



# Energy Cost Monitoring (ECM)

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(This report was prepared by Koji Nomura, Sho Inaba, and Mintsu Takagi.)

## 1 Recent Estimates

### 1.1 Growth Rates

	Quarter-over-quarter growth rate			Month-over-month growth rate		
	2022Q1	2022Q2	2022Q3	September, 2022	October, 2022	November, 2022
a. RUEC (Real Unit Energy Cost) (=b-c=e-d)	10.9%	3.3%	6.3%	1.6%	-2.2%	2.0%
b. Real Energy Price (=b1-b2)	7.5%	8.5%	6.1%	2.3%	-1.3%	1.7%
b1. Energy Price	8.1%	8.3%	5.6%	2.0%	-0.6%	2.4%
b2. GDP Price	0.6%	-0.1%	-0.5%	-0.3%	0.8%	0.7%
c. Energy Productivity (=c1-c2)	-3.4%	5.2%	-0.2%	0.7%	0.9%	-0.3%
c1. Real GDP	-0.5%	1.1%	-0.2%	-0.6%	-0.5%	-0.5%
c2. Energy Consumption	3.0%	-4.1%	0.0%	-1.3%	-1.4%	-0.3%
d. Nominal GDP (=b2+c1)	0.2%	1.0%	-0.7%	-0.9%	0.3%	0.2%
e. Energy Cost (=b1+c2)	11.1%	4.2%	5.6%	0.7%	-1.9%	2.1%

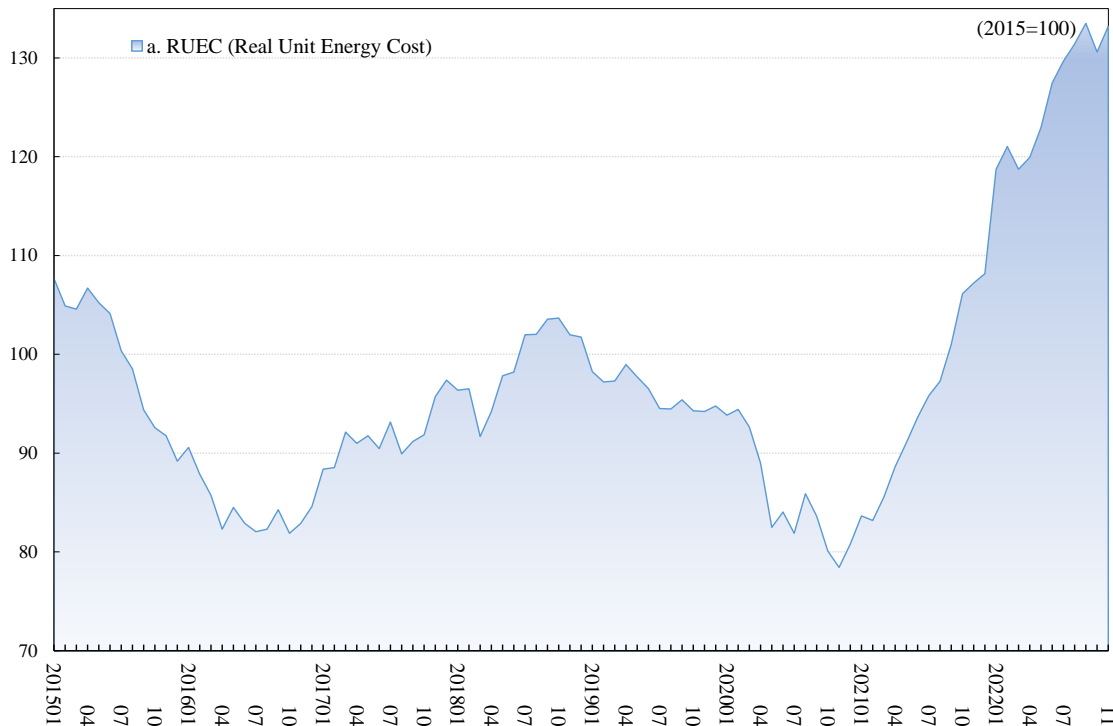
Unit: %. Note: Growth rates are defined as log differences. Notes: The most recent month is the forecasts, the previous month is the preliminary estimates, and the last two months or earlier are the final estimates. The aggregate volume indices of real GDP and energy consumption are measured using the Chained-Laspeyres index, based on the prices and volumes measured at 32 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		
	2022Q1	2022Q2	2022Q3	September, 2022	October, 2022	November, 2022
a. RUEC (Real Unit Energy Cost) (=b/c=e/d)	119.5	123.5	131.5	133.5	130.6	133.2
b. Real Energy Price (=b1/b2)	122.9	133.7	142.1	144.5	142.6	145.1
b1. Energy Price	125.4	136.2	144.0	146.5	145.7	149.2
b2. GDP Price	102.0	101.9	101.3	101.4	102.1	102.9
c. Energy Productivity (=c1/c2)	102.7	108.2	107.9	108.2	109.1	108.8
c1. Real GDP	100.7	101.8	101.6	101.5	101.0	100.5
c2. Energy Consumption	98.0	94.1	94.1	93.8	92.6	92.3
d. Nominal GDP (=b2*c1)	102.8	103.7	103.0	102.9	103.2	103.3
e. Energy Cost (=b1*c2)	122.8	128.1	135.5	137.4	134.8	137.7

