



## **Coordination of Infrastructure Development: Some International Comparisons**

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## **Executive Summary**

This report presents the findings from a desktop review into how governments across a selection of countries coordinate infrastructure development by working with the industry. The selected countries included the UK (Northern Ireland was examined separately from mainland UK), Canada, Germany, Japan and South Korea.

The goal is to identify alternative means of coordinating infrastructure development at the government level, with a view to assist the Institution of Civil Engineers to make the case for a more strategic approach to planning and delivery of infrastructure. The need for this report derives from growing complexity in the way infrastructure development programmes are procured, and the shifting role of government from provider of infrastructure development to enabler of the process of delivery. Thus, an opportunity arose to compare alternative arrangements of government coordination.

There were similarities of political governance landscape between the investigated countries regarding strategies of infrastructure delivery. Differences exist however in the way resources are allocated and decisions made regarding infrastructure development. A potential for greater transparency and collaboration between public and private sector was identified.

In Germany, for example, local governments enjoy a great deal of autonomy in defining infrastructural requirements, even though the definition of requirements has to align with high-level planning principles at the regional, national and European levels. Delivery of infrastructure development is devolved to the local governments working with a range of stakeholders from both the public and private sectors with funding provided by regional allocations.

By contrast, infrastructure development is coordinated by a single high-level government department Canada, Japan and South Korea. The make-up of this department varies across the three countries, with subtle differences in the roles and responsibilities of each constituent part. Nonetheless, the benefits of such an approach include a whole-systems view in decision-making and a somewhat simpler, more transparent way of funding allocation. Furthermore, in the case of Japan and South Korea, resources can be more effectively channelled towards advancing research and development related to infrastructure development capacity and more clarity in terms of skills development.

The UK, on the other hand, has a fragmented approach in addressing infrastructure development, with a continuously evolving system of government departments and agencies having some form of influence on determining infrastructural requirements. In order to redress some of the challenges with such fragmentation, the situation in Northern Ireland differs slightly with the formation of a Strategic Investment Board Limited charged with overseeing infrastructure programmes, making delivery more transparent.

## Introduction

This report presents findings from a desktop review into how governments across a selection of countries coordinate infrastructure development by working with the industry. The selected countries included the UK (Northern Ireland was examined separately from mainland UK), Canada, Germany, Japan and South Korea.

The goal is to identify alternative means of coordinating infrastructure development at the government level, with a view to assist the Institution of Civil Engineers to make the case for a more strategic approach to planning and delivery of infrastructure.

The review comprised principally an analysis of web-based information resources found in each country's government websites. Three guiding questions helped in determining the relevance of the source information, including:

- Who are the key players in infrastructure development across the countries?
- How do these key players interact with each other at the high-level? For example, are the interactions in relation to policy-making, funding mechanisms, regulations etc.?
- What roles does each of the key players have in planning, procuring and delivering infrastructure development?

Furthermore, special emphasis was placed on a number of core infrastructure themes, including:

- Flood defence and water management
- Waste management
- Energy
- Transport

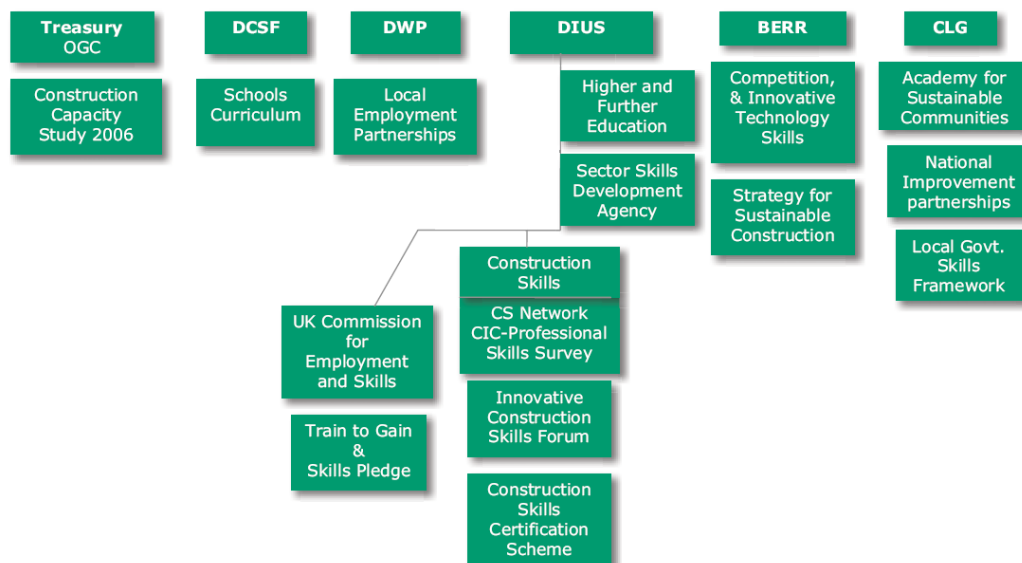
## Country Profiles

### ***United Kingdom (excluding Northern Ireland)***

In recent times, the UK has seen a shift of the process of infrastructure development, where the role of government gradually changes from one that provides for infrastructure to one that enables the process of development in collaboration with the private sector. Procurement routes such as Private-Finance-Initiative (PFI) and Public-Private-Partnerships (PPP) are increasingly commonplace in infrastructure development. With the growing involvement of the private sector in financing and delivering infrastructure projects, the government has continually attempted to negotiate the changing dynamics of the relationship between public and private sectors. Consequently, there is constant reorganisation of government departments and agencies, which in turn lead to further fragmentation and bureaucratisation.

It is noticeable that administrative organs of government are in a constant state of flux, with the current department responsible for national spatial policy

being the Department for Communities and Local Government (DCLG). This department superseded the then Office of the Deputy Prime Minister, and since May 2006, the DCLG has been charged with working on wide-area and urban planning. However, the picture of government coordination is less straightforward. To demonstrate the complexities of coordination, Figure 1 below illustrates the plethora of government departments (let alone agencies and quangos) that have an influence on coordinating skills relevant to infrastructure development. The structure of the construction industry - being project-based and transient - creates barriers for engagement in the skills development agenda by e.g. increasing the administrative burden, especially in relation to funding arrangements (Chan & Moehler, 2007; Department for Community and Local Government, 2008).



