

Middle- to Long-term Forecasts of Construction Investment

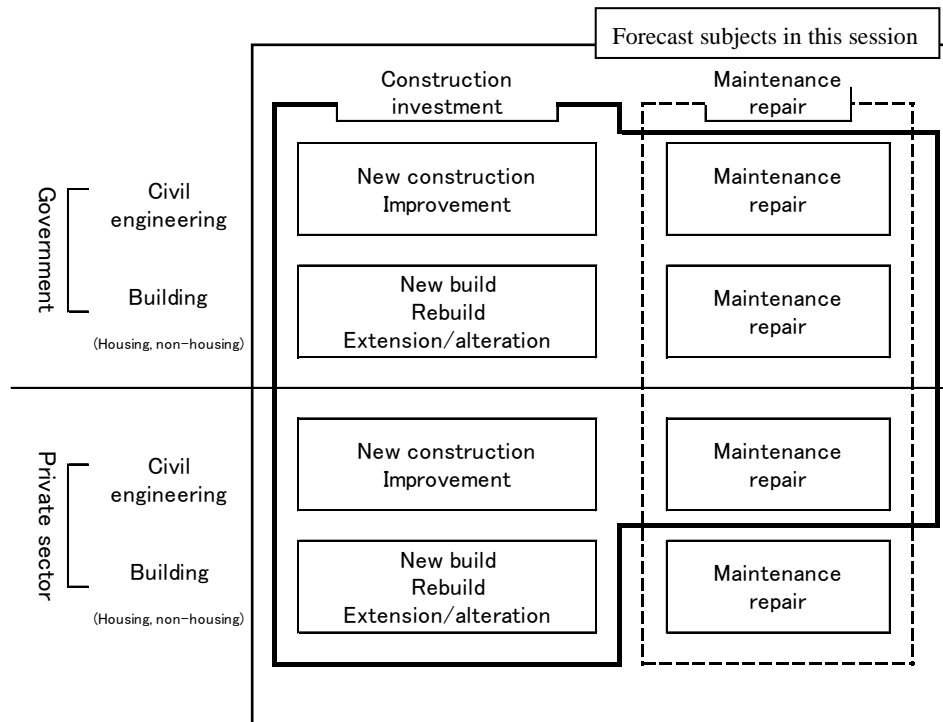
— Forecasts for FY2020 and FY2030 —

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Research Institute of Construction and Economy (RICE)

1. Sectors Covered by the Forecasts

- “Construction Investment” and “Maintenance and Repairs” covers the following areas.
- Forecasts are in real terms, based on FY2005 prices.



2. Forecast Assumptions

Economic growth rates :

- Case 1 (Economic Revitalization Case)

Stable medium and long-term trends show real and nominal economic growth rates exceeding 2% and 3% respectively

- Case 2 (Baseline Case)

Medium and long-term trends show real and nominal economic growth rates below 1% and around 1.5% respectively

