PART OF PHAIDON INTERNATIONAL

LVI ASSOCIATES

RENEWABLE ENERGY

INDUSTRY INSIGHTS

Salary Guide 2023
Renewable Energy Japan

Overview of the **Renewable Energy Market in Japan**

> **Japan's energy policy is rooted in the concept of the energy mix, which encompasses safety, energy security, economic efficiency, and environmental sustainability (S+3E). This policy aims to enhance energy self-sufficiency.**

The share of renewable energy in Japan's energy mix reached 22.7% in 2022, comprising of 9.9% from solar energy, 4.6% from biomass, 0.85% from wind energy, 0.25% from geothermal energy, and 7.1% from hydropower. The country's energy supply is projected to reach 430 million kW by FY 2030-31, with an approximate distribution of 31% from oil, 22-23% from renewable energy, 18% from natural gas, 9-10% from nuclear power, and 1% from hydrogen and ammonia.

Amidst the global surge in energy prices and uncertainty around energy costs, driven by efforts to reduce dependence on Russian fossil fuels in response to the Russian/Ukraine war, Japan has heightened its emphasis on domestic energy production, with a particular focus on expanding renewable energy sources. In February 2023, the Japanese government officially approved the Green Transformation (GX) Basic Policy. To reinforce the expansion of renewable energy, all government ministries and agencies have crafted an Action Plan. As part of the objectives outlined in the 6th Basic Energy Plan, Japan is striving to achieve a renewable energy share of 36-38% by 2030.

Overview of the **Renewable Energy Market in Japan**

Under the Act of Promotion of Green Transformation (GX), the government is providing substantial support through pre-emptive investments. The total public and private sector investment budget for the next decade is set at 150 trillion yen ($1.06 trillion), with 60 trillion yen allocated for the widespread adoption of renewable energy, hydrogen, and ammonia. The government itself is committing 20 trillion yen, of which 6-8 trillion yen will be directed towards boosting hydrogen and ammonia demand in the market and promoting renewable energy. The plan for 2030 involves the implementation of 104-118 GW of solar energy, 10 GW of offshore wind energy, and 3 million tons of hydrogen and ammonia.

According to a 2023 report by Fuji Keizai Group, the green energy market is anticipated to surge to 2.28 trillion yen by 2035, marking a 16.3-fold increase from 2021[1]. The solar energy generation system market, while declining, still commands a 60% share, and mass production is expected to drive down prices over the long term. Major consumption forms include non-Feed-in-Tariff/Feed-in-Premium (FIT/FIP) private household self-consumption, Power Purchase Agreements (PPA), self-consignment, and electricity sales business. In the wind energy sector, offshore energy systems are set to gain wider acceptance, compensating for the shrinking solar market. By 2035, the renewables market is forecasted to reach 1.59 trillion yen.

In pursuit of the 2050 carbon-neutral objectives, hydrogen and ammonia have come into focus as alternative energy sources to oil, coal, and natural gas. The Japanese government is aiming to achieve a 1% share of hydrogen and ammonia power by 2030, with estimates indicating an increase to 9% by 2050. By 2030, mixed and mono hydrogen combustion in gas-fired power generation is expected to account for 30%, while mixed ammonia combustion in coal-fired thermal power generation is projected to reach 20%. Ammonia is categorized as “green” if produced from water electrolysis, and “blue” if produced from gas. It holds promise for zero-emission energy generation and decarbonization through carbon dioxide capture, storage, and effective utilization. Japan also anticipates reaching 7.4-8 million kW in geothermal energy by 2050 thanks to the country’s technological advancements and capabilities in the field.

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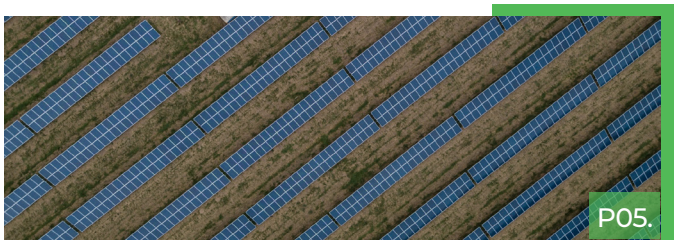
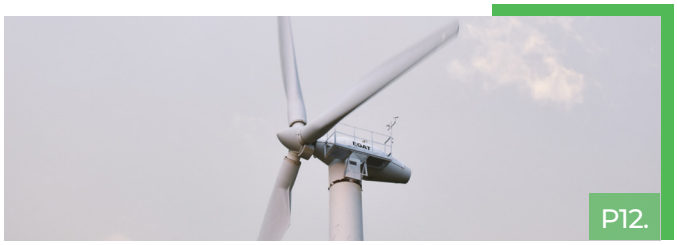
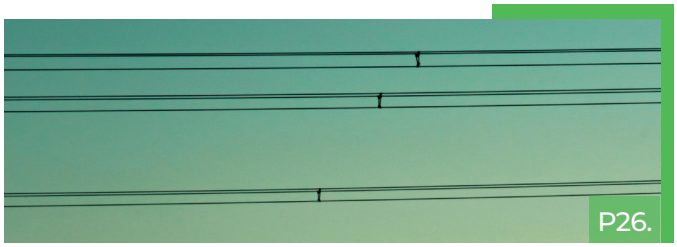


Solar



Offshore Wind

Onshore Wind



Energy Storage

Solar
JAPAN

Overview of the **Solar Market in Japan**

According to the 2023 report issued by METI (the Ministry of Economy, Trade and Industry of Japan), as of the end of 2022, Japan had installed 80.6 GW of solar energy capacity, with an additional 8.9 GW of non-operated energy volume under FIT/FIP[2]. In the 2030 energy mix, Japan's share of renewable energy is expected to reach 36-38%. Solar energy accounts for 14-16% of this, which translates to an estimated installation of 129-146 billion kWh. Furthermore, in 2022, an additional 0.5 GW of non-FIT/FIP capacity was confirmed.

