

Appendix I
**Reference case projections for natural gas
production**

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Table 11. World total natural gas production by region, Reference case, 2015-50

trillion cubic feet

Region	2015	2020	2025	2030	2035	2040	2045	2050	Average annual percent change (2015-50)
OECD									
OECD Americas	33.8	37.2	39.7	41.9	44.2	46.8	49.2	51.3	1.2
United States ^a	27.0	30.8	33.1	34.9	36.5	37.7	38.9	40.3	1.1
Canada	5.5	5.6	5.6	5.6	6.2	7.1	8.0	8.2	1.2
Mexico	1.3	0.7	1.0	1.3	1.5	1.8	2.3	2.7	2.1
Chile	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	3.1
OECD Europe	8.9	6.4	6.9	7.0	6.9	7.2	7.4	7.5	-0.5
North Europe	8.7	6.2	6.2	6.3	6.2	6.6	6.8	6.8	-0.7
South Europe	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-2.2
Southwest Europe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--
Turkey/Israel	0.0	0.0	0.6	0.6	0.6	0.6	0.6	0.6	8.3
OECD Asia	2.9	5.3	5.8	6.2	6.8	7.5	8.0	8.7	3.2
Japan	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
South Korea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--
Australia/New Zealand	2.7	5.2	5.6	6.0	6.6	7.3	7.8	8.5	3.3
Total OECD	45.7	48.9	52.4	55.0	57.9	61.5	64.6	67.4	1.1
Non-OECD									
Non-OECD Europe and Eurasia	28.4	27.5	29.7	30.5	33.0	34.0	36.2	37.9	0.8
Russia	21.0	21.6	23.0	23.4	25.5	25.8	27.8	29.2	0.9
Central Asia	6.3	5.6	5.5	5.9	5.8	6.4	6.6	6.8	0.4
Non-OECD Europe	1.1	0.3	1.2	1.2	1.7	1.7	1.8	1.9	1.4
Non-OECD Asia	16.1	15.8	17.1	20.5	25.2	29.8	34.9	40.2	2.6
China	4.6	5.5	6.4	8.7	11.3	14.1	17.1	20.7	4.4
India	1.1	0.6	1.3	1.4	1.6	1.7	1.9	2.1	1.8
LNG Exporters	5.6	5.7	6.0	6.2	7.1	7.6	8.6	9.5	1.5
Other Asia	4.8	4.0	3.4	4.2	5.2	6.3	7.3	7.9	1.4
Middle East	20.7	20.3	23.5	26.0	28.0	32.5	37.1	42.5	2.1
Arabian Producers	4.4	4.0	3.8	4.0	4.2	4.2	4.8	5.3	0.5
Iran	6.5	6.3	7.7	9.1	10.3	12.9	15.3	18.6	3.0
Iraq	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	2.1
Qatar	5.8	6.5	8.0	8.2	8.3	9.8	10.7	11.9	2.0
Saudi Arabia	3.7	3.4	4.0	4.6	5.0	5.4	6.0	6.4	1.6
Other Middle East	0.2	0.0	0.1	0.1	0.1	0.2	0.2	0.2	1.1

Table I1. World total natural gas production by region, Reference case, 2015-50 (cont.)

trillion cubic feet

Region	2015	2020	2025	2030	2035	2040	2045	2050	Average annual percent change (2015-50)
Africa	7.3	8.3	9.1	10.2	11.1	11.7	12.2	13.0	1.7
North Africa	5.0	5.8	6.1	6.2	6.4	6.8	7.3	7.7	1.3
West Africa	2.0	2.4	2.5	2.6	3.0	3.1	3.2	3.5	1.6
East Africa	0.2	0.1	0.4	1.4	1.7	1.7	1.7	1.7	5.7
Other Africa	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	3.3
Non-OECD Americas	5.9	5.9	5.9	6.0	6.6	7.1	7.8	8.5	1.1
Brazil	0.7	0.9	0.9	1.0	1.1	1.2	1.4	1.6	2.4
Northern Producers	2.6	2.6	2.5	2.6	2.8	2.9	3.1	3.4	0.7
Southern Cone	1.3	1.2	1.4	1.4	1.7	1.9	2.1	2.3	1.7
Andean	1.2	1.2	1.1	1.0	1.0	1.1	1.1	1.2	-0.1
Central America and Caribbean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Total Non-OECD	78.4	77.7	85.4	93.2	104.0	115.2	128.2	142.1	1.7
Total World	124	127	138	148	162	177	193	210	1.5
Discrepancy ^b	-0.1	-0.1	-0.3	-0.3	-0.3	-0.4	-0.3	-0.3	

^aIncludes supplemental production less any forecast discrepancy.

