

Tables for scenario projections

General note to the tables

This annex includes historical and projected data for the Stated Policies, Current Policies and Sustainable Development scenarios for the following five data sets:

- A.1. Fossil fuel production and demand by region.
- A.2. Power sector overview by region covering gross electricity generation and installed capacity; cumulative retirements and additions for 2019-2040. Global carbon dioxide (CO₂) emissions and intensity from power plants are also included.
- A.3. Energy demand, gross electricity generation and electrical capacity, and CO₂ emissions from fossil fuel combustion by region.
- A.4. Global emissions of pollutants by energy sector and fuel.
- A.5. Global average annual and cumulative energy investments by type.

Geographical coverage for Tables A.1, A.2 and A.3 include: World, North America, Central and South America, Europe, Africa, Middle East, Eurasia, and Asia Pacific. Table A.3 also covers: Brazil, China, European Union, India, Japan, Russia, South Africa, Southeast Asia and United States. The definitions for regions, fuels and sectors are in Annex C.

Both in the text of this book and in the tables, rounding may lead to minor differences between totals and the sum of their individual components. Growth rates are calculated on a compound average annual basis and are marked “n.a.” when the base year is zero or the value exceeds 200%. Nil values are marked “-”.

Please see Box A.1 for details on where to download the *World Energy Outlook (WEO)* tables in Excel format. In addition, Box A.1 lists the links relating to the main *WEO* website, documentation and methodology of the World Energy Model (WEM), investment costs, policy databases and recent *WEO* special reports.

Data sources

The World Energy Model (WEM) is a very data-intensive model covering the whole global energy system. Much of the data on energy supply, transformation and demand, as well as CO₂ emissions from fuel combustion, energy efficiency and prices are obtained from the IEA’s own databases of energy and economic statistics (www.iea.org/statistics/).

Additional data from a wide range of external sources are also used. Historical data for gross power generation capacity are drawn from the S&P Global Market Intelligence World Electric Power Plants Database (March 2019 version) and the International Atomic Energy Agency PRIS database (www.iaea.org/pris).

The formal base year for this year’s projections is 2017, as this is the last year for which a complete picture of energy demand and production is in place. However, we have used more recent data wherever available, and we include our 2018 estimates for energy

production and demand in this annex (Tables A.1 to A.3). Estimates for the year 2018 are based on an update of the Global Energy and CO₂ Status Report which is derived from a number of sources, including the latest monthly data submissions to the IEA's Energy Data Centre, other statistical releases from national administrations, and recent market data from the IEA *Market Report Series* that cover coal, oil, natural gas, renewables and power. Investment estimates include the year 2018, based on the IEA's World Energy Investment 2019 (www.iea.org/wei2019/).

This annex also includes projections for primary air pollutant emissions that are emitted directly as a result of human activity. The focus is on anthropogenic emissions of sulfur dioxide (SO₂), nitrogen oxides (NO_x) and fine particulate matter (PM_{2.5}). Only emissions related to energy activities are reported. The base year of the projections is 2018. Base year air pollutant emissions estimates and scenario projections stem from a coupling of sectoral activity and associated energy demand of the WEM with the Greenhouse Gas and Air Pollution Interactions and Synergies (GAINS) model of the International Institute for Applied Systems Analysis (IIASA).¹

Definitional note: A.1. Fossil fuel production and demand tables

Oil production and demand is expressed in million barrels per day (mb/d). Tight oil includes tight crude oil and condensate production except for the United States, which includes tight crude oil only (US tight condensate volumes are included in natural gas liquids). Processing gains covers volume increases that occur during crude oil refining. Biofuels and their inclusion in liquids demand is expressed in energy-equivalent volumes of gasoline and diesel. Natural gas production and demand is expressed in billion cubic metres (bcm). Coal production and demand is expressed in million tonnes of coal equivalent (Mtce). Differences between historical production and demand volumes for oil, gas and coal are due to changes in stocks. Bunkers include both international marine and aviation fuels.

Definitional note: A.2. Power sector overview tables

The power sector overview tables provide a high-level snapshot of the electricity system by region. Electricity generation expressed in terawatt-hours (TWh) and installed electrical capacity data expressed in gigawatts (GW) are both provided on a gross basis (i.e. includes own use by the generator), with more detailed data broken down by fuel and region in the A.3 tables. Power sector carbon dioxide (CO₂) emissions are expressed in million tonnes (Mt). The emission intensity expressed in grammes of carbon dioxide per kilowatt-hour (g CO₂/kWh) is calculated based on electricity-only plants and the electricity component of combined heat and power (CHP) plants.² For retirements and additions (both expressed in GW), the category "other" includes bioenergy, geothermal, concentrating solar power (CSP), marine, and battery storage.

¹ See: www.iiasa.ac.at/web/home/research/researchPrograms/air/GAINS.html for details.

² We assume that the heat component of a CHP plant is 90% efficient and the remainder of the fuel input is allocated to electricity to derive the associated electricity-only emissions.

Definitional note: A.3. Energy demand, electricity and CO₂ emissions tables

Total primary energy demand (TPED) is equivalent to power generation plus “other energy sector” excluding electricity and heat, plus total final consumption (TFC) excluding electricity and heat. TPED does not include ambient heat from heat pumps or electricity trade. Sectors comprising TFC include industry, transport, buildings (residential, services and non-specified other) and other (agriculture and non-energy use). While not itemised separately, hydrogen is included in total final consumption and “other energy sector”. Projected gross electrical capacity is the sum of existing capacity and additions, less retirements. While not itemised separately, other sources are included in total electricity generation, and battery storage in total power generation capacity.

Total CO₂ includes carbon dioxide emissions from “other energy sector” in addition to the power and final consumption sectors shown in the tables. Total and power sector CO₂ emissions also account for captured emissions from bioenergy with carbon capture, utilisation and storage (CCUS). CO₂ emissions and energy demand from international marine and aviation bunkers are included only at the world transport level. Gas use in international bunkers is not itemised separately. CO₂ emissions do not include emissions from industrial waste and non-renewable municipal waste. For more information please visit www.iea.org/statistics/CO2emissions.

Abbreviations used: Mtoe = million tonnes of oil equivalent; CAAGR = compound average annual growth rate; Petrochem. feedstock = petrochemical feedstock.

Definitional note: A.4. Emissions of air pollutant tables

Emissions of all air pollutants (SO₂, NO_x, PM_{2.5}) are expressed in million tonnes (Mt) per year and are reported by sector. The energy sector is broken down into power, industry including other transformation (i.e. other energy sector excluding electricity and heat), transport, buildings and agriculture. Emissions are reported separately for all energy activities and for combustion activities; the difference between these two relates to energy processes, including, for example, cement production in the industry sector or abrasion, tyres and brakes in road transport.

Definitional note: A.5. Energy investment overview tables

The energy investment overview tables provide a high-level snapshot for the world by type of investment expressed in billion dollars, including key regional details. Total fuel investment covers oil, natural gas, coal and biofuels. Total power investment covers power plants, electricity networks and also battery storage which is not itemised separately. Electricity networks includes electric vehicle (EV) fast chargers. Renewables for end-use include solar thermal, bioenergy and geothermal applications for heating. Other end-use includes CCUS in industry sector, EVs and EV slow chargers. Abbreviations used: Renew. = renewables; Transport. = transportation.

Table A.1: Fossil fuel production

	Stated Policies Scenario							Shares (%)		CAAGR (%)
	2000	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Oil production and supply (mb/d)										
North America	14.2	20.5	23.0	28.4	29.6	29.7	28.6	24	28	1.0
Central and South America	6.8	7.2	6.6	7.5	8.1	8.7	9.7	7	9	1.8
Europe	7.1	3.7	3.7	4.0	3.3	2.8	2.6	4	3	-1.5
European Union	3.6	1.6	1.7	1.5	1.1	0.9	0.7	2	1	-3.6
Africa	7.8	8.2	8.4	7.9	8.0	8.1	8.2	9	8	-0.1
Middle East	23.5	31.2	31.7	32.2	33.6	34.6	35.6	33	34	0.5
Eurasia	7.9	14.2	14.5	14.1	13.6	13.0	12.4	15	12	-0.7
Asia Pacific	7.8	7.8	7.6	6.9	6.5	6.4	6.4	8	6	-0.8
non-OPEC	44.5	55.3	58.0	64.8	65.2	64.6	63.4	61	61	0.4
OPEC	30.6	37.5	37.4	36.2	37.6	38.7	40.1	39	39	0.3
World production	75.1	92.8	95.4	101.0	102.8	103.2	103.5	100	100	0.4
Conventional crude oil	64.5	66.9	67.1	66.1	65.1	63.0	61.9	69	58	-0.4
Tight oil	-	4.9	6.3	10.5	12.0	13.2	13.4	6	13	3.5
Natural gas liquids	9.0	16.5	17.3	19.4	20.4	21.2	21.7	18	20	1.0
Extra-heavy oil and bitumen	1.0	3.8	3.8	3.9	4.0	4.3	4.9	4	5	1.1
Other	0.6	0.7	0.8	1.1	1.3	1.5	1.6	1	1	3.1
Processing gains	1.8	2.3	2.3	2.5	2.6	2.8	2.9	2	3	1.0
World supply	76.9	95.1	97.7	103.5	105.4	106.0	106.4	100	100	0.4
Natural gas production (bcm)										
North America	763	988	1 083	1 254	1 336	1 358	1 376	27	25	1.1
Central and South America	102	177	177	188	209	244	285	5	5	2.2
Europe	338	292	277	236	206	191	188	7	3	-1.7
European Union	265	132	120	66	47	44	40	3	1	-4.8
Africa	124	233	240	287	372	435	508	6	9	3.5
Middle East	198	627	645	721	787	912	1 016	16	19	2.1
Eurasia	691	893	918	1 021	1 054	1 105	1 143	23	21	1.0
Asia Pacific	290	584	598	708	757	816	889	15	16	1.8
World	2 507	3 794	3 937	4 415	4 720	5 060	5 404	100	100	1.4
Conventional gas	2 318	2 985	3 004	3 164	3 293	3 498	3 694	76	68	0.9
Tight gas	148	253	274	276	267	244	238	7	4	-0.6
Shale gas	3	473	568	852	1 020	1 159	1 290	14	24	3.8
Coalbed methane	38	80	88	91	103	115	129	2	2	1.7
Other	-	3	3	33	36	44	54	0	1	14.2
Coal production (Mtce)										
North America	824	586	576	432	385	358	329	10	6	-2.5
Central and South America	48	89	82	75	75	62	62	1	1	-1.3
Europe	397	249	230	174	131	105	80	4	1	-4.7
European Union	307	187	163	117	79	57	30	3	1	-7.5
Africa	187	224	225	217	199	210	221	4	4	-0.1
Middle East	1	1	1	2	2	2	2	0	0	0.7
Eurasia	234	393	414	408	409	415	424	7	8	0.1
Asia Pacific	1 564	3 848	4 039	4 208	4 297	4 295	4 282	73	79	0.3
World	3 255	5 391	5 566	5 515	5 498	5 446	5 398	100	100	-0.1
Steam coal	2 504	4 164	4 342	4 349	4 393	4 394	4 394	78	81	0.1
Coking coal	449	936	955	888	857	822	790	17	15	-0.9
Lignite and peat	302	290	270	278	247	231	214	5	4	-1.0

Table A.1: Fossil fuel production

	Current Policies Scenario				Sustainable Development Scenario			
	2030	2040	Shares (%)		2030	2040	Shares (%)	
			2040	2018-40			2040	2018-40
Oil production and supply (mb/d)								
North America	31.4	32.2	27	1.5	25.7	20.6	32	-0.5
Central and South America	8.7	11.8	10	2.7	5.7	4.5	7	-1.7
Europe	3.4	2.8	2	-1.2	2.8	1.9	3	-3.0
European Union	1.2	0.9	1	-3.0	0.9	0.5	1	-5.5
Africa	8.6	9.5	8	0.6	6.0	4.9	7	-2.4
Middle East	35.4	39.5	34	1.0	28.7	22.2	34	-1.6
Eurasia	14.2	14.1	12	-0.1	10.7	7.1	11	-3.2
Asia Pacific	6.9	7.7	7	0.0	5.4	3.9	6	-3.0
non-OPEC	68.9	72.3	61	1.0	53.8	40.8	63	-1.6
OPEC	39.8	45.4	39	0.9	31.2	24.3	37	-1.9
World production	108.7	117.7	100	1.0	85.0	65.1	100	-1.7
Conventional crude oil	68.5	70.6	58	0.2	52.7	36.9	55	-2.7
Tight oil	13.1	15.5	13	4.1	10.1	9.2	14	1.7
Natural gas liquids	21.2	23.1	19	1.3	17.7	14.8	22	-0.7
Extra-heavy oil and bitumen	4.3	6.3	5	2.3	3.3	2.9	4	-1.2
Other	1.5	2.2	2	4.8	1.2	1.2	2	2.0
Processing gains	2.8	3.3	3	1.6	2.2	1.8	3	-1.1
World supply	111.5	121.0	100	1.0	87.1	66.9	100	-1.7
Natural gas production (bcm)								
North America	1 375	1 445	25	1.3	1 209	909	24	-0.8
Central and South America	227	341	6	3.0	187	189	5	0.3
Europe	193	180	3	-1.9	189	151	4	-2.7
European Union	47	40	1	-4.8	47	42	1	-4.7
Africa	405	559	9	3.9	333	383	10	2.2
Middle East	806	1 045	18	2.2	681	651	17	0.0
Eurasia	1 145	1 315	22	1.6	921	786	20	-0.7
Asia Pacific	788	1 005	17	2.4	745	786	20	1.2
World	4 940	5 891	100	1.8	4 264	3 854	100	-0.1
Conventional gas	3 433	3 926	67	1.2	3 004	2 689	70	-0.5
Tight gas	253	232	4	-0.8	262	141	4	-3.0
Shale gas	1 113	1 532	26	4.6	863	871	23	2.0
Coalbed methane	102	143	2	2.2	101	103	3	0.7
Other	38	58	1	14.7	34	50	1	13.9
Coal production (Mtce)								
North America	430	397	6	-1.7	139	72	3	-9.0
Central and South America	90	100	2	0.9	59	11	1	-8.6
Europe	165	120	2	-2.9	63	24	1	-9.8
European Union	106	59	1	-4.6	43	17	1	-9.9
Africa	246	301	5	1.3	174	122	6	-2.7
Middle East	2	2	0	0.7	2	2	0	0.2
Eurasia	463	511	8	1.0	246	127	6	-5.2
Asia Pacific	4 539	4 968	78	0.9	2 788	1 742	83	-3.7
World	5 934	6 399	100	0.6	3 471	2 101	100	-4.3
Steam coal	4 753	5 266	82	0.9	2 672	1 515	72	-4.7
Coking coal	885	854	13	-0.5	676	497	24	-2.9
Lignite and peat	297	280	4	0.2	123	89	4	-4.9

Table A.1: Fossil fuel demand

	Stated Policies Scenario							Shares (%)		CAAGR (%)
	2000	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Oil and liquids demand (mb/d)										
North America	23.5	22.3	22.8	22.5	21.5	20.3	19.1	23	18	-0.8
United States	19.6	18.0	18.5	18.4	17.4	16.3	15.1	19	14	-0.9
Central and South America	4.5	5.9	5.8	6.1	6.2	6.4	6.5	6	6	0.5
Europe	14.9	13.2	13.2	12.4	11.1	9.7	8.7	14	8	-1.9
European Union	13.1	11.2	11.1	10.1	8.8	7.4	6.3	11	6	-2.5
Africa	2.2	3.9	3.9	4.9	5.5	6.2	7.0	4	7	2.7
Middle East	4.3	7.5	7.5	8.4	8.8	9.6	10.2	8	10	1.4
Eurasia	3.1	3.8	3.9	4.3	4.3	4.2	4.2	4	4	0.4
Asia Pacific	19.4	31.0	31.6	35.8	38.0	38.9	39.2	33	37	1.0
China	4.7	12.1	12.5	14.5	15.6	15.6	15.5	13	15	1.0
India	2.3	4.5	4.7	6.4	7.5	8.4	9.0	5	8	3.0
International bunkers	5.4	8.1	8.2	9.3	10.0	10.7	11.4	8	11	1.5
World oil	77.4	95.7	96.9	103.5	105.4	106.0	106.4	100	100	0.4
Road, aviation & shipping	38.5	53.4	54.2	58.3	60.1	60.6	61.2	56	58	0.6
Industry & petrochemicals	14.4	18.4	18.3	20.5	21.5	22.4	22.9	19	21	1.0
World biofuels	0.2	1.8	1.9	2.8	3.5	4.1	4.7	2	4	4.2
World liquids	77.6	97.5	98.8	106.4	108.9	110.1	111.1	100	100	0.5
Natural gas demand (bcm)										
North America	800	974	1 067	1 163	1 183	1 195	1 221	27	23	0.6
United States	669	779	860	936	947	949	957	22	18	0.5
Central and South America	97	169	172	178	198	224	257	4	5	1.8
Europe	606	617	607	621	593	578	557	15	10	-0.4
European Union	487	487	480	477	442	416	386	12	7	-1.0
Africa	58	150	158	185	221	265	317	4	6	3.2
Middle East	186	539	535	559	646	739	807	14	15	1.9
Eurasia	471	570	598	628	639	652	674	15	12	0.5
Asia Pacific	313	758	815	1 071	1 218	1 374	1 522	21	28	2.9
China	28	240	282	454	533	598	655	7	12	3.9
India	28	59	62	103	131	166	196	2	4	5.4
International bunkers	-	0	0	11	21	34	50	0	1	34.3
World	2 530	3 778	3 952	4 415	4 720	5 060	5 404	100	100	1.4
Power	908	1 521	1 571	1 638	1 708	1 816	1 936	40	36	1.0
Industrial use	644	877	909	1 108	1 229	1 352	1 474	23	27	2.2
Coal demand (Mtce)										
North America	818	515	492	369	328	304	285	9	5	-2.5
United States	763	472	451	350	314	291	272	8	5	-2.3
Central and South America	29	46	46	48	47	47	49	1	1	0.3
Europe	578	460	447	314	263	219	203	8	4	-3.5
European Union	459	335	319	204	157	113	87	6	2	-5.7
Africa	129	157	159	165	160	160	161	3	3	0.0
Middle East	2	5	6	9	10	12	14	0	0	4.2
Eurasia	202	224	229	225	212	203	199	4	4	-0.6
Asia Pacific	1 551	4 012	4 079	4 385	4 476	4 502	4 487	75	83	0.4
China	955	2 805	2 834	2 934	2 845	2 710	2 568	52	48	-0.4
India	208	558	586	771	938	1 063	1 157	11	21	3.1
World	3 309	5 419	5 458	5 515	5 498	5 446	5 398	100	100	-0.1
Power	2 233	3 391	3 500	3 467	3 470	3 442	3 395	64	63	-0.1
Industrial use	869	1 728	1 680	1 832	1 852	1 872	1 903	31	35	0.6

Table A.1: Fossil fuel demand

	Current Policies Scenario				Sustainable Development Scenario			
	2030	2040	Shares (%)	CAAGR (%)	2030	2040	Shares (%)	CAAGR (%)
			2040	2018-40			2040	2018-40
Oil and liquids demand (mb/d)								
North America	22.5	21.6	18	-0.2	17.7	11.7	17	-3.0
United States	18.1	16.9	14	-0.4	14.2	9.1	14	-3.2
Central and South America	6.6	7.3	6	1.1	4.9	3.8	6	-1.8
Europe	12.1	10.9	9	-0.9	9.2	5.0	7	-4.3
European Union	9.6	8.2	7	-1.4	7.3	3.5	5	-5.1
Africa	5.7	7.4	6	2.9	4.9	5.2	8	1.3
Middle East	9.0	11.0	9	1.8	6.7	6.3	9	-0.7
Eurasia	4.4	4.5	4	0.6	3.8	3.1	5	-1.0
Asia Pacific	40.5	44.9	37	1.6	32.4	25.4	38	-1.0
China	17.0	18.5	15	1.8	12.7	9.3	14	-1.3
India	8.0	10.4	9	3.7	6.5	6.1	9	1.2
International bunkers	10.9	13.4	11	2.2	7.6	6.4	10	-1.2
World oil	111.5	121.0	100	1.0	87.1	66.9	100	-1.7
Road, aviation & shipping	64.7	72.7	60	1.3	47.9	32.2	48	-2.3
Industry & petrochemicals	21.5	23.0	19	1.0	18.9	18.5	28	0.0
World biofuels	2.8	3.6	3	2.9	6.3	7.7	10	6.6
World liquids	114.3	124.6	100	1.1	93.4	74.6	100	-1.3
Natural gas demand (bcm)								
North America	1 214	1 281	22	0.8	1 052	791	21	-1.4
United States	955	972	16	0.6	870	646	17	-1.3
Central and South America	217	297	5	2.5	168	169	4	-0.1
Europe	635	680	12	0.5	519	380	10	-2.1
European Union	485	502	9	0.2	387	266	7	-2.6
Africa	235	350	6	3.7	176	200	5	1.1
Middle East	674	857	15	2.2	550	507	13	-0.2
Eurasia	661	733	12	0.9	551	471	12	-1.1
Asia Pacific	1 293	1 671	28	3.3	1 234	1 322	34	2.2
China	572	730	12	4.4	508	497	13	2.6
India	154	231	4	6.2	199	303	8	7.5
International bunkers	9	23	0	29.4	14	15	0	27.0
World	4 940	5 891	100	1.8	4 264	3 854	100	-0.1
Power	1 823	2 197	37	1.5	1 580	1 248	32	-1.0
Industrial use	1 243	1 527	26	2.4	1 108	1 114	29	0.9
Coal demand (Mtce)								
North America	375	341	5	-1.7	81	50	2	-9.9
United States	351	323	5	-1.5	71	41	2	-10.3
Central and South America	55	60	1	1.2	30	23	1	-3.0
Europe	366	319	5	-1.5	129	84	4	-7.3
European Union	239	166	3	-2.9	84	59	3	-7.4
Africa	187	238	4	1.8	113	92	4	-2.5
Middle East	10	15	0	4.6	7	6	0	0.6
Eurasia	229	226	4	-0.1	136	74	4	-5.0
Asia Pacific	4 712	5 202	81	1.1	2 976	1 771	84	-3.7
China	2 949	2 838	44	0.0	2 065	1 154	55	-4.0
India	987	1 417	22	4.1	546	395	19	-1.8
World	5 934	6 399	100	0.7	3 471	2 101	100	-4.2
Power	3 789	4 156	65	0.8	1 872	858	41	-6.2
Industrial use	1 926	2 075	32	1.0	1 461	1 206	57	-1.5

Table A.2: Power sector overview

	Stated Policies Scenario						Shares (%)		CAAGR (%)
	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Electricity generation (TWh)									
North America	5 244	5 430	5 615	5 780	5 994	6 277	20	15	0.7
Central and South America	1 294	1 310	1 540	1 734	1 952	2 198	5	5	2.4
Europe	4 127	4 163	4 345	4 478	4 640	4 840	16	12	0.7
Africa	827	866	1 056	1 284	1 564	1 897	3	5	3.6
Middle East	1 126	1 147	1 306	1 570	1 876	2 169	4	5	2.9
Eurasia	1 341	1 360	1 490	1 565	1 643	1 747	5	4	1.1
Asia Pacific	11 642	12 327	15 450	17 731	20 012	22 245	46	54	2.7
China	6 639	7 170	9 037	10 177	11 192	12 071	27	29	2.4
India	1 532	1 618	2 338	3 018	3 780	4 581	6	11	4.8
World	25 601	26 603	30 803	34 140	37 682	41 373	100	100	2.0
Electrical capacity (GW)									
North America	1 415	1 429	1 535	1 654	1 787	1 934	20	15	1.4
Central and South America	346	359	434	483	532	600	5	5	2.4
Europe	1 280	1 305	1 484	1 579	1 678	1 753	18	13	1.3
Africa	228	244	315	400	501	614	3	5	4.3
Middle East	321	331	410	476	561	641	5	5	3.1
Eurasia	327	331	355	364	380	407	5	3	0.9
Asia Pacific	3 054	3 218	4 429	5 287	6 216	7 161	45	55	3.7
China	1 754	1 872	2 634	3 113	3 531	3 884	26	30	3.4
India	377	396	604	823	1 168	1 585	5	12	6.5
World	6 970	7 218	8 962	10 244	11 655	13 109	100	100	2.7
Global power sector CO₂ emissions and CO₂ intensity from electricity generation									
CO ₂ emissions (Mt)	13 445	13 818	13 759	13 777	13 813	13 834	n.a.	n.a.	0.0
Intensity (g CO ₂ /kWh)	482	476	409	370	337	308	n.a.	n.a.	-2.0

	Stated Policies Scenario								Total
	Coal	Gas	Oil	Nuclear	Hydro	Wind	Solar PV	Other	
Cumulative retirements, 2019-2040 (GW)									
North America	127	140	64	42	32	93	39	40	578
Central and South America	7	13	19	0	9	13	3	9	74
Europe	194	59	43	77	41	158	104	43	718
Africa	32	17	22	2	3	4	3	6	90
Middle East	0	41	41	-	0	0	1	1	85
Eurasia	55	101	8	20	1	0	0	4	190
Asia Pacific	179	86	85	38	40	180	148	97	852
China	83	1	4	-	21	140	81	36	367
India	45	7	6	2	3	28	12	34	137
World	594	458	282	180	126	448	298	200	2 586
Cumulative additions, 2019-2040 (GW)									
North America	5	310	10	8	48	221	365	113	1 081
Central and South America	7	78	3	7	83	56	55	26	315
Europe	57	159	1	46	71	397	314	121	1 165
Africa	33	121	16	6	50	51	133	51	460
Middle East	6	197	23	12	7	37	92	22	395
Eurasia	33	141	0	26	20	25	5	15	265
Asia Pacific	547	358	19	139	381	952	1 980	417	4 792
China	155	128	0	90	192	620	1 041	152	2 378
India	232	17	5	27	61	211	606	169	1 327
World	687	1 365	72	243	659	1 738	2 944	765	8 473

Table A.2: Power sector overview

	Current Policies Scenario				Sustainable Development Scenario			
	2030	2040	Shares (%)	CAAGR (%)	2030	2040	Shares (%)	CAAGR (%)
			2040	2018-40			2040	2018-40
Electricity generation (TWh)								
North America	5 872	6 354	15	0.7	5 527	6 186	16	0.6
Central and South America	1 811	2 351	5	2.7	1 592	1 975	5	1.9
Europe	4 622	5 012	12	0.8	4 429	5 246	14	1.1
Africa	1 338	2 029	5	3.9	1 267	1 976	5	3.8
Middle East	1 656	2 328	5	3.3	1 416	1 909	5	2.3
Eurasia	1 610	1 862	4	1.4	1 362	1 437	4	0.3
Asia Pacific	18 079	22 887	53	2.9	16 208	19 984	52	2.2
China	10 233	12 188	28	2.4	9 286	10 899	28	1.9
India	3 169	4 875	11	5.1	2 764	3 940	10	4.1
World	34 988	42 824	100	2.2	31 800	38 713	100	1.7
Electrical capacity (GW)								
North America	1 648	1 901	15	1.3	1 702	2 228	14	2.0
Central and South America	482	614	5	2.5	472	603	4	2.4
Europe	1 598	1 724	14	1.3	1 691	2 066	13	2.1
Africa	390	557	4	3.8	484	852	6	5.9
Middle East	477	631	5	3.0	508	783	5	4.0
Eurasia	367	419	3	1.1	344	424	3	1.1
Asia Pacific	5 231	6 812	54	3.5	5 841	8 522	55	4.5
China	3 074	3 818	30	3.3	3 378	4 706	30	4.3
India	834	1 386	11	5.9	993	1 741	11	7.0
World	10 194	12 658	100	2.6	11 042	15 478	100	3.5
Global power sector CO₂ emissions and CO₂ intensity from electricity generation								
CO ₂ emissions (Mt)	14 951	16 594	n.a.	0.8	8 460	3 780	n.a.	-5.7
Intensity (g CO ₂ /kWh)	394	359	n.a.	-1.3	237	81	n.a.	-7.7

	Current Policies Scenario					Sustainable Development Scenario				
	Coal	Gas	Nuclear	Renew.	Total	Coal	Gas	Nuclear	Renew.	Total
Cumulative retirements, 2019-2040 (GW)										
North America	106	140	36	185	553	244	141	25	185	691
Central and South America	3	13	0	33	70	9	14	0	33	77
Europe	154	57	77	330	679	218	57	68	331	739
Africa	32	17	2	10	90	35	17	2	11	100
Middle East	0	41	-	2	83	0	41	-	2	84
Eurasia	55	101	20	4	189	60	102	20	4	195
Asia Pacific	179	85	41	383	842	625	87	21	386	1 317
China	83	1	-	244	363	352	1	-	245	661
India	45	7	2	44	129	128	7	2	45	228
World	529	456	176	946	2 506	1 192	460	136	952	3 204
Cumulative additions, 2019-2040 (GW)										
North America	5	319	8	614	1 023	12	187	16	1 151	1 489
Central and South America	7	94	7	210	326	3	29	8	269	321
Europe	81	223	44	693	1 097	20	161	53	1 180	1 498
Africa	62	131	6	153	404	20	63	11	537	709
Middle East	7	197	12	130	382	3	101	16	394	537
Eurasia	47	156	30	40	277	2	81	32	167	288
Asia Pacific	872	500	138	2 678	4 434	207	395	182	5 364	6 618
China	329	178	93	1 619	2 308	86	111	124	2 967	3 494
India	312	79	27	599	1 120	63	125	31	1 150	1 573
World	1 081	1 619	246	4 517	7 942	267	1 018	318	9 061	11 460

Table A.3: Energy demand – World

	Stated Policies Scenario									
	Energy demand (Mtoe)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total primary demand	12 853	13 997	14 314	15 538	16 311	17 011	17 723	100	100	1.0
Coal	3 653	3 793	3 821	3 861	3 848	3 813	3 779	27	21	-0.1
Oil	4 124	4 453	4 501	4 791	4 872	4 897	4 921	31	28	0.4
Natural gas	2 749	3 128	3 273	3 638	3 889	4 167	4 445	23	25	1.4
Nuclear	719	687	709	730	801	855	906	5	5	1.1
Hydro	296	351	361	409	452	489	524	3	3	1.7
Bioenergy	1 202	1 328	1 357	1 561	1 671	1 749	1 828	9	10	1.4
Other renewables	110	256	293	548	777	1 041	1 320	2	7	7.1
Power sector	4 780	5 309	5 494	5 879	6 276	6 708	7 152	100	100	1.2
Coal	2 175	2 374	2 450	2 427	2 429	2 409	2 377	45	33	-0.1
Oil	265	225	218	197	167	148	132	4	2	-2.3
Natural gas	1 115	1 261	1 302	1 359	1 417	1 507	1 606	24	22	1.0
Nuclear	719	687	709	730	801	855	906	13	13	1.1
Hydro	296	351	361	409	452	489	524	7	7	1.7
Bioenergy	122	200	213	288	337	389	445	4	6	3.4
Other renewables	88	210	241	469	673	910	1 162	4	16	7.4
Other energy sector	1 422	1 491	1 506	1 674	1 726	1 764	1 823	100	100	0.9
Electricity	309	364	371	401	430	463	501	25	27	1.4
Total final consumption	8 841	9 744	9 954	10 997	11 607	12 145	12 672	100	100	1.1
Coal	1 050	1 019	984	991	979	963	954	10	8	-0.1
Oil	3 580	3 985	4 043	4 355	4 469	4 517	4 561	41	36	0.5
Natural gas	1 372	1 528	1 615	1 864	2 032	2 205	2 360	16	19	1.7
Electricity	1 543	1 840	1 915	2 245	2 503	2 777	3 061	19	24	2.2
Heat	274	289	296	311	313	313	312	3	2	0.2
Bioenergy	1 001	1 037	1 050	1 151	1 205	1 237	1 264	11	10	0.8
Other renewables	21	45	51	79	104	131	158	1	1	5.2
Industry	2 653	2 862	2 898	3 255	3 460	3 650	3 839	100	100	1.3
Coal	860	817	795	824	832	837	843	27	22	0.3
Oil	338	310	298	304	305	303	303	10	8	0.1
Natural gas	511	620	646	791	883	975	1 066	22	28	2.3
Electricity	639	768	803	939	1 018	1 092	1 163	28	30	1.7
Heat	123	138	143	152	152	150	147	5	4	0.1
Bioenergy	182	208	213	242	265	285	305	7	8	1.6
Other renewables	0	1	1	2	4	8	11	0	0	11.4
Transport	2 422	2 810	2 863	3 156	3 327	3 459	3 606	100	100	1.1
Oil	2 252	2 590	2 629	2 824	2 906	2 932	2 963	92	82	0.5
International bunkers	359	412	416	468	500	536	572	15	16	1.5
Electricity	25	31	32	58	88	127	173	1	5	7.9
Biofuels	56	83	89	133	167	195	223	3	6	4.3
Other fuels	89	105	113	142	166	204	247	4	7	3.6
Buildings	2 830	3 011	3 101	3 293	3 455	3 608	3 758	100	100	0.9
Coal	137	130	125	88	67	45	30	4	1	-6.3
Oil	317	325	330	308	291	273	263	11	7	-1.0
Natural gas	622	657	700	746	784	817	829	23	22	0.8
Electricity	834	974	1 011	1 165	1 307	1 462	1 625	33	43	2.2
Heat	147	148	150	155	158	160	162	5	4	0.4
Bioenergy	753	734	737	758	753	733	709	24	19	-0.2
Traditional biomass	639	619	620	628	613	582	546	20	15	-0.6
Other renewables	20	42	48	73	95	118	140	2	4	5.0
Other	937	1 061	1 092	1 292	1 365	1 428	1 470	100	100	1.4
Petrochem. feedstock	554	544	549	693	743	789	825	50	56	1.9

