Organisation for Economic Co-operation and Development

SDD/CSSP/WPNA(2021)1/REV1

Unclassified

English - Or. English

20 September 2021

STATISTICS AND DATA DIRECTORATE
COMMITTEE ON STATISTICS AND STATISTICAL POLICY

Working Party on National Accounts

Defining infrastructure

The OECD Horizontal Project on 'Strategic Policies for Sustainable Infrastructure' has the goals of ensuring that infrastructure meets its economic, environmental, social, and development objectives; and addressing emerging challenges and issues in the field of planning, investing in, and financing of infrastructure investments. The project contains a strong measurement agenda, not only by way of collecting detailed metadata on large individual infrastructure projects, but also by monitoring relevant investments and capital stocks at the macro and meso level. All of this requires a common understanding and definition of what infrastructure entails, which is the topic of this note.

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JT03481167

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1. Introduction

1. The OECD has embarked on a Horizontal Project on 'Strategic Policies for Sustainable Infrastructure', with the goals of ensuring that infrastructure meets its economic, environmental, social, and development objectives; and addressing emerging challenges and issues in the field of planning, investing in, and financing of infrastructure investments. As such, the project tries to address the challenge of accelerating current infrastructure investment, while recognising that infrastructure investment is complex and long-term by nature, involving numerous risks and stakeholders, and needing policymakers to move beyond a more traditional silo-ed approach. The horizontal project contains a strong measurement agenda, not only by way of collecting detailed metadata on large individual infrastructure projects, but also by monitoring relevant investments and capital stocks at the macro and meso level. All of this requires a common understanding and definition of what infrastructure entails, which is the topic of this note.

2. The international standards for compiling official statistics do not provide any definition of what is commonly referred to as 'infrastructure'. The Central Product Classification (CPC), Version 2.1,[2] contains several references to infrastructure, but does not provide a definition of which types of expenditures should (not) be included. The Classification of the Outlays of Producers according to Purpose (COPP)[3] actually separates out a specific category for 'outlays on infrastructure' by enterprises, but again no definition is provided. From the further breakdown of the latter category into 01.1 Outlays on road and land construction and improvement; 01.2 Outlays on engineering and related technological work; and 01.3 Outlays on information management,[4] one can however derive that a rather broad group of expenses is included under infrastructure.

[1] The author would like to acknowledge and thank the following people for providing feedback on an earlier version of this note: Jennifer Bennett (US BEA), Brenda Bugge (Statistics Canada), Marianthi Dunn (UK ONS), Juan Garin (OECD), Richard Heys (UK ONS), Robert Kornfeld (US BEA), Maarten van Rossum (Statistics Netherlands, Dan Sichel (Wellesley College, USA), Matthew Steel (UK ONS), Margot Weijnen (Technical University Delft, The Netherlands), and David Wasshausen (US BEA). The paper has also benefited from the feedback provided by various countries, as part of a consultation of the members of the OECD Working Party on National Accounts.

[2] See https://unstats.un.org/unsd/classifications/unsdclassifications/cpcv21.pdf.

[3] See https://unstats.un.org/unsd/publication/SeriesM/SeriesM_84E.pdf.

[4] This category is further broken down into 01.3.1 Outlays on operating purposes of information management; and 01.3.2 Outlays on development of software.

3. The international standards for macroeconomic statistics, the 2008 System of National Accounts (2008 SNA)[5] and its European equivalent, the European System of Accounts 2010 (ESA 2010),[6] also do not provide clear guidance. Paragraph 20.144 of the ESA 2010 includes implicit guidance by referring to "… *infrastructure assets, such as roads and communications facilities*", while paragraph 20.277 says, in relation to Public Private Partnerships (PPPs), that these PPPs may relate to *"… infrastructure assets because many of the large projects undertaken by means of PPPs involve the provision of transportation, communications, utilities, or other services typically described as infrastructure services*". More generally, when it comes to breaking down investment categories, both standards for compiling national accounts typically distinguish types of assets, such as dwellings, non-residential buildings, transport equipment, ICT-equipment, R&D, software, etc. Broader functional categories, such as 'infrastructure', are not being defined.