**Figure 1.** Coordination of skills at the national level (Callcutt, 2007)

From Figure 1 above, it is evident that the various government departments are chiefly concerned with the formulation of strategy that is associated with their respective remits. Such a structure promotes silo-thinking, which could potentially result in the production of disjointed strategies. At the same time, other departments such as Department of Health and Department for Transport would have a heavy involvement in infrastructure development as well. For example, the Department of Health, through initiatives such as the Local Improvement Finance Trust (LIFT) scheme, would also have an impact on the shaping of local communities and regeneration schemes (Kirkpatrick, Parker & Zhang, 2006). Doubtlessly, the Department of Transport would have overall responsibility for overseeing the development and maintenance of efficient road networks, harbours, ports, airports and railways. As noted above, the delivery of these infrastructural services is increasingly being provided for with private sector involvement and finance. However, without a single government (-led) organisation to integrate the disparate requirements of various government departments,

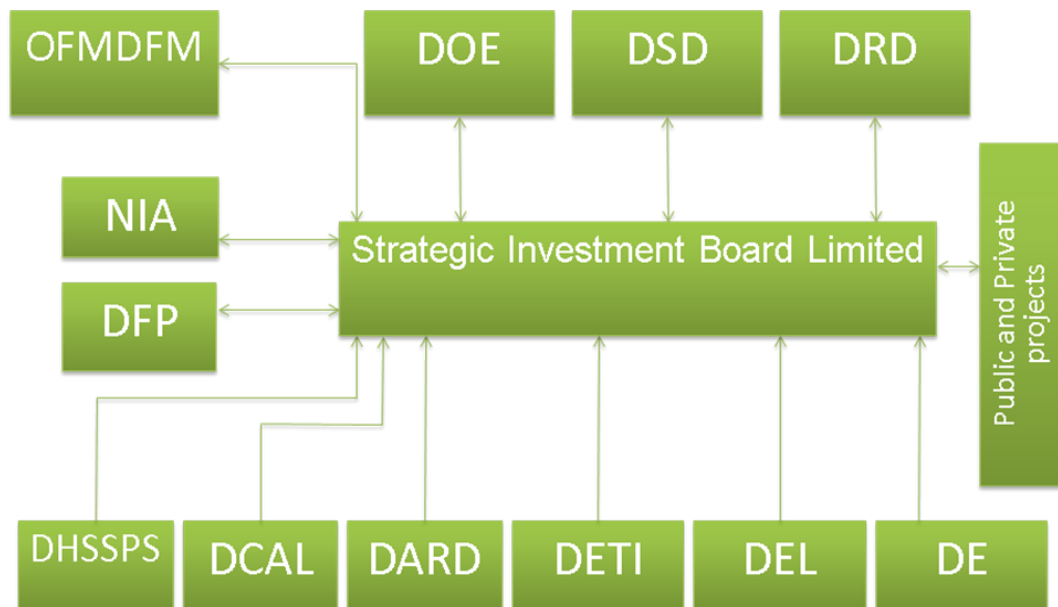
To add another layer of complexity, there is also the contemporary policy of regionalisation. Devolution of power and decision-making process in terms of infrastructure planning is not new. Local authorities often have a certain level

of planning powers in this respect. However, since the Labour government came into power in the 1990s, the notion of regional autonomy and governance was reinvigorated with a view to improve both national and regional competitiveness. On the face of it, empowering regions and localities to decide on infrastructure requirements seem logical from an efficiency perspective. The reality, however, is somewhat different. Firstly, the high-level structure of government at the national level is replicated in the regions, along with the complexities associated with the evolving structure. Second, financing of infrastructure development at the regional level is constrained by the control of funding located in central government, based on the Treasury's Comprehensive Spending Reviews. To redress the difficulties associated with the ever-changing structures of government departments and agencies, an alternative solution can be found in Northern Ireland.

### **Northern Ireland**

Northern Ireland has seen unprecedented development in recent years. Infrastructure development is paramount if economic growth were to be sustained. In order to better plan and deliver such development, a Strategic Investment Board Limited was set up to manage the requirements of individual Departments and ensure that projects were undertaken with the required skills and experience not usually found in the public sector (Strategic Investment Board Limited, 2008).

To do so, the Strategic Investment Board Limited interacts with a number of departments (outlined in the Appendix), as shown in Figure 2 below.



**Figure 2.** Coordination of infrastructure development in Northern Ireland

### **Key Observations from UK and Northern Ireland**

Although the structure of government in Mainland UK and Northern Ireland are greatly similar, one striking difference is the formation of the Strategic Investment Board Limited as an umbrella organisation that coordinates the requirements from various departments in relation to infrastructure development. This provides an overarching organisation that supports various government departments in shaping the future provision of public services by helping advising on how best to deliver infrastructure development in a responsive and efficient way. With an investment strategy of £20bn for the next ten years (2008 – 2018), the board is able to work with the requirements across all government departments to ensure that resource allocation meets the investment priorities set out by the government programme. This helps avoid disjointed thinking and implementation that could result from the complexities and plurality of government departments and agencies working in their silos.

### ***Germany***

Many city regions in Germany are suffering of suburbanisation, marked by an intensified regional division of labour, scarcity of land and fiscal resources within central cities, growing fiscal disparities between core city and suburban cities, shrinking local capacities to act vis-à-vis large private investors, and growing competition with other urban areas. The administrative response to these problems are so-called 'regional unions', 'conurbations', or 'special purpose associations (Zweckverband)'. These are considered as public law entities. Specific legislation has only been adopted in certain Laender (states) and for certain urban areas –namely for the conurbations of Stuttgart (Baden-Wuerttemberg), Frankfurt/ Main (Hessen), Hanover and Brunswick (Lower Saxony), Saarbrücken (Saarland), and Ruhr District [KRV] (North Rhine-Westphalia). All other metropolitan areas may establish inter-municipal co-operation under the provisions of the local government law and the law on inter-municipal co-operation. In addition to fees and earmarked transfers, regional unions are funded through contributions from the constituent municipalities and through their land specific transfers or equalisation. The planning system and infrastructure programmes in metropolitan regions do not differ fundamentally from that in other regions of the country. The scope of joint policies and the intensity of cooperation/ commitment in regional unions differ from union to union (see Figure 3 below).



Sector/Area	Stuttgart	Frankfurt	Brunswick	Hannover	Saarbrücken	KVR
Regional planning	●	●	●	●	●	▲
Transport	●	●	●	●	▲	×
Waste	●	●	▲	▲	▲	▲
Water	×	●	▲	▲	▲	×
Tourism	●	●	▲	▲	▲	×
Culture, sports, leisure	●	●	▲	▲	▲	●
Economic promotion	●	●	▲	▲	●	×
Environment	×	●	▲	▲	▲	●
Health	×	●	▲	▲	▲	×
Abattoirs	×	●	▲	▲	▲	×
Energy	×	●	▲	▲	▲	×
Others	×	▲	▲	▲	▲	▲
Requirements for additional tasks to be entrusted	2/3 majority	majority + agreement of supervisory authorities	unanimity	unanimity	by law	2/3 majority

● Mandatory Cooperation      ▲ Additional Cooperation      × No Cooperation

**Figure 3.** Intensity of cooperation between/commitment between sectoral stakeholders across the various regional unions.