Table A.3: Energy demand – World

	Current Policies Scenario				Sustainable Development Scenario			
	Energy demand (Mtoe)		Shares (%)	CAAGR (%)	Energy demand (Mtoe)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total primary demand	16 960	19 177	100	1.3	13 750	13 279	100	-0.3
Coal	4 154	4 479	23	0.7	2 430	1 470	11	-4.2
Oil	5 174	5 626	29	1.0	3 995	3 041	23	-1.8
Natural gas	4 070	4 847	25	1.8	3 513	3 162	24	-0.2
Nuclear	811	937	5	1.3	895	1 149	9	2.2
Hydro	445	509	3	1.6	489	596	4	2.3
Bioenergy	1 626	1 736	9	1.1	1 319	1 628	12	0.8
Other renewables	681	1 042	5	5.9	1 109	2 231	17	9.7
Power sector	6 519	7 649	100	1.5	5 467	6 048	100	0.4
Coal	2 652	2 909	38	0.8	1 311	601	10	-6.2
Oil	176	158	2	-1.5	102	63	1	-5.5
Natural gas	1 513	1 823	24	1.5	1 313	1 038	17	-1.0
Nuclear	811	937	12	1.3	895	1 149	19	2.2
Hydro	445	509	7	1.6	489	596	10	2.3
Bioenergy	328	394	5	2.8	406	639	11	5.1
Other renewables	595	918	12	6.3	952	1 962	32	10.0
Other energy sector	1 831	2 062	100	1.4	1 419	1 410	100	-0.3
Electricity	454	548	27	1.8	379	423	30	0.6
Total final consumption	11 996	13 540	100	1.4	9 904	9 500	100	-0.2
Coal	1 044	1 078	8	0.4	746	533	6	-2.7
Oil	4 736	5 191	38	1.1	3 695	2 838	30	-1.6
Natural gas	2 084	2 465	18	1.9	1 816	1 719	18	0.3
Electricity	2 550	3 132	23	2.3	2 349	2 902	31	1.9
Heat	327	340	3	0.6	264	224	2	-1.3
Bioenergy	1 167	1 210	9	0.6	870	948	10	-0.5
Other renewables	86	124	1	4.1	157	269	3	7.8
Industry	3 540	4 020	100	1.5	2 949	2 904	100	0.0
Coal	866	920	23	0.7	627	470	16	-2.4
Oil	311	309	8	0.2	221	174	6	-2.4
Gas	897	1 102	27	2.5	806	813	28	1.1
Electricity	1 032	1 193	30	1.8	925	1 047	36	1.2
Heat	161	166	4	0.7	116	85	3	-2.4
Bioenergy	271	324	8	1.9	237	265	9	1.0
Other renewables	3	7	0	8.5	18	43	1	18.3
Transport	3 475	3 981	100	1.5	2 956	2 615	100	-0.4
Oil	3 129	3 512	88	1.3	2 315	1 572	60	-2.3
International bunkers	547	672	17	2.2	382	319	12	-1.2
Electricity	62	94	2	4.9	118	350	13	11.4
Biofuels	133	168	4	2.9	298	373	14	6.7
Other fuels	151	207	5	2.8	225	320	12	4.8
Buildings	3 607	4 039	100	1.2	2 735	2 709	100	-0.6
Coal	94	70	2	-2.6	54	10	0	-11.0
Oil	327	322	8	-0.1	254	175	6	-2.8
Natural gas	839	938	23	1.3	614	462	17	-1.9
Electricity	1 362	1 735	43	2.5	1 227	1 428	53	1.6
Heat	163	171	4	0.6	145	137	5	-0.4
Bioenergy	743	690	17	-0.3	306	269	10	-4.5
Traditional biomass	613	546	14	-0.6	140	75	3	-9.2
Other renewables	80	113	3	4.0	132	217	8	7.1
Other	1 374	1 500	100	1.5	1 264	1 272	100	0.7
Petrochem. feedstock	738	825	55	1.9	681	707	56	1.2

Table A.3: Electricity and CO₂ emissions – World

	Stated Policies Scenario										
	Electricity generation (TWh)							Shares (%)		CAAGR (%)	
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40	
Total generation	21 522	25 601	26 603	30 803	34 140	37 682	41 373	100	100	2.0	
Coal	8 666	9 863	10 123	10 291	10 408	10 444	10 431	38	25	0.1	
Oil	976	841	808	724	622	556	490	3	1	-2.3	
Natural gas	4 833	5 879	6 118	6 984	7 529	8 165	8 899	23	22	1.7	
Nuclear	2 756	2 636	2 718	2 801	3 073	3 282	3 475	10	8	1.1	
Renewables	4 257	6 345	6 799	9 972	12 479	15 204	18 049	26	44	4.5	
Hydro	3 443	4 083	4 203	4 759	5 255	5 685	6 098	16	15	1.7	
Bioenergy	369	594	636	916	1 085	1 266	1 459	2	4	3.8	
Wind	341	1 127	1 265	2 411	3 317	4 305	5 226	5	13	6.7	
Geothermal	68	85	90	125	182	248	316	0	1	5.9	
Solar PV	32	443	592	1 730	2 562	3 551	4 705	2	11	9.9	
CSP	2	11	12	28	67	124	196	0	0	13.7	
Marine	1	1	1	2	10	25	49	0	0	19.0	

	Stated Policies Scenario										
	Electrical capacity (GW)							Shares (%)		CAAGR (%)	
	2017	2018	2025	2030	2035	2040	2018	2040	2018-40		
Total capacity	6 970	7 218	8 962	10 244	11 655	13 109	100	100	2.7		
Coal	2 071	2 079	2 106	2 111	2 132	2 171	29	17	0.2		
Oil	450	450	344	298	271	239	6	2	-2.8		
Natural gas	1 693	1 745	2 070	2 254	2 448	2 651	24	20	1.9		
Nuclear	413	419	417	436	459	482	6	4	0.6		
Renewables	2 339	2 517	3 962	5 019	6 120	7 233	35	55	4.9		
Hydro	1 269	1 290	1 448	1 586	1 707	1 822	18	14	1.6		
Bioenergy	137	146	194	224	255	286	2	2	3.1		
Wind	515	566	980	1 288	1 594	1 856	8	14	5.6		
Geothermal	14	14	19	27	37	46	0	0	5.5		
Solar PV	399	495	1 309	1 866	2 476	3 142	7	24	8.8		
CSP	5	6	11	23	40	61	0	0	11.4		
Marine	1	1	1	4	10	20	0	0	17.8		

	Stated Policies Scenario										
	CO ₂ emissions (Mt)							Shares (%)		CAAGR (%)	
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40	
Total CO₂	30 412	32 631	33 243	34 346	34 860	35 198	35 589	100	100	0.3	
Coal	13 808	14 498	14 664	14 473	14 343	14 120	13 891	44	39	-0.2	
Oil	10 546	11 393	11 446	11 930	12 031	11 991	12 001	34	34	0.2	
Natural gas	6 057	6 740	7 134	7 944	8 486	9 087	9 697	21	27	1.4	
Power sector	12 413	13 445	13 818	13 759	13 777	13 813	13 834	100	100	0.0	
Coal	8 942	9 759	10 066	9 942	9 920	9 803	9 641	73	70	-0.2	
Oil	844	714	692	621	526	468	418	5	3	-2.3	
Natural gas	2 627	2 972	3 060	3 196	3 332	3 542	3 775	22	27	1.0	
Final consumption	16 365	17 603	17 809	18 815	19 286	19 576	19 895	100	100	0.5	
Coal	4 442	4 411	4 286	4 243	4 163	4 071	4 012	24	20	-0.3	
Oil	9 079	10 100	10 167	10 729	10 935	10 959	11 022	57	55	0.4	
Transport	6 783	7 801	7 917	8 508	8 758	8 841	8 937	44	45	0.6	
Of which: bunkers	1 121	1 281	1 293	1 455	1 552	1 662	1 772	7	9	1.4	
Natural gas	2 844	3 093	3 356	3 843	4 188	4 546	4 861	19	24	1.7	

Table A.3: Electricity and CO₂ emissions – World

	Current Policies Scenario				Sustainable Development Scenario			
	Electricity generation (TWh)		Shares (%)	CAAGR (%)	Electricity generation (TWh)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total generation	34 988	42 824	100	2.2	31 800	38 713	100	1.7
Coal	11 464	12 923	30	1.1	5 504	2 428	6	-6.3
Oil	669	603	1	-1.3	355	197	1	-6.2
Natural gas	8 086	10 186	24	2.3	7 043	5 584	14	-0.4
Nuclear	3 112	3 597	8	1.3	3 435	4 409	11	2.2
Renewables	11 627	15 485	36	3.8	15 434	26 065	67	6.3
Hydro	5 171	5 923	14	1.6	5 685	6 934	18	2.3
Bioenergy	1 022	1 256	3	3.1	1 335	2 196	6	5.8
Wind	2 955	4 258	10	5.7	4 453	8 295	21	8.9
Geothermal	161	258	1	4.9	282	552	1	8.6
Solar PV	2 265	3 658	9	8.6	3 513	7 208	19	12.0
CSP	46	104	0	10.5	153	805	2	21.2
Marine	7	28	0	16.0	14	75	0	21.3

	Current Policies Scenario				Sustainable Development Scenario			
	Electrical capacity (GW)		Shares (%)	CAAGR (%)	Electrical capacity (GW)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total capacity	10 194	12 658	100	2.6	11 042	15 478	100	3.5
Coal	2 316	2 630	21	1.1	1 644	1 153	7	-2.6
Oil	312	268	2	-2.3	294	240	2	-2.8
Natural gas	2 387	2 908	23	2.3	2 084	2 304	15	1.3
Nuclear	436	489	4	0.7	482	601	4	1.7
Renewables	4 618	6 087	48	4.1	6 359	10 626	69	6.8
Hydro	1 555	1 758	14	1.4	1 728	2 090	14	2.2
Bioenergy	211	247	2	2.4	272	425	3	5.0
Wind	1 162	1 537	12	4.6	1 721	2 930	19	7.8
Geothermal	24	38	0	4.5	43	82	1	8.3
Solar PV	1 646	2 465	19	7.6	2 537	4 815	31	10.9
CSP	16	32	0	8.2	52	254	2	18.9
Marine	3	11	0	14.6	6	30	0	20.0

	Current Policies Scenario				Sustainable Development Scenario			
	CO ₂ emissions (Mt)		Shares (%)	CAAGR (%)	CO ₂ emissions (Mt)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total CO₂	37 379	41 302	100	1.0	25 181	15 796	100	-3.3
Coal	15 548	16 609	40	0.6	8 281	3 424	22	-6.4
Oil	12 905	14 053	34	0.9	9 436	6 433	41	-2.6
Natural gas	8 927	10 639	26	1.8	7 464	6 032	38	-0.8
Power sector	14 951	16 594	100	0.8	8 460	3 780	100	-5.7
Coal	10 839	11 813	71	0.7	5 126	1 552	41	-8.1
Oil	555	497	3	-1.5	325	200	5	-5.5
Natural gas	3 558	4 284	26	1.5	3 009	2 123	56	-1.6
Final consumption	20 507	22 561	100	1.1	15 344	11 037	100	-2.2
Coal	4 441	4 539	20	0.3	2 964	1 749	16	-4.0
Oil	11 745	12 903	57	1.1	8 684	5 964	54	-2.4
Transport	9 433	10 597	47	1.3	6 976	4 747	43	-2.3
Of which: bunkers	1 699	2 084	9	2.2	1 187	990	9	-1.2
Natural gas	4 321	5 118	23	1.9	3 696	3 324	30	-0.0

Table A.3: Energy demand – North America

	Stated Policies Scenario									
	Energy demand (Mtoe)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total primary demand	2 655	2 625	2 714	2 738	2 717	2 693	2 686	100	100	-0.0
Coal	538	361	345	258	230	213	200	13	7	-2.5
Oil	997	976	997	991	947	896	851	37	32	-0.7
Natural gas	686	807	884	965	982	992	1 014	33	38	0.6
Nuclear	244	248	250	217	205	192	178	9	7	-1.5
Hydro	56	63	61	66	68	70	72	2	3	0.7
Bioenergy	111	124	126	145	160	174	187	5	7	1.8
Other renewables	24	47	52	96	125	155	186	2	7	6.0
Power sector	1 084	1 012	1 035	969	954	956	969	100	100	-0.3
Coal	490	331	315	226	199	181	168	30	17	-2.8
Oil	24	18	19	6	5	4	3	2	0	-8.7
Natural gas	226	284	317	336	334	336	348	31	36	0.4
Nuclear	244	248	250	217	205	192	178	24	18	-1.5
Hydro	56	63	61	66	68	70	72	6	7	0.7
Bioenergy	23	25	25	29	31	34	37	2	4	1.8
Other renewables	21	44	49	88	113	139	165	5	17	5.7
Other energy sector	213	236	249	293	308	315	328	100	100	1.3
Electricity	61	62	64	65	66	68	71	26	22	0.4
Total final consumption	1 821	1 839	1 908	1 969	1 962	1 946	1 938	100	100	0.1
Coal	34	23	23	23	22	21	20	1	1	-0.6
Oil	926	910	929	926	882	831	784	49	40	-0.8
Natural gas	377	409	443	473	481	484	488	23	25	0.4
Electricity	389	389	402	417	430	447	468	21	24	0.7
Heat	7	6	6	6	6	6	5	0	0	-1.0
Bioenergy	86	99	101	116	129	140	150	5	8	1.8
Other renewables	2	2	3	8	12	16	21	0	1	9.0
Industry	350	345	356	387	393	395	402	100	100	0.6
Coal	32	22	22	22	21	21	20	6	5	-0.5
Oil	45	31	30	31	30	30	31	9	8	0.1
Natural gas	134	153	161	184	187	186	187	45	46	0.7
Electricity	97	95	98	105	108	111	115	28	29	0.7
Heat	6	5	5	5	5	5	4	1	1	-0.8
Bioenergy	36	38	39	40	41	42	44	11	11	0.6
Other renewables	0	0	0	0	0	1	1	0	0	21.1
Transport	705	738	755	743	721	696	676	100	100	-0.5
Oil	661	675	689	658	620	575	535	91	79	-1.1
Electricity	1	2	2	4	7	12	21	0	3	11.9
Biofuels	25	40	42	53	61	69	75	6	11	2.7
Other fuels	19	22	22	28	33	39	46	3	7	3.3
Buildings	573	553	587	582	588	593	599	100	100	0.1
Coal	2	0	0	0	0	0	-	0	-	n.a.
Oil	51	39	40	33	27	22	16	7	3	-4.0
Natural gas	207	205	226	217	215	212	208	39	35	-0.4
Electricity	286	286	296	302	310	318	326	51	54	0.4
Heat	1	1	1	1	1	1	1	0	0	-1.8
Bioenergy	24	20	19	22	24	26	28	3	5	1.8
Traditional biomass	-	-	-	-	-	-	-	-	-	n.a.
Other renewables	2	2	3	7	11	15	19	1	3	8.5
Other	192	203	210	257	259	262	260	100	100	1.0
Petrochem. feedstock	114	79	81	109	112	113	112	39	43	1.5

Table A.3: Energy demand – North America

	Current Policies Scenario				Sustainable Development Scenario			
	Energy demand (Mtoe)		Shares (%)	CAAGR (%)	Energy demand (Mtoe)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total primary demand	2 806	2 878	100	0.3	2 377	2 087	100	-1.2
Coal	262	239	8	-1.7	57	35	2	-9.9
Oil	994	970	34	-0.1	766	499	24	-3.1
Natural gas	1 008	1 063	37	0.8	873	656	31	-1.3
Nuclear	208	190	7	-1.2	222	228	11	-0.4
Hydro	68	72	3	0.8	70	75	4	0.9
Bioenergy	152	178	6	1.6	214	249	12	3.1
Other renewables	115	165	6	5.4	176	345	17	9.0
Power sector	985	1 009	100	-0.1	852	889	100	-0.7
Coal	230	205	20	-1.9	34	17	2	-12.5
Oil	6	3	0	-7.6	3	1	0	-11.5
Natural gas	335	347	34	0.4	331	201	23	-2.0
Nuclear	208	190	19	-1.2	222	228	26	-0.4
Hydro	68	72	7	0.8	70	75	8	0.9
Bioenergy	31	37	4	1.9	38	62	7	4.3
Other renewables	108	154	15	5.4	155	305	34	8.7
Other energy sector	328	373	100	1.9	259	280	100	0.5
Electricity	69	75	20	0.7	58	59	21	-0.4
Total final consumption	2 007	2 051	100	0.3	1 750	1 500	100	-1.1
Coal	22	21	1	-0.3	16	11	1	-3.3
Oil	923	889	43	-0.2	717	464	31	-3.1
Natural gas	493	511	25	0.7	399	300	20	-1.8
Electricity	435	471	23	0.7	416	472	31	0.7
Heat	6	5	0	-0.7	5	4	0	-2.5
Bioenergy	121	141	7	1.5	176	186	12	2.8
Other renewables	7	12	1	6.1	21	41	3	12.3
Industry	398	413	100	0.7	346	328	100	-0.4
Coal	22	21	5	-0.3	15	11	3	-3.2
Oil	31	31	8	0.1	20	15	5	-3.1
Gas	190	193	47	0.8	160	129	39	-1.0
Electricity	108	115	28	0.7	104	117	36	0.8
Heat	5	4	1	-0.7	4	3	1	-2.8
Bioenergy	42	47	11	0.9	40	45	14	0.7
Other renewables	0	1	0	20.6	2	6	2	30.6
Transport	741	737	100	-0.1	633	463	100	-2.2
Oil	654	627	85	-0.4	481	252	54	-4.5
Electricity	3	5	1	5.0	15	57	12	17.1
Biofuels	55	67	9	2.2	103	99	21	4.0
Other fuels	29	38	5	2.4	35	55	12	4.2
Buildings	609	640	100	0.4	527	473	100	-1.0
Coal	0	0	0	-2.8	0	-	-	n.a.
Oil	34	28	4	-1.5	23	9	2	-6.7
Natural gas	228	232	36	0.1	166	102	22	-3.6
Electricity	317	344	54	0.7	293	294	62	-0.0
Heat	1	1	0	-0.6	1	1	0	-1.6
Bioenergy	22	24	4	1.0	28	33	7	2.4
Traditional biomass	-	-	-	n.a.	-	-	-	n.a.
Other renewables	6	10	2	5.5	17	33	7	11.3
Other	259	261	100	1.0	244	237	100	0.5
Petrochem. feedstock	110	111	42	1.4	100	92	39	0.6

Table A.3: Electricity and CO₂ emissions – North America

	Stated Policies Scenario									
	Electricity generation (TWh)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total generation	5 234	5 244	5 430	5 615	5 780	5 994	6 277	100	100	0.7
Coal	2 106	1 412	1 344	985	874	810	757	25	12	-2.6
Oil	101	78	86	31	23	19	12	2	0	-8.7
Natural gas	1 216	1 585	1 793	2 026	2 074	2 124	2 240	33	36	1.0
Nuclear	935	951	959	833	788	738	683	18	11	-1.5
Renewables	868	1 212	1 242	1 738	2 019	2 302	2 583	23	41	3.4
Hydro	651	728	710	771	793	813	834	13	13	0.7
Bioenergy	84	87	87	105	114	124	133	2	2	1.9
Wind	105	296	321	538	644	764	866	6	14	4.6
Geothermal	24	25	25	29	36	44	50	0	1	3.2
Solar PV	3	72	95	291	422	543	677	2	11	9.4
CSP	1	4	4	4	7	10	17	0	0	6.9
Marine	0	0	0	0	2	5	7	0	0	26.7

	Stated Policies Scenario									
	Electrical capacity (GW)							Shares (%)		CAAGR (%)
	2017	2018	2025	2030	2035	2040	2018	2040	2018-40	
Total capacity	1 415	1 429	1 535	1 654	1 787	1 934	100	100	1.4	
Coal	296	276	208	181	165	154	19	8	-2.6	
Oil	79	79	37	31	29	25	6	1	-5.1	
Natural gas	532	546	582	622	661	715	38	37	1.2	
Nuclear	122	121	107	101	94	87	8	4	-1.5	
Renewables	385	406	591	699	798	892	28	46	3.6	
Hydro	196	196	202	205	208	212	14	11	0.3	
Bioenergy	22	23	24	26	28	29	2	2	1.2	
Wind	104	113	171	198	223	242	8	13	3.5	
Geothermal	5	4	5	6	7	8	0	0	2.5	
Solar PV	56	68	187	260	326	394	5	20	8.3	
CSP	2	2	2	2	3	5	0	0	4.4	
Marine	0	0	0	1	2	2	0	0	23.3	

	Stated Policies Scenario									
	CO ₂ emissions (Mt)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total CO₂	6 297	5 735	5 887	5 544	5 322	5 102	4 953	100	100	-0.8
Coal	2 128	1 444	1 381	1 026	907	825	764	23	15	-2.7
Oil	2 575	2 492	2 543	2 395	2 256	2 099	1 962	43	40	-1.2
Natural gas	1 594	1 799	1 963	2 123	2 159	2 178	2 227	33	45	0.6
Power sector	2 579	2 055	2 074	1 721	1 595	1 520	1 485	100	100	-1.5
Coal	1 970	1 330	1 265	910	795	717	658	61	44	-2.9
Oil	78	60	63	22	15	13	9	3	1	-8.7
Natural gas	531	666	745	789	784	790	818	36	55	0.4
Final consumption	3 299	3 277	3 390	3 312	3 189	3 037	2 909	100	100	-0.7
Coal	146	104	104	103	99	96	93	3	3	-0.5
Oil	2 304	2 277	2 322	2 207	2 075	1 922	1 787	68	61	-1.2
Transport	1 955	1 996	2 039	1 947	1 834	1 700	1 582	60	54	-1.1
Natural gas	849	896	964	1 002	1 015	1 020	1 029	28	35	0.3

Table A.3: Electricity and CO₂ emissions – North America

	Current Policies Scenario				Sustainable Development Scenario			
	Electricity generation (TWh)		Shares (%)	CAAGR (%)	Electricity generation (TWh)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total generation	5 872	6 354	100	0.7	5 527	6 186	100	0.6
Coal	1 015	922	15	-1.7	151	70	1	-12.5
Oil	29	15	0	-7.5	13	6	0	-11.3
Natural gas	2 069	2 222	35	1.0	2 039	1 247	20	-1.6
Nuclear	798	731	12	-1.2	851	876	14	-0.4
Renewables	1 960	2 462	39	3.2	2 471	3 984	64	5.4
Hydro	796	842	13	0.8	811	869	14	0.9
Bioenergy	113	132	2	1.9	147	251	4	4.9
Wind	619	809	13	4.3	911	1 596	26	7.6
Geothermal	37	51	1	3.3	45	81	1	5.5
Solar PV	388	608	10	8.8	524	1 019	16	11.4
CSP	6	15	0	6.1	31	154	2	18.1
Marine	2	7	0	26.2	2	15	0	30.9

	Current Policies Scenario				Sustainable Development Scenario			
	Electrical capacity (GW)		Shares (%)	CAAGR (%)	Electrical capacity (GW)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total capacity	1 648	1 901	100	1.3	1 702	2 228	100	2.0
Coal	194	175	9	-2.0	114	44	2	-8.0
Oil	33	26	1	-4.9	29	21	1	-5.8
Natural gas	626	724	38	1.3	552	592	27	0.4
Nuclear	103	93	5	-1.2	110	112	5	-0.3
Renewables	669	835	44	3.3	865	1 372	62	5.7
Hydro	205	213	11	0.4	210	221	10	0.5
Bioenergy	26	29	2	1.1	35	56	3	4.2
Wind	191	226	12	3.2	276	441	20	6.4
Geothermal	6	8	0	2.5	7	12	1	4.7
Solar PV	238	353	19	7.8	326	591	27	10.4
CSP	2	4	0	3.5	11	45	2	15.9
Marine	1	2	0	22.9	1	5	0	27.7

	Current Policies Scenario				Sustainable Development Scenario			
	CO ₂ emissions (Mt)		Shares (%)	CAAGR (%)	CO ₂ emissions (Mt)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total CO₂	5 656	5 576	100	-0.2	3 762	2 075	100	-4.6
Coal	1 037	920	17	-1.8	192	58	3	-13.4
Oil	2 394	2 306	41	-0.4	1 728	922	44	-4.5
Natural gas	2 226	2 350	42	0.8	1 842	1 113	54	-2.5
Power sector	1 727	1 634	100	-1.1	849	303	100	-8.4
Coal	921	808	49	-2.0	116	16	5	-18.1
Oil	19	11	1	-7.6	9	4	1	-11.5
Natural gas	786	816	50	0.4	724	302	99	-4.0
Final consumption	3 353	3 292	100	-0.1	2 501	1 488	100	-3.7
Coal	102	99	3	-0.2	67	38	3	-4.5
Oil	2 200	2 103	64	-0.4	1 601	847	57	-4.5
Transport	1 934	1 855	56	-0.4	1 423	746	50	-4.5
Natural gas	1 051	1 090	33	0.6	834	604	41	-2.1

Table A.3: Energy demand – United States

	Stated Policies Scenario									
	Energy demand (Mtoe)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total primary demand	2 215	2 150	2 230	2 247	2 214	2 173	2 142	100	100	-0.2
Coal	503	331	316	245	220	203	190	14	9	-2.3
Oil	806	790	812	810	766	717	671	36	31	-0.9
Natural gas	556	644	711	776	785	787	793	32	37	0.5
Nuclear	219	219	219	193	181	164	147	10	7	-1.8
Hydro	23	26	25	26	27	28	28	1	1	0.5
Bioenergy	89	101	103	118	130	143	154	5	7	1.9
Other renewables	19	40	44	79	104	131	157	2	7	5.9
Power sector	936	850	873	816	797	788	789	100	100	-0.5
Coal	463	308	293	220	195	179	166	34	21	-2.6
Oil	11	7	9	3	3	2	1	1	0	-7.9
Natural gas	185	232	264	279	273	273	280	30	35	0.3
Nuclear	219	219	219	193	181	164	147	25	19	-1.8
Hydro	23	26	25	26	27	28	28	3	4	0.5
Bioenergy	20	21	21	22	24	26	29	2	4	1.4
Other renewables	17	38	41	72	93	116	138	5	18	5.6
Other energy sector	154	162	170	199	207	208	209	100	100	0.9
Electricity	51	50	52	52	51	51	52	31	25	0.0
Total final consumption	1 513	1 520	1 584	1 638	1 622	1 600	1 582	100	100	-0.0
Coal	27	17	17	17	16	16	15	1	1	-0.6
Oil	762	748	766	766	723	676	630	48	40	-0.9
Natural gas	322	346	375	402	408	409	410	24	26	0.4
Electricity	326	321	334	344	352	362	377	21	24	0.5
Heat	7	6	6	6	5	5	4	0	0	-1.2
Bioenergy	68	80	82	96	107	117	126	5	8	2.0
Other renewables	2	2	3	7	11	15	19	0	1	9.0
Industry	274	261	272	301	303	303	306	100	100	0.5
Coal	25	17	17	17	16	16	15	6	5	-0.5
Oil	34	18	18	20	20	20	21	7	7	0.7
Natural gas	110	125	132	151	152	150	148	48	49	0.5
Electricity	71	67	70	76	77	79	81	26	27	0.7
Heat	5	5	5	5	4	4	4	2	1	-0.9
Bioenergy	29	30	31	32	33	34	35	11	11	0.6
Other renewables	-	-	-	0	0	1	1	-	0	n.a.
Transport	596	625	641	629	607	582	562	100	100	-0.6
Oil	556	568	582	552	514	472	433	91	77	-1.3
Electricity	1	1	1	3	5	10	18	0	3	13.9
Biofuels	23	38	39	50	58	66	71	6	13	2.7
Other fuels	16	18	19	25	30	35	41	3	7	3.7
Buildings	490	468	498	490	493	495	497	100	100	-0.0
Coal	2	0	0	0	0	0	-	0	-	n.a.
Oil	37	26	27	21	17	12	7	5	1	-5.8
Natural gas	182	178	197	187	185	182	178	40	36	-0.5
Electricity	251	249	260	262	266	271	276	52	55	0.3
Heat	1	1	1	1	1	1	1	0	0	-2.3
Bioenergy	15	11	10	12	14	16	17	2	4	2.4
Traditional biomass	-	-	-	-	-	-	-	-	-	n.a.
Other renewables	2	2	3	7	10	14	18	1	4	8.7
Other	153	166	172	218	219	220	217	100	100	1.1
Petrochem. feedstock	95	60	63	92	93	94	93	37	43	1.8

Table A.3: Energy demand – United States

	Current Policies Scenario				Sustainable Development Scenario			
	Energy demand (Mtoe)		Shares (%)	CAAGR (%)	Energy demand (Mtoe)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total primary demand	2 269	2 267	100	0.1	1 942	1 687	100	-1.3
Coal	246	226	10	-1.5	49	29	2	-10.3
Oil	800	760	34	-0.3	616	387	23	-3.3
Natural gas	791	806	36	0.6	722	535	32	-1.3
Nuclear	184	159	7	-1.4	198	197	12	-0.5
Hydro	27	28	1	0.5	28	30	2	0.8
Bioenergy	124	148	7	1.7	180	208	12	3.2
Other renewables	96	140	6	5.4	150	300	18	9.1
Power sector	816	814	100	-0.3	712	734	100	-0.8
Coal	221	200	25	-1.7	32	14	2	-12.9
Oil	3	2	0	-6.6	2	1	0	-8.9
Natural gas	268	266	33	0.0	292	174	24	-1.9
Nuclear	184	159	20	-1.4	198	197	27	-0.5
Hydro	27	28	3	0.5	28	30	4	0.8
Bioenergy	24	29	4	1.5	29	52	7	4.2
Other renewables	90	129	16	5.3	132	265	36	8.8
Other energy sector	215	227	100	1.3	179	202	100	0.8
Electricity	53	54	24	0.2	46	44	22	-0.7
Total final consumption	1 654	1 663	100	0.2	1 448	1 226	100	-1.2
Coal	17	16	1	-0.4	12	9	1	-3.1
Oil	755	712	43	-0.3	582	365	30	-3.3
Natural gas	417	427	26	0.6	338	252	21	-1.8
Electricity	354	375	23	0.5	342	386	31	0.7
Heat	6	5	0	-0.9	5	3	0	-2.6
Bioenergy	101	119	7	1.7	150	156	13	3.0
Other renewables	6	10	1	6.0	18	35	3	12.1
Industry	307	313	100	0.6	267	250	100	-0.4
Coal	16	16	5	-0.4	12	9	3	-3.0
Oil	20	21	7	0.7	13	11	4	-2.4
Gas	154	153	49	0.7	129	101	40	-1.2
Electricity	77	81	26	0.7	75	85	34	0.9
Heat	4	4	1	-0.8	4	2	1	-2.8
Bioenergy	34	38	12	0.9	32	36	14	0.7
Other renewables	0	1	0	n.a.	2	4	2	n.a.
Transport	620	606	100	-0.3	529	379	100	-2.4
Oil	540	504	83	-0.7	390	191	50	-4.9
Electricity	2	4	1	6.5	13	50	13	19.5
Biofuels	52	65	11	2.3	95	89	24	3.8
Other fuels	25	33	6	2.7	30	48	13	4.4
Buildings	509	527	100	0.3	445	396	100	-1.0
Coal	0	0	0	-2.8	0	-	-	n.a.
Oil	22	17	3	-2.1	14	3	1	-9.2
Natural gas	196	198	38	0.0	144	88	22	-3.6
Electricity	271	287	55	0.5	251	248	63	-0.2
Heat	1	1	0	-1.0	1	1	0	-2.0
Bioenergy	12	15	3	1.6	18	23	6	3.8
Traditional biomass	-	-	-	n.a.	-	-	-	n.a.
Other renewables	6	9	2	5.5	16	30	8	11.4
Other	219	217	100	1.1	207	202	100	0.7
Petrochem. feedstock	92	92	42	1.7	84	77	38	0.9

Table A.3: Electricity and CO₂ emissions – United States

	Stated Policies Scenario									
	Electricity generation (TWh)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total generation	4 354	4 264	4 445	4 555	4 639	4 763	4 939	100	100	0.5
Coal	1 994	1 321	1 255	960	861	802	749	28	15	-2.3
Oil	48	32	44	17	16	12	7	1	0	-7.9
Natural gas	1 018	1 338	1 542	1 711	1 714	1 734	1 803	35	37	0.7
Nuclear	839	839	841	741	696	628	564	19	11	-1.8
Renewables	452	728	758	1 125	1 350	1 585	1 814	17	37	4.0
Hydro	262	302	294	304	311	321	331	7	7	0.5
Bioenergy	73	79	79	85	93	101	110	2	2	1.5
Wind	95	257	278	458	542	643	728	6	15	4.5
Geothermal	18	19	20	21	27	35	41	0	1	3.4
Solar PV	3	67	84	252	368	473	584	2	12	9.2
CSP	1	4	4	4	7	10	16	0	0	6.6
Marine	-	-	-	0	1	3	4	-	0	n.a.

