

# Comparative Study of National Infrastructure Financing Institutions

Final Report Findings Slide Deck for the National Infrastructure Commission

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# Project Introduction

# 1. Project Introduction and Aims

## Project Aims

Eunomia was commissioned by the National Infrastructure Commission to understand the experience of other countries which do, and do not, have access to either national and/or international institutions to finance infrastructure projects. The study focuses on economic infrastructure within six case study countries – three with national infrastructure financing institutions (Germany, Japan, Canada) and three without (USA, Australia, New Zealand). The study includes an assessment of the benefits and drawbacks of the countries with national finance institutions and the tools and mechanisms used by countries without institutions.

## Research Themes & Focus

The focus of this study is on economic infrastructure within scope of the NIC. The scope of the study does not include social infrastructure (e.g. hospitals, schools, housing).

**The research reviews a number of areas across the two groups of countries:**

**For all Comparison Countries:**

- Nature of infrastructure markets
- Government interventions in infrastructure markets
- Whether needs are met for infrastructure

**Countries with national financing institutions:**

- Role of institutions in the markets and the achievement of benefits
- Governance arrangements
- Capitalisation of institution
- Terms of lending
- Services provided
- Monitoring and evaluation



Identify transferable experience that is as relevant to the UK context as possible, recognising that no country is directly comparable

Further details on the research themes and questions are provided in the **Technical Appendix** which supports this slide deck.

## 2. Method

### Method

This study is based:

- on a review of relevant literature;
- interviews with national experts working in the field of infrastructure finance; and
- a workshop with national experts including government officials, academics, utility companies and financiers.

The research has been conducted between April and June 2018. This slide deck seeks to summarise the research in a digestible format. Supporting the slide deck is a Technical Appendix. The Technical Appendix provides additional detail associated with the information presented in this slide deck.

### Limitations

There are a number of limitations associated with this study, these include:

- **Timing:** The study has been conducted over a three month period. This has reduced the extent to which the study has been able to tackle the subject matter in great detail.
- **Potential Bias:** Information gathered from interviews was subjective, and based on individual perceptions and experience. It was difficult to elicit organisational information that overcomes such potential bias.
- **Assessment of Additionality and Impact:** For the case study countries with institutions, understanding of the counterfactual – what would have changed in the absence of the institutions – is extremely difficult. The reverse holds true for the case study countries without an institution. National financing institutions examined in this study were established decades ago and are ingrained within the financing markets (apart from Canada which has recently been established).
- **Quantitative data:** In some areas within scope, meaningful quantitative data are not available. This limited the extent to which the research could be grounded on empirical data.
- **Burden of Proof:** In order to draw conclusive observations, data of the necessary quantity and quality of data were not always available.

# 3. Definitions of National Financing Institution

## Definitions

There is a broad range of terminology and nomenclature used to define state owned institutions that provide finance for infrastructure projects. Terms include state owned enterprises, government business enterprises, state investment banks and state owned development banks. For the purposes of this assessment we have adopted the term national (or international) financing institution. The definition of national and international financing institutions being a bank or financial institution with **at least 50% public sector ownership that invests in a range of economic infrastructure.**

## Function(s) of National Financing Institutions

This research is focussed on national financing institutions that invest in infrastructure in their domestic markets. However, it is recognised that there are a wide range of roles and functions undertaken by national financing institutions that are not just limited to investment in infrastructure. These include:

- Export credit;
- Development bank, investing outside of the host country;
- Concessionary lending to SMEs;
- Issue of grants and funds;
- Guarantees;
- R&D funding;
- Venture capital support; and
- Investment in infrastructure

Each national financing institution has unique characteristics and functions. Many provide a number of these functions and it is rare for an institution to only have one function. This study is explicitly focussed on the investment in infrastructure and the delivery of financial support. Therefore we may overlook these other functions and their associated benefits.

### Potential Benefits

- Crowds-in private finance
- De-risks first of a kind transactions
- Provide market liquidity
- Improve technical capabilities
- Can be combined and integrated with other government functions

### Potential Drawbacks




- Crowds-out private investment
- Tends to require large initial investments (seed money)
- Misallocation of investments due to political interference
- Maintaining inefficient market structures, sectors with overcapacity or supporting undertakings in difficulty

## 4. Case Study Selection

The case studies aim to identify countries with similar infrastructure markets to the UK. Selection was based on the following:

- Similar level of development of the country (e.g. OECD)
- Privatised infrastructure markets
- Comparable legal systems
- Similar needs for investment

It's recognised that no country is directly comparable to the UK and that almost all OECD countries have some access to either a national and/or international financing institution. The choice of the case studies were informed by the steering group.

Country	National Financing Institution	Relevance to the UK
Germany		Long-established institution and one of most cited examples of a successful national financing institutions. Is based in the EU and has a similar legal structure to the UK. Similar level of development to the UK.
Japan	 Development Bank of Japan	Strong emphasis on encouraging private investment in the domestic infrastructure market. Institution has a clear mandate and mission. Similar level of development to the UK.
Canada	CANADA  INFRASTRUCTURE BANK	New institution which has recently been established. Provides useful insights in to justification for setting up an institution and governance arrangements. Similar level of development to the UK.
Australia	X	<ul style="list-style-type: none"> <li>• All are OECD countries</li> <li>• Australia and NZ have a similar institutional approach to assessing the need for infrastructure.</li> <li>• Each has a similar legal system and promote private sector involvement in financing infrastructure</li> </ul>
New Zealand	X	
USA	X	



# Infrastructure Markets

# 5. Characteristics of Economic Infrastructure

## Economic Infrastructure

This study is explicitly focussed on economic infrastructure. Economic infrastructure includes the provision of services and facilities that facilitate the functioning of the economy.

Sectors include:

- **Energy;**
- **Water and waste water;**
- **Transport;**
- **Waste;**
- **Flood defence; and**
- **Digital telecommunications.**

## Characteristics of Economic Infrastructure

Much economic infrastructure is characterised by a number of common features as shown below.

Feature of Asset	Typical Result of Feature	Attribute / Challenge
<b>Large Scale</b>	Large capital costs High entry barriers	Often can't be financed by a single organisation and debt often forms a significant proportion of the financing needs. Projects attracting cheap(er) debt are the most likely to be successful. Often significant advantages associated with being first mover, but this comes at an increased risk of failure.
<b>Long Lifetime</b>	Deployed technologies must be robust	Assets must be well designed to operate for long periods of time Unproven technologies present significant risks for potential investors and investors are likely to support proven technologies.
<b>Long Payback</b>	Requires stable, predictable operating cash flows	Policy stability is required to ensure revenues required to repay capital are stable Regulatory intervention might be required to guarantee revenues.

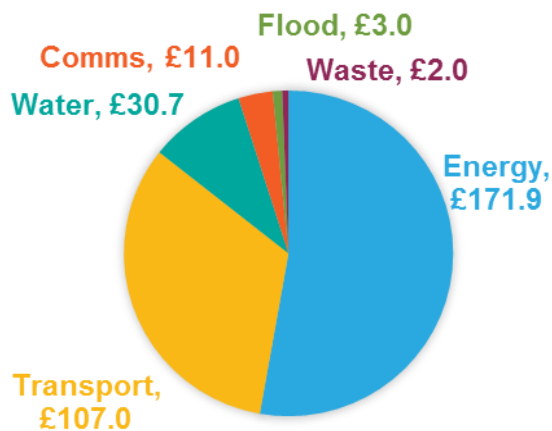
# 6a. The State of Infrastructure: Scale of Investment

## Relative Sizes of Infrastructure Sectors by Country

Within the comparison countries there is a wide range of needs for private capital across the different sectors. For the UK, the value of infrastructure projects in the pipeline totalled £325.6bn in 2014. Energy and transport are significantly larger in the UK when compared to the other economic sectors; this is similar in all comparison countries.

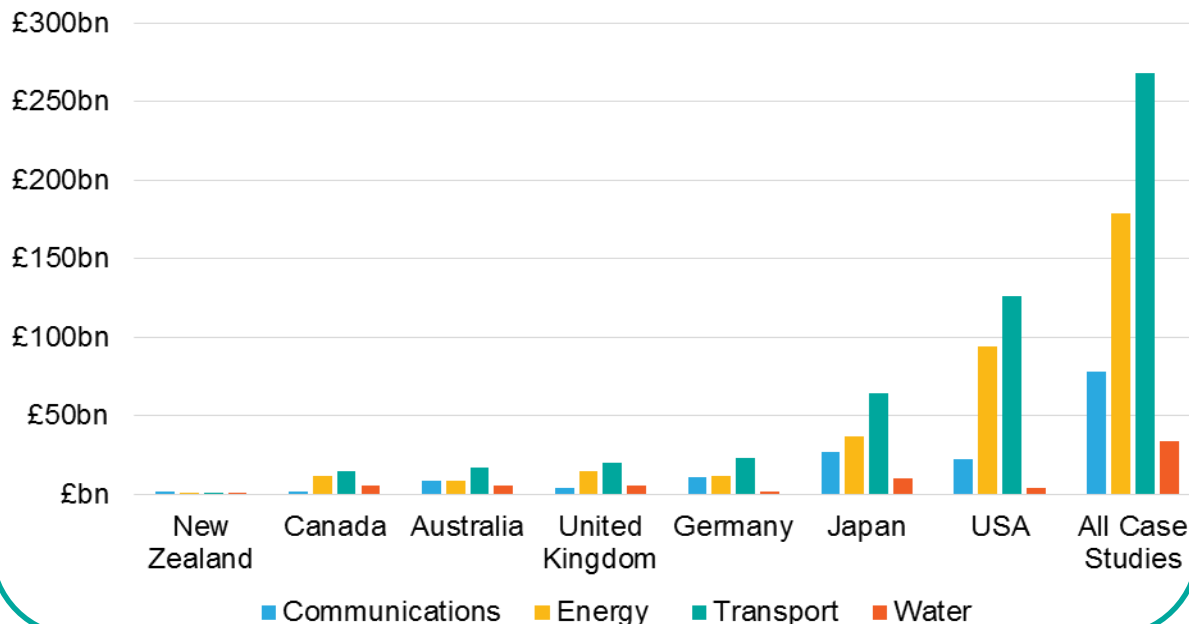
Investment is cyclical and it is difficult to make a comparison between countries. However, for perspective, the total amounts invested in Australia, Canada, Germany, Japan, New Zealand, the US and the UK in a single year across 4 of the 6 largest sectors shows the relative sizes of each sector. Transport, followed by energy and then digital communications are the largest sectors within the comparison countries infrastructure markets. Further details of historic infrastructure expenditure are provided in the Technical Appendix.

UK - 2014 infrastructure pipeline  
/ (£ billion)



Source: The BBA (now integrated into UK Finance)

Infrastructure Investments by Country and Sector, 2015



Source: The Global Infrastructure Outlook

## 6b. The State of Infrastructure: Assessment of Quality

### Assessments of the Quality of Infrastructure

The overall quality of national infrastructure is important when considering each comparison country as it provides an indicator of the effectiveness of the system in place. The quality, or state, of infrastructure is dependent on factors such as:

- **Investment in maintenance**, which could extend the expected lifetime;
- **Investment in upgrading / improvements**, such as helping efficiency through innovative additions to a current asset;
- **Point in the life cycle**, recognising that recently renewed infrastructure may be of higher quality.

There is no standardised or generally accepted appraisal method or approach for measuring the quality of a nation's infrastructure. This makes comparisons across countries difficult, with limited options for achieving this:

- **Global indices** attempt to make high-level global comparisons within one assessment. Due to the high level view they adopt, they tend to reflect quantity as opposed to quality.
- **National reports which appraise infrastructure** and which may allow for some comparison. Many, however, emphasize (or even exaggerate) a nation's needs, sometimes because their objective is to stimulate investment.

Neither of these provide, therefore, a truly accurate appraisal of the state of a nation's infrastructure, still less, of whether the existence, or otherwise, of a national financing institution has been a key determinant on that state.

### World Economic Forum – Global Competitiveness Index (GCI)

The GCI infrastructure assessment only **includes transport, electricity and telephony**. The assessment is somewhat simplified. For example, the *number of landlines* was used as an assessment tool for telephony infrastructure, which is not indicative of the infrastructure's state. Other indicators were based on surveys which used a simple rating method to determine perceived quality. As an example, Japan had a total of only 63 respondents in 2017, whilst the US had 149. Combined, these factors highlight potential weaknesses or biases within the GCI.

