused on Open APIs provided by banks.

From our findings, we have divided each country's Open Banking aspirations into five groups:

●●● Pioneer
Heavily regulated Open Banking

●●● Follower
Weaker regulated Open Banking

●●● Converter
Stronger market standards

●●● Riser
Weaker market standards

●●● Beginner
First Initiatives

87%
active initiatives of all countries analysed

In our overall ranking, the UK and Australia, together with the 28 EU countries, are Pioneers (1) and considered to be the 'front runners' of Open Banking. Japan, Hong Kong, South Korea, Bahrain and Brazil are classed as Followers (2). Among the mid-field Converters (3) are Mexico, Singapore, Malaysia, Canada and Thailand. While up and coming Risers (4) are Switzerland, India, Indonesia, China and Rwanda. According to our analysis, those at the earliest stages, Beginners (5), are represented by the US, New Zealand, Chile, Nigeria, Kenya.

Our observations identified the following market conditions:

– Legal regulations exist in the European Union, the United Kingdom, Australia, Bahrain and Hong Kong.

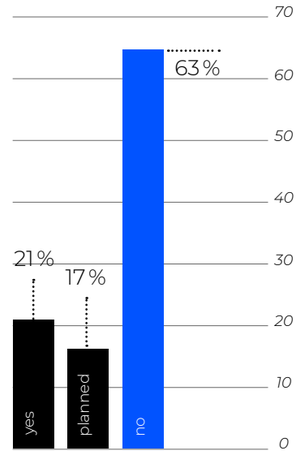
– Regulations were at least announced in another half-dozen countries.

– Most widely used are Open Banking APIs in the European Union, UK, Singapore, Australia, Hong Kong, Japan and Malaysia.

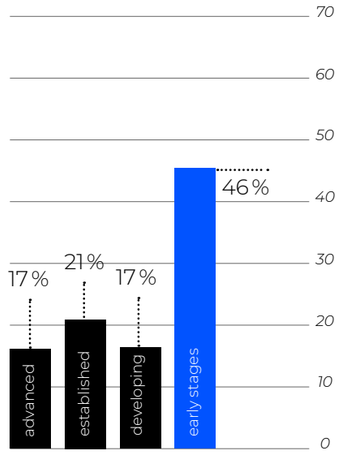
– There are currently just four countries with central regulatory bodies for TPPs.

Overall, we detected signs of active initiatives in 87% of all countries analysed. Which leads us to the conclusion that Open Banking is a global phenomenon!

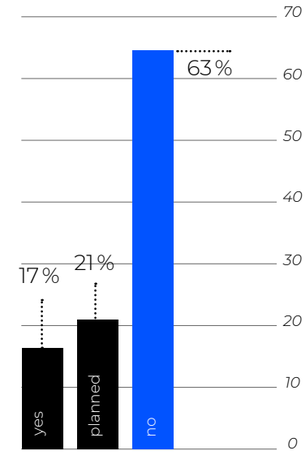
Global Status of Open APIs



API prescribed by regulatory



Standardisation Initiatives present

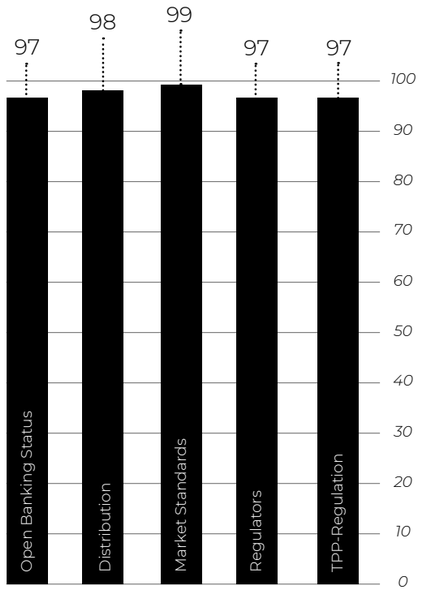


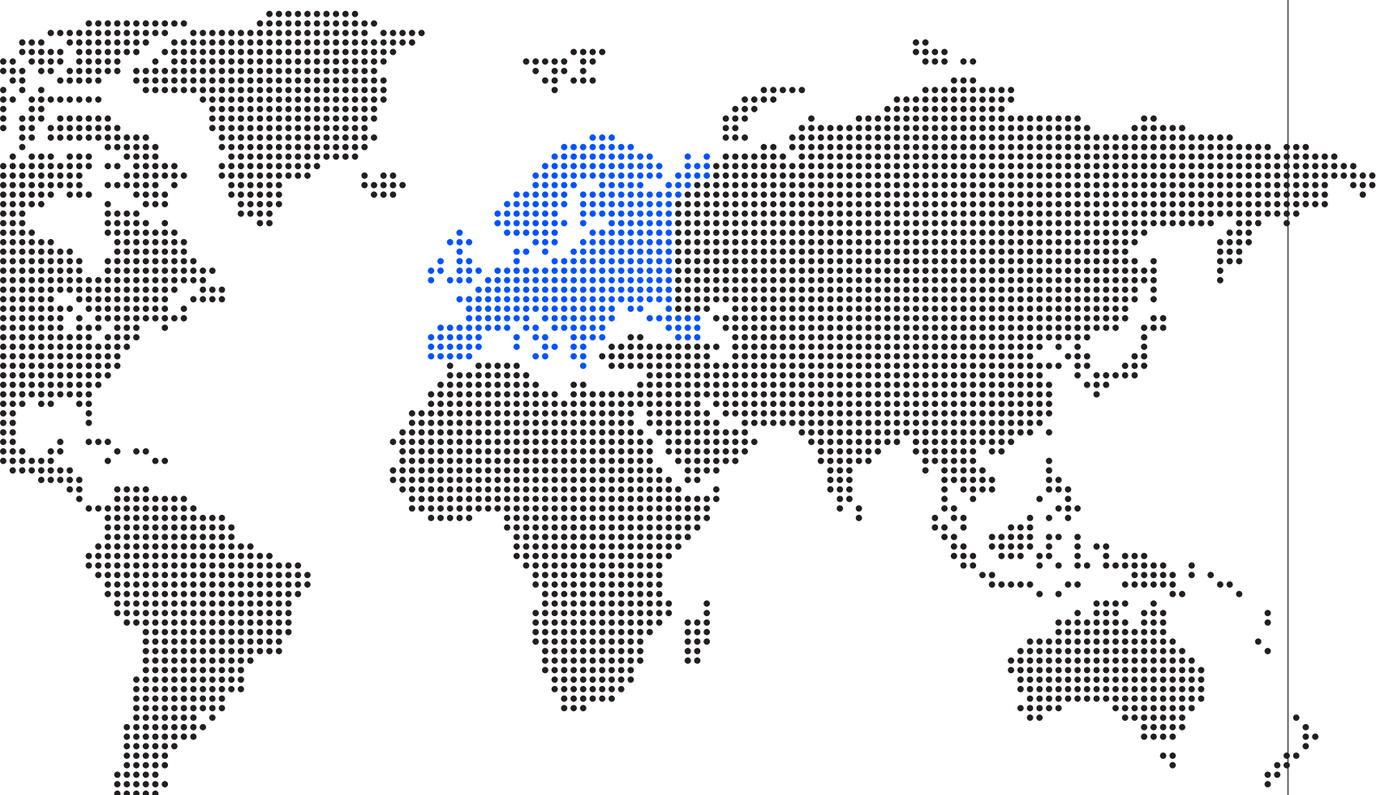
TPPs regulated

Europe

With its PSD2 legislation, the European Union is a clear Pioneer (1) in the widespread introduction of Open Banking. PSD2 covers the regulation of third-party service providers as well as the requirements for a standard.

Within the EU, however, there are significant differences in the progress of implementation and cooperation between banks and FinTechs via Open APIs. Of particular note, and therefore worthy of separate consideration, is the UK and the implementation of the UK Open Banking APIs by the CMA9 banks. In contrast, Switzerland does not follow the PSD2 regulation and relies on the emergence of market standards that are gradually spreading.





