China Market Report 2018

GREEN RECRUITMENT COMPANY

Welcome

Matt Churchward
CEO
The Green Recruitment Company

Welcome to our China Market Report.

This report is a brief survey of the renewable energy market in China and focuses on;

- The Pipeline of Energy Projects,
- A Brief Overview of Government Policy
- The Key Developers
- EV
- Energy Storage
- Staffing Conditions

The report uses future pipeline capacity (MW) of projects that have reached financial close for its data.

If you have any questions regarding this report, or would be interested in any other research please get in contact:

+44 (0) 203 640 2130

info@greenrecruitmentcompany.com

Overview of Government Policy

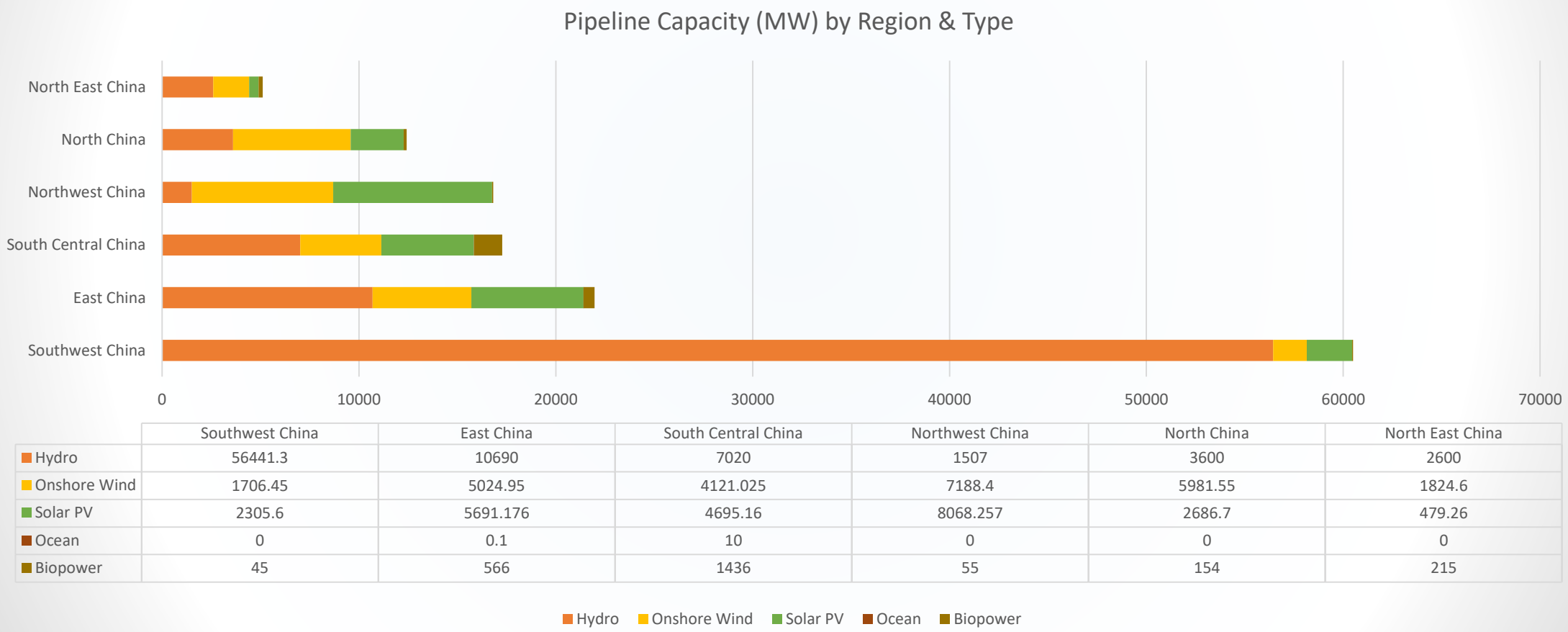
China Is the world's leading renewable energy player. The International Energy Agency (IEA) says China has one-third of the world's wind power, a quarter of its solar capacity, six of the top ten solar-panel manufacturers and four of the top ten wind-turbine makers. It sells more electric vehicles than the rest of the world combined. It also leads the world in construction of nuclear power plants. Its electricity generation from renewable sources is double that of the USA.