Notwithstanding these limitations, the index does not clearly show that the case study countries with institutions – Japan, Germany, Canada – have significantly better infrastructure than those without – US, New Zealand, Australia. Therefore, **it is not clear from this that an institution would result in improved infrastructure quality according to this measurement technique.**

Rank/137	Country / Economy	Score	Trend
1	Hong Kong SAR	6.7	—
2	Singapore	6.5	—
3	Netherlands	6.4	—
4	Japan	6.3	—
5	United Arab Emirates	6.3	—
6	Switzerland	6.3	—
7	France	6.1	—
8	Korea, Rep	6.1	—
9	United States	6.0	—
10	Germany	6.0	—
11	United Kingdom	6.0	—
12	Spain	5.9	—
13	Qatar	5.8	—
14	Austria	5.7	—
15	Taiwan, China	5.7	—
16	Canada	5.7	—
17	Luxembourg	5.7	—
18	Portugal	5.6	—
19	Sweden	5.6	—
20	Iceland	5.6	—
21	Denmark	5.5	—
22	Malaysia	5.5	—
23	New Zealand	5.5	—
24	Belgium	5.4	—
25	Israel	5.4	—
26	Finland	5.4	—
27	Italy	5.4	—
28	Australia	5.3	—

## 6c. The State of Infrastructure: National Assessments

### National Assessments of the Quality of Infrastructure

Alongside international comparisons, there are also national assessments of the quality and need for infrastructure. There is often a need for an independent assessment of infrastructure needs so to reduce the perception that assessments are biased. A summary of some of the most recent assessments in the comparison countries is provided in the table below.

Report Name	Source (Institution type)	Comments
<b>KfW Municipal Panel 2017</b>	KfW Research (private, Germany)	Roads (and schools) are seen as the sectors with the highest need for maintenance and investment. IT and water infrastructure also has, to a lesser degree, investment backlog.
<b>Canadian Infrastructure Report Card 2016</b>	Consortium of four bodies (private and public)	Municipalities own most of the core infrastructure assets (60%), one-third of which is in 'fair' or worse condition.
<b>White Paper on MLIT 2016</b>	Ministry of Land, Infrastructure, Transport and Tourism (MLIT, Japan)	Generally in good condition, particularly the digital communications sector. The solution to their aging infrastructure is said to be technology and innovation, rather than just replacement.
<b>NZ National State of Infrastructure Report 2016</b>	National Infrastructure Unit (branch of New Zealand's Treasury)	Energy and telecommunications sectors are considered to be in good condition. Water and transport sectors are looking to build better information networks to help guide future investments.
<b>Australia Infrastructure Audit Report 2015</b>	Infrastructure Australia (public body)	Gaps in quality and reliability have been determined, particularly in urban transport and rural water services. Lack of willingness or ability to pay for infrastructure has created a need for "serious public discussion".
<b>ASCE's Infrastructure Report Card 2017</b>	American Society of Civil Engineers (private)	Overall grade across transport, energy, water & wastewater, waste, education, parks, and flood defence: D+

# 7. Government Intervention in Markets

## Capital & Revenue Support Mechanisms

No infrastructure market is entirely free of government intervention. Interventions are often used to correct market failures. Intervention can comprise of a number of forms, including regulation. Infrastructure projects **rely on predictable and stable revenue streams to secure private financing**. Even where revenues can be generated from the sale of utility services (e.g. electricity); projects may not be able to attract private finance if conditions are unfavourable.

Of importance to this study is to consider the interventions that are related to **resolving financial constraints/risks/barriers**. Accordingly this study is focused on the **capital support** (in the form of financing) and **revenue support** (in the form of funding) mechanisms provided by governments.

A summary of some of the key mechanisms is included in the following table.

Capital Support Mechanisms	Revenue Support Mechanisms
Direct Provision	Subsidies (e.g. Feed in Tariffs)
Grants	Regulated Fees/Charges (e.g. Road tolls)
Investment using Debt and/or Equity	Hypothecated Taxation (e.g. Fuel excise duty)
Guarantees	

Furthermore, beyond such mechanisms, the use of Public Private Partnerships (PPPs) to support the provision of infrastructure is common. A common feature of most PPPs is that they allow the public sector to avoid or reduce upfront capital expenditure, but they require payments from the public sector and/or users over the project's lifetime. These are not the focus of this study.

# 8. Government Intervention: Revenue Support Mechanisms

## Revenue Support Mechanisms in Case Study Countries

Whilst the focus of this assessment is on the provision of finance; it is necessary to ensure that suitable funding mechanisms (revenue support mechanisms) are in existence, as these are often a key enabler for private finance.

Within the comparison countries, there is a plethora of revenue provision mechanisms, both in countries with a national financing institution, and those without.

An overview of the existence of revenue support mechanisms is provided below. Note that whilst we have identified the existence of mechanisms, we have not sought to appraise their effectiveness. Further details are provided in the Technical Appendix.

	Revenue Support Mechanism	Germany	Japan	Canada	Australia	New Zealand	USA	UK
Transport	Regulated Fees/Charges (e.g. tolls)	✓	✓	✓	✓	✓	✓	✓
	Hypothecated Taxation (e.g. Fuel excise duty)			✓	✓	✓	✓	✓
Digital Communications	Regulated Fees/Charges		✓	✓				✓
Energy	Subsidies (e.g. Feed in Tariffs)	✓	✓	✓	✓		✓	✓
Waste	Regulated Fees/Charges		✓	✓	✓	✓	✓	
	Hypothecated Taxation	✓						✓
Water	Regulated Fees/Charges (e.g. water rates)	✓		✓	✓		✓	✓
Flood	Hypothecated Taxation (e.g. regional flood infrastructure rates)					✓		

# 9. Government Intervention: Finance Sources

Financing in Case Study Countries - Public vs Private Finance Provision

	Germany	Japan	Canada	Australia	New Zealand	USA	UK
Transport							
Digital Communications							
Energy							
Waste							
Water							
Flood Defence							

## Finance Support

Adopting the hypothesis that one of the key benefits associated with the introduction of a national finance institution is to complement and enhance finance from the private sector, it is important to consider whether there are adequate opportunities for private capital in the comparison countries' economic infrastructure markets. The table above provides an overview of the main sources of capital.

As shown in the table above, the wide use of private financing for economic infrastructure in the UK implies that there may be an opportunity to aid the provision of private capital via a national financing institution in the UK.

It should also be noted that the UK is somewhat unique in offering a range a sectoral opportunities for private capital, when compared to the comparison countries. Other countries utilise a more significant use of municipality and publically owned utility companies to deliver investment in infrastructure. For example, the use of private capital in water markets in the UK is relatively unique.

### Source of Finance

Predominantly public

Mixed

Predominantly private

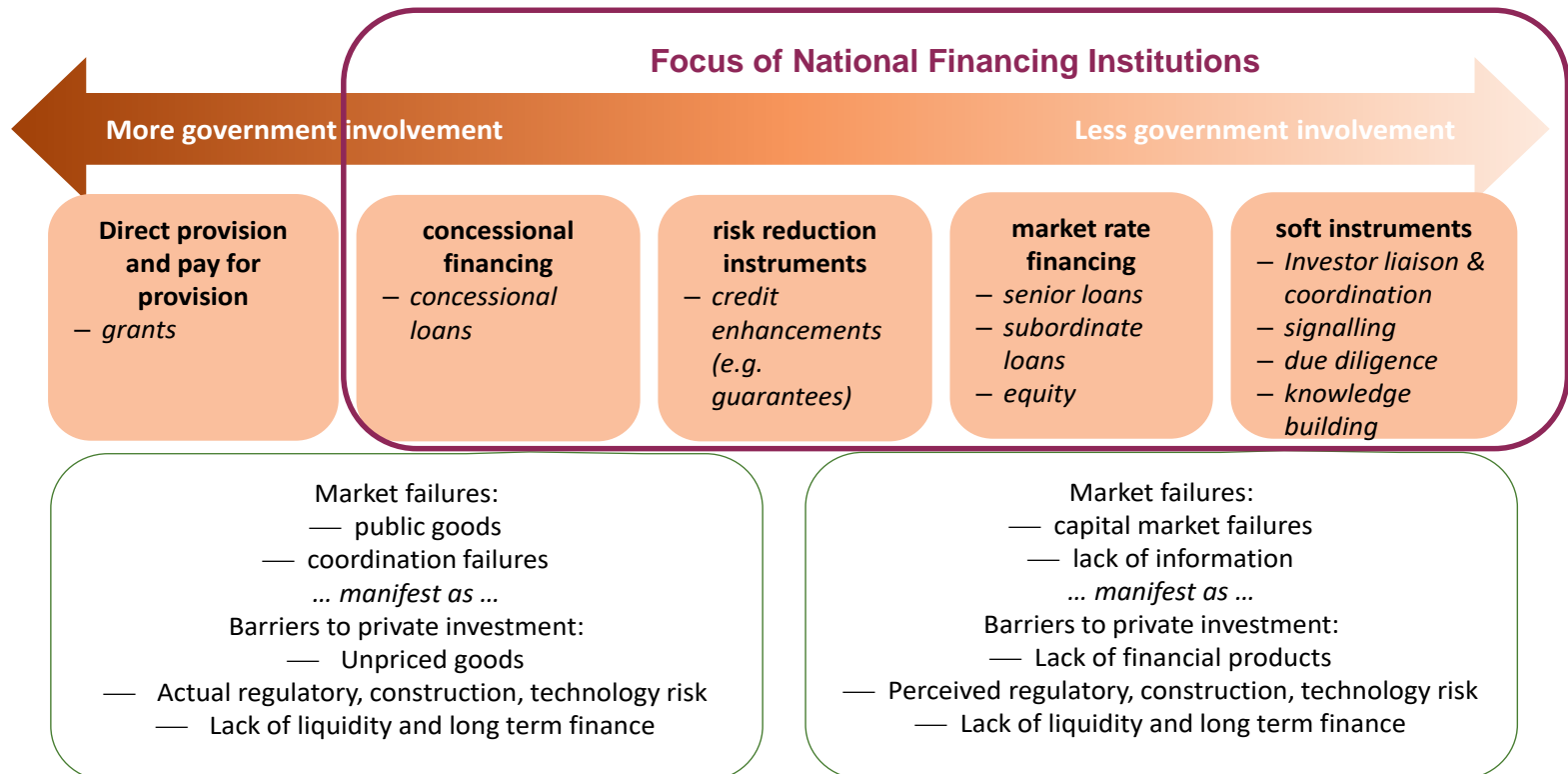


# 10. Government Intervention: Financing Markets

## Government Intervention in Financing Markets

Government intervention in the financing market can be in a number of different forms. The most significant intervention is the direct provision of infrastructure. For the UK, this intervention is not well suited to many aspects of the economic infrastructure market. Furthermore, the establishment of a national financing institution to provide direct provision is not considered to be an efficient delivery method.

National Financing Institutions are therefore more likely to be focussed on addressing capital market failures. Naturally, that creates an interface with private capital markets and reaffirms the hypothesis that a national finance institution should complement and enhance the provision of finance from the private sector.



# Countries Without National Financing Institutions

# 11. Countries Without National Financing Institutions

In the following slides profiles of the countries without national financing institutions are provided. The profiles are focused on the interventions in infrastructure markets and the establishment (or otherwise) of alternative institutions and mechanisms to support infrastructure delivery.


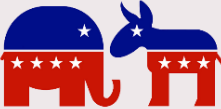



## 12a. USA: Overview

There is recognition that greater levels of investment infrastructure than what has historically been provided is needed within the country. In particular, there have been calls to increase the amount of private investment, particularly in the digital communications and energy sectors.

### Calls for a National Financing Institution

Infrastructure banks in various forms have been suggested since the 1980s in the USA, but none have been established. Recent proposals include:

Recent Proposals	Proposal Year	Proposed by	Features
National Infrastructure Reinvestment Bank	2007		<ul style="list-style-type: none"><li>• Sought to invest primarily in surface transport infrastructure, as well as other public infrastructure (e.g. energy)</li><li>• Would borrow US\$50 billion of federal funding to invest over 10 years</li><li>• Sought to leverage "up to \$500 billion" of private investment</li></ul>
BRIDGE Act for an Infrastructure Finance Authority	2015		<ul style="list-style-type: none"><li>• Focused on transportation network, water and wastewater systems and energy infrastructure</li><li>• Would be an additional financing tool to help states and localities better leverage private funds</li><li>• Would receive initial seed funding of up to \$10 billion</li><li>• Expected to make US\$300 billion or more in total project investment</li></ul>
Infrastructure Bank for America Act	2017		<ul style="list-style-type: none"><li>• Bill is in the first stage of the legislative process (deemed unlikely to pass)</li><li>• Seeks to issue special bonds, named "Repatriation Bonds", with maturities up to 30 years or longer, aiming to raise US\$100 billion</li></ul> To provide: <ul style="list-style-type: none"><li>• direct loans and loan guarantees to <b>private entities</b> for <b>revenue-producing</b> infrastructure projects; or</li><li>• indirect loans and loan guarantees to State and local governments and State infrastructure banks for projects.</li></ul>

There are supporters and opponents in both parties, but generally the concept of a national financing institution has been opposed by Republicans (who have tended to oppose government intervention in markets). There are many reasons given for opposing the introduction of a new institution. The most commonly cited include:

- **Contribution to public debt:** institutions are likely to increase the contribution to public debt
- **Lack of independence from political influence:** fears that the activities of the institution will be focussed on political priorities; and
- **Doubts over effectiveness:** concern that failures in the market will not be addressed by a single institution.