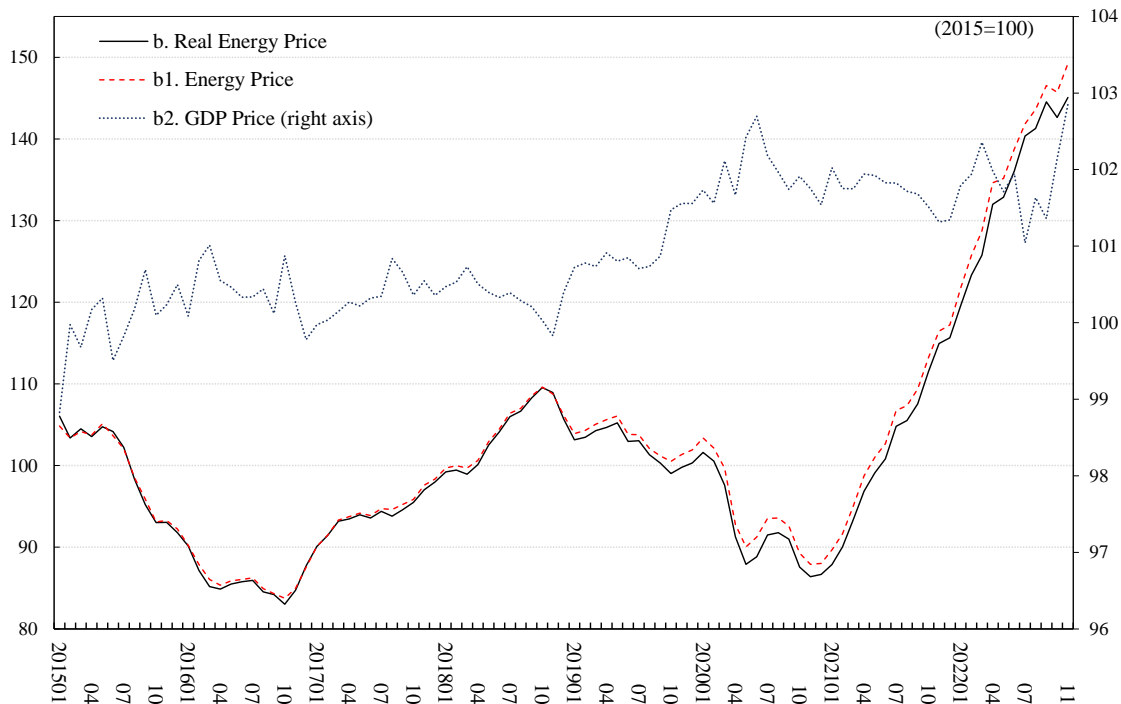
Unit: 2015 average=100.