European Union and EEA

All countries in the EU and the European Economic Area - which includes Norway, Iceland and Liechtenstein - must implement PSD2 and, in the process, transfer sovereignty over the bank data to their customers. At the same time, third-party service providers who want to access account data or initiate payments must also be regulated. Under PSD2, as of September 2019, over 5,000 European banks must provide access to account information and payment initiation via Open APIs. Safety guidelines for this have been set with the Regulatory Technical Standards (RTS) of the European Banking Association (EBA) but the market has been left to design its own open interfaces. To this end, several European working groups have been developing API standards. Among the most successful is the Berlin Group. Covering 78% of all European banks, its framework provides the most widely used standard, followed by UK Open Banking and STET.

A comparison of the standards, and the reasons for Berlin Group's rapid rise, can be found in our white paper „Berlin Group - Development, Features, Outlook".

Spotlight: United Kingdom

The UK is considered the principle Pioneer (1) in the introduction of Open Banking. From January 2018, its Competition and Markets Authority (CMA) mandated country's nine largest banks (CMA9), to provide standardised Open APIs. This gave the UK much earlier regulation than any other market. The CMA-initiated Open Banking Implementation Entity (OBIE) defined the APIs within the UK Open Banking Standard. Although this had to be extended to include individual PSD2 requirements, it also covers areas such as credit data not regulated by the PSD2. As long as the UK is a member of the EU, UK banks will be required to comply with PSD2 and only allow registered TPPs to access their PSD2 APIs. Large parts of the PSD2 requirements are very similar to those of the CMA and some - like access control for TPPS – are identical. So it can be assumed that even after Brexit, PSD2-like specifications will remain. It is also expected that the CMA's mandate will be extended to the remaining UK-based banks.

The UK has perhaps the most intense banking market internationally with strong competition from traditional banks, challenger banks and FinTechs. Due to the resulting high level of innovation, the number of banks that already offer open interfaces today is the highest worldwide.

Example: Starling Bank
The Starling Bank already has its own API marketplace, offering FinTechs innovative services beyond its Open APIs in categories such as account aggregation, personal finance management, insurance, peer-to-peer investments, savings and mortgages.

78%

of all European banks provides the most widely used standard

Overview UK

Score 100/100
Status ..... Pioneer (1)
Open APIs ..... Very common
Regulator ..... Yes
Initiatives ..... Advanced
TPP regulation ..... Yes

Innovators in the EU

Within the European Union, Germany, Spain and the Nordics are considered, from several perspectives, to be particularly innovative in the field of Open Banking. This includes the emergence of ‘hubs’, that centralise the delivery of APIs through a single vendor, thereby making integration much easier for FinTechs.

Germany was the first country to provide interfaces and APIs for account access. Since 1998, FinTS has provided a functional spectrum that has been well beyond the scope of PSD2, for example, ensuring custody account data is provided by almost all German banks. Since 2016, against this backdrop, a broad range of local account aggregators have operated in a legal but grey area, supplying more than 800 FinTechs. The introduction of PSD2 has provided greater legal clarity on the part of the third-party service providers as well as a reduction of supported use cases.

The Nordics are considered leaders in digital banking and are now extending their innovation into Open Banking. A number of banks already offer Open APIs today and provide access to account information.

Spain was recently named a pioneer in digital banking in an analysis by Oliver Wyman. As part of PSD2, Redsys has launched its own hub, which now serves more than 25 banking groups. The hub will take API functionality beyond the scope of PSD2 e.g. to savings products, loans and real estate finance.

Example: Nordea
Nordea already maintains a developer portal with Open APIs for Account Information Services, Domestic Payments, and SEPA Transfers. Account services for corporate customers are also under development.

Other countries, like Portugal, Luxembourg and Italy, have formed hubs that are based on the standard of the Berlin Group and make FinTechs easier to integrate. In Portugal, SIBS covers about 95% of the market. In Italy, the bank-based Interbank Association for Corporate Banking founded the Globe Hub.

Overview EU / EWR

Score 100/100
Status ..... Pioneer (1)
Open APIs ..... Very common
Regulator ..... Yes
Initiatives ..... Advanced
TPP regulation ..... Yes

Switzerland

Although legendary for its banking landscape, Switzerland can be ranked as a Riser (4) in the realms of Open Banking. This is due to the fact that both the Swiss Bankers Association and the authorities reject legal regulation for opening bank data.

Therefore, Open APIs in Switzerland are driven by the market itself. But there are some market bodies working on public standards for banking APIs. This includes the industry association Swiss FinTech Innovations (SFTI) which, together with the system providers Avaloq, Finnova, Temenos, Finstar and ndgit, are designing the Common API. OpenBankingProject.ch is also planning an Open API for Swiss payments. In addition, SwissCorporate API, an interface standard and hub for business customers, is also planning to go live this year, and will be supported by major Swiss banks.

Example: ecosystem of Hypothekarbank Lenzburg
Recognised with several innovation awards, the Hypothekarbank Lenzburg ecosystem has enabled multidimensional business models using the ndgit API platform. Through its Open Banking APIs, innovative start-ups such as neon consume white-label products to launch services directly to their customers. In addition, banking customers can benefit from an ecosystem of FinTech partners, that can use their data via Open APIs to deliver value-added services.

Overview Switzerland

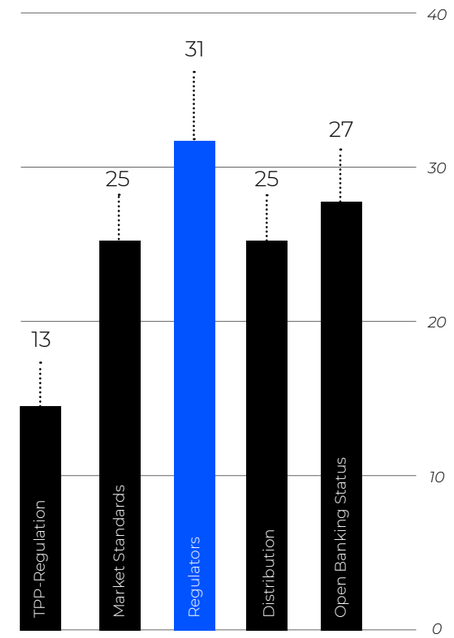
Score 13,5/100
Status ..... Riser (4)
Open APIs ..... Some
Regulator ..... No
Initiatives ..... Established
TPP regulation ..... No