The cost of solar power generation is anticipated to remain relatively consistent across locations, making households and private companies the primary segments adopting solar energy. Solar energy generation is categorized into "building" type and "ground" type, with the Ministry of Environment identifying high potential for installing solar systems in single-family houses for the former and cultivated fields, including abandoned farmlands, for the latter.

The scale of solar power adoption in Japan is on par with that of China, France, and the USA, although it's approximately half of what is observed in the UK, Germany, and Spain. However, Japan distinguishes itself as a global leader in solar energy installation per unit of land area, surpassing Germany.

At the policy level, local renewable energy installation is being actively promoted, and is mainly being achieved through the installation of solar panels on public facilities, residential buildings, plants, warehouses, airports, railways, and community-led renewable energy initiatives.

Next-generation solar batteries have also gained significant attention. In particular, the Green Innovation Fund supports the social implementation of perovskite solar cells (PSC), known for their lightweight nature and impressive performance in terms of conversion efficiency and durability.

Investments of 8 billion yen are planned for 2022-2025 to develop experimental labs, with an additional 12 billion yen allocated for scaling up production. PSC technology, which originated in Japan, has positioned the country as the world's second-largest producer of iodine, a critical component for this technology. Solar energy harnessed through solar batteries holds promise as a domestic renewable energy source and is expected to enhance domestic technological self-sufficiency.

Overview of the **Solar Market in Japan**

In 2021, there were nearly 5,423 registered solar energy enterprises in Japan, with a total market value of 22.5 trillion yen (15 trillion dollars). While this represents a significant decline compared to the pre-COVID-19 period, the market is currently on a growth trajectory. Solar energy generation transitioned to the fixed amount purchase (FIP) system in April 2022, wherein solar energy is purchased at premium prices. This shift impacted small-scale commercial facilities (10-50 kW), which transitioned from fixed-price full purchasing systems to excess electricity purchase systems. For large-scale operators with generation capacities exceeding 250 kW, a tender system was implemented, likely resulting in a reduction in the number of players and the general market decline.

Solar panel prices are on a continuing downward trend. However, despite offering a 10% return on investment (ROI) for renewables, profit margins are shrinking, and the market environment has become increasingly challenging. We anticipate significant growth in the solar energy generation system and battery markets, particularly in the demand for residential solar generation systems. Japanese companies are actively engaged in the development of efficient small solar battery modules, which promise to enhance generation capacity. These modules have demonstrated an impressive 20% energy conversion efficiency, representing a 6% improvement over previous equipment. Furthermore, there is significant potential for businesses to supply surplus electricity generated from solar facilities installed on condominium rooftops to external companies.

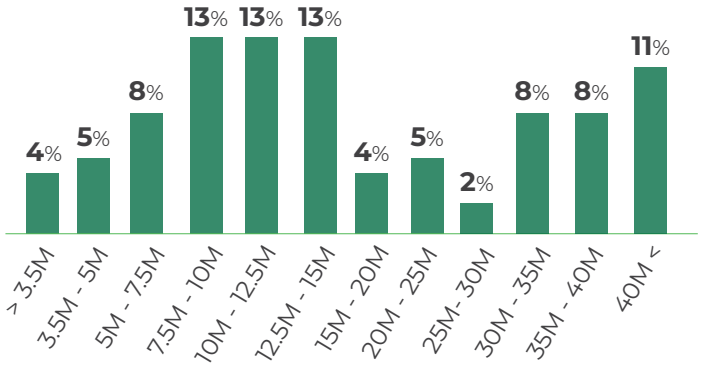
Japan - **Solar**

BASE SALARY

According to the solar energy professionals we surveyed in Japan, 39% of respondents earned a basic salary of between 7.5-15 million yen, followed by 16% earning 30-40 million yen, and 11% earning over 40 million yen. This is significantly higher compared to the average annual salary of 4.16 million yen in Japan's electric, gas and energy industries.

Besides the fact that solar energy is a considered to be a cutting-edge field, highly skilled professionals are choosing solar energy as field for employment due to these higher salaries.

What is your current annual base salary in YEN?



KEY: **YEN**

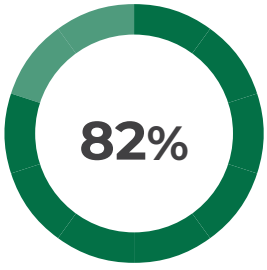
YEARLY BONUSES

According to our survey results, 82% of Japan's solar energy professionals have received a bonus in the past 12 months, and 25% of those received 6-10% of their base salary as a bonus. On average this is equal to one month's salary, which is quite low compared to the bonuses worth 3-6 months' salary often received in the oil industry. Taking Japan's renewable energy policy goals into account, renewables companies face a need to design more competitive bonus packages to make them more attractive to professionals than conventional energy companies.

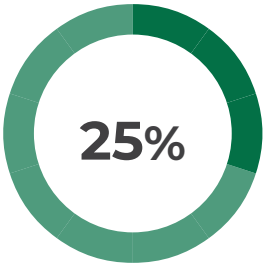
YEARLY BASE INCREMENT

Our survey showed that 75% of Japan's solar energy professionals received an increment this year, and 20% of those received a 6-10% increment to their salary. The average percentage of professionals that received an increment across all of Japan is 66.6%[3], so solar energy companies fall within the average range.