4. In this note, a proposal for a definition of infrastructure is put forward, starting, in Section 2, with some general notions of what is typically meant with this functional category. In Section 3, the work done by a number of countries on developing satellite accounts or extended accounts on infrastructure is taken on board. Subsequently, in Section 4, some considerations around defining infrastructure are dwelt upon, on the basis on which a definition is proposed in Section 5.

5. The paper does not address the question of how to define the part of infrastructure that is instrumental to the objective of environmental sustainability. Here, reference is only made to Chapter IV of the System of Environmental-Economic Accounting 2012 Central Framework,[7] which contain more precise definitions on such a functional classification. In this respect, especially paragraphs 4.95 – 4.109, on the definition of environmental goods and services, are considered highly relevant.

2. General notions of infrastructure

6. Wikipedia, with reference to Dictionary.com, defines infrastructure as follows: "*infrastructure is the set of fundamental facilities and systems that support the sustainable functionality of households and firms, including the services and facilities necessary for its economy to function. Infrastructure is composed of public and private physical structures such as roads, railways, bridges, tunnels, water supply, sewers, electrical grids, and telecommunication (including internet connectivity and broadband access). In general, infrastructure has been defined as "the physical components of interrelated systems providing commodities and services essential to enable, sustain, or enhance societal living conditions and maintain the surrounding environment*"".

7. In respect of the above definition, it is also noted that one could classify types of infrastructure into two quite distinctive types of infrastructure: hard infrastructure and soft infrastructure. Hard infrastructure would then refer to the physical networks necessary for the functioning of a modern economy, and would include the examples included in the above definition. Soft infrastructure would refer to "*all the institutions that maintain the economic, health, social, environmental, and cultural standards of a country*", including

[5] See https://unstats.un.org/unsd/nationalaccount/docs/sna2008.pdf.

[6] See https://ec.europa.eu/eurostat/documents/3859598/5925693/KS-02-13-269-EN.PDF/44cd9d01-bc64-40e5-bd40-d17df0c69334.

[7] See https://seea.un.org/sites/seea.un.org/files/seea_cf_final_en.pdf.

education programs, official statistics, parks and recreational facilities, law enforcement, emergency services, etc.

8. The above definitions contain various elements or conditions for considering something as part of infrastructure. First of all, it typically refers to investments and capital stocks, as suggested by the references to facilities, systems and structures. As such, it does not refer to current expenses on, for example, regular maintenance of the structures in place. Furthermore, the definitions put emphasis on the physical nature of infrastructure investments and assets, although reference is also made to internet connectivity and broadband access, which seems to open the door to the inclusion of intangible assets, or intellectual property products, as well.

9. More generally, infrastructure typically provides a fundamental support function to enable, sustain or enhance societal living conditions. From a more traditional perspective, infrastructure tends to refer to large scale projects with a *public good* character, the latter in the sense that the use of these facilities are often shared by many (economic) agents, and that this use is often indivisible and cannot be attributed to single agents. As such, a significant share of infrastructure can be considered as *non-rival* and *non-excludable*. However, congestion may have become an issue for quite a number of infrastructure assets (e.g. roads and connections to Internet), thus making them rival assets. Moreover, nowadays, with the privatisation of many facilities and systems which are considered fundamental for the functioning of the society, and also because of the increasing digitalisation of the economy, more and more infrastructure has the character of *club goods*, in the sense that the use of the facilities and systems remains non-rival, but becomes excludable. Examples concern toll roads, access to broadband connectivity, etc.

10. The services provided by infrastructure also often have the character of *merit goods*, whose use would be under-consumed in a competitive open market economy, because the benefits to the private users tend to be smaller than the public benefits for the society as a whole, and because the long-term benefits tend to be underestimated, as compared to the short-term benefits. To maximise societal utility, governments therefore need to step in either as the one who produces these services, or by subsidising private producers.

3. Country perspectives

11. At least four OECD member states have experience in developing satellite accounts, or extended accounts, on infrastructure: Canada, the Netherlands, the United Kingdom, and the United States. Three of them focus on infrastructural investments and capital stocks. The Dutch study on the other hand is focusing on the value added generated by economic activities related to infrastructure. After paying attention to what the OECD Horizontal Project on 'Strategic Policies for Sustainable Infrastructure' currently has to say on infrastructure, each of the country studies is summarised below.