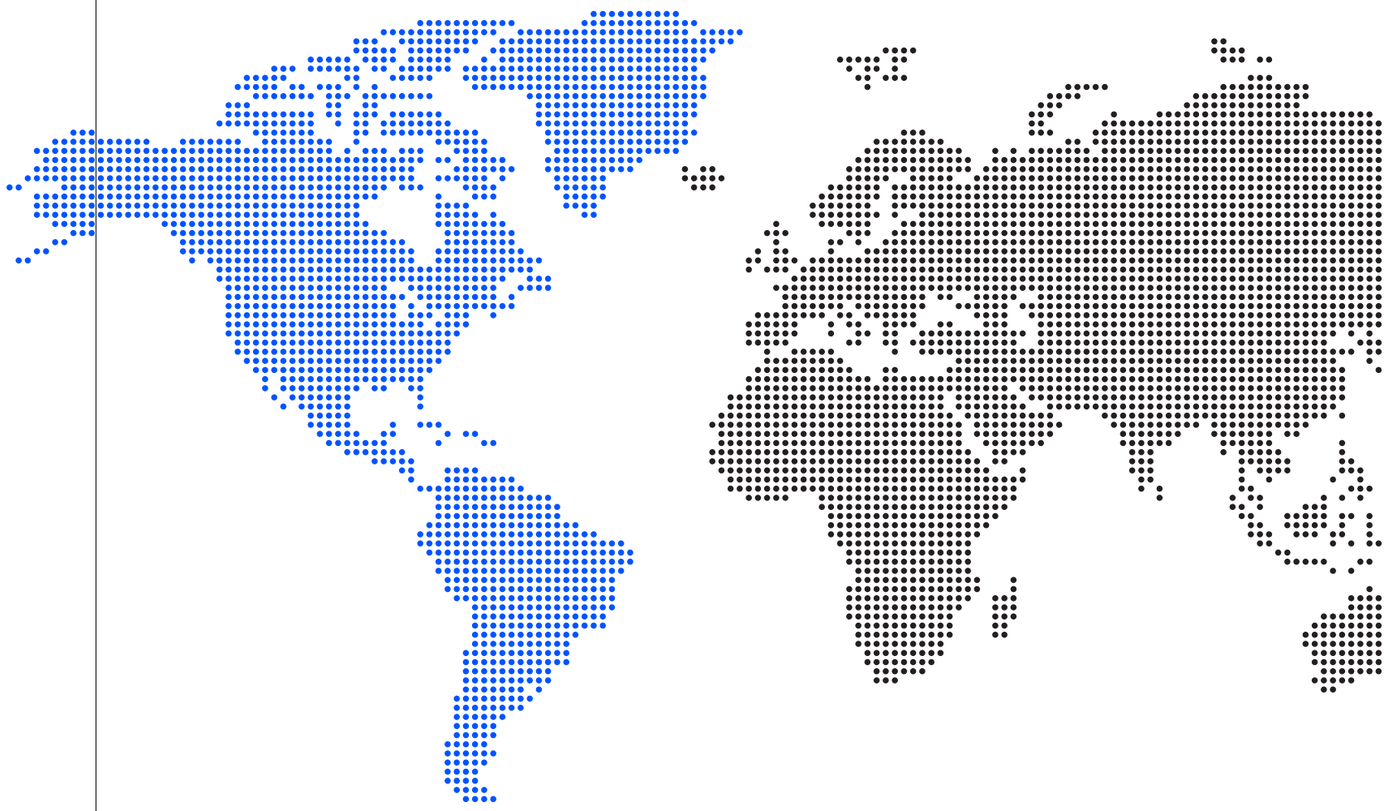
As of today, only Hypothekarbank Lenzburg offers Open Banking APIs in Switzerland via a developer portal which has been successfully used by various FinTechs since 2018. Similar to PSD2, these APIs support account information and payment initiation but also take into account local Swiss characteristics.

Americas

The development of Open Banking within the American continent differs greatly from one region to another: While the US is characterised by a large number of challenger banks and FinTechs with very broad digital offerings, the development of Open Banking APIs tends to be championed by countries like Mexico and Brazil.

Other South American countries, however, remain Beginners (5), while Canada, as a Converter (3), shows clear signs of having a rapidly emerging open market.





Brazil

Brazil is one of the world's Open Banking Followers (2). It already has some open APIs provided by banks and these cover a relatively broad range of services. In April, the central bank also announced the main guidelines for the regulation of Open Banking but the exact model is still being discussed.

By 2020, it will oblige all banks to open up to third-party providers in a multi-stage process. In addition to account access functions and payment triggers, it will include locations of service points, loans and customer data within its guidelines. As with the UK, it's aiming beyond the demands of Europe's PSD2. However, a third-party regulatory body is currently not planned.

Example: Banco Brasil
Banco Brasil already provides a third-party developer portal with sandboxes. Included are account information, credit card, investment, and payment functions.

Overview Brazil

Score	39,5/100
Status	Follower (2)
Open APIs	Widely used
Regulator	Planned
Initiatives	Early stage
TPP regulation	No

Mexico

Mexico is ranked as an Open Banking Converter (3) and lies mid-field in terms of the region's other players. The introduction of FinTechLaw, in March 2018, made it the first country in Latin America to regulate the fintech market. Similar to the CMA's approach in the UK, this law not only promotes greater protection of consumer data but also fosters competition, thereby increasing the pressure on local banks to innovate. In addition to regulation of FinTech companies in the market, it also makes the introduction of Open APIs mandatory.

Some features , such as the Customer Consent model and the Regulatory Sandbox, are coming directly from the UK Open Banking Standard. Currently, an API standard does not yet exist but, given these developments, it can be assumed its scope will be based on the UK Open Banking Standard.

Overview Mexico

Score	38,5/100
Status	Converter (3)
Open APIs	Some spread
Regulator	Planned
Initiatives	Early stage
TPP regulation	Planned

Canada

Canada is also classified as a Converter (3) in Open Banking. Currently, RBC is the only local bank that offers third-party vendors access to Open APIs through a developer portal. Its use cases differ greatly from those required by PSD2.

Although the country does not have an overarching and legally required Open Banking standard, there are banking and regulatory efforts to design an API standard. The Department of Finance convened an Open Banking consultancy committee in 2018 which resulted in the January 2019 publication of the Review into the Merits of Open Banking, whose

aim was to help derive a comprehensive Open Banking strategy for the whole country.

It's certain that this will include the strengthening of user rights through a customer-consent model for data transfer, risk minimisation through common security standards and the relevance of data-sharing policies in the context of Open Banking.

Example: Royal Bank of Canada (RBC)
In 2018, the RBC was the first Bank in Canada to provide an API developer portal. The portal comprises five API packages with end-to-end business processes for the following use cases: credit card catalogue; settlement finder; amortisation, minimum deposit rate and vault deposit calculators.

Overview Canada

Score 21/100
Status ..... Converter (3)
Open APIs ..... Some spread
Regulator ..... No
Initiatives ..... Early stage
TPP regulation ..... No

USA

Despite its many existing digital players, the US remains an Open Banking Beginner (5). None of its states has a legally prescribed Open Banking regulation. Instead, the market itself is driving efforts to roll out Open APIs across the board. Individual banks now provide APIs on their developer portals. However, most continue to rely on bilaterally used APIs in collaboration with FinTechs.

In 2017, the National Automated Clearing-house Association (NACHA), in collaboration with the API Standardization Industry Group (ASIG), announced the development of several API Use Cases. In July 2018, together with the IFX Forum (now Afinis), they published an implementation concept for RESTful APIs. Afinis continues to explore the definition of standardized APIs - for transaction status retrieval, B2B billing interoperability, and payment initiation - and has already deployed a sandbox including a developer portal.

With its wide range of FinTech offerings, as well as the large number of new challenger banks, the US could be considered as a leader in digital banking. However, with no current legally binding requirements for Open Banking, its development remains strongly linked to the readiness of banks to open their data for third-party providers. This has resulted in its downgrading in our assessment and subsequent ranking.

Overview USA

Score 8,5/100
Status ..... Beginner (5)
Open APIs ..... Some spread
Regulator ..... No
Initiatives ..... Early stage
TPP regulation ..... No

Chile

With its current Open Banking development, Chile is lagging behind the Latin American pioneers Brazil and Mexico and is among the Beginners (5) in international comparison. Currently, only Banco BCI has an Open Banking platform.

Together with fintech group FinTechile, it is also trying to drive a nationwide Open Banking strategy. This would aim to position Chile as a Latin American Open Banking pioneer by actively initiating cooperation between banks and FinTechs.