China's challenge is however much more internally focused, the country has significant energy demands and renewables account for roughly a quarter of power generated. For China, renewable energy is tied to a desire to reduce carbon emissions and improve the countries energy security. The current renewable energy sector was significantly shaped by 2013's "China's Action Plan for the Prevention and Control of Air Pollution". This fits a trend since 2010 of greater national coordination, in 2010 the NEC (National Energy Council) was formed filling a gap created in 1993 when the Energy and Industry Department was dissolved.

China has developed a significant competitive advantage in renewables by its expansion of its manufacturing capacity and investment in innovation. This has reduced the cost of renewable energy projects making them competitive as well as desirable. The next challenge for China is one of integration and development of infrastructure; much of the current generation capability is in remote locations in the West of the country, significant investment is being placed in grid improvements and a ten-year plan around energy storage. Economies of scale and a consistent policy of subsidies has also led to large growth in the Electric Vehicle (EVs) market, China currently has the world's largest domestic market for EVs.

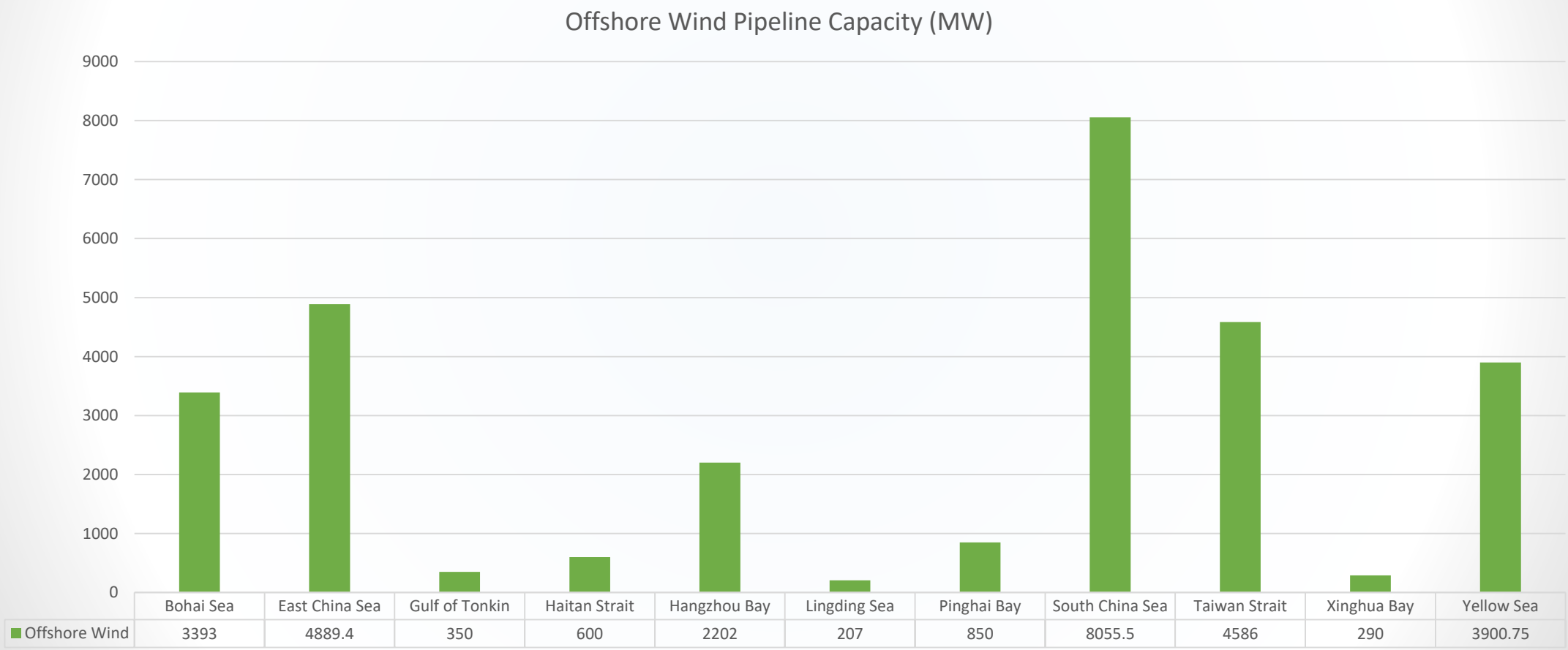
Politically ever improving renewable energy credentials are useful for China's growing soft power, already the world's leading authority on hydro, China demonstrated good global leadership on renewable energy following the US withdrawal from the Paris agreement. This may lead to a greater rapprochement between the EU and China (a previous dispute on solar panel prices was settled in 2014) though clean tech is likely to be an increasing trade battleground between China and the US.