Such regional unions, conurbations, or special purpose associations comprise of a varying number of autonomous local governments (compare Stuttgart with 179 local communities with Hanover with only 20). For this reason, no coherent socio-economic development plans are formulated by a region as a whole but rather by the respective sectoral departments of the local municipalities (Germany's Federal Office for Building and Regional Planning, 2008).

Coordination of infrastructure development is an iterative process involving public bodies representing public interest and sectoral stakeholders from government (Germany's Federal Ministry of Transport Building and Urban Affairs, 2008). The horizontal and vertical co-ordination of draft plans involving all public planning agencies is an important element of German planning. This means for regional planning a co-ordination with the Federation, the Ministries, Laender (States) and the municipalities (localities). The vertical dimension is defined as the co-ordination between different jurisdictional levels (national, regional, and local) which can be achieved if the high-level planning takes into account the planning objectives of the lower level, which, in turn, has to comply with high-level planning. This is known as the "principle of countervailing influence". On the horizontal path, formal co-ordination describes the co-ordinated action of public, semi-public and private actors at the same administrative level. Material co-ordination means the co-ordination between different plans with regard to their contents. Horizontal material co-ordination encompasses the integration of the interests and policies of

different planning sectors in comprehensive spatial plans, policies and funding programmes, which is necessary for higher overall efficiency of a single planning sector and for comprehensive spatial planning as a whole. Vertical co-ordination is described as the degree of conformity of plans or policies between different administrative levels, for example transport plans at the regional and local level.



**Figure 4.** *Iterative process of coordination in Germany*

In terms of the main government departments involved, the Federal Ministry of Transport, Building and Urban Affairs has the overall responsibility for spatial planning at federal level, which in turn works closely with Federal Office for Building and Regional Planning in the regions (see an explanation of these in the Appendix). Detailed process of how spatial planning occurs is depicted in Figure 5 below (Fuerst, 2002).

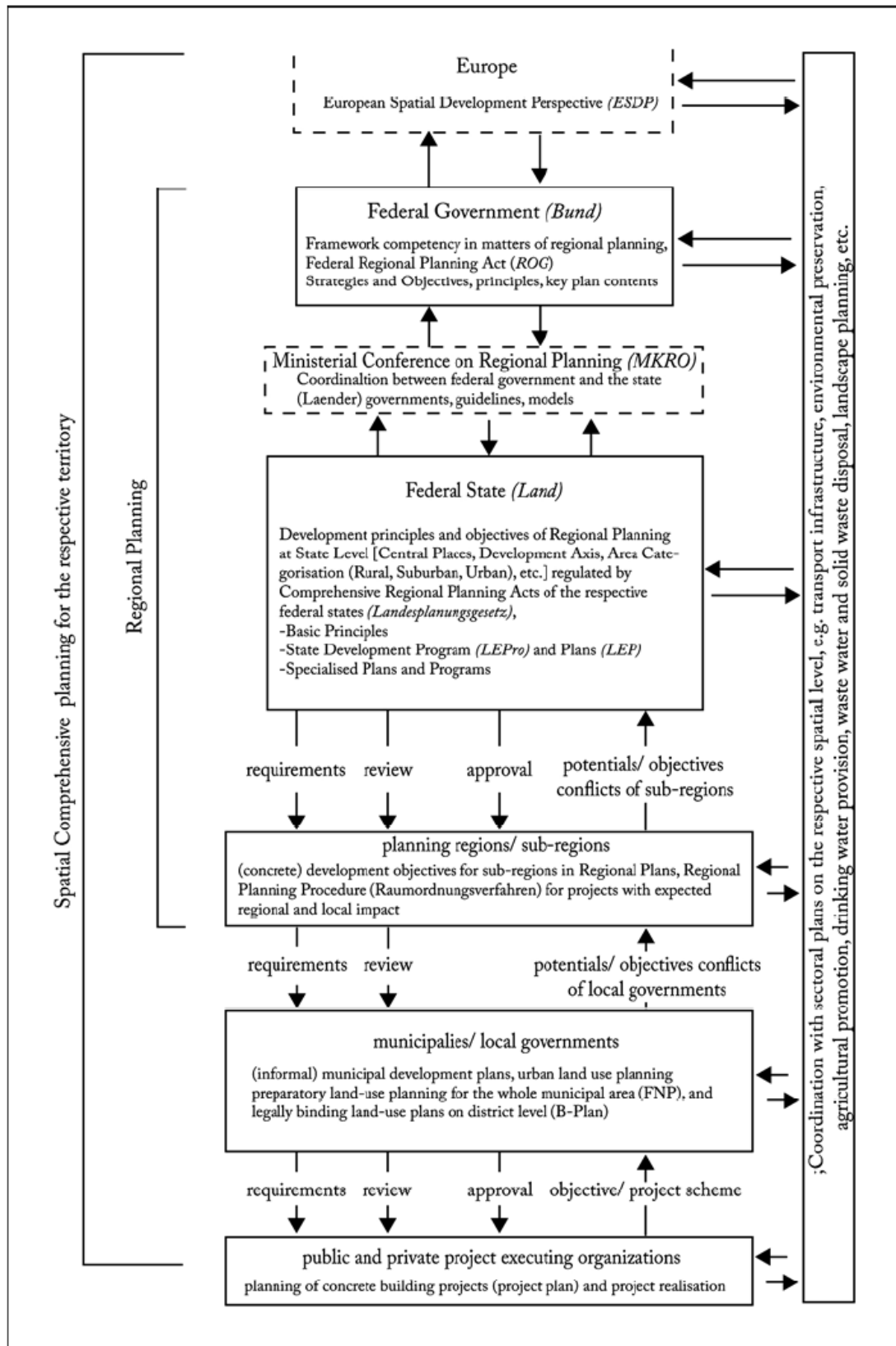


Figure 5. Overarching system of spatial planning in Germany

### **Key observations from Germany**

The process of planning and co-ordinating is characterised by constant negotiations between the involved participants, which can be time consuming and conflictual. Because there is no comprehensive development plan at the national level, any conflicts cannot be resolved through national policies. Conflicts are resolved on a case-by-case basis and often decision-making by the administrative court is necessary. The main deciding method is the process of consideration (weighting process) between all interests of public authorities and private persons by the responsible planning authority – for local land-use planning the municipality, for development projects of supra-local significance the responsible sectoral planning authority. Another problem for regional planning is that it can hardly be enforced against the will of local government, who enjoy a high degree of autonomy, granted by the constitution. Regional planning faces also difficulties to prevail against sectoral/special plans (e.g. National highway development program) because of a lack of own funds and because it has no implementation power. Comprehensive Regional Development is also often located in different ministries in the respective Laender (e.g. Ministry of Economy/ Infrastructure and Regional Planning/ Environment/ Interior) and thus funding, as well as the political priority varies considerably (Council of Europe, 2007).

