



# Energy Cost Monitoring (ECM)

Nomura Lab at Keio Economic Observatory (KEO), Keio University, Tokyo

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(This report was prepared by Koji Nomura, Sho Inaba, Mansaku Yoshida.)

## 1 Recent Estimates

### 1.1 Growth Rates

|                                            | Quarter-over-quarter growth rate |        |        | Month-over-month growth rate |               |                |
|--------------------------------------------|----------------------------------|--------|--------|------------------------------|---------------|----------------|
|                                            | 2023Q1                           | 2023Q2 | 2023Q3 | September, 2023              | October, 2023 | November, 2023 |
| a. RUEC (Real Unit Energy Cost) (=b-c=e-d) | -5.5%                            | -11.0% | -3.3%  | 1.7%                         | -4.3%         | 0.6%           |
| b. Real Energy Price (=b1-b2)              | -3.4%                            | -8.3%  | -7.0%  | -2.0%                        | 0.6%          | 0.7%           |
| b1. Energy Price                           | -2.4%                            | -6.8%  | -6.3%  | -2.2%                        | 1.0%          | 0.7%           |
| b2. GDP Price                              | 1.0%                             | 1.7%   | 0.7%   | -0.2%                        | 0.4%          | 0.0%           |
| c. Energy Productivity (=c1-c2)            | 2.2%                             | 3.1%   | -3.8%  | -3.6%                        | 5.2%          | 0.1%           |
| c1. Real GDP                               | 1.2%                             | 0.9%   | -0.7%  | 0.0%                         | -0.2%         | -0.5%          |
| c2. Energy Consumption                     | -1.0%                            | -2.1%  | 3.2%   | 3.7%                         | -5.2%         | -0.7%          |
| d. Nominal GDP (=b2*c1)                    | 2.2%                             | 2.6%   | 0.0%   | -0.2%                        | 0.1%          | -0.5%          |
| e. Energy Cost (=b1*c2)                    | -3.4%                            | -8.7%  | -3.4%  | 1.4%                         | -4.2%         | 0.0%           |

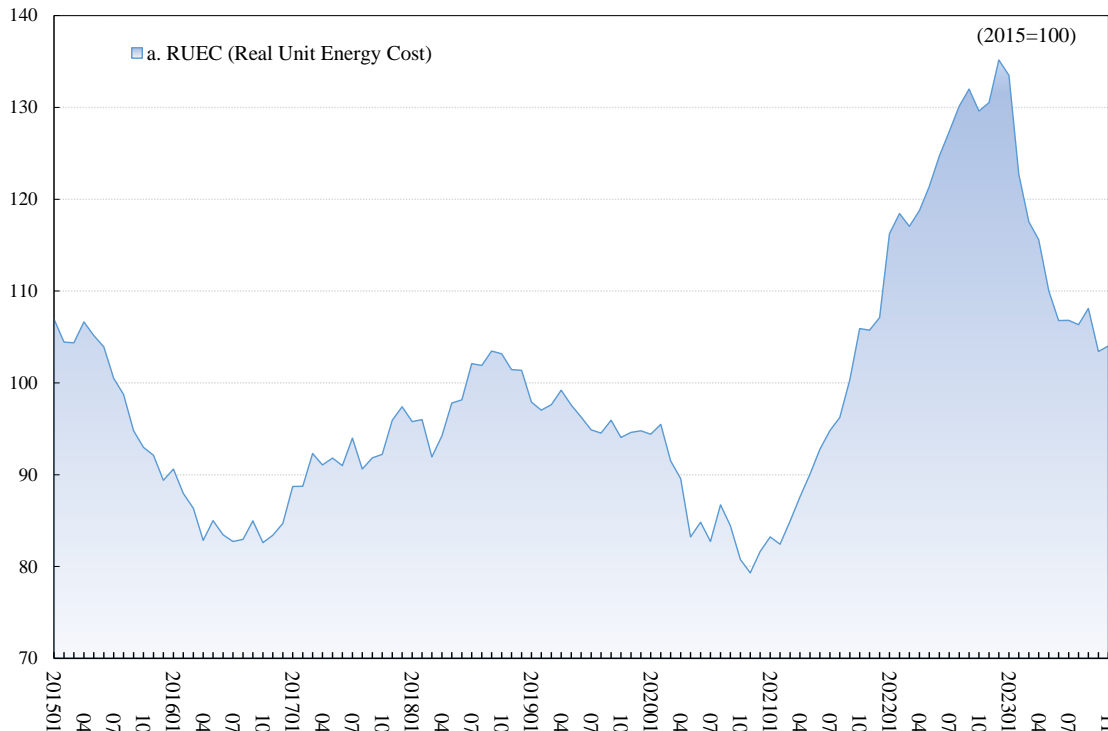
Unit: %. Notes: The most recent month is the forecasts, the previous month is the preliminary estimates, and the last two months or earlier are the final estimates. The aggregate volume indices of real GDP and energy consumption are measured using the translog index, based on the prices and volumes measured at 36 industries and 21 types of energy, respectively. The aggregate price indices of real GDP and energy consumption are defined implicitly.