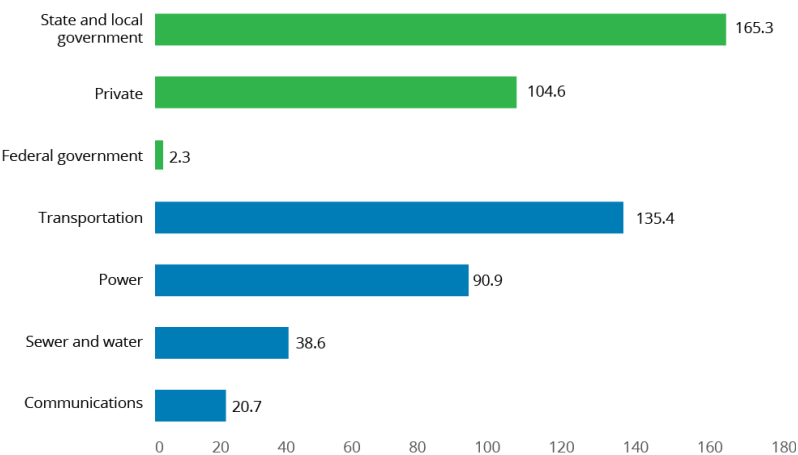
# 12b. USA: Federal vs State Level Investment

Public infrastructure spending in the US can come from different levels of government: Federal, State or Local level. Most public investment in the US is derived from State and local governments, rather than the Federal Government..

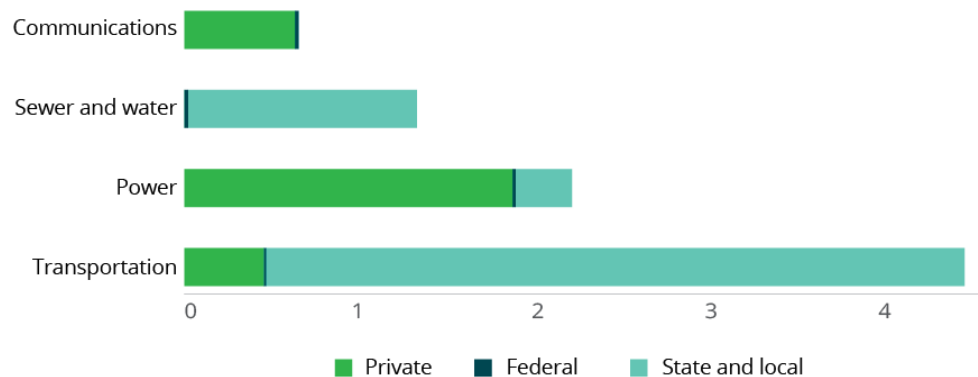
## Federal-level Support

The federal government owns very little of the country's infrastructure assets, as shown below. Even when the federal government contributes funding to highway and transportation projects, the resulting assets are managed and owned by state and local governments.

## Infrastructure Investment, 2015 (US\$ billion)



## Infrastructure Capital Stock, 2015 (US\$ trillion)



## State-level Support

‘Transportation’ and ‘sewer and water’ are two sectors for which investments mainly come from State and local government.

Costs of all water and sewer projects, as well as new transportation projects not funded through the Federal Government, are borne by taxpayers. Mechanisms for covering these costs are mainly issuing bonds (or selling stock shares), so taxpayers pay for the investment over time.

Tables' Sources: BEA; Haver Analytics; Deloitte University Press;

# Federal Intervention

- **TIFIA** – this is managed by the Build America Bureau (as part of the Department of Transport); and
- **WIFIA** – this is managed by the Environmental Protection Agency.

TIFIA stands for the *Transportation Infrastructure Finance and Innovation Act*. It was established in 1998 and aims to leverage Federal resources and increase capital market investment in transport infrastructure. It provides credit assistance for regionally and nationally significant projects. Credit assistance refers to:

- ### Key Objectives:

- Facilitate projects with significant public benefits
- Encourage new revenue streams and private participation
- Fill capital market gaps for secondary/subordinate capital
- Be a flexible, "patient" investor willing to take on investor concerns about investment horizon, liquidity, predictability and risk
- Limit Federal exposure by relying on market discipline

Applicants can be from the private or public sector, on a local or state level.

As of Jan 2017, TIFIA had provided \$26bn of assistance to 64 projects.



# 12d. USA: Federal Intervention

## Water: WIFIA

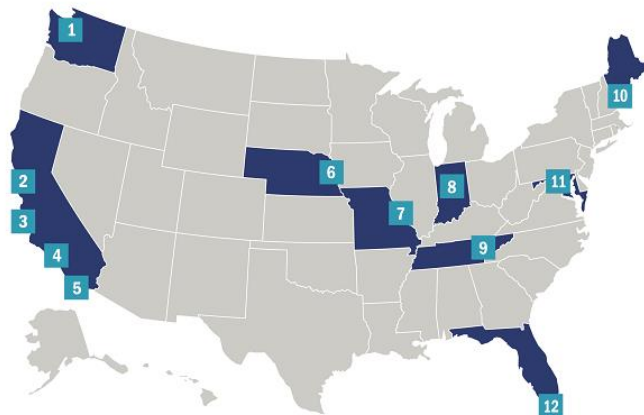
WIFIA: *The Water Infrastructure Finance and Innovation Act of 2014 (WIFIA)* was established as a federal credit Program to accelerate investment in water and wastewater infrastructure of national and regional significance.

WIFIA authorizes EPA to provide secured (direct) loans and loan guarantees to water infrastructure projects.

WIFIA loans have distinct benefits that are not readily available in the capital markets. They have a low, fixed interest rate equal to the Treasury rate for a comparable maturity.

WIFIA can offer borrowers the advantage of developing customised terms, including sculpted repayment terms to match the specific needs of a project.

It is able to act as a patient investor and offer credit assistance with extended maturities due to the federal government's long-term investment horizon.



1. King County  
Georgetown WWTS  
2. San Francisco PUC  
Biosolids Digester Facilities  
3. City of Morro Bay  
Water Reclamation  
4. Orange Co. Water District  
Groundwater Replenishment System

5. City of San Diego  
Pure Water San Diego  
6. City of Omaha  
Saddle Creek RTB  
7. Metro St. Louis Sewer District  
Sanitary Tunnel & Relief Projects  
8. Indiana Finance Authority  
FY2017 SRF Program

9. City of Oak Ridge  
Water Treatment Plant  
10. Maine Water Co.  
Saco River Treatment Plant  
11. City of Baltimore  
Capital Improvements  
12. Miami-Dade County  
Ocean Outfall Reduction

### FY 2017 WIFIA Projects




**\$2.3B**  
WIFIA Loans  
**\$5.1B**  
Project Costs

### Key Features:

- \$20 million: Minimum project size for large communities.
- \$5 million: Minimum project size for small communities (population of 25,000 or less).
- 49%: Maximum portion of eligible project costs that WIFIA can fund.
- Total federal assistance may not exceed 80% of a project's eligible costs.
- 35 years: Maximum final maturity date from substantial completion.
- 5 years: Maximum time that repayment may be deferred after substantial completion of the project.
- Projects must be creditworthy and have a dedicated source of revenue

# 12e. USA: State Level Intervention

## Examples of State Level Institutions

State	Bank	Relevant Features	Scope of Lending
New York		<ul style="list-style-type: none"> <li>Aiming to leverage more private capital investment in clean energy development</li> <li>Focussed on part of the energy market where there is limited competition, low technology risk, and high liquidity premiums.</li> </ul>	<ul style="list-style-type: none"> <li>Focusses exclusively on 'green' energy infrastructure at a state level</li> <li>Invests in successful entities that have insufficient finance</li> </ul>
Connecticut		<ul style="list-style-type: none"> <li>First green investment bank in the USA.</li> <li>Seeks to leverage more private capital investment in clean energy deployment in Connecticut.</li> <li>Sought to replace grants</li> <li>Their evaluation framework aims to assess and monitor the impact of their investments.</li> </ul>	<ul style="list-style-type: none"> <li>Focusses exclusively on 'green' energy infrastructure at a state level</li> <li>Also provides loans to householders</li> </ul>
California		<ul style="list-style-type: none"> <li>Lends to public sector for infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>Focusses on lending to local councils. Does not lend to the private sector</li> </ul>

## SIB Program for Transport Infrastructure

In 1995 under the National Highway System Designation Act (NHS), "State Infrastructure Banks" (SIBs) were set-up to offer innovative financial assistance for '*surface transportation that are established and administered by states*'. They are revolving loan funds created through state transportation departments to supply local entities (private or public) with funding to meet local infrastructure needs. SIBs provide borrowers with capital funds at or below market interest rates.

- All repayments are considered to be Federal funds.
- Part of the aim of the SIB program is to leverage federal funding by attracting non-federal public and private investment.
- SIB capital can be used as collateral to borrow in the bond market or to establish a guaranteed reserve fund.
- SIBs are capitalized with Federal-aid surface transportation funds and matching State funds. (Several states have established SIBs or separate SIB accounts capitalized solely with state funds.)
- 31 States have a SIB under the NHS Act.

Example: The Texas Transportation Commission has approved 114 loans totalling more than \$605 million under their SIB. The loans have helped leverage more than \$4.9 billion in transportation projects in Texas



# 13a. Australia: Overview

The infrastructure market in Australia is privatised to a lesser extent than in the UK. Infrastructure needs are well known and generally being met. Australia does not have one national institution dedicated to investing in infrastructure; it has a number of bodies and instruments that focus on investing in specific infrastructure sectors.



## Infrastructure Australia

The Australian Government created Infrastructure Australia as a corporate commonwealth entity. It is an independent statutory body with a purpose to prioritise national infrastructure investment. It strategically audits Australia’s nationally significant infrastructure in order to develop 15-year rolling Infrastructure Plans that guide investment priorities for the government.

Infrastructure Australia published the first Australia Infrastructure Audit in May 2015, and the first Australian Infrastructure Plan in February 2016.

## Types and Number of Financing Programs

	Energy	Transport	Telecommunications	Water	Other
Tied Funding	7	10	2	4	10
Untied Funding					1
Concessional Loans	2	2		1	2
Equity	1	3	2		
Incentive Payments					1

Source: Infrastructure Australia analysis of research conducted by EY (2017)

# 13b. Australia: Tied & Untied Grants

Tied funding, or a Specific Purpose Payment (SPP), is a *conditional grant made by the Australian Government to states and territories or local governments to assist in funding specific state and territory responsibilities*. National Partnership Agreements (NPAs) are a type of SPP and generally mandate a specified outcome to receive funding.

Untied funding, or a General Purpose Grant, is an unconditional grant used at the recipient's discretion. An example of this is the Commonwealth payments of GST (goods and services tax) to states and territories.

Australian Government grants totalled AUS\$102 billion in 2014-15 (approx. 25% of total spending). Of that, roughly 54% was in the form of untied grants which were almost completely funded by GST revenue, 34% was semi-tied grants, and 12% was tied grants from National Partnership payments.

Infrastructure funding only makes up a small percentage of SPPs and NPAs.

Australian Government

Department of Infrastructure, Regional Development and Cities

## Examples from Energy, Transport, and Water Sectors

### Australia Renewable Energy Agency

*Department of Industry, Innovation & Science*

Australian Renewable Energy Agency (ARENA), under the ARENA Act (2011) was provided with annual A\$2 billion grants for 5 years to invest in renewable energy projects until 2022.

They set investment priorities which are approved by the responsible Minister for projects over A\$50 million, or by the ARENA CEO for projects less than A\$1 million. The Minister also appoints the Board members.