Pipeline Capacity by Region & Type (excl. Offshore Wind)



	Southwest China	East China	South Central China	Northwest China	North China	North East China
Hydro	56441.3	10690	7020	1507	3600	2600
Onshore Wind	1706.45	5024.95	4121.025	7188.4	5981.55	1824.6
Solar PV	2305.6	5691.176	4695.16	8068.257	2686.7	479.26
Ocean	0	0.1	10	0	0	0
Biopower	45	566	1436	55	154	215

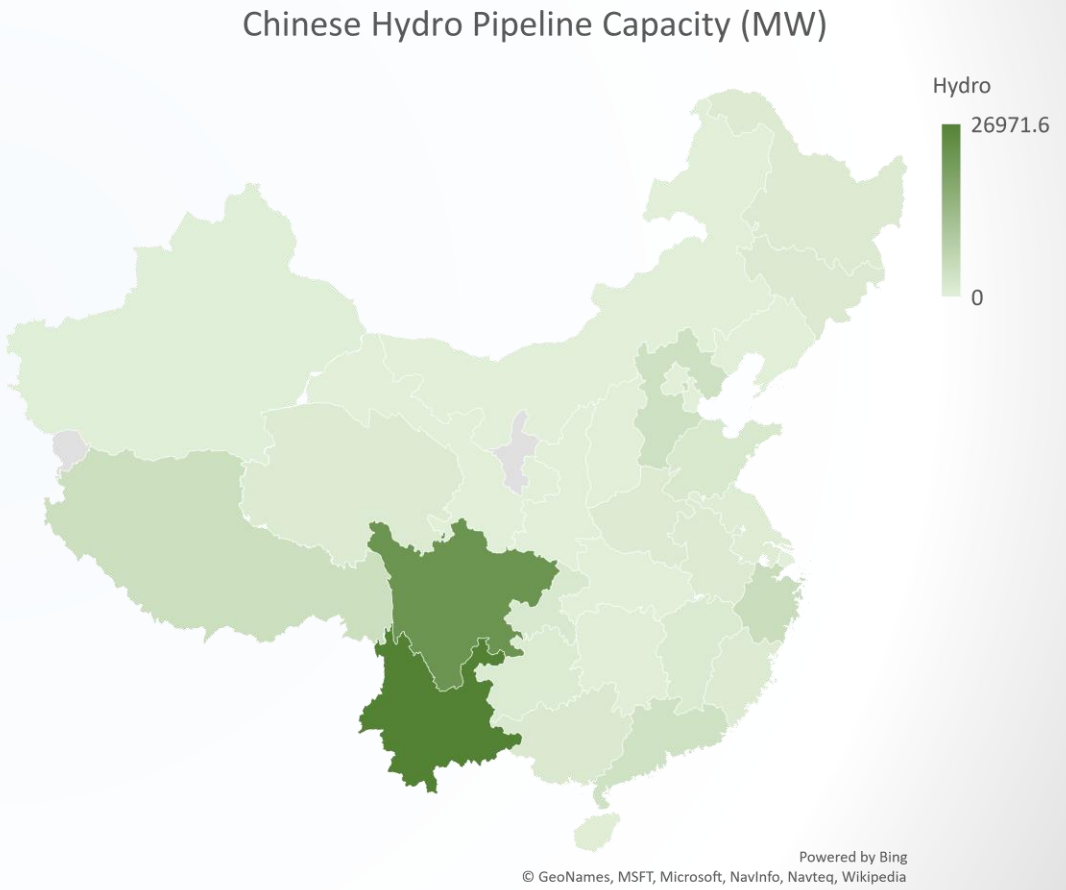
Offshore Wind Pipeline Capacity (MW) by Body of Water



	Bohai Sea	East China Sea	Gulf of Tonkin	Haitan Strait	Hangzhou Bay	Lingding Sea	Pinghai Bay	South China Sea	Taiwan Strait	Xinghua Bay	Yellow Sea
Offshore Wind	3393	4889.4	350	600	2202	207	850	8055.5	4586	290	3900.75