^bBalancing item. Differences between global production and consumption totals results from independent rounding and differences in conversion factors derived from heat contents of natural gas that is produced and consumed regionally.

Sources: **United States:** EIA, *Annual Energy Outlook 2017*, DOE/EIA-0383 (2017) (Washington, DC, June 2017), www.eia.gov/aeo. **Others:** EIA, International Natural Gas Model (2017).

Table 12. World tight gas, shale gas, and coalbed methane production by region, Reference case, 2015-50

trillion cubic feet

	2015	2020	2025	2030	2035	2040	2045	2050	Average annual percent change (2015-50)
OECD									
OECD Americas	22.4	27.3	31.0	33.7	36.3	38.8	41.2	43.3	1.9
United States ^a	19.2	23.5	26.6	28.8	30.6	31.9	33.2	34.7	1.7
Canada	3.2	3.8	4.2	4.4	5.0	5.9	6.6	6.8	2.2
Mexico	0.0	0.0	0.2	0.5	0.7	1.0	1.3	1.7	15.1
Chile	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--
OECD Europe	0.1	0.2	0.7	0.8	0.9	1.1	1.3	1.4	9.6
North Europe	0.1	0.2	0.4	0.6	0.9	1.1	1.3	1.4	9.6
South Europe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.4
Southwest Europe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--
Turkey/Israel	0.0	0.0	0.3	0.1	0.0	0.0	0.0	0.0	--
OECD Asia	0.5	1.6	2.2	2.7	3.2	3.8	4.3	4.8	6.5
Japan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--
South Korea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--
Australia/New Zealand	0.5	1.6	2.2	2.7	3.2	3.8	4.3	4.8	6.5
Total OECD	23.0	29.2	33.9	37.1	40.4	43.8	46.8	49.5	2.2
Non-OECD									
Non-OECD Europe and Eurasia	0.2	0.3	0.4	0.7	1.6	2.7	4.2	5.7	10.1
Russia	0.2	0.3	0.4	0.6	1.3	2.2	3.4	4.8	9.6
Central Asia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--
Non-OECD Europe	0.0	0.0	0.1	0.1	0.3	0.6	0.8	1.0	23.3
Non-OECD Asia	0.8	1.9	3.6	5.9	8.6	11.3	14.1	17.4	9.2
China	0.6	1.5	3.0	5.0	7.3	9.7	12.1	15.0	9.9
India	0.0	0.0	0.1	0.2	0.3	0.3	0.4	0.6	10.5
LNG Exporters	0.2	0.4	0.5	0.7	1.0	1.3	1.6	1.8	6.3
Other Asia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--
Middle East	0.0	0.0	0.0	0.1	0.3	0.7	1.3	1.9	24.5
Arabian Producers	0.0	0.0	0.0	0.1	0.1	0.3	0.4	0.5	19.8
Iran	0.0	0.0	0.0	0.1	0.2	0.4	0.8	1.3	--
Iraq	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--
Qatar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--
Saudi Arabia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--
Other Middle East	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	--

Table 12. World tight gas, shale gas, and coalbed methane production by region, Reference case, 2015-50 (cont.)

trillion cubic feet

	2015	2020	2025	2030	2035	2040	2045	2050	Average annual percent change (2015-50)
Africa	0.0	0.1	0.5	1.1	1.8	2.5	3.1	3.5	17.1
North Africa	0.0	0.1	0.5	1.0	1.5	2.0	2.3	2.5	15.9
West Africa	0.0	0.0	0.0	0.1	0.3	0.5	0.8	1.1	--
East Africa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--
Other Africa	-	-	-	-	-	-	-	-	--
Non-OECD Americas	0.1	0.3	0.8	1.2	2.0	2.6	3.2	3.8	10.9
Brazil	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.4	23.7
Northern Producers	0.0	0.0	0.1	0.2	0.5	0.7	0.9	1.2	32.1
Southern Cone	0.1	0.3	0.7	0.8	1.2	1.4	1.6	1.8	8.5
Andean	0.0	0.0	0.0	0.1	0.2	0.2	0.3	0.4	--
Central America and Caribbean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--
Total Non-OECD	1.1	2.6	5.4	8.9	14.3	19.8	25.9	32.4	10.1
Total World	24	32	39	46	55	64	73	82	3.6

^aIncludes supplemental production less any forecast discrepancy.