2 Monthly RUEC (Real Unit Energy Cost)



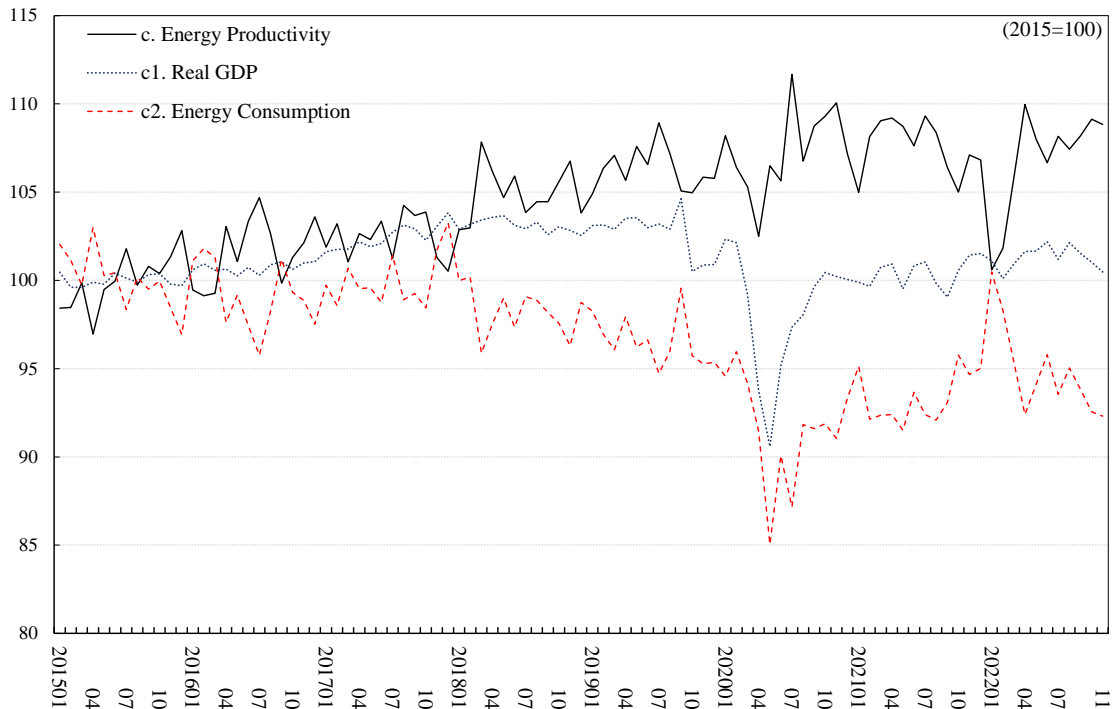
Unit: 2015 average=100. Note: Observation period is from January 2015 to November 2022.

3 Monthly Real Energy Price



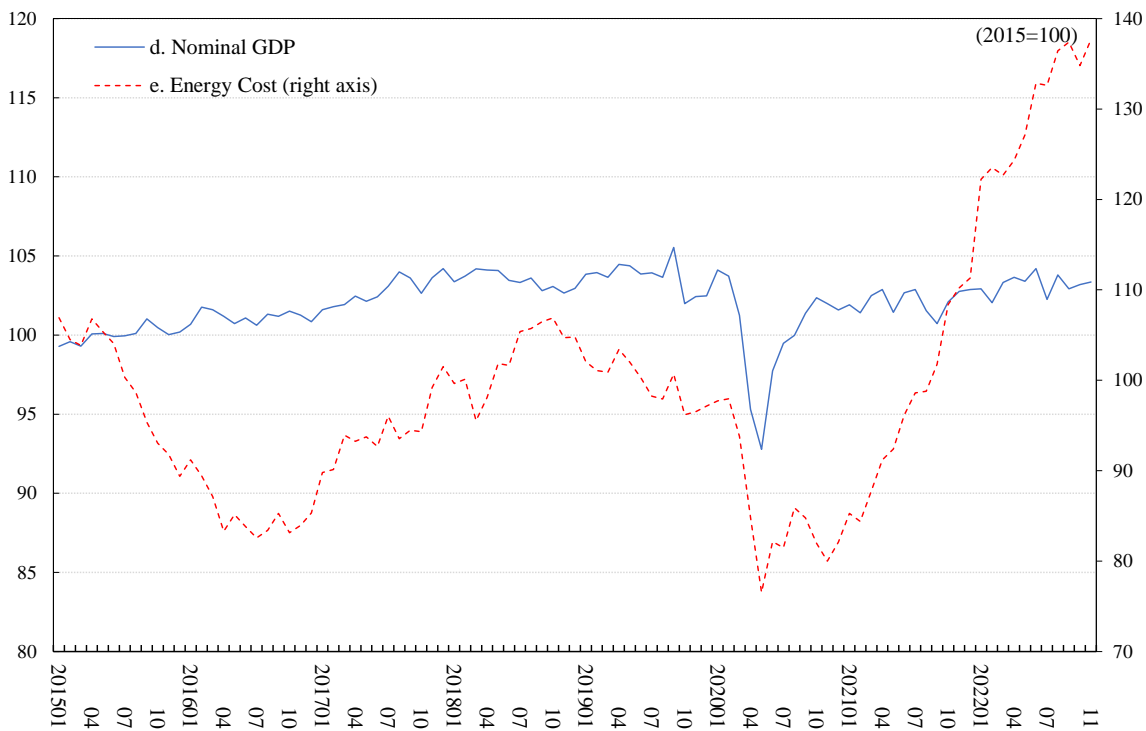
Unit: 2015 average=100. Note: Observation period is from January 2015 to November 2022.