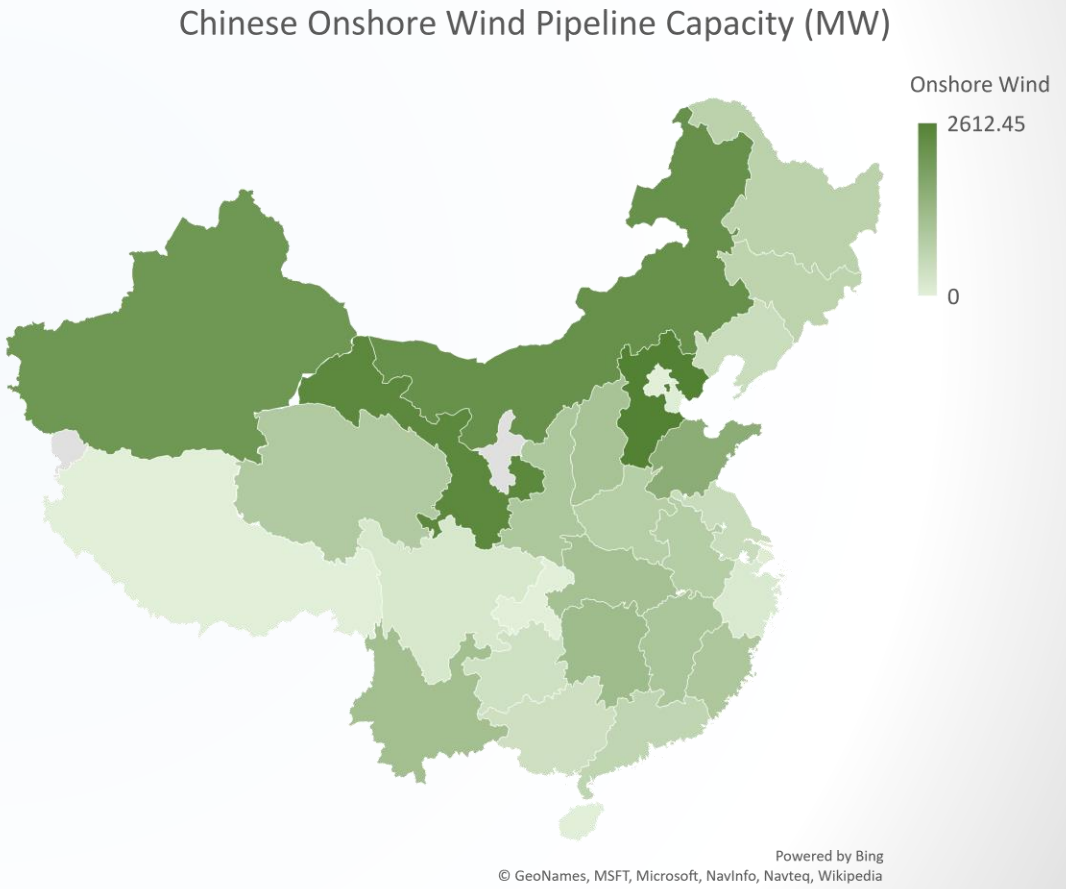
Hydro Pipeline Capacity (MW)

Province/Region	Hydro
Anhui Province	1200
Beijing Municipality	0
Chongqing Municipality	1725
Fujian Province	1200
Gansu Province	12
Guangdong Province	3400
Guangxi Zhuang Autonomous Region	1600
Guizhou Province	1060
Hainan Province	600
Hebei Province	3600
Heilongjiang Province	1200
Henan Province	1200
Hong Kong Special Administrative Region	0
Hubei Province	0
Hunan Province	220
Inner Mongolia Autonomous Region	0
Jiangsu Province	750
Jiangxi Province	1240
Jilin Province	1400
Liaoning Province	0
Macau Special Administrative Region	0
Ningxia Hui Autonomous Region	0
Qinghai Province	1200
Shaanxi Province	0
Shandong Province	1800
Shanghai Municipality	0
Shanxi Province	0
Sichuan Province	22431.3
Tianjin Municipality	0
Tibet Autonomous Region	4253.4
Xinjiang Uyghur Autonomous Region	295
Yunnan Province	26971.6
Zhejiang Province	4500