### 1.2 Indices

|                                            | Quarterly index |        |        | Monthly index   |               |                |
|--------------------------------------------|-----------------|--------|--------|-----------------|---------------|----------------|
|                                            | 2023Q1          | 2023Q2 | 2023Q3 | September, 2023 | October, 2023 | November, 2023 |
| a. RUEC (Real Unit Energy Cost) (=b/c=e/d) | 124.6           | 110.8  | 107.1  | 108.1           | 103.4         | 104.0          |
| b. Real Energy Price (=b1/b2)              | 140.7           | 129.0  | 120.0  | 117.8           | 118.5         | 119.4          |
| b1. Energy Price                           | 146.5           | 136.6  | 128.0  | 125.5           | 126.7         | 127.7          |
| b2. GDP Price                              | 104.1           | 105.8  | 106.6  | 106.5           | 106.9         | 106.9          |
| c. Energy Productivity (=c1/c2)            | 112.9           | 116.4  | 112.0  | 108.9           | 114.5         | 114.7          |
| c1. Real GDP                               | 103.6           | 104.5  | 103.7  | 103.8           | 103.6         | 103.0          |
| c2. Energy Consumption                     | 91.7            | 89.8   | 92.6   | 95.4            | 90.4          | 89.9           |
| d. Nominal GDP (=b2*c1)                    | 107.8           | 110.6  | 110.6  | 110.6           | 110.8         | 110.2          |
| e. Energy Cost (=b1*c2)                    | 134.3           | 122.6  | 118.5  | 119.6           | 114.6         | 114.6          |