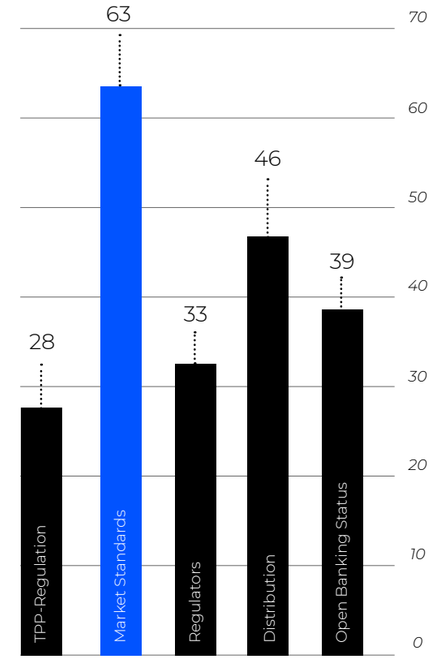
Overview Chile

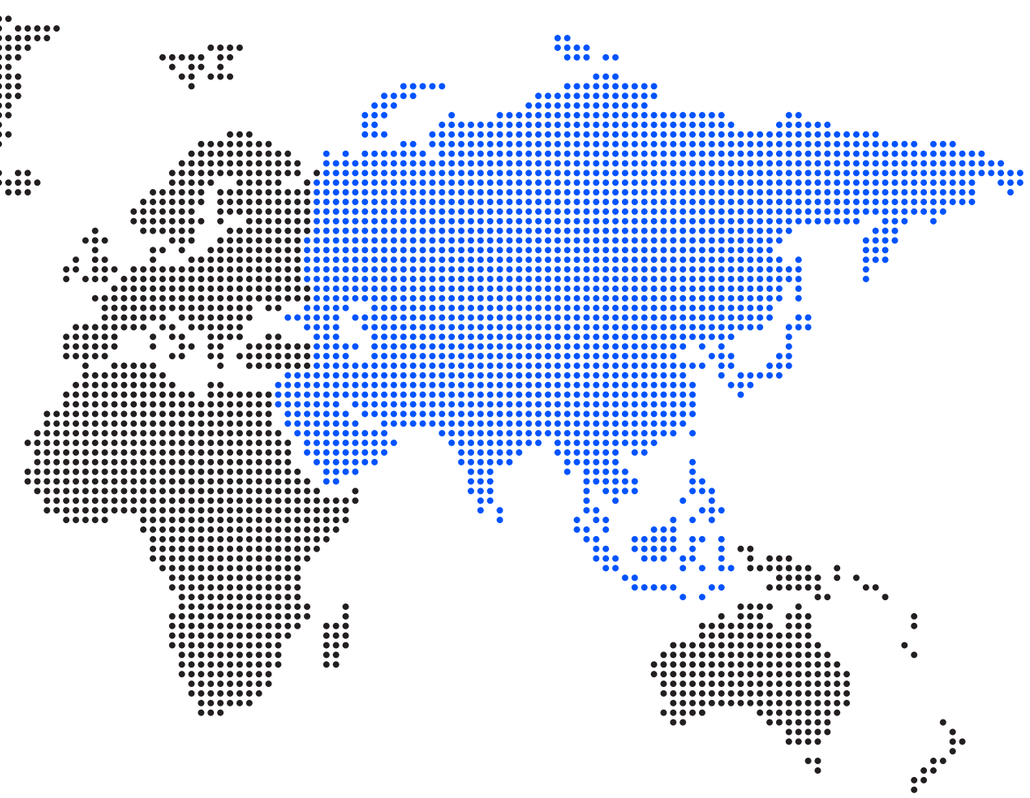
Score 8,5/100
Status ..... Beginner (5)
Open APIs ..... Some spread
Regulator ..... No
Initiatives ..... Early stage
TPP regulation ..... No

Example: Banco BCI
In 2017, Banco BCI was the first and only one on the market to launch its own API portal, providing a selection of third-party APIs covering branches, ATM localisation, loans, mortgages, account access, benefits such as discounts and promotions and daily economic indicators. The BCI contributes positively to financial inclusion through its open portal and the resulting digital solutions.

Asia

Within Asia, the Open Banking progress of each market is very different. The introduction of Open APIs is being promoted at the local level, which significantly increases the risk of fragmentation compared to Europe or other regions that embrace trans-national Open Banking initiatives.





Hong Kong

Although Hong Kong is clearly a pioneer in Asia Open Banking, in the international context, we have ranked it as a Follower (2). Today, its range of Open Banking APIs is very large, with many delivering a much higher level of service than PSD2 prescribed APIs. In early 2018, the Hong Kong Monetary Authority (HKMA), which is the national regulator, released an Open API Framework. It includes functionality and deployment time for APIs; architectural standards, security and scope of the Open APIs; a third-party control model; and Open API support and development.

In a four-phase model, banks will provide product information (Phase 1), customer onboarding (Phase 2), account information (Phase 3), and payment initiation services (Phase 4) through Open APIs. The framework is influenced by both PSD2 and UK Open Banking, but is unique in its overall form. In Hong Kong the movement is referred to being the initial step in the „new era of smart banking“.

Overview Hong Kong

Score 80,5/100
Status ..... Follower (2)
Open APIs ..... Widely used
Regulator ..... Yes
Initiatives ..... Established
TPP regulation ..... Planned

Example: Standard Chartered
In 2017, Standard Chartered introduced a developer portal, which now has over 100 APIs for Hong Kong, South Korea, UK, France and Germany. There are currently 8 APIs available in Hong Kong covering Product Information, Customer Onboarding for Loans, ATM Localization and FX Rates.

Japan

Like Hong Kong, Japan is one of the Followers (2) in the field of Open APIs. Here, too, we found various Open Banking services provided by banks, which will continue to increase until 2020 through regulatory measures. At the same time, there is full regulation of TTPs on the market, as well as other initiatives to create a common Open API standard.

In 2017, the Japan Banking Association (JBA) was commissioned via the ‘Promotion of Open Innovation’ report to make recommendations that included an API standard for Open Banking as well as an API Connection List to help banks familiarise themselves with Open APIs and give guidance on evaluating third-party APIs.

As an amendment to the Banking Act, which came into force on 1 June 2018, it released the Legislation on Electronic Payment Intermediate Service Providers. These provisions cover the introduction of a Financial Services Authority (FSA) registration system and the monitoring of registered FinTechs, as well as requirements for promoting cooperation between banks and FinTechs. In March 2019, 40 TPPs were already registered in Japan.

Overview Japan

Score 63/100
Status ..... Follower (2)
Open APIs ..... Widely used
Regulator ..... No
Initiatives ..... Advanced
TPP regulation ..... Yes

South Korea

In South Korea, there have been strong efforts in Open Banking since 2016. At that time, the Financial Services Commission (FSC) initiated the FinTech Open Platform. Forty financial institutions, including 16 banks, supported the initiative, which allowed FinTechs to access Open APIs through a common interface, but at a comparatively high cost. The South Korean government believed these conditions were inhibiting market growth so began developing a framework for nationwide Open Banking that would ensure low costs for market participants. It adopted the Financial Innovation Support Act and intro-

Overview South Korea

Score 59,5/100
Status ..... Follower (2)
Open APIs ..... Very little
Regulator ..... Planned
Initiatives ..... Fortgeschritten
TPP regulation ..... Planned

duced a Regulatory Sandbox in March 2019. In parallel, the FSC provided frameworks for Open Banking under the Electronic Financial Transaction Act: standardised Open Banking APIs and third-party regulation. By October 2019, a central API standard should also be defined. This activity has propelled South Korea to a leadership role within of the Asian Open Banking movement and is reflected in its position as Follower (2) in our international comparison.

Bahrain

In the Arab world, Dubai and Abu Dhabi are beginning their efforts to open the banks, but only Bahrain is showing a sustainable development towards Open Banking. Thanks to these developments, the state can be classed as a Follower (2). In November 2018, the Bahraini Central Bank adopted the regulatory framework Open Banking Modules for banks and TPPs in payments. Retail banks were given a tight deadline and had to submit implementation plans by January 2019.

The Open Banking Module defines both the interfaces and the requirements for the technical standards of Strong Customer Authentication (SCA) and Common Secure Communication (CSC). It is based in the broadest sense on PSD2 but goes beyond it with a requirement for 3-factor authentication. The catalogue of measures, with its clear sanctions for failure to meet deadlines or requirements, also shows how serious the Kingdom is about advancing and benefiting from Open Banking.

Overview Bahrain

Score 67/100
Status ..... Follower (2)
Open APIs ..... Very little
Regulator ..... Yes
Initiatives ..... Developing
TPP regulation ..... No

Singapore

Singapore has experienced the widespread use of Open Banking APIs, with many banks offering them nationwide. However, in our comparison it falls short of a being a Follower and is ranked as a Converter (3) due to its lack of legal guidelines.

