

# Measuring Performance of Permitting Processes: The Wind Power Planning and Permitting Index WPPPI



### Wind Power Planning and Permitting Index:

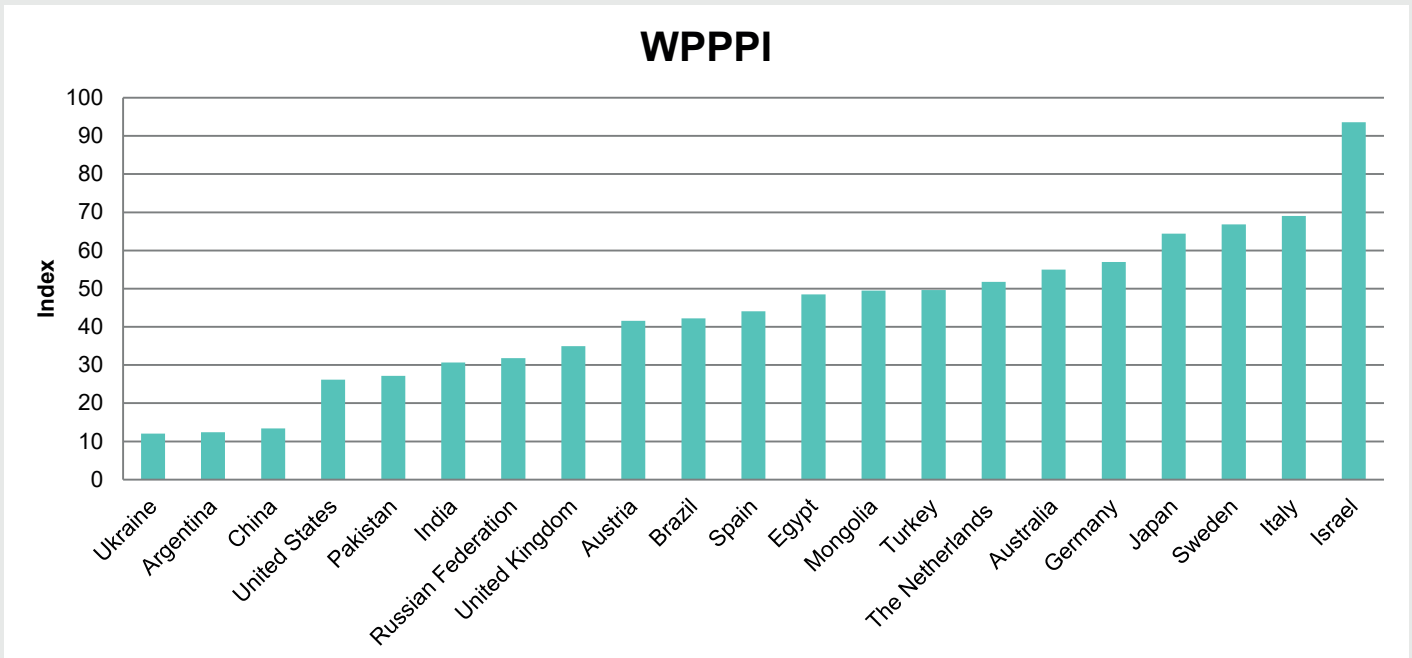
In light of the urgency to accelerate the deployment of wind power and in order to measure the implementation performance of countries, WWEA has created a Wind Power Planning and Performance Index WPPPI.

WPPPI measures the duration of the planning and permitting process as well as the predictability and reliability of these processes. The lower the WPPPI, the better the assessment of the duration of planning and permitting process. In total, 23 countries have provided data which allow to set up a ranking. Accordingly, WPPPI allows to compare them with each other - plus to evaluate potential future changes.

It is important to underline that the WPPPI is not a market performance index, as there are several other important factors which determine the wind power deployment rates, like after all the remuneration scheme.

Based on the data submitted from various countries, the global WPPPI ranking is as follows:

