EWEA
THE EUROPEAN WIND ENERGY ASSOCIATION

Wind energy scenarios for 2020

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Content

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Background

EWEA's previous wind energy scenarios were published in 2009 ('Pure Power 2') following the adoption of the EU's Renewable Energy Directive. They were subsequently re-published in 2011 ('Pure Power 3').

The scenarios looked at both annual and cumulative installations and included a country breakdown for 2020, but not for intermediate years. The headline figure was 230 GW (of which 40 GW offshore) producing 581 TWh of electricity, meeting 15.7% of electricity consumption. EU electricity consumption for 2020 was projected to be 3,689.5 TWh[1].

Reasons for the new scenarios

In light of developments since 2009, not least the economic downturn and regulatory instability in a number of key European markets, EWEA has reviewed its 2020 scenarios according to present and expected realities.

The European Commission now[2] expects final power demand in 2020 to be 11% lower than it did in 2009 (2,956 TWh gross final consumption in EU27, instead of 3,336 TWh). In reality, therefore, the Commission does not expect EU power demand to increase above its 2008 peak until after 2020. This economic reality has had a impact on demand for new power installations for all generation technologies.

The economic reality has also fed through to the stability of regulatory and market frameworks for wind energy, both onshore and offshore. This has impacted investment plans, new orders, investment decisions already taken, and existing installations in markets across Europe. Retroactive and retrospective changes to regulatory and market frameworks have had a particularly negative impact on the wind energy sector, especially in certain markets.

Proposed new scenarios

Given the expectations for energy demand, the persisting instability in numerous markets across Europe, the rapidly changing national policy frameworks for wind energy, the new round of climate and energy discussions at EU level on a policy framework to 2030, and the potential impact of the 2015 COP climate negotiations in Paris, it is apparent that a single growth scenario for wind energy is no longer sufficient.

Consequently, EWEA is proposing three growth scenarios to 2020. These are based on the premise that the instability experienced in wind energy markets to date is not fully compensated for by new installations in the latter half of the decade, particularly offshore.

It does not necessarily follow that lower installations will undermine the EU's 20% renewable energy target being met. As the 20% target is a consumption target, and with consumption in 2020 being lower than previously expected, meeting the target with fewer installed MW producing fewer TWh is feasible.

EWEA's new central scenario expects 192 GW of wind installations to produce 442 TWh meeting 14.9% of electricity consumption in 2020.[4]

The central scenario will result in cumulative installations over the seven year period of 75 GW and an investment volume in wind farms of between €90 billion and €124 billion, with the leading markets being Germany, France, the United Kingdom, Poland and Italy. By 2020, 354,000 people (up from 253,000 today) will be employed in the European wind industry.

Photo: Alba Valmorisco

[1] Pure Power – wind energy targets for 2020 and 2030, EWEA, 2011.
[2] EU Energy, transport and GHG emission trends to 2050. Reference Scenario 2013. http://ec.europa.eu/energy/observatory/trends_2030/doc/trends_to_2050_update_2013.pdf
[3] EU energy trends to 2030 http://ec.europa.eu/energy/observatory/trends_2030/doc/trends_to_2030_update_2009.pdf

TABLE 1 ESTIMATED EU WIND POWER INSTALLATIONS, PRODUCTION AND SHARE OF EU CONSUMPTION, AND NEW EWEA LOW, CENTRAL AND HIGH SCENARIOS

	Wind energy installations GW			Wind energy production TWh			Share of wind energy in demand %		
	Onshore	Offshore	Total	Onshore	Offshore	Total	Onshore	Offshore	Total
EWEA 2014	169	23.5	192.5	355	86.4	441.7	12%	2.9%	14.9%
NREAPs	170	43	213	354.9	139.8	494.7	10%	4%	14%
EC 2013	156.5	47.6	204	343.2	142.9	486.3	11.6%	4.8%	16.4%

- **Low scenario 2020**

  Installed capacity increases by 41% compared to 2013 to 165.6 GW. Offshore installations are 19.5 GW. Onshore wind installations produce 307 TWh of electricity and offshore installations 71.9 TWh. The combined wind energy production of 378.9 TWh covers 12.8% of total EU power demand.

  The effects of the economic crisis on power demand linger, pressure on public spending persists across Europe until the latter years of the decade. Instability in national regulatory frameworks in both mature and emerging markets continues. This instability makes it difficult to attract financing for new wind energy projects, especially in the offshore sector that struggles to de-risk. EU and international climate and energy policy post-2020 decisions are weak and unambitious, providing few extra stimuli for wind energy development.