The largest bank in Singapore, the DBS Group Holding, published its platform in 2017 and, with its Open API Offering, is considered to be an absolute pioneer worldwide. While the implementation of open interfaces in Singapore is not mandatory, there are government-led initiatives to introduce standards. The Monetary Authority Singapore (MAS), in cooperation with the Association of Banks in Singapore (ABS), launched an API Playbook in 2016, which provides an overview of 411 recommended APIs covering more than 700 business processes. It includes APIs for banks, insurance companies, asset management and government organisations. Adoption of the recommendations is voluntary, however, it has been well received and interest in the market is great.

In early 2017, the MAS also launched the AFIN, a FinTech innovation network, involving the International Finance Corporation (IFC) and the Bankers Association. Part of its remit includes providing a sandbox to facilitate service development between banks and FinTechs.

2017
in this year the MAS also launched the AFIN

Overview Singapore

Score 31,5/100
Status ..... Converter (3)
Open APIs ..... Widely used
Regulator ..... No
Initiatives ..... Established
TPP regulation ..... No

Example: DBS Group
The DBS refers to its platform, launched in 2017, as „the largest API Developer platform in the world“. From the beginning 155 APIs were available, which made it possible to integrate innovative functionalities such as real-time payments. In 2018, DBS added to this with the launch of various marketplaces including a real estate marketplace, a car marketplace and an electricity marketplace.

Thailand

We have classed Thailand as a Converter (3). Although there is no legal regulation at present, the three big banks have already provided developer portals with Open Banking APIs. These include Siam Commercial Bank, Kasikorn Bank and Bangkog Bank. The scope of the interfaces provided differs significantly from the services required under PSD2.

In December 2015, the government launched the Thailand 4.0 drive project. As part of this, the central bank called Bank of Thailand (BOT) provided a regulatory sandbox in 2016, enabling emerging FinTechs to test their services. One year later, the country's Securities and Exchange Commission (SEC), launched additional sandboxing on topics such as collateral, derivatives, clearing houses and e-commerce.

In 2018, they released an API portal, with access to product information, exchange rates, and more.

Example: Siam Commercial Bank (SCB)
Siam Commercial Bank relies on ecosystems with digital partners and FinTechs. Together with the Mall Group, it has launched a range of new services. It also offers Open Banking APIs for loans, payments and customer information in its developer portal.

Overview Thailand

Score	19,5/100
Status	Converter (3)
Open APIs	Some
Regulator	No
Initiatives	Established
TPP regulation	No

Malaysia

Malaysia's Open Banking development classifies it as a Converter (3). The emergence of Open APIs is primarily driven by the government and is now well advanced with various banks already providing open interfaces and a planned central registry for TPPs. Since 2015, banks have used a joint FinTech incubator programme to self-initiated Open Banking. In June 2016, the Central Bank of Malaysia and the regulator Bank Negara Malaysia (BNM) jointly launched the Financial Technology Enabler Group.

Supporting regulatory policies for Open Banking, this created a regulatory sandbox base, which was launched in 2017.

In 2018, the Central Bank of Malaysia initiated the Open API Implementation Group to develop standards and regulate TPPs. In January 2019, it released API specifications, which included scope, deadlines and recommendations for standardisation and the planned regulation of TTPs.

Overview Malaysia

Score	30,5/100
Status	Converter (3)
Open APIs	Widely used
Regulator	No
Initiatives	Established
TPP regulation	Planned

China

Despite its pioneering role in other technical disciplines, China is lagging behind in its Open Banking development and so has been ranked as a Riser (4). Open Banking is heavily followed by Tecent's WeBank (WeChat) and Ant Financial (Alibaba).

In March 2019, Tecent and WeBank announced the implementation of a new FinTech Research Lab with the goal of developing an Open Banking Framework to support banks in Open Banking implementation. Where Chinese banks currently offer Open APIs, the range is bigger than those driven by PSD2 and other regulations probably by the influence of tech giants.

In China Open Banking is heavily followed by Tecent's WeBank (WeChat) and Ant Financial (Alibaba).

So far, the country's financial services and data protection regulation has been limited but privacy guidelines, based on GDPR, are

now in planning. Nonetheless, there are still no concrete plans for an Open Banking regulation, so the emergence of Open APIs will continue to be driven by market participants and customer needs.

Overview China

Score 11/100
Status ..... Riser (4)
Open APIs ..... Very little
Regulator ..... No
Initiatives ..... Developing
TPP regulation ..... No

Indonesia

Indonesia has not published any regulatory guidelines so far. That said, thanks to current bank and government initiatives, the country is still ranked as a Riser (4). Some banks already offer Open Banking APIs through developer portals, giving FinTechs access to their data and affiliate ecosystem partners.

In December 2016, the Bank Sentral Republik (BSR) set up the FinTech Office to monitor FinTechs and serve as a consultancy for them. Recently it announced the establishment of a Regulatory Sandbox. At the time of publishing this paper, this had not been launched.

In 2017, the Bank of Central Asia released its developer portal with 19 APIs that could serve as the basis for further standardisation initiatives.

Overview Indonesia

Score 13,5/100
Status ..... Riser (4)
Open APIs ..... Very little
Regulator ..... No
Initiatives ..... Developing
TPP regulation ..... Planned

Example: Madiri Bank
As early as 2015, Madiri Bank made an API available, which gives third-party providers access to its electronic money system. It also helped building FinTech and third-party partnerships that provide online payment system services e.g. Cashlez.

India

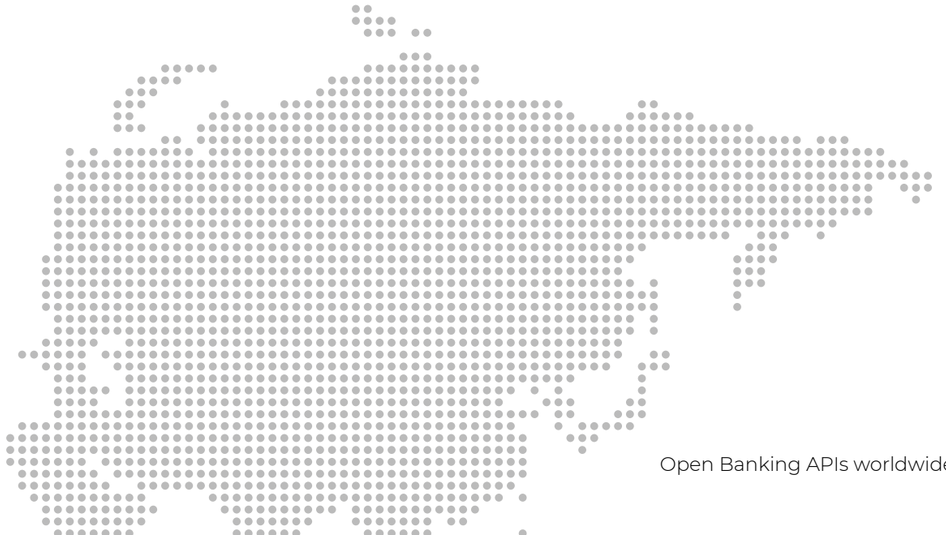
India also has the status of Riser (4). Despite the absence of regulatory requirements, banks have already implemented Open Banking APIs. Disclosed interfaces mainly cover payment initiation and loans services. A central TPP register is currently not planned and initiatives for Open Banking have so far been driven mainly by banks.

For example, YES Bank, RBL, DCB, Kotak and the Federal Bank have already implemented Open API platforms, increasing pressure on other local banks to follow suit.