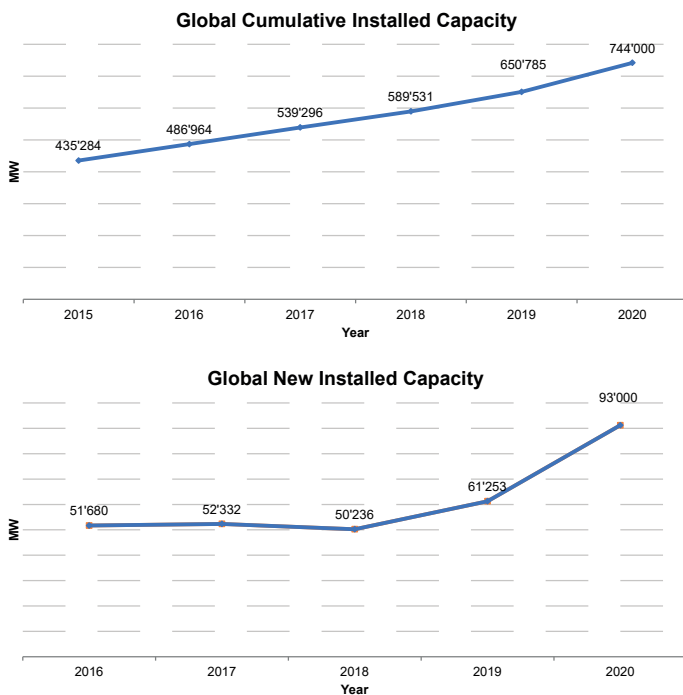
Rank	Country	WPPPI
1	Ukraine	12
	Argentina	12
3	China	13
4	United States	26
5	Pakistan	27
6	India	31
7	Russian Federation	32
8	United Kingdom	35
9	Austria	42
	Brazil	42
11	Spain	44
12	Egypt	49
	Mongolia	49
14	Turkey	50
15	The Netherlands	52
16	Australia	55
17	Germany	56
18	Japan	64
19	Sweden	67
20	Italy	69
21	Israel	94



## The importance of wind power in the global energy landscape

Wind energy has become a cornerstone of the energy supply in many countries, as an affordable and domestic energy source. Wind energy is also playing a crucial role in climate change mitigation, as wind turbines are not producing any greenhouse gases such as CO<sub>2</sub>.

As of end of 2020, the world has installed wind turbines with an overall capacity of 744 GW which produce enough power to cover around 7% of the global electricity demand. In several countries, the wind power share has reached more than 20%, in Denmark every second kilowatt-hour comes from a wind turbine.



Source: WWEA, 2021

It is obvious that in order to reach the climate targets, in particular to limit global warming below 1,5°, the global energy supply needs to come largely from renewable energy, with wind power playing a key role. According to various studies, wind power will contribute by middle of the century 40-50% of the global power demand. Taking into account that the global electricity demand will increase, this will require an around tenfold increase in the global wind power capacity.

Accordingly, the installation of wind turbines needs to be rapidly accelerated to close to 500 GW per year, which is easily doable from a technological standpoint, since current state-of-the-art wind turbines already produce up to 15 times more electricity than those installed at the begin of the century and will continue to get improved.

## Installation of wind farms: fast in principle, slower in practice

One big advantage of wind farms is that technically, wind turbines can be installed fast. The construction period of a wind farm takes only several months.

However, the technical installation and erection of a wind farm is following a longer planning process which includes a formal permitting process. During such planning and permitting process, wind farm planners do not only analyse the wind resources at the site and undertake a financial and economic due diligence of the project. Also many environmental aspects have to be analysed. This is usually done in form of an environmental impact assessment (EIA) or similar.

While in the pioneering years of modern wind power, the technology itself presented a major challenge, wind turbine technology is today well established and does not bear major risks. Nowadays the focus has shifted towards the administrative processes which are necessary to erect a wind farm, in particular assessing, planning and permitting processes.

Wind farm planners and operators from around the world have increasingly stated that such administrative processes are today getting more and more time-consuming. In some, even in major countries, no single wind turbine has got building permission in a full year, like it was reported from Italy for the year 2020.

Accordingly, WWEA decided to set up a survey in order to obtain a comprehensive picture of the duration of wind farm planning and permitting processes. WWEA send a survey to its member associations and to additional partners and experts asking for the duration of the planning process in total, from the first idea until the operation of a wind farm starts, and, more specifically, the duration of the permitting process.

The answers present a quite diverse picture, as there is a rather broad variety between the different countries. And even within some countries, there is a huge difference between individual projects.

In average, the planning process for a wind farm takes more than five years (63 months), while the permitting process alone consumes half of the time, 29 months. Such long period exceeds by far the technically necessary time and has to be rated as too long.

While in some countries, like Ukraine, China or Argentina, a wind farm can be implemented in about two

years, there are places where the whole process exceeds seven years in average, in some cases even more than ten years. And there is a very big range for wind farm planning processes, from only 16 months (best case in Germany from previous projects, which, however, according to experts does no longer correspond with the current project planning period) up to 180 months in the worst case, in Israel.