- **Central scenario 2020**

  Installed capacity increases by 64% compared to 2013 to 192.5 GW. Offshore installations reach almost 23.5 GW. Onshore wind installations produce 355.2 TWh of electricity and offshore installations 86.4 TWh. The combined wind energy production of 441.7 TWh covers 14.9% of total EU power demand.

  Regulatory stability is not fully recovered throughout Europe; however, in key onshore markets such as Germany, France, United Kingdom and Poland policy reforms are finalised rapidly and the new regulatory frameworks are conducive to a pick-up in wind power installations. EU post-2020 energy and climate negotiations provide some medium-term perspectives for the wind energy sector. Offshore installations are similar to those under the low scenario, but extra confidence in the UK and faster deployment in France and the Netherlands push the EU total to 23.5 GW.

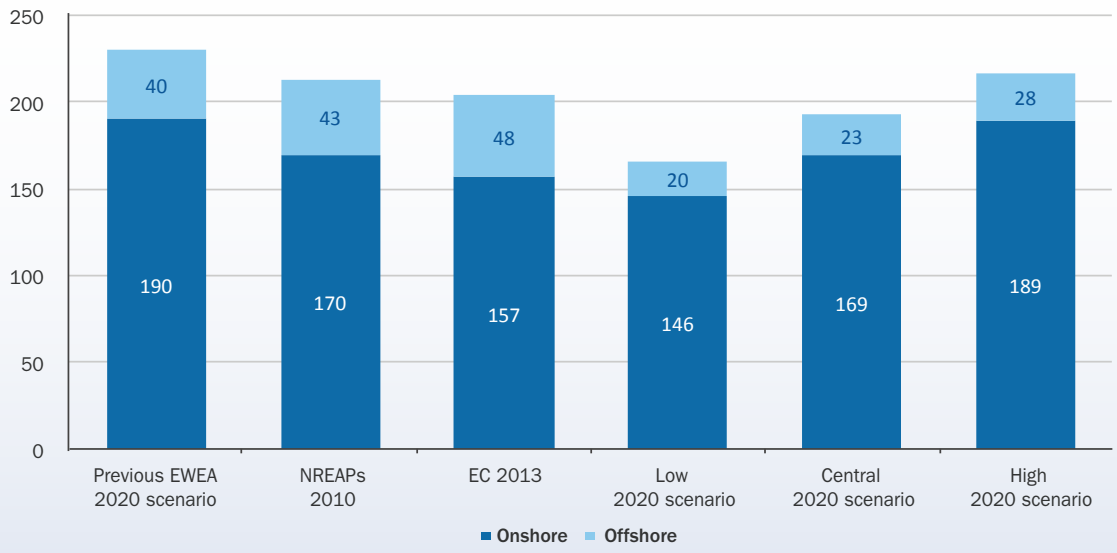
- **High scenario 2020**

  Installed capacity increases by 84.9% compared to 2013 to 217 GW. Offshore installations almost reach 28 GW. Onshore wind installations produce 397.8 TWh of electricity and offshore installations 102.2 TWh. The combined wind energy production of 500 TWh covers 17% of total EU power demand.

  Regulatory stability returns to most markets in Europe with annual installation growth rates returning to pre-2012 levels. Agreement on a strong EU climate and energy package, proposing domestic greenhouse gas reductions of 40% in 2030 compared to 1990 levels and a renewable energy target of 30% boosts installations in a number of key markets such as Germany, France, Italy and the United Kingdom. As the effects of the economic crisis fade, markets that came to a virtual standstill in 2013, such as Spain, begin to show signs of growth. Offshore installations are similar to those of the central scenario, except in Belgium, Ireland and the UK where there is some extra growth. Germany's offshore connection capacity of 7.7 GW is almost totally met.