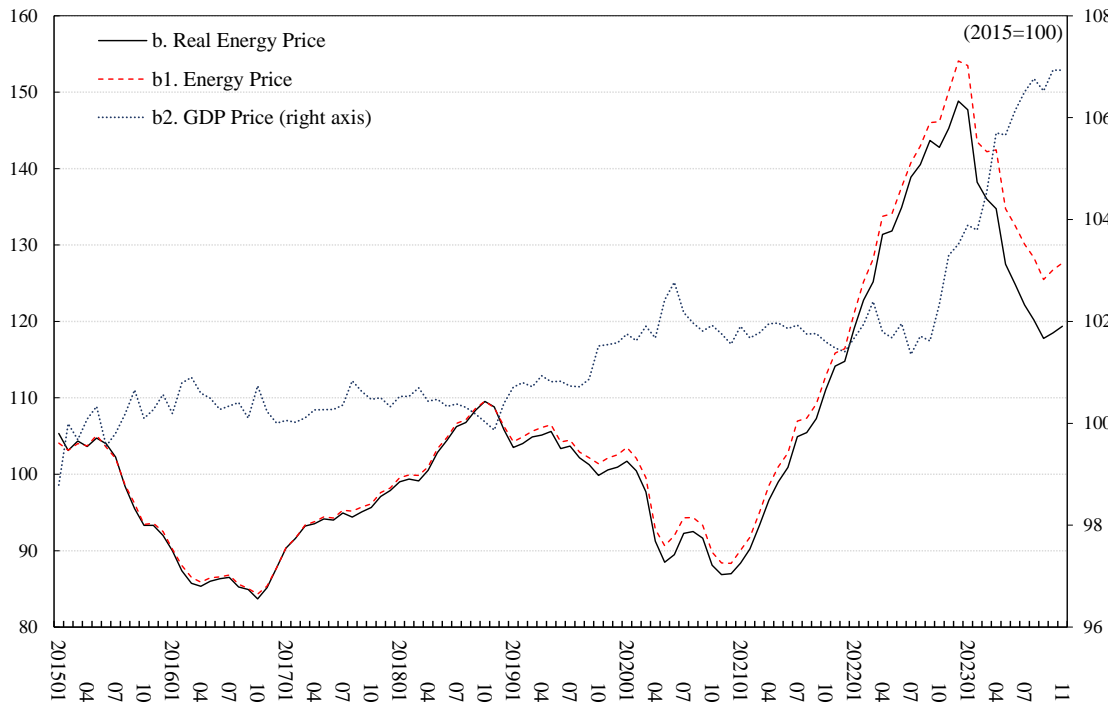
Unit: 2015 average=100.

2 Monthly RUEC (Real Unit Energy Cost)



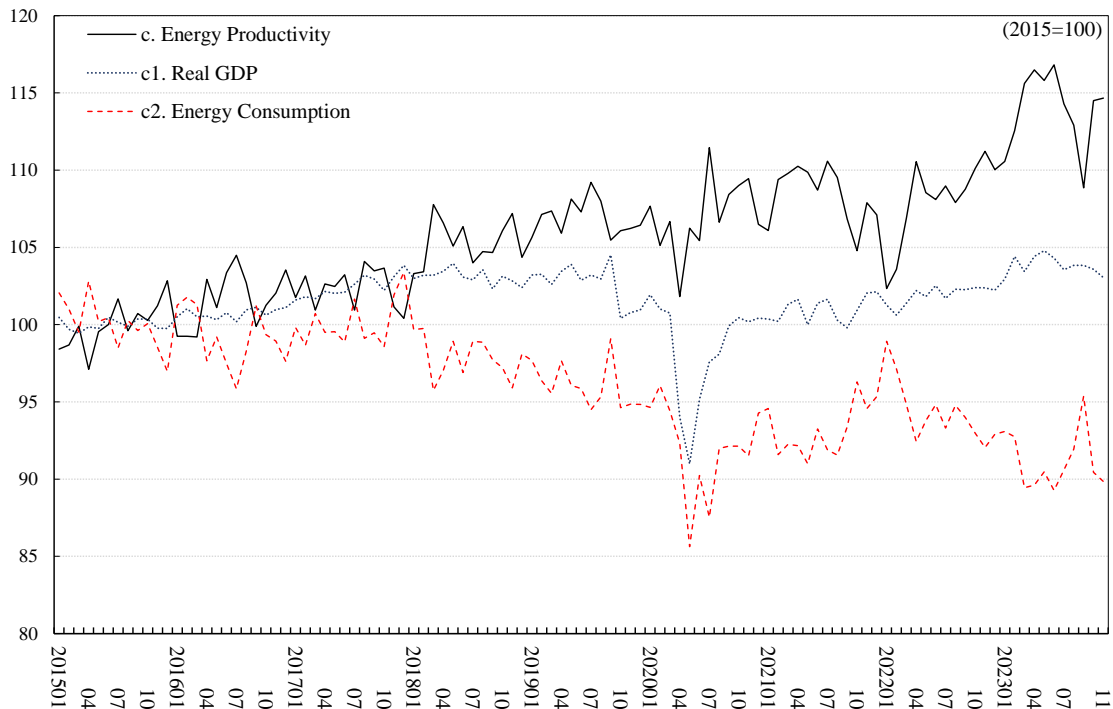
Unit: 2015 average=100. Note: Observation period is from January 2015 to November 2023.