12. The OECD Horizontal Project has not tried to provide an agreed definition of infrastructure. However, in the 'Implementation Handbook for Quality Infrastructure Investment' (forthcoming), the following description is included: "*Infrastructure provides the backbone of modern well-functioning economies by providing connectivity through enabling the flow of goods, people and information, and by supplying the necessary inputs in the form of energy and water that constitute the foundation for most commercial and industrial activity. Infrastructure is also critical for delivering many services, such as electricity, water and sanitation, digital telecommunications, public transport, health care*

and education, and flood protection that are essential for health and quality of life, and for providing protection against natural elements".

13. It is clear that the **OECD Horizontal Project** starts from a relatively broad definition, including infrastructure for delivering education and health services. Furthermore, 'connectivity', in the sense of enabling the flow of goods and services, people and information, is a key word in the description of what is being considered infrastructure, although other types of structures are not excluded. Furthermore, reference is made to a variety of functions which are considered basic or fundamental for the functioning of a society: transport, energy, water, sanitation, communications, protection against natural elements, education and health.

14. In the research conducted by the **United Kingdom** Office for National Statistics (UK ONS),[8] the starting point is "*a simple functional approach to defining infrastructure, identifying six 'types' of physical capital assets, which we jointly refer to as 'economic infrastructure', where the flow of services or benefits accrues to multiple industries beyond the industry possessing the asset: transport; energy; water; waste; communications; and flood defences*". [9]

15. In further specifying this definition, UK ONS notes that they have included neither housing nor social infrastructure (such as the education and health systems), but that there may be scope to extend the definition, subject to further investigations. Furthermore, the relevant expenditures on infrastructure are limited to "*expenditure on forming new infrastructure assets and major expenditure to repair and maintain existing infrastructure assets*", which in the SNA are classified as investments.

16. In quantifying their definition, UK ONS uses, for the government sector, investment expenditures on certain functions of government (COFOG): 4.5 – transport; 4.6 – communication; 5.1 – waste management; 5.2 – waste water management; 6.3 – water supply; and 6.4 – street lighting. This means that smaller investment items, which typically would not qualify as infrastructure, may be implicitly accounted for as infrastructure investments, an example being the purchase of transport equipment included under item 4.5. One may assume, however, that the impact is not that large. For the market sector, data on investments in the SNA asset category 'other structures',[10] adjusted for other buildings, are basically used as a starting point. This may indeed be a good approximation, although

[8] See www.ons.gov.uk/releases/developingnewstatisticsofinfrastructureaugust2018.

[9] Please note that this definition perfectly aligns to the one used by UK National Infrastructure Commission. However, the UK Government's Infrastructure and Projects Authority also includes the science and research infrastructure and housing in its definition of (economic) infrastructure.

[10] Paragraph 10.76 of the 2008 SNA defines other structures as follows: "Other structures include structures other than buildings, including the cost of the streets, sewer, etc. The costs of site clearance and preparation are also included. Public monuments for which identification as dwellings or non-residential buildings is not possible are included as are shafts, tunnels and other structures associated with mining mineral and energy resources, and the construction of sea walls, dykes, flood barriers etc. intended to improve the quality and quantity of land adjacent to them. The infrastructure necessary for aquaculture such as fish farms and shellfish beds is also included". The following examples are mentioned in paragraph 10.77: civil engineering works, such as highways, streets, roads, railways and airfield runways; bridges, elevated highways, tunnels and subways; waterways, harbours, dams and other waterworks; long-distance pipelines, communication and power lines; local pipelines and cables, ancillary works; constructions for mining and manufacture; and constructions for sport and recreation.

some items, such as constructions for mining and manufacture, and constructions for sport and recreation, would also be included.