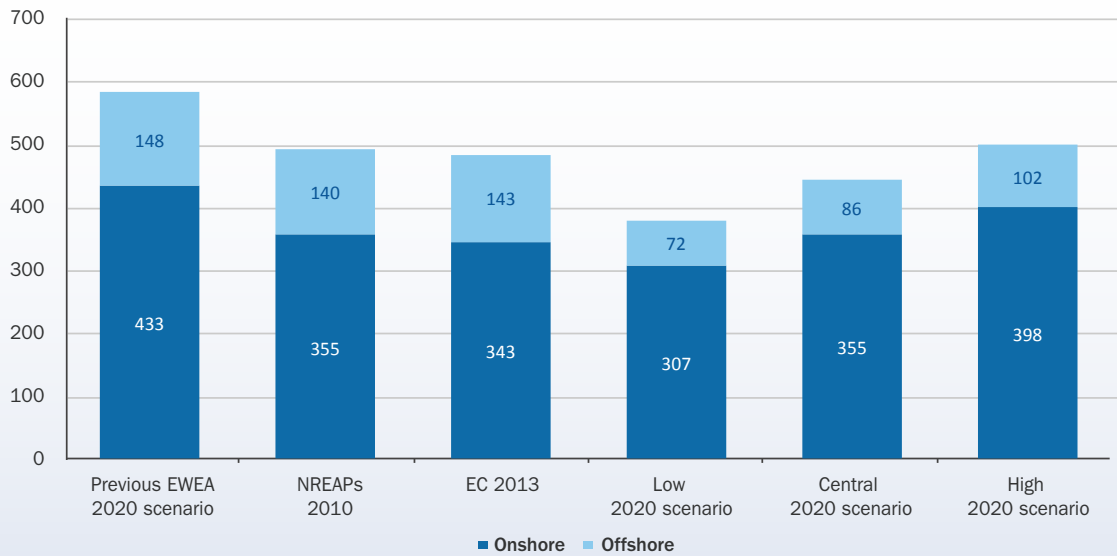
[4] Consumption being 2,956 TWh

FIGURE 1 PREVIOUS EWEA, NREAP, EC PRIMES AND NEW EWEA 2020 EU WIND POWER INSTALLATION SCENARIOS IN GW



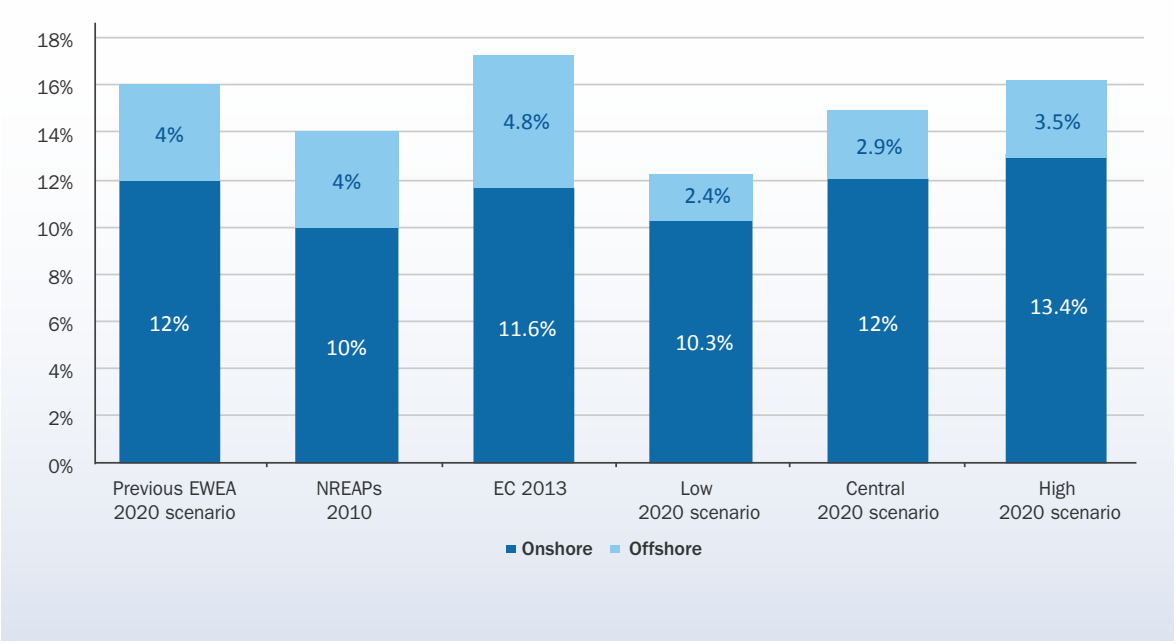
Sources: European Commission, EWEA, National Renewable Action Plans

FIGURE 2 PREVIOUS EWEA, NREAP, EC PRIMES AND NEW EWEA 2020 EU WIND ENERGY PRODUCTION SCENARIOS IN TWH



Sources: European Commission, EWEA, National Renewable Action Plans

FIGURE 3 PREVIOUS EWEA, NREAPS, EC PRIMES AND NEW EWEA 2020 SCENARIOS FOR SHARE OF WIND ENERGY IN EU ELECTRICITY CONSUMPTION



Sources: European Commission, EWEA, National Renewable Action Plans

TABLE 2 ESTIMATED EU WIND POWER INSTALLATIONS, PRODUCTION AND SHARE OF EU CONSUMPTION, AND NEW EWEA LOW, CENTRAL AND HIGH SCENARIOS