	Stated Policies Scenario									
	Electrical capacity (GW)							Shares (%)		CAAGR (%)
	2017	2018	2025	2030	2035	2040	2018	2040	2018-40	
Total capacity	1 187	1 199	1 265	1 357	1 458	1 571	100	100	1.2	
Coal	282	262	198	175	162	151	22	10	-2.5	
Oil	57	57	22	21	20	18	5	1	-5.1	
Natural gas	476	490	508	530	555	595	41	38	0.9	
Nuclear	105	105	94	88	80	72	9	5	-1.7	
Renewables	265	283	434	527	610	687	24	44	4.1	
Hydro	103	103	104	106	107	109	9	7	0.3	
Bioenergy	18	18	19	20	21	23	1	1	1.2	
Wind	88	95	142	163	183	198	8	13	3.4	
Geothermal	4	4	4	5	6	6	0	0	2.8	
Solar PV	52	62	164	231	289	346	5	22	8.1	
CSP	2	2	2	2	3	4	0	0	4.1	
Marine	-	-	0	1	1	2	-	0	n.a.	

	Stated Policies Scenario									
	CO ₂ emissions (Mt)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total CO₂	5 329	4 742	4 884	4 588	4 367	4 142	3 963	100	100	-0.9
Coal	1 982	1 324	1 265	974	867	791	730	26	18	-2.5
Oil	2 060	1 981	2 035	1 914	1 784	1 637	1 505	42	38	-1.4
Natural gas	1 287	1 437	1 584	1 700	1 716	1 714	1 728	32	44	0.4
Power sector	2 329	1 807	1 828	1 551	1 435	1 358	1 313	100	100	-1.5
Coal	1 858	1 240	1 178	886	783	710	651	64	50	-2.7
Oil	37	23	30	10	9	8	5	2	0	-7.9
Natural gas	435	544	621	655	642	640	657	34	50	0.3
Final consumption	2 736	2 694	2 800	2 725	2 603	2 459	2 333	100	100	-0.8
Coal	115	78	80	80	76	73	72	3	3	-0.5
Oil	1 893	1 859	1 904	1 799	1 674	1 533	1 407	68	60	-1.4
Transport	1 641	1 682	1 723	1 632	1 521	1 395	1 281	62	55	-1.3
Natural gas	728	757	816	846	852	852	854	29	37	0.2

Table A.3: Electricity and CO₂ emissions – United States

	Current Policies Scenario				Sustainable Development Scenario			
	Electricity generation (TWh)		Shares (%)	CAAGR (%)	Electricity generation (TWh)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total generation	4 685	4 937	100	0.5	4 471	4 956	100	0.5
Coal	977	902	18	-1.5	142	59	1	-13.0
Oil	18	10	0	-6.7	11	6	0	-8.9
Natural gas	1 679	1 703	34	0.5	1 806	1 076	22	-1.6
Nuclear	706	611	12	-1.4	760	757	15	-0.5
Renewables	1 304	1 709	35	3.8	1 752	3 056	62	6.5
Hydro	311	330	7	0.5	321	351	7	0.8
Bioenergy	92	108	2	1.5	121	219	4	4.8
Wind	525	685	14	4.2	788	1 380	28	7.6
Geothermal	28	42	1	3.5	36	71	1	6.0
Solar PV	342	527	11	8.7	455	877	18	11.2
CSP	6	13	0	5.8	29	146	3	17.8
Marine	1	4	0	n.a.	1	12	0	n.a.

	Current Policies Scenario				Sustainable Development Scenario			
	Electrical capacity (GW)		Shares (%)	CAAGR (%)	Electrical capacity (GW)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total capacity	1 351	1 537	100	1.1	1 400	1 841	100	2.0
Coal	185	169	11	-2.0	108	39	2	-8.2
Oil	21	19	1	-5.0	19	15	1	-6.0
Natural gas	533	594	39	0.9	475	504	27	0.1
Nuclear	90	78	5	-1.4	97	97	5	-0.4
Renewables	503	640	42	3.8	672	1 107	60	6.4
Hydro	106	109	7	0.2	109	115	6	0.5
Bioenergy	20	22	1	1.1	26	47	3	4.5
Wind	158	186	12	3.1	233	373	20	6.4
Geothermal	5	7	0	2.9	6	11	1	5.3
Solar PV	212	311	20	7.6	288	515	28	10.1
CSP	2	3	0	3.1	10	43	2	15.6
Marine	0	1	0	n.a.	1	4	0	n.a.

	Current Policies Scenario				Sustainable Development Scenario			
	CO ₂ emissions (Mt)		Shares (%)	CAAGR (%)	CO ₂ emissions (Mt)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total CO₂	4 596	4 400	100	-0.5	3 030	1 571	100	-5.0
Coal	972	874	20	-1.7	167	46	3	-14.0
Oil	1 886	1 759	40	-0.7	1 349	672	43	-4.9
Natural gas	1 738	1 766	40	0.5	1 515	872	55	-2.7
Power sector	1 526	1 420	100	-1.1	747	237	100	-8.9
Coal	886	790	56	-1.8	109	13	6	-18.4
Oil	11	7	0	-6.6	7	4	2	-8.9
Natural gas	629	624	44	0.0	632	238	100	-4.3
Final consumption	2 730	2 628	100	-0.3	2 021	1 154	100	-4.0
Coal	79	76	3	-0.2	53	30	3	-4.4
Oil	1 770	1 650	63	-0.6	1 268	627	54	-4.9
Transport	1 597	1 492	57	-0.7	1 155	566	49	-4.9
Natural gas	881	902	34	0.5	700	497	43	-2.2

Table A.3: Energy demand – Central and South America

	Stated Policies Scenario									
	Energy demand (Mtoe)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total primary demand	611	657	660	727	780	844	913	100	100	1.5
Coal	26	32	32	34	33	33	35	5	4	0.3
Oil	272	271	267	285	292	299	303	40	33	0.6
Natural gas	124	142	145	150	166	188	216	22	24	1.8
Nuclear	6	6	6	6	9	16	19	1	2	5.5
Hydro	60	61	62	73	82	90	97	9	11	2.1
Bioenergy	120	135	138	156	167	178	190	21	21	1.5
Other renewables	3	10	11	22	31	41	53	2	6	7.4
Power sector	158	185	186	202	223	255	290	100	100	2.0
Coal	10	16	16	14	12	10	10	8	3	-2.0
Oil	31	24	22	19	16	16	14	12	5	-2.0
Natural gas	38	51	51	46	50	57	67	28	23	1.2
Nuclear	6	6	6	6	9	16	19	3	7	5.5
Hydro	60	61	62	73	82	90	97	33	33	2.1
Bioenergy	11	19	19	23	27	30	34	10	12	2.6
Other renewables	3	9	10	20	28	37	48	5	17	7.5
Other energy sector	87	88	88	93	100	106	114	100	100	1.2
Electricity	18	22	22	25	28	31	34	25	30	2.0
Total final consumption	463	496	498	564	606	652	699	100	100	1.5
Coal	11	12	12	14	16	17	18	2	3	1.8
Oil	215	234	231	251	259	267	272	46	39	0.7
Natural gas	67	60	62	74	85	98	112	12	16	2.7
Electricity	79	89	91	108	122	137	155	18	22	2.5
Heat	-	-	-	-	-	-	-	-	-	n.a.
Bioenergy	90	99	102	115	122	129	137	20	20	1.4
Other renewables	0	1	1	2	3	4	5	0	1	7.0
Industry	160	159	161	184	199	215	234	100	100	1.7
Coal	11	12	12	14	16	17	18	7	8	1.9
Oil	38	33	32	33	33	33	33	20	14	0.1
Natural gas	34	31	32	43	50	58	66	20	28	3.3
Electricity	35	36	36	43	47	52	57	22	25	2.1
Heat	-	-	-	-	-	-	-	-	-	n.a.
Bioenergy	42	47	49	52	54	56	59	30	25	0.9
Other renewables	-	0	0	0	0	0	0	0	0	44.9
Transport	145	174	173	194	207	220	232	100	100	1.3
Oil	123	148	146	159	163	168	171	84	73	0.7
Electricity	1	0	0	1	1	2	4	0	2	10.3
Biofuels	15	19	20	29	34	39	45	11	19	3.9
Other fuels	7	7	7	6	8	10	13	4	6	2.7
Buildings	103	116	118	128	138	149	160	100	100	1.4
Coal	0	0	0	0	0	0	0	0	0	-3.3
Oil	19	22	21	22	23	23	24	18	15	0.4
Natural gas	12	14	14	16	17	19	21	12	13	1.6
Electricity	41	50	51	60	68	77	88	43	55	2.5
Heat	-	-	-	-	-	-	-	-	-	n.a.
Bioenergy	30	29	30	29	27	26	24	25	15	-1.0
Traditional biomass	26	26	27	25	24	22	20	23	12	-1.4
Other renewables	0	1	1	2	3	3	4	1	3	6.6
Other	54	47	46	57	63	68	73	100	100	2.1
Petrochem. feedstock	24	18	17	24	27	29	32	38	44	2.8

Table A.3: Energy demand – Central and South America

	Current Policies Scenario				Sustainable Development Scenario			
	Energy demand (Mtoe)		Shares (%)	CAAGR (%)	Energy demand (Mtoe)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total primary demand	813	983	100	1.8	669	702	100	0.3
Coal	38	42	4	1.2	21	16	2	-3.0
Oil	310	343	35	1.1	227	178	25	-1.8
Natural gas	183	250	25	2.5	142	142	20	-0.1
Nuclear	9	19	2	5.5	9	21	3	6.0
Hydro	83	102	10	2.3	83	99	14	2.2
Bioenergy	162	181	18	1.3	150	172	25	1.0
Other renewables	28	46	5	6.7	37	73	10	8.9
Power sector	239	314	100	2.4	193	246	100	1.3
Coal	16	16	5	0.1	4	0	0	-16.1
Oil	18	16	5	-1.6	5	2	1	-10.0
Natural gas	61	87	28	2.4	33	22	9	-3.8
Nuclear	9	19	6	5.5	9	21	9	6.0
Hydro	83	102	32	2.3	83	99	40	2.2
Bioenergy	26	32	10	2.4	27	37	15	3.0
Other renewables	25	42	13	6.8	33	64	26	8.8
Other energy sector	106	131	100	1.8	87	89	100	0.0
Electricity	29	38	29	2.4	25	29	33	1.2
Total final consumption	624	740	100	1.8	525	539	100	0.4
Coal	16	19	3	2.1	13	12	2	-0.1
Oil	274	306	41	1.3	209	164	30	-1.5
Natural gas	88	116	16	2.9	82	96	18	2.0
Electricity	126	165	22	2.8	112	141	26	2.0
Heat	-	-	-	n.a.	-	-	-	n.a.
Bioenergy	118	130	18	1.1	105	116	22	0.6
Other renewables	2	4	1	5.9	4	8	2	9.8
Industry	204	243	100	1.9	169	172	100	0.3
Coal	16	19	8	2.1	12	12	7	-0.1
Oil	33	33	14	0.2	23	17	10	-3.0
Gas	52	71	29	3.7	46	49	28	1.9
Electricity	48	58	24	2.2	43	53	31	1.8
Heat	-	-	-	n.a.	-	-	-	n.a.
Bioenergy	55	61	25	1.0	44	41	24	-0.8
Other renewables	0	0	0	43.1	1	2	1	55.5
Transport	214	252	100	1.7	186	178	100	0.1
Oil	176	202	80	1.5	126	89	50	-2.2
Electricity	1	1	0	3.9	2	4	3	11.4
Biofuels	29	37	15	2.9	47	61	34	5.3
Other fuels	8	12	5	2.2	12	24	14	5.7
Buildings	144	172	100	1.8	111	125	100	0.3
Coal	0	0	0	-1.7	0	0	0	-8.4
Oil	23	25	14	0.7	22	20	16	-0.4
Natural gas	18	22	13	1.9	15	13	11	-0.4
Electricity	73	99	57	3.1	63	79	63	2.0
Heat	-	-	-	n.a.	-	-	-	n.a.
Bioenergy	27	23	14	-1.1	7	7	5	-6.5
Traditional biomass	24	20	11	-1.4	3	1	1	-12.5
Other renewables	2	4	2	5.5	3	7	5	8.6
Other	63	74	100	2.1	59	64	100	1.5
Petrochem. feedstock	27	32	43	2.8	25	29	46	2.4

Table A.3: Electricity and CO₂ emissions – Central and South America

	Stated Policies Scenario									
	Electricity generation (TWh)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total generation	1 128	1 294	1 310	1 540	1 734	1 952	2 198	100	100	2.4
Coal	39	67	67	63	53	44	46	5	2	-1.7
Oil	145	111	103	89	78	74	68	8	3	-1.9
Natural gas	177	248	248	257	299	348	419	19	19	2.4
Nuclear	22	22	23	24	35	61	74	2	3	5.5
Renewables	745	845	869	1 107	1 269	1 425	1 591	66	72	2.8
Hydro	694	708	717	854	950	1 041	1 126	55	51	2.1
Bioenergy	44	70	75	89	99	112	125	6	6	2.4
Wind	3	56	62	118	153	180	211	5	10	5.7
Geothermal	3	4	4	7	11	17	23	0	1	8.4
Solar PV	0	7	11	39	53	70	98	1	4	10.4
CSP	-	-	-	0	2	5	8	-	0	n.a.
Marine	-	-	-	0	0	0	0	-	0	n.a.

	Stated Policies Scenario									
	Electrical capacity (GW)							Shares (%)		CAAGR (%)
	2017	2018	2025	2030	2035	2040	2018	2040	2018-40	
Total capacity	346	359	434	483	532	600	100	100	2.4	
Coal	13	13	15	14	12	12	4	2	-0.3	
Oil	49	49	43	37	35	33	14	5	-1.8	
Natural gas	64	67	90	104	111	132	19	22	3.1	
Nuclear	4	4	3	5	9	10	1	2	4.6	
Renewables	217	226	282	323	363	410	63	68	2.7	
Hydro	174	178	194	214	233	252	50	42	1.6	
Bioenergy	19	20	23	25	27	30	5	5	1.9	
Wind	17	20	37	47	55	63	6	11	5.3	
Geothermal	1	1	1	2	3	4	0	1	7.6	
Solar PV	5	7	26	34	44	60	2	10	9.9	
CSP	-	-	0	1	2	2	-	0	n.a.	
Marine	-	-	0	0	0	0	-	0	n.a.	

	Stated Policies Scenario									
	CO ₂ emissions (Mt)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total CO₂	1 090	1 167	1 158	1 206	1 249	1 308	1 382	100	100	0.8
Coal	99	126	125	128	123	120	126	11	9	0.0
Oil	723	751	737	772	782	796	801	64	58	0.4
Natural gas	268	290	295	306	343	392	454	25	33	2.0
Power sector	233	266	262	231	222	227	248	100	100	-0.2
Coal	46	70	71	64	53	45	46	27	18	-2.0
Oil	98	76	70	60	52	49	45	27	18	-2.0
Natural gas	88	121	121	107	116	133	158	46	64	1.2
Final consumption	758	806	801	878	923	970	1 012	100	100	1.1
Coal	49	51	50	59	65	70	76	6	7	1.9
Oil	584	643	635	679	695	712	721	79	71	0.6
Transport	371	444	438	476	490	505	513	55	51	0.7
Natural gas	125	112	116	140	163	188	215	14	21	2.8

Table A.3: Electricity and CO₂ emissions – Central and South America

	Current Policies Scenario				Sustainable Development Scenario			
	Electricity generation (TWh)		Shares (%)	CAAGR (%)	Electricity generation (TWh)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total generation	1 811	2 351	100	2.7	1 592	1 975	100	1.9
Coal	73	72	3	0.3	16	2	0	-15.9
Oil	86	76	3	-1.4	21	10	0	-10.2
Natural gas	358	538	23	3.6	203	140	7	-2.6
Nuclear	35	74	3	5.5	35	82	4	6.0
Renewables	1 258	1 591	68	2.8	1 316	1 741	88	3.2
Hydro	967	1 184	50	2.3	962	1 157	59	2.2
Bioenergy	97	118	5	2.1	100	133	7	2.7
Wind	139	189	8	5.2	170	274	14	6.9
Geothermal	11	21	1	7.8	13	29	1	9.5
Solar PV	42	72	3	8.8	65	128	6	11.8
CSP	2	7	0	n.a.	6	18	1	n.a.
Marine	0	0	0	n.a.	0	1	0	n.a.

	Current Policies Scenario				Sustainable Development Scenario			
	Electrical capacity (GW)		Shares (%)	CAAGR (%)	Electrical capacity (GW)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total capacity	482	614	100	2.5	472	603	100	2.4
Coal	16	17	3	1.2	10	6	1	-3.2
Oil	37	33	5	-1.8	37	33	5	-1.8
Natural gas	106	147	24	3.6	80	82	14	0.9
Nuclear	5	10	2	4.6	5	11	2	5.1
Renewables	317	403	66	2.7	338	462	77	3.3
Hydro	219	269	44	1.9	214	259	43	1.7
Bioenergy	25	28	5	1.6	25	31	5	2.0
Wind	43	56	9	4.7	54	84	14	6.7
Geothermal	2	3	1	7.1	2	4	1	8.7
Solar PV	27	44	7	8.5	41	78	13	11.3
CSP	1	2	0	n.a.	2	6	1	n.a.
Marine	0	0	0	n.a.	0	0	0	n.a.

	Current Policies Scenario				Sustainable Development Scenario			
	CO ₂ emissions (Mt)		Shares (%)	CAAGR (%)	CO ₂ emissions (Mt)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total CO₂	1 360	1 602	100	1.5	929	725	100	-2.1
Coal	145	156	10	1.0	67	42	6	-4.8
Oil	833	915	57	1.0	584	420	58	-2.5
Natural gas	382	531	33	2.7	277	263	36	-0.5
Power sector	273	325	100	1.0	108	59	100	-6.5
Coal	73	71	22	0.0	15	1	2	-16.4
Oil	57	50	15	-1.6	15	7	12	-10.0
Natural gas	143	204	63	2.4	78	51	86	-3.8
Final consumption	974	1 128	100	1.6	745	609	100	-1.2
Coal	67	80	7	2.1	48	38	6	-1.2
Oil	739	823	73	1.2	544	396	65	-2.1
Transport	529	606	54	1.5	379	266	44	-2.2
Natural gas	168	225	20	3.1	153	175	29	1.9

Table A.3: Energy demand – Brazil

	Stated Policies Scenario									
	Energy demand (Mtoe)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total primary demand	263	287	285	318	342	369	397	100	100	1.5
Coal	14	17	17	16	16	16	16	6	4	-0.2
Oil	105	111	108	118	123	128	130	38	33	0.9
Natural gas	24	33	30	29	32	39	48	11	12	2.1
Nuclear	4	4	4	4	7	10	12	1	3	5.0
Hydro	35	32	32	39	43	46	49	11	12	2.0
Bioenergy	82	87	89	102	109	115	122	31	31	1.4
Other renewables	1	5	5	10	13	15	19	2	5	6.0
Power sector	58	70	71	75	84	96	110	100	100	2.0
Coal	3	5	6	4	4	3	3	8	3	-2.5
Oil	4	3	3	1	1	1	1	4	1	-5.1
Natural gas	7	13	12	6	5	8	13	17	11	0.3
Nuclear	4	4	4	4	7	10	12	6	11	5.0
Hydro	35	32	32	39	43	46	49	45	45	2.0
Bioenergy	6	9	10	12	13	15	16	14	14	2.1
Other renewables	0	4	4	8	11	13	16	6	14	6.1
Other energy sector	41	42	41	46	49	52	56	100	100	1.5
Electricity	10	11	11	12	13	15	17	27	30	1.9
Total final consumption	211	229	227	260	278	298	318	100	100	1.5
Coal	7	7	7	8	8	8	9	3	3	0.7
Oil	94	103	100	112	116	121	124	44	39	1.0
Natural gas	13	13	12	14	17	20	23	5	7	2.9
Electricity	38	43	43	51	56	63	70	19	22	2.3
Heat	-	-	-	-	-	-	-	-	-	n.a.
Bioenergy	59	63	64	74	79	83	89	28	28	1.5
Other renewables	0	1	1	1	2	3	3	0	1	5.8
Industry	80	81	80	91	97	103	110	100	100	1.4
Coal	7	7	7	8	8	8	8	9	8	0.7
Oil	12	11	10	11	11	11	12	13	10	0.5
Natural gas	9	9	9	12	14	16	18	11	17	3.4
Electricity	17	17	17	20	22	24	26	21	24	1.9
Heat	-	-	-	-	-	-	-	-	-	n.a.
Bioenergy	34	36	37	40	41	43	46	46	41	1.0
Other renewables	-	-	-	0	0	0	0	-	0	n.a.
Transport	70	85	83	93	98	103	108	100	100	1.2
Oil	54	65	64	69	70	73	73	76	68	0.6
Electricity	0	0	0	0	1	1	2	0	2	10.1
Biofuels	14	17	17	23	26	29	32	21	30	2.8
Other fuels	2	2	2	1	1	1	1	3	1	-3.4
Buildings	34	38	38	43	47	52	57	100	100	1.8
Coal	-	-	-	-	-	-	-	-	-	n.a.
Oil	7	7	7	8	8	8	9	19	15	0.8
Natural gas	1	1	0	1	1	2	2	1	3	6.5
Electricity	18	23	23	27	31	35	40	61	70	2.5
Heat	-	-	-	-	-	-	-	-	-	n.a.
Bioenergy	8	7	6	6	5	4	4	17	6	-2.7
Traditional biomass	8	6	6	6	5	4	3	16	5	-3.1
Other renewables	0	1	1	1	2	2	3	2	5	5.4
Other	27	26	25	33	37	40	43	100	100	2.5
Petrochem. feedstock	9	8	8	13	15	16	18	31	42	3.9

Table A.3: Energy demand – Brazil

	Current Policies Scenario				Sustainable Development Scenario			
	Energy demand (Mtoe)		Shares (%)	CAAGR (%)	Energy demand (Mtoe)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total primary demand	356	427	100	1.9	299	312	100	0.4
Coal	17	18	4	0.3	10	9	3	-3.0
Oil	132	147	35	1.4	97	74	24	-1.7
Natural gas	38	60	14	3.1	26	34	11	0.5
Nuclear	7	12	3	5.0	7	12	4	5.0
Hydro	45	55	13	2.6	40	44	14	1.5
Bioenergy	106	118	28	1.3	106	118	38	1.3
Other renewables	11	17	4	5.4	14	21	7	6.6
Power sector	90	119	100	2.4	74	93	100	1.2
Coal	5	4	4	-1.2	0	-	-	n.a.
Oil	2	2	2	-1.0	1	0	0	-16.6
Natural gas	9	16	13	1.3	2	4	5	-4.4
Nuclear	7	12	10	5.0	7	12	13	5.0
Hydro	45	55	47	2.6	40	44	47	1.5
Bioenergy	13	15	12	1.7	13	15	16	1.8
Other renewables	9	14	12	5.5	11	17	19	6.5
Other energy sector	52	64	100	2.0	43	47	100	0.6
Electricity	14	19	29	2.4	12	14	29	1.0
Total final consumption	287	338	100	1.8	245	250	100	0.4
Coal	8	9	3	0.9	7	6	2	-1.3
Oil	123	139	41	1.5	91	71	28	-1.6
Natural gas	19	27	8	3.6	16	20	8	2.4
Electricity	59	75	22	2.6	52	63	25	1.7
Heat	-	-	-	n.a.	-	-	-	n.a.
Bioenergy	77	86	26	1.4	77	86	34	1.4
Other renewables	2	3	1	4.6	2	4	2	7.1
Industry	98	114	100	1.6	83	82	100	0.1
Coal	8	9	8	0.9	6	5	7	-1.4
Oil	11	12	10	0.6	9	7	9	-1.5
Gas	15	21	18	3.9	13	13	15	1.6
Electricity	22	26	23	1.9	21	25	30	1.6
Heat	-	-	-	n.a.	-	-	-	n.a.
Bioenergy	42	47	41	1.1	34	31	38	-0.8
Other renewables	0	0	0	n.a.	0	1	1	n.a.
Transport	102	118	100	1.6	89	84	100	0.0
Oil	77	87	73	1.4	50	29	34	-3.5
Electricity	0	1	0	3.9	1	2	3	11.0
Biofuels	24	29	24	2.3	37	47	56	4.6
Other fuels	1	2	2	0.3	2	6	7	4.8
Buildings	49	63	100	2.3	39	46	100	0.9
Coal	-	-	-	n.a.	-	-	-	n.a.
Oil	8	9	14	1.0	7	7	14	-0.4
Natural gas	1	2	3	7.3	0	1	2	2.1
Electricity	33	46	73	3.1	28	34	73	1.7
Heat	-	-	-	n.a.	-	-	-	n.a.
Bioenergy	5	3	5	-2.9	1	2	3	-6.1
Traditional biomass	5	3	5	-3.1	0	0	0	-19.2
Other renewables	2	2	4	4.3	2	4	8	6.2
Other	37	43	100	2.5	35	38	100	1.9
Petrochem. feedstock	15	18	42	3.9	14	17	43	3.5

Table A.3: Electricity and CO₂ emissions – Brazil

	Stated Policies Scenario									
	Electricity generation (TWh)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total generation	516	588	593	695	774	866	976	100	100	2.3
Coal	11	25	26	19	18	17	15	4	2	-2.5
Oil	16	16	15	5	5	5	5	2	0	-5.1
Natural gas	36	66	61	38	33	50	81	10	8	1.3
Nuclear	15	16	16	15	26	39	47	3	5	5.0
Renewables	437	465	475	618	692	755	828	80	85	2.6
Hydro	403	371	369	459	500	537	573	62	59	2.0
Bioenergy	31	51	55	63	67	71	75	9	8	1.4
Wind	2	42	47	80	103	119	139	8	14	5.0
Geothermal	-	-	-	-	-	-	-	-	-	n.a.
Solar PV	-	1	3	15	21	27	37	0	4	12.7
CSP	-	-	-	-	1	2	3	-	0	n.a.
Marine	-	-	-	-	-	-	0	-	0	n.a.

	Stated Policies Scenario									
	Electrical capacity (GW)							Shares (%)		CAAGR (%)
	2017	2018	2025	2030	2035	2040	2018	2040	2018-40	
Total capacity	156	162	194	213	231	258	100	100	2.1	
Coal	4	4	5	4	4	4	3	1	-0.7	
Oil	8	8	7	7	7	7	5	3	-0.9	
Natural gas	13	13	18	19	19	23	8	9	2.7	
Nuclear	2	2	2	3	5	6	1	2	5.2	
Renewables	129	135	161	179	195	217	83	84	2.2	
Hydro	100	103	111	118	126	136	63	53	1.3	
Bioenergy	15	16	18	19	20	21	10	8	1.3	
Wind	12	14	22	28	32	36	9	14	4.3	
Geothermal	-	-	-	-	-	-	-	-	n.a.	
Solar PV	1	2	10	14	17	23	1	9	11.2	
CSP	-	-	-	0	1	1	-	0	n.a.	
Marine	-	-	-	-	-	0	-	0	n.a.	

	Stated Policies Scenario									
	CO ₂ emissions (Mt)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total CO₂	372	428	416	422	435	460	484	100	100	0.7
Coal	54	65	65	58	58	57	57	16	12	-0.6
Oil	267	292	284	302	310	320	324	68	67	0.6
Natural gas	51	71	67	62	68	83	104	16	21	2.0
Power sector	45	69	68	40	37	41	50	100	100	-1.4
Coal	18	29	31	22	21	19	18	45	35	-2.5
Oil	12	10	9	3	3	3	3	14	6	-5.1
Natural gas	16	30	28	15	13	19	30	41	59	0.3
Final consumption	302	329	319	347	361	378	390	100	100	0.9
Coal	33	32	30	32	33	34	35	9	9	0.7
Oil	242	270	263	284	292	302	307	82	79	0.7
Transport	163	198	193	208	212	219	221	60	57	0.6
Natural gas	28	27	26	31	36	42	49	8	12	2.8

Table A.3: Electricity and CO₂ emissions – Brazil

	Current Policies Scenario				Sustainable Development Scenario			
	Electricity generation (TWh)		Shares (%)	CAAGR (%)	Electricity generation (TWh)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total generation	811	1 053	100	2.6	706	854	100	1.7
Coal	22	20	2	-1.2	0	-	-	n.a.
Oil	12	12	1	-1.0	3	0	0	-16.6
Natural gas	55	101	10	2.3	14	28	3	-3.5
Nuclear	26	47	4	5.0	26	47	6	5.0
Renewables	696	873	83	2.8	662	778	91	2.3
Hydro	521	643	61	2.6	467	511	60	1.5
Bioenergy	66	71	7	1.2	65	73	8	1.2
Wind	93	126	12	4.5	106	148	17	5.3
Geothermal	-	-	-	n.a.	-	-	-	n.a.
Solar PV	15	29	3	11.5	23	43	5	13.5
CSP	1	3	0	n.a.	1	3	0	n.a.
Marine	-	0	0	n.a.	-	0	0	n.a.

	Current Policies Scenario				Sustainable Development Scenario			
	Electrical capacity (GW)		Shares (%)	CAAGR (%)	Electrical capacity (GW)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total capacity	215	271	100	2.4	202	239	100	1.8
Coal	4	4	1	-0.4	4	-	-	n.a.
Oil	7	7	3	-0.8	7	7	3	-1.0
Natural gas	21	24	9	2.9	16	16	7	1.2
Nuclear	3	6	2	5.2	3	6	3	5.2
Renewables	179	228	84	2.4	171	205	85	1.9
Hydro	125	156	58	1.9	109	119	50	0.7
Bioenergy	18	20	7	1.1	18	20	8	1.2
Wind	25	33	12	3.9	29	39	16	4.6
Geothermal	-	-	-	n.a.	-	-	-	n.a.
Solar PV	10	18	7	10.1	14	26	11	11.9
CSP	0	1	0	n.a.	0	1	0	n.a.
Marine	-	0	0	n.a.	-	0	0	n.a.