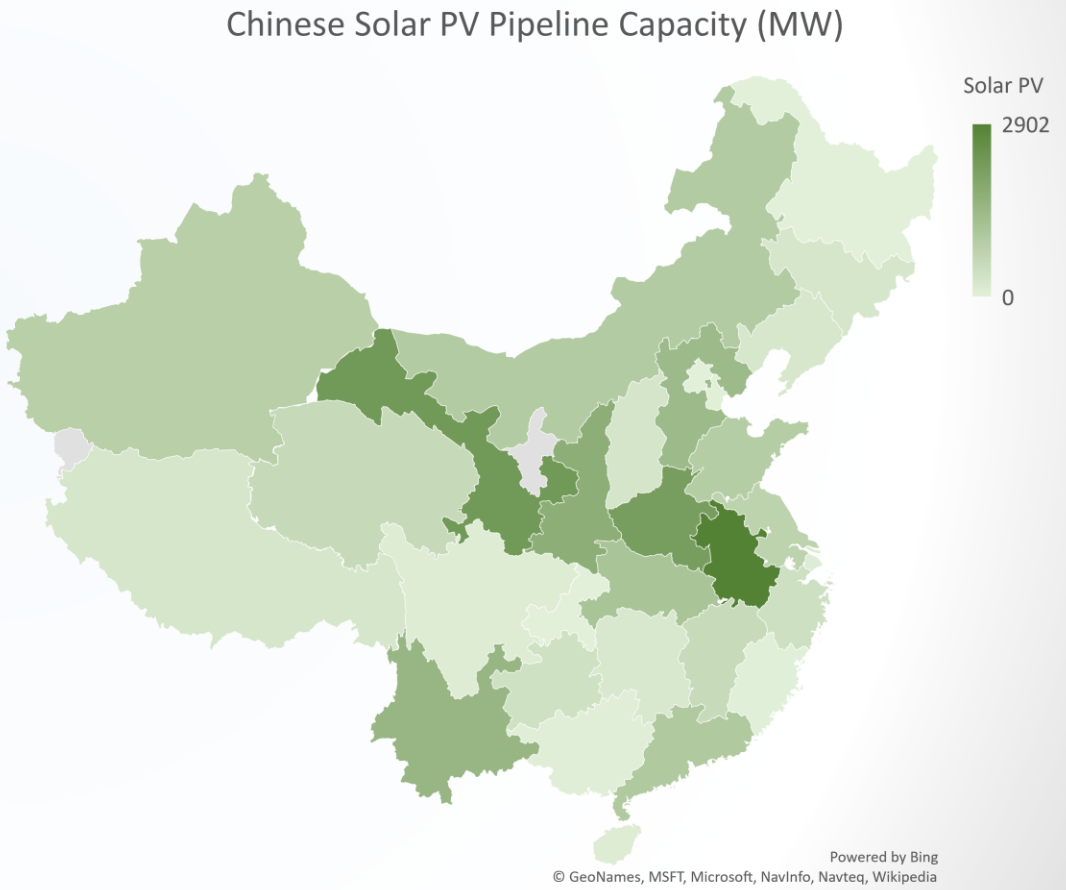
Province/Region	Onshore Wind
Anhui Province	816
Beijing Municipality	0
Chongqing Municipality	0
Fujian Province	965.55
Gansu Province	2448.5
Guangdong Province	630
Guangxi Zhuang Autonomous Region	377
Guizhou Province	367
Hainan Province	0
Hebei Province	2612.45
Heilongjiang Province	708.5
Henan Province	793.2
Hong Kong Special Administrative Region	0
Hubei Province	1095.125
Hunan Province	1225.7
Inner Mongolia Autonomous Region	2247.6
Jiangsu Province	455.6
Jiangxi Province	994
Jilin Province	671
Liaoning Province	445.1
Macau Special Administrative Region	0
Ningxia Hui Autonomous Region	795.4
Qinghai Province	899
Shaanxi Province	949
Shandong Province	1588.1
Shanghai Municipality	60
Shanxi Province	1073.5
Sichuan Province	200.2
Tianjin Municipality	48
Tibet Autonomous Region	0
Xinjiang Uyghur Autonomous Region	2096.5
Yunnan Province	1139.25
Zhejiang Province	145.7

Onshore Wind Pipeline Capacity (MW)