### **South Korea**

In South Korea, the Ministry of Construction and Transportation is the key administrative body in charge of efficient territorial management, balanced regional development, enhancing national competitiveness, and construction and operation/management of major infrastructures.

Making most of the country's peninsular features to build an axis stretching to the world, creating a well-balanced territory, developing regions to suit their individual characteristics, building new towns and industrial parks, securing water and carrying out river improvement works, the ministry is trying to make our land a better, more pleasant place to live. One of the things that the ministry is focusing on at present is planning for 21st century's future-oriented territorial management and is devising development of multi-functional cities and transformation of Jeju into Jeju Free International City (South Korea's Ministry of Land Transport and Maritime Affairs, 2008).

Housing and transportation also come under the ministry's responsibilities. In housing, the ministry is doing its best efforts to improve housing conditions for all by stabilizing housing prices, providing more subsidized housing for low-income households, and repairing old and degraded housing, thereby enhancing people's lives. For more convenient public transportation, the ministry is continuing efforts to expand urban railways and improve bus and taxi services.

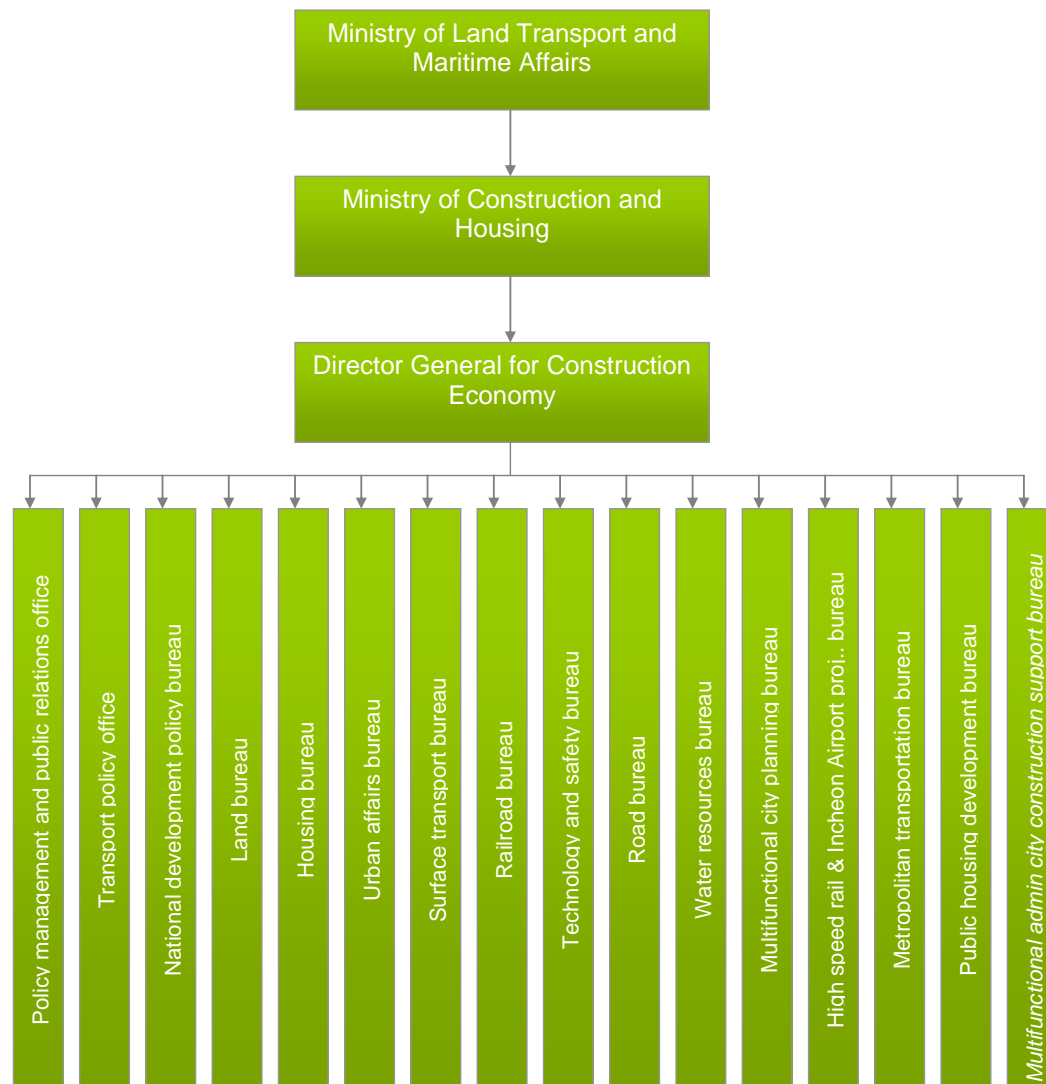
In construction, the ministry is working to strengthen the industry competitiveness by developing related technologies and adopting advanced systems. Korea invests about 15% of the GDP in the construction sector and

the construction industry has extended its activities to other countries based on the know-how and experience that it amassed in infrastructure projects at home. To date, Korean contractors have executed a number of major projects in countries around the world including the Al Jubayl Open Sea Tanker Terminal in Saudi Arabia, the Great Man-made River in Libya, and the Twin Towers in Malaysia. Today, Korea's construction companies are working on diverse projects in about 50 countries with special concentration in plant projects such as petroleum and gas facilities (World Bank, 2008).

Therefore, the Ministry of Construction and Transportation is the umbrella organisation that coordinates all infrastructure development throughout South Korea, chaired by the Director General for Construction Economy. The Director is responsible for construction related policies and promotion of the construction industry, promotion and coordination of overseas construction businesses by Korean contractors, development and promotion of construction equipment and materials, and managing bilateral relations and Free Trade Agreements with other countries, interacting with a range of international organisations such as WTO, APEC, OECD, and UNESCAP. Internally, the Director General for Construction Economy coordinates efforts with a number of public bodies and agencies (see Figure 6 below for an illustration of how infrastructure development is coordinated in South Korea; see also Appendix for explanation).

### **Key observations from South Korea**

In many respects, the structure of the various government departments and agencies mirror that of the UK government. However, there is a single Ministry of Construction and Transportation that oversees the delivery of infrastructure development. This enables a whole-systems view, whilst retaining individual autonomy in the various bureaus to formulate and implement the strategic priorities. It is also notable that the South Korean context emphasises capacity building (not just of the domestic market, but of work done internationally of Korean contractors) and research and development.