	Current Policies Scenario				Sustainable Development Scenario			
	CO ₂ emissions (Mt)		Shares (%)	CAAGR (%)	CO ₂ emissions (Mt)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total CO₂	483	568	100	1.4	310	235	100	-2.6
Coal	64	64	11	-0.0	28	19	8	-5.4
Oil	337	376	66	1.3	229	151	64	-2.8
Natural gas	82	128	23	3.0	53	65	28	-0.2
Power sector	54	68	100	0.0	8	11	100	-8.1
Coal	26	24	34	-1.2	0	-	-	n.a.
Oil	8	7	11	-1.0	2	0	2	-16.6
Natural gas	20	37	55	1.3	5	10	98	-4.4
Final consumption	387	444	100	1.5	276	204	100	-2.0
Coal	34	36	8	0.9	25	17	8	-2.5
Oil	313	350	79	1.3	217	145	71	-2.7
Transport	232	262	59	1.4	150	87	43	-3.6
Natural gas	40	58	13	3.6	34	42	21	2.2

Table A.3: Energy demand – Europe

	Stated Policies Scenario									
	Energy demand (Mtoe)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total primary demand	2 110	1 996	2 000	1 929	1 848	1 761	1 723	100	100	-0.7
Coal	377	322	313	220	184	154	142	16	8	-3.5
Oil	663	635	636	588	526	458	407	32	24	-2.0
Natural gas	571	504	496	510	487	474	456	25	26	-0.4
Nuclear	269	244	246	214	205	187	191	12	11	-1.1
Hydro	55	50	54	61	64	65	67	3	4	1.0
Bioenergy	146	174	182	213	226	237	247	9	14	1.4
Other renewables	30	66	73	123	155	187	213	4	12	5.0
Power sector	896	837	840	791	779	771	788	100	100	-0.3
Coal	267	226	223	134	104	79	71	27	9	-5.1
Oil	27	18	17	9	7	6	4	2	1	-6.2
Natural gas	203	170	162	177	169	169	161	19	20	-0.0
Nuclear	269	244	246	214	205	187	191	29	24	-1.1
Hydro	55	50	54	61	64	65	67	6	8	1.0
Bioenergy	49	68	72	84	90	97	103	9	13	1.6
Other renewables	25	60	66	111	140	168	190	8	24	4.9
Other energy sector	202	185	184	172	158	147	142	100	100	-1.1
Electricity	56	53	53	50	48	48	48	29	34	-0.5
Total final consumption	1 457	1 408	1 412	1 417	1 372	1 317	1 283	100	100	-0.4
Coal	66	56	53	49	45	41	39	4	3	-1.4
Oil	587	570	571	540	487	426	381	40	30	-1.8
Natural gas	330	306	306	302	291	279	269	22	21	-0.6
Electricity	299	301	304	321	334	350	367	22	29	0.9
Heat	75	65	65	67	66	65	64	5	5	-0.1
Bioenergy	95	104	108	126	134	138	141	8	11	1.2
Other renewables	5	6	6	11	15	19	22	0	2	5.9
Industry	343	341	340	346	342	338	336	100	100	-0.0
Coal	40	36	33	33	32	31	30	10	9	-0.5
Oil	43	36	35	35	34	32	31	10	9	-0.5
Natural gas	101	105	105	105	103	99	97	31	29	-0.4
Electricity	111	114	115	117	118	118	119	34	35	0.2
Heat	25	22	22	23	23	22	21	7	6	-0.2
Bioenergy	23	28	29	32	33	34	36	9	11	1.0
Other renewables	0	0	0	1	1	1	2	0	1	8.2
Transport	374	391	394	389	368	335	317	100	100	-1.0
Oil	347	362	363	345	314	272	242	92	76	-1.8
Electricity	7	7	7	12	17	26	35	2	11	7.7
Biofuels	13	16	18	26	30	30	31	5	10	2.5
Other fuels	7	6	6	6	6	8	9	2	3	1.9
Buildings	579	530	531	531	518	506	499	100	100	-0.3
Coal	23	17	16	12	9	6	5	3	1	-5.1
Oil	73	56	56	40	27	16	10	11	2	-7.7
Natural gas	197	178	177	175	166	157	147	33	29	-0.8
Electricity	176	175	176	186	193	200	206	33	41	0.7
Heat	49	42	42	43	43	43	42	8	8	0.0
Bioenergy	57	58	59	65	67	69	71	11	14	0.8
Traditional biomass	-	-	-	-	-	-	-	-	-	n.a.
Other renewables	5	5	5	9	13	16	18	1	4	6.1
Other	161	146	148	151	144	138	131	100	100	-0.6
Petrochem. feedstock	89	83	83	83	77	73	66	56	51	-1.0

Table A.3: Energy demand – Europe

	Current Policies Scenario				Sustainable Development Scenario			
	Energy demand (Mtoe)		Shares (%)	CAAGR (%)	Energy demand (Mtoe)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total primary demand	1 982	1 968	100	-0.1	1 689	1 470	100	-1.4
Coal	256	223	11	-1.5	90	59	4	-7.3
Oil	574	516	26	-0.9	437	231	16	-4.5
Natural gas	521	557	28	0.5	425	311	21	-2.1
Nuclear	215	201	10	-0.9	220	217	15	-0.6
Hydro	63	66	3	0.9	66	71	5	1.3
Bioenergy	219	238	12	1.2	263	285	19	2.1
Other renewables	133	168	9	3.9	188	296	20	6.6
Power sector	839	865	100	0.1	735	803	100	-0.2
Coal	172	145	17	-1.9	28	14	2	-12.0
Oil	7	5	1	-5.7	6	3	0	-7.7
Natural gas	172	199	23	0.9	147	109	14	-1.8
Nuclear	215	201	23	-0.9	220	217	27	-0.6
Hydro	63	66	8	0.9	66	71	9	1.3
Bioenergy	89	99	11	1.5	103	130	16	2.7
Other renewables	121	151	18	3.8	166	260	32	6.4
Other energy sector	168	163	100	-0.5	143	128	100	-1.6
Electricity	52	53	32	-0.0	51	64	50	0.8
Total final consumption	1 450	1 452	100	0.1	1 257	1 051	100	-1.3
Coal	48	43	3	-0.9	34	23	2	-3.6
Oil	531	481	33	-0.8	402	214	20	-4.4
Natural gas	321	329	23	0.3	254	177	17	-2.5
Electricity	343	377	26	1.0	325	385	37	1.1
Heat	69	69	5	0.3	57	50	5	-1.2
Bioenergy	128	137	9	1.1	159	153	15	1.6
Other renewables	11	16	1	4.4	22	36	3	8.3
Industry	351	354	100	0.2	295	269	100	-1.1
Coal	33	32	9	-0.2	24	20	7	-2.4
Oil	34	32	9	-0.3	23	16	6	-3.4
Gas	108	106	30	0.0	89	66	24	-2.1
Electricity	119	122	34	0.3	108	112	42	-0.1
Heat	23	23	6	0.1	16	12	5	-2.7
Bioenergy	34	38	11	1.2	30	36	13	0.9
Other renewables	1	1	0	5.0	3	5	2	13.0
Transport	392	381	100	-0.2	345	241	100	-2.2
Oil	348	327	86	-0.5	251	106	44	-5.4
Electricity	11	17	5	4.3	22	69	29	11.1
Biofuels	26	29	7	2.1	55	38	16	3.5
Other fuels	6	8	2	1.2	18	28	11	7.2
Buildings	563	585	100	0.4	484	430	100	-1.0
Coal	11	8	1	-3.3	7	1	0	-12.1
Oil	37	21	4	-4.2	24	5	1	-10.7
Natural gas	190	199	34	0.5	135	80	19	-3.5
Electricity	206	230	39	1.2	189	197	46	0.5
Heat	45	46	8	0.4	41	38	9	-0.5
Bioenergy	64	67	11	0.6	70	74	17	1.1
Traditional biomass	-	-	-	n.a.	-	-	-	n.a.
Other renewables	10	14	2	4.8	18	29	7	8.3
Other	145	133	100	-0.5	133	111	100	-1.3
Petrochem. feedstock	76	66	50	-1.0	71	55	50	-1.8

Table A.3: Electricity and CO₂ emissions – Europe

	Stated Policies Scenario									
	Electricity generation (TWh)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total generation	4 120	4 127	4 163	4 345	4 478	4 640	4 840	100	100	0.7
Coal	1 068	928	907	544	432	338	319	22	7	-4.6
Oil	93	65	61	31	22	19	13	1	0	-6.7
Natural gas	947	867	808	902	848	852	802	19	17	-0.0
Nuclear	1 032	936	943	822	788	717	734	23	15	-1.1
Renewables	975	1 325	1 438	2 043	2 384	2 711	2 967	35	61	3.3
Hydro	641	579	624	713	743	761	776	15	16	1.0
Bioenergy	147	217	233	280	300	326	348	6	7	1.8
Wind	153	385	417	742	968	1 189	1 357	10	28	5.5
Geothermal	11	18	21	28	33	37	40	0	1	3.1
Solar PV	23	120	138	273	325	368	394	3	8	4.9
CSP	1	6	5	7	11	18	25	0	1	7.5
Marine	0	1	1	1	4	13	27	0	1	19.7

	Stated Policies Scenario									
	Electrical capacity (GW)							Shares (%)		CAAGR (%)
	2017	2018	2025	2030	2035	2040	2018	2040	2018-40	
Total capacity	1 280	1 305	1 484	1 579	1 678	1 753	100	100	1.3	
Coal	227	222	145	112	88	84	17	5	-4.3	
Oil	57	56	31	23	19	14	4	1	-6.0	
Natural gas	262	264	307	323	356	365	20	21	1.5	
Nuclear	142	142	125	118	108	111	11	6	-1.1	
Renewables	590	619	867	986	1 077	1 137	47	65	2.8	
Hydro	246	248	259	269	274	278	19	16	0.5	
Bioenergy	46	49	58	61	65	67	4	4	1.4	
Wind	178	191	299	356	402	429	15	25	3.8	
Geothermal	3	3	4	4	5	5	0	0	2.9	
Solar PV	114	126	243	290	320	336	10	19	4.6	
CSP	2	2	3	4	6	8	0	0	5.9	
Marine	0	0	0	2	6	12	0	1	19.5	

	Stated Policies Scenario									
	CO ₂ emissions (Mt)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total CO₂	4 401	3 979	3 923	3 408	3 047	2 703	2 487	100	100	-2.1
Coal	1 473	1 253	1 221	824	678	551	504	31	20	-3.9
Oil	1 671	1 596	1 589	1 443	1 282	1 095	970	41	39	-2.2
Natural gas	1 257	1 131	1 112	1 141	1 087	1 056	1 013	28	41	-0.4
Power sector	1 695	1 422	1 387	1 015	861	750	691	100	100	-3.1
Coal	1 131	967	952	570	444	335	299	69	43	-5.1
Oil	85	55	54	29	21	17	13	4	2	-6.2
Natural gas	478	399	382	416	396	397	379	28	55	-0.0
Final consumption	2 494	2 358	2 339	2 209	2 023	1 805	1 653	100	100	-1.6
Coal	296	244	229	213	195	178	168	10	10	-1.4
Oil	1 471	1 440	1 436	1 330	1 188	1 014	897	61	54	-2.1
Transport	1 050	1 099	1 101	1 047	953	823	732	47	44	-1.8
Natural gas	728	675	674	666	640	613	588	29	36	-0.6

Table A.3: Electricity and CO₂ emissions – Europe

	Current Policies Scenario				Sustainable Development Scenario			
	Electricity generation (TWh)		Shares (%)	CAAGR (%)	Electricity generation (TWh)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total generation	4 622	5 012	100	0.8	4 429	5 246	100	1.1
Coal	733	647	13	-1.5	101	48	1	-12.5
Oil	23	15	0	-6.1	20	9	0	-8.2
Natural gas	868	1 043	21	1.2	739	536	10	-1.8
Nuclear	825	771	15	-0.9	844	832	16	-0.6
Renewables	2 168	2 532	51	2.6	2 721	3 817	73	4.5
Hydro	733	762	15	0.9	767	824	16	1.3
Bioenergy	298	333	7	1.6	345	461	9	3.2
Wind	822	1 049	21	4.3	1 157	1 860	35	7.0
Geothermal	30	35	1	2.4	36	51	1	4.3
Solar PV	275	321	6	3.9	395	541	10	6.4
CSP	9	19	0	6.2	16	44	1	10.3
Marine	2	12	0	15.4	5	36	1	21.1

	Current Policies Scenario				Sustainable Development Scenario			
	Electrical capacity (GW)		Shares (%)	CAAGR (%)	Electrical capacity (GW)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total capacity	1 598	1 724	100	1.3	1 691	2 066	100	2.1
Coal	174	148	9	-1.8	65	23	1	-9.8
Oil	25	16	1	-5.5	23	15	1	-5.7
Natural gas	370	431	25	2.2	318	369	18	1.5
Nuclear	118	109	6	-1.2	128	127	6	-0.5
Renewables	891	982	57	2.1	1 132	1 468	71	4.0
Hydro	264	273	16	0.4	275	293	14	0.8
Bioenergy	60	64	4	1.2	69	88	4	2.7
Wind	313	353	20	2.8	422	590	29	5.3
Geothermal	4	5	0	2.2	5	7	0	4.1
Solar PV	245	275	16	3.6	352	461	22	6.1
CSP	3	6	0	4.7	6	14	1	8.5
Marine	1	6	0	15.3	3	16	1	20.9

	Current Policies Scenario				Sustainable Development Scenario			
	CO ₂ emissions (Mt)		Shares (%)	CAAGR (%)	CO ₂ emissions (Mt)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total CO₂	3 574	3 386	100	-0.7	2 236	1 196	100	-5.3
Coal	982	845	25	-1.7	280	112	9	-10.3
Oil	1 424	1 293	38	-0.9	1 018	443	37	-5.6
Natural gas	1 169	1 248	37	0.5	937	640	54	-2.5
Power sector	1 160	1 098	100	-1.1	471	263	100	-7.3
Coal	733	616	56	-2.0	111	16	6	-17.0
Oil	21	15	1	-5.7	19	9	4	-7.6
Natural gas	405	467	43	0.9	342	238	90	-2.1
Final consumption	2 239	2 118	100	-0.4	1 639	858	100	-4.5
Coal	207	188	9	-0.9	141	76	9	-4.9
Oil	1 323	1 203	57	-0.8	942	404	47	-5.6
Transport	1 055	992	47	-0.5	760	320	37	-5.5
Natural gas	708	728	34	0.3	556	377	44	-2.6

Table A.3: Energy demand – European Union

	Stated Policies Scenario									
	Energy demand (Mtoe)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total primary demand	1 726	1 617	1 613	1 514	1 414	1 313	1 254	100	100	-1.1
Coal	283	234	223	143	110	79	61	14	5	-5.7
Oil	570	531	530	478	413	345	294	33	23	-2.6
Natural gas	448	398	392	392	363	341	317	24	25	-1.0
Nuclear	239	216	216	180	166	150	155	13	12	-1.5
Hydro	32	26	29	33	35	36	36	2	3	1.0
Bioenergy	131	159	166	194	205	213	220	10	18	1.3
Other renewables	22	52	56	95	122	150	171	3	14	5.2
Power sector	725	666	662	604	578	560	562	100	100	-0.7
Coal	212	170	162	86	58	32	17	24	3	-9.6
Oil	24	16	16	8	6	5	4	2	1	-6.4
Natural gas	150	123	119	130	119	113	103	18	18	-0.7
Nuclear	239	216	216	180	166	150	155	33	28	-1.5
Hydro	32	26	29	33	35	36	36	4	6	1.0
Bioenergy	47	64	67	78	82	87	91	10	16	1.4
Other renewables	20	49	53	88	113	137	156	8	28	5.1
Other energy sector	148	138	137	122	109	100	94	100	100	-1.7
Electricity	43	41	41	37	34	33	33	30	35	-1.0
Total final consumption	1 205	1 154	1 155	1 135	1 074	1 006	958	100	100	-0.9
Coal	41	36	34	31	27	24	22	3	2	-2.0
Oil	503	479	479	441	384	321	274	41	29	-2.5
Natural gas	278	254	253	243	229	214	200	22	21	-1.0
Electricity	244	241	241	250	256	265	274	21	29	0.6
Heat	53	49	49	49	48	47	46	4	5	-0.3
Bioenergy	83	93	97	114	121	124	127	8	13	1.2
Other renewables	2	3	3	7	9	12	15	0	2	7.5
Industry	272	270	269	269	261	254	249	100	100	-0.3
Coal	24	22	21	20	19	18	17	8	7	-1.0
Oil	37	28	27	27	26	25	24	10	10	-0.6
Natural gas	85	88	88	86	82	78	75	33	30	-0.7
Electricity	88	89	89	90	88	87	87	33	35	-0.1
Heat	17	16	16	16	15	14	13	6	5	-0.9
Bioenergy	22	27	28	30	30	31	32	10	13	0.7
Other renewables	0	0	0	0	0	1	1	0	1	20.6
Transport	320	327	328	316	289	253	232	100	100	-1.6
Oil	299	303	302	279	244	199	168	92	72	-2.6
Electricity	5	6	6	9	14	22	30	2	13	7.9
Biofuels	13	15	17	25	28	29	29	5	12	2.4
Other fuels	3	3	3	3	3	4	5	1	2	1.8
Buildings	482	436	435	427	409	391	378	100	100	-0.6
Coal	14	10	10	7	5	3	2	2	0	-7.5
Oil	64	50	50	35	23	13	7	11	2	-8.5
Natural gas	172	150	149	142	132	120	109	34	29	-1.4
Electricity	147	142	142	147	149	151	153	33	40	0.3
Heat	36	32	32	33	33	33	32	7	9	0.0
Bioenergy	47	49	50	56	59	61	63	11	17	1.0
Traditional biomass	-	-	-	-	-	-	-	-	-	n.a.
Other renewables	2	3	3	6	9	11	13	1	3	7.3
Other	131	122	122	123	114	107	98	100	100	-1.0
Petrochem. feedstock	78	75	75	75	68	63	56	62	57	-1.3

Table A.3: Energy demand – European Union

	Current Policies Scenario				Sustainable Development Scenario			
	Energy demand (Mtoe)		Shares (%)	CAAGR (%)	Energy demand (Mtoe)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total primary demand	1 531	1 466	100	-0.4	1 311	1 101	100	-1.7
Coal	167	116	8	-2.9	59	42	4	-7.4
Oil	456	389	27	-1.4	340	161	15	-5.3
Natural gas	398	412	28	0.2	317	217	20	-2.6
Nuclear	175	168	11	-1.1	177	178	16	-0.9
Hydro	34	35	2	0.9	35	37	3	1.1
Bioenergy	199	213	15	1.1	237	240	22	1.7
Other renewables	102	132	9	4.0	146	225	20	6.6
Power sector	630	625	100	-0.3	563	613	100	-0.4
Coal	113	68	11	-3.9	19	13	2	-10.8
Oil	6	4	1	-5.9	5	3	0	-7.7
Natural gas	125	139	22	0.7	104	79	13	-1.9
Nuclear	175	168	27	-1.1	177	178	29	-0.9
Hydro	34	35	6	0.9	35	37	6	1.1
Bioenergy	82	88	14	1.2	93	104	17	2.0
Other renewables	96	122	20	3.9	131	199	33	6.2
Other energy sector	118	111	100	-0.9	101	87	100	-2.0
Electricity	37	37	33	-0.5	38	50	57	0.9
Total final consumption	1 143	1 107	100	-0.2	987	790	100	-1.7
Coal	28	24	2	-1.6	20	13	2	-4.3
Oil	423	361	33	-1.3	313	149	19	-5.2
Natural gas	256	257	23	0.1	198	126	16	-3.1
Electricity	263	282	25	0.7	252	294	37	0.9
Heat	50	49	4	0.1	42	36	5	-1.4
Bioenergy	115	123	11	1.1	143	135	17	1.5
Other renewables	6	10	1	5.5	15	26	3	10.2
Industry	269	264	100	-0.1	226	200	100	-1.3
Coal	20	18	7	-0.7	15	11	6	-3.0
Oil	26	24	9	-0.5	18	12	6	-3.6
Gas	87	84	32	-0.2	70	48	24	-2.7
Electricity	90	89	34	-0.0	83	85	42	-0.2
Heat	15	14	5	-0.7	11	7	4	-3.6
Bioenergy	31	34	13	0.9	28	32	16	0.7
Other renewables	0	1	0	15.9	2	4	2	26.0
Transport	311	288	100	-0.6	273	178	100	-2.7
Oil	274	242	84	-1.0	190	66	37	-6.7
Electricity	10	15	5	4.6	17	57	32	11.1
Biofuels	25	27	9	2.1	51	34	19	3.2
Other fuels	3	4	1	1.0	14	21	12	8.8
Buildings	448	455	100	0.2	383	329	100	-1.3
Coal	6	3	1	-5.6	3	0	0	-22.7
Oil	32	18	4	-4.5	20	4	1	-11.1
Natural gas	154	158	35	0.3	106	56	17	-4.3
Electricity	160	173	38	0.9	147	149	45	0.2
Heat	34	35	8	0.4	31	28	9	-0.6
Bioenergy	56	59	13	0.8	60	65	20	1.2
Traditional biomass	-	-	-	n.a.	-	-	-	n.a.
Other renewables	6	9	2	5.5	13	22	7	9.8
Other	115	100	100	-0.9	105	82	100	-1.8
Petrochem. feedstock	68	55	56	-1.4	62	46	56	-2.2

Table A.3: Electricity and CO₂ emissions – European Union

	Stated Policies Scenario									
	Electricity generation (TWh)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total generation	3 336	3 269	3 279	3 351	3 396	3 468	3 565	100	100	0.4
Coal	864	710	666	351	238	126	65	20	2	-10.0
Oil	87	61	58	28	20	17	12	2	0	-6.9
Natural gas	765	663	629	698	627	591	523	19	15	-0.8
Nuclear	917	830	829	693	636	575	595	25	17	-1.5
Renewables	699	1 000	1 092	1 579	1 872	2 156	2 368	33	66	3.6
Hydro	377	301	339	383	403	414	422	10	12	1.0
Bioenergy	143	211	225	265	279	298	312	7	9	1.5
Wind	149	362	392	682	884	1 084	1 239	12	35	5.4
Geothermal	6	7	7	7	10	13	15	0	0	3.6
Solar PV	23	114	124	234	282	319	332	4	9	4.6
CSP	1	6	5	6	10	15	22	0	1	6.8
Marine	0	1	1	1	4	13	27	0	1	19.7

	Stated Policies Scenario									
	Electrical capacity (GW)							Shares (%)		CAAGR (%)
	2017	2018	2025	2030	2035	2040	2018	2040	2018-40	
Total capacity	1 038	1 055	1 185	1 251	1 320	1 360	100	100	1.2	
Coal	170	164	93	59	32	22	16	2	-8.7	
Oil	46	45	25	19	15	11	4	1	-6.3	
Natural gas	217	217	249	255	275	272	21	20	1.0	
Nuclear	125	125	106	97	88	92	12	7	-1.4	
Renewables	480	502	705	808	885	927	48	68	2.8	
Hydro	155	155	160	166	170	173	15	13	0.5	
Bioenergy	45	48	55	57	60	61	5	5	1.2	
Wind	170	180	276	324	363	387	17	28	3.5	
Geothermal	1	1	1	1	2	2	0	0	3.6	
Solar PV	107	115	210	254	279	286	11	21	4.2	
CSP	2	2	2	4	5	7	0	1	5.3	
Marine	0	0	0	2	6	12	0	1	19.5	

	Stated Policies Scenario									
	CO ₂ emissions (Mt)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total CO₂	3 563	3 144	3 083	2 582	2 212	1 846	1 590	100	100	-3.0
Coal	1 116	918	874	531	394	265	192	28	12	-6.7
Oil	1 438	1 335	1 332	1 173	1 005	819	693	43	44	-2.9
Natural gas	1 009	891	878	878	812	762	705	28	44	-1.0
Power sector	1 331	1 071	1 023	699	547	417	325	100	100	-5.1
Coal	901	731	694	369	249	136	71	68	22	-9.8
Oil	76	50	49	25	18	15	11	5	4	-6.4
Natural gas	353	290	280	305	279	266	242	27	74	-0.7
Final consumption	2 058	1 915	1 903	1 745	1 547	1 324	1 167	100	100	-2.2
Coal	178	153	147	131	116	102	94	8	8	-2.0
Oil	1 259	1 199	1 197	1 076	927	753	634	63	54	-2.8
Transport	906	920	919	846	741	605	510	48	44	-2.6
Natural gas	620	562	559	537	504	470	439	29	38	-1.1

Table A.3: Electricity and CO₂ emissions – European Union

	Current Policies Scenario				Sustainable Development Scenario			
	Electricity generation (TWh)		Shares (%)	CAAGR (%)	Electricity generation (TWh)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total generation	3 515	3 702	100	0.6	3 418	4 016	100	0.9
Coal	479	293	8	-3.7	64	48	1	-11.3
Oil	21	14	0	-6.2	19	9	0	-8.3
Natural gas	663	761	21	0.9	549	401	10	-2.0
Nuclear	673	644	17	-1.1	679	685	17	-0.9
Renewables	1 677	1 987	54	2.8	2 103	2 871	71	4.5
Hydro	394	411	11	0.9	404	428	11	1.1
Bioenergy	278	303	8	1.4	317	372	9	2.3
Wind	751	962	26	4.2	1 019	1 573	39	6.5
Geothermal	9	12	0	2.6	12	20	0	5.1
Solar PV	234	271	7	3.6	333	408	10	5.6
CSP	8	16	0	5.4	13	35	1	9.1
Marine	2	12	0	15.4	5	36	1	21.1

	Current Policies Scenario				Sustainable Development Scenario			
	Electrical capacity (GW)		Shares (%)	CAAGR (%)	Electrical capacity (GW)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total capacity	1 271	1 344	100	1.1	1 341	1 561	100	1.8
Coal	112	66	5	-4.1	37	14	1	-10.5
Oil	20	13	1	-5.6	19	12	1	-5.8
Natural gas	304	345	26	2.1	252	262	17	0.9
Nuclear	97	92	7	-1.4	105	106	7	-0.7
Renewables	720	795	59	2.1	908	1 115	71	3.7
Hydro	163	168	13	0.4	167	175	11	0.5
Bioenergy	56	59	4	1.0	64	73	5	1.9
Wind	286	321	24	2.7	368	485	31	4.6
Geothermal	1	2	0	2.6	2	3	0	5.2
Solar PV	210	234	17	3.3	299	353	23	5.2
CSP	3	6	0	4.0	5	11	1	7.5
Marine	1	6	0	15.3	3	16	1	20.9

	Current Policies Scenario				Sustainable Development Scenario			
	CO ₂ emissions (Mt)		Shares (%)	CAAGR (%)	CO ₂ emissions (Mt)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total CO₂	2 661	2 327	100	-1.3	1 668	820	100	-5.8
Coal	637	424	18	-3.2	177	71	9	-10.8
Oil	1 132	975	42	-1.4	788	294	36	-6.6
Natural gas	893	929	40	0.3	702	455	55	-2.9
Power sector	795	632	100	-2.2	331	190	100	-7.4
Coal	483	292	46	-3.9	73	14	8	-16.1
Oil	19	13	2	-5.8	17	9	5	-7.6
Natural gas	294	327	52	0.7	241	167	88	-2.3
Final consumption	1 737	1 575	100	-0.9	1 243	577	100	-5.3
Coal	123	105	7	-1.6	83	41	7	-5.7
Oil	1 047	900	57	-1.3	723	263	45	-6.7
Transport	831	736	47	-1.0	578	201	35	-6.7
Natural gas	567	571	36	0.1	437	274	47	-3.2

Table A.3: Energy demand – Africa

	Stated Policies Scenario									
	Energy demand (Mtoe)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total primary demand	681	817	838	992	1 100	1 202	1 318	100	100	2.1
Coal	108	110	112	116	112	112	113	13	9	0.0
Oil	161	193	194	237	266	298	333	23	25	2.5
Natural gas	90	126	133	154	184	220	263	16	20	3.2
Nuclear	3	4	4	4	7	9	11	0	1	5.2
Hydro	9	11	12	17	21	24	30	1	2	4.4
Bioenergy	308	368	378	449	471	470	471	45	36	1.0
Other renewables	2	6	7	16	39	68	97	1	7	13.0
Power sector	142	168	175	194	230	275	327	100	100	2.9
Coal	66	65	66	69	64	60	54	38	17	-0.9
Oil	17	18	19	20	19	20	19	11	6	-0.1
Natural gas	44	64	67	67	75	88	109	38	33	2.2
Nuclear	3	4	4	4	7	9	11	2	3	5.2
Hydro	9	11	12	17	21	24	30	7	9	4.4
Bioenergy	1	1	1	2	6	9	11	1	3	11.7
Other renewables	1	6	6	15	37	65	93	4	28	12.9
Other energy sector	101	126	127	164	179	183	190	100	100	1.9
Electricity	12	16	16	17	20	24	29	13	15	2.7
Total final consumption	496	594	611	727	804	881	970	100	100	2.1
Coal	17	21	22	22	23	24	26	4	3	0.7
Oil	137	165	167	207	238	271	308	27	32	2.8
Natural gas	29	42	46	61	77	96	114	8	12	4.2
Electricity	47	57	59	75	92	114	141	10	15	4.0
Heat	-	-	-	-	-	-	-	-	-	n.a.
Bioenergy	266	309	317	359	372	374	377	52	39	0.8
Other renewables	0	0	0	1	2	3	4	0	0	13.6
Industry	83	95	98	119	135	157	184	100	100	2.9
Coal	12	11	12	14	16	17	20	12	11	2.3
Oil	17	18	17	21	23	26	31	18	17	2.7
Natural gas	14	24	27	34	40	48	57	27	31	3.5
Electricity	20	23	24	28	33	38	44	24	24	2.8
Heat	-	-	-	-	-	-	-	-	-	n.a.
Bioenergy	20	18	18	22	24	27	32	19	17	2.5
Other renewables	-	-	-	0	0	0	0	-	0	n.a.
Transport	86	116	118	147	168	187	207	100	100	2.6
Oil	85	114	116	144	163	181	199	98	96	2.5
Electricity	0	1	1	1	1	2	2	0	1	6.8
Biofuels	0	0	0	1	1	1	2	0	1	20.8
Other fuels	1	1	1	2	2	3	3	1	2	3.9
Buildings	297	358	369	426	460	490	525	100	100	1.6
Coal	3	8	8	6	5	4	4	2	1	-3.7
Oil	19	19	19	23	28	37	47	5	9	4.2
Natural gas	6	12	14	20	28	37	44	4	8	5.4
Electricity	24	31	33	43	55	70	90	9	17	4.7
Heat	-	-	-	-	-	-	-	-	-	n.a.
Bioenergy	244	288	295	333	342	340	337	80	64	0.6
Traditional biomass	236	277	283	320	326	321	314	77	60	0.5
Other renewables	0	0	0	1	2	3	4	0	1	13.0
Other	30	25	26	35	41	47	54	100	100	3.4
Petrochem. feedstock	12	6	6	11	13	15	17	25	32	4.6

Table A.3: Energy demand – Africa

	Current Policies Scenario				Sustainable Development Scenario			
	Energy demand (Mtoe)		Shares (%)	CAAGR (%)	Energy demand (Mtoe)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total primary demand	1 126	1 395	100	2.3	698	828	100	-0.1
Coal	131	166	12	1.8	79	64	8	-2.5
Oil	274	351	25	2.7	239	247	30	1.1
Natural gas	195	291	21	3.6	146	166	20	1.0
Nuclear	7	11	1	5.2	7	20	2	7.9
Hydro	21	30	2	4.5	26	40	5	5.8
Bioenergy	471	482	35	1.1	139	123	15	-5.0
Other renewables	26	63	5	10.8	61	168	20	15.8
Power sector	246	368	100	3.4	202	307	100	2.6
Coal	80	97	26	1.8	36	18	6	-5.8
Oil	24	26	7	1.4	19	18	6	-0.4
Natural gas	84	135	37	3.2	50	40	13	-2.3
Nuclear	7	11	3	5.2	7	20	6	7.9
Hydro	21	30	8	4.5	26	40	13	5.8
Bioenergy	4	8	2	10.1	7	14	4	12.6
Other renewables	25	60	16	10.7	57	158	52	15.7
Other energy sector	189	219	100	2.5	91	100	100	-1.1
Electricity	22	32	15	3.2	18	25	25	2.1
Total final consumption	806	983	100	2.2	514	591	100	-0.2
Coal	25	31	3	1.6	19	18	3	-0.9
Oil	240	316	32	2.9	211	224	38	1.3
Natural gas	75	110	11	4.0	66	92	16	3.2
Electricity	94	143	15	4.1	91	145	24	4.1
Heat	-	-	-	n.a.	-	-	-	n.a.
Bioenergy	372	380	39	0.8	123	103	17	-5.0
Other renewables	2	3	0	12.4	4	9	2	17.5
Industry	134	184	100	2.9	115	146	100	1.8
Coal	16	23	13	3.0	12	14	9	0.5
Oil	22	26	14	1.8	19	24	17	1.5
Gas	39	55	30	3.3	34	42	29	2.1
Electricity	32	43	23	2.7	26	35	24	1.8
Heat	-	-	-	n.a.	-	-	-	n.a.
Bioenergy	26	38	20	3.3	23	29	20	2.1
Other renewables	0	0	0	n.a.	1	2	1	n.a.
Transport	169	217	100	2.8	160	175	100	1.8
Oil	166	212	98	2.8	148	147	84	1.1
Electricity	1	1	0	2.4	1	3	2	8.2
Biofuels	0	1	0	16.7	5	10	6	30.2
Other fuels	2	3	1	3.3	5	15	8	11.0
Buildings	462	528	100	1.6	201	221	100	-2.3
Coal	6	5	1	-2.3	4	2	1	-5.5
Oil	29	49	9	4.4	23	29	13	1.9
Natural gas	28	45	8	5.5	20	25	11	2.8
Electricity	57	94	18	4.9	60	102	46	5.3
Heat	-	-	-	n.a.	-	-	-	n.a.
Bioenergy	340	332	63	0.5	90	56	25	-7.3
Traditional biomass	326	314	60	0.5	78	44	20	-8.1
Other renewables	2	3	1	12.1	3	7	3	16.3
Other	41	54	100	3.4	39	49	100	3.0
Petrochem. feedstock	12	14	26	3.7	12	16	33	4.3

Table A.3: Electricity and CO₂ emissions – Africa

	Stated Policies Scenario									
	Electricity generation (TWh)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total generation	671	827	866	1 056	1 284	1 564	1 897	100	100	3.6
Coal	259	254	258	284	268	256	240	30	13	-0.3
Oil	64	75	79	84	79	82	78	9	4	-0.0
Natural gas	220	335	351	377	433	523	651	40	34	2.9
Nuclear	12	14	14	14	28	35	44	2	2	5.2
Renewables	115	147	163	296	474	668	882	19	46	8.0
Hydro	110	123	135	202	245	283	348	16	18	4.4
Bioenergy	1	2	2	7	22	32	40	0	2	14.9
Wind	2	12	14	39	84	120	159	2	8	11.7
Geothermal	1	5	5	9	23	41	59	1	3	12.1
Solar PV	0	5	6	34	90	172	241	1	13	18.1
CSP	-	1	2	5	9	19	34	0	2	13.9
Marine	-	-	-	-	-	-	-	-	-	n.a.

	Stated Policies Scenario									
	Electrical capacity (GW)							Shares (%)		CAAGR (%)
	2017	2018	2025	2030	2035	2040	2018	2040	2018-40	
Total capacity	228	244	315	400	501	614	100	100	4.3	
Coal	48	48	55	55	51	48	20	8	0.0	
Oil	42	43	35	36	37	36	18	6	-0.8	
Natural gas	92	103	129	146	171	207	42	34	3.2	
Nuclear	2	2	2	4	5	6	1	1	5.0	
Renewables	44	48	90	154	225	299	20	49	8.7	
Hydro	35	36	49	57	67	83	15	13	3.9	
Bioenergy	1	1	2	6	8	9	0	1	11.9	
Wind	5	5	15	30	41	53	2	9	10.9	
Geothermal	1	1	1	4	6	9	0	1	12.6	
Solar PV	3	4	21	55	98	135	2	22	16.8	
CSP	1	1	2	3	6	10	0	2	11.3	
Marine	-	-	-	-	-	-	-	-	n.a.	

	Stated Policies Scenario									
	CO ₂ emissions (Mt)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total CO₂	1 017	1 181	1 215	1 357	1 464	1 621	1 797	100	100	1.8
Coal	385	391	395	382	346	332	318	32	18	-1.0
Oil	450	541	551	668	750	846	948	45	53	2.5
Natural gas	182	248	269	307	368	443	532	22	30	3.1
Power sector	420	466	480	495	490	508	530	100	100	0.4
Coal	263	257	261	275	255	239	215	54	41	-0.9
Oil	54	59	62	63	59	62	60	13	11	-0.2
Natural gas	103	150	158	157	176	208	256	33	48	2.2
Final consumption	496	620	641	776	892	1 021	1 163	100	100	2.7
Coal	66	83	85	84	85	89	96	13	8	0.5
Oil	382	472	480	590	675	767	871	75	75	2.8
Transport	257	345	351	436	495	549	603	55	52	2.5
Natural gas	48	65	76	102	131	165	197	12	17	4.4

Table A.3: Electricity and CO₂ emissions – Africa

	Current Policies Scenario				Sustainable Development Scenario			
	Electricity generation (TWh)		Shares (%)	CAAGR (%)	Electricity generation (TWh)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total generation	1 338	2 029	100	3.9	1 267	1 976	100	3.8
Coal	336	424	21	2.3	148	75	4	-5.5
Oil	102	113	6	1.6	76	64	3	-0.9
Natural gas	491	809	40	3.9	298	250	13	-1.5
Nuclear	28	44	2	5.2	28	76	4	7.9
Renewables	378	638	31	6.4	716	1 509	76	10.6
Hydro	243	351	17	4.5	306	464	23	5.8
Bioenergy	13	29	1	13.1	23	49	2	15.9
Wind	48	85	4	8.5	130	252	13	14.0
Geothermal	17	45	2	10.7	25	75	4	13.3
Solar PV	49	108	5	13.8	200	556	28	22.6
CSP	8	20	1	11.1	32	112	6	20.3
Marine	-	-	-	n.a.	0	1	0	n.a.