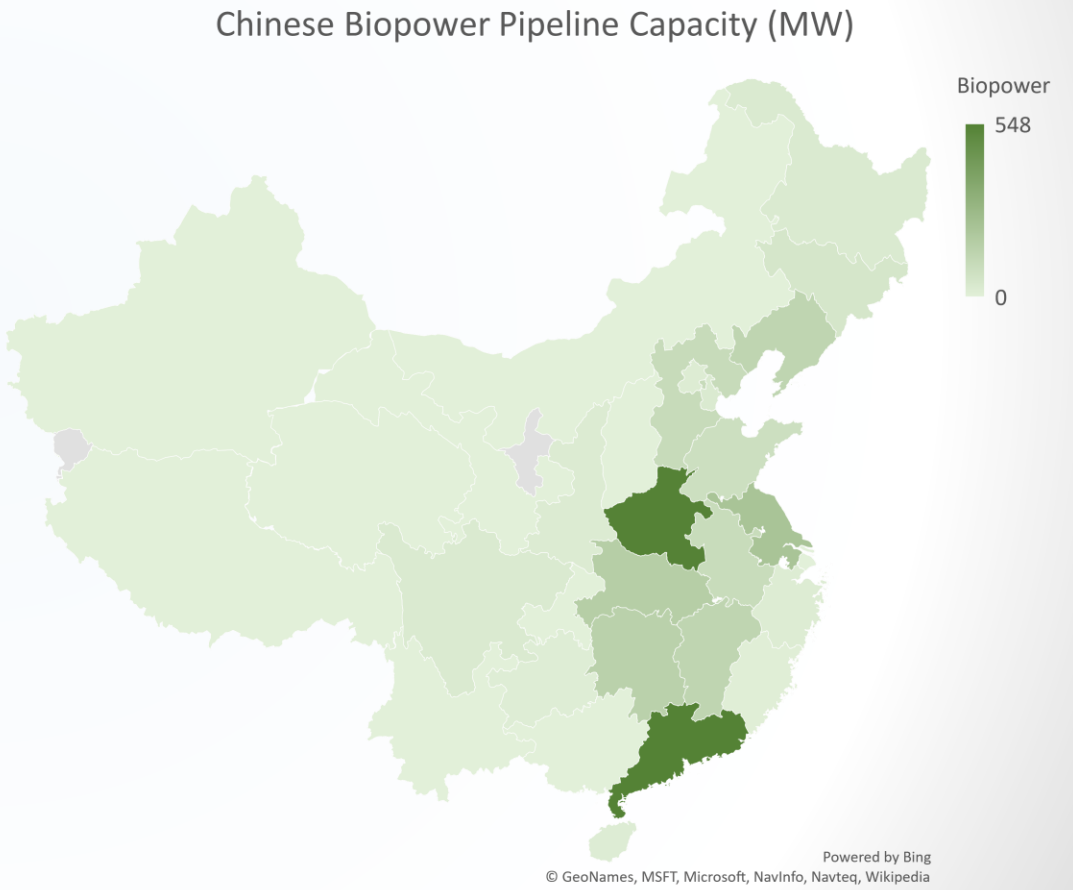
Solar PV Pipeline Capacity (MW)

Province/Region	Solar PV
Anhui Province	2902
Beijing Municipality	0
Chongqing Municipality	0
Fujian Province	36.3
Gansu Province	2305.537
Guangdong Province	1022.67
Guangxi Zhuang Autonomous Region	40
Guizhou Province	404.72
Hainan Province	100
Hebei Province	1402.4
Heilongjiang Province	0
Henan Province	2164.09
Hong Kong Special Administrative Region	0
Hubei Province	1168.4
Hunan Province	200
Inner Mongolia Autonomous Region	976.3
Jiangsu Province	758.25
Jiangxi Province	555.708
Jilin Province	255.16
Liaoning Province	224.1
Macau Special Administrative Region	0
Ningxia Hui Autonomous Region	2588
Qinghai Province	570.78
Shaanxi Province	1741.94
Shandong Province	915.3
Shanghai Municipality	95.518
Shanxi Province	280
Sichuan Province	107.91
Tianjin Municipality	28
Tibet Autonomous Region	273
Xinjiang Uyghur Autonomous Region	862
Yunnan Province	1519.97
Zhejiang Province	428.1



Province/Region	Biopower
Anhui Province	99
Beijing Municipality	20
Chongqing Municipality	0
Fujian Province	9
Gansu Province	0
Guangdong Province	548
Guangxi Zhuang Autonomous Region	0
Guizhou Province	15
Hainan Province	18
Hebei Province	104
Heilongjiang Province	30
Henan Province	546
Hong Kong Special Administrative Region	0
Hubei Province	169
Hunan Province	155
Inner Mongolia Autonomous Region	0
Jiangsu Province	219
Jiangxi Province	135
Jilin Province	50
Liaoning Province	135
Macau Special Administrative Region	0
Ningxia Hui Autonomous Region	30
Qinghai Province	0
Shaanxi Province	25
Shandong Province	84
Shanghai Municipality	0
Shanxi Province	0
Sichuan Province	30
Tianjin Municipality	30
Tibet Autonomous Region	0
Xinjiang Uyghur Autonomous Region	0
Yunnan Province	0
Zhejiang Province	20

Biopower Pipeline Capacity (MW)