17. The study on infrastructure by Statistics **Netherlands**, as commissioned by Next Generation Infrastructures (NGInfra) consortium, focuses on the value added generated by economic activities related to infrastructure. The definition applied in this study deviates from the traditional 'hard infrastructure' definition, which is generally restricted to immovable physical infrastructure assets, such as roads, railway lines, cables and pipelines. Instead, the Dutch study defines infrastructure as "*the system that provides essential services for society and the economy*", more specifically: flood protection and water management; energy (electricity, heat, transport and heating fuels); transport of people and goods (overland, by air, sea and rail); information and telecommunications, including digital communications (fixed and mobile); provision of safe drinking water; and sanitation and solid waste management. It thus includes the entire supply chain for each one of the aforementioned essential services, including production and conversion facilities (e.g. oil refineries producing transport fuels from crude oil), the use of movable assets (e.g. trains) and the management and control systems (e.g. traffic management) without which safe and reliable services cannot be supplied. Similar to the UK-study, the Dutch research focuses on 'hard infrastructure' or, as it is being referred to in the Dutch study, 'economic infrastructure', and does not relate to 'soft infrastructure' or 'social infrastructure', such as assets and activities related to education and health.

18. Looking at the research done by **Canada**,[11] Statistics Canada comes up with a more precise definition of infrastructure. Starting with a more generic notion of the functions of infrastructure, i.e. providing an important foundation that is required to support economic growth, quality of life and security, and building upon work done by the OECD and the World Bank, they arrive at the following definition of infrastructure: "*the physical structures and systems that support the production of goods and services and their delivery to and consumption by governments, businesses and citizens*". In addition to limiting infrastructure to tangible assets, they emphasise the role of infrastructure as an enabler or that it performs a support function.

19. Combining this role or function of infrastructure with existing industry and product classifications, they arrive at the following, very detailed, list of asset classes for delineating infrastructure (alphabetically ordered): airports and other passenger terminals; bridges; buses; cables and lines - coaxial, copper, aluminium, etc.; canals and waterways; communications buildings; highway and road structures and networks; historical sites; hospitals; hydraulic production plants; indoor recreational facilities; libraries; locomotives, railway rolling stock, and rapid transit equipment; marinas and harbours; museums; nuclear production plants; nuclear reactor steam supply systems; nursing homes, homes for the aged; optical fibre; other communication construction; other electric power construction; other marine infrastructure; other sewage infrastructure; other water infrastructure; outdoor recreational facilities; pipelines; pollution abatement and control; power and distribution transformers; power distribution networks; power transmission networks; public security facilities; railway lines; religious centres and memorial sites; runways; schools, colleges, universities and other educational buildings; seaports; sewage treatment plants; sports facilities with spectator capacity; steam production plants; student residences; transmission support structures - towers, poles, conduit; tunnels; turbines, turbine generators, and turbine generator sets; waste disposal facilities; water filtration plants; water treatment equipment; and wind and solar power plants.

[11] See https://www150.statcan.gc.ca/n1/pub/13-607-x/2016001/1362-eng.htm.

20. Importantly, Statistics Canada uses a broad definition of infrastructure assets, thus including 'soft infrastructure', which provides support to maintaining the economic, health, social, environmental, and cultural standards of a country, such as hospitals and other health facilities, schools and other educational facilities, and recreational facilities. On the other hand, intangible assets such as educational programs, intellectual property products, etc. are explicitly excluded.

21. The final study on infrastructure concerns the one done by the **United States**.[12] This study starts from a broad definition, as put forward by Henry Cisneros, former Secretary of Housing and Urban Development (HUD), who defines infrastructure capital as "*the structures and equipment that comprise the basic systems that bridge distance and bring productive inputs together*". In doing so, explicit reference is made to the public good character of infrastructure, including infrastructure that can be excludable and rival purely public goods, such as a toll road suffering from congestion.

22. In further elaborating the above definition, basic, or core, infrastructure is defined with reference to certain basic functions to support the functioning of the economy and the society at large, as follows: "*those asset types, both structures and equipment, related to power, transportation, water supply, sewage and waste disposal, and conservation and development (dams, levees, sea walls, and related assets)*". Subsequently, the definition is further expanded, by including "*social infrastructure, including assets such as public safety facilities, schools, and hospitals*", and digital infrastructure, i.e. "*assets that enable the storage and exchange of data through a centralised communication system*".