	Current Policies Scenario				Sustainable Development Scenario			
	Electrical capacity (GW)		Shares (%)	CAAGR (%)	Electrical capacity (GW)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total capacity	390	557	100	3.8	484	852	100	5.9
Coal	63	78	14	2.2	43	32	4	-1.8
Oil	43	48	9	0.6	40	46	5	0.3
Natural gas	161	216	39	3.4	129	149	17	1.7
Nuclear	4	6	1	5.0	4	11	1	8.0
Renewables	112	192	34	6.5	262	574	67	11.9
Hydro	57	82	15	3.9	73	115	13	5.4
Bioenergy	3	7	1	10.3	6	11	1	12.7
Wind	17	28	5	7.7	47	86	10	13.3
Geothermal	3	7	1	11.3	4	12	1	14.1
Solar PV	29	62	11	12.8	122	317	37	21.5
CSP	3	6	1	8.7	11	33	4	17.5
Marine	-	-	-	n.a.	0	0	0	n.a.

	Current Policies Scenario				Sustainable Development Scenario			
	CO ₂ emissions (Mt)		Shares (%)	CAAGR (%)	CO ₂ emissions (Mt)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total CO₂	1 590	2 117	100	2.6	1 161	1 104	100	-0.4
Coal	417	512	24	1.2	209	111	10	-5.6
Oil	774	1 001	47	2.7	668	685	62	1.0
Natural gas	400	605	29	3.7	284	307	28	0.6
Power sector	593	786	100	2.3	315	200	100	-3.9
Coal	318	385	49	1.8	137	49	25	-7.3
Oil	76	83	11	1.4	62	57	28	-0.4
Natural gas	198	318	40	3.2	117	94	47	-2.3
Final consumption	904	1 210	100	2.9	773	833	100	1.2
Coal	93	118	10	1.5	68	59	7	-1.6
Oil	681	898	74	2.9	594	620	74	1.2
Transport	503	642	53	2.8	449	446	54	1.1
Natural gas	130	195	16	4.4	110	154	19	3.3

Table A.3: Energy demand – South Africa

	Stated Policies Scenario									
	Energy demand (Mtoe)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total primary demand	132	133	134	135	133	135	139	100	100	0.2
Coal	101	98	99	93	82	75	68	74	49	-1.7
Oil	18	19	19	23	25	27	30	14	21	2.1
Natural gas	4	4	4	4	5	6	8	3	5	2.9
Nuclear	3	4	4	4	4	4	6	3	5	2.5
Hydro	0	0	0	0	0	0	0	0	0	9.9
Bioenergy	7	7	7	8	10	12	13	5	9	3.1
Other renewables	0	1	1	2	7	10	14	1	10	11.5
Power sector	65	62	62	60	56	57	58	100	100	-0.3
Coal	61	57	57	53	42	37	31	92	53	-2.8
Oil	0	0	0	0	0	0	0	0	0	1.8
Natural gas	-	-	-	1	1	2	3	-	6	n.a.
Nuclear	3	4	4	4	4	4	6	6	11	2.5
Hydro	0	0	0	0	0	0	0	0	1	9.9
Bioenergy	0	0	0	1	2	3	4	0	7	18.8
Other renewables	0	1	1	2	6	9	13	2	22	11.7
Other energy sector	28	24	24	25	25	26	26	100	100	0.3
Electricity	4	4	4	4	4	5	5	18	18	0.5
Total final consumption	61	68	68	73	76	81	86	100	100	1.1
Coal	15	18	19	17	17	16	15	27	18	-0.9
Oil	22	25	25	29	30	32	34	37	39	1.3
Natural gas	1	2	2	2	2	2	2	2	2	0.5
Electricity	17	17	17	19	21	23	27	25	31	2.1
Heat	-	-	-	-	-	-	-	-	-	n.a.
Bioenergy	6	6	6	6	7	7	7	8	8	1.2
Other renewables	0	0	0	0	1	1	1	0	2	9.6
Industry	25	24	24	25	26	27	28	100	100	0.8
Coal	10	9	9	9	9	9	9	36	33	0.4
Oil	1	2	2	2	2	2	2	7	6	-0.1
Natural gas	1	2	2	2	2	2	2	7	6	-0.0
Electricity	10	10	10	11	11	12	12	43	44	0.9
Heat	-	-	-	-	-	-	-	-	-	n.a.
Bioenergy	2	2	2	2	2	3	3	7	10	2.9
Other renewables	-	-	-	0	0	0	0	-	0	n.a.
Transport	16	18	18	21	23	25	28	100	100	1.9
Oil	16	18	18	20	22	24	26	98	93	1.7
Electricity	0	0	0	0	1	1	1	2	3	4.3
Biofuels	-	-	-	0	0	1	1	-	4	n.a.
Other fuels	0	0	0	0	0	0	0	0	0	29.3
Buildings	15	20	20	19	19	20	22	100	100	0.4
Coal	3	8	8	6	5	4	4	41	16	-3.8
Oil	1	2	2	1	1	1	1	8	5	-1.6
Natural gas	0	0	0	0	0	0	0	0	1	22.5
Electricity	6	6	6	7	8	10	12	30	57	3.4
Heat	-	-	-	-	-	-	-	-	-	n.a.
Bioenergy	4	4	4	4	4	4	3	20	15	-0.8
Traditional biomass	4	4	4	4	4	3	3	20	13	-1.6
Other renewables	0	0	0	0	1	1	1	1	5	9.0
Other	6	6	6	8	8	8	9	100	100	1.4
Petrochem. feedstock	1	1	1	3	3	3	3	19	39	4.8

Table A.3: Energy demand – South Africa

	Current Policies Scenario				Sustainable Development Scenario			
	Energy demand (Mtoe)		Shares (%)	CAAGR (%)	Energy demand (Mtoe)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total primary demand	144	160	100	0.8	112	107	100	-1.0
Coal	96	92	58	-0.3	64	39	37	-4.1
Oil	26	33	21	2.6	21	20	19	0.3
Natural gas	6	8	5	3.0	5	7	6	2.3
Nuclear	4	6	4	2.5	4	10	9	4.7
Hydro	0	0	0	8.5	0	0	0	9.9
Bioenergy	9	12	8	2.7	9	13	12	3.0
Other renewables	3	8	5	8.9	8	17	16	12.5
Power sector	65	74	100	0.8	43	40	100	-2.0
Coal	55	52	71	-0.4	28	7	18	-9.1
Oil	0	0	0	1.8	0	0	0	1.7
Natural gas	2	4	5	n.a.	1	3	6	n.a.
Nuclear	4	6	9	2.5	4	10	26	4.7
Hydro	0	0	1	8.5	0	0	1	9.9
Bioenergy	2	4	5	17.9	2	4	11	18.8
Other renewables	3	7	10	9.1	7	15	38	12.6
Other energy sector	26	28	100	0.6	25	25	100	0.2
Electricity	5	5	20	1.1	4	3	14	-1.0
Total final consumption	78	91	100	1.3	65	66	100	-0.1
Coal	18	17	19	-0.3	14	10	16	-2.6
Oil	31	37	41	1.8	26	24	37	-0.2
Natural gas	2	2	2	0.5	1	2	2	-0.4
Electricity	21	27	30	2.2	17	21	31	0.9
Heat	-	-	-	n.a.	-	-	-	n.a.
Bioenergy	6	7	8	1.0	5	7	10	1.0
Other renewables	0	1	1	7.7	1	2	3	12.1
Industry	26	29	100	0.9	21	22	100	-0.4
Coal	10	10	35	0.8	7	6	28	-1.6
Oil	2	2	6	-0.0	1	1	4	-2.7
Gas	2	2	6	0.2	1	1	4	-2.5
Electricity	11	12	42	0.8	8	9	43	-0.4
Heat	-	-	-	n.a.	-	-	-	n.a.
Bioenergy	2	3	10	2.8	3	4	19	4.5
Other renewables	0	0	0	n.a.	0	0	2	n.a.
Transport	24	30	100	2.3	21	21	100	0.7
Oil	23	29	96	2.2	19	18	84	0.0
Electricity	0	0	2	1.9	0	1	4	4.4
Biofuels	0	1	3	n.a.	1	2	9	n.a.
Other fuels	-	-	-	n.a.	0	1	3	44.2
Buildings	20	24	100	0.8	15	15	100	-1.2
Coal	6	5	20	-2.4	4	2	15	-5.6
Oil	1	1	5	-1.1	1	1	4	-4.5
Natural gas	0	0	0	21.4	0	0	0	18.4
Electricity	9	13	56	3.7	7	10	64	2.3
Heat	-	-	-	n.a.	-	-	-	n.a.
Bioenergy	4	3	14	-0.9	1	1	6	-6.4
Traditional biomass	4	3	12	-1.6	1	0	2	-10.3
Other renewables	0	1	4	7.4	1	2	11	10.9
Other	8	9	100	1.6	8	8	100	1.0
Petrochem. feedstock	3	3	38	4.8	3	3	39	4.3

Table A.3: Electricity and CO₂ emissions – South Africa

	Stated Policies Scenario									
	Electricity generation (TWh)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total generation	257	251	254	264	283	310	344	100	100	1.4
Coal	242	227	228	221	181	163	143	90	42	-2.1
Oil	0	0	0	0	0	0	0	0	0	1.8
Natural gas	-	-	-	4	10	17	23	-	7	n.a.
Nuclear	12	14	14	14	14	15	25	6	7	2.5
Renewables	2	10	12	25	77	114	153	5	44	12.4
Hydro	2	1	1	2	3	4	6	0	2	9.9
Bioenergy	0	0	0	2	9	13	16	0	5	19.6
Wind	0	5	7	12	42	61	81	3	24	12.0
Geothermal	-	-	-	0	0	0	0	-	0	n.a.
Solar PV	-	3	3	7	22	32	41	1	12	12.6
CSP	-	1	1	2	2	4	8	0	2	10.2
Marine	-	-	-	-	-	-	-	-	-	n.a.

	Stated Policies Scenario									
	Electrical capacity (GW)							Shares (%)		CAAGR (%)
	2017	2018	2025	2030	2035	2040	2018	2040	2018-40	
Total capacity	56	56	65	82	96	112	100	100	3.2	
Coal	42	41	41	36	31	27	74	24	-1.8	
Oil	4	4	4	3	3	3	7	3	-0.9	
Natural gas	-	-	4	7	11	17	-	15	n.a.	
Nuclear	2	2	2	2	2	3	3	3	2.4	
Renewables	8	8	13	31	42	54	15	48	8.9	
Hydro	4	4	4	4	4	4	7	4	0.9	
Bioenergy	0	0	1	2	3	4	0	3	12.6	
Wind	2	2	4	13	17	22	4	19	11.2	
Geothermal	-	-	0	0	0	0	-	0	n.a.	
Solar PV	2	2	4	12	16	21	3	19	11.8	
CSP	0	0	1	1	1	3	1	2	8.9	
Marine	-	-	-	-	-	-	-	-	n.a.	

	Stated Policies Scenario									
	CO ₂ emissions (Mt)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total CO₂	419	422	420	378	321	300	279	100	100	-1.8
Coal	356	347	346	296	232	204	175	82	63	-3.0
Oil	61	71	70	77	81	86	91	17	33	1.2
Natural gas	2	4	4	5	7	10	12	1	4	5.4
Power sector	243	225	227	212	172	153	129	100	100	-2.5
Coal	243	225	227	210	168	147	121	100	94	-2.8
Oil	0	0	0	0	0	0	0	0	0	1.8
Natural gas	-	-	-	1	3	6	8	-	6	n.a.
Final consumption	116	142	143	142	143	145	148	100	100	0.1
Coal	57	70	71	64	60	57	54	50	37	-1.2
Oil	58	69	68	74	79	84	89	47	60	1.2
Transport	46	54	54	61	67	72	77	37	52	1.7
Natural gas	2	4	4	4	4	4	4	3	3	0.5

Table A.3: Electricity and CO₂ emissions – South Africa

	Current Policies Scenario				Sustainable Development Scenario			
	Electricity generation (TWh)		Shares (%)	CAAGR (%)	Electricity generation (TWh)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total generation	300	381	100	1.9	232	260	100	0.1
Coal	236	238	62	0.2	118	28	11	-9.1
Oil	0	0	0	1.9	0	0	0	1.8
Natural gas	12	24	6	n.a.	10	17	6	n.a.
Nuclear	14	25	6	2.5	14	39	15	4.7
Renewables	38	94	25	9.9	89	176	68	13.1
Hydro	2	4	1	8.5	3	6	2	9.9
Bioenergy	6	13	3	18.4	9	16	6	19.6
Wind	16	41	11	8.5	46	92	35	12.6
Geothermal	0	0	0	n.a.	0	0	0	n.a.
Solar PV	12	31	8	11.1	26	52	20	13.8
CSP	2	6	1	8.2	5	10	4	11.2
Marine	-	-	-	n.a.	0	0	0	n.a.

	Current Policies Scenario				Sustainable Development Scenario			
	Electrical capacity (GW)		Shares (%)	CAAGR (%)	Electrical capacity (GW)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total capacity	76	108	100	3.1	82	105	100	2.9
Coal	42	42	39	0.1	33	17	16	-4.0
Oil	4	3	3	-0.8	3	3	3	-0.9
Natural gas	7	14	13	n.a.	5	8	8	n.a.
Nuclear	2	3	3	2.4	2	6	6	5.1
Renewables	18	36	34	7.0	36	62	59	9.6
Hydro	4	4	4	0.9	4	4	4	0.9
Bioenergy	2	3	3	11.6	2	4	4	12.6
Wind	5	11	10	7.9	14	25	23	11.8
Geothermal	0	0	0	n.a.	0	0	0	n.a.
Solar PV	7	16	15	10.4	14	26	25	12.9
CSP	1	2	2	6.9	2	3	3	10.0
Marine	-	-	-	n.a.	0	0	0	n.a.

	Current Policies Scenario				Sustainable Development Scenario			
	CO ₂ emissions (Mt)		Shares (%)	CAAGR (%)	CO ₂ emissions (Mt)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total CO₂	379	384	100	-0.4	231	107	100	-6.0
Coal	287	271	70	-1.1	155	36	33	-9.8
Oil	84	101	26	1.7	70	63	58	-0.5
Natural gas	8	13	3	5.5	6	9	8	3.8
Power sector	223	216	100	-0.2	109	13	100	-12.1
Coal	218	208	96	-0.4	105	7	55	-14.4
Oil	0	0	0	1.8	0	0	2	1.7
Natural gas	4	8	4	n.a.	3	6	44	n.a.
Final consumption	150	166	100	0.7	118	94	100	-1.9
Coal	65	63	38	-0.6	48	30	32	-3.9
Oil	82	99	59	1.7	68	61	65	-0.5
Transport	69	86	52	2.2	58	54	58	0.0
Natural gas	4	4	3	0.5	3	3	3	-1.2

Table A.3: Energy demand – Middle East

	Stated Policies Scenario									
	Energy demand (Mtoe)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total primary demand	640	776	763	848	956	1 092	1 206	100	100	2.1
Coal	2	4	4	6	7	8	10	1	1	4.2
Oil	311	324	313	354	376	409	442	41	37	1.6
Natural gas	324	443	440	466	538	615	672	58	56	1.9
Nuclear	-	2	2	11	12	18	20	0	2	11.1
Hydro	2	2	2	2	3	3	3	0	0	3.2
Bioenergy	1	1	1	2	4	7	11	0	1	12.2
Other renewables	0	1	1	7	17	31	48	0	4	21.0
Power sector	214	282	288	291	317	359	394	100	100	1.4
Coal	0	0	0	2	3	5	6	0	1	15.6
Oil	83	85	87	97	81	72	66	30	17	-1.2
Natural gas	129	193	197	173	206	236	257	68	65	1.2
Nuclear	-	2	2	11	12	18	20	1	5	11.1
Hydro	2	2	2	2	3	3	3	1	1	3.2
Bioenergy	0	0	0	1	2	4	6	0	2	35.2
Other renewables	0	0	0	4	11	22	36	0	9	22.1
Other energy sector	65	72	61	86	99	115	130	100	100	3.5
Electricity	14	21	20	22	26	31	35	32	26	2.6
Total final consumption	435	521	513	584	676	781	869	100	100	2.4
Coal	1	3	3	3	3	3	3	1	0	-0.1
Oil	210	237	231	255	286	325	359	45	41	2.0
Natural gas	163	202	198	231	269	309	337	39	39	2.4
Electricity	60	78	80	91	109	131	153	16	18	3.0
Heat	-	-	-	-	-	-	-	-	-	n.a.
Bioenergy	1	1	1	2	2	3	4	0	0	7.6
Other renewables	0	0	0	3	6	9	12	0	1	18.7
Industry	131	148	137	155	173	193	213	100	100	2.0
Coal	1	3	3	3	3	3	3	2	1	-0.1
Oil	34	23	18	18	19	20	20	13	10	0.6
Natural gas	83	107	101	116	131	147	164	73	77	2.2
Electricity	13	15	16	18	20	22	24	11	11	2.0
Heat	-	-	-	-	-	-	-	-	-	n.a.
Bioenergy	-	-	-	0	1	1	2	-	1	n.a.
Other renewables	0	0	0	0	0	0	0	0	0	24.6
Transport	116	134	131	149	165	189	209	100	100	2.2
Oil	111	127	124	139	154	177	194	95	93	2.1
Electricity	0	0	0	0	0	0	0	0	0	10.3
Biofuels	-	-	-	-	-	-	-	-	-	n.a.
Other fuels	5	7	7	10	10	12	15	5	7	3.4
Buildings	126	149	151	173	214	257	287	100	100	3.0
Coal	0	0	0	0	0	0	0	0	0	-1.7
Oil	22	17	17	15	15	15	15	11	5	-0.5
Natural gas	59	71	73	86	107	127	136	48	47	2.9
Electricity	44	59	60	69	85	104	123	40	43	3.3
Heat	-	-	-	-	-	-	-	-	-	n.a.
Bioenergy	1	1	1	1	2	2	2	1	1	4.8
Traditional biomass	0	0	0	0	0	1	1	0	0	1.5
Other renewables	0	0	0	2	5	9	11	0	4	18.3
Other	62	90	94	107	124	142	159	100	100	2.4
Petrochem. feedstock	44	71	74	84	100	117	134	78	84	2.8

Table A.3: Energy demand – Middle East

	Current Policies Scenario				Sustainable Development Scenario			
	Energy demand (Mtoe)		Shares (%)	CAAGR (%)	Energy demand (Mtoe)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total primary demand	989	1 279	100	2.4	802	880	100	0.7
Coal	7	10	1	4.6	5	4	1	0.6
Oil	387	484	38	2.0	270	254	29	-0.9
Natural gas	561	713	56	2.2	458	422	48	-0.2
Nuclear	13	23	2	11.8	15	33	4	13.6
Hydro	2	3	0	3.1	3	4	0	4.1
Bioenergy	4	9	1	11.5	8	16	2	14.2
Other renewables	14	36	3	19.5	44	147	17	27.3
Power sector	334	428	100	1.8	253	288	100	0.0
Coal	4	6	1	16.1	2	2	1	11.3
Oil	82	80	19	-0.4	35	16	6	-7.3
Natural gas	221	284	66	1.7	170	117	41	-2.3
Nuclear	13	23	5	11.8	15	33	11	13.6
Hydro	2	3	1	3.1	3	4	1	4.1
Bioenergy	1	5	1	33.6	4	9	3	37.1
Other renewables	9	26	6	20.3	25	106	37	28.2
Other energy sector	107	144	100	4.0	80	90	100	1.8
Electricity	28	38	26	3.0	22	27	30	1.5
Total final consumption	692	908	100	2.6	590	669	100	1.2
Coal	3	3	0	0.0	2	1	0	-4.3
Oil	294	383	42	2.3	235	235	35	0.1
Natural gas	272	343	38	2.5	231	247	37	1.0
Electricity	115	163	18	3.3	100	137	21	2.5
Heat	-	-	-	n.a.	-	-	-	n.a.
Bioenergy	2	4	0	7.8	4	7	1	10.2
Other renewables	5	10	1	17.8	19	40	6	25.4
Industry	173	217	100	2.1	148	154	100	0.5
Coal	3	3	1	0.1	1	1	1	-5.1
Oil	19	21	9	0.6	13	12	8	-1.9
Gas	131	167	77	2.3	115	116	75	0.6
Electricity	20	24	11	2.1	17	20	13	1.3
Heat	-	-	-	n.a.	-	-	-	n.a.
Bioenergy	1	2	1	n.a.	1	3	2	n.a.
Other renewables	0	0	0	23.5	0	2	1	40.4
Transport	170	226	100	2.5	136	131	100	0.0
Oil	162	215	95	2.5	118	96	73	-1.2
Electricity	0	0	0	2.7	1	3	2	20.9
Biofuels	-	-	-	n.a.	1	2	1	n.a.
Other fuels	8	10	5	1.8	16	31	24	7.0
Buildings	225	306	100	3.3	191	241	100	2.1
Coal	0	0	0	-1.6	0	0	0	-5.6
Oil	17	18	6	0.3	13	11	4	-2.0
Natural gas	112	144	47	3.1	80	80	33	0.4
Electricity	90	133	43	3.7	78	110	46	2.8
Heat	-	-	-	n.a.	-	-	-	n.a.
Bioenergy	1	2	1	4.4	2	3	1	5.3
Traditional biomass	0	1	0	1.5	0	0	0	-7.8
Other renewables	5	9	3	17.4	18	37	15	25.0
Other	123	159	100	2.4	115	143	100	1.9
Petrochem. feedstock	98	131	82	2.7	93	121	85	2.3

Table A.3: Electricity and CO₂ emissions – Middle East

	Stated Policies Scenario									
	Electricity generation (TWh)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total generation	833	1 126	1 147	1 306	1 570	1 876	2 169	100	100	2.9
Coal	0	1	1	11	17	23	28	0	1	18.9
Oil	286	289	294	346	303	273	251	26	12	-0.7
Natural gas	529	808	822	837	1 065	1 253	1 404	72	65	2.5
Nuclear	-	8	8	41	45	70	78	1	4	11.1
Renewables	18	21	23	71	140	257	408	2	19	14.0
Hydro	18	18	18	27	29	32	36	2	2	3.2
Bioenergy	0	0	0	2	6	14	22	0	1	35.0
Wind	0	1	1	9	28	60	109	0	5	24.7
Geothermal	-	-	-	0	0	0	0	-	0	n.a.
Solar PV	0	2	4	29	63	123	193	0	9	19.9
CSP	-	0	0	3	13	28	47	0	2	26.7
Marine	-	-	-	-	-	-	-	-	-	n.a.

	Stated Policies Scenario									
	Electrical capacity (GW)							Shares (%)		CAAGR (%)
	2017	2018	2025	2030	2035	2040	2018	2040	2018-40	
Total capacity	321	331	410	476	561	641	100	100	3.1	
Coal	0	0	3	4	5	6	0	1	14.9	
Oil	93	96	95	86	81	77	29	12	-1.0	
Natural gas	208	214	266	309	345	370	65	58	2.5	
Nuclear	1	1	7	8	13	13	0	2	12.5	
Renewables	18	19	40	68	115	173	6	27	10.4	
Hydro	17	17	19	20	22	23	5	4	1.5	
Bioenergy	0	0	0	1	2	4	0	1	31.5	
Wind	0	1	3	10	21	37	0	6	19.6	
Geothermal	-	-	0	0	0	0	-	0	n.a.	
Solar PV	1	2	16	32	61	93	1	14	19.2	
CSP	0	0	1	5	10	16	0	3	23.8	
Marine	-	-	-	-	-	-	-	-	n.a.	

	Stated Policies Scenario									
	CO ₂ emissions (Mt)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total CO₂	1 493	1 776	1 805	1 936	2 104	2 317	2 481	100	100	1.5
Coal	6	15	14	23	27	32	36	1	1	4.3
Oil	809	859	829	908	913	954	994	46	40	0.8
Natural gas	678	902	961	1 006	1 165	1 331	1 450	53	58	1.9
Power sector	565	709	730	717	748	792	828	100	100	0.6
Coal	1	2	1	10	14	19	23	0	3	15.6
Oil	261	262	270	302	253	223	205	37	25	-1.2
Natural gas	303	445	459	405	481	550	600	63	72	1.2
Final consumption	826	927	934	1 043	1 174	1 331	1 446	100	100	2.0
Coal	4	12	12	12	12	12	12	1	1	-0.1
Oil	515	551	515	556	606	676	734	55	51	1.6
Transport	331	378	369	414	461	527	579	40	40	2.1
Natural gas	307	363	407	475	556	642	701	44	48	2.5

Table A.3: Electricity and CO₂ emissions – Middle East

	Current Policies Scenario				Sustainable Development Scenario			
	Electricity generation (TWh)		Shares (%)	CAAGR (%)	Electricity generation (TWh)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total generation	1 656	2 328	100	3.3	1 416	1 909	100	2.3
Coal	17	32	1	19.4	11	12	1	14.3
Oil	308	310	13	0.2	128	59	3	-7.1
Natural gas	1 152	1 568	67	3.0	916	703	37	-0.7
Nuclear	51	88	4	11.8	56	125	7	13.6
Renewables	128	331	14	12.9	305	1 010	53	18.8
Hydro	29	36	2	3.1	36	44	2	4.1
Bioenergy	5	17	1	33.3	14	31	2	37.0
Wind	23	65	3	21.7	119	371	19	31.8
Geothermal	-	-	-	n.a.	0	0	0	n.a.
Solar PV	62	195	8	20.0	115	362	19	23.4
CSP	8	18	1	21.3	22	201	11	35.4
Marine	-	-	-	n.a.	0	1	0	n.a.

	Current Policies Scenario				Sustainable Development Scenario			
	Electrical capacity (GW)		Shares (%)	CAAGR (%)	Electrical capacity (GW)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total capacity	477	631	100	3.0	508	783	100	4.0
Coal	4	7	1	15.4	3	3	0	10.5
Oil	87	88	14	-0.4	79	72	9	-1.3
Natural gas	311	370	59	2.5	279	274	35	1.1
Nuclear	8	13	2	12.5	8	17	2	13.8
Renewables	64	148	23	9.6	138	411	53	14.9
Hydro	20	23	4	1.5	23	27	4	2.3
Bioenergy	1	3	0	29.8	2	6	1	34.3
Wind	8	22	3	16.7	43	125	16	26.4
Geothermal	-	-	-	n.a.	0	0	0	n.a.
Solar PV	32	94	15	19.3	60	181	23	22.9
CSP	3	6	1	18.4	8	72	9	32.4
Marine	-	-	-	n.a.	0	0	0	n.a.

	Current Policies Scenario				Sustainable Development Scenario			
	CO ₂ emissions (Mt)		Shares (%)	CAAGR (%)	CO ₂ emissions (Mt)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total CO₂	2 191	2 699	100	1.8	1 569	1 262	100	-1.6
Coal	27	39	1	4.7	16	14	1	-0.1
Oil	944	1 119	41	1.4	593	434	34	-2.9
Natural gas	1 219	1 541	57	2.2	960	815	65	-0.7
Power sector	788	939	100	1.2	511	318	100	-3.7
Coal	14	26	3	16.1	9	10	3	11.3
Oil	257	250	27	-0.4	109	51	16	-7.3
Natural gas	517	664	71	1.7	393	257	81	-2.6
Final consumption	1 209	1 536	100	2.3	917	832	100	-0.5
Coal	12	12	1	0.1	6	3	0	-5.8
Oil	633	808	53	2.1	450	360	43	-1.6
Transport	482	642	42	2.5	352	285	34	-1.2
Natural gas	564	715	47	2.6	462	468	56	0.6

Table A.3: Energy demand – Eurasia

	Stated Policies Scenario									
	Energy demand (Mtoe)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total primary demand	831	900	934	965	980	1 000	1 031	100	100	0.5
Coal	138	157	160	157	148	142	139	17	14	-0.6
Oil	152	182	189	198	198	193	191	20	19	0.1
Natural gas	469	477	500	524	533	544	562	54	55	0.5
Nuclear	45	54	54	52	56	64	66	6	6	0.9
Hydro	19	21	22	23	25	26	27	2	3	1.0
Bioenergy	7	9	9	10	12	16	21	1	2	4.0
Other renewables	0	0	0	2	7	15	24	0	2	22.2
Power sector	417	400	404	407	411	424	445	100	100	0.4
Coal	90	84	87	86	78	72	69	21	16	-1.0
Oil	11	6	7	6	5	5	5	2	1	-1.5
Natural gas	246	230	231	234	234	234	241	57	54	0.2
Nuclear	45	54	54	52	56	64	66	13	15	0.9
Hydro	19	21	22	23	25	26	27	5	6	1.0
Bioenergy	4	4	4	5	6	9	13	1	3	5.2
Other renewables	0	0	0	1	7	14	23	0	5	22.4
Other energy sector	143	165	170	172	171	170	172	100	100	0.1
Electricity	31	34	34	35	34	34	36	20	21	0.2
Total final consumption	534	588	614	652	670	684	702	100	100	0.6
Coal	30	43	43	43	44	44	45	7	6	0.2
Oil	120	147	152	165	167	166	165	25	24	0.4
Natural gas	182	199	219	230	237	244	252	36	36	0.6
Electricity	75	80	80	91	98	104	112	13	16	1.5
Heat	125	115	115	117	117	118	119	19	17	0.1
Bioenergy	3	4	4	5	6	7	8	1	1	2.6
Other renewables	0	0	0	0	0	1	1	0	0	18.6
Industry	156	180	185	198	203	207	212	100	100	0.6
Coal	21	36	36	37	38	40	41	20	19	0.6
Oil	13	20	20	21	20	20	19	11	9	-0.1
Natural gas	41	45	49	52	53	54	56	27	26	0.6
Electricity	34	35	35	39	40	42	43	19	20	0.9
Heat	48	43	43	47	48	49	50	23	24	0.7
Bioenergy	0	1	1	2	2	3	3	1	1	3.1
Other renewables	-	-	-	0	0	0	0	-	0	n.a.
Transport	111	114	120	130	135	139	144	100	100	0.8
Oil	68	73	76	83	86	86	87	63	60	0.6
Electricity	8	7	7	8	9	11	12	6	8	2.4
Biofuels	-	0	0	0	0	0	0	0	0	4.0
Other fuels	35	33	37	39	40	43	45	31	31	0.9
Buildings	198	216	223	226	230	233	236	100	100	0.3
Coal	9	7	7	6	5	4	3	3	1	-3.3
Oil	12	24	24	25	24	23	22	11	9	-0.5
Natural gas	70	78	85	86	87	88	89	38	38	0.2
Electricity	30	35	35	39	43	47	51	16	22	1.7
Heat	74	70	69	67	67	66	66	31	28	-0.2
Bioenergy	2	3	3	3	4	4	4	1	2	2.2
Traditional biomass	-	-	-	-	-	-	-	-	-	n.a.
Other renewables	0	0	0	0	0	0	0	0	0	16.4
Other	69	79	86	98	102	105	109	100	100	1.1
Petrochem. feedstock	48	20	19	31	33	34	36	22	33	2.9

Table A.3: Energy demand – Eurasia

	Current Policies Scenario				Sustainable Development Scenario			
	Energy demand (Mtoe)		Shares (%)	CAAGR (%)	Energy demand (Mtoe)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total primary demand	1 010	1 103	100	0.8	858	807	100	-0.7
Coal	160	158	14	-0.1	95	52	6	-5.0
Oil	202	201	18	0.3	175	140	17	-1.3
Natural gas	552	612	55	0.9	459	393	49	-1.1
Nuclear	56	76	7	1.5	62	79	10	1.7
Hydro	25	28	3	1.1	30	41	5	2.9
Bioenergy	11	16	1	2.6	19	51	6	8.3
Other renewables	5	12	1	18.7	18	50	6	26.4
Power sector	423	472	100	0.7	354	362	100	-0.5
Coal	89	87	18	0.0	41	12	3	-8.6
Oil	5	4	1	-1.8	5	4	1	-2.6
Natural gas	239	256	54	0.5	187	139	38	-2.3
Nuclear	56	76	16	1.5	62	79	22	1.7
Hydro	25	28	6	1.1	30	41	11	2.9
Bioenergy	5	9	2	3.4	12	42	11	10.9
Other renewables	5	12	3	18.9	17	46	13	26.3
Other energy sector	177	194	100	0.6	144	119	100	-1.6
Electricity	36	41	21	0.7	29	25	21	-1.5
Total final consumption	690	742	100	0.9	591	549	100	-0.5
Coal	44	46	6	0.2	32	24	4	-2.6
Oil	171	176	24	0.7	146	119	22	-1.1
Natural gas	248	272	37	1.0	222	209	38	-0.2
Electricity	100	117	16	1.7	86	96	18	0.8
Heat	121	124	17	0.3	97	86	16	-1.3
Bioenergy	5	6	1	1.8	7	9	2	3.6
Other renewables	0	0	0	15.4	1	4	1	27.6
Industry	207	221	100	0.8	171	161	100	-0.6
Coal	38	41	19	0.6	29	23	14	-2.0
Oil	20	18	8	-0.4	17	15	9	-1.3
Gas	57	63	29	1.1	52	51	31	0.1
Electricity	40	43	19	0.9	34	36	22	0.1
Heat	49	53	24	0.9	36	31	19	-1.5
Bioenergy	2	3	1	3.2	3	4	3	5.1
Other renewables	0	0	0	n.a.	0	2	1	n.a.
Transport	140	155	100	1.2	119	107	100	-0.5
Oil	88	94	61	1.0	74	56	52	-1.4
Electricity	9	11	7	1.8	10	13	12	2.9
Biofuels	0	0	0	3.0	0	0	0	3.8
Other fuels	43	50	32	1.4	36	38	35	0.1
Buildings	240	254	100	0.6	204	181	100	-1.0
Coal	5	4	1	-2.6	3	1	0	-10.0
Oil	26	26	10	0.3	21	16	9	-2.0
Natural gas	91	96	38	0.5	79	62	34	-1.4
Electricity	46	57	22	2.2	38	43	24	0.9
Heat	69	69	27	-0.0	58	53	29	-1.2
Bioenergy	3	3	1	0.7	4	5	3	2.5
Traditional biomass	-	-	-	n.a.	-	-	-	n.a.
Other renewables	0	0	0	12.7	1	2	1	24.7
Other	103	112	100	1.2	97	99	100	0.7
Petrochem. feedstock	33	36	32	2.9	31	33	33	2.4

Table A.3: Electricity and CO₂ emissions – Eurasia

	Stated Policies Scenario									
	Electricity generation (TWh)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total generation	1 244	1 341	1 360	1 490	1 565	1 643	1 747	100	100	1.1
Coal	235	250	271	279	248	230	222	20	13	-0.9
Oil	9	5	5	3	2	1	1	0	0	-8.5
Natural gas	598	626	618	726	778	789	831	45	48	1.4
Nuclear	173	206	206	198	213	243	253	15	14	0.9
Renewables	229	254	260	283	324	379	440	19	25	2.4
Hydro	226	249	255	269	286	303	318	19	18	1.0
Bioenergy	3	3	3	4	9	19	34	0	2	11.9
Wind	0	1	1	7	20	41	62	0	4	22.7
Geothermal	1	0	0	1	6	13	20	0	1	19.0
Solar PV	-	1	1	3	4	4	6	0	0	7.3
CSP	-	-	-	-	-	-	-	-	-	n.a.
Marine	-	-	-	0	0	0	0	-	0	n.a.