3 Monthly Real Energy Price



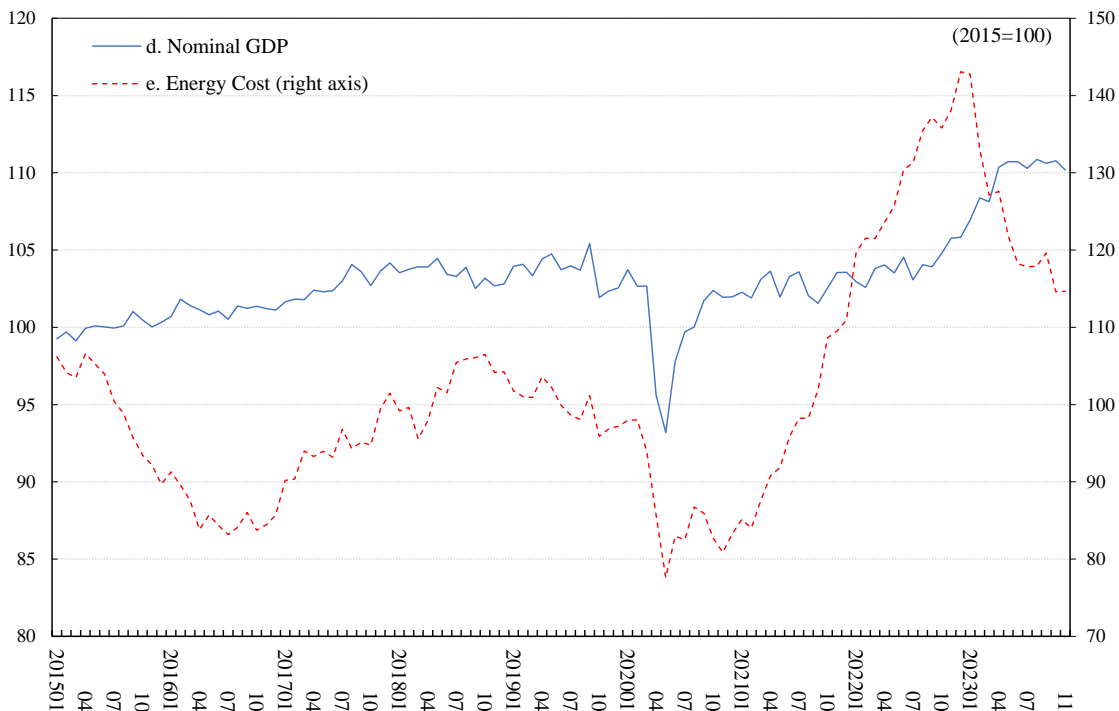
Unit: 2015 average=100. Note: Observation period is from January 2015 to November 2023.

4 Monthly Real GDP and Energy Productivity



Unit: 2015 average=100. Note: Observation period is from January 2015 to November 2023.

5 Monthly Nominal GDP and Energy Cost



Unit: 2015 average=100. Note: Observation period is from January 2015 to November 2023.