Overview India

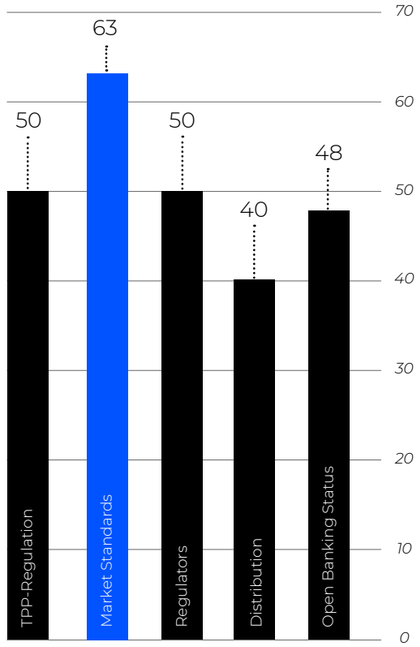
Score 14,5/100
Status ..... Riser (4)
Open APIs ..... Relatively strong
Regulator ..... No
Initiatives ..... Early stage
TPP regulation ..... No

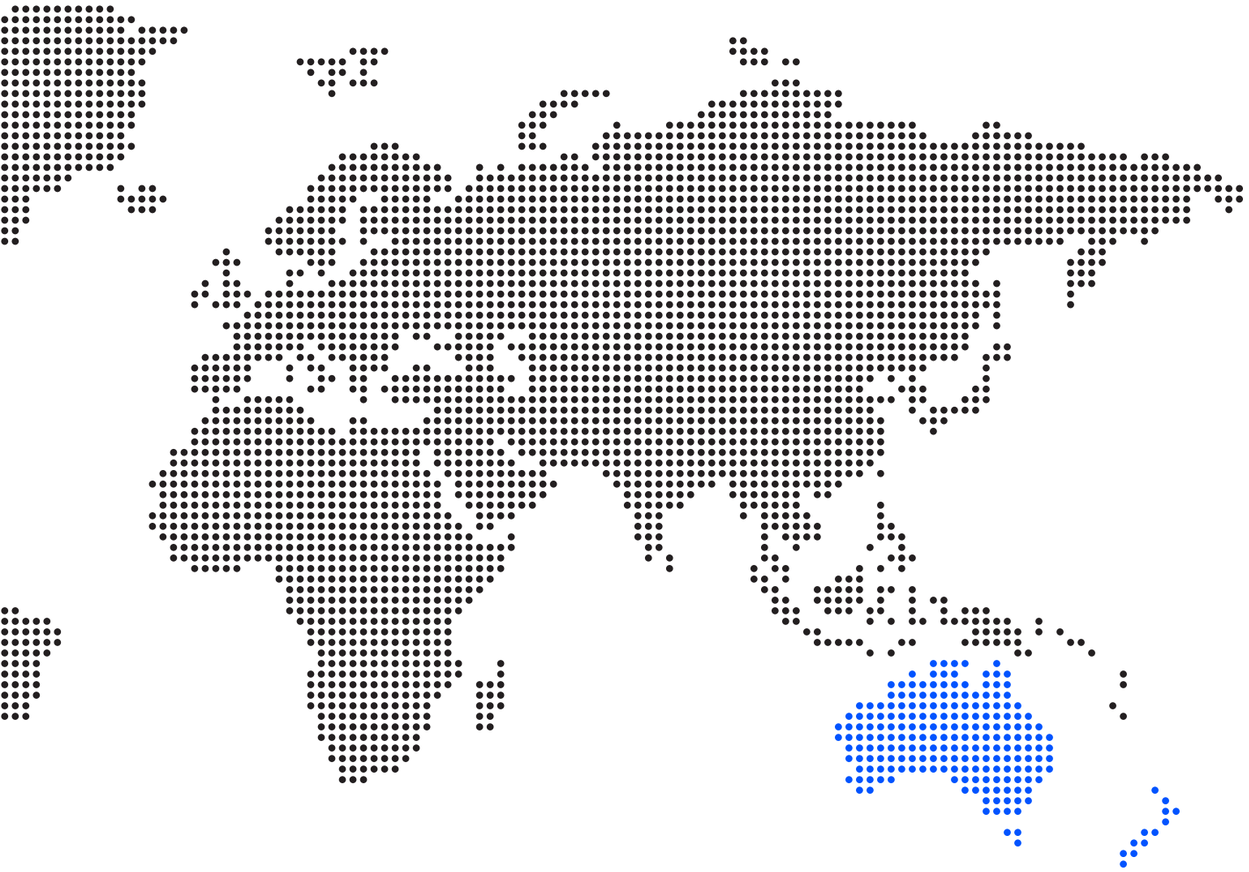
Example: DCB Bank
In February this year, DCB Bank announced the launch of its developer portal. Together with its own APIs, this is enabling more than 20 third-party providers to offer its innovative and customer-centric products. Use cases include PAN verifications, account and customer inquiries, fund transfers and remittances.



Australia & New Zealand

Although geographically close together, Australia and New Zealand could not be more different in their Open Banking development. Australia is one of the top countries in our ranking, while New Zealand, together with the USA, Kenya, Nigeria, Chile and South Africa, is at the back of the pack.





Australia

Australia is one of the new Pioneers (1) in Open Banking, as it has both a set of rules for opening bank data and a central regulator of TPPs. However the Open Banking coverage in the market is still relatively low. It's worth noting that the requirements of Australia's Open API based services is much larger than those of PSD2.

As with PSD2, Australian regulators see data sovereignty in the hands of consumers. This data sovereignty is not regulated in a dedicated Payment Directive, but in the Data Protection Act called Consumer Data Right t. Specifically, the law provides that consumers themselves can decide which of their accumulated data to share and with which outside party. The banking sector is only the first industry in which the law will take effect. It also foresees the introduction of Open APIs into other sectors and will be extended to them in due course.

By July 1, 2019, the four largest banks in Australia had to provide Open APIs on credit and debit cards, prepayment and transaction data as part of a pilot test. Within 12 months all banks should follow their lead and provide the full planned functionality.

Overview Australia

Score 88/100
Status ..... Pioneer (1)
Open APIs ..... Relatively strong
Regulator ..... Yes
Initiatives ..... Advanced
TPP regulation ..... Yes

Scope of Required Services

- Savings accounts
- Call accounts
- Term deposits
- Current accounts
- Cheque accounts
- Debit card accounts
- Transaction accounts
- Personal basic accounts
- GST and tax accounts
- Cash management accounts
- Farm management accounts
- Pensioner deeming accounts
- Mortgages
- Business finance
- Personal loans
- Lines of credit
- Overdrafts
- Consumer leases
- Credit and charge cards
- Asset finance and leases
- Mortgage offset accounts
- Trust accounts
- Retirement savings accounts
- Foreign currency accounts

New Zealand

New Zealand is one of the Beginners (5) in Open Banking. Only the Bank of New Zealand (BNZ) currently provides Open Banking APIs, which are currently limited to payment initiation. In New Zealand, the Open Banking movement is driven primarily by the government Payments NZ. In March 2018, it launched an API pilot programme to test Open Banking APIs with account information and payment services. Six banks and third-party vendors participated in the test: ASB, BNZ, Datacom, Paymark, Trade Me and Westpac.

Last year, this community worked on a common Open Banking API and ecosystem standard that would simplify cooperation between different organisations and promote innovation in the financial sector.

The standard is expected to be based on UK Open Banking of the Open Banking Implementation Entity (OBIE). At time of publication of this paper, the standard was not yet published.