23. In respect of digital infrastructure, it is noted that it may be difficult to delineate the relevant assets, as, for example, equipment and software providing wireline and wireless access to the Internet could also be used for other purposes than the storage and exchange of data. On the other hand, it is stated that the following categories would qualify as infrastructure investments and assets: "*all private communication structures — for example, cell towers — as well as computers, communications equipment, and software owned by the broadcast and telecommunications industries (North American Industry Classification System (NAICS) 515 and 517) and by the data processing, internet publishing, and information services industries (NAICS 518 and 519)*", the latter category including the equipment and software within data centres.

24. Finally, it is noted that intangible infrastructure (except for selected software), such as research and development related to infrastructure, is largely omitted, recognising that, if the asset boundary in the SNA were expanded to include a wider set of intangible assets, then it would be possible to include a wider set of intangible infrastructure in the definition of infrastructure.

4. Some considerations around delineating infrastructure

25. On the basis of the above, one can derive that there is a common understanding of what infrastructure more generally encompasses. However, one can also observe some divergences around the delineation of infrastructure. In this section, the main points of discussion are being dwelt upon. Based on these considerations, the following section puts forward a definition of infrastructure.

26. The first point of discussion concerns the delineation of the **basic functions** that infrastructure provides in support of the economy and the society. In some cases a broader

[12] See Microsoft Word - Infrastructure_Revision_May13_2020.docx (nber.org).

definition is preferred, while in other cases a more restrictive interpretation is being pursued. According to the more narrow interpretation, infrastructure provides support for the following functions: transport; utilities, broken down into the provision of energy, water, and sanitation and waste management; flood protection and water management; and communications. The broader definition would also include structures that support the provision of services in the areas of education; health; public order and safety; culture; and recreation.

27. Which delineation of basic functions is preferred heavily depends on the object of analysis, but it would be good to always have a proper understanding of what is (not) included. Furthermore, as there is a clear divergence between studies focusing on the more narrow delineation versus research which applies the broader definition, it's proposed to always keep the two sets of functions separated. In this respect, it is also proposed to label the more narrowly defined infrastructure as **economic infrastructure**, while the infrastructure providing support to the additional functions included in the broader concept of infrastructure is labelled as **social infrastructure**. That is not to say that social infrastructure only provide services which are not part of the economy. The services provided in the context of the functions under social infrastructure actually do contribute to output and value added in the system of national accounts. Moreover, education as an input to the generation of human capital is considered as one of the most important determinants of the future economic growth. Nevertheless, the term "social infrastructure" is used here in the absence of a more appropriate terminology, its alignment to commonly used terminology, and to make clear that this infrastructure provides support to services which address more social aspects of societal wellbeing.

28. Although not explicitly addressed in the above, occasionally it is proposed to also include the provision of **financial services** and **(social) housing** in the list of basic functions for the operation of the economy and society. It is proposed here to exclude both of them from the definition of infrastructure. In relation to financial services, one could indeed think of including the payment systems as a basic function, but investments in the provision of these services are considered of minor importance from a quantitative point of view. It would also be quite problematic to distinguish the relevant infrastructure type of investments from other investments. In relation to housing, which of course is of critical importance for the wellbeing of households, the main argument for excluding them is that the inclusion of this function would completely dilute the whole value added of tracking infrastructure. Housing generally also does not have any of the characteristics that can be associated with public good or club goods.

29. When it comes to the delineation of some of functions linked to infrastructure, the inclusion of **energy** leads to different interpretations. Two questions have arisen in this context. The first one concerns the provision of fossil fuels. While electricity generating infrastructure is generally included, and the same holds for distribution networks for electricity and also gas, facilities for the production of fossil fuel related energy resources, including the distribution facilities of e.g. petrol, are typically excluded. The second question concerns the fast growing phenomenon of green, environmentally sustainable, energy: wind energy, energy from solar panels, geothermal energy, etc. Although some of the related infrastructure may be large scale, many of them such as private wind turbines and solar panels on rooftops of dwellings are small-scale. Here, it is proposed to include all forms of energy provision. However, in doing so, it would be important to break down the various categories of energy provision, according to their environmental impact, thus being able to monitor the shift in investments to more sustainable forms of energy production. This breakdown may not always be that straightforward, for example in the case of distribution networks for electricity, where electricity produced by coal-fired power plants are using the same distribution grid as electricity produced by windmills and solar

panels. Another example may be the combination of petrol stations and charging points for electric cars.

