

in-fra-struc-ture, noun

1: the underlying foundation or basic framework (as of a system or organization); 2: the permanent installations required for military purposes; 3: the system of public works of a country, state, or region; also: the resources (as personnel, buildings, or equipment) required for an activity.
–Merriam-Webster

**EXAMPLES OF INFRASTRUCTURE ASSETS****TRANSPORTATION****Toll roads/tunnels/bridges**

- Airports
- Ports
- Rail and mass transit networks
- Municipal parking facilities

ENERGY / UTILITIES

- Oil and gas pipelines
- Regulated electricity assets
- Transmission and distribution systems
- Water treatment and distribution facilities

COMMUNICATIONS

- Cable networks
- Communications towers
- Select satellite systems

SOCIAL INFRASTRUCTURE

- Education facilities
- Health care facilities

BACKGROUND

Utility and other infrastructure assets provide the framework for economic growth and social development. As many observed after the blackout in the Northeast and after the turmoil in Iraq, without utilities, water, roads, bridges, transportation facilities, etc, society as we know it does not function. Infrastructure, essential service and commodity providers are the core, the essence, of a modern economy.

In our view and according to many studies we have reviewed, we are at the very beginning of a large wave of investment in real productive assets globally. According to the OECD Futures Project on Global Infrastructure Needs, “there is a growing gap between needs and actual levels of investment which will evolve over time. At a global level several trillion US\$ are thought to be required for energy infrastructure investments and investments in other sectors.”¹

GROWTH DRIVERS

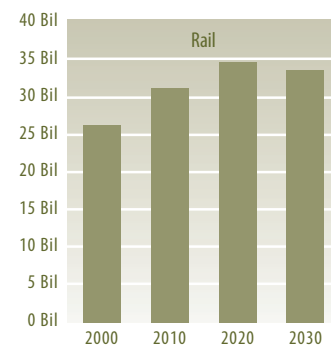
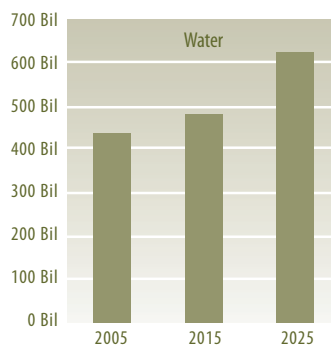
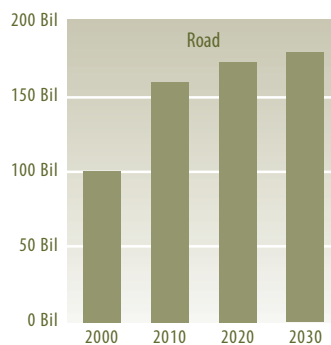
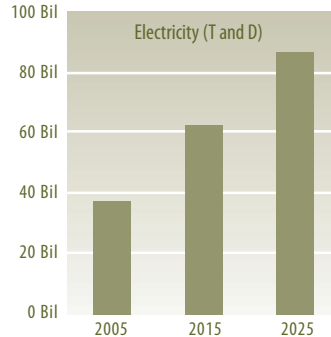
Global economic and population growth: In developed countries, there is a need to upgrade or replace aging infrastructure, especially roads, water and electricity generation. In developing countries, there is an acute demand for new infrastructure, especially for electricity generation, water and sanitation.²

Deferred maintenance: Roads, water systems, dams and electric grids will require substantial capital outlays to maintain current systems and many local governments are generally unprepared to fund these projects.³

Policy driven initiatives: Governments around the world understand the need and benefits of infrastructure investments for both local economies and global competitiveness. Policies providing long-term focus and capital will act as a catalyst and ongoing support to infrastructure investments.

Funding Opportunities: Governments, facing budgetary constraints, are raising much needed revenue through the monetization/privatization of their existing infrastructure assets, thereby increasing the supply of such investments. Also, governments will need to find alternative sources to fund new infrastructure projects and repair existing infrastructure.⁴

Projected Average Annual Infrastructure Investment Requirements in OECD Countries 2025/30 in US\$ Billion



Note: Estimates for electricity are trans-mission and distribution (T&D) only. Source: OECD (2006a), Infrastructure to 2030: Telecom, Land Transport, Water and Electricity, OECD, Paris; estimates drawn from data in Table 3.6 (electricity), p. 167; Table 4.5 (road), p. 195; Table 4.6 (rail), p. 199; Table 5.16 (water), pp. 313-314.