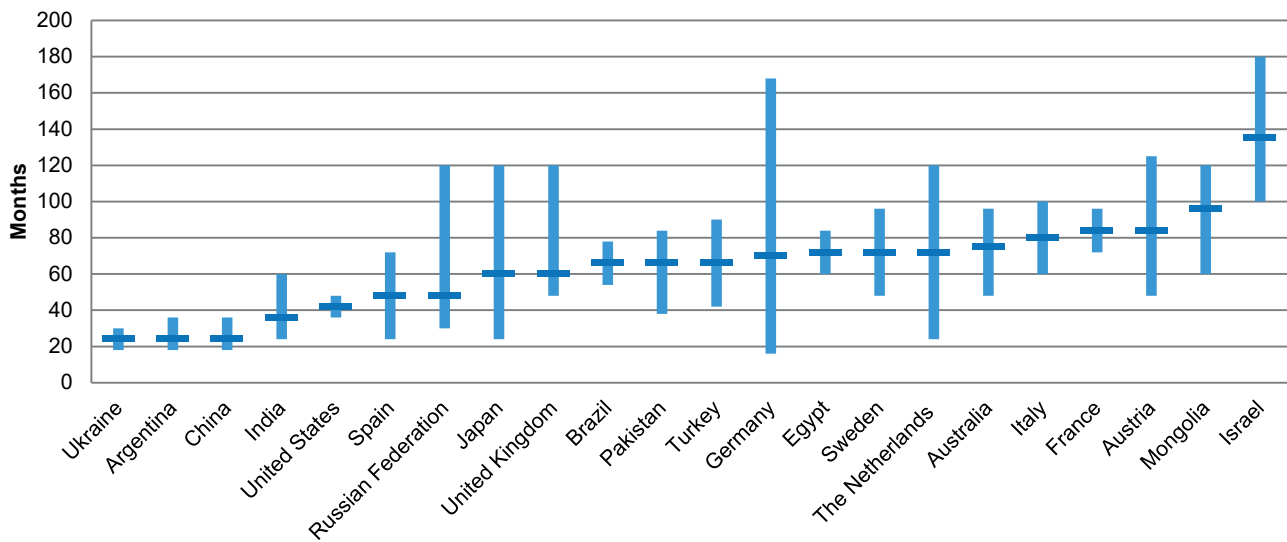
Countries performing better than the global average include next to Argentina, China and Ukraine also India, and the USA, where wind farms can be implemented in less than four years, while the longest duration of seven years and more can be observed in Israel, Mongolia, Austria, France and in Italy.

The survey also asked for the duration of only the

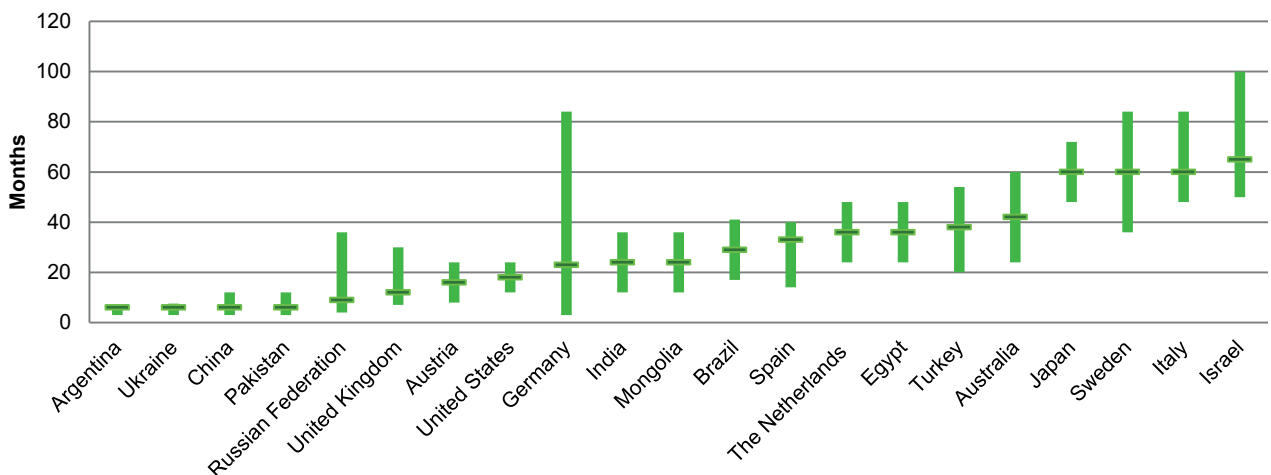
permitting process, i.e. the time from the first formal submission of a building permission application until the wind farm starts operation. Of course the overall planning process can not be seen isolated from the permitting process but is closely related as usually many documents for the permitting process are prepared in the first part of the planning process.

Here, again, big differences can be observed amongst countries, but also within countries. Ukraine, Argentina, China and Pakistan manage to issue building permits in a rather short period of time, in six months in average. The global average lies at 29 months, and is by far exceeded in Israel, Italy, Sweden and Japan, where the approval process takes five years and more. The possible duration across the globe ranges from ten days to 156 months.