## 6 Data Table

|         | a. RUEC (Real Unit Energy Cost) |                  |               |                        |              |                        |       | d. Nominal GDP | e. Energy Cost |
|---------|---------------------------------|------------------|---------------|------------------------|--------------|------------------------|-------|----------------|----------------|
|         | b. Real Energy Price            |                  |               | c. Energy Productivity |              |                        |       |                |                |
|         |                                 | b1. Energy Price | b2. GDP Price |                        | cl. Real GDP | c2. Energy Consumption |       |                |                |
| 2015    | 100.0 (.074)                    | 100.0            | 100.0         | 100.0                  | 100.0        | 100.0                  | 100.0 | 100.0          | 100.0          |
| 2016    | 84.8 (.063)                     | 86.2             | 86.5          | 100.4                  | 101.6        | 100.7                  | 99.2  | 101.1          | 85.8           |
| 2017    | 92.2 (.068)                     | 94.3             | 94.6          | 100.3                  | 102.3        | 102.4                  | 100.1 | 102.8          | 94.7           |
| 2018    | 99.0 (.073)                     | 104.2            | 104.6         | 100.3                  | 105.3        | 103.1                  | 97.9  | 103.4          | 102.4          |
| 2019    | 96.2 (.071)                     | 102.9            | 103.9         | 101.0                  | 106.9        | 102.7                  | 96.0  | 103.7          | 99.8           |
| 2020    | 86.3 (.064)                     | 92.3             | 94.1          | 101.9                  | 107.0        | 98.4                   | 91.9  | 100.3          | 86.5           |
| 2021    | 94.3 (.070)                     | 102.2            | 104.0         | 101.8                  | 108.4        | 101.0                  | 93.2  | 102.7          | 96.9           |
| 2022    | 125.2 (.093)                    | 135.3            | 138.1         | 102.1                  | 108.1        | 101.9                  | 94.3  | 104.1          | 130.3          |
| 2020 Q1 | 93.8 (.069)                     | 100.0            | 101.7         | 101.8                  | 106.5        | 101.2                  | 95.0  | 103.0          | 96.6           |
| Q2      | 85.9 (.064)                     | 89.8             | 91.9          | 102.3                  | 104.5        | 93.4                   | 89.4  | 95.5           | 82.1           |
| Q3      | 84.6 (.063)                     | 92.2             | 94.0          | 102.0                  | 108.8        | 98.5                   | 90.5  | 100.5          | 85.1           |
| Q4      | 80.6 (.060)                     | 87.3             | 88.9          | 101.7                  | 108.3        | 100.4                  | 92.6  | 102.1          | 82.3           |
| 2021 Q1 | 83.5 (.062)                     | 90.6             | 92.3          | 101.8                  | 108.4        | 100.6                  | 92.8  | 102.4          | 85.6           |
| Q2      | 90.1 (.067)                     | 98.9             | 100.8         | 101.9                  | 109.6        | 101.0                  | 92.1  | 103.0          | 92.8           |
| Q3      | 97.1 (.072)                     | 105.9            | 107.8         | 101.8                  | 109.0        | 100.6                  | 92.3  | 102.4          | 99.5           |
| Q4      | 106.3 (.079)                    | 113.3            | 115.0         | 101.5                  | 106.6        | 101.7                  | 95.4  | 103.2          | 109.7          |
| 2022 Q1 | 117.3 (.087)                    | 122.3            | 124.8         | 102.0                  | 104.3        | 101.1                  | 97.0  | 103.1          | 120.9          |
| Q2      | 121.6 (.090)                    | 132.7            | 135.2         | 101.8                  | 109.1        | 102.2                  | 93.7  | 104.0          | 126.6          |
| Q3      | 129.8 (.096)                    | 141.0            | 143.3         | 101.6                  | 108.6        | 102.1                  | 94.0  | 103.7          | 134.6          |
| Q4      | 131.8 (.098)                    | 145.6            | 150.1         | 103.1                  | 110.5        | 102.3                  | 92.6  | 105.5          | 139.0          |
| 2023 Q1 | 124.6 (.092)                    | 140.7            | 146.5         | 104.1                  | 112.9        | 103.6                  | 91.7  | 107.8          | 134.3          |