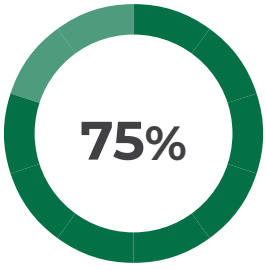
According to the Finance Bureau's survey, "Trends in Wage Growth in Local Businesses", in 2023 the most common salary increment rate was more than 3%[4], indicating that energy companies also fall within the average range for the value of their salary increments.



of solar energy professionals in Japan have received a bonus.



have received a 6-10% bonus this year.



have received a yearly increment.

have received 6-10% yearly increment.

Japan - **Solar**

BENEFITS

The most common benefits offered to Japan's solar energy professionals are travel allowances, a statutory superannuation, and extra holiday such as charity days, birthday leave, and anniversary leave.

These are some of the most desirable benefits for employees in Japan. Organizations that offer a wide range of fulfilling benefits will help to attract more highly skilled professionals, and increase employee satisfaction and retention.

Travel Allowance

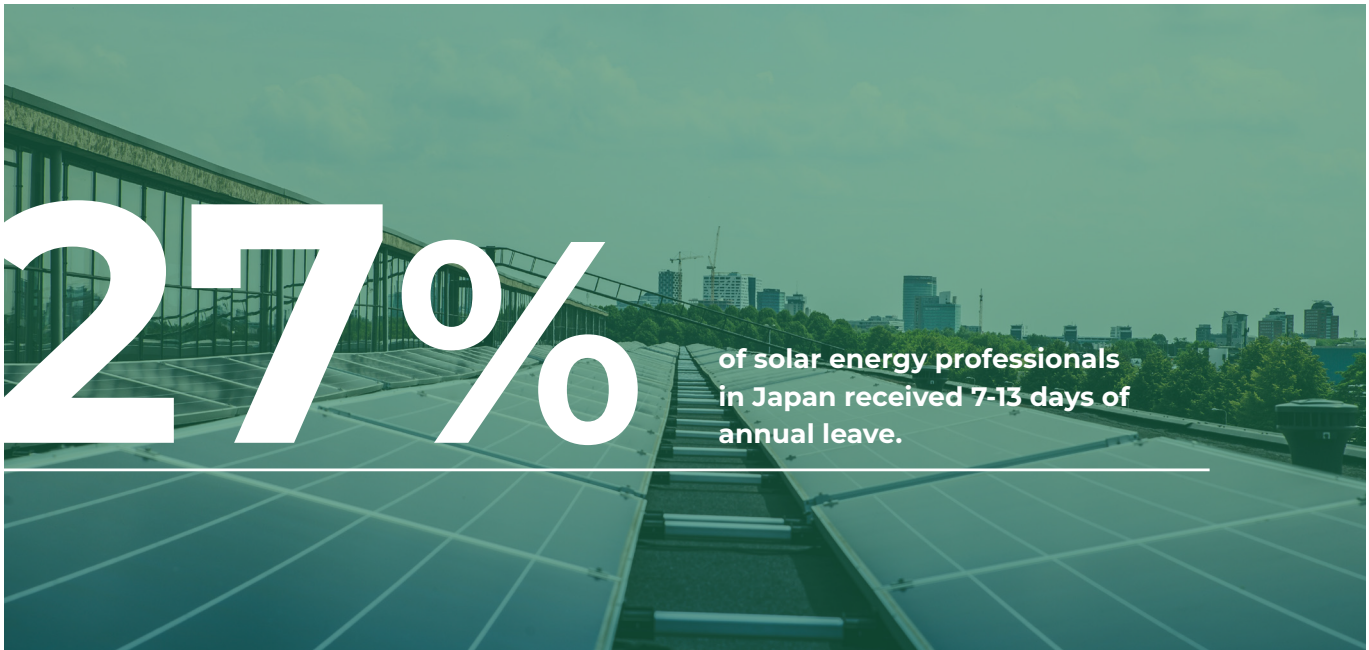
Statutory Superannuation

Extra Holiday

LEAVE

27% of our surveyed solar energy professionals received 7-13 days of paid annual leave. 66% could take parental leave, and 15% of those were offered 28-35 days' parental leave.

In comparison, the average length of paid annual leave offered by electric and gas companies is 15 days according to the Statistics Bureau of Japan, and 76.8% are taking it[5]. This rate is higher than in other industries, so increasing leave allowances could be a way for solar energy companies to improve their talent attraction and retention.



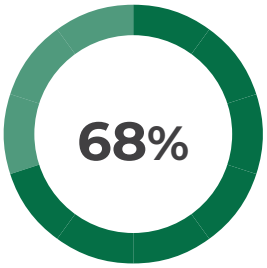
Japan - **Solar**

FLEXIBILITY

68% of our surveyed solar energy professionals received flexible working hours. 69% were offered flexibility with remote working, and 22% worked remotely two days a week. 67% said that flexible working/working from home is an important or very important factor when considering a new job.

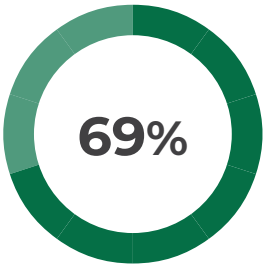
According to research by the Ministry of Health, Labour and Welfare, only 6.1% of companies are implementing flexible time systems in Japan, but for companies with more than 1000 employees the rate is 28.7%[6], highlighting that flexible working is easier to implement for larger companies and could be an effective measure to improve employee attraction and retention.