	Stated Policies Scenario									
	Electrical capacity (GW)							Shares (%)		CAAGR (%)
	2017	2018	2025	2030	2035	2040	2018	2040	2018-40	
Total capacity	327	331	355	364	380	407	100	100	0.9	
Coal	68	68	61	52	49	46	21	11	-1.8	
Oil	9	9	6	3	1	1	3	0	-10.4	
Natural gas	150	152	176	180	180	192	46	47	1.1	
Nuclear	28	29	29	32	35	35	9	9	0.8	
Renewables	72	73	84	97	113	130	22	32	2.7	
Hydro	70	70	76	81	85	89	21	22	1.1	
Bioenergy	1	1	2	3	5	8	0	2	8.1	
Wind	0	0	3	9	17	25	0	6	21.0	
Geothermal	0	0	0	1	2	3	0	1	17.8	
Solar PV	0	1	3	3	4	5	0	1	9.3	
CSP	-	-	-	-	-	-	-	-	n.a.	
Marine	-	-	0	0	0	0	-	0	n.a.	

	Stated Policies Scenario									
	CO ₂ emissions (Mt)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total CO₂	1 926	1 984	2 035	2 090	2 076	2 064	2 088	100	100	0.1
Coal	551	553	567	563	529	508	500	28	24	-0.6
Oil	369	421	428	446	448	440	436	21	21	0.1
Natural gas	1 005	1 010	1 039	1 082	1 099	1 116	1 151	51	55	0.5
Power sector	1 014	932	928	932	893	869	873	100	100	-0.3
Coal	389	347	360	357	322	298	286	39	33	-1.0
Oil	38	25	22	19	18	16	15	2	2	-1.5
Natural gas	587	560	546	555	554	555	571	59	65	0.2
Final consumption	791	931	979	1 012	1 028	1 036	1 048	100	100	0.3
Coal	152	201	203	201	203	205	209	21	20	0.1
Oil	294	359	369	390	396	392	388	38	37	0.2
Transport	202	217	225	245	254	255	258	23	25	0.6
Natural gas	344	371	407	420	429	440	451	42	43	0.5

Table A.3: Electricity and CO₂ emissions – Eurasia

	Current Policies Scenario				Sustainable Development Scenario			
	Electricity generation (TWh)		Shares (%)	CAAGR (%)	Electricity generation (TWh)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total generation	1 610	1 862	100	1.4	1 362	1 437	100	0.3
Coal	293	300	16	0.5	101	8	1	-14.8
Oil	2	1	0	-8.6	2	1	0	-8.7
Natural gas	795	894	48	1.7	572	321	22	-2.9
Nuclear	213	288	15	1.6	236	301	21	1.7
Renewables	308	378	20	1.7	452	807	56	5.3
Hydro	286	325	17	1.1	350	482	34	2.9
Bioenergy	7	20	1	9.4	32	136	9	19.2
Wind	7	16	1	15.3	48	132	9	27.0
Geothermal	5	12	1	16.3	14	39	3	22.5
Solar PV	4	5	0	6.7	7	17	1	12.9
CSP	-	-	-	n.a.	-	-	-	n.a.
Marine	0	0	0	n.a.	0	1	0	n.a.

	Current Policies Scenario				Sustainable Development Scenario			
	Electrical capacity (GW)		Shares (%)	CAAGR (%)	Electrical capacity (GW)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total capacity	367	419	100	1.1	344	424	100	1.1
Coal	62	60	14	-0.5	30	10	2	-8.3
Oil	3	1	0	-10.4	3	1	0	-10.4
Natural gas	180	207	49	1.4	139	132	31	-0.6
Nuclear	32	40	10	1.4	33	41	10	1.6
Renewables	90	109	26	1.8	139	237	56	5.5
Hydro	81	91	22	1.2	99	134	32	3.0
Bioenergy	2	5	1	5.7	8	29	7	14.5
Wind	3	7	2	13.8	22	50	12	24.9
Geothermal	1	2	0	15.0	2	5	1	21.2
Solar PV	3	4	1	8.7	7	17	4	15.5
CSP	-	-	-	n.a.	-	-	-	n.a.
Marine	0	0	0	n.a.	0	0	0	n.a.

	Current Policies Scenario				Sustainable Development Scenario			
	CO ₂ emissions (Mt)		Shares (%)	CAAGR (%)	CO ₂ emissions (Mt)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total CO₂	2 176	2 302	100	0.6	1 605	1 119	100	-2.7
Coal	579	577	25	0.1	315	136	12	-6.3
Oil	457	467	20	0.4	383	294	26	-1.7
Natural gas	1 140	1 258	55	0.9	907	706	63	-1.7
Power sector	951	982	100	0.3	622	355	100	-4.3
Coal	370	360	37	0.0	170	49	14	-8.6
Oil	16	15	1	-1.8	16	12	3	-2.6
Natural gas	565	607	62	0.5	436	311	88	-2.5
Final consumption	1 064	1 124	100	0.6	871	685	100	-1.6
Coal	204	212	19	0.2	142	85	12	-3.9
Oil	407	417	37	0.6	338	260	38	-1.6
Transport	261	280	25	1.0	218	167	24	-1.4
Natural gas	453	495	44	0.9	391	340	50	-0.8

Table A.3: Energy demand – Russia

	Stated Policies Scenario									
	Energy demand (Mtoe)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total primary demand	674	723	751	766	767	773	786	100	100	0.2
Coal	101	115	116	112	101	95	90	15	11	-1.1
Oil	125	148	153	157	155	149	145	20	18	-0.2
Natural gas	381	383	404	420	421	421	428	54	54	0.3
Nuclear	45	53	53	51	55	62	64	7	8	0.9
Hydro	14	16	16	17	18	19	19	2	2	0.8
Bioenergy	7	8	8	9	11	14	18	1	2	3.7
Other renewables	0	0	0	1	6	13	21	0	3	23.4
Power sector	364	334	336	340	342	352	365	100	100	0.4
Coal	71	60	62	61	52	48	45	18	12	-1.4
Oil	10	6	6	5	5	5	5	2	1	-1.1
Natural gas	219	195	195	200	199	196	199	58	54	0.1
Nuclear	45	53	53	51	55	62	64	16	18	0.9
Hydro	14	16	16	17	18	19	19	5	5	0.8
Bioenergy	4	4	4	5	6	9	13	1	3	5.1
Other renewables	0	0	0	1	6	13	21	0	6	23.3
Other energy sector	108	123	126	127	122	119	118	100	100	-0.3
Electricity	25	27	27	28	28	28	29	21	24	0.3
Total final consumption	433	486	508	525	531	534	539	100	100	0.3
Coal	14	28	28	27	26	26	25	5	5	-0.4
Oil	96	118	122	129	129	125	123	24	23	0.0
Natural gas	143	165	184	188	189	192	195	36	36	0.3
Electricity	62	65	65	72	77	81	85	13	16	1.2
Heat	115	106	106	106	105	105	105	21	20	-0.0
Bioenergy	2	3	4	4	4	5	5	1	1	1.6
Other renewables	-	-	-	0	0	0	0	-	0	n.a.
Industry	125	149	154	161	161	161	162	100	100	0.2
Coal	10	25	25	24	24	24	24	16	15	-0.1
Oil	10	15	15	16	16	15	14	10	9	-0.1
Natural gas	32	38	42	43	42	41	41	28	25	-0.2
Electricity	28	29	29	32	32	32	33	19	20	0.6
Heat	45	41	41	45	46	46	48	27	29	0.6
Bioenergy	0	1	1	2	2	2	2	1	1	2.0
Other renewables	-	-	-	0	0	0	0	-	0	n.a.
Transport	96	96	102	108	111	112	114	100	100	0.5
Oil	56	60	62	65	67	65	64	61	56	0.2
Electricity	7	7	7	8	9	10	11	6	10	2.3
Biofuels	-	-	-	-	0	0	0	-	0	n.a.
Other fuels	33	30	34	35	36	37	39	33	34	0.6
Buildings	149	167	173	169	168	167	166	100	100	-0.2
Coal	4	3	3	2	2	1	1	2	0	-5.9
Oil	6	16	16	16	15	14	13	9	8	-1.1
Natural gas	43	56	62	60	59	58	57	36	34	-0.4
Electricity	26	28	28	31	34	36	38	16	23	1.5
Heat	67	62	62	58	57	55	54	36	33	-0.6
Bioenergy	2	2	2	2	2	2	3	1	2	1.0
Traditional biomass	-	-	-	-	-	-	-	-	-	n.a.
Other renewables	-	-	-	0	0	0	0	-	0	n.a.
Other	63	73	79	87	91	94	97	100	100	0.9
Petrochem. feedstock	47	19	18	26	28	29	31	22	32	2.5

Table A.3: Energy demand – Russia

	Current Policies Scenario				Sustainable Development Scenario			
	Energy demand (Mtoe)		Shares (%)	CAAGR (%)	Energy demand (Mtoe)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total primary demand	794	844	100	0.5	680	635	100	-0.8
Coal	111	105	12	-0.5	62	35	6	-5.3
Oil	158	153	18	-0.0	139	109	17	-1.5
Natural gas	438	467	55	0.7	364	302	47	-1.3
Nuclear	55	73	9	1.5	61	74	12	1.5
Hydro	18	20	2	1.0	22	28	4	2.4
Bioenergy	10	14	2	2.4	17	44	7	7.9
Other renewables	4	11	1	19.7	15	43	7	27.5
Power sector	353	390	100	0.7	299	310	100	-0.4
Coal	63	60	15	-0.2	25	9	3	-8.6
Oil	5	4	1	-1.4	5	4	1	-2.2
Natural gas	204	213	55	0.4	161	118	38	-2.3
Nuclear	55	73	19	1.5	61	74	24	1.5
Hydro	18	20	5	1.0	22	28	9	2.4
Bioenergy	5	9	2	3.3	12	37	12	10.4
Other renewables	4	11	3	19.7	15	41	13	27.1
Other energy sector	127	132	100	0.2	104	83	100	-1.9
Electricity	29	33	25	0.9	23	20	24	-1.3
Total final consumption	549	574	100	0.6	472	427	100	-0.8
Coal	26	25	4	-0.4	20	15	3	-2.8
Oil	132	130	23	0.3	114	90	21	-1.4
Natural gas	200	214	37	0.7	176	161	38	-0.6
Electricity	79	90	16	1.5	69	76	18	0.7
Heat	108	110	19	0.2	87	76	18	-1.5
Bioenergy	4	5	1	1.3	5	6	1	2.5
Other renewables	0	0	0	n.a.	1	3	1	n.a.
Industry	165	171	100	0.5	137	125	100	-0.9
Coal	24	24	14	-0.1	18	15	12	-2.4
Oil	15	13	8	-0.5	14	12	9	-1.1
Gas	45	48	28	0.6	40	37	29	-0.7
Electricity	32	33	19	0.6	28	28	23	-0.1
Heat	47	50	29	0.9	35	30	24	-1.5
Bioenergy	2	2	1	1.9	2	3	3	3.5
Other renewables	0	0	0	n.a.	0	1	1	n.a.
Transport	115	124	100	0.9	97	84	100	-0.9
Oil	69	70	56	0.6	58	42	50	-1.8
Electricity	8	10	8	1.8	9	12	14	2.8
Biofuels	-	-	-	n.a.	0	0	0	n.a.
Other fuels	39	44	36	1.2	31	30	36	-0.5
Buildings	176	180	100	0.2	151	129	100	-1.3
Coal	2	1	0	-5.4	1	-	-	n.a.
Oil	17	16	9	-0.1	13	9	7	-2.5
Natural gas	61	62	34	-0.0	54	38	30	-2.2
Electricity	35	43	24	2.0	30	33	25	0.7
Heat	59	57	31	-0.4	50	44	34	-1.5
Bioenergy	2	2	1	0.7	2	3	2	1.6
Traditional biomass	-	-	-	n.a.	-	-	-	n.a.
Other renewables	0	0	0	n.a.	0	1	1	n.a.
Other	92	99	100	1.0	87	89	100	0.5
Petrochem. feedstock	28	30	31	2.5	26	28	31	2.1

Table A.3: Electricity and CO₂ emissions – Russia

	Stated Policies Scenario									
	Electricity generation (TWh)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total generation	1 029	1 076	1 085	1 186	1 233	1 281	1 345	100	100	1.0
Coal	166	175	190	193	158	144	133	18	10	-1.6
Oil	8	2	2	2	1	1	1	0	0	-5.6
Natural gas	515	507	496	590	623	614	631	46	47	1.1
Nuclear	170	203	203	196	211	237	245	19	18	0.9
Renewables	170	189	193	205	239	285	336	18	25	2.5
Hydro	166	185	189	194	206	218	226	17	17	0.8
Bioenergy	3	3	3	4	8	18	33	0	2	12.0
Wind	0	0	0	4	17	35	55	0	4	30.1
Geothermal	1	0	0	1	6	11	19	0	1	18.5
Solar PV	-	1	1	2	3	3	4	0	0	6.8
CSP	-	-	-	-	-	-	-	-	-	n.a.
Marine	-	-	-	0	0	0	0	-	0	n.a.

	Stated Policies Scenario									
	Electrical capacity (GW)							Shares (%)		CAAGR (%)
	2017	2018	2025	2030	2035	2040	2018	2040	2018-40	
Total capacity	262	265	275	279	287	304	100	100	0.6	
Coal	52	52	42	33	30	27	20	9	-3.0	
Oil	4	4	2	2	1	1	1	0	-7.3	
Natural gas	125	126	141	140	136	141	48	46	0.5	
Nuclear	28	29	28	31	33	34	11	11	0.7	
Renewables	54	54	61	71	85	99	20	33	2.8	
Hydro	52	52	55	58	61	63	20	21	0.9	
Bioenergy	1	1	2	3	5	8	1	3	7.9	
Wind	0	0	2	8	15	22	0	7	24.9	
Geothermal	0	0	0	1	2	3	0	1	17.2	
Solar PV	0	0	2	2	3	4	0	1	9.7	
CSP	-	-	-	-	-	-	-	-	n.a.	
Marine	-	-	0	0	0	0	-	0	n.a.	

	Stated Policies Scenario									
	CO ₂ emissions (Mt)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total CO₂	1 505	1 520	1 555	1 583	1 538	1 499	1 484	100	100	-0.2
Coal	405	391	400	391	351	333	317	26	21	-1.1
Oil	298	331	335	343	339	325	316	22	21	-0.3
Natural gas	803	799	820	849	847	841	851	53	57	0.2
Power sector	871	752	742	750	711	685	677	100	100	-0.4
Coal	313	252	261	258	221	204	190	35	28	-1.4
Oil	36	23	20	18	17	16	15	3	2	-1.1
Natural gas	523	477	462	475	473	465	471	62	70	0.1
Final consumption	571	707	748	750	745	731	722	100	100	-0.2
Coal	85	135	136	130	127	125	124	18	17	-0.4
Oil	229	276	283	294	293	283	275	38	38	-0.1
Transport	167	177	184	194	197	193	191	25	26	0.2
Natural gas	257	295	328	326	324	323	324	44	45	-0.1

Table A.3: Electricity and CO₂ emissions – Russia

	Current Policies Scenario				Sustainable Development Scenario			
	Electricity generation (TWh)		Shares (%)	CAAGR (%)	Electricity generation (TWh)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total generation	1 270	1 443	100	1.3	1 082	1 130	100	0.2
Coal	198	199	14	0.2	60	3	0	-16.9
Oil	1	1	0	-5.7	1	1	0	-5.8
Natural gas	635	683	47	1.5	448	246	22	-3.1
Nuclear	211	281	19	1.5	233	284	25	1.5
Renewables	225	280	19	1.7	339	596	53	5.3
Hydro	207	235	16	1.0	252	320	28	2.4
Bioenergy	6	19	1	9.4	30	121	11	18.9
Wind	4	10	1	20.5	40	108	10	34.1
Geothermal	4	11	1	15.9	13	36	3	22.0
Solar PV	2	4	0	6.0	4	11	1	11.3
CSP	-	-	-	n.a.	-	-	-	n.a.
Marine	0	0	0	n.a.	0	1	0	n.a.

	Current Policies Scenario				Sustainable Development Scenario			
	Electrical capacity (GW)		Shares (%)	CAAGR (%)	Electrical capacity (GW)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total capacity	281	313	100	0.8	264	309	100	0.7
Coal	42	40	13	-1.2	20	6	2	-9.6
Oil	2	1	0	-7.3	2	1	0	-7.3
Natural gas	140	153	49	0.9	107	90	29	-1.5
Nuclear	31	39	12	1.3	32	39	13	1.4
Renewables	65	79	25	1.8	103	171	55	5.4
Hydro	58	65	21	1.1	70	88	28	2.4
Bioenergy	2	5	2	5.6	8	27	9	14.1
Wind	2	4	1	15.9	19	41	13	28.5
Geothermal	1	2	1	14.6	2	5	2	20.7
Solar PV	2	3	1	8.7	4	10	3	14.8
CSP	-	-	-	n.a.	-	-	-	n.a.
Marine	0	0	0	n.a.	0	0	0	n.a.

	Current Policies Scenario				Sustainable Development Scenario			
	CO ₂ emissions (Mt)		Shares (%)	CAAGR (%)	CO ₂ emissions (Mt)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total CO₂	1 625	1 654	100	0.3	1 190	800	100	-3.0
Coal	395	379	23	-0.2	192	81	10	-7.0
Oil	346	338	20	0.0	296	217	27	-2.0
Natural gas	884	937	57	0.6	702	520	65	-2.1
Power sector	762	770	100	0.2	494	292	100	-4.2
Coal	264	252	33	-0.2	103	36	12	-8.6
Oil	15	14	2	-1.4	16	12	4	-2.2
Natural gas	483	504	65	0.4	374	261	90	-2.6
Final consumption	775	784	100	0.2	633	464	100	-2.1
Coal	128	124	16	-0.4	86	44	9	-5.0
Oil	302	295	38	0.2	255	186	40	-1.9
Transport	203	207	26	0.6	172	123	27	-1.8
Natural gas	345	365	47	0.5	292	234	50	-1.5

Table A.3: Energy demand – Asia Pacific

	Stated Policies Scenario									
	Energy demand (Mtoe)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total primary demand	4 965	5 814	5 989	6 858	7 402	7 837	8 208	100	100	1.4
Coal	2 464	2 808	2 855	3 070	3 133	3 151	3 141	48	38	0.4
Oil	1 209	1 460	1 489	1 670	1 768	1 807	1 821	25	22	0.9
Natural gas	486	627	674	861	980	1 105	1 220	11	15	2.7
Nuclear	152	130	147	226	306	370	419	2	5	4.9
Hydro	95	144	150	165	190	211	229	3	3	1.9
Bioenergy	509	518	524	581	620	649	677	9	8	1.2
Other renewables	51	126	149	284	404	544	700	2	9	7.3
Power sector	1 869	2 425	2 566	3 024	3 363	3 668	3 939	100	100	2.0
Coal	1 251	1 653	1 744	1 895	1 969	2 002	1 999	68	51	0.6
Oil	72	55	47	39	34	27	22	2	1	-3.4
Natural gas	228	268	277	326	350	387	423	11	11	1.9
Nuclear	152	130	147	226	306	370	419	6	11	4.9
Hydro	95	144	150	165	190	211	229	6	6	1.9
Bioenergy	33	83	92	144	176	206	240	4	6	4.5
Other renewables	37	90	109	229	338	465	607	4	15	8.1
Other energy sector	611	618	627	693	712	728	746	100	100	0.8
Electricity	117	156	162	187	207	228	248	26	33	2.0
Total final consumption	3 277	3 885	3 981	4 604	4 990	5 301	5 574	100	100	1.5
Coal	890	860	827	836	827	813	803	21	14	-0.1
Oil	1 026	1 311	1 346	1 544	1 650	1 695	1 720	34	31	1.1
Natural gas	223	310	342	483	574	667	747	9	13	3.6
Electricity	596	846	899	1 142	1 318	1 493	1 665	23	30	2.8
Heat	67	102	110	120	124	125	124	3	2	0.6
Bioenergy	460	420	417	423	430	428	422	10	8	0.1
Other renewables	13	35	40	54	66	80	93	1	2	3.9
Industry	1 430	1 595	1 621	1 865	2 015	2 145	2 257	100	100	1.5
Coal	743	696	676	700	706	709	711	42	31	0.2
Oil	148	150	145	147	146	143	138	9	6	-0.3
Natural gas	103	155	170	256	320	383	440	10	19	4.4
Electricity	329	451	479	589	653	711	761	30	34	2.1
Heat	45	67	72	77	77	75	71	4	3	-0.1
Bioenergy	61	75	77	95	110	121	130	5	6	2.4
Other renewables	0	1	1	1	3	5	7	0	0	11.4
Transport	526	730	756	924	1 035	1 110	1 182	100	100	2.1
Oil	498	679	699	828	905	938	963	92	82	1.5
Electricity	9	15	16	32	52	74	99	2	8	8.8
Biofuels	4	8	9	21	30	38	45	1	4	7.6
Other fuels	15	29	32	42	48	61	74	4	6	3.8
Buildings	953	1 089	1 122	1 226	1 306	1 380	1 450	100	100	1.2
Coal	100	98	94	64	47	30	18	8	1	-7.2
Oil	120	149	153	151	146	138	129	14	9	-0.8
Natural gas	70	99	110	146	164	177	183	10	13	2.4
Electricity	232	339	360	466	554	646	741	32	51	3.3
Heat	22	35	38	43	47	50	53	3	4	1.6
Bioenergy	395	336	330	305	287	266	243	29	17	-1.4
Traditional biomass	376	315	309	283	262	239	212	28	15	-1.7
Other renewables	13	33	38	51	61	72	83	3	6	3.6
Other	369	470	482	588	633	666	685	100	100	1.6
Petrochem. feedstock	225	267	268	351	382	408	427	55	62	2.1

Table A.3: Energy demand – Asia Pacific

	Current Policies Scenario				Sustainable Development Scenario			
	Energy demand (Mtoe)		Shares (%)	CAAGR (%)	Energy demand (Mtoe)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total primary demand	7 678	8 878	100	1.8	6 232	6 085	100	0.1
Coal	3 298	3 641	41	1.1	2 083	1 240	20	-3.7
Oil	1 887	2 090	24	1.6	1 499	1 172	19	-1.1
Natural gas	1 042	1 341	15	3.2	998	1 060	17	2.1
Nuclear	303	417	5	4.8	361	551	9	6.2
Hydro	182	208	2	1.5	211	266	4	2.6
Bioenergy	606	629	7	0.8	494	644	11	0.9
Other renewables	360	551	6	6.1	585	1 153	19	9.7
Power sector	3 453	4 193	100	2.3	2 878	3 153	100	0.9
Coal	2 061	2 353	56	1.4	1 165	538	17	-5.2
Oil	34	23	1	-3.2	30	18	1	-4.2
Natural gas	401	514	12	2.9	396	410	13	1.8
Nuclear	303	417	10	4.8	361	551	17	6.2
Hydro	182	208	5	1.5	211	266	8	2.6
Bioenergy	171	204	5	3.7	216	346	11	6.2
Other renewables	301	473	11	6.9	499	1 023	32	10.7
Other energy sector	755	836	100	1.3	615	605	100	-0.2
Electricity	219	272	32	2.4	176	193	32	0.8
Total final consumption	5 171	5 973	100	1.9	4 250	4 172	100	0.2
Coal	886	914	15	0.5	631	443	11	-2.8
Oil	1 757	1 968	33	1.7	1 394	1 099	26	-0.9
Natural gas	581	766	13	3.7	551	586	14	2.5
Electricity	1 336	1 697	28	2.9	1 218	1 526	37	2.4
Heat	132	141	2	1.1	104	85	2	-1.2
Bioenergy	420	409	7	-0.1	264	284	7	-1.7
Other renewables	59	79	1	3.1	87	131	3	5.5
Industry	2 074	2 389	100	1.8	1 705	1 673	100	0.1
Coal	738	780	33	0.7	532	390	23	-2.5
Oil	153	149	6	0.1	106	76	5	-2.9
Gas	321	446	19	4.5	309	361	22	3.5
Electricity	665	789	33	2.3	592	674	40	1.6
Heat	84	86	4	0.8	59	38	2	-2.8
Bioenergy	111	135	6	2.5	95	107	6	1.5
Other renewables	2	4	0	8.1	12	25	2	17.8
Transport	1 093	1 321	100	2.6	951	891	100	0.8
Oil	988	1 162	88	2.3	735	507	57	-1.4
Electricity	37	58	4	6.2	69	200	22	12.3
Biofuels	22	33	2	5.9	56	74	8	10.0
Other fuels	46	68	5	3.5	91	110	12	5.7
Buildings	1 364	1 555	100	1.5	1 016	1 038	100	-0.4
Coal	72	53	3	-2.5	40	6	1	-11.9
Oil	160	155	10	0.0	129	88	8	-2.5
Natural gas	172	201	13	2.8	119	99	10	-0.5
Electricity	572	779	50	3.6	506	603	58	2.4
Heat	48	55	4	1.7	45	46	4	0.9
Bioenergy	285	239	15	-1.5	106	92	9	-5.7
Traditional biomass	262	212	14	-1.7	59	30	3	-10.1
Other renewables	55	73	5	3.0	71	101	10	4.5
Other	640	708	100	1.8	578	569	100	0.8
Petrochem. feedstock	382	436	62	2.2	348	361	63	1.4

Table A.3: Electricity and CO₂ emissions – Asia Pacific

	Stated Policies Scenario									
	Electricity generation (TWh)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total generation	8 292	11 642	12 327	15 450	17 731	20 012	22 245	100	100	2.7
Coal	4 958	6 951	7 276	8 126	8 516	8 743	8 817	59	40	0.9
Oil	278	218	180	140	116	89	67	1	0	-4.4
Natural gas	1 147	1 410	1 477	1 859	2 033	2 276	2 552	12	11	2.5
Nuclear	582	500	566	869	1 175	1 419	1 609	5	7	4.9
Renewables	1 306	2 541	2 805	4 434	5 869	7 463	9 178	23	41	5.5
Hydro	1 104	1 680	1 744	1 924	2 209	2 452	2 660	14	12	1.9
Bioenergy	91	215	237	430	534	640	757	2	3	5.4
Wind	77	377	449	959	1 419	1 952	2 462	4	11	8.0
Geothermal	28	34	36	51	73	97	124	0	1	5.8
Solar PV	6	236	338	1 062	1 605	2 271	3 096	3	14	10.6
CSP	0	0	0	8	25	44	65	0	0	26.7
Marine	0	1	1	1	4	8	14	0	0	16.4

	Stated Policies Scenario									
	Electrical capacity (GW)							Shares (%)		CAAGR (%)
	2017	2018	2025	2030	2035	2040	2018	2040	2018-40	
Total capacity	3 054	3 218	4 429	5 287	6 216	7 161	100	100	3.7	
Coal	1 419	1 452	1 619	1 693	1 761	1 820	45	25	1.0	
Oil	121	119	97	83	68	53	4	1	-3.6	
Natural gas	385	398	519	571	623	671	12	9	2.4	
Nuclear	115	121	144	168	196	221	4	3	2.8	
Renewables	1 013	1 125	2 008	2 692	3 428	4 192	35	59	6.2	
Hydro	532	544	649	741	819	885	17	12	2.2	
Bioenergy	47	52	85	103	120	138	2	2	4.6	
Wind	210	235	451	638	836	1 006	7	14	6.8	
Geothermal	5	5	8	11	14	18	0	0	5.7	
Solar PV	219	288	813	1 190	1 623	2 120	9	30	9.5	
CSP	0	0	3	8	13	19	0	0	18.5	
Marine	0	0	0	1	3	5	0	0	14.2	

	Stated Policies Scenario									
	CO ₂ emissions (Mt)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total CO₂	13 066	15 528	15 928	17 329	18 005	18 357	18 532	100	100	0.7
Coal	9 165	10 715	10 960	11 528	11 732	11 752	11 642	69	63	0.3
Oil	2 827	3 452	3 473	3 843	4 049	4 099	4 118	22	22	0.8
Natural gas	1 073	1 361	1 495	1 959	2 224	2 505	2 772	9	15	2.8
Power sector	5 908	7 594	7 958	8 648	8 969	9 148	9 179	100	100	0.7
Coal	5 142	6 787	7 156	7 756	8 037	8 151	8 114	90	88	0.6
Oil	230	177	152	125	108	88	71	2	1	-3.4
Natural gas	536	630	650	767	824	909	994	8	11	1.9
Final consumption	6 581	7 403	7 431	8 111	8 464	8 648	8 793	100	100	0.8
Coal	3 729	3 716	3 602	3 571	3 505	3 422	3 359	48	38	-0.3
Oil	2 408	3 076	3 118	3 524	3 748	3 813	3 851	42	44	1.0
Transport	1 497	2 040	2 099	2 488	2 721	2 820	2 898	28	33	1.5
Natural gas	444	611	712	1 017	1 212	1 412	1 584	10	18	3.7

Table A.3: Electricity and CO₂ emissions – Asia Pacific

	Current Policies Scenario				Sustainable Development Scenario			
	Electricity generation (TWh)		Shares (%)	CAAGR (%)	Electricity generation (TWh)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total generation	18 079	22 887	100	2.9	16 208	19 984	100	2.2
Coal	8 998	10 525	46	1.7	4 976	2 214	11	-5.3
Oil	120	74	0	-4.0	95	49	0	-5.8
Natural gas	2 351	3 111	14	3.4	2 277	2 387	12	2.2
Nuclear	1 162	1 601	7	4.8	1 384	2 117	11	6.2
Renewables	5 426	7 554	33	4.6	7 453	13 197	66	7.3
Hydro	2 117	2 423	11	1.5	2 454	3 093	15	2.6
Bioenergy	489	608	3	4.4	675	1 136	6	7.4
Wind	1 297	2 047	9	7.1	1 918	3 810	19	10.2
Geothermal	62	94	0	4.5	148	276	1	9.8
Solar PV	1 446	2 349	10	9.2	2 207	4 585	23	12.6
CSP	12	25	0	21.3	45	275	1	35.2
Marine	3	9	0	13.9	6	22	0	18.7

	Current Policies Scenario				Sustainable Development Scenario			
	Electrical capacity (GW)		Shares (%)	CAAGR (%)	Electrical capacity (GW)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total capacity	5 231	6 812	100	3.5	5 841	8 522	100	4.5
Coal	1 802	2 145	31	1.8	1 380	1 034	12	-1.5
Oil	83	56	1	-3.4	84	52	1	-3.7
Natural gas	633	812	12	3.3	588	706	8	2.6
Nuclear	166	218	3	2.7	194	282	3	3.9
Renewables	2 475	3 419	50	5.2	3 485	6 102	72	8.0
Hydro	709	806	12	1.8	834	1 041	12	3.0
Bioenergy	94	112	2	3.6	126	204	2	6.4
Wind	586	844	12	6.0	857	1 554	18	9.0
Geothermal	9	14	0	4.3	23	41	0	9.7
Solar PV	1 072	1 633	24	8.2	1 628	3 171	37	11.5
CSP	4	7	0	13.5	15	84	1	26.7
Marine	1	3	0	11.6	2	8	0	16.4