**Figure 6.** Coordination of infrastructure development in South Korea

## **Japan**

The Ministry of Land, Infrastructure, Transport and Tourism in Japan coordinates infrastructure development and represents the following:

- Government Buildings Department
- Policy Bureau
- International Affairs Division
- Tourism Policy and
- The Construction Industry

Within the Ministry, the National and Regional Planning Bureau (NRPB) play a crucial role in terms of spatial planning. The principal roles of the NRPB are to consider the ideal figure of Japanese land use and to make a comprehensive plan coordinating each fields such as urban, industrial and transportation policies, that is, to draw future plan of Japan, and to build a new national and regional planning system (*Japans Ministry of Land Infrastructure Transport and Tourism MLIT, 2008*).

There are also a number of activities that are undertaken by the NRPB, including:

- *Anti-disaster Measures:* The safety and security of residents in disaster-stricken area must be ensured by attempts to prevent reoccurrence of disasters. Disaster-related countermeasures will be carried out energetically and immediately even in the fiscal year when the disaster took place. Resettlement issues are therefore important and are closely associated with reform of the entire government. Contingency planning and resettlement policy reform will also help greatly to correct over-centralization in Tokyo and improve the country's ability to withstand disasters. The MLIT is pro-actively engaging in a wide range of publicity activities to inform the Japanese people of such issues
- *Creating Scenery:* This priority seeks to contribute to richer, more rewarding lives for the Japanese people, the NRPB carries out work to create scenery through flexible budgetary measures in response to needs during the fiscal year. These efforts are aimed both at creating excellent scenery and undertaking initiatives to help Japan become a powerhouse in tourism.
- *Putting Social Capital in Place:* The NRPB works to planned provision of social capital based on long-range planning conducted by ministries. It also coordinates adjustments between the wide-ranging projects that are under the jurisdiction of the various ministries.
- *Urban Renewal:* The NRPB undertakes initiatives to enable flexible handling of budgetary measures that become necessary during the fiscal year with respect to carrying out urban renewal projects.
- *Urban Renewal and Preparations for Scenic Facilities:* The NRPB carries out preparations for urban renewal projects and facilities related to projects to create excellent scenery.
- *Preparations for and Mutual Use of Geographical Information Systems:* The NRPB's National Land Information Office is vigorously undertaking GIS-related initiatives in a partnership with related government ministries / agencies and the private sector.
- *Preparation and Provision of National Land-related Information:* Starting April 2001, numerical land-related data has been provided gratis (download services) via the Internet. This data is made available for use in various areas as it covers a wide range of land-related information, including topography, land use, public facilities, roads, and railroads. As such, it is data that is the foundation for the formulation of national and regional plans such as the National Land Sustainability Plans and National Land Use Plans. This numerical land-related data facilitates analyses involving cross-matching of population statistics with other statistics because much of it is meshed with other data. The National Land Information Web Mapping System, which was opened to the public starting March 2003, allows numerical land information to be read in a browser and downloaded. Besides providing numerical land information, the system allows access to aerial photographs that were photographed from 1974 to 1990 (currently about 100,000 photos).
- *Studies of the Emergence of National Land-related Measures:* Studies of the emergence of national land-related measures have the objective

of promoting policies related to land use, development and preservation through the application of partnerships between the national and regional governments and bottom-up techniques. The necessary studies are carried out with the participation of the various related organizations in order to implement measures related to creating a national territory with an emphasis on local autonomy, proposals from regions, and partnerships between the national and local governments.

- *International Cooperation Regarding National And Regional Planning:* The NRPB actively conducts exchanges of opinion with other countries. These exchanges will be reflected the national land policy of Japan. More specifically, the NRPB constructively collects information on the national land policies of other countries through participation in international organizations such as OECD/TDPC (Organization for Economic Cooperation and Development / Territorial Development Policy Committee) and UN-HABITAT (United Nations Human Settlements Programme) as well as through bilateral exchange with Korea and multi-lateral exchange with developing countries in an effort to mutually improve planning capabilities for national land policy.

As a result of these activities, the MLIT interacts with a number of government departments, including the Land and Water Bureau, City and Regional Development Bureau, River Bureau, Road Bureau, Housing Bureau, Railway Bureau, Road Transport Bureau, Maritime Bureau, Ports and Harbors Bureau, Civil Aviation Bureau, Hokkaido Bureau, Director-General for Policy Planning, Policy Research Institute of Land, Infrastructure, Transport and Tourism, National Institute for Land and Infrastructure Management, Geographical Survey Institute, Labour Relations Commission for Seafarers, Japan Meteorological Agency, Japan Coast Guard, and Marine Accident Inquiry Agency.

### **Key observations from Japan**

In a similar vein to South Korea, there is a single Ministry of Land, Infrastructure, Transport and Tourism that oversees the delivery of infrastructure development. It is also interesting to note that contingency planning features heavily in the Japanese system, in part due to it being prone to natural disasters such as earthquakes and hurricanes. Nonetheless, it is also laudable that capacity building through strengthening of research and development expertise is also emphasised in the Japanese context.