3. Overall Forecast Results

| | FY2010 | FY2015 | FY2016 | FY2020 | | FY2025 | | FY2030 | | |
|---------------------------|--|--------|--------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | | | | Case 1 | Case 2 | Case1 | Case 2 | Case 1 | Case 2 | |
| Nominal Values | Construction Investment | 41.9 | 51.0 | 51.5 | 50.7 ~ 52.5 | 49.0 ~ 50.4 | 51.2 ~ 54.4 | 47.1 ~ 49.2 | 51.1 ~ 56.4 | 44.9 ~ 48.2 |
| | Government | 18.0 | 21.6 | 21.4 | 18.7 ~ 19.7 | 18.7 ~ 19.3 | 18.7 ~ 21.5 | 18.7 ~ 20.4 | 18.7 ~ 23.4 | 18.7 ~ 21.4 |
| | civil engineering | 15.8 | 18.9 | 18.8 | 16.4 ~ 17.6 | 16.4 ~ 16.9 | 16.4 ~ 18.8 | 16.4 ~ 17.9 | 16.4 ~ 20.5 | 16.4 ~ 18.8 |
| | building | 2.2 | 2.7 | 2.7 | 2.3 ~ 2.5 | 2.3 ~ 2.4 | 2.3 ~ 2.6 | 2.3 ~ 2.5 | 2.3 ~ 2.9 | 2.3 ~ 2.6 |
| | Private Sector | 23.9 | 29.4 | 30.1 | 32.0 ~ 32.8 | 30.3 ~ 31.1 | 32.5 ~ 33.0 | 28.3 ~ 28.8 | 32.3 ~ 33.1 | 26.1 ~ 26.9 |
| | residential | 13.0 | 14.4 | 15.1 | 14.0 ~ 14.8 | 13.8 ~ 14.7 | 11.9 ~ 12.4 | 11.4 ~ 11.9 | 9.2 ~ 10.1 | 8.6 ~ 9.4 |
| | non-residential | 6.9 | 10.0 | 9.8 | 11.8 | 10.8 | 13.5 | 11.1 | 15.1 | 11.5 |
| | civil engineering | 4.1 | 5.0 | 5.2 | 6.2 | 5.7 | 7.1 | 5.8 | 8.0 | 6.0 |
| | Maintenance & Repairs | 11.6 | 14.0 | 14.2 | 15.3 ~ 15.6 | 15.0 ~ 15.2 | 16.3 ~ 17.1 | 15.4 ~ 15.9 | 17.2 ~ 18.6 | 15.9 ~ 16.7 |
| | Government (partially reproduced) | 4.2 | 5.0 | 5.2 | 5.4 ~ 5.7 | 5.4 ~ 5.6 | 5.6 ~ 6.4 | 5.6 ~ 6.1 | 5.7 ~ 7.2 | 5.7 ~ 6.6 |
| | civil engineering | 3.5 | 4.2 | 4.3 | 4.4 ~ 4.6 | 4.4 ~ 4.5 | 4.5 ~ 5.2 | 4.5 ~ 4.9 | 4.7 ~ 5.8 | 4.7 ~ 5.3 |
| | building | 0.8 | 0.8 | 0.8 | 1.1 ~ 1.1 | 1.1 ~ 1.1 | 1.1 ~ 1.2 | 1.1 ~ 1.2 | 1.1 ~ 1.3 | 1.1 ~ 1.2 |
| | Private Sector | 7.4 | 9.0 | 9.0 | 9.9 | 9.6 | 10.7 | 9.8 | 11.5 | 10.1 |
| | residential | 2.3 | 2.9 | 2.9 | 3.1 | 3.1 | 3.3 | 3.1 | 3.5 | 3.2 |
| | non-residential | 3.8 | 4.4 | 4.4 | 4.7 | 4.6 | 5.0 | 4.7 | 5.3 | 4.9 |
| | civil engineering (partially reproduced) | 1.3 | 1.6 | 1.7 | 2.1 | 1.9 | 2.4 | 2.0 | 2.7 | 2.0 |
| Construction Market Total | 48.1 | 58.3 | 58.9 | 58.6 ~ 60.3 | 56.7 ~ 58.1 | 59.5 ~ 62.7 | 55.0 ~ 57.1 | 59.9 ~ 65.2 | 53.0 ~ 56.3 | |
| Real Values | Construction Investment | 40.1 | 46.6 | 47.3 | 43.9 ~ 45.5 | 43.3 ~ 44.5 | 41.7 ~ 44.3 | 40.4 ~ 42.2 | 39.3 ~ 43.4 | 37.5 ~ 40.3 |
| | Government | 17.1 | 19.6 | 19.6 | 16.1 ~ 16.9 | 16.4 ~ 17.0 | 15.2 ~ 17.5 | 16.0 ~ 17.5 | 14.4 ~ 18.0 | 15.7 ~ 17.9 |
| | civil engineering | 14.9 | 17.1 | 17.1 | 14.1 ~ 15.0 | 14.4 ~ 14.9 | 13.4 ~ 15.3 | 14.1 ~ 15.3 | 12.7 ~ 15.8 | 13.7 ~ 15.7 |
| | building | 2.1 | 2.5 | 2.5 | 2.0 ~ 2.1 | 2.0 ~ 2.1 | 1.9 ~ 2.1 | 2.0 ~ 2.1 | 1.8 ~ 2.2 | 1.9 ~ 2.2 |
| | Private Sector | 23.0 | 27.1 | 27.7 | 27.8 ~ 28.5 | 26.9 ~ 27.6 | 26.5 ~ 26.9 | 24.3 ~ 24.7 | 24.9 ~ 25.5 | 21.8 ~ 22.4 |
| | residential | 12.5 | 13.3 | 13.8 | 12.4 ~ 13.2 | 12.4 ~ 13.2 | 9.9 ~ 10.3 | 9.9 ~ 10.3 | 7.3 ~ 7.9 | 7.3 ~ 7.9 |
| | non-residential | 6.6 | 9.2 | 9.1 | 10.1 | 9.5 | 10.9 | 9.4 | 11.5 | 9.5 |
| | civil engineering | 3.8 | 4.5 | 4.8 | 5.3 | 5.0 | 5.7 | 5.0 | 6.1 | 5.0 |
| | Maintenance & Repairs | 11.1 | 12.8 | 13.0 | 13.2 ~ 13.4 | 13.2 ~ 13.3 | 13.2 ~ 13.9 | 13.2 ~ 13.6 | 13.2 ~ 14.3 | 13.3 ~ 13.9 |
| | Government (partially reproduced) | 4.1 | 4.6 | 4.7 | 4.7 ~ 4.9 | 4.8 ~ 4.9 | 4.6 ~ 5.2 | 4.8 ~ 5.2 | 4.4 ~ 5.5 | 4.8 ~ 5.5 |
| | civil engineering | 3.3 | 3.8 | 3.9 | 3.8 ~ 4.0 | 3.8 ~ 4.0 | 3.7 ~ 4.2 | 3.9 ~ 4.2 | 3.6 ~ 4.5 | 3.9 ~ 4.5 |
| | building | 0.7 | 0.8 | 0.8 | 0.9 ~ 1.0 | 0.9 ~ 1.0 | 0.9 ~ 1.0 | 0.9 ~ 1.0 | 0.8 ~ 1.0 | 0.9 ~ 1.0 |
| | Private Sector | 7.1 | 8.2 | 8.3 | 8.5 | 8.4 | 8.7 | 8.4 | 8.8 | 8.5 |
| | residential | 2.2 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 |
| | non-residential | 3.7 | 4.1 | 4.1 | 4.1 | 4.1 | 4.1 | 4.1 | 4.1 | 4.1 |
| | civil engineering (partially reproduced) | 1.2 | 1.5 | 1.6 | 1.8 | 1.6 | 1.9 | 1.7 | 2.1 | 1.7 |
| Construction Market Total | 45.9 | 53.4 | 54.0 | 50.7 ~ 52.2 | 50.1 ~ 51.3 | 48.5 ~ 51.1 | 47.1 ~ 48.9 | 46.1 ~ 50.2 | 44.3 ~ 47.1 | |