Flexible working hours



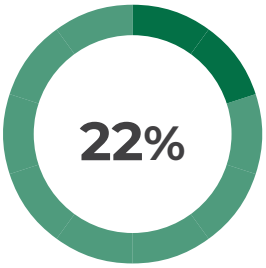
of solar professionals in Japan have flexible working hours in their current role.

Remote working



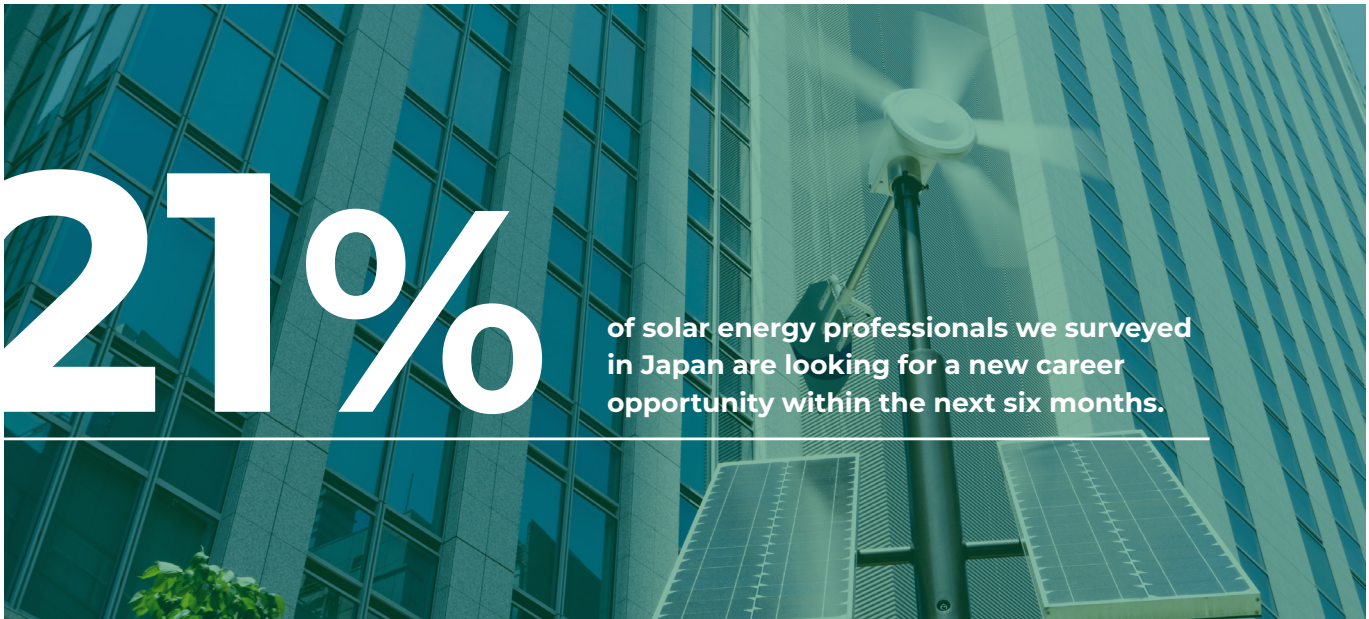
received flexibility in remote working.

Remote working days



have 2 days a week of remote working.

Are **solar energy professionals** in Japan planning to change jobs?



Japan - **Solar**

WHAT ARE THEY LOOKING FOR?

Top three PULL factors
What makes solar energy professionals in Japan consider a new career opportunity?

1. Convenient and accessible location
2. Enhanced role, management, or company opportunities
3. Better workplace culture

Top three PUSH factors
What are the reasons that solar energy professionals in Japan would change a job?

1. Poor work life balance
2. Limited accessibility and transportation challenges
3. Feeling unchallenged

FACTORS BEYOND SALARY IN ACCEPTING A JOB OFFER

EQUITY/SHARES

32%

of solar professionals in Japan would accept a lower base salary for more shares/equity.

PAY RISE

32%

are looking for a 11-15% pay rise in their next role.

FLEXIBLE WORKING

67%

find flexible working/ working from home important or very important when considering a new job.

AND...

70%

of them will still accept a new job offer that requires them to come into the office full time.

Offshore Wind

JAPAN

Overview of the **Offshore Wind Market in Japan**

As of the end of 2022, the total offshore wind power capacity in Japan, including approved but non-utilized capacity under FIT/FIP and capacity from public bidding under the Renewable Energy Sea Area Utilization Act, reached 4.4 GW. There are plans to increase this capacity to 5.7 GW by 2030, positioning offshore wind as a leading source of renewable energy.

The Japanese government has announced ambitious projects to reach a capacity of 10 million kW by 2030 and 30-45 million kW by 2040, which includes the development of floating offshore wind energy. The domestic procurement rate is expected to reach 60% by 2040, with the cost of fixed-bottom offshore generation projected to be 8-9 yen/kWh by 2030-2035. Calculations by the Yano Economic Research Institute estimate that the offshore energy market will grow to 397 billion yen by 2025 and 920 billion yen by 2030.

In 2022, METI (Ministry of Economy, Trade and Industry) and MLIT (Ministry of Land, Infrastructure, Transport, and Tourism) designated four offshore wind promoting areas, five “promising areas” and eleven “preparatory stage areas”, each with a maximum planned generation capacity of over 12 GW. This expansion of offshore wind energy generation is expected to accelerate the transition to renewables as a primary energy source, driving industry growth. The Hokkaido area is also poised for expansion in the near future.