### Infrastructure Investment Program

*Department of Infrastructure, Regional Development & Cities*

The Australian Government, under this program, assists states, territories and local governments with national and regional economic and social development aimed at improving land transport infrastructure.

The Australian Government has committed over A\$75 billion for the next decade to transport infrastructure, of which a significant portion is under the Infrastructure Investment Program.

### National Water Infra. Fund Program

*Department of Infrastructure, Regional Development & Cities (since Dec 2017)*

The A\$580 million National Water Infrastructure Development Fund is implementing the Australian Government's commitment to water infrastructure. The fund has two components: feasibility and capital.

It is accelerating the detailed planning and construction of projects.

Funding is only provided to state and territory governments through bilateral schedules (project agreements which specify delivery milestones).

## 13c. Australia: Concessional Lending

Energy (e.g. *the Clean Energy Finance Corporation*), transport (e.g. *WestConnex*), and water (e.g. *National Water Infrastructure Loan Facility*) sector projects have received concessional loans, as has the broader-focused *Northern Australia Infrastructure Facility (NAIF)*.

### Example: WestConnex

The logo for WestConnex, featuring the word "WestConnex" in white text on a blue background, with a stylized white line graphic below it.

WestConnex is a 33km predominately underground motorway scheme, being constructed jointly by the New South Wales and Australian governments. The real cost of WestConnex has reportedly hit A\$45 billion and is rising. The Government has committed \$1.5 billion in funding and is also providing a concessional loan of \$2 billion to accelerate delivery. NSW has the intention to sell at least 51% of WestConnex, with the aim of reinvesting the earnings into new infrastructure projects.

### Comparative Examples: CEFC and NAIF

The CEFC is a highly successful and productive statutory authority\*. CEFC has a Special Account which is annually credited with A\$2 billion for 5 years from 2013. The CEFC invests only in clean energy projects that have strong potential to reduce CO<sub>2</sub> emissions. The CEFC is run by a CEO and decisions on what to invest in are made by the CEFC Board independent of government and based on commercial assessments. It provides project, equity and aggregation finance, as well as corporate loans.

After the Abbott Government's attempts to abolish the CEFC were blocked by non-government senators in the Senate, Abbott mandated a ban preventing CEFC from investing in wind power and rooftop solar. This ban was lifted by the Turnbull Government, finally allowing CEFC to redirect focus to innovative and emerging technologies and paving the way for new CEFC programmes, such as the Sustainable Cities Investment Program and Reef Funding Program (worth A\$1 billion each).

The Northern Australia Infrastructure Facility (NAIF), another Commonwealth entity, may approve loans until 30 June 2021 which total A\$5 billion in aggregate. Loans may be concessional finance to encourage and complement private sector investment in economic infrastructure that benefits northern Australia. This may include investments in airports, communications, energy, ports, rail and water. As of May 2018, the fund had financed a total of 2 projects. The second of which only occurred after the government relaxed lending rules. Despite the authorities' similarities, CEFC has managed to achieve significantly more than NAIF. For NAIF, the absence of private investment and viable projects in sparsely populated Northern Australia is thought to be a significant barrier.

The logo for the Clean Energy Finance Corporation (CEFC), featuring the letters "CEFC" in large white font and "CLEAN ENERGY FINANCE CORP" in smaller white font below it, all on a blue background.The logo for the Northern Australia Infrastructure Facility (NAIF), featuring the letters "NAIF" in large orange and red font, with "Northern Australia Infrastructure Facility" in smaller red font below it.

*\*Statutory authority: a corporate Commonwealth entity created by the Australian Government*

## 13d. Australia: Equity

For riskier projects, equity has been used for projects across the energy, transport and telecommunication sectors.

### Example: National Broadband Network

The National Broadband Network (NBN) is a national wholesale open-access data network equity investment project.

It was wholly financed by the government to replace the existing copper cable telephony network (that is approaching end of life) and to cover the rapidly growing demand for internet access.

It's estimated total cost is A\$49bn. It is the largest infrastructure project in Australian history.

### Example: Snowy Hydro Ltd

Snowy Hydro is a renewable energy company. They have 16 power stations which generate 4500GWh on average per annum across New South Wales, Victoria and South Australia. One of these is the 4100 MW Snowy Mountains Scheme, the original scheme. It had a historical construction cost of A\$820 million which was funded by Commonwealth Government advances.

Snowy Hydro is largely owned by NSW, with the federal and Victorian governments being minority shareholders.

#### Snowy 2.0 – The Extension

Snowy Hydro 2.0 is expected to increase the amount of electricity the scheme produces by 50% and be enough to power 500,000 homes. A feasibility study costing A\$29 million has been released. The Australian Renewable Energy Agency (ARENA) provided A\$8 million in grant funding on behalf of the government. The extension is estimated to cost around A\$4 billion.



Source: Supplied

## 13e. Australia: Incentive Payments

Incentive payments are *payments made to states and territories with conditions based on predefined actions or outcomes*.

These payments have previously been made under the National Competition Policy.

In 2013/14, Infrastructure Australia estimated commercial infrastructure assets, worth at least \$100 billion, were on the government's balance sheets.

In an effort to remove bottlenecks, stimulate construction, increase investment and help boost the economy, the Commonwealth devised a novel measure: Asset Recycling.

### Example: Asset Recycling Initiative

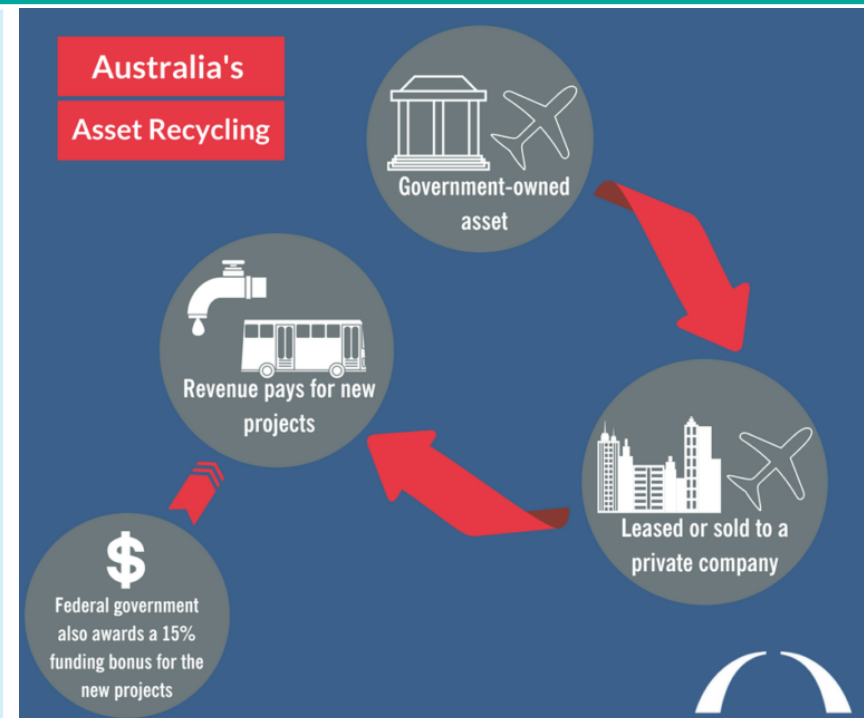
Infrastructure Growth Package is a key component of the infrastructure expenditure in the Government's budget and is made up of three measures: The Asset Recycling Initiative, new investments, and the Western Sydney Infrastructure Plan.

The Asset Recycling Initiative is a measure which provides a financial incentive to States and Territories to sell (or lease) their assets and use the proceeds to fund new infrastructure.

The financial incentive is worth 15% of the assessed sale value of the asset and is provided by the federal government. It has a budget of A\$5 billion delivered over 5 years, ending mid-2019.

The initiative has been able to leverage approximately A\$20 billion of private investment (June '18), often through PPPs.

(The Asset Recycling Fund provides financing for the Infrastructure Growth Package and other programmes.)



Source: Bipartisan Policy Center

# 14a. New Zealand: Overview

The infrastructure market in New Zealand is privatised to a lesser extent than in the UK. There is less support for privatisation in NZ following the economic reforms in the late 1980's to early 1990's ('Rogernomics' and 'Ruthanasia') which saw the privatisation of the energy and telecoms sectors.

## Overview of Infrastructure by Sector

Sector	Owner ship**	Condi tion*	Example showing Condition	Comments
Transport	Public	Poor	<ul style="list-style-type: none"> <li>Auckland, fast growing city, has decaying road infrastructure due to decades of under-investment</li> </ul>	<ul style="list-style-type: none"> <li>Petrol Tax and Road User Charges have been placed in a hypothecated fund since 2008.</li> <li>Survey conducted in Auckland recently showed 2/3 people were pro-toll roads as a mechanism for improving roads, with 1/3 opposed. It has been suggested that this outcome would have been very different as recently as 5 years ago.*</li> </ul>
Water	Public	Poor	<ul style="list-style-type: none"> <li>Outbreak of E.coli as a result of water board contamination (demonstration of poor quality infrastructure)</li> </ul>	<ul style="list-style-type: none"> <li>Property tax is the primary funding source</li> <li>Only a few councils charge volumetrically</li> <li>Approx. NZ\$7 billion deficit* in renewals funding, not including expansion financing</li> <li>Government has announced a review of the funding, regulations, infrastructure, etc. of this sector</li> </ul>
Energy	Private	Good	<ul style="list-style-type: none"> <li>Some complaints over high prices but overall steady supply.</li> </ul>	<ul style="list-style-type: none"> <li>Users charged higher by private now, than comparative rates the public sector charged before privatisation.</li> <li>An argument to say higher prices are necessary to maintain infrastructure.</li> <li>Energy utility companies are private, though the national grid is publicly-owned.</li> </ul>
Telecoms	Private	Good	<ul style="list-style-type: none"> <li>Successful roll-out of super-fast fibre</li> </ul>	<ul style="list-style-type: none"> <li>Users pay for telephone and broadband.</li> <li>From 2012 to 2025 the private sector is expected to invest a total of NZ\$1.27 billion in telecommunications capital.</li> </ul>

\* Based on interviews; \*\* Majority of ownership.



# 14b. New Zealand: Debt and Equity Investment

## Debt Support Initiatives

A Green Investment Fund, with NZ\$100M of government seed money, is being developed to stimulate NZ\$1 billion of new investments in low carbon industries by 2020.

It will be fully government owned and will have a minimum rate of return of 5%.

This fund is expected to be financed by raising oil royalty rates 46% to the global average of 70%. Sectors covered include renewable energy plants, solar panel installations, energy efficiency retrofits, the development and production of significant volumes of biofuels, and other clean technology projects.

## Equity Support Initiatives

NZ has set up a number of Crown-owned companies, to focus on specific Government priorities.

One example is the Crown Infrastructure Partners (previously the Crown Fibre Holdings):

- They received NZ\$1.5bn to aid the initial roll-out of fast fibre to homes. Using a model similar to Australia's asset recycling model, the equity in the projects has been sold the privatised telecoms sector.
- Recently, Crown Infrastructure Partners received NZ\$600 million for road and water infrastructure for housing developments. In return, councils will provide long term revenue streams by charging the new residents with targeted rates and volumetric charging for the use of the infrastructure.
- The Crown Infrastructure Partners' investments aim to crowd-in private investment.

A different example is Transpower New Zealand Ltd. It has two main functions:

- Providing infrastructure of electric power transmission through ownership of the National Grid,
- Enabling competition in the wholesale electricity market.