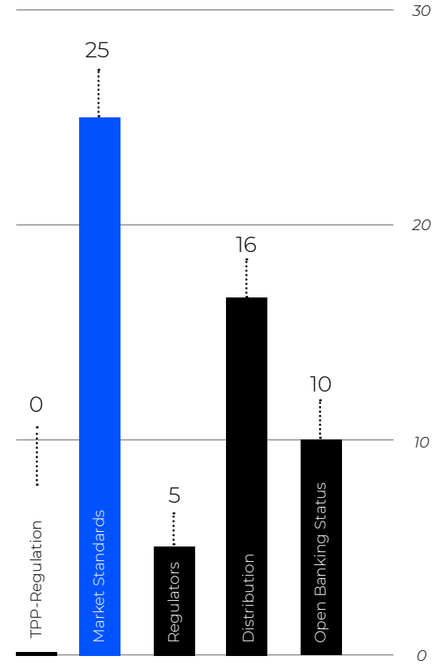
Overview New Zealand

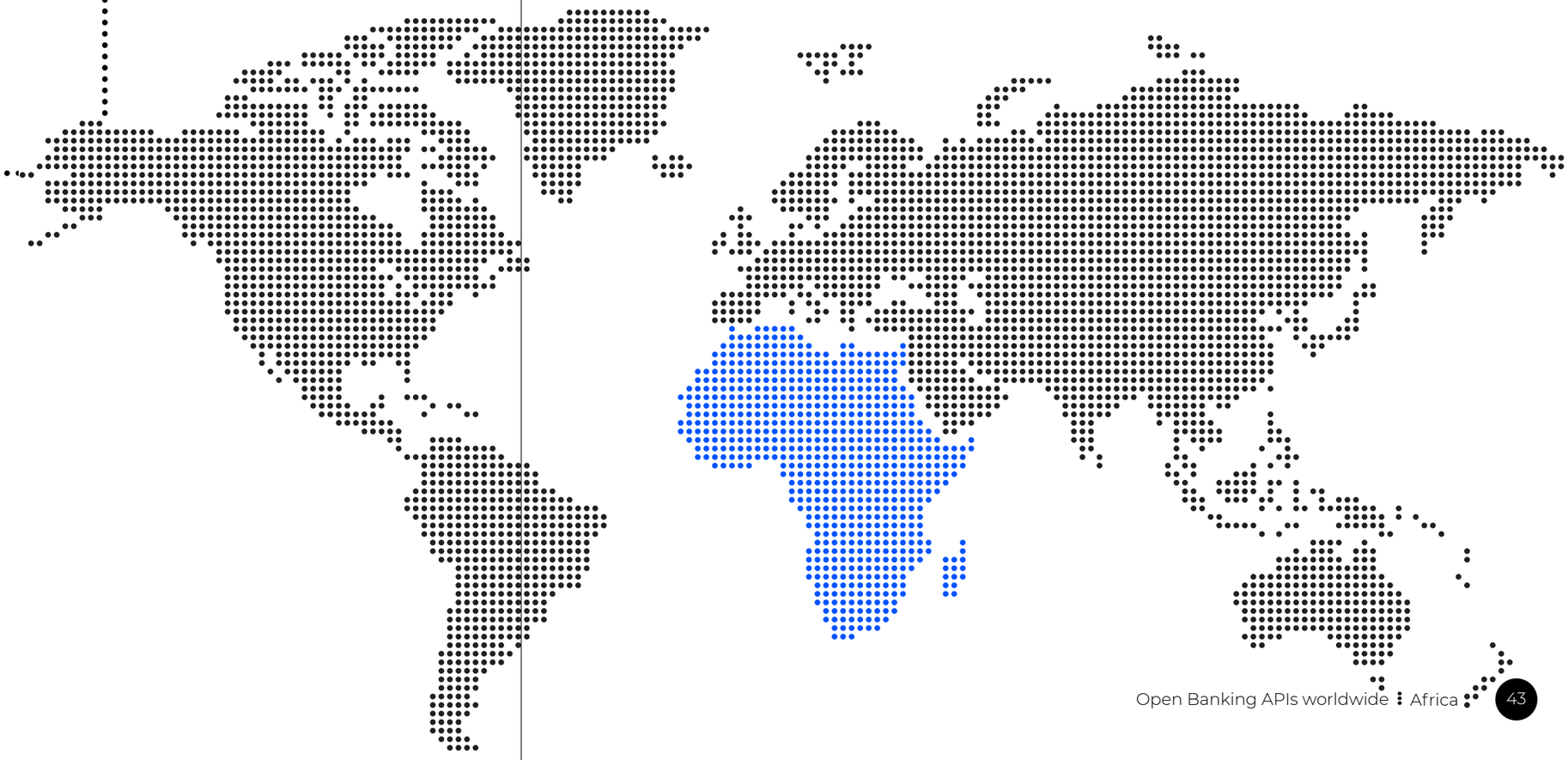
Score 8,5/100
Status ..... Beginner (5)
Open APIs ..... Very little
Regulator ..... No
Initiatives ..... Early stage
TPP regulation ..... No

Africa

Overall, Africa is one of the Beginners (5) in the field of Open Banking although isolated initiatives can be seen in the market. Due to a high proportion of its population having no access to financial systems and its relatively weak infrastructure, Africa's digital service development is primarily focused on financial inclusion. Telecommunications providers such as M-Pesa have had a lot of influence on the digital banking market. They are increasing the pressure on banks to innovate their services through digital payment offerings.

M-Pesa not only offers users the ability to upload funds to the SIM card in order to make payments, but also allows employers to pay directly to their employees phones. In 2018 M-Pesa already had 27 million customers in 10 countries.





Ruanda

Despite the current absence of Open Banking portals in the market, Rwanda has announced regulatory efforts and can be classed as a Riser (4) in Open Banking. In contrast to other African countries, the Rwanda Payment System Strategy which was launched by the Banque Nationale du Rwanda (BNR) in 2018, already provides a regulatory system. It is strongly based on Europe's PSD2. The aim is to use consumers' digital data strategically to generate economic advantage.

The introduction of APIs in the financial sector is included within the framework, which also supports the implementation of (technical) standards by 2024.

Overview Ruanda

Score 15/100
Status ..... Riser (4)
Open APIs ..... Very little
Regulator ..... Planned
Initiatives ..... Early stage
TPP regulation ..... No

Overview Kenya

Score 8,5/100
Status ..... Beginner (5)
Open APIs ..... Very little
Regulator ..... No
Initiatives ..... Early stage
TPP regulation ..... No

Kenya

Within Africa, Kenya is one of the more developed countries in terms of Open APIs. Despite the lack of a legal framework, there are already single Open APIs from banks. These mainly include services such as payment initiation, direct debits as well as balance and transaction inquiries. In international comparisons, however, Kenya can be ranked as a Beginner (5).

Due to specific market conditions, such as technical progress (see previous remarks on M-Pesa) and limited FinTech services, Kenya, like other African countries, can be expected to adopt a less stringent regulatory approach to Open Banking.

Nigeria

In terms of open interfaces, Nigeria is also among the Beginners (5). Its Open Banking development - like in Switzerland - is mainly driven by market participants. To this end, a whole range of companies, including the Sterling Bank and the Open Technology Foundation (OTF), are helping to create a standard for the country and recently signed a Memorandum of Understanding to promote the development of an independent Open Banking API Gateway.

In June this year, the Central Bank of Nigeria responded and prioritised Open Banking in its Payment Systems Vision PSV 2030 (a briefing document for a new framework in the banking sector). Partners, such as the FinTech Centric Gateway of the Open Banking Initiative, have joined this initiative. The document should be completed by the end of 2019.

Overview Nigeria

Score 8,5/100
Status ..... Beginner (5)
Open APIs ..... Very little
Regulator ..... No
Initiatives ..... Early stage
TPP regulation ..... No

South Africa

As a Beginner (5), South Africa is one of the continent's Open Banking laggards. Unlike neighbouring countries, its banking and financial markets are heavily regulated. Financial institutions need to comply with a whole range of financial, consumer protection and privacy policies, which may be one of the reasons for the low coverage of Open Banking APIs. Nedbank is currently the only bank in South Africa to provide third-party access to account information via Open APIs. The scope of the services offered here is greater than the regulatory requirement in the EU.

Due to the high degree of regulation in the

market, it can be assumed that the introduction of Open Banking will also have to comply with legal guidelines. A future central regulatory body for TPPs is, therefore, also expected, however, concrete implementation plans are not yet known.