Offshore energy generation projects are typically large-scale and have a significant impact on related industries while contributing to regional revitalization. However, the challenge of managing multiple operators conducting wind condition and ground monitoring simultaneously poses a potential burden to local fishing industries. To address this issue and ensure a fair competitive environment, the Japanese government is leading research projects, known as the “Japanese version of the Centralized System”, where the government oversees all processes from the early stages to expedite research and guarantee power system stability.

Overview of the **Offshore Wind Market in Japan**

Japan holds substantial potential for floating offshore wind generation. In 2022, the Japanese government allocated 119.5 billion yen from the Green Innovation Fund to develop floating offshore wind power technology and promote core technology development, leveraging Japanese strengths, especially in the Asian market.

Private companies are also expanding their offshore wind businesses, not only domestically but also abroad, leveraging robust Japanese technology. Major trading companies are actively involved in constructing offshore wind energy generation sites in France. Furthermore, Japanese companies have secured rights for five other offshore wind power projects in the Netherlands. Japanese private companies are actively participating in building a domestic supply chain to provide essential equipment for offshore wind plants.

With a focus on the offshore wind promotion zone in Akita Prefecture, 100 small and medium-sized companies have been invited to support all stages of the process, from component development to production. The growth potential for each company in the offshore wind power industry is promising. It is expected that domestic companies' share in the supply chain as a whole will increase by 2040, further driving the development of offshore wind power areas and stimulating the economy. Simultaneously, expanding exports to Asia and establishing technological partnerships with Europe and North America hold great potential.

In a concerted effort to shift towards local production of electrical cabinets, which house components such as wind turbine nacelles with rear frames and control panels, parts suppliers have been enlisted. These suppliers have entered into strategic partnership agreements with major foreign companies to manufacture nacelle parts for the next 25 years, playing a pivotal role in establishing a resilient supply chain.

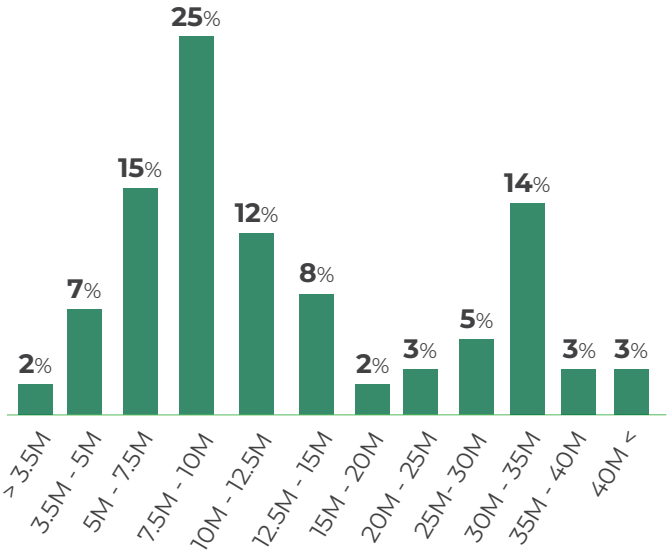
Japan - **Offshore Wind**

BASE SALARY

Offshore wind energy is expected to become a core source of renewable energy. As many companies are expanding their operations, there have been more employees looking to build a career in this industry.

According to the offshore wind energy professionals we surveyed, 25% of respondents reported a basic salary of between 7.5-10 million yen, followed by 15% earning 5-7.5 million yen, and 14% earning 30-35 million yen. This is higher than the average of 4.3 million yen offered by Japanese companies as a whole[7].

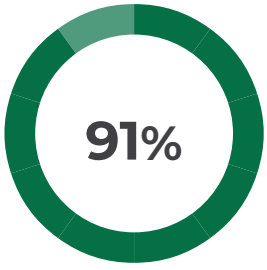
What is your current annual base salary in YEN?



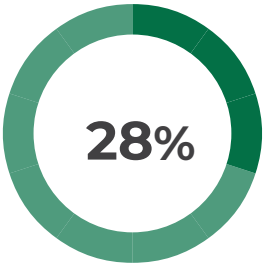
KEY: **YEN**

YEARLY BONUSES

According to our survey results, 91% of offshore wind energy professionals received a bonus in the past 12 months, and 28% of those received 6-10% of their basic salary as a bonus. This is equal to around one month's salary, and is within the average 0.5-3 months' bonus offered by companies across Japan, but still lower than bonuses in many major corporations[8]. Offering yearly bonuses is an effective tool to help companies attract highly skilled industry professionals.



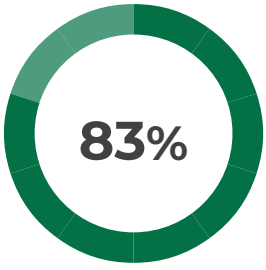
of offshore wind professionals in Japan have received a bonus.



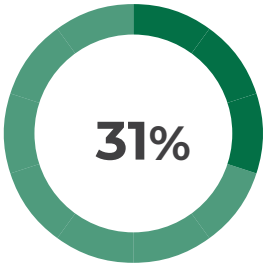
have received a 0-5% bonus in the past 12 months.

YEARLY BASE INCREMENT

The same survey results showed that 83% of offshore wind energy professionals received an increment this year, and 31% of those received a 0-5% increment to their salary. The Japanese Trade Union Confederation reported that an average of 3.7% is being offered as an increment by large companies across Japan in 2023, which is much higher than offshore wind companies' average[9]. For offshore companies expanding their business or looking to hire, considering yearly increments is an important part of the total compensation package.



have received a yearly increment.



have received 0-5% yearly increments in the past 12 months.