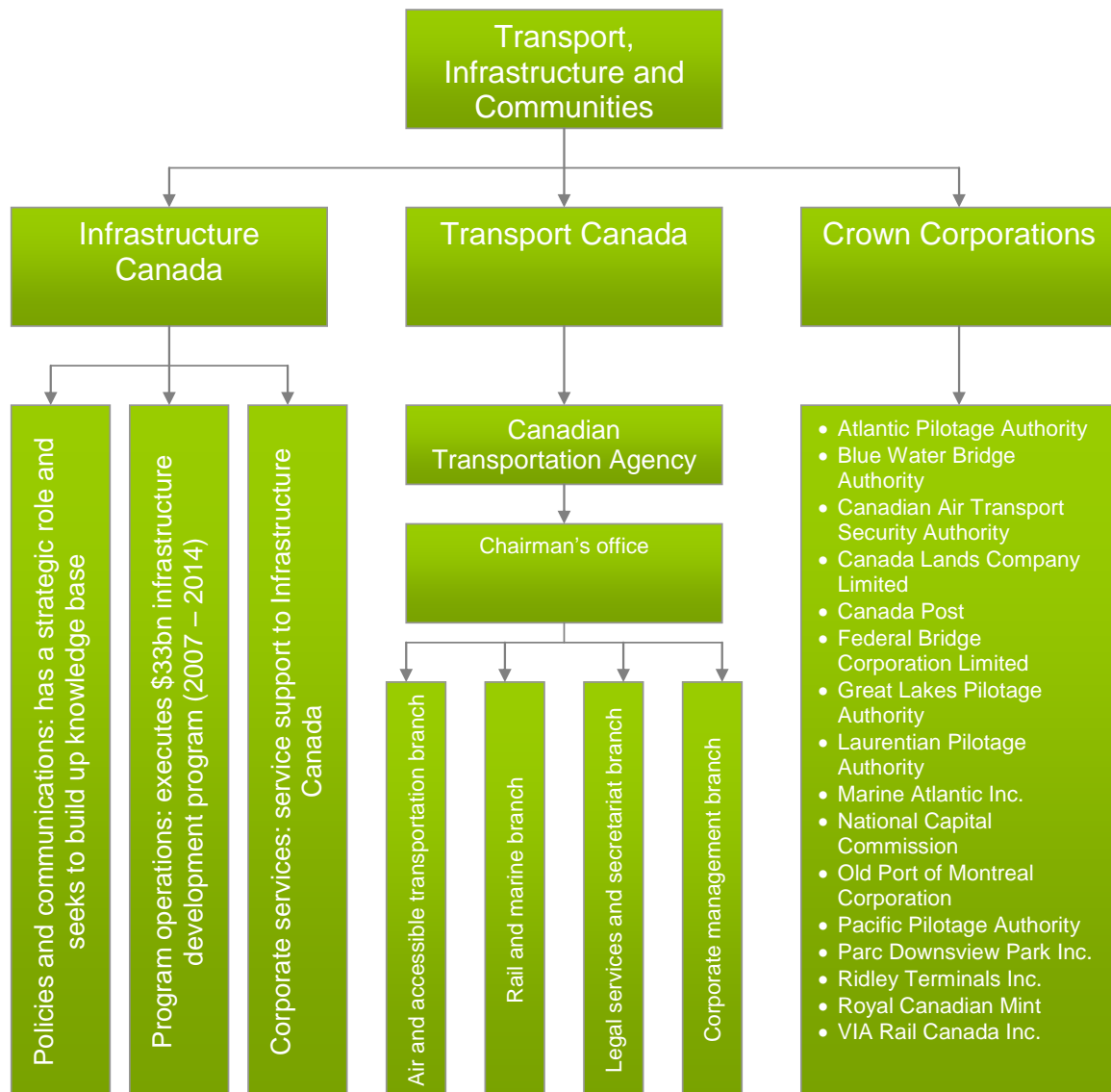
### **Canada**

The Transport, Infrastructure and Communities (TIC) Portfolio brings together Infrastructure Canada, Transport Canada, the Canadian Transportation Agency, the Transportation Appeal Tribunal of Canada, and 16 Crown Corporations (see Figure 7 below). Together, they contribute to rural and urban infrastructure, and make sure that roads, bridges, railroads, ports and airports are well-placed, well-built, well-kept, safe and secure. Their work supports the economy, the environment and the health of Canada's



communities. Working together makes sense because these institutions work on many of the same issues and problems affecting Canadians and their communities across the country. Furthermore, integrative working saves time and money and allows policy and decision makers see the bigger picture, i.e. how a decision in one area can affect other areas. For example, when funding new highways or public transit, decision makers think about how this infrastructure will affect the cities and towns they run near or through. They answer questions like:

- Will industry move here and create jobs since shipping and local travel is efficient?
- How can we create less pollution when we move more goods and people through the area?



**Figure 7.** Coordination of infrastructure development in Canada

Therefore, the basic priorities of job creation and environmental responsibility are paramount. TIC Portfolio organisations work with all levels of government. While the Government of Canada makes and enforces laws, sets national rules about safety and security, lays out infrastructure policies, and makes

investments in community projects, it respects the fact that provinces, territories, cities and towns all have their own areas of responsibility. This is how the principles of open federalism and fiscal balance work. The portfolio's combined knowledge, research and experience make TIC Portfolio an example of leading-edge public policy and good decision-making. The constituent parts of TIC Portfolio will be further explained in turn.

#### *Infrastructure Canada*

It provides a focal point for the Government of Canada on infrastructure issues and programs. The department that makes up Infrastructure Canada is explained in the Appendix.

#### *Transport Canada*

Transport Canada's mission is to develop and administer policies, regulations and services for the best transportation system for Canada and Canadians — one that is safe and secure, efficient, affordable, integrated and environmentally friendly (Transport Canada, 2008). An executive agency - *Canadian Transportation Agency* – facilitates the implementation of policies developed in Transport Canada. The Agency is an independent, quasi-judicial tribunal that makes decisions on a wide range of economic matters involving federally-regulated modes of transportation (air, rail and marine). Along with its roles as an economic regulator and an aeronautical authority, the Agency works to facilitate accessible transportation, and serves as a dispute resolution authority over certain transportation rate and service complaints. The Agency is divided, administratively, into five branches: the Air and Accessible Transportation Branch; the Rail and Marine Branch; the Legal Services and Secretariat Branch; the Chairman's Office; and the Corporate Management Branch (see the Appendix for the remit of these branches).

Finally, the TIC Portfolio also works closely with *16 Crown Corporations*. There are 16 Crown Corporations that report to Parliament through the Honourable Lawrence Cannon, Minister of Transport, Infrastructure and Communities. They are:

- Atlantic Pilotage Authority
- Blue Water Bridge Authority
- Canadian Air Transport Security Authority
- Canada Lands Company Limited
- Canada Post
- Federal Bridge Corporation Limited
- Great Lakes Pilotage Authority
- Laurentian Pilotage Authority
- Marine Atlantic Inc.
- National Capital Commission
- Old Port of Montreal Corporation
- Pacific Pilotage Authority
- Parc Downsview Park Inc.
- Ridley Terminals Inc.
- Royal Canadian Mint
- VIA Rail Canada Inc.

### **Key observations from Canada**

The Canadian example also supports the notion of having an umbrella organisation to oversee infrastructure development. This allows for better coordination of strategy formulation, execution of strategic priorities and funding mechanisms. Indeed, TIC Portfolio manages a comprehensive infrastructure programme that sets to deliver a historic \$33bn infrastructure plan, including funds secured for *inter alia* public transportation (\$400m), border infrastructure (\$600m), water and waste treatment (\$1.2bn), infrastructure development (in excess of \$6bn) over a seven-year period (2007 – 2014). Having TIC Portfolio coordinate these investments enables a single umbrella organisation to have a whole-systems view of strategic and operational activities. Furthermore, it is evident through their interactions with the crown corporations that the TIC Portfolio facilitates collaboration between public and private sector organisations. The TIC Portfolio also works closely with the Canadian Society of Civil Engineers in capacity building and knowledge sharing activities.

### **Conclusions and Recommendations**

The brief desktop review revealed a number of interesting findings. First, the political governance landscape in terms of the structure of government is fairly similar across the various countries under investigation. At least in name, similar government departments and agencies exist to strategise and deliver on infrastructure development, based on a number of fundamental core principles, including the need for job creation, accessible transportation, decent and affordable housing, environmental responsibility and mitigation against disasters. Furthermore, there is evidence of greater collaboration between public and private sector stakeholders in delivering infrastructure development.

