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ALTERNATIVES  
UNLOCKED

Unlocking Infrastructure:  
The Building Blocks  
of Society



**When most people think of infrastructure,** they think of the basic things you need to keep society functioning. But the definition of “need” changes over time, and the complexity of today’s global infrastructure matches that of modern society. From wind farms to data centers, the long-term shifts shaping society will demand new and upgraded infrastructure.

First Things First:  
What is Infrastructure?



How Do Infrastructure  
Assets Work?



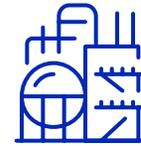
# First Things First: What is Infrastructure?

Infrastructure consists of the physical assets required for economies and societies to function. Over time, the category has expanded beyond traditional structures such as toll roads, bridges, and railroads (Exhibit 1).

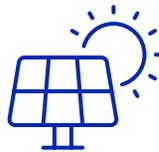
## EXHIBIT 1 | Wait, That's Infrastructure?



Wind farms



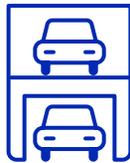
Midstream pipelines



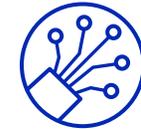
Solar farms



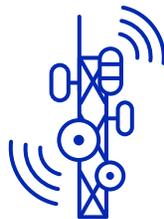
Gas and electricity meter providers



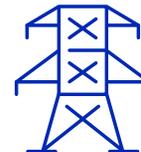
Parking garages



Fiber optic cable networks



Telecom towers



Electricity and gas transmission networks



Data centers

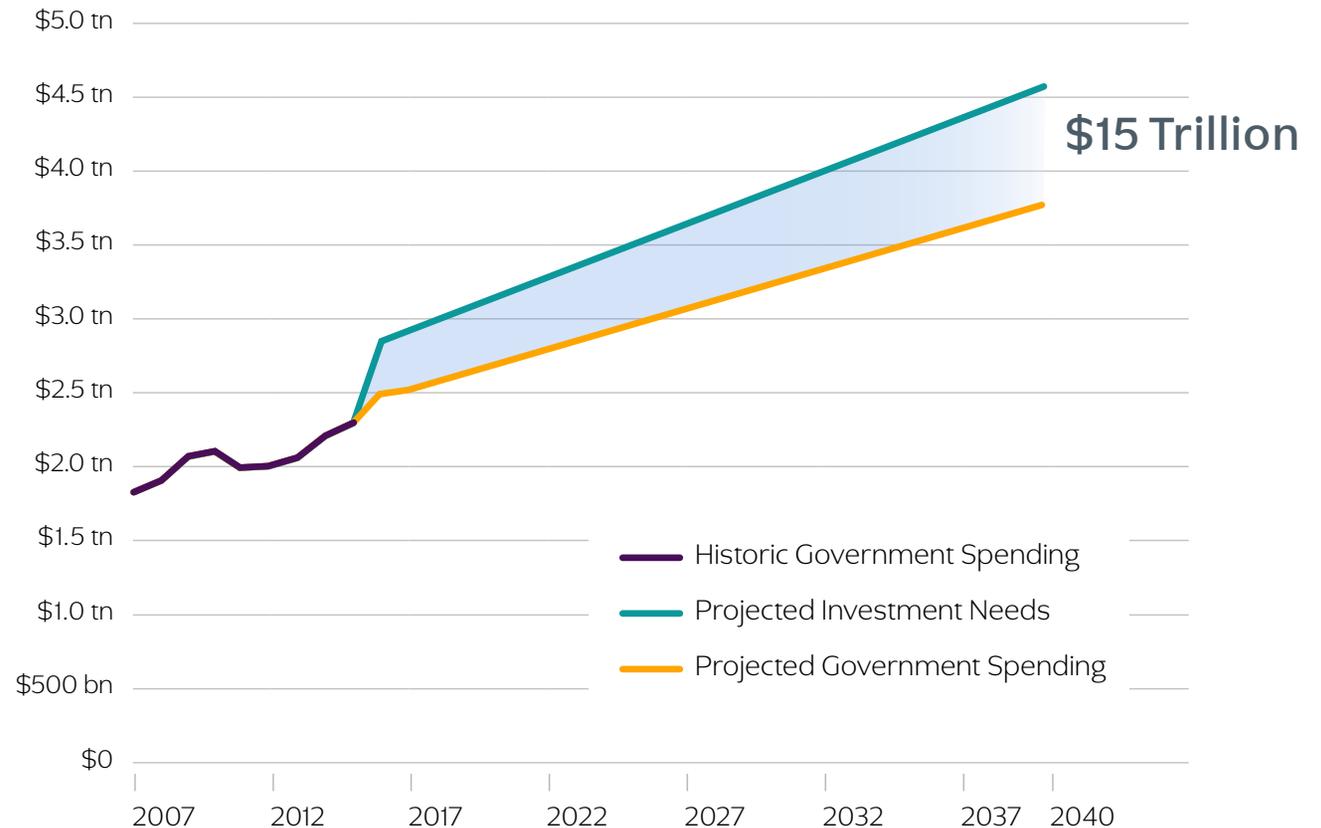


District energy systems  
(water pipes used to heat and cool urban buildings)

# The Need for Private Infrastructure Investment

Infrastructure is often a public good, but governments increasingly need private capital to repair and build new infrastructure (Exhibit 2).