Japan - **Offshore Wind**

BENEFITS

The most common benefits received by offshore wind energy professionals are travel allowances, a laptop/mobile phone, and extra holiday such as charity days, birthday leave, and anniversary leave. The Japan Business Federation reported that the most common and most expected benefits for Japanese employees are related to accommodation, lifestyle, medical, and health care[10], so offshore wind energy companies would be wise to consider a broader range of employee benefits.

Travel Allowance

Laptop/Mobile

Extra Holiday

LEAVE

40% of our surveyed offshore wind energy professionals received 7-13 days of paid annual leave. 60% received parental leave, and 22% of those could take 8-12 days parental leave. In Japan, the average annual paid leave is 10 days, and the longest leave among large companies is 28-36 days. Renewable energy companies that offer more leave will be better placed to attract and successfully hire top professionals in this competitive market.

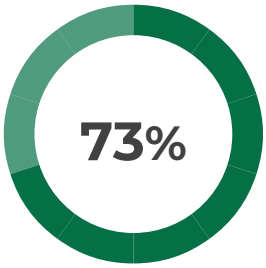
Japan - **Offshore Wind**

FLEXIBILITY

73% of our surveyed offshore wind energy professionals received flexible working hours. 80% received flexibility in remote working, and 25% worked remotely two days a week. 68% find flexible working/ working from home important or very important when considering a new job.

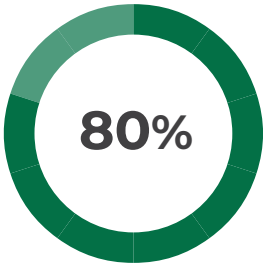
Flexible working options are essential for companies who want to position themselves as an employer that offers a great work/life balance. In the renewable energy field there are a lot of IT-related project management positions, which make it easier to implement remote working practices to further increase companies' attractiveness.

Flexible working hours



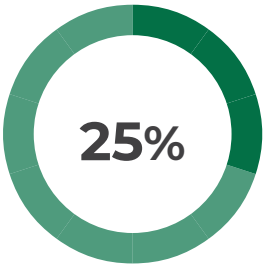
of offshore wind professionals in Japan have flexible working hours in their current role.

Remote working



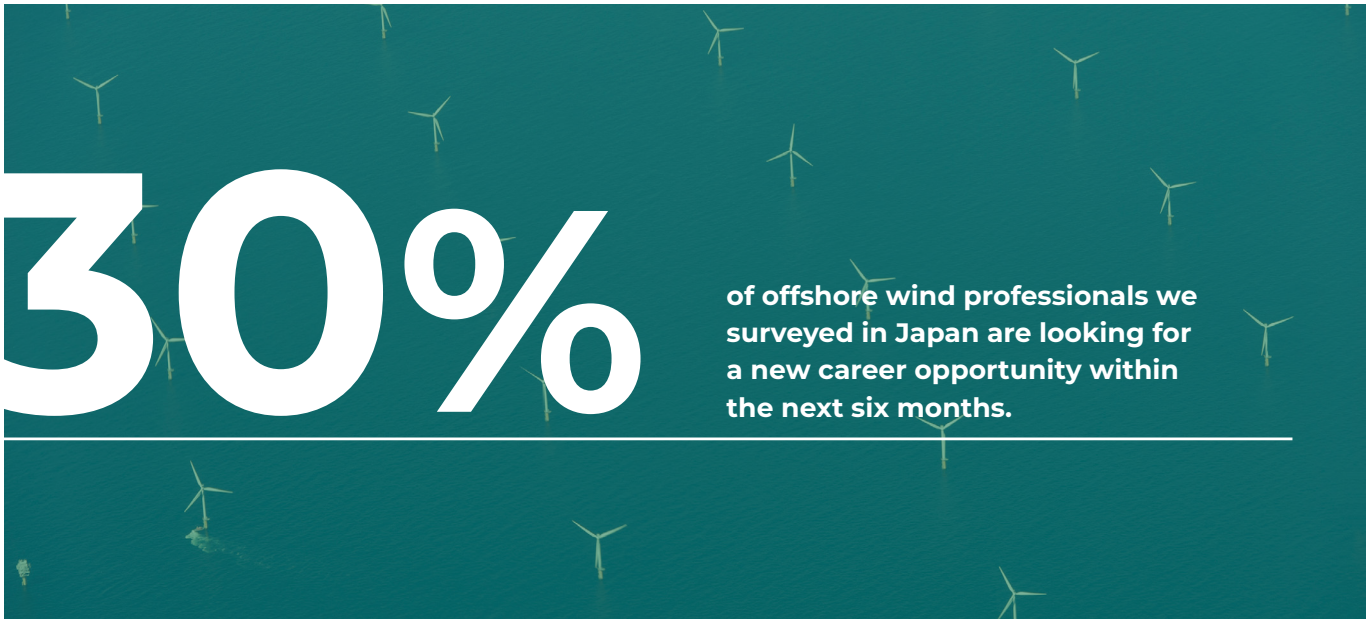
received flexibility in remote working.

Remote working days



have 2 days a week of remote working.

Are **offshore wind professionals** in Japan planning to change jobs?



Japan - **Offshore Wind**

WHAT ARE THEY LOOKING FOR?

Top three PULL factors
What makes offshore wind professionals in Japan consider a new career opportunity?

1. Mental health
2. Enhanced role, management, or company opportunities
3. Better workplace culture

Top three PUSH factors
What are the reasons that offshore wind professionals in Japan would change a job?

1. Poor work life balance
2. Limited accessibility and transportation challenges
3. Feeling unchallenged

FACTORS BEYOND SALARY IN ACCEPTING A JOB OFFER

EQUITY/SHARES

39%

of offshore wind professionals in Japan would accept a lower base salary for more shares/equity.