Key Owners by Pipeline

Hydro

China Three Gorges Corp
26200 MW in pipeline capacity

State Grid Corporation of China
5600 MW in pipeline capacity

State Grid Xin Yuan Co., Ltd.
4800 MW in pipeline capacity

Huaneng Lancang River Hydropower Co., Ltd.
3740 MW in pipeline capacity

Onshore Wind

China Huadian Corp Ltd
1365.35 MW in pipeline capacity

China Resources Power Holdings Co Ltd
1151.4 MW in pipeline capacity

State Power Investment Corp
879.5 MW in pipeline capacity

China Datang Corp
781.5 MW in pipeline capacity

Concord New Energy Group Ltd
672.4 MW in pipeline capacity

Solar PV

GCL-Poly Energy Holdings Ltd
1344.35 MW in pipeline capacity

Guangdong No.2 Hydropower Engineering Co Ltd
1018.54 MW in pipeline capacity

Fujian Energy Group Co Ltd
1000 MW in pipeline capacity

Xi'an Longji Silicon Materials Co., Ltd
520 MW in pipeline capacity

Biopower

China Everbright International Limited
586 MW in pipeline capacity

Shenzhen Energy Environmental Engineering Co Ltd
300 MW in pipeline capacity

Offshore Wind

China Guangdong Nuclear Wind Power Co Ltd
3000 MW in pipeline capacity

China Huaneng Group
1702 MW in pipeline capacity

Electric Vehicles

Brief Overview

EVs

China has 487 Electric Vehicle manufacturers and the sector is growing twice as fast as in the USA. Government policy with the “Made in China 2025” initiative provides manufacturers with significant support and incentive to continue to grow the sector. This includes a $47bn investment by the Development and Reform commission, alongside numerous regional and provincial schemes.

The Chinese Government is currently pushing EV use as a way of reducing carbon emissions and has been offering subsidies to buyers of EVs of up to 110,000 yuan per unit. The Government have also supported a vast expansion of the charging network with plans to build 120,000 charging stations by 2020.

By 2025 it is anticipated that there will be 5.49m EV sales a year, compared to 0.21m in 2015. The focus of the industry is currently domestic, part of the “Made in China 2025” initiative is to ensure that 70% of the domestic EV market is controlled by domestic suppliers. At present Tesla is the leading foreign manufacturer in China (17% of its foreign sales are made in China). However, there is a reasonable expectation that the current macro-economic environment may work against foreign firms cracking the Chinese EV market, especially US ones.

Domestic production has kept Chinese EVs price competitive against petrol fuelled cars, a distinct advantage over the US where EVs struggle to be price competitive against petrol fuelled cars. China has internally resolved a significant challenge for the sector, how to get cost conscious consumers to use a more ethical product.

It is unlikely that the Chinese domestic market will continue with the large number of firms largely due to the R&D costs in the sector. The next few years is likely to see consolidation and mergers amongst different players and the emergence of larger operations. A contributing factor to this will be the point at which the government ends subsidies for the sector, this may see manufacturers receive significantly lower returns on investments. Evidence for this can be seen the ending of subsidies for buyers who purchase EVs with a range below 150km.

Energy Storage

China has been slower to push energy storage than several other advanced economies, with the US, Australia, and Germany the world leaders. However, the next five years could see China eclipse all of these countries with a range of ambitious energy storage plans, taking them to second place in storage capacity by 2022.

The direction of travel is obvious; In 2018 China deployed more energy storage than in all previous years combined. Crucial to this approach is the level of integration that China is undertaking in developing its energy storage, its gigafactories are supported by housing & infrastructure, extensive R&D and links to universities for staff development.

In 2018 there were four provinces that offer good case studies of Chinese strategy in energy storage; Jiangsu (switching to modern energy storage), Henan (grid focused smoothing of variable wind and solar power), Qinghai (storage that integrates wind, solar and hydro) and Shanxi (pairing thermal generation with energy storage). The overall picture is that China is pursuing not only a vast increase in energy storage capacity but also far greater diversity.

China sits in the sweet spot for a rapid growth in energy storage, it has the natural resources and existing manufacturing competency as a leading producer of batteries and a booming EV sector that needs innovation in battery technology. Currently the focus has been on demonstration projects but that will soon give way to large scale deployments.

The existing schemes should be seen in the context of a national R&D project, generating the data needed to take forward energy storage on the national level. Whilst China will get to second place in the world by 2022, it is the fiver years after from 2022-2027 where the real boom may occur.