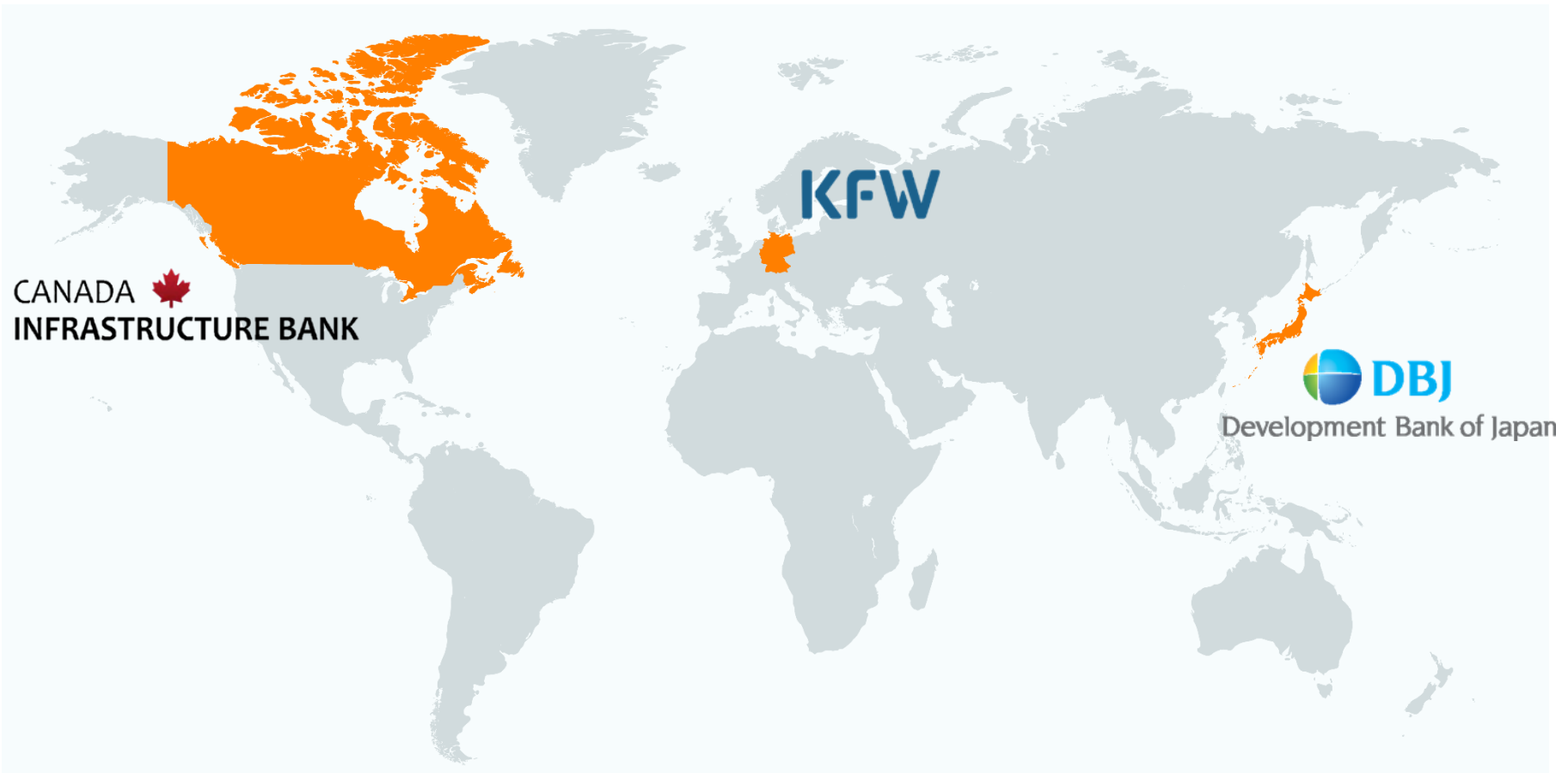


# National Institution Profiles



# 15. Countries With National Financing Institutions

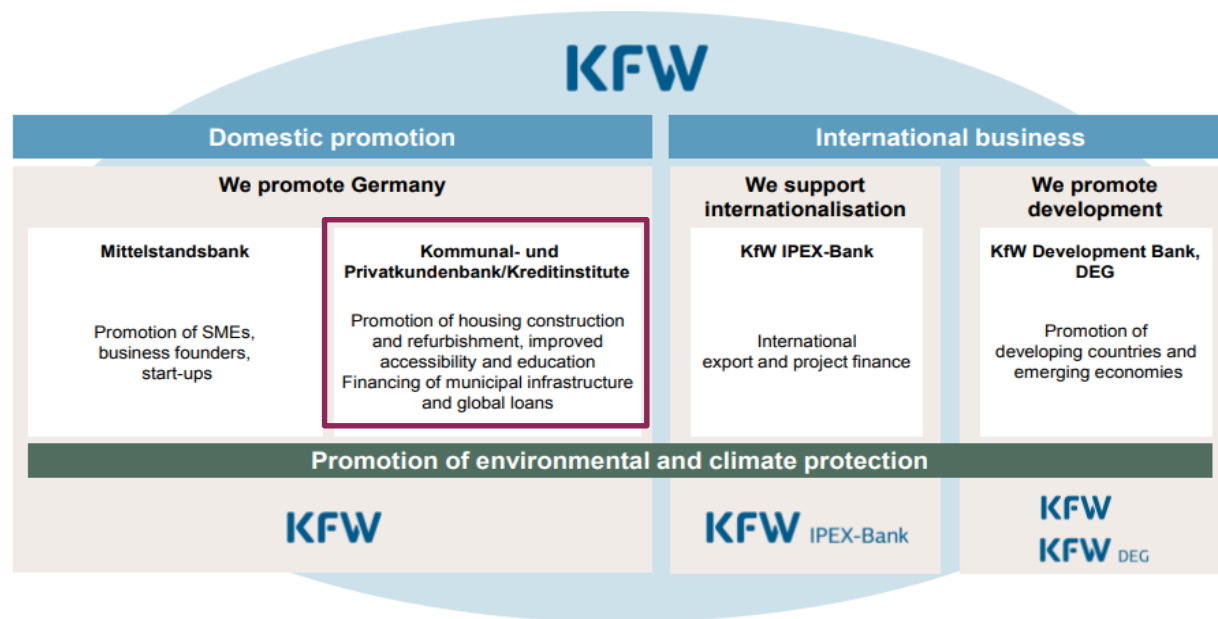
In the following slides profiles of the countries with national financing institutions are provided. The high level profiles are focused on the key features of the institutions.



# 16a. Institutional Profile: Germany - KfW

<b>History</b>	The bank was established in Frankfurt in 1948 after World War II, as part of the Marshall Plan, as a means of rebuilding the country.
<b>Purpose</b>	Global mission: “support change and encourage forward-looking ideas – in Germany, Europe and throughout the world.” The bank also operates in alignment with a subsidiarity principle.
<b>Ownership</b>	Government-owned: split between the Federal Republic of Germany (80%) and the States of Germany (20%)
<b>Assets</b>	Balance sheet total in 2017 was €472.3bn In 2016 KfW’s domestic promotional business volume was €55.1bn; €4.1bn were in infrastructure

Functions	
Equity	✓
Debt	✓
Guarantees	✓
Grants	✓
Export Finance	✓
Development Aid	✓
Advisory Services	✓
Venture Capitalism	✓



**Note:** 47% of renewable generating capacity installed in Germany in 2015/2016 was financed by KfW

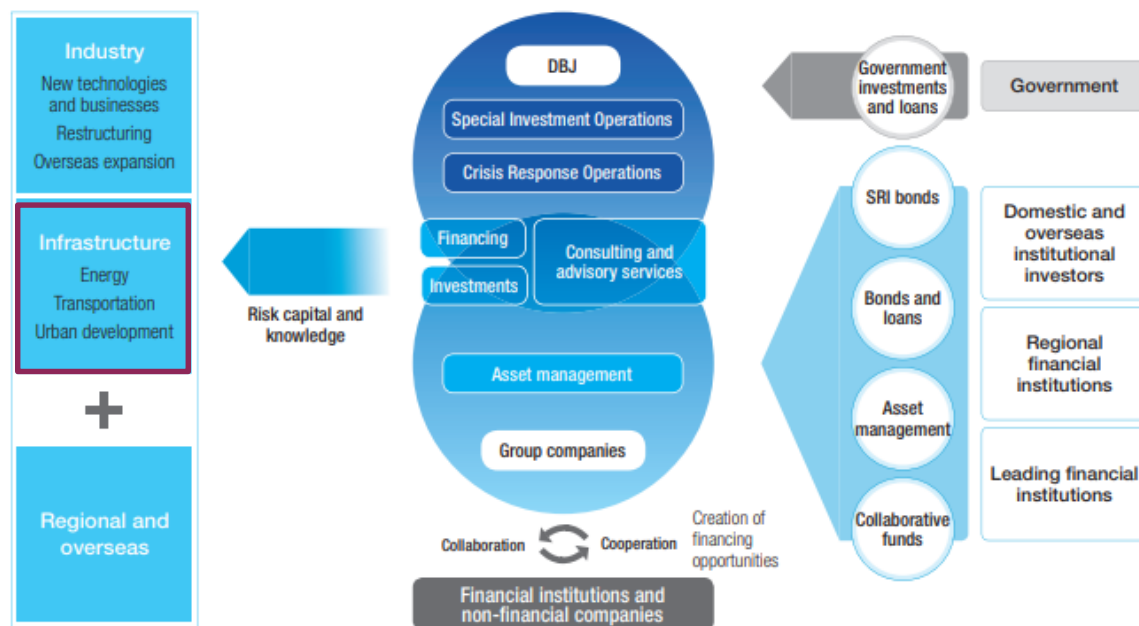
# 16b. Institutional Profile: Germany - KfW Subsidiaries

	High-level Information
<b>KfW as a whole</b>	<ul style="list-style-type: none"> <li>Balance sheet total (2017): €472.3 billion</li> <li>Financing volume (2017): €76.5 billion</li> <li>Best long-term rating: Aaa/AAA/AAA</li> </ul>
<b>Kommunal- und Privatkundenbank /Kreditinstitute</b>	<ul style="list-style-type: none"> <li>For <b>Private individuals</b>: <ul style="list-style-type: none"> <li>Promotion Business Volume of 2016: €23.1 billion</li> <li>Sectors: Energy-efficient construction and refurbishment; Reducing barriers in existing residential buildings; Creating residential property; Education.</li> </ul> </li> <li>For <b>Local and municipal authorities, municipal enterprises and social institutions</b>: <ul style="list-style-type: none"> <li>Promotion Business Volume of 2016: €4.1 billion</li> <li>Sectors: Municipal and social infrastructure; Municipal energy supply; Urban energy-efficient rehabilitation; Improving accessibility in public areas.</li> </ul> </li> <li>For <b>Promotional institutions of the federal states/Credit institutions</b>: <ul style="list-style-type: none"> <li>Promotional Business Volume of 2016: €6.5 billion</li> </ul> </li> </ul>
<b>KfW IPEX-Bank</b>	<ul style="list-style-type: none"> <li>Responsible for the <b>Export</b> and <b>Project Finance</b></li> <li>Legally <b>independent</b> and operate under <b>competitive</b> conditions on the market since 2008. <ul style="list-style-type: none"> <li>Promotional Commitments Volume of 2016: €16.1 billion</li> </ul> </li> </ul>
<b>DEG</b>	<ul style="list-style-type: none"> <li>Partner to <b>private-sector</b> enterprises operating in <b>developing</b> and <b>emerging-market</b> countries</li> <li><b>Long-term financing</b> and <b>advice</b> <ul style="list-style-type: none"> <li>Promotional Business Volume of 2016: €1.6 billion</li> </ul> </li> </ul>
<b>KfW Development Bank</b>	<ul style="list-style-type: none"> <li>The development bank of the German Federal Government</li> <li>Provides support/advice for reform processes &amp; investments in developing &amp; emerging countries <ul style="list-style-type: none"> <li>Promotion Business Volume of 2016: €7.3 billion</li> </ul> </li> </ul>
<b>Mittelstandsbank</b>	<ul style="list-style-type: none"> <li>Provides <b>medium and long-term financing to SMEs</b>, targeting commercial enterprises, start-ups, and self-employed professionals. <ul style="list-style-type: none"> <li>Promotion Business Volume of 2016: €21.4 billion</li> </ul> </li> </ul>

# 17a. Institutional Profile: Japan - DBJ

<b>History</b>	DBJ in its current form was established in October 2008. This process started with the merger of the Hokkaido-Tohoku Development Finance Public Corporation into the Japan Development Bank and the transfer of the former institutions' rights to DBJ in 1999. It's Crisis Response Operations was designed to help the economy after the 2008 crash and the 2011 disasters (non-cyclical function).
<b>Purpose</b>	A source of integrated investment and loan services to domestic and international clients. DBJ's philosophy is to apply "financial expertise to design the future".
<b>Ownership</b>	Government-owned (100%) though has the aim of eventual privatisation.
<b>Assets</b>	In 2016 the bank held ¥16,570bn in assets, approximately US \$148bn.