| Q2      | 110.8 (.082)                    | 129.0            | 136.6         | 105.8                  | 116.4        | 104.5                  | 89.8  | 110.6          | 122.6          |
| Q3      | 107.1 (.079)                    | 120.0            | 128.0         | 106.6                  | 112.0        | 103.7                  | 92.6  | 110.6          | 118.5          |
| 2020 01 | 94.4 (.070)                     | 101.7            | 103.5         | 101.8                  | 107.7        | 101.9                  | 94.7  | 103.7          | 97.9           |
| 02      | 95.5 (.071)                     | 100.4            | 102.1         | 101.6                  | 105.1        | 101.0                  | 96.1  | 102.6          | 98.0           |
| 03      | 91.5 (.068)                     | 97.7             | 99.6          | 101.9                  | 100.7        | 100.7                  | 94.4  | 102.7          | 94.0           |
| 04      | 89.6 (.066)                     | 91.3             | 92.8          | 101.7                  | 101.8        | 94.0                   | 92.3  | 95.6           | 85.6           |
| 05      | 83.2 (.062)                     | 88.5             | 90.6          | 102.4                  | 106.2        | 91.0                   | 85.6  | 93.2           | 77.6           |
| 06      | 84.8 (.063)                     | 89.5             | 92.0          | 102.8                  | 105.4        | 95.2                   | 90.2  | 97.8           | 83.0           |
| 07      | 82.7 (.061)                     | 92.3             | 94.3          | 102.2                  | 111.5        | 97.6                   | 87.5  | 99.7           | 82.5           |
| 08      | 86.7 (.064)                     | 92.5             | 94.3          | 102.0                  | 106.6        | 98.1                   | 92.0  | 100.0          | 86.7           |
| 09      | 84.5 (.063)                     | 91.6             | 93.3          | 101.8                  | 108.4        | 99.9                   | 92.1  | 101.7          | 85.9           |
| 10      | 80.8 (.060)                     | 88.1             | 89.8          | 101.9                  | 109.0        | 100.5                  | 92.1  | 102.4          | 82.7           |
| 11      | 79.3 (.059)                     | 86.9             | 88.4          | 101.8                  | 109.5        | 100.2                  | 91.5  | 101.9          | 80.9           |
| 12      | 81.6 (.060)                     | 87.0             | 88.4          | 101.6                  | 106.5        | 100.4                  | 94.3  | 102.0          | 83.3           |
| 2021 01 | 83.2 (.062)                     | 88.4             | 90.1          | 101.9                  | 106.1        | 100.4                  | 94.6  | 102.3          | 85.1           |
| 02      | 82.4 (.061)                     | 90.2             | 91.8          | 101.7                  | 109.4        | 100.2                  | 91.6  | 101.9          | 84.0           |
| 03      | 85.0 (.063)                     | 93.3             | 95.0          | 101.8                  | 109.8        | 101.3                  | 92.3  | 103.1          | 87.6           |
| 04      | 87.6 (.065)                     | 96.6             | 98.5          | 102.0                  | 110.3        | 101.6                  | 92.2  | 103.6          | 90.8           |
| 05      | 90.1 (.067)                     | 99.0             | 101.0         | 102.0                  | 109.9        | 100.0                  | 91.0  | 102.0          | 91.9           |
| 06      | 92.8 (.069)                     | 100.9            | 102.8         | 101.9                  | 108.7        | 101.4                  | 93.2  | 103.3          | 95.8           |
| 07      | 94.8 (.070)                     | 104.9            | 107.0         | 101.9                  | 110.6        | 101.6                  | 91.9  | 103.6          | 98.2           |
| 08      | 96.2 (.071)                     | 105.5            | 107.3         | 101.8                  | 109.5        | 100.3                  | 91.6  | 102.0          | 98.2           |
| 09      | 100.3 (.074)                    | 107.3            | 109.2         | 101.8                  | 106.8        | 99.8                   | 93.4  | 101.6          | 101.9          |
| 10      | 105.9 (.078)                    | 111.1            | 112.9         | 101.6                  | 104.8        | 100.9                  | 96.3  | 102.5          | 108.6          |
| 11      | 105.7 (.078)                    | 114.2            | 115.9         | 101.5                  | 107.9        | 102.0                  | 94.6  | 103.6          | 109.5          |