Notwithstanding these similarities, there are subtle differences in terms of how government departments, bodies and agencies interact with each other. It was found that in Northern Ireland, South Korea, Japan and Canada, an umbrella organisation exists to coordinate efforts in strategy formulation, operational delivery and the sourcing and allocation of funds with regards infrastructure development. So in Northern Ireland, this is undertaken by a strategic investment board that largely plays an advisory role, whilst in South Korea and Japan, this is within the remit of a named Ministry. In Canada, a government department also coordinates a series of infrastructure development programmes.

On the contrary, whilst there may be potential inefficiencies in the German system, deriving from the time-consuming process of public engagement, coordination of relevant public, semi-public and private actors are undertaken at state, regional and local planning levels (with the local authority enjoying a lot of autonomy in deciding spatial planning requirements). The level of engagement between sectoral stakeholders is also governed by statutory instruments and there is an explicit system that describes how infrastructure

development takes place. The system is driven largely by spatial requirements by sectoral stakeholders. This heavily involves public engagement. Moreover, lessons can be learnt from the German system as to how devolution of the decision-making process to the regions and localities may be undertaken.

By contrast, the UK system (excluding Ireland) consists of a plurality of government departments and agencies, each having some level of influence in terms of contribution to infrastructure development. Unlike the German system, there is no explicit process of how organisations should interact with each other. This lack of clarity is further exacerbated by the constant restructuring of government departments. As a result, departments and agencies potentially compete with one another to secure funding for infrastructure projects, at the expense of the whole-systems view. The examples presented from this cross-country comparison highlights alternative arrangements that can be adopted in the UK context, albeit with a need for institutional reform. The UK face a number of contemporary societal challenges in recent times, including the need for affordable, sustainable housing provision, the strengthening of flood defences and the securitisation of energy sources. This requires joined-up thinking in the way infrastructure is developed to meet these needs. This report presents some alternative arrangements from other countries that may be adopted to create a more holistic, efficient approach to meet these challenges.

It is important to note that this study is limited in scope. Much of the discussion and key observations made in this report are derived from a cursory review of information resources from web pages from government sources of the selected countries in question. Therefore, more work needs to be done to verify if the alternative arrangements are indeed effective in practice, as well as how the UK might be able to adopt best practice in reality.

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## Appendix

### **Brief remit of key departments in Northern Ireland involved with the Strategic Investment Board Limited**

- *Department of Agriculture and Rural Development (DARD)*: this department has a vision of developing a thriving and sustainable rural community and environment, with a remit to improve performance in the market place, strengthen the social and economic infrastructure of rural areas, enhance animal, fish and plant health and welfare, develop a more sustainable environment, and deliver efficiently our services to customers.
- *Department of Culture, Arts and Leisure (DCAL)*: the overall aim of the Department is to “create a confident, creative, informed and vibrant community”. In pursuing this aim, the objective of the Department is to protect, nurture and grow the cultural capital for today and tomorrow.
- *Department of Education (DE)*: this department is charged with educating and developing young people to the highest possible standards, providing equality of access for all.
- *Department for Employment and Learning (DEL)*: this department aims to promote learning and skills for the workplace and the economy.
- *Department of Enterprise, Trade and Investment (DETI)*: with a remit to promote the development of a globally competitive economy by encouraging development of high value-added, innovative, enterprising and competitive economy.
- *Department of Finance and Personnel (DFP)*: charged with helping the Executive secure the most appropriate and effective use of resources and services for the benefit of the community.
- *Department of Health, Social Services and Public Safety (DHSSPS)*: responsible for improving the health and social well-being of the people of Northern Ireland by creating a safer environment for the community and reducing preventable disease and ill-health.
- *Department of the Environment (DOE)*: with a remit to promote sustainable development and to secure a better and safer environment by protecting, conserving and enhancing the natural environment and built heritage and support the adoption of the principles of sustainable development; to plan and manage development in a sustainable way which will contribute to a better environment and which is modern and responsive to the community; to work with statutory and voluntary partners to reduce road deaths and serious injuries; and to support a system of effective local government which meets the needs of residents and ratepayers.
- *Department for Regional Development (DRD)*: tasked with maintaining and enhancing a range of essential infrastructure services and by shaping the region’s long-term strategic development through the development of safe transportation networks and maintaining modern, high quality water and sewerage services.

- *Department for Social Development (DSD)*: responsible for addressing under-privileged, disadvantaged groups and building communities through encouraging self-sufficiency and reducing dependence on welfare benefits.
- *Office of the First Minister and Deputy First Minister (OFMDFM)*: with the overall aim to build a peaceful, fair and prosperous society by driving investment and sustainable development.
- *Northern Ireland Assembly (NIA)*

### **Brief remit of key departments in Germany involved with infrastructure development**

- *Federal Ministry of Transport, Building and Urban Affairs*: The challenges in infrastructure development must be seen against the background of the space-relevant trends in demographic and economic structural changes as well as in settlement, traffic and infrastructure development. General social trends, in particular, in globalisation, European integration and German reunification, have had effects on current and future developments and lead to changes in the spatial structure of Germany. The Federal Government and federal state ministers responsible for infrastructure planning have adopted on 30 June 2006 new "Concepts and Strategies for Spatial Development in Germany", and in doing so have given themselves a joint development strategy for the cities and regions of Germany. The concepts state that infrastructure development should consider the need to stimulate growth and innovation, ensuring public services meet the needs of the public and the conservation of resources and shaping of cultural landscapes.
- *Federal Office for Building and Regional Planning*: The BBR supports international cooperation in the field of regional planning through scientific information on regional development in Europe as well as programme and project management. It is involved with concepts and instruments of Europe-oriented regional development policy. In order to provide expert support on regional planning policy on federal and state levels, it concerns itself with the fundamental regional development processes in Germany and also carries out cross section oriented analyses and prognoses (regional development prognoses). Plans, programmes and instruments of regional development policy are comparatively evaluated nationwide. It maintains a database of regionalised spatially effective means as a basis for a continuous executive control of regionally effective investments and measures and regularly develops regional planning reports for submission to the German Bundestag via the federal minister responsible for regional development.
- *Regionally significant funds*: A regionally significant fund in the narrower sense refers to public expenditure to finance measures and plans which serve the improvement of the infrastructure and the regional economic structure. The federal expenditure is in the foreground of this financing. The role of the BBR in the context of

Regionally Significant Funds is to ensure that spatial planning aligns with funding available at the regional and EU levels (Council of Europe, 2007; European Spatial Planning Observation Network, 2008).