Overview South Africa

Score 8,5/100
Status ..... Beginner (5)
Open APIs ..... Very little
Regulator ..... No
Initiatives ..... Early stage
TPP regulation ..... No

Example: Nedbank
South African Nedbank has already launched its Open Banking platform, which also includes an API Marketplace. The broad portfolio of APIs includes account information and payment initiation, as well as loans, customer information, rewards, and publicly available banking information such as branch offices.

Platforms and Ecosystems

For many banks, Open Banking APIs are the starting point for the new age of networked banking. As in other sectors, the digital economy and the connecting of value chains are also creating a platform economy within the financial sector. Regulatory and market standards for Open Banking APIs are an important catalyst, as they require banks to open up and provide third-party access to their systems.

For banks, the platform economy means they can network with digital partners at different levels. For example:

1. Designing innovative digital customer processes through flexible integration of partner services. In most cases, innovative FinTech APIs are connected to provide financial management with PSD2-based account aggregation or credit processes based on PSD2 account access rules.

2. Providing banking-enabled marketplaces so digital partners can quickly and easily integrate the bank's products and services into their portals. Typical examples are white-label accounts, deposits and credit lines.

3. Establishing ecosystems in which banks offer customers heavily customised services from partners. This gives customers best-of-breed complementary services around financial services. For instance, ecosystems for small and medium-sized companies that offer accounting functions, alternative finance and financial analytics as well as banking services.

Unlike compulsory PSD2 and Open Banking APIs, banking platform providers decide for themselves how to engage third parties and how to design access for partners. While they use industry standards to design APIs and access, they ultimately decide for themselves, or with each partner, who can access their platform and to what extent.

Ecosystems are the ultimate expansion of Open Banking and put the bank at the centre of the platform economy. They enable banks to retain control under their own roof yet provide access to attractive third-party banking products as well as to the latest services from FinTechs. With a broader and customer-oriented range of services, they can deliver a richer experience and increase the satisfaction and loyalty of their customers.

An ecosystem is also based on the open interfaces of the bank, but these do not necessarily have to be subject to predetermined standards or regulations. Banks typically provide their partners with proprietary Open APIs, which they disclose in developer portals for a closed user group. Partners can prefill their applications with this data and easily serve the customer without complex data entry. At the end of each process, the bank secures the user data for cross-departmental analysis or recommendation management. This form of cooperation also enables the bank to rapidly expand or change its relationships and initiatives in a market-driven manner through the loose coupling of the systems.

A key principle of ecosystems is that everyone benefits. Banks get access to attractive new services without having to deploy or integrate them into their core systems. They can also offer services in market niches that are not economically viable in-house or lack the innovation speed of start-ups. These digital partnerships are monetised with lucrative agreements and revenue splits. For FinTechs, too, such partnerships are attractive and promising. They benefit from the end customer's trust in the bank partner and can, thanks to the interfaces, enter into a privileged cooperation.

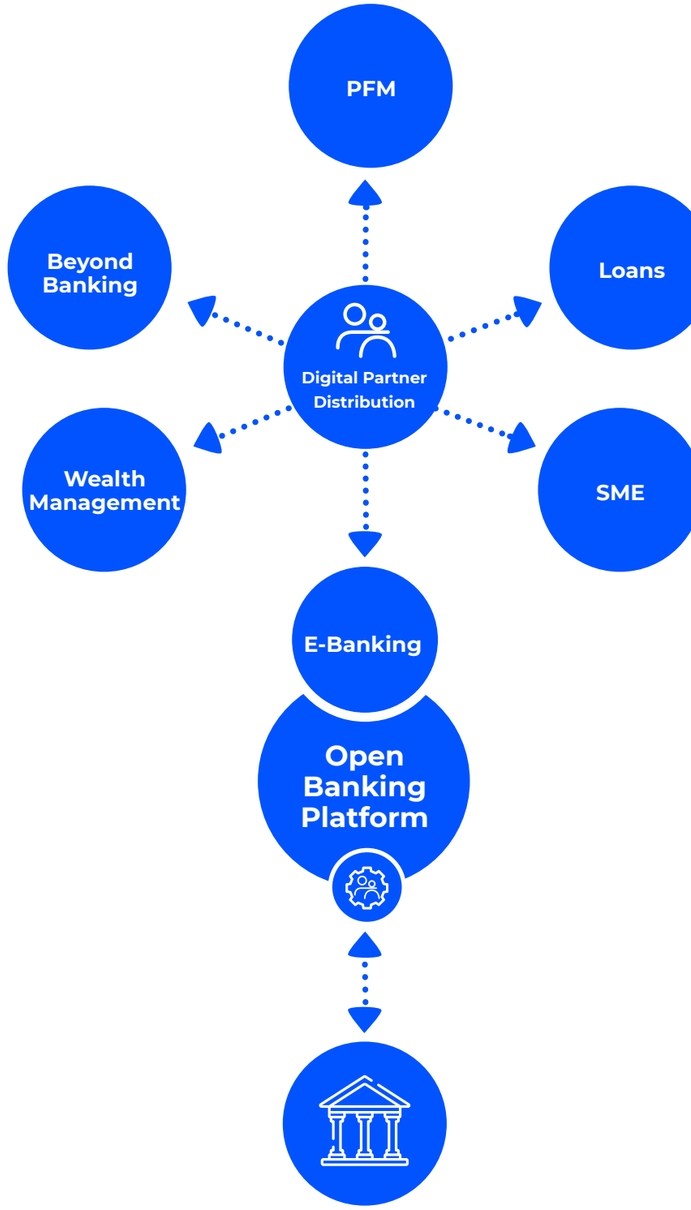
Strategically, banks do not necessarily have to build their own ecosystems. It may be more useful for them to engage in the platforms of other market participants in order to form a network with strong partners.

Ultimately, ecosystems are about moving both customers and demand-oriented banks into the digital age. With offerings that appeal to specific target groups - by sector, location or profile - the bank's classic range of offerings can be expanded considerably, supplementing their online banking or creating new independent business models.

In the battle for the end customer, banks must be able to face-off future 'banking' functions powered by the platforms of large technology companies (like Google, Amazon, Facebook and Apple), which have both customer access and experience with large-scale, customer-centred processes on their side. Nevertheless, there are many reasons to keep banks as the future designers of banking ecosystems. This includes their size and ability to invest in comparison to many digital providers; their experience with complex customer processes and the underlying financial products; and the recognised trust in the security of banks and their systems.

Key Take Aways

- Open Banking is the banks preferred business model in the digital age
- Open Banking shouldn't happen in isolation, the maximum benefit for banks comes through further commercial, partner and customer facing strategies
- There are seven global Open Banking Pioneers (including the EU) and 12 Beginners
- Seven international markets (including the EU) rely on regulation, the others are driven by market standards
- Open Banking is created by new customer needs, competitive pressures and new technologies
- PSD2 and similar market standards are just a catalyst for networking
- More than 10,000 banks in more than 50 countries are affected by Open Banking APIs
- The expansion stages of Open Banking are banking as a service, strategic use of FinTech innovations and ecosystems
- API platforms are the technological backbone for the flexible implementation of Open Banking
- Ecosystems are the ultimate expansion of Open Banking, with the greatest benefit for all involved



ndgit Open Banking Plattform

ndgit provides the # 1 API platform for banking and insurance. It connects banks and FinTechs with digital ecosystems. Our technology enables banks to open up to digital partners and quickly and easily connect value-added services using the marketplace. The ndgit FinTech platform thus forms the technological backbone for new applications and IT landscapes in banking and insurance. As early as 2017, ndgit, together with Hypothekarbank Lenzburg, implemented Switzerland's first Open Banking platform and was awarded the Euro Finance Tech Award 2017 for the best cooperation between Bank and FinTech. In 2018, the ndgit API platform won the largest FinTech competition in Central and Eastern Europe with the CEE Fintech Challenge. In 2019, the ndgit team, Hypothakarbank Lenzberg, Finstar, Neon and Sonect received the Finance IT Innovation Award for their joint ecosystem.

www.ndgit.com

For questions and suggestions please contact us via our contac form.

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