	Current Policies Scenario				Sustainable Development Scenario			
	CO ₂ emissions (Mt)		Shares (%)	CAAGR (%)	CO ₂ emissions (Mt)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total CO₂	19 113	21 492	100	1.4	12 707	7 298	100	-3.5
Coal	12 360	13 559	63	1.0	7 202	2 949	40	-5.8
Oil	4 380	4 869	23	1.5	3 274	2 246	31	-2.0
Natural gas	2 373	3 063	14	3.3	2 231	2 160	30	1.7
Power sector	9 460	10 830	100	1.4	5 583	2 281	100	-5.5
Coal	8 408	9 547	88	1.3	4 567	1 410	62	-7.1
Oil	109	74	1	-3.2	96	59	3	-4.2
Natural gas	942	1 210	11	2.9	919	869	38	1.3
Final consumption	9 048	10 025	100	1.4	6 683	4 714	100	-2.0
Coal	3 756	3 831	38	0.3	2 492	1 450	31	-4.1
Oil	4 064	4 567	46	1.8	3 028	2 086	44	-1.8
Transport	2 970	3 495	35	2.3	2 208	1 527	32	-1.4
Natural gas	1 229	1 627	16	3.8	1 164	1 177	25	2.3

Table A.3: Energy demand – China

	Stated Policies Scenario									
	Energy demand (Mtoe)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total primary demand	2 550	3 080	3 187	3 618	3 805	3 905	3 972	100	100	1.0
Coal	1 797	1 964	1 984	2 054	1 992	1 897	1 797	62	45	-0.4
Oil	431	572	593	672	714	716	711	19	18	0.8
Natural gas	93	196	231	347	410	460	499	7	13	3.6
Nuclear	19	65	77	119	166	216	252	2	6	5.6
Hydro	61	99	104	112	122	131	138	3	3	1.3
Bioenergy	133	114	114	144	167	183	200	4	5	2.6
Other renewables	16	70	86	169	234	303	373	3	9	6.9
Power sector	957	1 368	1 479	1 740	1 893	2 019	2 117	100	100	1.6
Coal	829	1 086	1 155	1 223	1 225	1 202	1 160	78	55	0.0
Oil	9	7	7	6	5	5	4	0	0	-2.2
Natural gas	21	41	51	94	115	131	147	3	7	5.0
Nuclear	19	65	77	119	166	216	252	5	12	5.6
Hydro	61	99	104	112	122	131	138	7	7	1.3
Bioenergy	13	33	38	66	85	101	118	3	6	5.3
Other renewables	4	37	48	120	176	235	295	3	14	8.7
Other energy sector	376	383	386	419	405	387	375	100	100	-0.1
Electricity	63	91	95	107	113	118	122	25	33	1.1
Total final consumption	1 653	2 004	2 055	2 363	2 511	2 591	2 647	100	100	1.2
Coal	713	665	627	587	536	480	428	30	16	-1.7
Oil	372	518	536	628	677	681	681	26	26	1.1
Natural gas	74	132	154	236	278	318	346	7	13	3.7
Electricity	300	480	521	670	762	844	916	25	35	2.6
Heat	62	96	103	114	117	118	117	5	4	0.6
Bioenergy	121	81	76	78	82	82	81	4	3	0.3
Other renewables	12	33	38	49	58	68	78	2	3	3.3
Industry	933	993	1 000	1 099	1 131	1 142	1 139	100	100	0.6
Coal	584	519	494	468	432	390	348	49	31	-1.6
Oil	69	56	50	48	46	42	39	5	3	-1.2
Natural gas	35	56	65	108	135	160	178	7	16	4.7
Electricity	203	297	321	393	431	460	482	32	42	1.9
Heat	42	64	69	74	74	72	69	7	6	-0.0
Bioenergy	-	0	0	6	13	16	20	0	2	41.1
Other renewables	0	0	1	1	1	2	4	0	0	9.8
Transport	199	313	327	413	468	491	517	100	100	2.1
Oil	185	281	291	353	386	382	380	89	74	1.2
Electricity	6	11	12	25	39	55	71	4	14	8.6
Biofuels	2	2	3	9	15	19	23	1	4	10.2
Other fuels	7	19	22	26	28	35	42	7	8	3.0
Buildings	372	482	504	567	603	628	648	100	100	1.1
Coal	82	81	77	48	32	17	7	15	1	-10.5
Oil	36	58	60	56	51	43	36	12	6	-2.3
Natural gas	25	48	56	87	99	105	106	11	16	3.0
Electricity	79	152	168	229	270	308	341	33	53	3.3
Heat	19	32	34	40	43	46	48	7	7	1.6
Bioenergy	119	78	73	63	53	45	37	15	6	-3.1
Traditional biomass	112	71	66	56	47	37	26	13	4	-4.1
Other renewables	11	32	36	47	55	64	72	7	11	3.2
Other	148	217	224	283	309	330	343	100	100	2.0
Petrochem. feedstock	76	116	115	168	190	209	226	51	66	3.1

Table A.3: Energy demand – China

	Current Policies Scenario				Sustainable Development Scenario			
	Energy demand (Mtoe)		Shares (%)	CAAGR (%)	Energy demand (Mtoe)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total primary demand	3 950	4 283	100	1.4	3 226	2 915	100	-0.4
Coal	2 064	1 986	46	0.0	1 446	808	28	-4.0
Oil	784	849	20	1.6	582	421	14	-1.5
Natural gas	441	559	13	4.1	391	371	13	2.2
Nuclear	168	264	6	5.8	200	331	11	6.9
Hydro	119	133	3	1.1	131	149	5	1.7
Bioenergy	161	177	4	2.0	186	284	10	4.2
Other renewables	212	314	7	6.1	290	551	19	8.8
Power sector	1 915	2 181	100	1.8	1 628	1 678	100	0.6
Coal	1 237	1 242	57	0.3	838	428	25	-4.4
Oil	5	4	0	-2.7	6	4	0	-2.7
Natural gas	138	186	9	6.1	121	132	8	4.4
Nuclear	168	264	12	5.8	200	331	20	6.9
Hydro	119	133	6	1.1	131	149	9	1.7
Bioenergy	88	105	5	4.8	110	176	10	7.2
Other renewables	159	246	11	7.7	222	458	27	10.8
Other energy sector	428	420	100	0.4	342	293	100	-1.2
Electricity	114	126	30	1.3	95	93	32	-0.1
Total final consumption	2 625	2 878	100	1.5	2 164	1 988	100	-0.1
Coal	585	513	18	-0.9	411	223	11	-4.6
Oil	741	810	28	1.9	550	404	20	-1.3
Natural gas	282	360	13	3.9	256	225	11	1.7
Electricity	765	922	32	2.6	704	844	42	2.2
Heat	125	134	5	1.2	98	79	4	-1.2
Bioenergy	74	72	2	-0.3	76	108	5	1.6
Other renewables	53	68	2	2.7	68	93	5	4.1
Industry	1 175	1 242	100	1.0	958	834	100	-0.8
Coal	456	395	32	-1.0	325	174	21	-4.6
Oil	48	44	4	-0.6	29	16	2	-5.1
Gas	137	186	15	4.9	127	120	14	2.8
Electricity	442	514	41	2.2	394	436	52	1.4
Heat	81	84	7	0.9	57	37	4	-2.8
Bioenergy	10	18	1	40.8	20	37	4	45.2
Other renewables	1	2	0	5.4	6	12	1	15.4
Transport	503	583	100	2.7	436	399	100	0.9
Oil	437	484	83	2.3	298	173	43	-2.3
Electricity	30	47	8	6.6	52	130	33	11.6
Biofuels	10	16	3	8.4	26	33	8	11.9
Other fuels	26	36	6	2.3	60	64	16	4.9
Buildings	632	692	100	1.5	501	495	100	-0.1
Coal	55	39	6	-3.1	29	3	1	-14.0
Oil	58	46	7	-1.2	43	22	4	-4.6
Natural gas	104	119	17	3.5	63	50	10	-0.5
Electricity	269	338	49	3.2	239	265	53	2.1
Heat	44	50	7	1.8	41	42	9	1.0
Bioenergy	52	35	5	-3.3	27	33	7	-3.5
Traditional biomass	47	26	4	-4.1	5	3	1	-13.7
Other renewables	51	65	9	2.7	59	78	16	3.6
Other	315	361	100	2.2	268	261	100	0.7
Petrochem. feedstock	192	237	66	3.3	164	173	66	1.9

Table A.3: Electricity and CO₂ emissions – China

	Stated Policies Scenario									
	Electricity generation (TWh)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total generation	4 236	6 639	7 170	9 037	10 177	11 192	12 071	100	100	2.4
Coal	3 263	4 509	4 748	5 145	5 188	5 120	4 979	66	41	0.2
Oil	15	10	10	6	5	4	3	0	0	-6.1
Natural gas	92	196	255	533	662	767	877	4	7	5.8
Nuclear	74	248	294	457	636	828	969	4	8	5.6
Renewables	791	1 676	1 862	2 896	3 687	4 474	5 244	26	43	4.8
Hydro	711	1 157	1 205	1 301	1 415	1 519	1 607	17	13	1.3
Bioenergy	34	93	106	217	275	326	382	1	3	6.0
Wind	45	295	354	710	985	1 290	1 602	5	13	7.1
Geothermal	0	0	0	1	3	6	12	0	0	23.3
Solar PV	1	131	197	662	990	1 300	1 594	3	13	10.0
CSP	0	0	0	6	19	32	45	0	0	24.7
Marine	0	0	0	0	1	1	2	0	0	25.1

	Stated Policies Scenario									
	Electrical capacity (GW)							Shares (%)		CAAGR (%)
	2017	2018	2025	2030	2035	2040	2018	2040	2018-40	
Total capacity	1 754	1 872	2 634	3 113	3 531	3 884	100	100	3.4	
Coal	981	1 006	1 084	1 103	1 099	1 078	54	28	0.3	
Oil	9	9	7	7	6	4	0	0	-3.0	
Natural gas	74	80	155	179	194	207	4	5	4.4	
Nuclear	37	46	70	93	118	136	2	4	5.1	
Renewables	653	730	1 299	1 698	2 070	2 403	39	62	5.6	
Hydro	344	352	416	456	493	523	19	13	1.8	
Bioenergy	15	18	40	49	57	66	1	2	6.0	
Wind	164	184	333	447	560	664	10	17	6.0	
Geothermal	0	0	0	0	1	2	0	0	21.0	
Solar PV	131	175	507	739	949	1 135	9	29	8.9	
CSP	0	0	2	6	10	13	0	0	20.4	
Marine	0	0	0	0	0	1	0	0	22.8	

	Stated Policies Scenario									
	CO ₂ emissions (Mt)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total CO₂	7 852	9 269	9 513	10 005	9 950	9 621	9 229	100	100	-0.1
Coal	6 600	7 470	7 607	7 618	7 341	6 935	6 479	80	70	-0.7
Oil	1 020	1 351	1 380	1 541	1 613	1 570	1 526	15	17	0.5
Natural gas	233	448	527	846	996	1 117	1 224	6	13	3.9
Power sector	3 483	4 585	4 893	5 268	5 310	5 238	5 091	100	100	0.2
Coal	3 402	4 465	4 749	5 025	5 021	4 913	4 729	97	93	-0.0
Oil	31	22	24	20	19	17	15	1	0	-2.2
Natural gas	50	98	120	223	270	308	347	2	7	5.0
Final consumption	4 015	4 371	4 304	4 405	4 319	4 080	3 847	100	100	-0.5
Coal	2 962	2 856	2 718	2 460	2 199	1 912	1 650	63	43	-2.2
Oil	896	1 225	1 248	1 423	1 502	1 458	1 422	29	37	0.6
Transport	559	844	874	1 061	1 161	1 147	1 143	20	30	1.2
Natural gas	157	290	338	522	618	711	774	8	20	3.8

Table A.3: Electricity and CO₂ emissions – China

	Current Policies Scenario				Sustainable Development Scenario			
	Electricity generation (TWh)		Shares (%)	CAAGR (%)	Electricity generation (TWh)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total generation	10 233	12 188	100	2.4	9 286	10 899	100	1.9
Coal	5 311	5 449	45	0.6	3 515	1 744	16	-4.4
Oil	5	3	0	-6.1	6	1	0	-11.9
Natural gas	810	1 082	9	6.8	624	643	6	4.3
Nuclear	646	1 014	8	5.8	768	1 272	12	6.9
Renewables	3 461	4 641	38	4.2	4 373	7 238	66	6.4
Hydro	1 389	1 549	13	1.1	1 526	1 733	16	1.7
Bioenergy	254	317	3	5.1	356	577	5	8.0
Wind	912	1 390	11	6.4	1 167	2 203	20	8.7
Geothermal	2	6	0	19.5	5	18	0	25.4
Solar PV	895	1 360	11	9.2	1 290	2 549	23	12.3
CSP	9	18	0	19.5	29	157	1	31.9
Marine	0	1	0	23.2	0	1	0	21.0

	Current Policies Scenario				Sustainable Development Scenario			
	Electrical capacity (GW)		Shares (%)	CAAGR (%)	Electrical capacity (GW)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total capacity	3 074	3 818	100	3.3	3 378	4 706	100	4.3
Coal	1 167	1 252	33	1.0	946	740	16	-1.4
Oil	7	4	0	-3.0	7	4	0	-3.0
Natural gas	202	257	7	5.4	177	190	4	4.0
Nuclear	94	139	4	5.2	108	170	4	6.1
Renewables	1 573	2 106	55	4.9	2 080	3 452	73	7.3
Hydro	446	502	13	1.6	503	576	12	2.3
Bioenergy	45	55	1	5.1	61	98	2	8.0
Wind	414	575	15	5.3	526	904	19	7.5
Geothermal	0	1	0	17.3	1	3	0	23.1
Solar PV	665	967	25	8.1	980	1 826	39	11.2
CSP	3	5	0	15.6	9	45	1	27.3
Marine	0	1	0	21.0	0	0	0	18.8

	Current Policies Scenario				Sustainable Development Scenario			
	CO ₂ emissions (Mt)		Shares (%)	CAAGR (%)	CO ₂ emissions (Mt)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total CO₂	10 475	10 444	100	0.4	7 053	3 093	100	-5.0
Coal	7 595	7 170	69	-0.3	4 880	1 670	54	-6.7
Oil	1 807	1 904	18	1.5	1 241	708	23	-3.0
Natural gas	1 073	1 370	13	4.4	932	752	24	1.6
Power sector	5 411	5 512	100	0.5	3 570	1 354	100	-5.7
Coal	5 068	5 060	92	0.3	3 272	1 135	84	-6.3
Oil	17	13	0	-2.7	20	13	1	-2.7
Natural gas	326	439	8	6.1	278	242	18	3.3
Final consumption	4 718	4 591	100	0.3	3 246	1 602	100	-4.4
Coal	2 403	2 002	44	-1.4	1 520	489	31	-7.5
Oil	1 687	1 782	39	1.6	1 152	654	41	-2.9
Transport	1 314	1 454	32	2.3	895	520	32	-2.3
Natural gas	628	807	18	4.0	575	459	29	1.4

Table A.3: Energy demand – India

	Stated Policies Scenario									
	Energy demand (Mtoe)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total primary demand	700	882	916	1 194	1 427	1 648	1 841	100	100	3.2
Coal	279	391	410	540	656	744	810	45	44	3.1
Oil	162	223	233	305	351	390	420	25	23	2.7
Natural gas	54	51	53	89	113	143	168	6	9	5.4
Nuclear	7	10	10	18	29	44	58	1	3	8.1
Hydro	11	12	13	16	21	25	28	1	2	3.8
Bioenergy	185	187	187	197	203	208	211	20	11	0.5
Other renewables	2	7	10	30	54	94	146	1	8	13.1
Power sector	239	339	354	476	585	686	776	100	100	3.6
Coal	177	262	276	350	416	450	466	78	60	2.4
Oil	7	8	6	8	8	6	5	2	1	-0.6
Natural gas	27	14	14	18	20	26	29	4	4	3.2
Nuclear	7	10	10	18	29	44	58	3	8	8.1
Hydro	11	12	13	16	21	25	28	4	4	3.8
Bioenergy	8	26	27	37	41	45	50	8	6	2.9
Other renewables	2	7	9	28	51	89	140	2	18	13.4
Other energy sector	62	84	87	108	132	158	181	100	100	3.4
Electricity	22	32	32	42	52	64	75	37	41	3.9
Total final consumption	484	591	614	812	969	1 129	1 278	100	100	3.4
Coal	87	101	105	148	184	223	260	17	20	4.2
Oil	135	196	207	278	326	367	399	34	31	3.0
Natural gas	27	36	38	69	91	114	137	6	11	6.0
Electricity	63	100	107	159	207	261	319	17	25	5.1
Heat	-	-	-	0	0	0	0	-	0	n.a.
Bioenergy	172	158	157	156	158	158	157	26	12	0.0
Other renewables	0	1	1	2	3	5	6	0	0	8.7
Industry	159	217	226	325	407	490	568	100	100	4.3
Coal	75	89	93	135	172	212	251	41	44	4.6
Oil	16	31	32	37	40	42	43	14	8	1.4
Natural gas	11	24	26	50	68	86	103	12	18	6.4
Electricity	28	40	42	63	80	97	114	19	20	4.6
Heat	-	-	-	0	0	0	0	-	0	n.a.
Bioenergy	29	32	32	40	46	51	55	14	10	2.4
Other renewables	0	0	0	0	1	1	2	0	0	17.6
Transport	65	98	104	153	190	229	262	100	100	4.3
Oil	62	94	99	141	173	204	228	95	87	3.9
Electricity	1	1	1	3	6	10	14	1	6	11.2
Biofuels	0	0	1	3	4	5	7	1	3	11.9
Other fuels	1	3	3	6	7	9	12	3	5	6.5
Buildings	207	214	218	236	259	287	317	100	100	1.7
Coal	12	12	12	12	12	10	9	6	3	-1.6
Oil	28	33	35	39	42	44	46	16	14	1.3
Natural gas	1	2	2	4	5	7	9	1	3	7.4
Electricity	23	41	44	67	91	121	155	20	49	5.9
Heat	-	-	-	-	-	-	-	-	-	n.a.
Bioenergy	143	125	124	112	108	102	95	57	30	-1.2
Traditional biomass	136	118	117	104	97	90	83	54	26	-1.5
Other renewables	0	1	1	2	2	3	4	0	1	6.9
Other	54	62	66	98	112	123	132	100	100	3.2
Petrochem. feedstock	24	19	20	36	43	49	55	30	42	4.8

Table A.3: Energy demand – India

	Current Policies Scenario				Sustainable Development Scenario			
	Energy demand (Mtoe)		Shares (%)	CAAGR (%)	Energy demand (Mtoe)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total primary demand	1 494	2 055	100	3.7	1 143	1 294	100	1.6
Coal	691	992	48	4.1	382	277	21	-1.8
Oil	377	486	24	3.4	306	286	22	0.9
Natural gas	132	198	10	6.2	171	260	20	7.5
Nuclear	28	56	3	7.9	29	65	5	8.7
Hydro	19	22	1	2.7	23	32	2	4.4
Bioenergy	200	202	10	0.3	142	163	13	-0.6
Other renewables	48	99	5	11.1	89	211	16	15.0
Power sector	620	903	100	4.3	457	547	100	2.0
Coal	440	620	69	3.8	195	60	11	-6.7
Oil	8	5	1	-0.2	7	5	1	-0.8
Natural gas	41	63	7	7.0	74	114	21	9.9
Nuclear	28	56	6	7.9	29	65	12	8.7
Hydro	19	22	2	2.7	23	32	6	4.4
Bioenergy	39	42	5	2.1	46	75	14	4.8
Other renewables	46	94	10	11.4	82	197	36	15.2
Other energy sector	145	208	100	4.0	118	148	100	2.5
Electricity	60	90	43	4.7	44	59	40	2.8
Total final consumption	1 002	1 364	100	3.7	806	939	100	1.9
Coal	192	282	21	4.6	138	151	16	1.7
Oil	349	461	34	3.7	282	269	29	1.2
Natural gas	89	132	10	5.8	94	140	15	6.1
Electricity	212	329	24	5.3	193	280	30	4.5
Heat	0	0	0	n.a.	0	0	0	n.a.
Bioenergy	157	155	11	-0.0	92	84	9	-2.8
Other renewables	3	5	0	7.2	7	15	2	12.9
Industry	413	582	100	4.4	342	421	100	2.9
Coal	179	271	47	5.0	129	149	35	2.2
Oil	43	48	8	1.9	32	27	6	-0.8
Gas	64	94	16	5.9	73	112	27	6.8
Electricity	78	110	19	4.4	71	94	22	3.7
Heat	0	0	0	n.a.	0	0	0	n.a.
Bioenergy	48	57	10	2.6	35	33	8	0.1
Other renewables	1	2	0	16.1	3	7	2	23.8
Transport	203	300	100	4.9	168	190	100	2.8
Oil	189	274	91	4.7	144	136	71	1.4
Electricity	3	6	2	6.6	7	28	15	14.6
Biofuels	2	4	1	8.8	8	14	8	15.8
Other fuels	9	17	6	8.2	9	12	6	6.4
Buildings	273	346	100	2.1	189	213	100	-0.1
Coal	13	12	3	-0.3	9	2	1	-7.5
Oil	46	56	16	2.2	40	37	17	0.2
Natural gas	5	8	2	7.0	2	4	2	3.2
Electricity	99	173	50	6.4	87	129	61	5.0
Heat	-	-	-	n.a.	-	-	-	n.a.
Bioenergy	107	94	27	-1.3	46	33	16	-5.8
Traditional biomass	97	83	24	-1.5	32	16	8	-8.6
Other renewables	2	3	1	5.4	4	8	4	9.9
Other	113	137	100	3.4	106	116	100	2.6
Petrochem. feedstock	43	55	40	4.7	43	53	46	4.6

Table A.3: Electricity and CO₂ emissions – India

	Stated Policies Scenario									
	Electricity generation (TWh)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total generation	982	1 532	1 618	2 338	3 018	3 780	4 581	100	100	4.8
Coal	658	1 134	1 194	1 558	1 861	2 036	2 133	74	47	2.7
Oil	24	25	17	25	24	18	16	1	0	-0.3
Natural gas	113	71	71	94	105	143	164	4	4	3.9
Nuclear	26	38	40	68	111	170	224	2	5	8.1
Renewables	160	264	295	592	916	1 412	2 045	18	45	9.2
Hydro	125	142	146	187	241	286	328	9	7	3.8
Bioenergy	15	45	47	81	93	107	123	3	3	4.5
Wind	20	51	58	146	250	399	525	4	11	10.5
Geothermal	-	-	-	0	1	1	1	-	0	n.a.
Solar PV	0	26	44	178	328	611	1 053	3	23	15.5
CSP	-	-	-	1	3	7	14	-	0	n.a.
Marine	-	-	-	-	0	0	1	-	0	n.a.

	Stated Policies Scenario									
	Electrical capacity (GW)							Shares (%)		CAAGR (%)
	2017	2018	2025	2030	2035	2040	2018	2040	2018-40	
Total capacity	377	396	604	823	1 168	1 585	100	100	6.5	
Coal	223	227	269	307	360	414	57	26	2.8	
Oil	8	8	10	10	8	7	2	0	-0.4	
Natural gas	29	29	30	31	36	39	7	2	1.4	
Nuclear	7	7	9	16	25	31	2	2	7.2	
Renewables	111	125	273	425	666	975	32	62	9.8	
Hydro	48	49	64	80	94	106	12	7	3.6	
Bioenergy	11	12	16	18	21	23	3	1	3.0	
Wind	33	35	76	119	176	219	9	14	8.6	
Geothermal	-	-	0	0	0	0	-	0	n.a.	
Solar PV	19	28	118	207	373	622	7	39	15.1	
CSP	-	-	0	1	3	5	-	0	n.a.	
Marine	-	-	-	0	0	0	-	0	n.a.	

	Stated Policies Scenario									
	CO ₂ emissions (Mt)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total CO₂	1 583	2 160	2 267	3 011	3 621	4 120	4 500	100	100	3.2
Coal	1 088	1 507	1 581	2 079	2 517	2 846	3 092	70	69	3.1
Oil	399	580	578	748	869	975	1 056	25	23	2.8
Natural gas	96	73	108	184	234	299	352	5	8	5.5
Power sector	789	1 099	1 146	1 459	1 722	1 868	1 935	100	100	2.4
Coal	704	1 040	1 095	1 391	1 651	1 789	1 853	96	96	2.4
Oil	23	26	18	25	23	18	15	2	1	-0.6
Natural gas	62	33	33	43	48	62	67	3	3	3.2
Final consumption	762	1 028	1 086	1 513	1 854	2 201	2 509	100	100	3.9
Coal	382	464	482	683	859	1 047	1 228	44	49	4.3
Oil	349	526	531	693	813	921	1 001	49	40	2.9
Transport	190	285	301	429	526	621	693	28	28	3.9
Natural gas	32	38	73	137	183	232	279	7	11	6.3

Table A.3: Electricity and CO₂ emissions – India

	Current Policies Scenario				Sustainable Development Scenario			
	Electricity generation (TWh)		Shares (%)	CAAGR (%)	Electricity generation (TWh)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total generation	3 169	4 875	100	5.1	2 764	3 940	100	4.1
Coal	1 974	2 822	58	4.0	891	266	7	-6.6
Oil	25	18	0	0.1	23	15	0	-0.6
Natural gas	234	384	8	8.0	443	729	19	11.2
Nuclear	106	215	4	7.9	113	251	6	8.7
Renewables	830	1 436	29	7.5	1 294	2 678	68	10.5
Hydro	218	261	5	2.7	268	375	10	4.4
Bioenergy	86	97	2	3.4	111	217	5	7.2
Wind	225	402	8	9.2	364	740	19	12.3
Geothermal	0	1	0	n.a.	2	5	0	n.a.
Solar PV	300	671	14	13.2	539	1 236	31	16.4
CSP	2	3	0	n.a.	11	105	3	n.a.
Marine	-	1	0	n.a.	0	1	0	n.a.

	Current Policies Scenario				Sustainable Development Scenario			
	Electrical capacity (GW)		Shares (%)	CAAGR (%)	Electrical capacity (GW)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total capacity	834	1 386	100	5.9	993	1 741	100	7.0
Coal	332	495	36	3.6	223	162	9	-1.5
Oil	10	8	1	0.0	9	6	0	-1.0
Natural gas	61	101	7	5.9	85	147	8	7.7
Nuclear	16	31	2	7.2	17	36	2	7.9
Renewables	390	680	49	8.0	618	1 230	71	11.0
Hydro	72	84	6	2.5	89	121	7	4.2
Bioenergy	17	19	1	2.0	21	40	2	5.6
Wind	108	172	12	7.5	170	309	18	10.4
Geothermal	0	0	0	n.a.	0	1	0	n.a.
Solar PV	193	404	29	12.8	333	723	42	15.9
CSP	1	1	0	n.a.	4	36	2	n.a.
Marine	-	0	0	n.a.	0	0	0	n.a.

	Current Policies Scenario				Sustainable Development Scenario			
	CO ₂ emissions (Mt)		Shares (%)	CAAGR (%)	CO ₂ emissions (Mt)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total CO₂	3 875	5 476	100	4.1	2 516	2 052	100	-0.5
Coal	2 651	3 807	70	4.1	1 416	874	43	-2.7
Oil	943	1 245	23	3.6	731	650	32	0.5
Natural gas	281	424	8	6.4	370	549	27	7.7
Power sector	1 868	2 627	100	3.8	967	425	100	-4.4
Coal	1 747	2 463	94	3.8	771	173	41	-8.0
Oil	25	17	1	-0.2	23	15	3	-0.8
Natural gas	97	147	6	7.0	173	257	61	9.7
Final consumption	1 959	2 785	100	4.4	1 512	1 592	100	1.8
Coal	897	1 331	48	4.7	638	691	43	1.6
Oil	884	1 184	43	3.7	683	616	39	0.7
Transport	575	831	30	4.7	437	412	26	1.4
Natural gas	179	269	10	6.1	191	284	18	6.4

Table A.3: Energy demand – Japan

	Stated Policies Scenario								Shares (%)		CAAGR (%)
	Energy demand (Mtoe)										
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40	
Total primary demand	501	432	434	400	387	368	353	100	100	-0.9	
Coal	115	116	115	99	87	80	75	27	21	-2.0	
Oil	203	176	172	145	127	109	94	40	27	-2.7	
Natural gas	86	101	100	86	76	75	74	23	21	-1.3	
Nuclear	75	9	15	31	55	55	57	3	16	6.4	
Hydro	7	7	8	8	8	8	8	2	2	0.4	
Bioenergy	12	15	15	19	20	22	22	4	6	1.7	
Other renewables	3	8	9	12	15	19	22	2	6	4.4	
Power sector	233	189	190	180	184	183	182	100	100	-0.2	
Coal	64	72	69	57	49	46	43	37	23	-2.2	
Oil	20	14	13	8	5	3	1	7	1	-9.5	
Natural gas	58	70	68	52	41	39	37	36	20	-2.7	
Nuclear	75	9	15	31	55	55	57	8	31	6.4	
Hydro	7	7	8	8	8	8	8	4	5	0.4	
Bioenergy	6	8	9	12	13	14	15	4	8	2.7	
Other renewables	3	7	8	12	13	17	20	4	11	4.1	
Other energy sector	57	42	43	38	35	32	30	100	100	-1.6	
Electricity	11	8	8	8	8	7	7	19	24	-0.6	
Total final consumption	312	293	293	273	259	245	234	100	100	-1.0	
Coal	23	22	23	21	19	17	15	8	7	-1.8	
Oil	164	151	148	129	115	101	90	51	38	-2.3	
Natural gas	29	30	31	33	34	35	35	11	15	0.5	
Electricity	89	83	84	82	83	83	84	29	36	0.0	
Heat	1	1	1	1	1	1	1	0	0	0.0	
Bioenergy	6	6	6	7	7	7	7	2	3	0.3	
Other renewables	1	0	0	1	1	2	2	0	1	8.2	
Industry	94	87	88	83	78	73	69	100	100	-1.1	
Coal	22	21	22	20	18	16	15	25	21	-1.9	
Oil	25	21	20	17	15	14	12	23	17	-2.4	
Natural gas	11	11	12	13	13	13	12	14	18	0.2	
Electricity	33	30	30	29	28	27	26	34	37	-0.7	
Heat	-	-	-	-	-	-	-	-	-	n.a.	
Bioenergy	3	4	4	4	4	4	4	5	6	0.2	
Other renewables	0	0	0	0	0	0	0	0	1	33.9	
Transport	76	71	69	59	53	48	44	100	100	-2.0	
Oil	74	69	67	56	49	42	38	97	85	-2.6	
Electricity	2	2	2	2	3	4	5	2	10	5.1	
Biofuels	0	0	0	1	1	1	1	1	2	3.5	
Other fuels	0	0	0	0	0	1	1	0	3	15.4	
Buildings	103	96	97	96	95	95	94	100	100	-0.1	
Coal	0	0	0	-	-	-	-	0	-	n.a.	
Oil	27	23	23	22	20	17	15	24	16	-2.0	
Natural gas	18	18	19	19	20	21	22	20	24	0.7	
Electricity	55	51	52	51	52	53	53	53	57	0.1	
Heat	1	1	1	1	1	1	1	1	1	0.0	
Bioenergy	2	2	2	2	2	2	2	2	2	-0.6	
Traditional biomass	-	-	-	-	-	-	-	-	-	n.a.	
Other renewables	1	0	0	1	1	1	2	0	2	7.2	
Other	40	39	38	35	32	29	27	100	100	-1.7	
Petrochem. feedstock	29	23	23	22	20	19	17	59	64	-1.3	

Table A.3: Energy demand – Japan

	Current Policies Scenario				Sustainable Development Scenario			
	Energy demand (Mtoe)		Shares (%)	CAAGR (%)	Energy demand (Mtoe)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total primary demand	399	374	100	-0.7	349	300	100	-1.7
Coal	101	93	25	-1.0	49	30	10	-6.0
Oil	131	105	28	-2.2	107	57	19	-4.9
Natural gas	77	85	23	-0.7	77	52	17	-2.9
Nuclear	50	45	12	5.3	60	72	24	7.5
Hydro	8	8	2	0.4	9	12	4	2.1
Bioenergy	19	20	5	1.2	22	24	8	2.1
Other renewables	13	18	5	3.3	25	53	18	8.5
Power sector	192	192	100	0.0	171	177	100	-0.3
Coal	61	59	31	-0.7	17	6	3	-10.7
Oil	6	2	1	-7.7	3	1	0	-11.9
Natural gas	42	48	25	-1.6	47	25	14	-4.4
Nuclear	50	45	24	5.3	60	72	40	7.5
Hydro	8	8	4	0.4	9	12	7	2.1
Bioenergy	12	12	6	1.7	14	16	9	2.8
Other renewables	13	16	9	3.1	21	46	26	8.0
Other energy sector	36	30	100	-1.6	31	28	100	-1.9
Electricity	8	8	27	-0.2	7	6	22	-1.4
Total final consumption	266	250	100	-0.7	233	185	100	-2.1
Coal	19	16	6	-1.6	16	11	6	-3.1
Oil	119	99	40	-1.8	98	54	29	-4.5
Natural gas	34	37	15	0.7	28	22	12	-1.5
Electricity	86	89	36	0.3	78	80	43	-0.2
Heat	1	1	0	0.5	0	0	0	-1.1
Bioenergy	7	7	3	0.5	8	8	5	1.2
Other renewables	1	1	1	6.3	4	7	4	14.3
Industry	79	71	100	-1.0	69	57	100	-2.0
Coal	18	15	21	-1.7	15	11	19	-3.3
Oil	16	12	17	-2.3	12	8	14	-4.2
Gas	13	13	18	0.4	11	9	16	-1.4
Electricity	28	26	37	-0.6	26	24	42	-1.0
Heat	-	-	-	n.a.	-	-	-	n.a.
Bioenergy	4	4	6	0.4	4	4	7	0.1
Other renewables	0	0	0	29.3	1	1	2	40.3
Transport	55	49	100	-1.6	48	31	100	-3.6
Oil	52	45	92	-1.8	42	18	59	-5.7
Electricity	2	3	6	3.0	3	8	26	7.9
Biofuels	1	1	2	2.6	2	2	6	7.0
Other fuels	0	0	0	4.9	1	3	9	19.2
Buildings	100	102	100	0.3	84	74	100	-1.2
Coal	-	-	-	n.a.	-	-	-	n.a.
Oil	20	16	15	-1.8	14	5	7	-6.8
Natural gas	21	24	23	0.9	16	12	17	-2.0
Electricity	56	60	58	0.6	49	48	65	-0.4
Heat	1	1	1	0.5	0	0	1	-1.1
Bioenergy	2	2	2	0.2	2	2	3	0.4
Traditional biomass	-	-	-	n.a.	-	-	-	n.a.
Other renewables	1	1	1	5.6	3	5	7	13.6
Other	32	27	100	-1.6	31	24	100	-2.1
Petrochem. feedstock	20	17	63	-1.3	19	15	62	-1.9

Table A.3: Electricity and CO₂ emissions – Japan

	Stated Policies Scenario									
	Electricity generation (TWh)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total generation	1 164	1 061	1 069	1 050	1 053	1 057	1 062	100	100	-0.0
Coal	311	352	338	284	244	230	218	32	21	-2.0
Oil	96	70	64	40	27	16	8	6	1	-9.3
Natural gas	326	398	385	331	268	262	251	36	24	-1.9
Nuclear	288	33	56	120	210	212	219	5	21	6.4
Renewables	122	188	206	255	283	317	346	19	33	2.4
Hydro	84	83	89	91	93	95	97	8	9	0.4
Bioenergy	28	41	41	54	61	66	71	4	7	2.5
Wind	4	6	7	19	31	43	53	1	5	9.3
Geothermal	3	2	2	3	3	5	7	0	1	4.6
Solar PV	4	55	66	88	95	105	113	6	11	2.5
CSP	-	-	-	-	-	-	-	-	-	n.a.
Marine	-	-	-	0	0	2	6	-	1	n.a.