Functions	
Equity	✓
Debt	✓
Guarantees	✓
Grants	
Export Finance	
Development Aid	
Advisory Services	✓
Venture Capitalism	✓



## 17b. Institutional Profile: Japan - DBJ Services

Types of Financing & Related Services	<ul style="list-style-type: none"> <li>• <b>Medium to long-term or syndicated loans</b> for infrastructure</li> <li>• <b>Mezzanine</b> Financing, such as: <ul style="list-style-type: none"> <li>• Subordinated loans, subordinate corporate bonds</li> <li>• Preferred shares, classified shares</li> <li>• Hybrid securities, hybrid loans</li> </ul> </li> <li>• <b>Equity:</b> After investment, DBJ provides: <ul style="list-style-type: none"> <li>• its networks and strengths in information,</li> <li>• research and financing technologies,</li> <li>• Help to clients to maximize their long-term corporate value</li> </ul> </li> <li>• <b>Asset-Based Lending:</b> uses liquid assets as collateral</li> <li>• <b>Debtor-in-Possession Financing:</b> In the 1990s when the Japanese financial system had problems, this was developed as a tool to help underperforming companies with their non-performing loans, by allowing companies in bankruptcy to continue operations and providing them funding.</li> </ul>
M&A Advisory Services	<ul style="list-style-type: none"> <li>• <b>M&amp;A</b> (mergers &amp; acquisitions), including extensive advisory service and financing methods, such as: <ul style="list-style-type: none"> <li>• <b>LBOs</b> (leveraged buyouts): a method of acquiring a company or business using borrowed money</li> <li>• <b>MBOs</b> (management buyouts): a company's current management team acquiring their business</li> </ul> </li> </ul>
Public Sector Advisory Services	<ul style="list-style-type: none"> <li>• Advice regarding public-sector business procedures (PFI, PPP, etc.)</li> <li>• Comprehensive advice on future public asset utilization, such as: <ul style="list-style-type: none"> <li>• support with asset management measures,</li> <li>• asset utilization plans using financial procedures,</li> <li>• the privatization of management / operations of a partial asset or service.</li> </ul> </li> <li>• Advice on local government finance based on the Law Relating to the Financial Soundness of Local Governments;</li> <li>• Advice for local-government-run hospitals (provision of information, links to reports, etc.)</li> </ul>
SME Financing	Most DBJ borrowers are unlisted medium-scale companies.
Other	<ul style="list-style-type: none"> <li>• The <b>Women Entrepreneurs Center</b> (DBJ-WEC): to support women in their efforts to establish new businesses</li> <li>• <b>Practical Application Support Center for Technology:</b> to diagnose whether companies have the management strength (technology management expertise) to turn their technologies into products</li> </ul>

## 18. Institutional Profile: Canada - CIB

<b>History</b>	Established by the Government of Canada at the end of 2017 as part of its wider 'Investing in Canada' infrastructure plan. The institution has yet to make an investment and many aspects of its operation are yet to be confirmed. It has recently hired its management team.
<b>Purpose</b>	To invest in and attract private sector investment in domestic infrastructure projects that will generate revenue and be in the public interest. The institution was established to take advantage of historically low interest rates, and in an effort to resolve the 'Canadian Paradox', where Canadian pension plans are major global infrastructure investors, but often don't invest in projects at home because of the absence of large-scale privatizations of public infrastructure assets.
<b>Ownership</b>	Government owned, but as a Crown Corporation operates at arm's length from government with an independent, professional Board of Directors and CEO.
<b>Assets</b>	Can\$35 billion - including \$5 billion each for public transit, green infrastructure and trade & transport.

Functions	
Equity	✓
Debt	✓
Guarantees	✓
Grants	
Export Finance	
Development Aid	
Advisory Services	✓
Venture Capitalism	

### CANADA INFRASTRUCTURE BANK



# Features of National Institutions

# 19. Features of National Institutions

## Overview

The following slides provide an overview of the key features associated with the national financing institutions. These slides focus on the following themes:

- Institution capitalisation
- Terms of lending
- Innovation
- Governance arrangements; and
- Contribution to public debt.




As many of these themes focus on the operation of the institutions there is a natural focus on the more established organisations (i.e. KfW and DBJ).



# 20a. Institution Capitalisation

## Overview

There are differences in the capitalisation of the institutions; but in general there is heavy reliance on capital markets for the two institutions which are established (KfW and DBJ).

	The Federal and State Government joint provided the initial seed funding. Subsequently, returns of investment have been recycled in to the organisation. The largest source of funding is now via the capital markets whereby KfW are able to issue bonds.
 Development Bank of Japan	Initial financing in 2008 (when the corporation was incorporated) came from share sales to the government through the Minister of Finance. It now receives funding from the government and via the capital markets (through another government institution).
CANADA  INFRASTRUCTURE BANK	The Treasury has pledged initial seed funding of Can\$35 billion. There is currently no cap on potential government fund provision. As yet it is unclear whether the CIB will be able to source funds from the capital markets.

Both KfW and DBJ benefit from explicit and direct statutory guarantee and institutional liability from their respective governments which facilitate their activities in the capital markets.

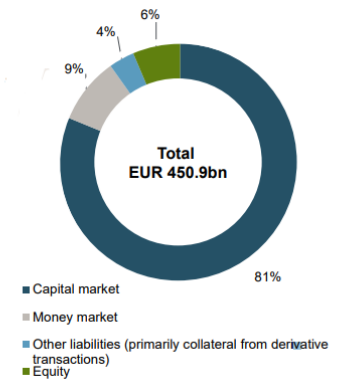
Source of Funding	Germany - KfW	Japan - DBJ	Canada - CIB
Treasury Funds	✓	✓	✓
Capital Markets	✓	✓	
Return on Investments	✓	✓	✓

## 20b. Institution Capitalisation

### Germany - KfW

In Germany, the Federal Government and the State provided KfW with the initial seed money – amounting to a nominal capital of €3.75 billion at the time of opening. KfW's activities in the capital market cover over 90% of their borrowing needs, particularly through the use of bonds with federal guarantees. In 2016, the entirety of the bank's profits, approximately €1.3 billion, was allocated to retained earnings. KfW benefits from explicit and direct statutory guarantee and institutional liability from the Federal Republic of Germany which facilitates its activities in the capital markets. KfW has AAA-rated bonds and is one of the world's biggest bond issuers on the international capital market. KfW issued bonds in the amount of €78.2 billion in 2017. The chart on the right shows capitalisation from bonds (81%), including benchmark maturities, Green Bonds, and more flexible customised bonds. Short-term debt and collateral loans are covered under the money market. Equity had a reported value of €28.7 billion in 2017 (~6%) which includes retained earnings (including profits from lending).

Total Capitalisation (as of 31.12.2017)



### Japan - DBJ

Much of DBJ's historic funding came from postal savings deposits and insurance premiums that are funnelled through the Fiscal Investment and Loan Program but recent reforms have forced the Bank to procure a significant amount of its funds from the capital markets (via the Japan Finance Corporation). Like Germany, DBJ benefits from explicit and direct statutory guarantee and institutional liability from the Japanese Government.

### Canada - CIB

Under the CIB Act the Minister of Finance may pay up to \$35 billion to the CIB, out of the Consolidated Revenue Fund, and approve loan guarantees. The Minister of Finance may also lend money out of the Consolidate Revenue Fund to the CIB under any terms and conditions the Minister of Finance stipulates. \$15 billion of this total will come from the already established over \$180 billion pot designated for the wider 'Investing in Canada' plan, and the remaining \$20 billion will be available in the form of equity or debt. The CIB will use this for investments which will result in the Bank holding assets, therefore this \$20 billion will not result in a fiscal impact for the government.

# 21a. Terms of Lending: Germany

## Concessional Lending

Concessional Lending	KfW	DBJ	CANADA INFRASTRUCTURE BANK
<p>The provision is often on a limited basis and specific for certain types of infrastructure</p> <p>Concessional lending can be considered a form of public subsidy</p>	✓	✓	(✓)*

\*Likely, but not yet confirmed

## Germany – KfW: Overview

The lending rates provided by KfW vary depending on the loan programme under which the loan is obtained. Many of the activities of KfW adhere to state aid rules, as they are related to investments in environmental protection.

## Municipal and Social Infrastructure Schemes

For a loan under ‘credit 148’ for extending infrastructure in municipalities, the effective interest rates start from 1.71%. It has a maximum allocation of €50 million per project, generally with a minimum term of 4 years and a maximum term of 30 years. Repayment of this loan is made through the applicant’s bank (so KfW does not deal directly with the applicant). There is a ‘redemption-free’ start-up period during which the applicant would only pay back interest, after which point repayment is made in equal quarterly instalments plus interest. The loan can be combined with other public funding.

## Energy Efficiency Schemes

<p><b>‘Credit 217’ – Energy efficient construction and renovation:</b> Provides municipalities, their legally-dependent in-house operators, and community associations with loans for non-residential buildings.</p> <ul style="list-style-type: none"> <li>✓ Redemption-free start-up period</li> <li>✓ Concessional rates:               <ul style="list-style-type: none"> <li>• 0.05% for refurbishment</li> <li>• Less than 0.6% for new construction</li> </ul> </li> </ul>	<p><b>‘Credit 201’ – Energetic Urban Redevelopment:</b> Provides municipalities, their legally-dependent in-house operators, and community associations with loans in efficient heating, cooling, water and sewage systems.</p> <ul style="list-style-type: none"> <li>✓ Redemption-free start-up period</li> <li>✓ Concessional rate of 0.05%</li> </ul>
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## 21b. Terms of Lending: Japan

### Japan - DBJ

The terms of lending vary for medium to long-term loans depending on the details of the particular project and the credit strength of the customer, as well as financial market fluctuations. DBJ can reduce interest rates through national and regional government entities.

### Environmentally Rated Loan Program



Companies that have pledged to reduce their per-unit CO<sub>2</sub> emissions by 5% or more within five years, and have received a DBJ environmental rating, are eligible for an additional 1% reduction in interest rates on funds to be applied toward efforts to reduce global warming.

A total of 95 billion yen in loans (525 projects), as of March 31, 2016.

Companies covered by this program include international giants such as Nikon, Nissan, Suzuki, and Kawasaki. Other companies under this program with connections to economic and social infrastructure include Nankai (electric railway), Kamma Memorial Hospital, and AGP (airport ground power).

### BCM Rated Loan Program

DBJ became the first in the world to offer an advantageous loan program to companies that took steps toward disaster risk reduction (DRR), business continuity management (BCM) and enterprise resilience.

From inception in 2006 to March 2016, the program has provided financing worth ¥282 billion for 233 projects.

The BCM program does not explicitly state it covers capital financing for infrastructure projects, neither does it prohibit it. If a company based in Japan can pass the interviews, screenings and due diligence to show an infrastructure project would aid DRR, BCM or enterprise resilience, then it should qualify for this loan program.

The *2014 Global risk Landscape* assessment, partially conducted by DBJ, determined functional recovery of infrastructure, such as telecommunications, was essential for regional resilience.



## 22. Innovation

### Germany - KfW

**KfW Research:** KfW has a research division which, as a “*centre of economic expertise*”, offers current analyses, indicators and surveys on the economic development of Germany and the world with “*a focus on their environmental and social relevance*”. Sectors: Energy and the environment, SMEs, start-ups, innovations, overall economic performance and growth.

**Financial Innovation:**

- **Medium-term fixed-rate note:** in the mid-1980s, when the only option available was “traditional” refinancing using “promissory notes”, KfW developed these new notes which filled a niche gap between the money and bond markets.

### Japan - DBJ

**Financial Innovation:**

DBJ has been key to the use of syndicated loans in the Japanese infrastructure market. Syndicated loans involve multiple financial institutions combining into a syndicate. The agreement with the customer is based on a single contractual document and financing is provided cooperatively according to a single set of terms.

**Case Study: Fukuoka Clean Energy Corporation**

A banking syndicate provided finance to the city of Fukuoka and Kyushu Electric for the rebuild of the city’s east-side sanitation plant. Fukuoka Clean Energy Corporation, the SPC set-up by the two clients, would repay the loan through waste processing fees and through the sale of electricity to Kyushu Electric. It used PFI methods to promote private-sector investment.

**Asset-based lending (ABL) / debtor in possession (DIP) loan**

- In April 2004, DBJ provided DIP financing for a children’s uniform company undergoing restructuring, using the in-store product inventory as collateral. Since then, DBJ has developed ABL based on the cash value of liquid assets.
- In July 2006, DBJ collaborated with Gordon Brothers (US) to jointly establish Gordon Brothers Japan Co., Ltd., the first company in Japan to concentrate fully on inventory valuation and disposal. This is key when determining the cash value of liquid assets for ABL.

# 23a. Governance Arrangements

## Overview

KfW

 **DBJ**  
Development Bank of Japan Inc.

CANADA   
**INFRASTRUCTURE BANK**

*Decreasing Government Control*

*Increasing Government Control*

**KfW** has limited Government intervention in its governance arrangements and associated day to day operations.

**DBJ** has similar levels of Government control to CIB. A key difference is the expectation of future privatisation of DBJ and a desire for it to operate independently, therefore government appears to have less influence on potential investments.