30. Another item of discussion concerns the inclusion, or not, of **digital infrastructure**. In fact, there are two different issues at stake here. The first one relates to the broadening of the set of basic functions, in particular the function of communications. Internet connectivity and broadband access are already often referred to, but it is proposed here, in line with the suggestions made in the US-study, to also include assets that enable the storage and exchange of data through a centralised communication system, including investments that support the provision of cloud services. One could argue that social media platforms, and platforms for the digital ordering and/or delivery of goods and services, should be included as well. However, it is proposed to leave infrastructure related to these latter services out, mainly because the relevant services are not considered as a basic function, but as applications using the basic function of communications. To acknowledge the explicit inclusion of various IT-related functions more appropriately, it is proposed to refer to **IT and communications**, instead of communications alone.

31. The second issue around digital infrastructure concerns the inclusion of investments in **intellectual property products (IPPs)** (e.g. software), in addition to the physical structures that support the various basic functions. Obviously, such assets are highly relevant in the case of IT and communications, but one could also think of traffic guidance systems to support the flow of cars on highways, or traffic control systems for managing air and rail transport. Another example would relate to capacity management systems, logistics software and the like. In view of the growing importance of the digital economy, it is proposed here to include these IPPs in the definition of infrastructure investments for all relevant functions.[13] Sometimes, it even may not be possible to separate these intangible assets from the physical structures.

32. Furthermore, when it comes to monitoring infrastructure, the general understanding is that it relates to **investments and capital stocks**. It may indeed be useful to also look at the services that are being provided by these assets, including the income and jobs generated by the production and use of these services, for example by looking at the share in GDP and total employment, but the primary focus is on the underlying assets. The question can then be raised whether one should also include assets to construct or maintain infrastructure (e.g. equipment for road construction or maintenance). Here, it is argued that these are not part of infrastructure assets themselves, which typically refers to the basic or fundamental structures and facilities needed. The same is proposed in relation to e.g. transport equipment (aeroplanes, trains, ships, cars, etc.), or in the case of digital infrastructure for personal computers, mobile telephones, apps, etc.

33. Another issue in relation to the delineation of investments and capital stocks concerns the inclusion, or not, of **non-produced assets**. Non-produced assets may relate to physical assets such as land or to intangible assets such as permits for the use of radio spectra.[14] Transactions in these non-produced assets do not lead to additional capital stocks,

[13] During the COVID-19 crisis, physical in-class education had to be replaced by remote learning. Similarly, medical consultations were often replaced by on-line consultations. Investments by the producers of these services in tools and software to make all of this possible would thus also qualify as infrastructure investments. It would, however, not necessarily mean that computers, cell phones, etc. of the users would become part of infrastructure investments, as these are used for many other purposes as well.

[14] In the case of the energy function, an important category of non-produced assets concern the natural energy resources. It is proposed here to not include these assets, as they usually are not

as the acquisition by one economic agent are matched by the disposal of the relevant asset by another economic agent. However, from an investment perspective for the provider of the related infrastructure, they clearly add to the project costs. For example, making investments into clearing agricultural land to provide for additional flooding areas to counter the risk of flooding due to the rise of high water levels in rivers clearly include the required acquisitions of land.[15] Furthermore, when investing in buildings and other structures, these would typically include both the construction itself and the underlying land.[16] For these reasons, it is proposed to include non-produced assets in the definition of infrastructure, if evidenced by monetary payments. However, to reflect the special nature of non-produced assets, it is also proposed to distinguish non-produced assets as a separate sub-category, unless this is not practically feasible.

34. Finally, although not all studies mentioned in Section 3 address this issue explicitly, it is proposed to include infrastructure investments of **all (economic) agents**, not only infrastructure initiated and controlled by government. The government used to be the primary or predominant operator, e.g. in transport and utilities, but with the increasing privatisation more and more private companies have become involved, while in the case of e.g. IT and communications related infrastructure, private parties are very important, if not the most dominant, players as well.