PAY RISE

31%

are looking for a 11-15% pay rise in their next role.

FLEXIBLE WORKING

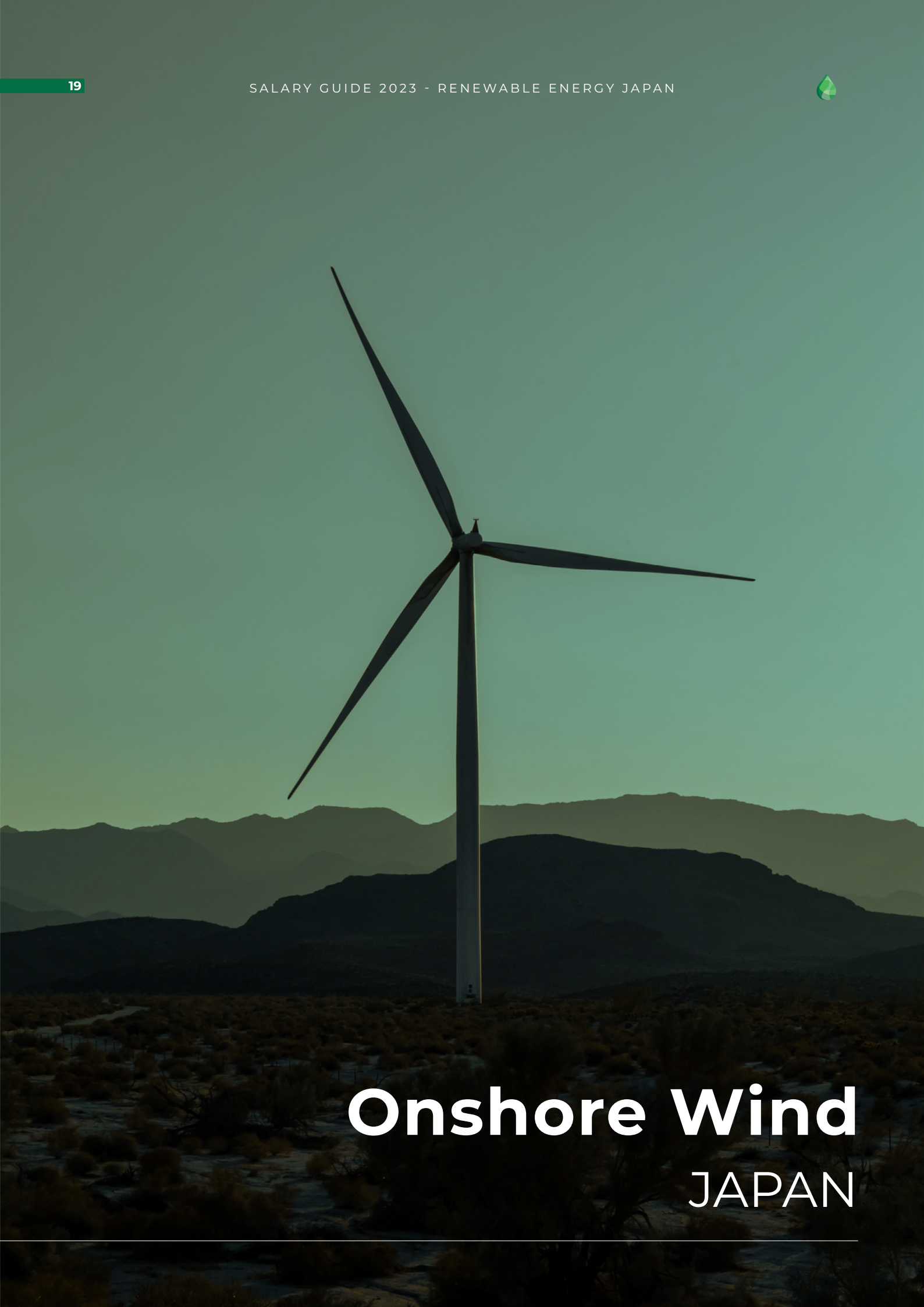
68%

find flexible working/ working from home important or very important when considering a new job.

HOWEVER...

80%

of them will still accept a new job offer that requires them to come into the office full time.



Onshore Wind

JAPAN

Overview of the **Onshore Wind Market in Japan**

Onshore wind energy stands out as one of the most promising sources of energy in Japan's journey towards achieving its carbon-neutral plan. According to the 2023 report from METI (Ministry of Economy, Trade and Industry), the implemented onshore wind energy capacity as of the end of 2022 was 5.1 GW, while the approved but unused capacity under FIT/FIP reached 11.1 GW[11]. The onshore energy implementation target for 2030 is set at 17.9 GW, which is three times higher than for offshore wind energy. It is anticipated that onshore wind energy will take the lead in the wind energy market in the near future.

By 2030, onshore wind is expected to reach 3% of Japan's total energy generation, indicating the need for further expansion. In contrast, the governmental Electricity Cost Analysis Working Group reported that offshore wind energy generation cost was 19.8 yen/kWh in 2020[12]. While the cost reduction process for transportation and onshore wind energy generation is progressing slowly, expenses for turbines, electrical equipment, and batteries have been decreasing slightly faster. This suggests that implementing onshore wind energy will become more accessible for operators in the future. Notably, the size of wind turbines in Japan is larger, making equipment costs a crucial factor for operators.

The Nomura Research Institute's report identifies the Hokkaido and Tohoku regions, followed by Ibaraki and Chiba Prefecture, as having the highest onshore wind generation potential in Japan[13].