	Stated Policies Scenario									
	Electrical capacity (GW)							Shares (%)		CAAGR (%)
	2017	2018	2025	2030	2035	2040	2018	2040	2018-40	
Total capacity	337	339	356	364	370	375	100	100	0.5	
Coal	50	50	49	48	45	42	15	11	-0.9	
Oil	48	45	29	18	11	5	13	1	-9.1	
Natural gas	85	86	82	82	83	78	25	21	-0.4	
Nuclear	41	39	34	30	27	28	11	7	-1.5	
Renewables	111	118	161	182	201	216	35	58	2.8	
Hydro	50	50	51	52	52	52	15	14	0.2	
Bioenergy	8	8	10	12	13	14	2	4	2.7	
Wind	3	4	9	13	17	20	1	5	8.0	
Geothermal	0	0	1	1	1	1	0	0	4.0	
Solar PV	50	56	90	104	116	126	17	34	3.7	
CSP	-	-	-	-	-	-	-	-	n.a.	
Marine	-	-	0	0	1	2	-	1	n.a.	

	Stated Policies Scenario									
	CO ₂ emissions (Mt)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total CO₂	1 108	1 097	1 078	908	792	722	666	100	100	-2.2
Coal	423	447	441	372	324	301	280	41	42	-2.0
Oil	478	412	401	334	290	246	214	37	32	-2.8
Natural gas	207	238	236	202	178	175	172	22	26	-1.4
Power sector	489	531	511	402	329	304	282	100	100	-2.7
Coal	290	321	309	253	216	202	191	61	68	-2.2
Oil	62	45	41	25	17	10	5	8	2	-9.5
Natural gas	136	165	160	123	96	92	87	31	31	-2.7
Final consumption	574	531	533	476	436	394	362	100	100	-1.7
Coal	114	109	114	101	92	84	76	21	21	-1.8
Oil	393	353	346	299	265	230	203	65	56	-2.4
Transport	221	205	201	168	147	126	112	38	31	-2.6
Natural gas	67	70	73	76	79	81	82	14	23	0.5

Table A.3: Electricity and CO₂ emissions – Japan

	Current Policies Scenario				Sustainable Development Scenario			
	Electricity generation (TWh)		Shares (%)	CAAGR (%)	Electricity generation (TWh)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total generation	1 095	1 129	100	0.2	991	1 005	100	-0.3
Coal	309	305	27	-0.5	85	25	2	-11.1
Oil	30	12	1	-7.4	16	4	0	-11.8
Natural gas	278	325	29	-0.8	306	163	16	-3.8
Nuclear	191	173	15	5.3	229	275	27	7.5
Renewables	268	294	26	1.6	334	518	52	4.3
Hydro	92	96	9	0.4	108	139	14	2.1
Bioenergy	56	58	5	1.6	64	74	7	2.7
Wind	27	40	4	8.0	53	139	14	14.2
Geothermal	3	6	1	3.9	9	26	3	11.2
Solar PV	88	92	8	1.5	98	130	13	3.1
CSP	-	-	-	n.a.	-	-	-	n.a.
Marine	0	1	0	n.a.	1	11	1	n.a.

	Current Policies Scenario				Sustainable Development Scenario			
	Electrical capacity (GW)		Shares (%)	CAAGR (%)	Electrical capacity (GW)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total capacity	360	356	100	0.2	358	410	100	0.9
Coal	53	52	15	0.1	29	7	2	-8.4
Oil	18	7	2	-8.1	18	5	1	-9.2
Natural gas	88	90	25	0.2	72	67	16	-1.1
Nuclear	27	22	6	-2.5	33	35	9	-0.4
Renewables	169	180	51	1.9	203	290	71	4.2
Hydro	51	52	15	0.2	59	70	17	1.6
Bioenergy	11	12	3	1.9	13	15	4	2.8
Wind	11	16	4	6.7	21	49	12	12.4
Geothermal	1	1	0	3.4	2	4	1	10.6
Solar PV	94	99	28	2.6	108	148	36	4.5
CSP	-	-	-	n.a.	-	-	-	n.a.
Marine	0	0	0	n.a.	0	4	1	n.a.

	Current Policies Scenario				Sustainable Development Scenario			
	CO ₂ emissions (Mt)		Shares (%)	CAAGR (%)	CO ₂ emissions (Mt)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total CO₂	868	805	100	-1.3	568	287	100	-5.8
Coal	384	358	45	-0.9	156	69	24	-8.1
Oil	302	245	30	-2.2	233	108	38	-5.8
Natural gas	182	201	25	-0.7	179	110	38	-3.4
Power sector	391	383	100	-1.3	186	59	100	-9.3
Coal	273	264	69	-0.7	66	3	4	-19.5
Oil	18	7	2	-7.7	10	3	4	-11.9
Natural gas	99	112	29	-1.6	110	54	91	-4.8
Final consumption	451	398	100	-1.3	358	211	100	-4.1
Coal	95	80	20	-1.6	77	56	27	-3.2
Oil	275	232	58	-1.8	215	102	48	-5.4
Transport	156	135	34	-1.8	125	55	26	-5.7
Natural gas	81	87	22	0.8	66	53	25	-1.4

Table A.3: Energy demand – Southeast Asia

	Stated Policies Scenario									
	Energy demand (Mtoe)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total primary demand	544	676	701	843	941	1 031	1 114	100	100	2.1
Coal	86	134	143	188	216	244	272	20	24	3.0
Oil	190	237	244	291	313	325	329	35	30	1.4
Natural gas	125	134	135	168	192	220	246	19	22	2.8
Nuclear	-	-	-	-	-	-	3	-	0	n.a.
Hydro	7	16	16	17	23	28	31	2	3	3.1
Bioenergy	112	123	127	131	133	135	137	18	12	0.3
Other renewables	25	32	35	48	64	79	96	5	9	4.6
Power sector	165	230	243	313	370	428	486	100	100	3.2
Coal	49	96	103	140	162	185	208	43	43	3.2
Oil	15	7	7	5	5	5	4	3	1	-2.1
Natural gas	67	69	68	87	95	106	114	28	23	2.4
Nuclear	-	-	-	-	-	-	3	-	1	n.a.
Hydro	7	16	16	17	23	28	31	7	6	3.1
Bioenergy	3	10	14	17	21	26	32	6	7	4.0
Other renewables	25	32	35	47	63	78	94	15	19	4.5
Other energy sector	61	51	52	59	64	70	76	100	100	1.7
Electricity	7	11	11	15	17	20	22	22	30	3.1
Total final consumption	377	482	496	592	653	706	754	100	100	1.9
Coal	31	37	39	47	53	57	61	8	8	2.1
Oil	165	222	230	274	291	301	305	46	40	1.3
Natural gas	29	42	44	60	76	93	111	9	15	4.3
Electricity	52	76	79	106	129	154	180	16	24	3.8
Heat	-	-	-	-	-	-	-	-	-	n.a.
Bioenergy	99	104	105	105	103	100	95	21	13	-0.4
Other renewables	0	0	0	0	1	1	2	0	0	27.6
Industry	113	157	162	199	227	254	280	100	100	2.5
Coal	29	35	36	45	50	55	59	22	21	2.2
Oil	23	29	29	31	32	31	30	18	11	0.2
Natural gas	20	33	35	49	62	76	90	22	32	4.4
Electricity	22	33	34	46	53	60	67	21	24	3.1
Heat	-	-	-	-	-	-	-	-	-	n.a.
Bioenergy	18	26	27	29	30	31	32	17	11	0.8
Other renewables	-	-	-	0	0	0	0	-	0	n.a.
Transport	89	130	135	167	182	192	200	100	100	1.8
Oil	85	123	127	155	166	172	175	94	88	1.5
Electricity	0	0	0	1	2	3	5	0	3	13.5
Biofuels	1	4	5	8	9	11	13	4	6	4.7
Other fuels	2	2	2	3	4	5	6	2	3	4.6
Buildings	127	138	140	153	165	177	189	100	100	1.4
Coal	2	2	2	2	2	2	2	2	1	-0.2
Oil	16	21	21	23	24	25	26	15	14	0.8
Natural gas	0	0	0	1	2	3	4	0	2	11.7
Electricity	30	42	43	58	72	88	106	31	56	4.2
Heat	-	-	-	-	-	-	-	-	-	n.a.
Bioenergy	79	73	73	68	63	57	50	52	26	-1.7
Traditional biomass	79	72	72	67	62	56	49	51	26	-1.8
Other renewables	0	0	0	0	1	1	1	0	1	24.9
Other	48	57	59	73	79	83	85	100	100	1.7
Petrochem. feedstock	34	42	43	53	57	61	62	72	73	1.7

Table A.3: Energy demand – Southeast Asia

	Current Policies Scenario				Sustainable Development Scenario			
	Energy demand (Mtoe)		Shares (%)	CAAGR (%)	Energy demand (Mtoe)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total primary demand	966	1 185	100	2.4	797	858	100	0.9
Coal	239	341	29	4.0	111	54	6	-4.3
Oil	325	365	31	1.8	272	224	26	-0.4
Natural gas	194	245	21	2.7	177	201	23	1.8
Nuclear	-	3	0	n.a.	-	4	0	n.a.
Hydro	20	25	2	2.1	28	45	5	4.9
Bioenergy	132	133	11	0.2	85	98	11	-1.2
Other renewables	55	73	6	3.3	126	232	27	8.9
Power sector	380	513	100	3.5	332	421	100	2.5
Coal	184	271	53	4.5	72	19	4	-7.4
Oil	6	5	1	-1.8	3	2	1	-4.5
Natural gas	96	109	21	2.2	81	83	20	0.9
Nuclear	-	3	1	n.a.	-	4	1	n.a.
Hydro	20	25	5	2.1	28	45	11	4.9
Bioenergy	20	29	6	3.5	26	42	10	5.3
Other renewables	55	71	14	3.2	123	225	53	8.8
Other energy sector	68	86	100	2.3	58	62	100	0.8
Electricity	17	24	27	3.4	14	17	28	1.9
Total final consumption	667	793	100	2.2	536	556	100	0.5
Coal	54	64	8	2.3	38	33	6	-0.7
Oil	301	336	42	1.7	254	206	37	-0.5
Natural gas	77	112	14	4.3	76	99	18	3.8
Electricity	131	183	23	3.9	115	162	29	3.3
Heat	-	-	-	n.a.	-	-	-	n.a.
Bioenergy	103	96	12	-0.4	50	47	8	-3.6
Other renewables	1	1	0	25.1	3	7	1	35.0
Industry	231	287	100	2.6	187	204	100	1.0
Coal	52	62	22	2.4	36	33	16	-0.5
Oil	32	31	11	0.3	23	17	9	-2.4
Gas	63	92	32	4.5	58	75	37	3.5
Electricity	53	66	23	3.0	46	56	28	2.2
Heat	-	-	-	n.a.	-	-	-	n.a.
Bioenergy	32	35	12	1.1	22	20	10	-1.5
Other renewables	0	0	0	n.a.	1	3	2	n.a.
Transport	187	220	100	2.3	168	155	100	0.6
Oil	175	202	92	2.1	142	103	66	-1.0
Electricity	1	1	1	6.1	3	21	13	21.0
Biofuels	8	11	5	3.9	15	19	12	6.5
Other fuels	4	6	3	4.3	8	13	8	7.9
Buildings	170	200	100	1.6	105	119	100	-0.7
Coal	3	3	1	0.4	2	1	1	-5.9
Oil	25	28	14	1.3	23	21	17	-0.2
Natural gas	2	4	2	11.6	2	3	2	9.5
Electricity	76	114	57	4.5	65	84	71	3.1
Heat	-	-	-	n.a.	-	-	-	n.a.
Bioenergy	63	50	25	-1.7	11	7	6	-9.9
Traditional biomass	62	49	24	-1.8	9	5	4	-11.7
Other renewables	0	1	0	23.0	1	3	3	30.6
Other	79	86	100	1.7	76	78	100	1.3
Petrochem. feedstock	57	61	72	1.7	55	58	75	1.4

Table A.3: Electricity and CO₂ emissions – Southeast Asia

	Stated Policies Scenario									
	Electricity generation (TWh)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total generation	684	1 014	1 045	1 400	1 693	2 009	2 345	100	100	3.7
Coal	185	386	416	597	699	812	929	40	40	3.7
Oil	60	27	26	19	19	18	15	2	1	-2.4
Natural gas	335	362	357	478	534	608	684	34	29	3.0
Nuclear	-	-	-	-	-	-	12	-	1	n.a.
Renewables	104	239	247	306	442	571	706	24	30	4.9
Hydro	78	187	184	194	268	323	362	18	15	3.1
Bioenergy	6	20	26	39	52	69	91	3	4	5.8
Wind	0	3	4	12	22	35	53	0	2	13.0
Geothermal	19	23	25	37	52	65	77	2	3	5.2
Solar PV	0	6	7	24	47	80	124	1	5	13.8
CSP	-	-	-	-	-	-	-	-	-	n.a.
Marine	-	-	-	0	0	0	0	-	0	n.a.

	Stated Policies Scenario									
	Electrical capacity (GW)							Shares (%)		CAAGR (%)
	2017	2018	2025	2030	2035	2040	2018	2040	2018-40	
Total capacity	253	261	362	438	525	623	100	100	4.0	
Coal	71	74	112	126	144	165	28	26	3.7	
Oil	26	26	23	21	19	13	10	2	-3.0	
Natural gas	93	96	122	137	158	184	37	29	3.0	
Nuclear	-	-	-	-	-	2	-	0	n.a.	
Renewables	63	66	102	150	198	249	25	40	6.3	
Hydro	46	47	61	84	100	111	18	18	4.0	
Bioenergy	8	9	11	14	16	18	3	3	3.4	
Wind	1	2	5	10	15	22	1	4	12.3	
Geothermal	4	4	6	8	9	11	1	2	5.0	
Solar PV	4	5	19	35	58	87	2	14	14.1	
CSP	-	-	-	-	-	-	-	-	n.a.	
Marine	-	-	0	0	0	0	-	0	n.a.	

	Stated Policies Scenario									
	CO ₂ emissions (Mt)							Shares (%)		CAAGR (%)
	2010	2017	2018	2025	2030	2035	2040	2018	2040	2018-40
Total CO₂	1 038	1 371	1 429	1 779	1 986	2 182	2 355	100	100	2.3
Coal	324	537	573	757	868	981	1 090	40	46	3.0
Oil	455	575	592	686	731	755	763	41	32	1.2
Natural gas	259	259	264	337	387	447	502	18	21	3.0
Power sector	401	570	597	784	892	1 010	1 119	100	100	2.9
Coal	198	386	416	565	652	745	837	70	75	3.2
Oil	46	22	21	16	17	16	13	4	1	-2.1
Natural gas	157	162	159	203	223	249	268	27	24	2.4
Final consumption	572	749	779	939	1 033	1 106	1 166	100	100	1.9
Coal	126	151	157	192	215	235	253	20	22	2.2
Oil	394	536	553	649	690	712	722	71	62	1.2
Transport	256	367	381	463	497	515	524	49	45	1.5
Natural gas	52	63	69	98	127	158	191	9	16	4.7

Table A.3: Electricity and CO₂ emissions – Southeast Asia

	Current Policies Scenario				Sustainable Development Scenario			
	Electricity generation (TWh)		Shares (%)	CAAGR (%)	Electricity generation (TWh)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total generation	1 726	2 404	100	3.9	1 496	2 083	100	3.2
Coal	788	1 205	50	5.0	304	81	4	-7.2
Oil	20	16	1	-2.1	10	8	0	-5.2
Natural gas	541	661	28	2.8	464	504	24	1.6
Nuclear	-	12	0	n.a.	-	16	1	n.a.
Renewables	377	510	21	3.4	718	1 474	71	8.5
Hydro	237	293	12	2.1	321	527	25	4.9
Bioenergy	49	78	3	5.1	67	127	6	7.5
Wind	17	29	1	9.9	129	314	15	22.5
Geothermal	44	61	3	4.0	106	183	9	9.4
Solar PV	29	49	2	9.0	94	321	15	18.8
CSP	-	-	-	n.a.	-	-	-	n.a.
Marine	0	0	0	n.a.	0	2	0	n.a.

	Current Policies Scenario				Sustainable Development Scenario			
	Electrical capacity (GW)		Shares (%)	CAAGR (%)	Electrical capacity (GW)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total capacity	418	575	100	3.7	508	823	100	5.4
Coal	136	206	36	4.8	93	67	8	-0.4
Oil	21	13	2	-2.9	21	13	2	-3.1
Natural gas	134	178	31	2.9	127	148	18	2.0
Nuclear	-	2	0	n.a.	-	3	0	n.a.
Renewables	123	162	28	4.2	265	580	71	10.4
Hydro	74	90	16	3.0	101	164	20	5.9
Bioenergy	13	16	3	2.8	17	25	3	5.0
Wind	8	12	2	9.1	58	135	16	21.8
Geothermal	7	9	2	3.9	16	27	3	9.3
Solar PV	22	36	6	9.6	72	229	28	19.2
CSP	-	-	-	n.a.	-	-	-	n.a.
Marine	0	0	0	n.a.	0	1	0	n.a.

	Current Policies Scenario				Sustainable Development Scenario			
	CO ₂ emissions (Mt)		Shares (%)	CAAGR (%)	CO ₂ emissions (Mt)		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
Total CO₂	2 117	2 718	100	3.0	1 395	1 012	100	-1.6
Coal	961	1 358	50	4.0	439	171	17	-5.3
Oil	765	861	32	1.7	612	457	45	-1.2
Natural gas	391	499	18	2.9	345	383	38	1.7
Power sector	981	1 363	100	3.8	488	245	100	-4.0
Coal	739	1 093	80	4.5	288	42	17	-9.9
Oil	17	14	1	-1.8	10	8	3	-4.5
Natural gas	224	257	19	2.2	190	195	80	0.9
Final consumption	1 071	1 274	100	2.3	859	730	100	-0.3
Coal	222	266	21	2.4	150	129	18	-0.9
Oil	722	816	64	1.8	583	436	60	-1.1
Transport	522	605	47	2.1	425	307	42	-1.0
Natural gas	128	193	15	4.8	126	166	23	4.1

Table A.4: Emissions of air pollutants – World

	Stated Policies Scenario							
	By energy sector					Shares (%)		CAAGR (%)
	2018	2025	2030	2035	2040	2018	2040	2018-40
SO₂ emissions from all energy activities (Mt)								
Total	62.7	51.7	47.7	47.6	48.3	100	100	-1.2
Power	21.7	16.5	12.6	12.5	13.0	35	27	-2.3
Industry*	28.2	26.0	26.3	26.9	27.4	45	57	-0.1
Transport	6.6	3.9	4.1	4.3	4.4	10	9	-1.8
Buildings	5.1	4.0	3.4	2.8	2.5	8	5	-3.2
Agriculture	1.1	1.3	1.3	1.1	1.1	2	2	-0.2
NO_x emissions from all energy activities (Mt)								
Total	105.2	97.0	92.7	91.4	91.9	100	100	-0.6
Power	15.9	13.2	12.5	12.0	11.9	15	13	-1.3
Industry*	25.1	24.7	24.7	25.8	26.8	24	29	0.3
Transport	56.5	51.8	48.2	46.6	46.3	54	50	-0.9
Buildings	4.7	4.7	4.6	4.5	4.5	4	5	-0.3
Agriculture	3.0	2.7	2.6	2.5	2.4	3	3	-0.9
PM_{2.5} emissions from all energy activities (Mt)								
Total	29.6	28.3	27.4	27.4	27.3	100	100	-0.4
Power	1.9	1.5	1.3	1.3	1.3	6	5	-1.9
Industry*	7.9	8.2	8.6	9.3	9.9	27	36	1.1
Transport	3.5	2.8	2.6	2.6	2.7	12	10	-1.2
Buildings	15.5	14.9	14.1	13.3	12.5	52	46	-1.0
Agriculture	0.7	0.8	0.8	0.8	0.9	2	3	0.8

* Industry also includes other transformation.

	Stated Policies Scenario							
	By fuel					Shares (%)		CAAGR (%)
	2018	2025	2030	2035	2040	2018	2040	2018-40
SO₂ emissions from combustion activities (Mt)								
Total	46.1	35.5	31.0	30.3	30.7	100	100	-1.8
Coal	27.0	19.8	15.5	14.9	15.0	59	49	-2.6
Oil	16.6	12.9	12.5	12.1	11.9	36	39	-1.5
Natural gas	0.4	0.4	0.5	0.5	0.6	1	2	2.1
Bioenergy	2.2	2.3	2.5	2.8	3.2	5	10	1.7
NO_x emissions from combustion activities (Mt)								
Total	93.7	86.0	81.3	79.5	79.6	100	100	-0.7
Coal	15.0	11.5	10.6	9.8	9.7	16	12	-2.0
Oil	65.9	60.7	56.4	54.5	53.7	70	67	-0.9
Natural gas	9.0	9.4	9.7	10.3	11.1	10	14	0.9
Bioenergy	3.8	4.3	4.6	4.9	5.1	4	6	1.4
PM_{2.5} emissions from combustion activities (Mt)								
Total	23.4	21.7	20.4	19.7	19.1	100	100	-0.9
Coal	4.1	3.1	2.6	2.3	2.1	17	11	-3.1
Oil	4.6	3.7	3.3	3.3	3.4	19	18	-1.4
Natural gas	0.1	0.1	0.1	0.2	0.2	1	1	1.8
Bioenergy	14.7	14.8	14.3	13.9	13.5	63	71	-0.4

Table A.4: Emissions of air pollutants – World

	Current Policies Scenario				Sustainable Development Scenario			
	By energy sector		Shares (%)	CAAGR (%)	By energy sector		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
SO₂ emissions from all energy activities (Mt)								
Total	49.6	52.6	100	-0.8	28.7	16.8	100	-5.8
Power	13.7	15.5	29	-1.5	4.9	2.3	13	-9.8
Industry*	26.1	27.4	52	-0.1	18.2	11.5	69	-4.0
Transport	4.6	5.4	10	-0.9	2.9	2.0	12	-5.2
Buildings	3.9	3.2	6	-2.2	2.0	0.8	5	-8.3
Agriculture	1.3	1.2	2	0.2	0.7	0.2	1	-7.0
NO_x emissions from all energy activities (Mt)								
Total	100.8	107.6	100	0.1	58.1	31.9	100	-5.3
Power	13.3	13.8	13	-0.7	6.7	3.6	11	-6.5
Industry*	25.1	27.6	26	0.4	15.3	8.2	26	-5.0
Transport	54.9	58.7	55	0.2	32.0	18.0	57	-5.1
Buildings	4.8	4.8	4	0.1	2.6	1.6	5	-4.8
Agriculture	2.7	2.7	2	-0.4	1.4	0.5	2	-7.5
PM_{2.5} emissions from all energy activities (Mt)								
Total	27.6	28.2	100	-0.2	11.0	4.5	100	-8.2
Power	1.3	1.4	5	-1.3	0.6	0.2	4	-10.2
Industry*	8.4	9.8	35	1.0	5.0	2.0	46	-5.9
Transport	3.3	3.8	13	0.3	1.8	1.1	25	-5.2
Buildings	13.8	12.3	44	-1.1	3.1	0.9	20	-12.1
Agriculture	0.8	0.9	3	0.8	0.5	0.2	5	-5.5

* Industry also includes other transformation.

	Current Policies Scenario				Sustainable Development Scenario			
	By fuel		Shares (%)	CAAGR (%)	By fuel		Shares (%)	CAAGR (%)
	2030	2040	2040	2018-40	2030	2040	2040	2018-40
SO₂ emissions from combustion activities (Mt)								
Total	33.2	35.3	100	-1.2	16.3	8.6	100	-7.4
Coal	17.0	18.1	51	-1.8	7.6	3.2	37	-9.3
Oil	13.3	13.8	39	-0.8	6.6	3.1	36	-7.3
Natural gas	0.5	0.6	2	2.6	0.5	0.5	6	1.2
Bioenergy	2.4	2.8	8	1.2	1.7	1.8	21	-0.7
NO_x emissions from combustion activities (Mt)								
Total	89.4	95.3	100	0.1	50.4	27.7	100	-5.4
Coal	11.5	11.6	12	-1.2	5.3	2.6	10	-7.6
Oil	63.5	67.0	70	0.1	36.2	19.3	70	-5.4
Natural gas	10.0	11.8	12	1.2	6.1	3.2	12	-4.6
Bioenergy	4.4	4.8	5	1.1	2.9	2.5	9	-1.8
PM_{2.5} emissions from combustion activities (Mt)								
Total	20.8	20.1	100	-0.7	6.5	2.2	100	-10.3
Coal	2.9	2.7	14	-1.8	1.2	0.3	13	-11.5
Oil	4.1	4.5	22	-0.0	2.0	0.9	40	-7.2
Natural gas	0.2	0.2	1	2.0	0.1	0.1	4	-1.2
Bioenergy	13.7	12.7	63	-0.7	3.2	0.9	43	-11.8

Table A.5: Energy investment

World investments	2014-2018	Stated Policies Scenario					
		2019-2030	2031-2040	2019-2040	2019-2030	2031-2040	2019-2040
(billion dollars, 2018)		Average annual			Cumulative		
Fuels	930	935	989	960	11 224	9 895	21 119
Oil and natural gas	414	867	932	897	10 409	9 321	19 730
Coal	98	59	42	51	714	419	1 133
Biofuels	5	8	15	12	101	154	256
Power	775	856	999	921	10 276	9 994	20 269
Power plants	483	491	521	505	5 890	5 212	11 101
<i>Fossil fuels</i>	138	92	91	91	1 102	908	2 010
<i>Nuclear</i>	41	52	48	50	619	482	1 102
<i>Renewables</i>	303	347	382	363	4 169	3 821	7 990
Electricity networks	291	354	455	400	4 248	4 552	8 800
Fuels and power	1 706	1 792	1 989	1 881	21 500	19 888	41 388
Energy efficiency	238	445	635	531	5 338	6 345	11 684
Renewables and other	127	220	308	260	2 644	3 080	5 723
End-use	365	665	943	791	7 982	9 425	17 407
Total	2 071	2 457	2 931	2 673	29 482	29 313	58 795

Fuels	Stated Policies Scenario					
	Upstream oil & gas	Transportation		Refining oil	Oil & gas	Total
Cumulative investments, 2019-2040 (billion dollars, 2018)						
North America	4 547	141	665	139	5 492	5 651
Central and South America	1 558	115	103	40	1 817	1 914
Europe	1 201	18	320	80	1 618	1 634
Africa	1 623	68	167	54	1 911	1 955
Middle East	2 098	183	291	140	2 711	2 713
Eurasia	2 089	36	329	42	2 496	2 563
Asia Pacific	2 052	80	747	405	3 284	4 239
Shipping	n.a.	927	116	n.a.	1 042	449
World	15 167	927	2 737	899	19 730	21 119

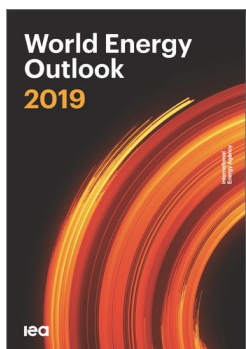
Power	Stated Policies Scenario								
	Coal	Gas	Oil	Fossil fuels	Nuclear	Renew.	Power plants	Networks	Total
Cumulative investments, 2019-2040 (billion dollars, 2018)									
North America	64	274	7	344	149	1 136	1 629	959	2 654
Central and South America	8	53	2	63	29	422	514	442	959
Europe	110	127	2	238	359	1 543	2 140	1 235	3 420
Africa	48	81	8	137	23	522	682	727	1 429
Middle East	10	138	17	164	34	249	447	292	741
Eurasia	65	120	0	185	94	144	423	247	673
Asia Pacific	632	237	11	880	412	3 973	5 266	4 898	10 394
World	935	1 029	46	2 010	1 102	7 990	11 101	8 800	20 269

Table A.5: Energy investment

World investments	Current Policies Scenario					Sustainable Development Scenario				
	2019-2030	2031-2040	2019-2030	2031-2040	2019-2040	2019-2030	2031-2040	2019-2030	2031-2040	2019-2040
(billion dollars, 2018)	Average annual		Cumulative			Average annual		Cumulative		
Fuels	1 060	1 320	12 726	13 204	25 930	727	567	8 720	5 668	14 388
Oil and natural gas	986	1 250	11 834	12 504	24 337	681	505	8 177	5 051	13 227
Coal	66	54	794	544	1 338	22	20	261	200	461
Biofuels	8	16	98	157	255	24	42	283	417	700
Power	832	918	9 986	9 181	19 167	1 014	1 463	12 167	14 631	26 797
Plants	460	481	5 525	4 810	10 336	653	793	7 833	7 934	15 767
<i>Fossil fuels</i>	120	134	1 444	1 342	2 786	66	65	795	651	1 446
<i>Nuclear</i>	53	48	631	479	1 110	62	67	749	670	1 420
<i>Renewables</i>	288	299	3 450	2 990	6 440	524	661	6 289	6 613	12 902
Electricity networks	360	417	4 316	4 172	8 488	345	631	4 138	6 306	10 444
Fuels and power	1 893	2 239	22 712	22 386	45 097	1 741	2 030	20 887	20 299	41 185
Energy efficiency	346	534	4 156	5 341	9 497	625	916	7 498	9 156	16 654
Renewables and other	179	200	2 144	2 005	4 148	332	950	3 985	9 504	13 489
End-use	525	735	6 299	7 346	13 645	957	1 866	11 483	18 660	30 143
Total	2 418	2 973	29 011	29 732	58 742	2 697	3 896	32 370	38 959	71 329

Fuels	Current Policies Scenario					Sustainable Development Scenario				
	Upstream oil & gas	Transport. oil & gas	Refining oil	Oil & gas	Total	Upstream oil & gas	Transport. oil & gas	Refining oil	Oil & gas	Total
Cumulative investments, 2019-2040 (billion dollars, 2018)										
North America	5 771	919	200	6 890	7 073	3 068	623	85	3 777	4 094
Central and South America	2 087	292	48	2 428	2 530	859	100	26	985	1 117
Europe	1 334	379	117	1 829	1 852	909	292	61	1 263	1 271
Africa	2 014	271	64	2 349	2 411	1 003	157	38	1 198	1 244
Middle East	2 534	568	189	3 291	3 293	1 399	243	64	1 706	1 730
Eurasia	2 623	410	46	3 078	3 171	1 314	279	34	1 626	1 667
Asia Pacific	2 467	914	591	3 972	5 034	1 533	696	230	2 458	3 027
Shipping	n.a.	500	n.a.	500	566	n.a.	213	n.a.	213	238
World	18 830	4 253	1 254	24 337	25 930	10 085	2 604	538	13 227	14 388

Power	Current Policies Scenario					Sustainable Development Scenario				
	Fossil fuels	Nuclear	Renew.	Networks	Total	Fossil fuels	Nuclear	Renew.	Networks	Total
Cumulative investments, 2019-2040 (billion dollars, 2018)										
North America	364	154	1 065	934	2 576	281	204	1 952	1 203	3 732
Central and South America	77	29	429	489	1 029	23	34	513	376	954
Europe	335	353	1 232	1 081	3 050	184	407	2 114	1 748	4 519
Africa	204	23	331	779	1 359	103	45	1 050	932	2 168
Middle East	189	34	176	321	725	80	48	719	284	1 136
Eurasia	237	112	98	269	719	77	118	396	192	786
Asia Pacific	1 380	404	3 109	4 616	9 709	697	565	6 158	5 708	13 502
World	2 786	1 110	6 440	8 488	19 167	1 446	1 420	12 902	10 444	26 797



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