**Planning (Min/Max/Avg)**



**Permitting (Min/Max/Avg)**



## Wind Power Planning and Permitting Index

The WPPPI is based on two sets of values: the planning and the permitting index. The primary criterion is the duration of the planning and permitting process in average. However, both indices take into account that major deviations between the minimum and maximum duration, especially between the average and maximum duration, increase the uncertainty for investors. Hence deviations are rated negatively (70% weight for the average value, 10% for the minimum, 10% for the maximum and 10% for the deviation between minimum and maximum). The country with the broadest deviations is Germany\* where wind farm implementation can take between 16 and 168 months, and the permitting process can last from 3 to 84 months.

As stated at the beginning of this study: Combining the planning and the permitting index, WWEA has created, as global indicator, the Wind Power Planning and Permitting Index WPPPI which evaluates the duration and reliability of these processes in the different countries and allows to compare them with each other - plus to evaluate potential future changes.

Country	PLANNING (in months)			
	Minimum	Average	Maximum	Planning Index
Ukraine	18	24	30	16
Argentina	18	24	36	17
China	18	24	36	17
India	24	36	60	27
United States	36	42	48	27
Spain	24	48	72	34
Denmark		54		40
Russian Federation	30	48	120	43
Brazil	54	66	78	44
Pakistan	38	66	84	45
Turkey	42	66	90	46
Egypt	60	72	84	47
Japan	24	60	120	49
United Kingdom	48	60	120	49
Sweden	48	72	96	50
Australia	48	75	96	51
Italy	60	80	100	54
The Netherlands	24	72	120	54
France	72	84	96	55
Austria	48	84	125	60
Germany*	16	70	168	62
Mongolia	60	96	120	65
Israel	100	135	180	93

Country	PERMITTING (in months)			
	Minimum	Average	Maximum	Permitting Index
Argentina	3	6	6	8
Ukraine	3	6	7.5	8
China	3	6	12	10
Pakistan	3	6	12	10
Russian Federation	4	9	36	20
United Kingdom	7	12	30	21
Austria	8	16	24	23
United States	12	18	24	25
India	12	24	36	34
Mongolia	12	24	36	34
Brazil	17	29	41	41
Spain	14	33	40	44
Germany	3	23	84	49
The Netherlands	24	36	48	50
Egypt	24	36	48	50
Turkey	20	38	54	53
Australia	24	42	60	55
Japan	48	60	72	80
Sweden	36	60	84	84
Italy	48	60	84	84
Israel	50	65	100	94

\* the lower numbers from Germany come from earlier projects, which, however, according to experts, no longer correspond to the current project planning period.

## How to accelerate wind power deployment rates

It has to be stated that, based on the findings of this short study in more than 20 wind power markets across the globe, wind power planning and permitting processes are far too time consuming. The in average very long duration of planning and permitting processes represents a big problem which needs to be addressed should the world seriously aim at achieving the climate and renewable energy targets. Wind power deployment rates need to be accelerated substantially.

What is the solution to this situation? Obviously there is a big range when comparing countries and projects, which shows us that some projects can be implemented in a reasonable time frame. It will be of crucial importance that the slow nations improve their WPPPI performance and take the faster countries as benchmarks. Some countries are demonstrating that reasonable duration of such processes are possible.

To accelerate wind power planning and permitting processes, WWEA recommends the following measures:

- WWEA recommends that the **permitting process should not take longer than 12 months**, so that a decision must be made no later than one year after the submission of a wind farm building application. Greater **standardisation of the approval procedures** will help to shorten their duration.
- WWEA recommends to strengthen social support for wind power by fostering models which **maximise the local share of economic and social benefits** with local communities, municipalities and citizens. Local involvement in the planning process and local (co-)ownership of wind farms are important instruments to achieve not only high local acceptance, but local support.
- Each country should set up a **monitoring process which assesses wind power planning and permitting processes** on a regular basis and identifies areas of improvement, as far as necessary also on a state/province level in order to identify more specific barriers.

## Monitoring future developments

WWEA intends to repeat this survey on annual basis and with this to establish a monitoring process which analyses whether the global situation and the situation in specific countries is getting better or worse. The WPPPI will allow to compare progress in the wind farm deployment processes.

### Data Sources:

AEE - Spanish Wind Energy Association, ANEV - Italian Wind Energy Association, APPA, Argentine Wind Energy Association AAEE, Austrian Wind Energy Association IG Windkraft, Beykent University (Turkey), Chinese Wind Energy Association, DFBEW/France Energie Eolienne, Egypt Wind Energy Association, Eólica Tecnologia (Brazil), Eurosolar Spain, Fachagentur Windenergie an Land, Falck Renewables, IDAE, Israel Wind Energy Association, Japan Wind Energy Association, Mongolian Renewables Industries Association, Neoen, Netherlands Wind Energy Association, Nordic Folkecenter, REWS India, Russian Association for the Wind Industry RAWI, Swedish Windpower Association, Ukrainian Wind Energy Association, SL Naturenergie, Sowitec, UPC\AC Renewables Australia, wpd, WWEA Pakistan



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