CHARACTERISTICS

Infrastructure has been a traditional category for pension plan allocations in Australia and Canada, and the concept has recently been embraced by funds in other developed markets all over the world. Utilities and infrastructure companies offer interesting characteristics for long-term investors that are available in few other investment areas.

- Long asset life: Utility and infrastructure investments typically have long durations with a useful life that can span even hundreds of years.
- Low volatility: Projects are structured for return and stable cash flows over many years and frequently returns on equity are “guaranteed” or established by regulatory authorities. Often, the companies involved have *de facto* or *de jure* monopoly status, insulating them from competition.
- Inelastic demand: By definition utilities and infrastructure are elements of the economic chain of connections without which the economy cannot exist.
- High barriers to entry: The industries involved are very capital intensive and require specialized industry-related expertise.
- Stable, predictable cash flows, often linked to inflation: Infrastructure projects typically have a long time horizon to generate cash flow thus producing a real return in the present in addition to gradually increasing returns as the fees and flows generated by the assets increase over time. Infrastructure is often used to provide a duration hedge within a portfolio.
- Less sensitivity to business cycles: Utility and infrastructure assets are often considered a separate asset class due to their low correlation to traditional asset classes thus providing portfolio diversification.

RISKS

There are risks, as in any equity investment:

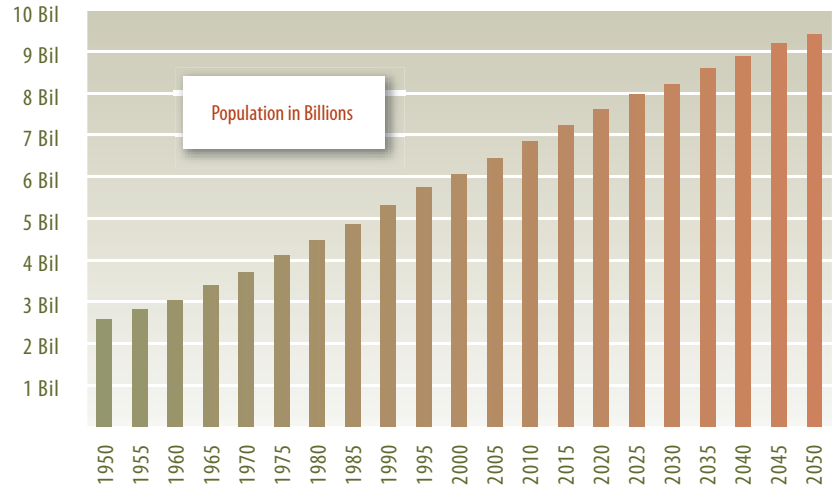
- Execution risk in terms of building or operating projects
- Continued access to credit markets
- Though often supportive, regulation can be a potential negative factor
- Market values, like any security, may fluctuate

POPULATION GROWTH

- Rising population and changing demographics puts pressure on existing infrastructure and creates demand for greater investment.
- Global urbanization puts added strain on infrastructure.
- It is estimated that by 2030 about 80% of America and Europe will be urbanized and that 50% of Asia will be living in urban areas.
- The large BRIC (Brazil, Russia, India, China) countries are moving from developing to developed economies.
- The growing population is enabled to be more productive, efficient and competitive by sovereign spending on infrastructure.

Future Global Population Growth

Rising population is putting pressure on existing infrastructure



Source: US Census Bureau, July 2007

INFRASTRUCTURE SPENDING

- Demand for infrastructure assets is at an all time high. Approximately 2% of global GDP is spent on infrastructure and this will be rising rapidly.
- Governments throughout the world have prioritized large counter-cyclical infrastructure expenditures to stimulate and accelerate their economies.
- The new multi-billion dollar programs will be incremental to the 2000–2030 projections.
- Incremental spending not only addresses the need to replenish aging infrastructure but also enables full implementation of the newest technologies.
- Future projects may involve the combination of the public and private sector not only in the financing of projects but also in the management. These partnerships add greater available capital and private sector investment opportunities.

“According to a study by the Organization for Economic Cooperation and Development (OECD), from 2000 to 2030 the global requirements of the 30 OECD and four BRIC countries (Brazil, Russia, India, and China) for airport, port, road, rail, telecommunications, electricity transmission and distribution, and water infrastructure will total in the trillions of dollars.”