	Wind energy installations GW			Wind energy production TWh			Share of wind energy in demand %		
	Onshore	Offshore	Total	Onshore	Offshore	Total	Onshore	Offshore	Total
EWEA 2009	190	40	230	432.7	148.2	580.9	12%	4%	16%
NREAPs	170	43	213	354.9	139.8	494.7	10%	4%	14%
EC 2013	156.5	47.6	204	343.2	142.9	486.3	4.8%	11.6%	16.4%
New EWEA Low	146	19.5	165.6	306	71.9	378.9	10.4%	2.4%	12.8%
New EWEA Central	169	23.5	192.5	355.2	86.4	441.7	12%	2.9%	14.9%
New EWEA High	189.2	27.8	217	397.8	102.2	500	13.5%	3.5%	16.9%

Sources: European Commission, EWEA, National Renewable Action Plans

TABLE 3 EU WIND POWER INSTALLATIONS, ACTUAL (END 2013) AND NEW EWEA 2020 LOW, MID AND HIGH SCENARIOS IN MW

	2013 actual installations			Low 2020 scenario			Central 2020 scenario			High 2020 scenario		
	Onshore	Offshore	Total	Onshore	Offshore	Total	Onshore	Offshore	Total	Onshore	Offshore	Total
Austria	1,684	-	1,684	3,000	-	3,000	3,400	-	3,400	3,550	-	3,550
Belgium	1,079	572	1,651	2,500	1,250	3,750	3,000	1,500	4,500	3,250	1,800	5,050
Bulgaria	681	-	681	1,250	-	1,250	1,500	-	1,500	1,750	-	1,750
Cyprus	147	-	147	200	-	200	300	-	300	400	-	400
Czech R	269	-	269	500	-	500	1,000	-	1,000	1,200	-	1,200
Denmark	3,501	1,271	4,771	3,600	2,300	5,900	3,700	2,800	6,500	4000	3,000	7,000
Estonia	280	-	280	550	-	550	700	-	700	1,000	-	1,000
Finland	422	26	448	2,000	26	2,026	2,500	26	2,526	2,700	26	2,726
France	8,254	-	8,254	13,000	1,000	14,000	18,500	1,500	20,000	20,000	1,500	21,500
Germany	33,730	520	34,250	40,000	5,000	45,000	45,000	6,500	51,500	50,000	7,500	57,500
Greece	1,865	-	1,865	3,000	-	3,000	4,500	-	4,500	5,000	-	5,000
Hungary	329	-	329	500	-	500	600	-	600	700	-	700
Ireland	2,011	25	2,037	3,500	25	3,525	4,000	25	4,025	4,500	200	4,700
Italy	8,551	-	8,551	12,000	-	12,000	12,000	-	12,000	15,000	-	15,000
Latvia	62	-	62	150	-	150	200	-	200	300	-	300
Lithuania	279	-	279	500	-	500	600	-	600	800	-	800
Luxembourg	58	-	58	90	-	90	100	-	100	110	-	110
Malta	0	-	-	20	-	20	30	-	30	50	-	50
Netherlands	2,446	247	2,693	3,500	1,200	4,700	4,000	1,400	5,400	5,000	2,000	7,000
Poland	3,390	-	3,390	7,000	-	7,000	10,000	-	10,000	12,000	500	12,500
Portugal	4,722	2	4,724	5,500	25	5,525	5,700	25	5,725	6,000	25	6,025
Romania	2,600	-	2,600	3,000	-	3,000	3,200	-	3,200	3,500	-	3,500
Slovakia	3	-	3	150	-	150	300	-	300	350	-	350
Slovenia	2	-	2	30	-	30	30	-	30	50	-	50
Spain	22,954	5	22,959	24,500	5	24,505	26,000	5	26,005	28,000	5	28,005
Sweden	4,258	212	4,470	5,500	212	5,712	6,000	212	6,212	6,300	212	6,512
UK	6,850	3,681	10,531	10,000	8,500	18,500	11,500	9,500	21,000	13,000	11,000	24,000
Total EU27	110,426	6,560	116,987	145,540	19,543	165,083	165,860	23,493	191,853	188,510	27,768	216,278
Croatia	302	-	302	500	-	500	600	-	600	700	-	700
Total EU28	110,728	6,560	117,288	146,040	19,543	165,583	168,960	23,493	192,453	189,210	27,768	216,978

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About EWEA

EWEA is the voice of the wind industry, actively promoting wind power in Europe and worldwide. It has over 600 members, which are active in over 50 countries, including wind turbine manufacturers with a leading share of the world wind power market, component suppliers, research institutes, national wind and renewables associations, developers, contractors, electricity providers, finance and insurance companies, and consultants. This combined strength makes EWEA the world's largest and most powerful wind energy network.

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