Staffing Your Projects

Staffing, Local Conditions & Other Topics

Staffing

Most international placements within China take place through international secondments in foreign invested firms (secondment). That said there are opportunities in Chinese companies (direct hiring), but these will usually require a knowledge of Mandarin. The economy is still growing, but there is fierce competition for graduate level roles and above. A foreign national that works for a Chinese company (direct hire) is subject to all PRC employment laws, there are far fewer requirements for foreign nationals operating under a secondment.

For international candidates looking to work in China, it is important to have a recruiter that is able to network on their behalf, many jobs in China are not formally advertised. Roles will require several interviews before a decision is made. The direct hiring process will require a visa process involving both the PRC entity and the candidate. Costs vary from region to region. The visa process actively encourages high skilled migrants to work in China and have their own visa category (category A).

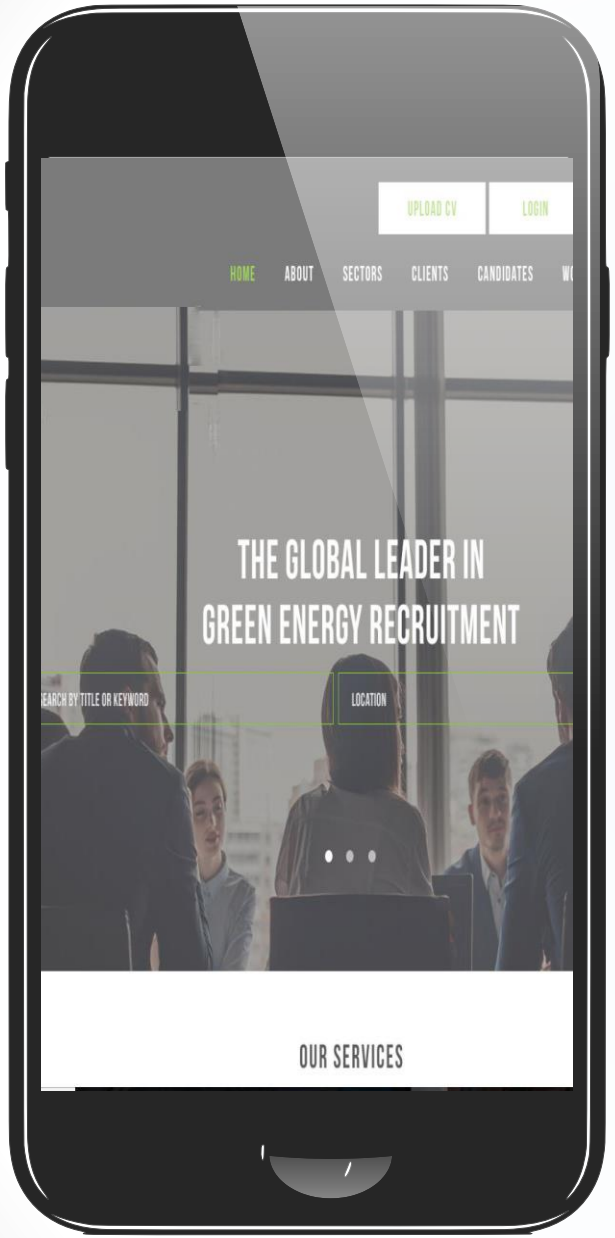
When hiring Chinese nationals, those currently employed need to provide 30 days' notice or three days if still in probation. A key difference between staffing practice in China and elsewhere is the difference between employees and freelancers. In the PRC a freelancer is classed as a labour service provider; labour services are not governed by the PRC Labour Law, Employment Contract Law, Social Security Law, and other employment-related regulations.

There are a number of incentives in the employment process, with several subsidies supporting employers who employ disabled staff.

There are limitations on what information can be gathered by an employer as background checks for a candidate and these must directly relate to the employment sought.

International employers should be aware that collective wage agreements are common in China and generally encouraged, whilst minimum wages are set at regional level. Working hours fall into three types; standard working hours (40 per week), Comprehensively calculated working hours (calculated over a set time interval e.g. a month or a quarter) and flexible working hours (limited to set professions and the worker works the hours needed to deliver the work). Holiday entitlement includes 11 public holidays as well as a sliding scale of entitlement linked to tenure in post.

Contact Us



Thank you for taking the time to read our China Market Report. We regularly create reports on the Green Energy space so if you're interested in seeing other reports or want to discuss our services then please get in touch:

info.cn@greenrecruitmentcompany.com
+86 (0) 10 6482 3419