**CIB** appears to have the greatest control from the Government. It is fully accountable to the Government and must submit detailed business plans on investment strategies.

## Significance of Governance Arrangements

The governance structure of the bank has two main important influences:

- It determines whether or not the bank's accounts sit on the **public balance sheet**, i.e. contribute to public debt (discussed later in the slide deck).
- The level of government involvement can influence the extent to which the bank's actions and long-term plan are **aligned with government policy/agenda** though limited evidence of this has been identified.

## 23b. Governance Arrangements

### Germany - KfW

<b>Executive Board</b>	Comprised of appointed senior staff members of KfW (including the chief executive), it conducts the bank's business, manages its assets and implements the Supervisory Directors' decisions
<b>Board of Supervisory Directors</b>	<p>Oversees the work carried out by the Executive Board and has responsibilities such as appointing the members of the Executive Board, approving the annual financial statement and appointing auditors.</p> <p>The Board has 37 members including:</p> <ul style="list-style-type: none"> <li>• 7 federal ministers specified in the Law of KfW, including the chairman and deputy chairman;</li> <li>• 7 members appointed by the Bundestag (Federal Government parliament);</li> <li>• 7 members appointed by the Bundesrat (the 16 'Länder');</li> <li>• Representatives of commercial, mortgage, cooperative and savings banks;</li> <li>• 2 representatives of industry and 1 from each of the municipalities, agriculture, trade, handicrafts, and housing industries;</li> <li>• 4 representatives from the trade unions.</li> </ul>

### Japan - DBJ

<b>Board of Directors</b>	Supervises management activities, strategies and policies
<b>Management Council</b>	In charge of the day-to-day operations
<b>Other executive-level boards</b>	E.g. the Audit & Supervisory Board - Responsible for monitoring internal functions.
<b>Japanese Government</b>	<p>The Minister of Finance is the primary supervisor. They must approve the following:</p> <ul style="list-style-type: none"> <li>• appointment and retention of representative directors,</li> <li>• adoption of an annual business plan,</li> <li>• adoption of an annual basic policy regarding issuance of bonds and Development Bank of Japan Inc. bonds and borrowings, adoption of annual debt repayment plans,</li> <li>• ownership of subsidiaries involved in the financial business (such as banks) and</li> <li>• amendment of DBJ's articles of incorporation.</li> </ul>

## 23c. Governance Arrangements

### Canada - CIB

<b>Accountable to Government</b>	<p>The CIB must annually submit its corporate plan, operating and capital budgets to the Minister of Infrastructure and Communities. The Minister of Finance, Governor in Council and Treasury Board must approve these.</p> <p>The Government of Canada sets the overall policy direction and high-level investment priorities of the Bank.</p>
<b>Board of Directors</b>	<p>The CIB is governed by an independent Board of between 9 and 12 finance professionals. The Government selected the board Chairperson and Board of Directors in late 2017. An interim Chief Investment Officer and a Chief Financial Officer have also been appointed.</p>



# 24. Contribution to Public Debt

## Definitions

### Public Debt

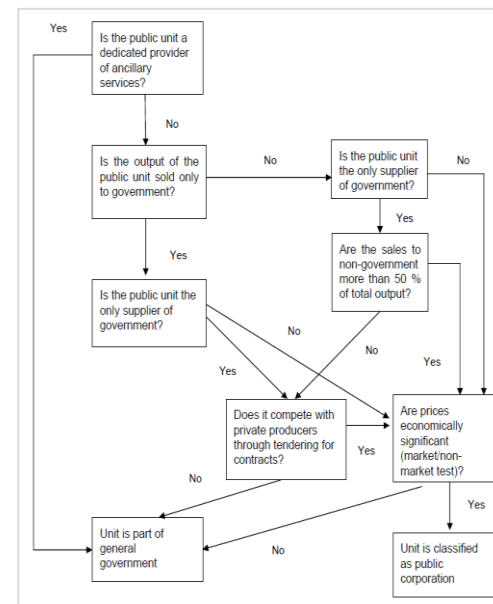
In the EU, public debt is calculated based on Eurostat's Manual on Government Deficit and Debt (ESA10). Public debt means “total gross debt at nominal value outstanding at the end of the year and consolidated between and within the sectors of general government”

### General Government Sector

Eurostat defines the “general government sector” as including non-market producers and institutions controlled by Government. It excludes public corporations.

### UK Public Sector

UK government’s fiscal framework applies to the whole of the public sector. This comprises central and local government and public corporations



Source: Eurostat

## Status of Case Study National Institutions



KfW appears to have avoided being classified as being controlled by the Government, so although some of its activities are recorded on the government balance sheet, others are not.



The Japanese Ministry of Finance specifies that Japan’s public debt is made up of a mix of Japan Government Bonds, comprising general bonds, loans under the Fiscal Investment and Loan Programme (FILP), and ‘others’, including government bonds issued to the Development Bank of Japan.



As the CIB is yet to operate, it is unclear exactly how its liabilities would contribute to public debt, although it is worth noting that in recent years, Canadian public-private partnership (PPP) transactions have been accounted for on government balance sheets. Currently some interviewees believe that debt will be on the balance sheet

# Impacts of National Institutions on Infrastructure

# 25a. Impact on Private Investment

The following table provides an overview of the key impacts associated with the use of national financing institutions. As previously acknowledged earlier in the slide deck, there are a number of limitations to the study that limit the ability to gather robust evidence associated with these impacts. These limitations should be kept in mind when reading this section

Impact	Description & Examples
Reducing technology and early deployment risk	<p>Both KfW and DBJ have supported FOAK projects that are innovative in the their nature. Investments are focussed on understanding/reducing technology and early deployment risk. This has been particularly prevalent in the energy sector. For example, KfW invested in Germany’s first offshore windfarm that was commissioned in 2010 (Alpha Ventus). Furthermore, recognising that the identification, assessment and mitigation of risks were key barriers to sourcing financing, it offered technology and risk advisory services in order to address the expertise gap early.</p> <p>KfW and DBJ have historically been able to de-risk projects for private lenders via the use of concessional finance and guarantees. These are seen as key instruments.</p> <p>There is also evidence of similar effects from the countries without national finance institutions.</p> <p>In the USA, the establishment of the TIFIA and WIFIA demonstrate that dedicated funds can be successful at leveraging private sector investment in economic infrastructure.</p> <p>In New Zealand, a government special purpose vehicle (‘Crown Fibre Holdings’) was used to roll-out broadband across the country. In this way, the Government was able to successfully co-invest with the private sector in a relatively new sector that has traditionally struggled to attract investment in sparsely populated areas. This model has been so successful that it has been adapted to seed private investment in road and water infrastructure. This provides an example of where private sector investment in a relatively nascent area has been leveraged without the use of a national In infrastructure bank.</p> <p>The CEFC in Australia takes a different approach, maintaining that lending on commercial terms sends a greater de-risking signal to investors, thereby giving the impression that projects will be bankable</p>



Source: Wikipedia

## 25b. Impact on Private Investment

Impact	Description & Examples
<b>Aggregation and innovative finance products</b>	<p>Evidence suggests that DBJ has been influential in developing innovative financial instruments (e.g. asset-based lending and corporate restructuring); although evidence is weak for infrastructure and stronger for other aspects (e.g. SME lending).</p> <p>KfW has been very active in the development of Green Bonds, though the bonds did not originate with them. They have won awards for their work on the Harmonised Framework for Impact Reporting. In earlier years, KfW achieved firsts in Germany, such as developing medium-term fixed-rate notes.</p>
<b>Crowding in private capital</b>	<p>There is evidence to suggest investment by KfW and DBJ have helped crowded in private capital. There is often a requirement to ensure that they are not the sole debt or equity provider. The involvement of the institutions has represented a “stamp of approval” for some private capital providers. More widely, the ability of national financing institutions to create crowding-in effects is well documented.</p> <p>A recent example is KfW’s commitment of €360 million to finance the Merkur offshore wind farm in the North Sea, with the remainder of the €1.6 billion investment coming from private sources. The debt was reportedly arranged in an unprecedented record time of four months, raising the question of whether the project could have gone ahead without KfW’s involvement.</p> <p>It should be noted that countries without a single national financing institutions can also deliver this benefit. In Australia, the CEFC recently announced it’s intention to finance an innovative project using solar panels to desalinate water for hydroponic greenhouses. Having done so, the developer attracted equity on better terms than the CEFC’s offer. The project was subsequently developed without government funding.</p>
<b>Providing social and public goods</b>	<p>Both KfW and DBJ have demonstrated the ability to encourage the provision of public/social goods as part of their investments (e.g. DBJ has provided loans related to post-earthquake rebuilding or based on eco-friendly ratings).</p>

## 25c. Impact on Private Investment

Impact	Description & Examples																																								
Risk appetite	There is evidence to suggest that Japanese lenders are becoming more risk averse, with an expectation that DBJ will/should shoulder the risk burden. A lack of risk-taking investors is a long-standing issue in Japan.																																								
Timing of exiting markets/crowding out	<p>There has been evidence to suggest that KfW has been slow to exit from established markets in Germany and is crowding out private capital. A good example is the renewable energy market, in particular offshore wind. Whilst developers initially struggled to source finance for these types of projects, they report that this is no longer the case and are questioning the role of the bank in this context.</p> <p>KfW time-series data on offshore wind is poor in comparison to other technologies. However, it does show that the bank contributed 50% of all investment in 2016. For other key renewable electricity markets – solar PV and onshore wind – KfW involvement appears to be decreasing, although not at the rate that might be expected given the progress these technologies have made in recent years.</p> <table><tr><th>Year</th><th>Solar PV (%)</th><th>Onshore Wind (%)</th><th>Offshore Wind (%)</th><th>Total Investment in Renewable Energy Projects in Germany provided by KfW (%)</th></tr><tr><td>2010</td><td>41.9</td><td>71.1</td><td></td><td>41</td></tr><tr><td>2011</td><td>32.4</td><td>73</td><td>Not available</td><td>36</td></tr><tr><td>2012</td><td>50.7</td><td>90.3</td><td>Not available</td><td>51</td></tr><tr><td>2013</td><td>24</td><td>94.5</td><td>57.6</td><td>42.3</td></tr><tr><td>2014</td><td>14.8</td><td>53.9</td><td>0</td><td>33.5</td></tr><tr><td>2015</td><td>25.1</td><td>69.4</td><td>44.8</td><td>42.6</td></tr><tr><td>2016</td><td>29.8</td><td>59.9</td><td>50</td><td>40.1</td></tr></table> <p>Source: KfW</p>	Year	Solar PV (%)	Onshore Wind (%)	Offshore Wind (%)	Total Investment in Renewable Energy Projects in Germany provided by KfW (%)	2010	41.9	71.1		41	2011	32.4	73	Not available	36	2012	50.7	90.3	Not available	51	2013	24	94.5	57.6	42.3	2014	14.8	53.9	0	33.5	2015	25.1	69.4	44.8	42.6	2016	29.8	59.9	50	40.1
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Meeting infrastructure needs	It is unclear whether KfW and DBJ can be said to have increased the extent to which the countries’ infrastructure needs have been met: set alongside countries without national financing institutions, and recognising that such a judgement is very difficult to make, no strong conclusion can be drawn.																																								

## 26. Relevance to the UK

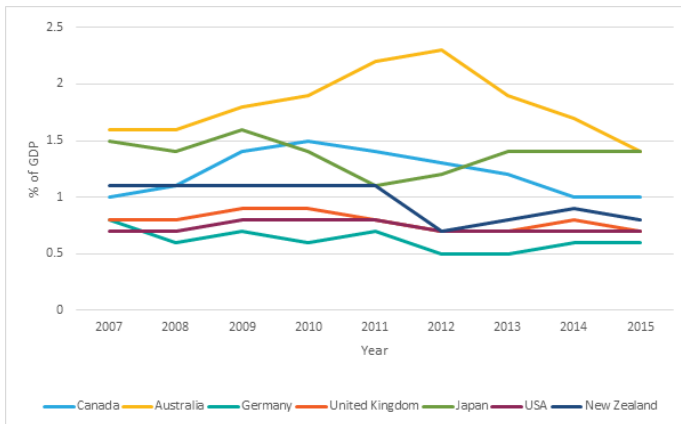
Whilst there is difficulty directly comparing one country to another, there are a number of findings from the research that are relevant to the UK. These include:

Theme	Consideration
<b>Rationale for establishment</b>	Historically institutions (other than CIB) were born out of a crisis whereby a country faced a major challenge, e.g. KfW in the aftermath of WWII and DBJ in the aftermath of the 2008 financial crash. Further DBJ failed to be privatised (as was originally intended) due to its being considered central for dealing the aftermath of the 2011 Fukushima Disaster, and other natural disasters.
<b>Interaction with other policy instruments</b>	The availability of reliable counterpart revenue streams (often related to specific policy interventions) is a key aspect in all markets and countries for the involvement of private finance in infrastructure development. The nature of the policy environment will remain important if private sources of finance are expected to fund infrastructure.
<b>Complementary functions</b>	Many of the institutions adopt other functions (e.g. export finance) which, in the UK, currently reside in Central Government or other institutions.
<b>Contribution to public debt</b>	KfW seems to be a notable exception to the rule regarding accounting. This appears to be an ongoing matter for discussion. In the UK a national finance institution would sit on the government balance sheet under its current preferred measure of Public Sector Net Debt (PSND). The treatment of any institution within national accounts is a key issue.
<b>Strategic infrastructure needs assessment</b>	Whether an institution is in place or not, an independent assessment of needs is highly desirable (and independence of such an assessment is crucial) to aid effective strategic planning, and guard against over-politicization of projects.