4 Monthly Real GDP and Energy Productivity



Unit: 2015 average=100. Note: Observation period is from January 2015 to November 2022.

5 Monthly Nominal GDP and Energy Cost



Unit: 2015 average=100. Note: Observation period is from January 2015 to November 2022.

## 6 Data Table

	a. RUEC (Real Unit Energy Cost)							d. Nominal GDP	e. Energy Cost
	b. Real Energy Price		c. Energy Productivity			e2. Energy Consumption			
	b1. Energy Price	b2. GDP Price			c1. Real GDP				
2015	100.0 (.074)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
2016	84.3 (.063)	86.3	86.6	100.4	102.3	100.7	98.5	101.1	85.3
2017	91.8 (.068)	94.6	94.9	100.3	103.0	102.4	99.4	102.8	94.4
2018	99.2 (.074)	105.2	105.6	100.3	106.1	103.1	97.2	103.4	102.6
2019	96.2 (.071)	103.7	104.7	101.0	107.8	102.7	95.3	103.7	99.7
2020	85.6 (.064)	94.2	96.1	101.9	110.0	98.2	89.3	100.1	85.8
2021	95.1 (.071)	103.8	105.6	101.7	109.1	100.4	92.0	102.1	97.2
2020 Q1	93.6 (.070)	99.9	101.7	101.8	106.6	101.2	94.9	103.0	96.5
Q2	85.2 (.063)	89.4	91.4	102.3	104.9	93.2	88.8	95.3	81.2
Q3	83.8 (.062)	91.4	93.3	102.0	109.0	98.3	90.2	100.3	84.1
Q4	79.8 (.059)	86.9	88.4	101.7	108.8	100.2	92.1	102.0	81.4
2021 Q1	84.1 (.062)	90.4	92.1	101.8	107.4	100.1	93.2	101.9	85.8
Q2	91.1 (.068)	98.9	100.8	101.9	108.5	100.4	92.5	102.3	93.2
Q3	98.0 (.073)	106.0	107.8	101.7	108.0	100.0	92.5	101.7	99.7
Q4	107.2 (.080)	114.0	115.6	101.4	106.3	101.2	95.2	102.6	110.0
2022 Q1	119.5 (.089)	122.9	125.4	102.0	102.7	100.7	98.0	102.8	122.8
Q2	123.5 (.092)	133.7	136.2	101.9	108.2	101.8	94.1	103.7	128.1
Q3	131.5 (.098)	142.1	144.0	101.3	107.9	101.6	94.1	103.0	135.5
2018 01	96.4 (.072)	99.2	99.7	100.5	102.9	102.9	100.0	103.4	99.6
02	96.5 (.072)	99.5	100.0	100.5	103.0	103.2	100.2	103.7	100.1
03	91.7 (.068)	99.0	99.7	100.7	107.8	103.4	95.9	104.2	95.5
04	94.2 (.070)	100.1	100.6	100.5	106.2	103.6	97.5	104.1	98.1
05	97.8 (.073)	102.5	102.9	100.4	104.7	103.7	99.0	104.1	101.8
06	98.2 (.073)	104.1	104.5	100.3	105.9	103.1	97.3	103.5	101.6
07	102.0 (.076)	106.0	106.4	100.4	103.8	102.9	99.1	103.3	105.4
08	102.0 (.076)	106.7	107.0	100.3	104.5	103.3	98.9	103.6	105.7
09	103.6 (.077)	108.3	108.5	100.2	104.5	102.6	98.2	102.8	106.5
10	103.7 (.077)	109.5	109.6	100.0	105.6	103.0	97.6	103.1	106.9
11	102.0 (.076)	108.9	108.8	99.8	106.8	102.8	96.3	102.7	104.7
12	101.8 (.076)	105.7	106.2	100.4	103.8	102.5	98.8	103.0	104.8
2019 01	98.3 (.073)	103.1	103.9	100.7	104.9	103.1	98.3	103.8	102.1
02	97.2 (.072)	103.5	104.3	100.8	106.4	103.1	97.0	103.9	101.1
03	97.3 (.072)	104.3	105.1	100.7	107.1	102.9	96.1	103.6	100.9
04	99.0 (.073)	104.7	105.6	100.9	105.7	103.5	98.0	104.5	103.4
05	97.7 (.073)	105.2	106.1	100.8	107.6	103.5	96.2	104.4	102.0