Estimated Average Annual World Infrastructure Expenditure

(Additions and Renewal) for Selected Sectors

2000–2030 in US\$ Billion

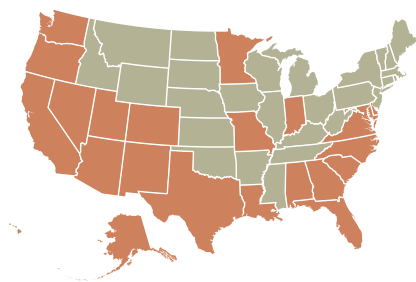
TYPE OF INFRASTRUCTURE	2000–2010	2000–2020	2000–2030
Roads	220	245	292
Rail	49	54	58
Telecoms ¹	654	646	171
Electricity ²	127	180	241
Water ³	576	772	1037

¹ Estimates apply to the years 2005, 2015, and 2025

² Transmission and distribution only

³ Only OECD countries, Russia, China, India, and Brazil are considered here

Source: “Investing in Global Infrastructure 2007: An Emerging Asset Class,” Ernst & Young



States that have enacted or introduced Public Private Partnerships (PPP) legislation as of 2006

Infrastructure Opportunities

Roads

- \$100 billion of investments per year¹

Electricity generation and transmission

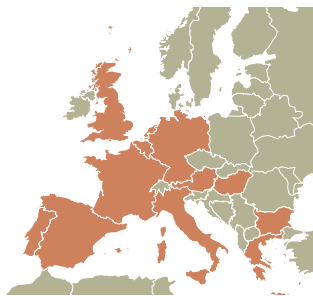
- 400 new plants and 100,000 miles of transmission must be built by 2020 to meet demand representing \$35 Billion per year of investment²

Water distribution and treatment

- \$660 billion of capital needs from 2006-2019³

Public private partnerships

- 21 states have enacted/introduced PPP legislation



Countries that have recent PPP Legislation/changes as of 2006

Infrastructure Opportunities

Infrastructure needs

- Historical under-investment
- Demographic trends
- Integration of European economies

Public budgetary constraints

- Wider acceptance of PPP/PFI
- Monetization of existing assets

Shifts in public policy

- Increased focus of governments on core responsibilities
- Outsourcing of non-core activities
- Concession arrangements validated as effective model

Liberalization and regulatory framework

- Progressive liberalization programs
- Predictable tariff regulations

Diversification of and environmental trends in energy supply

- Energy supply diversification
- Promotion of renewable energy (e.g., wind) through financial incentives
- Significant investments in conventional energy infrastructure

¹ Committee on Transportation and Infrastructure, U.S. Congress, 2007.

² L. Makovitch, Focus on Energy: CERAWEEK 2006, Cambridge Energy Research Associates, Inc., 2006.

³ U.S. Environmental Protection Agency, Office of Water, The Clean Water and Drinking Water Infrastructure Gap Analysis, EPA816-R-02-020, 2002.

ABOUT MILLER/HOWARD INVESTMENTS, INC.

Miller/Howard Investments has been managing long-only portfolios of utilities since 1991 including energy, utilities, pipelines (the largest segment of the listed infrastructure asset class), and in asset-based, broad market common stock investments. Over the years we have held in our portfolios many companies that enable infrastructure development or that are not considered traditional regulated utilities. These include merchant generators, pipeline MLPs, meter and cable companies, alternative energy manufacturers, catalyst chemical companies, and many foreign and domestic wired and wireless telecommunications companies.

Our four member portfolio team collectively has over 100 years of experience and has been focused on the eternal verities of asset-based essential service type companies for most of their investment careers. Miller/Howard's focus has always gravitated toward "foundational" assets that are the building blocks for any society.

SUMMARY

While investment in infrastructure assets is not new, we believe the pace and scale of such investment will accelerate. The developed world sorely needs renovation of electric grids, water systems, roads, bridges, new facilities for transport, shipping, and the servicing of growth trends and demographic changes. The developing world, like a newly married couple, needs everything.

Because of the growth potential combined with high and stable cash flow yield of the underlying asset investments, many observers have suggested that infrastructure will become an increasing percentage of institutional as well as individual asset allocations.

SOURCES

^{1,2} Morgan Stanley Investment Management, Infrastructure Paper Series No.2, May 2007

³ Urban Land Institute and Ernst and Young, May 2007

⁴ "Opportunities in Private Infrastructure Investments in the US," RREEF Infrastructure publication, September 2006

DISCLOSURE: This white paper represents Miller/Howard Investments' view of the global utilities and infrastructure universe of investment opportunities. The statistics and projections cited in this report have been provided by sources generally considered to be reliable. Opinions and estimates offered constitute Miller/Howard Investments' judgment and are subject to change without notice, as are statements of financial market trends, which are based on current market conditions.

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