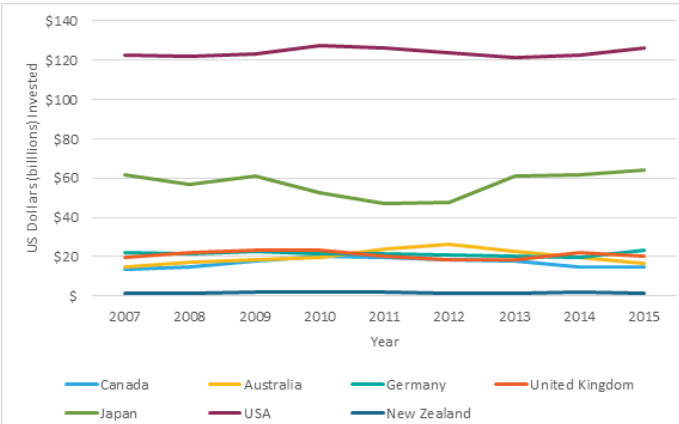
# **ANNEX A: Historical Investment in Infrastructure**

# Annex A: Historic Investment in Infrastructure

## Transport

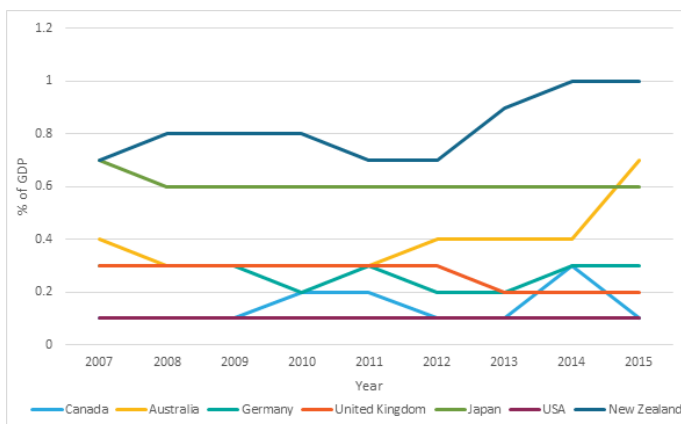


Source: The Global Infrastructure Outlook. \*It considers 4 sub-sectors of transport: Road, rail, ports and airports.

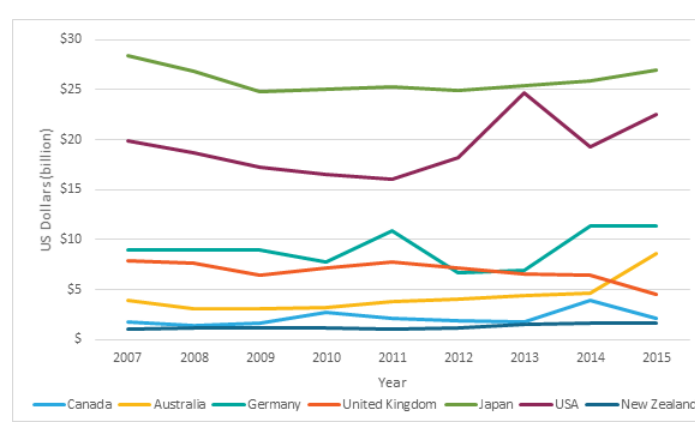


Source: The Global Infrastructure Outlook

## Digital Communications



Source: The Global Infrastructure Outlook

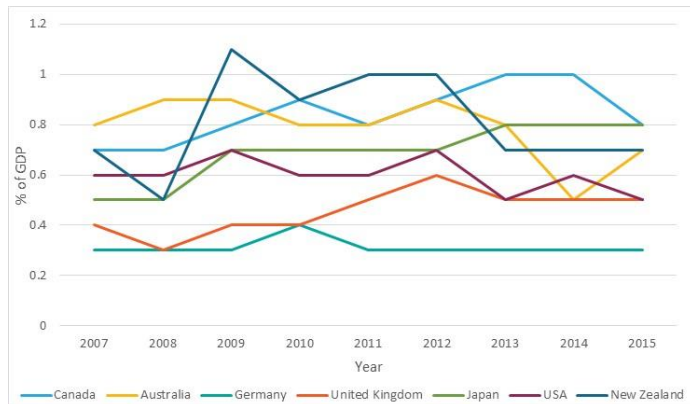


Source: The Global Infrastructure Outlook

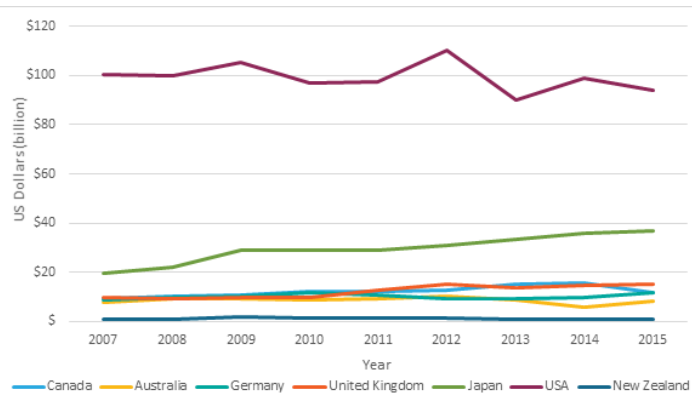


# Annex A: Historic Investment in Infrastructure

## Energy

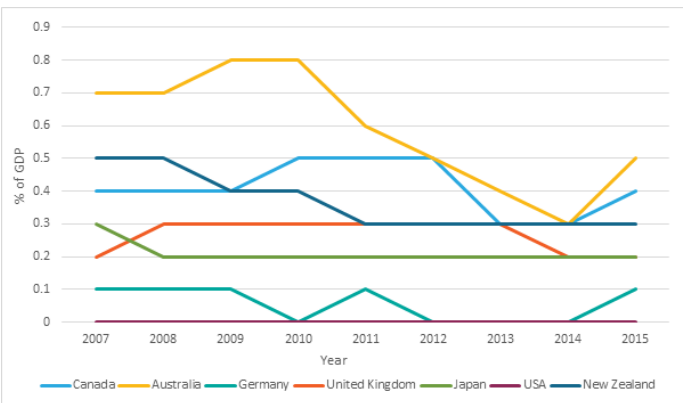


Source: The Global Infrastructure Outlook

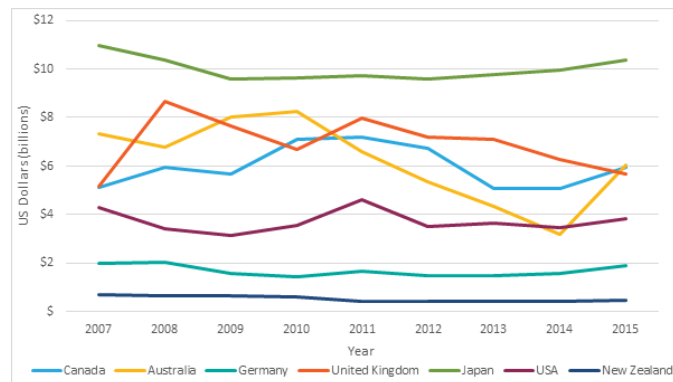


Source: The Global Infrastructure Outlook

## Water and Waste Water









Source: The Global Infrastructure Outlook









Source: The Global Infrastructure Outlook

# **ANNEX B: Case Study Selection**



## Annex B: Other Countries with Institutions (a)

Country/ State	Institution Name	Pros	Cons
Spain	 Instituto de Crédito Oficial	<ul style="list-style-type: none"> <li>• Similar use of economic regulation to the UK</li> <li>• Invests in large scale infrastructure projects</li> </ul>	<ul style="list-style-type: none"> <li>• Slightly riskier environment than the UK</li> </ul>
Finland		<ul style="list-style-type: none"> <li>• Similar use of economic regulation to the UK</li> </ul>	<ul style="list-style-type: none"> <li>• Does not explicitly invest in infrastructure</li> </ul>
Italy	 cassa depositi e prestiti	<ul style="list-style-type: none"> <li>• Similar use of economic regulation</li> <li>• Has an explicit aim to finance infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>• Corruption issues limit comparability to the UK.</li> <li>• Riskier environment than the UK.</li> </ul>
New York, USA		<ul style="list-style-type: none"> <li>• A new bank with potential lessons to be learnt</li> </ul>	<ul style="list-style-type: none"> <li>• Focusses exclusively on 'green' energy infrastructure at a state level</li> </ul>
Connecticut, USA		<ul style="list-style-type: none"> <li>• A new bank with potential lessons to be learnt</li> </ul>	<ul style="list-style-type: none"> <li>• Focusses exclusively on 'green' infrastructure at a state level</li> </ul>
California, USA		<ul style="list-style-type: none"> <li>• State bank</li> <li>• Lends to public sector for infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>• Does not lend to the private sector</li> </ul>

## Annex B: Other Countries with Institutions (b)

Country	Institution Name	Pros	Cons
Mexico	 Banco Nacional de Obras y Servicios Públicos S.N.C.	<ul style="list-style-type: none"> <li>Similar objectives to the UK</li> </ul>	<ul style="list-style-type: none"> <li>Very different investment climate</li> </ul>
Chile	 BancoEstado®	<ul style="list-style-type: none"> <li>Invests in large scale infrastructure projects</li> <li>Has a current focus on environmentally friendly (green) infrastructure and social development</li> </ul>	<ul style="list-style-type: none"> <li>Emphasis on SME lending which may not be relevant</li> <li>Different investment climate than the UK</li> </ul>
Brazil	 Banco Nacional de Desenvolvimento Econômico e Social	<ul style="list-style-type: none"> <li>One of the largest development banks in the world</li> <li>Has invested in large infrastructure projects</li> </ul>	<ul style="list-style-type: none"> <li>Not an OECD country</li> <li>Has different infrastructure challenges</li> <li>Different investment climate than the UK</li> <li>2017 corruption scandals limit comparability to UK</li> </ul>
South Africa	 Development Bank of S. A.	<ul style="list-style-type: none"> <li>Invests in a range of infrastructure projects</li> </ul>	<ul style="list-style-type: none"> <li>Not an OECD country</li> <li>Has different infrastructure challenges</li> <li>Different investment climate than the UK</li> </ul>
Israel	 Inbal Insurance Co Ltd	<ul style="list-style-type: none"> <li>Invests in infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>Focuses heavily on PPPs</li> <li>Has different infrastructure challenges</li> <li>Different investment climate than the UK</li> </ul>
South Korea	 Korea Development Bank	<ul style="list-style-type: none"> <li>Invests in infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>Has different infrastructure challenges</li> <li>Different investment climate than the UK</li> </ul>

## Annex B: Other Countries without Institutions

Country	Institution Name	Pros	Cons
 SWEDEN	X	<ul style="list-style-type: none"><li>• European example</li><li>• Similar investment climate and regulations to the UK</li></ul>	<ul style="list-style-type: none"><li>• Has access to EIB and the Nordic Investment Bank</li></ul>
 The Netherlands	X	<ul style="list-style-type: none"><li>• European example</li><li>• Similar investment climate and regulations to the UK</li></ul>	<ul style="list-style-type: none"><li>• Has access to EIB</li><li>• Different infrastructure challenges (e.g. more flooding)</li></ul>