06	96.5 (.072)	102.9	103.8	100.8	106.6	103.0	96.6	103.9	100.3
07	94.5 (.070)	103.0	103.8	100.7	108.9	103.2	94.7	103.9	98.2
08	94.5 (.070)	101.3	102.1	100.7	107.2	102.9	96.0	103.6	97.9
09	95.4 (.071)	100.3	101.2	100.9	105.1	104.6	99.6	105.5	100.7
10	94.3 (.070)	99.0	100.5	101.5	105.0	100.5	95.7	102.0	96.2
11	94.2 (.070)	99.8	101.4	101.6	105.8	100.9	95.3	102.4	96.5
12	94.8 (.070)	100.3	101.9	101.6	105.8	100.9	95.4	102.5	97.1
2020 01	93.8 (.070)	101.6	103.4	101.7	108.2	102.3	94.6	104.1	97.7
02	94.4 (.070)	100.6	102.1	101.6	106.4	102.1	96.0	103.7	98.0
03	92.6 (.069)	97.6	99.7	102.1	105.3	99.2	94.2	101.3	93.8
04	89.0 (.066)	91.3	92.8	101.7	102.5	93.7	91.4	95.3	84.8
05	82.5 (.061)	87.9	90.0	102.4	106.5	90.6	85.0	92.8	76.5
06	84.0 (.062)	88.8	91.3	102.7	105.6	95.2	90.1	97.7	82.2
07	81.9 (.061)	91.5	93.5	102.2	111.7	97.4	87.2	99.5	81.5
08	85.9 (.064)	91.8	93.6	102.0	106.8	98.1	91.8	100.0	85.9
09	83.6 (.062)	91.0	92.6	101.7	108.7	99.6	91.6	101.4	84.8
10	80.1 (.059)	87.6	89.3	101.9	109.3	100.4	91.9	102.4	82.0
11	78.4 (.058)	86.4	87.9	101.8	110.1	100.2	91.0	102.0	80.0
12	80.8 (.060)	86.7	88.0	101.5	107.2	100.0	93.3	101.6	82.1
2021 01	83.6 (.062)	87.9	89.7	102.0	105.0	99.9	95.1	101.9	85.3
02	83.2 (.062)	90.0	91.6	101.8	108.2	99.7	92.1	101.4	84.4
03	85.6 (.064)	93.4	95.0	101.7	109.1	100.7	92.4	102.5	87.7
04	88.6 (.066)	96.9	98.7	101.9	109.2	100.9	92.4	102.9	91.2
05	91.1 (.068)	99.1	101.0	101.9	108.7	99.5	91.5	101.4	92.4
06	93.6 (.070)	100.8	102.7	101.8	107.6	100.8	93.7	102.7	96.1
07	95.8 (.071)	104.8	106.8	101.8	109.3	101.0	92.4	102.9	98.6
08	97.3 (.072)	105.5	107.3	101.7	108.4	99.8	92.1	101.5	98.8
09	101.0 (.075)	107.6	109.4	101.7	106.4	99.1	93.1	100.7	101.8
10	106.1 (.079)	111.5	113.2	101.5	105.0	100.6	95.8	102.1	108.4
11	107.2 (.080)	114.9	116.5	101.3	107.1	101.4	94.7	102.8	110.2
12	108.2 (.080)	115.6	117.2	101.3	106.8	101.5	95.0	102.9	111.3
2022 01	118.7 (.088)	119.6	121.7	101.8	100.6	101.1	100.5	102.9	122.2
02	121.0 (.090)	123.3	125.7	101.9	101.8	101.0	98.3	102.0	123.5
03	118.7 (.088)	125.8	128.7	102.4	105.8	100.9	95.4	103.3	122.7
04	119.9 (.089)	132.0	134.6	102.0	110.0	101.6	92.4	103.6	124.3
05	122.9 (.091)	132.9	135.2	101.7	108.0	101.7	94.1	103.4	127.1
06	127.5 (.095)	136.1	138.8	102.0	106.7	102.2	95.8	104.2	132.8
07	129.7 (.096)	140.4	141.8	101.0	108.2	101.2	93.5	102.3	132.6
08	131.4 (.098)	141.3	143.6	101.6	107.4	102.1	95.0	103.8	136.4
09	133.5 (.099)	144.5	146.5	101.4	108.2	101.5	93.8	102.9	137.4
10	130.6 (.097)	142.6	145.7	102.1	109.1	101.0	92.6	103.2	134.8
11	133.2 (.099)	145.1	149.2	102.9	108.8	100.5	92.3	103.3	137.7

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