### **Brief remit of key departments in South Korea involved with infrastructure development under the authority of Director General for Construction Economy**

- *Policy Management and Public Relations Office*: responsible for integration and coordination of ministry's policies and programs, preparation and allocation of the budget, general management of the organization; drafting and reviewing legislative bills, information management and contingency planning
- *Transport Policy Office*: responsible for coordinating national transport policy, implementation of logistics facility policy, management of freight trucking system, establishment of basic traffic safety plan, and development and application of Intelligent Transport Systems (ITS)
- *National Development Policy Bureau*: involved in the formulation and implementation of the Comprehensive National Territorial Plan (CNTF), planning and coordination of infrastructure in the construction and transportation sector, and promotion of private participation in infrastructure, and formulation and implementation of policies and plans for the capital region and regional development at large.
- *Land Bureau*: formulates and implements land policies, and establishes and implements land management system, including the development of the land valuation system and National Geographic Information System
- *Housing Bureau*: responsible for the Formulation and coordination of housing policies, housing construction and management and the improvement of residential environment
- *Urban Affairs Bureau*: establishes and implements urban policies, design and manages restricted development zone and urban parks and execution and direction of architectural matters
- *Surface Transport Bureau*: with a remit of establishing and coordinating comprehensive surface transportation policies, and responsibly for policies on urban and regional transport, as well as formulation of motor vehicle-related policies and plans
- *Railroad Bureau*: involved in the research, development and drafting of Rail Industry Development Act and rail industry policies; formulation and adjustment of Basic Plan for Development of Rail Industry, and enforcement of the Rail Business Act, as well as the drafting and implementation of rail construction systems, and formulation mid/long-term rail construction and investment plans, and contingency planning
- *Technology and Safety Bureau*: responsible for formulation and coordination of construction technology policies, development and management of design & construction standards, formulation and implementation of environment-friendly construction policies, and development and implementation of construction safety policies



- *Road Bureau*: formulation and development of road policies, establishment of medium and long-term road development plans, preparation and allocation of budget for national expressways and highways, and research and development of road construction and maintenance technologies
- *Water Resources Bureau*: responsible for formulation of comprehensive water resources development policies and plans, construction and management of multi-purpose dams and integrated water supply systems, planning and management of rivers and canals, as well as groundwater conservation
- *Multifunctional City Planning Bureau*: responsible for research, development and formulation of multifunctional city policies, drafting new bills and amendments of existing regulations relating to multifunctional cities, in charge of matters dealing with standards for new town planning, selection of locations for new town development areas, and overall corporate city policy-making
- *High Speed Rail and Incheon Airport Projects Bureau*: formulation of basic plan for construction of Gyeongbu High Speed Rail and project management of high speed rail construction, Incheon International Airport, and development of international business zones and free trade zones
- *Metropolitan Transportation Bureau*: formulation of metropolitan transportation plans and transportation/traffic improvement measures necessitated by large-scale development projects, and coordination of transportation plans affecting the capital region and management of metropolitan transportation facilities and their construction
- *Public Housing Development Bureau*: responsible for public rented housing policies and construction plans, as well as securing funds for construction and purchasing of public rented housing
- *Multifunctional Administrative City Construction Support Bureau*: in charge of overall management and coordination of ministry's matters relating to construction of Multifunctional Administrative City, including providing support to the Presidential Committee on Multifunctional Administrative City Construction

### **Brief remit of key constituent parts of the Transport, Infrastructure and Communities (TIC) Portfolio in Canada**

- *Infrastructure Canada* is made up of:
  - *Policy and Communications*: The Policy and Communications Branch identifies and assesses broad infrastructure issues, priorities and needs for potential federal action; conducts research, independently and in conjunction with partners, which contributes to policy work; builds, connects and shares knowledge to help develop a wider understanding of infrastructure issues affecting cities and communities in Canada and abroad; communicates on the department's mandate; coordinates federal communications on infrastructure; and assists the Deputy in providing policy advice to the Minister.

- *Program Operations*: The Program Operations Branch implements programs, manages infrastructure funding agreements, and provides risk management and analysis, environmental stewardship, and program evaluations. It also manages the federal Gas Tax transfer to Canadian municipalities that is meant to support environmentally sustainable infrastructure.
- *Corporate Services*: The Corporate Services Branch provides support and services for corporate functions such as procurement, IM/IT including the department's major program management system, called the Shared Information Management System for Infrastructure (SIMSI), human resources, finance, security, planning and administration, and internal audit and evaluation.
- *The Canadian Transportation Agency* is made up of:
  - The Air and Accessible Transportation Branch processes licenses and charter permit applications from Canadian and foreign air carriers, and is involved in enforcing Agency licensing requirements. It helps negotiate and implement international air agreements, administers international air tariffs, and rules on appeals of NAV CANADA user charges. It also handles air travel complaints. The branch helps to ensure that all modes of federally-regulated transportation are accessible to persons with disabilities, and deals with their complaints related to air, rail and marine transportation.
  - The Rail and Marine Branch deals with rate and service complaints in the rail and marine industries, as well as disputes between railway companies and third parties in railway infrastructure matters. The branch offers mediation services as an alternate dispute resolution mechanism to the hearing process. It processes applications for certificates of fitness for the proposed construction and operation of railways, and provides technical advice and recommendations to Members concerning railway interswitching rates. Railways' revenue caps for the movement of western grain, the development of railway costing standards and related regulations, and the audit of railway companies' accounting and statistics-generating systems (as required), are also the responsibility of the branch. It also protects the interests of Canadian vessel operators when dealing with applications to use foreign vessels in Canada, while making recommendations to the Canada Customs and Revenue Agency to allow the use of foreign vessels when suitable Canadian vessels are not available.
  - The Legal Services and Secretariat Branch participates actively in all matters brought before the Agency, by providing legal advice and counsel and by ensuring that the rules of fairness are followed in the process leading to a decision or an order. The Branch also plays a major role in developing and applying the Agency's procedures and regulations. It represents the Agency

before the Courts, including the Federal Court of Appeal and the Supreme Court of Canada, when Agency decisions are submitted to the appeal process. Branch staff also assists with the conduct of Agency meetings and hearings. The Secretary has the duty, pursuant to the Canada Transportation Act, to maintain a record of any rule, order, decision and regulation of the Agency.

- The Chairman's Office includes the Internal Auditor and the Communications directorate. The Internal Auditor is responsible for providing management with objective assessments about the design and operation of management practices, control systems, and information, in keeping with modern comptrollership principles. The Communications directorate is a proactive partner with the branches in ensuring that Canadians interested in transportation understand their rights, their obligations and the Agency's role under the Canada Transportation Act. The Communications directorate publishes brochures and booklets; it sends out news releases, responds to information requests and operates a Web site; it participates at events and trade shows with Members and staff to meet Canadians face-to-face to answer their questions directly. Because the Agency has diverse audiences with varying needs, it provides its information in many formats, including paper, electronic, braille and audio cassette.
- The Corporate Management Branch supports the overall function of the Agency by providing corporate services related to human resources, strategic planning, finance, electronic information systems, records management and the library.