- (注) 1. Regarding government sector construction investment (Government Construction Investment) and private-sector construction investment in the field of civil engineering (private sector civil engineering investment), maintenance and repair is included in each field
2. Construction investment for FY2015 is based on estimates in Outlook of Construction Investment 2016 compiled by the Ministry of Land, Infrastructure, Transport and Tourism in July 2016.
3. Construction investment for FY2016 and FY2017 is based on forecasts in Quarterly Outlook of Construction and Macro Economy (forecasts for FY2016 and FY2017) compiled by RICE in August 2016.
4. Real values are based on FY2005 prices.
5. These forecasts must be interpreted with considerable latitude as they involve various uncertainties.

4. Major Results

(1) Construction Investment

(Case 1)

Construction investment in nominal terms of 51.0 trillion yen in FY2015 is expected to approximately increase to 50.7– 52.5 trillion yen in FY2010, and 51.1– 56.4 trillion yen in FY2020.

Construction investment in real terms of 46.6 trillion yen in FY2015 is expected to decline to 43.9– 45.5 trillion yen in FY2020, and 39.3– 43.4 trillion yen in FY2020.

(Case 2)

Construction investment in nominal terms of 51.0 trillion yen in FY2015 is expected to decline to 49.0– 50.4 trillion yen in FY2010, and 44.9– 48.2 trillion yen in FY2020.

Construction investment in real terms of 46.6 trillion yen in FY2015 is expected to decline to 43.3– 44.5 trillion yen in FY2020, and 37.5– 40.3 trillion yen in FY2020.

a) Government construction investment

Government construction investment continued to decline from its peak of 34.8 trillion yen in FY1995 until FY2008. However, it has been increasing slowly since FY2009. It has been around 20 trillion yen recently, and the level in FY2015 was about 60% of the peak.

Percent annual change by scenario

| Scenario | Assumed economic growth rate | Rate of change in public sector investment budget (initial budget) each FY2018 - 2030 |
|----------|---------------------------------------|---|
| Case A | Case 1(Economic Revitalization Case) | Year-on-year increase of approximately 2.0% along with the consumer price (nominal basis) |
| Case B | Case 2 (Baseline Case) | Year-on-year increase of approximately 1.2% along with the consumer price (nominal base) |
| Case C | Case 1 (Economic Revitalization Case) | Flat (nominal basis) |
| Case D | Case 2 (Baseline Case) | Flat (nominal basis) |

Moreover, based on the actual figures for the supplementary budget each year since FY1998, and taking into account recent trends, the future supplementary budget is expected to be about 1 trillion yen each FY. Additionally, the period of reconstruction for the Great East Japan Earthquake will end in FY2020.