5. A proposal for the definition of infrastructure

35. In the end, one can argue at great length about the preferred definition of infrastructure. Based on the above considerations, and taking into account the primary objectives of the OECD Horizontal Project on Sustainable Infrastructure, the following definition is proposed:

> *Infrastructure is the set of fundamental facilities and systems that support the provision of goods and services essential to enable, sustain, or enhance societal living conditions and protect the surrounding environment from erosion and other disasters that reduces the usefulness for economic purposes.*
>
> *The set of fundamental facilities and systems are composed of public and private physical structures as well as intellectual property products supporting the effective operation of these structures.*
>
> *The following functions are considered to be provided by economic infrastructure: transport; utilities (provision of energy, water, and sanitation and waste management); flood protection and water management; and IT and communications.*
>
> *Social infrastructure relates to the provision of the following functions: education; health; public order and safety; culture; and recreation.*

transacted, or only implicitly transacted by an agreement between the exploiter and the owner of the resources to pay an annual amount of royalties or the like.

[15] It may also include compensation of farmers for the loss of future income, although such compensations do not qualify as investments.

[16] In the system of national accounts, the relevant investments are recorded separately, one constituting the investments in produced assets (the structure itself), and another part as the acquisition of non-produced assets (the underlying land).

36. Using the list of asset types from Statistics Canada as a starting point, the following classification is proposed for economic infrastructure and social infrastructure. Although often not mentioned explicitly, the various classes of assets include the intellectual property products to support the effective operation of the structures as well.

Economic infrastructure

Transport related infrastructure

- land transport infrastructure (highways, other road structures and networks including cycle paths and pedestrian areas; tunnels; bridges; and railway lines including railway stations)
- water transport infrastructure (canals and waterways; marinas and harbours; seaports; and other water infrastructure)
- air transport infrastructure (airports and other passenger terminals; and runways)
- space transportation infrastructure (launching sites)

Utilities related infrastructure

- Mineral exploration and evaluation
- Oil refineries
- Storage facilities and distribution networks (e.g. petrol stations) for fossil fuels
- Natural gas distribution systems and transmission support structures
- Heat distribution networks
- Electric power plants and facilities
    - Nuclear production plants, nuclear reactor steam supply systems
    - Steam production plants
    - Hydraulic production plants
    - Geothermal energy producing facilities
    - Marine power plants
    - Wind power plants
    - Solar panels
    - Power and distribution transformers, turbines, turbine generators, etc.
- Power distribution and transmission networks
- Other energy-related storage facilities
- Water-related systems (water filtration plants, water treatment equipment, water distribution systems, etc.)
- Sewage systems (sewage treatment plants, other sewage infrastructure)
- Waste disposal facilities

Flood protection and water management related infrastructure

- Dykes, dams and sea walls
- Water regulation systems
- Relevant improvements to land, including land acquisitions (e.g. investments in flooding areas, forest management systems to avoid erosion and absorb water excess, etc.)
- Other flood control systems

IT and communications related infrastructure

- Communications buildings, including cell-towers and data centres
- Network base stations
- Broadband access and internet connectivity systems
- Software to run IT and communications related networks
- Permits for the use of radio spectra
- Cables and lines - coaxial, copper, aluminium, etc., optical fibre
- Satellite networks (in-orbit and ground based infrastructure)
- Other communication construction

Social infrastructure

Education related infrastructure

- Schools, colleges, and universities
- Student residences
- Libraries
- Other education related facilities

Health related infrastructure

- Hospitals and clinics
- Nursing homes, homes for the aged
- Other health related facilities

Public order and safety related infrastructure

- Police stations
- Fire stations
- Courts
- Prisons
- Other public safety related facilities

Culture related infrastructure

- Museums
- Historical sites
- Religious centres and memorial sites

Recreation related infrastructure

- Indoor and outdoor recreational facilities
- Facilities with spectator capacity
- Public parks
- Natural reserves: land acquisitions and investments to make the natural reserves accessible