**EXHIBIT 2 | A Growing Gap Between Government Infrastructure Spending and Society's Needs**



Source: G20 Global Infrastructure Outlook. As of March 2018.

Note: "Infrastructure investment" is defined here as gross fixed capital formation by the public and private sectors on fixed, immovable assets that support long-term economic growth, and also includes maintenance and replacement costs. The estimate of investment need is based on an analysis of how much countries would have to spend if they wanted to match the performance of their best-performing peers by income group, controlling for economic and demographic differences and the quality of current infrastructures.

# Four Forces Supporting Private Infrastructure Demand

## Digital Infrastructure

Estimated compound annual growth rate (2018-2022), global internet traffic **30%**

Data is the fastest-growing commodity in the world, and access to education, work, and basic services increasingly requires a high-speed internet connection.

### Infrastructure potential:

- Fiber optic networks
- Data centers
- Telecom towers



Source: Telegeography as of February 3, 2023.

## Decarbonization

Estimated size of the investment opportunity related to the transition to net zero emissions by 2050 **\$200tn**

Companies and governments will need cleaner, greener infrastructure solutions to keep pace with the energy transition and meet net-zero emissions targets.

### Infrastructure potential:

- Solar/wind technology
- Water/wastewater management
- Electric/gas assets



Source: BloombergNEF as of December 7, 2022.

## Deconsolidation

Large corporations and industrial companies account for a large portion of infrastructure investment, and they are under pressure to sell infrastructure assets. Some of today's fastest-growing infrastructure sectors began as corporate carve-outs.

### Infrastructure potential:

- Manufacturing
- Mining
- Chemicals
- Other industrial sectors



## Transportation and Supply Chain

Estimated growth in global passenger and freight transportation activity, respectively, by 2050 **79%/~100%**

Building out charging infrastructure and upgrading the power grid to accommodate more electric vehicles and alleviating congestion in cities will all require significant private infrastructure investment.

### Infrastructure potential:

- EV charging stations
- Electrical grid
- Public transit



Note: Activity is measured in tonne-kilometers.

Source: OECD International Transport Forum Outlook 2023



# How Do Infrastructure Assets Work?

Infrastructure assets generally tend to produce predictable cash flows. Just how predictable those cash flows are depends on whether or not prices are regulated and whether the revenues an asset generates tend to change based on the rate of economic growth.

While infrastructure assets without guaranteed, contractual payments may have less predictable cash flows, they often have a large market share or monopoly that provides a level of cash flow protection. Infrastructure operators may also find ways to make assets more profitable.

Infrastructure assets also often have some form of built-in inflation linkage, whether through an explicit agreement or an operator's ability to pass along higher input costs. (Exhibit 3).

## EXHIBIT 3 | The Infrastructure Cash Flow Spectrum

### Most Predictable

#### Regulated Assets

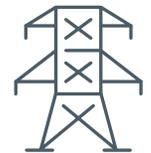
**Cash flows:** Highly predictable

**Rates:** Governments set rates

**Inflation linkage:** Adjustments based on price indices, costs

#### Asset Types:

- Electricity and natural gas distribution
- Water/wastewater utility



#### Contracted Assets

**Cash flows:** Highly predictable

**Rates:** Rates set in long-term contracts

**Inflation linkage:** Contracts often include index-based adjustments

#### Asset types:

- Data centers
- Natural gas pipelines and liquefied natural gas facilities
- Renewable power generation
- Cell towers



## Types of Infrastructure Investments

You may hear the terms “brownfield” or “greenfield” when learning about infrastructure investments. They refer to different ways infrastructure investors can put their capital to work.

### Words to Know:

#### Brownfield

Investing in existing assets, potentially with the goal of improving or expanding them

#### Greenfield

Building new assets

### Most Predictable *(continued)*

#### Concession (Availability Model)

**Cash flows:** Highly predictable

**Rates:** Government grants exclusive operation rights; pays regular, fixed rates so long as the asset is available

**Inflation linkage:** May include index-based adjustments

**Asset types:**

- Mass transit
- Social infrastructure



### Less Predictable

#### Concession (Tolling Model)

**Cash flows:** Somewhat predictable

**Rates:** Government grants exclusive operation rights; revenues based on volume and usage

**Inflation linkage:** May allow index-based toll adjustments; to the extent that strong economic growth causes inflation, can be a natural inflation hedge

**Asset types:**

- Toll roads
- Bridges
- Tunnels
- Airports



### Least Predictable

#### Independent Pricing

**Cash flows:** Least predictable

**Rates:** Market pricing; some protection from market share/barriers to entry

**Inflation linkage:** Inherent link to rising market prices

**Asset types:**

- Car parking
- Fiber-to-home internet connections



# Learn More

To find out more about infrastructure,  
please contact your financial professional.

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