| 12      | 107.1 (.079)                    | 114.8            | 116.4         | 101.4                  | 107.1        | 102.1                  | 95.3  | 103.6          | 110.9          |
| 2022 01 | 116.3 (.086)                    | 119.1            | 121.1         | 101.7                  | 102.3        | 101.3                  | 98.9  | 103.0          | 119.7          |
| 02      | 118.4 (.088)                    | 122.8            | 125.2         | 101.9                  | 103.6        | 100.6                  | 97.1  | 102.6          | 121.5          |
| 03      | 117.0 (.087)                    | 125.2            | 128.2         | 102.4                  | 106.9        | 101.4                  | 94.8  | 103.8          | 121.5          |
| 04      | 118.8 (.088)                    | 131.4            | 133.8         | 101.8                  | 110.6        | 102.2                  | 92.4  | 104.0          | 123.6          |
| 05      | 121.4 (.090)                    | 131.8            | 134.1         | 101.7                  | 108.5        | 101.8                  | 93.8  | 103.5          | 125.7          |
| 06      | 124.7 (.092)                    | 134.9            | 137.6         | 102.0                  | 108.1        | 102.5                  | 94.8  | 104.5          | 130.4          |
| 07      | 127.4 (.094)                    | 138.9            | 140.8         | 101.4                  | 109.0        | 101.7                  | 93.3  | 103.1          | 131.3          |
| 08      | 130.2 (.096)                    | 140.5            | 143.0         | 101.7                  | 107.9        | 102.3                  | 94.8  | 104.0          | 135.4          |
| 09      | 132.0 (.098)                    | 143.7            | 146.0         | 101.6                  | 108.8        | 102.3                  | 94.0  | 103.9          | 137.2          |
| 10      | 129.6 (.096)                    | 142.8            | 146.1         | 102.3                  | 110.1        | 102.4                  | 93.0  | 104.8          | 135.8          |
| 11      | 130.5 (.097)                    | 145.3            | 150.1         | 103.3                  | 111.2        | 102.4                  | 92.0  | 105.8          | 138.1          |
| 12      | 135.2 (.100)                    | 148.8            | 154.1         | 103.5                  | 110.0        | 102.2                  | 92.9  | 105.8          | 143.1          |
| 2023 01 | 133.5 (.099)                    | 147.7            | 153.5         | 103.9                  | 110.6        | 102.9                  | 93.1  | 106.9          | 142.8          |
| 02      | 122.7 (.091)                    | 138.2            | 143.5         | 103.8                  | 112.6        | 104.4                  | 92.8  | 108.4          | 133.0          |
| 03      | 117.5 (.087)                    | 136.0            | 142.2         | 104.5                  | 115.6        | 103.4                  | 89.4  | 108.1          | 127.1          |
| 04      | 115.6 (.086)                    | 134.7            | 142.5         | 105.7                  | 116.5        | 104.4                  | 89.6  | 110.4          | 127.6          |
| 05      | 110.0 (.081)                    | 127.5            | 134.7         | 105.7                  | 115.8        | 104.8                  | 90.5  | 110.7          | 121.8          |
| 06      | 106.8 (.079)                    | 124.8            | 132.5         | 106.1                  | 116.8        | 104.3                  | 89.3  | 110.7          | 118.3          |
| 07      | 106.8 (.079)                    | 122.1            | 130.1         | 106.5                  | 114.3        | 103.6                  | 90.6  | 110.3          | 117.8          |
| 08      | 106.3 (.079)                    | 120.2            | 128.3         | 106.8                  | 112.9        | 103.8                  | 91.9  | 110.9          | 117.9          |
| 09      | 108.1 (.080)                    | 117.8            | 125.5         | 106.5                  | 108.9        | 103.8                  | 95.4  | 110.6          | 119.6          |
| 10      | 103.4 (.077)                    | 118.5            | 126.7         | 106.9                  | 114.5        | 103.6                  | 90.4  | 110.8          | 114.6          |
| 11      | 104.0 (.077)                    | 119.4            | 127.7         | 106.9                  | 114.7        | 103.0                  | 89.9  | 110.2          | 114.6          |

Unit: 2015 average=100. Note: The numbers in parentheses are the ratio of final energy consumption cost to GDP at current prices.