Government construction investment (in trillion yen)

| FY | 2016 | 2020 | Nominal value (Trillions of yen) | |
|--------|------|-----------|----------------------------------|-----------|
| | | | 2025 | 2030 |
| Case 1 | 21.4 | 18.7-19.7 | 18.7-21.5 | 18.7-23.4 |
| Case 2 | 21.4 | 18.7-19.3 | 18.7-20.4 | 18.7-21.4 |

| FY | 2016 | 2020 | Real value (FY2005) (Trillions of yen) | |
|--------|------|-----------|--|-----------|
| | | | 2025 | 2030 |
| Case 1 | 19.6 | 16.1-16.9 | 15.2-17.5 | 14.4-18.0 |
| Case 2 | 19.6 | 16.4-17.0 | 16.0-17.5 | 15.7-17.9 |

Notes 1. Government construction investment includes maintenance and repairs.

2. Construction investment for FY2016 and FY2017 is based on forecasts related to government construction investment in Quarterly Outlook of Construction and Macro Economy (forecasts for FY2016 and FY2017) compiled by RICE in August 2016.

3. Real values are based on FY2005 prices.

b) Private-sector residential construction investment

Number of housing starts (in million units)

| FY2015 (estimate) | FY2020 (forecast) | FY2030 (forecast) |
|-------------------|-------------------|-------------------|
| 0.92 | 0.85-0.90 | 0.52-0.56 |

Note: Calculations are based on the expected changes in the number of households, housing vacancy rate and the number of houses to be replaced.

Private-sector residential investment (in trillion yen, Nominal Value)

| Nominal values | | (Trillions of yen) | | |
|----------------|-------------------|--------------------|----------|--|
| | FY2015 (estimate) | FY2020 | FY2030 | |
| Case 1 | 14.4 | 14.0-14.8 | 9.2-10.1 | |
| Case 2 | 14.4 | 13.8-14.7 | 8.6-9.4 | |

Real values (based on FY2005) (Trillions of yen)

| | FY2015 (estimate) | FY2020 | FY2030 | |
|--------|-------------------|-----------|---------|--|
| Case 1 | 13.3 | 12.4-13.2 | 7.3-7.9 | |
| Case 2 | 13.3 | 12.4-13.2 | 7.3-7.9 | |

Although the floor area per housing unit and the construction unit cost are expected to increase slightly, the decrease in the total number of housing starts (and renovation and reconstruction as a result of fewer houses being built) is likely to result in a decrease in total investment.

c) Private-sector non-residential construction investment

Private-sector non-residential construction investment (in trillion yen)

| Nominal values | (Trillions of yen) | | |
|----------------|--------------------|--------|--------|
| | FY2015 (estimate) | FY2020 | FY2030 |
| Case 1 | 15.0 | 18.0 | 23.1 |
| Case 2 | 15.0 | 16.5 | 17.5 |

| Real values (based on FY2005) | (Trillions of yen) | | |
|-------------------------------|--------------------|--------|--------|
| | FY2015 (estimate) | FY2020 | FY2030 |
| Case 1 | 13.7 | 15.4 | 17.6 |
| Case 2 | 13.7 | 14.4 | 14.5 |

The totals are calculated from the estimated total floor area by use (office, shop, factory, warehouse, accommodation, school, hospital, etc.). Private sector non-residential construction investment is affected by trends in economic activity more than government construction investment and private sector residential investment. The future forecasts for private sector non-residential construction investment resulted in an increase under Case 1 and remained flat under Case 2. Private sector civil engineering investment will also grow with accordance to steady economic growth.

(2) Maintenance and Repairs

Investment in maintenance and repairs (in trillion yen)

| Nominal values | | (Trillions of yen) | |
|----------------|-------------------|--------------------|-----------|
| | FY2015 (estimate) | FY2020 | FY2030 |
| Case 1 | 14.0 | 15.3-15.6 | 17.2-18.6 |
| Case 2 | 14.0 | 15.0-15.2 | 15.9-16.7 |

| Real values (based on FY2005) | | (Trillions of yen) | |
|-------------------------------|-------------------|--------------------|-----------|
| | FY2015 (estimate) | FY2020 | FY2030 |
| Case 1 | 12.8 | 13.2-13.4 | 13.2-14.3 |
| Case 2 | 12.8 | 13.2-13.3 | 13.3-13.9 |

Maintenance and repairs have remained stable for private sector residential and private sector non-residential construction over the past few years, and it is considered that the level of recent years will be maintained in real terms in the future.