Table 13. World other natural gas production by region, Reference case, 2015-50

trillion cubic feet

	2015	2020	2025	2030	2035	2040	2045	2050	Average annual percent change (2015-50)
OECD									
OECD Americas	11.4	9.8	8.7	8.2	8.0	7.9	8.0	8.0	-1.0
United States ^a	7.8	7.3	6.4	6.1	5.9	5.8	5.7	5.6	-1.0
Canada	2.2	1.8	1.4	1.3	1.2	1.2	1.4	1.4	-1.3
Mexico	1.3	0.7	0.8	0.8	0.8	0.9	0.9	0.9	-0.9
Chile	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7
OECD Europe	8.9	6.2	6.2	6.2	5.9	6.1	6.1	6.1	-1.1
North Europe	8.6	6.1	5.8	5.7	5.3	5.5	5.5	5.4	-1.3
South Europe	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-2.9
Southwest Europe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-1.0
Turkey/Israel	0.0	0.0	0.3	0.5	0.6	0.6	0.6	0.6	8.3
OECD Asia	2.4	3.7	3.6	3.5	3.6	3.7	3.7	3.8	1.4
Japan	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	-0.5
South Korea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--
Australia/New Zealand	2.2	3.5	3.4	3.3	3.4	3.6	3.6	3.7	1.5
Total OECD	22.7	19.7	18.5	17.9	17.5	17.8	17.9	17.9	-0.7
Non-OECD									
Non-OECD Europe and Eurasia	28.2	27.2	29.3	29.8	31.4	31.3	32.0	32.1	0.4
Russia	20.8	21.3	22.6	22.8	24.2	23.7	24.4	24.5	0.4
Central Asia	6.3	5.6	5.5	5.9	5.8	6.4	6.6	6.8	0.4
Non-OECD Europe	1.1	0.3	1.2	1.0	1.3	1.2	1.0	0.9	-0.7
Non-OECD Asia	15.3	13.9	13.5	14.6	16.7	18.6	20.8	22.8	1.1
China	4.1	3.9	3.5	3.7	4.1	4.5	5.0	5.7	1.0
India	1.1	0.6	1.2	1.2	1.4	1.4	1.5	1.6	1.0
LNG Exporters	5.3	5.3	5.5	5.5	6.0	6.4	7.0	7.6	1.0
Other Asia	4.8	4.0	3.4	4.2	5.2	6.3	7.3	7.9	1.4
Middle East	20.7	20.3	23.5	25.9	27.7	31.8	35.8	40.5	1.9
Arabian Producers	4.4	4.0	3.8	4.0	4.1	4.0	4.4	4.8	0.2
Iran	6.5	6.3	7.7	9.0	10.1	12.5	14.6	17.3	2.8
Iraq	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	2.1
Qatar	5.8	6.5	8.0	8.2	8.3	9.8	10.7	11.9	2.0
Saudi Arabia	3.7	3.4	4.0	4.5	5.0	5.4	5.9	6.4	1.6
Other Middle East	0.2	0.0	0.1	0.1	0.1	0.1	0.1	0.1	-1.0

Table 13. World other natural gas production by region, Reference case, 2015-50 (cont.)

trillion cubic feet

	2015	2020	2025	2030	2035	2040	2045	2050	Average annual percent change (2015-50)
Africa	7.2	8.2	8.6	9.1	9.3	9.2	9.2	9.5	0.8
North Africa	5.0	5.6	5.6	5.2	4.9	4.8	5.0	5.2	0.2
West Africa	2.0	2.4	2.5	2.5	2.7	2.6	2.4	2.5	0.6
East Africa	0.2	0.1	0.4	1.4	1.7	1.7	1.7	1.7	5.7
Other Africa	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	--
Non-OECD Americas	5.8	5.6	5.1	4.8	4.6	4.5	4.6	4.8	-0.6
Brazil	0.7	0.8	0.9	0.9	0.9	1.0	1.1	1.2	1.5
Northern Producers	2.6	2.6	2.4	2.4	2.3	2.2	2.2	2.2	-0.5
Southern Cone	1.2	0.9	0.7	0.5	0.5	0.5	0.5	0.5	-2.2
Andean	1.2	1.2	1.1	0.9	0.8	0.8	0.8	0.8	-1.2
Central America and Caribbean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-1.2
Total Non-OECD	77.3	75.1	80.0	84.2	89.7	95.3	102.4	109.8	1.0
Total World	100	95	98	102	107	113	120	128	0.7

Sources: **United States:** EIA, *Annual Energy Outlook 2017*, DOE/EIA-0383 (2017) (Washington, DC, June 2017), www.eia.gov/aeo. **Others:** EIA, International Natural Gas Model (2017).

Table 14. World net trade in natural gas by region, Reference case, 2015-50

trillion cubic feet

	2015	2020	2025	2030	2035	2040	2045	2050	Average annual percent change (2015-50)
OECD									
OECD Americas	0.5	-2.6	-3.5	-3.9	-4.8	-5.4	-5.8	-5.8	207.5
United States ^a	0.9	(3.4)	(4.7)	(5.4)	(5.8)	(5.7)	(5.6)	(5.6)	205.2
Canada	-1.9	-1.3	-0.8	-0.5	-0.9	-1.4	-1.9	-1.8	0.1
Mexico	1.3	1.9	1.9	1.8	1.7	1.6	1.5	1.4	0.2
Chile	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.4
OECD Europe	9.3	11.0	10.7	11.2	13.5	15.0	17.0	19.6	2.2
North Europe	4.5	5.3	5.4	5.7	7.3	8.1	9.5	11.2	2.6
South Europe	2.1	2.5	2.6	2.6	3.0	3.2	3.6	3.9	1.8
Southwest Europe	1.0	1.2	1.2	1.3	1.4	1.6	1.7	1.9	1.8
Turkey/Israel	1.7	2.0	1.5	1.6	1.8	2.0	2.3	2.6	1.3
OECD Asia	4.5	2.5	2.2	2.3	2.2	2.1	2.3	2.4	-1.8
Japan	4.1	4.1	4.0	4.0	4.0	4.0	4.0	4.1	0.0
South Korea	1.6	1.9	2.0	2.1	2.3	2.6	2.8	3.0	--
Australia/New Zealand	-1.2	-3.5	-3.8	-3.9	-4.2	-4.5	-4.5	-4.7	4.0
Total OECD	14.2	10.8	9.4	9.5	10.9	11.7	13.5	16.2	0.4
Non-OECD									
Non-OECD Europe and Eurasia	-8.2	-6.9	-9.1	-9.7	-11.7	-12.4	-14.6	-16.2	2.0
Russia	-6.7	-7.6	-8.9	-9.3	-11.1	-11.4	-13.5	-15.1	2.2
Central Asia	-1.8	-1.3	-1.2	-1.5	-1.3	-1.8	-1.9	-1.8	0.8
Non-OECD Europe	0.3	2.0	1.0	1.1	0.7	0.7	0.7	0.7	2.4
Non-OECD Asia	0.9	4.2	8.4	9.5	11.1	13.4	15.8	18.0	8.9
China	2.1	3.5	5.5	5.9	6.3	6.7	7.5	7.5	3.6
India	0.7	1.4	1.3	1.8	2.3	3.2	4.0	4.9	5.7
LNG Exporters	-2.8	-2.8	-2.6	-2.4	-2.4	-2.2	-2.3	-2.3	0.6
Other Asia	0.9	2.2	4.2	4.2	5.0	5.6	6.5	7.8	6.4
Middle East	-4.2	-4.7	-5.6	-5.4	-5.5	-8.0	-10.1	-13.3	3.4
Arabian Producers	0.2	0.4	1.3	1.8	2.2	2.7	2.8	3.0	7.5
Iran	0.0	-0.2	-0.6	-1.0	-1.5	-3.3	-4.7	-7.1	16.7
Iraq	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--
Qatar	-4.5	-5.1	-6.4	-6.4	-6.4	-7.7	-8.4	-9.3	2.1
Saudi Arabia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--
Other Middle East	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	2.2

Table I4. World net trade in natural gas by region, Reference case, 2015-50 (cont.)

trillion cubic feet

	2015	2020	2025	2030	2035	2040	2045	2050	Average annual percent change (2015-50)
Africa	-2.5	-3.0	-3.1	-4.1	-4.8	-4.8	-4.7	-4.9	1.9
North Africa	-1.6	-1.9	-1.8	-1.7	-1.7	-1.7	-1.7	-1.7	0.3
West Africa	-1.1	-1.3	-1.3	-1.3	-1.7	-1.7	-1.7	-1.8	1.5
East Africa	0.0	0.0	-0.2	-1.2	-1.6	-1.6	-1.5	-1.5	--
Other Africa	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.8
Non-OECD Americas	-0.2	-0.4	0.0	0.2	0.0	0.2	0.2	0.2	--
Brazil	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	-0.3
Northern Producers	-0.6	-0.6	-0.3	-0.3	-0.4	-0.2	-0.2	-0.2	2.6
Southern Cone	0.5	0.4	0.3	0.5	0.2	0.3	0.3	0.3	-1.6
Andean	-0.8	-0.8	-0.6	-0.5	-0.5	-0.5	-0.5	-0.5	-1.4
Central America and Caribbean	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5
Total Non-OECD	-14.2	-10.8	-9.3	-9.5	-10.8	-11.7	-13.5	-16.2	0.4
Total World	0	0	0	0	0	0	0	0	

Sources: **United States:** EIA, *Annual Energy Outlook 2017*, DOE/EIA-0383 (2017) (Washington, DC, June 2017), www.eia.gov/aeo. **Others:** EIA, International Natural Gas Model (2017).