Currently, Japan is in the process of implementing its largest domestic onshore wind power generation equipment yet, with a generation capacity of 540,000 kW. This equipment started operating commercially in April 2023, and the generation capacity in Hokkaido is expected to double. METI's Agency for Natural Resources and Energy is partially involved in this project. The reason for their participation is the relatively weak transmission grid in Hokkaido, which requires testing to address technical issues and provide maintenance solutions. The equipment includes the largest lithium-ion batteries in the country, with a capacity of 240MW/720MWh. In the same region, three Japanese companies are collaborating on the construction of the largest onshore wind energy generation plant in Japan, boasting a capacity of 540 MW, with part of it connected to the Tohoku region transmission line. This initiative aims to strengthen the transmission grid, a significant challenge in expanding renewable energy across the nation. The future plan includes supplying energy generated by the wind plant in Hokkaido to the Tokyo metropolitan area.

Overview of the **Onshore Wind Market in Japan**

Japanese companies engaged in onshore wind energy generation are not limiting their activities to domestic endeavors; they are active on a global scale. A prominent Japanese construction company has constructed an onshore wind generation plant in the northern region of Brazil, specifically in Areia Branca city in the Rio Grande do Norte region, which began operating in 2023. The energy generated is supplied to private companies, with surplus electricity being sold on the open market. Additionally, there is an onshore wind energy project in Vietnam's Quang Tri region, scheduled to commence operations in October 2023. Major trading companies, in collaboration with the UAE renewable company AMEA Power, are also progressing with an onshore wind energy project in the Ras Ghareb district. The involvement of major Japanese companies in such projects has been on the rise, offering substantial growth opportunities and appealing prospects for highly skilled professionals with international experience and knowledge.

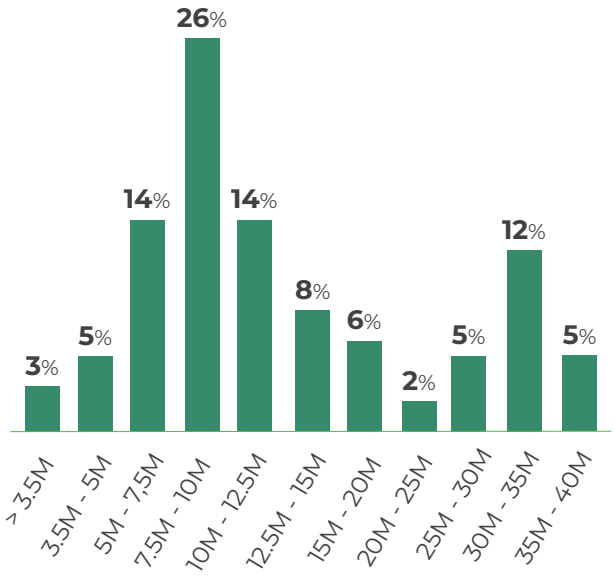
There are also a number of active projects involving large-scale companies partnering with foreign counterparts to launch onshore wind businesses in Japan, contributing to the development, construction, and operation of renewable projects in the country. Two standout examples are the Tsugaru Wind Farm and Tono-Sumita Wind Farm, the largest in Japan. These projects leverage Japanese expertise, knowledge, and experience in the renewables industry, maximizing business value and enhancing corporate worth.

Japan - **Onshore Wind**

BASE SALARY

According to the onshore wind energy professionals we surveyed, 54% received a basic salary of between 5-12.5 million yen, followed by 30-35 million yen (12%). The average basic salary for large energy companies in Japan is 9.4-11 million yen, meaning that onshore wind energy companies fall within the wider industry average.

What is your current annual base salary in YEN?



KEY: **YEN**

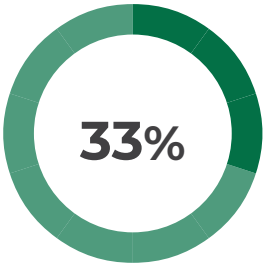
YEARLY BONUSES

According to our survey results, 90% of onshore wind energy professionals have received a bonus in the past 12 months, with 33% of those receiving 6-10% of their base salary as a bonus. On average this is equal to the one month's salary. Japan's top revenue-generating companies offer bonuses worth 6-9 months' salary, so onshore energy companies should consider offering higher bonuses to attract the best experts in the industry.

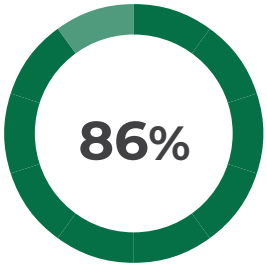
YEARLY BASE INCREMENT

Our survey results show that 86% of onshore wind energy professionals received a salary increment this year, and 33% of those received an increase worth 0-5% of their salary. Japan's highest valued companies offer a total increment of 210-230% of starting salaries over an employee's lifetime stay at a company on average[16], uncovering an opportunity for onshore wind companies to offer higher salary increases each year to remain competitive in the hiring market.

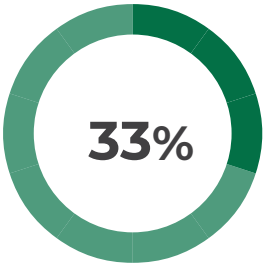
of onshore wind professionals in Japan have received a bonus.



have received a 6-10% bonus this year.



have received a yearly increment.



have received a 0-5% yearly increments in the past 12 months.

Japan - **Onshore Wind**

BENEFITS

The most common benefits received by onshore wind energy professionals are travel allowances, laptop/mobile phones, and extra holiday (including charity days, birthday leave, and anniversary leave). These are most desirable benefits offered by Japanese companies[14]. However, looking at companies rated as having good benefits packages, there is a further need for benefits like wellness programs, recreation facilities, and global development programs.

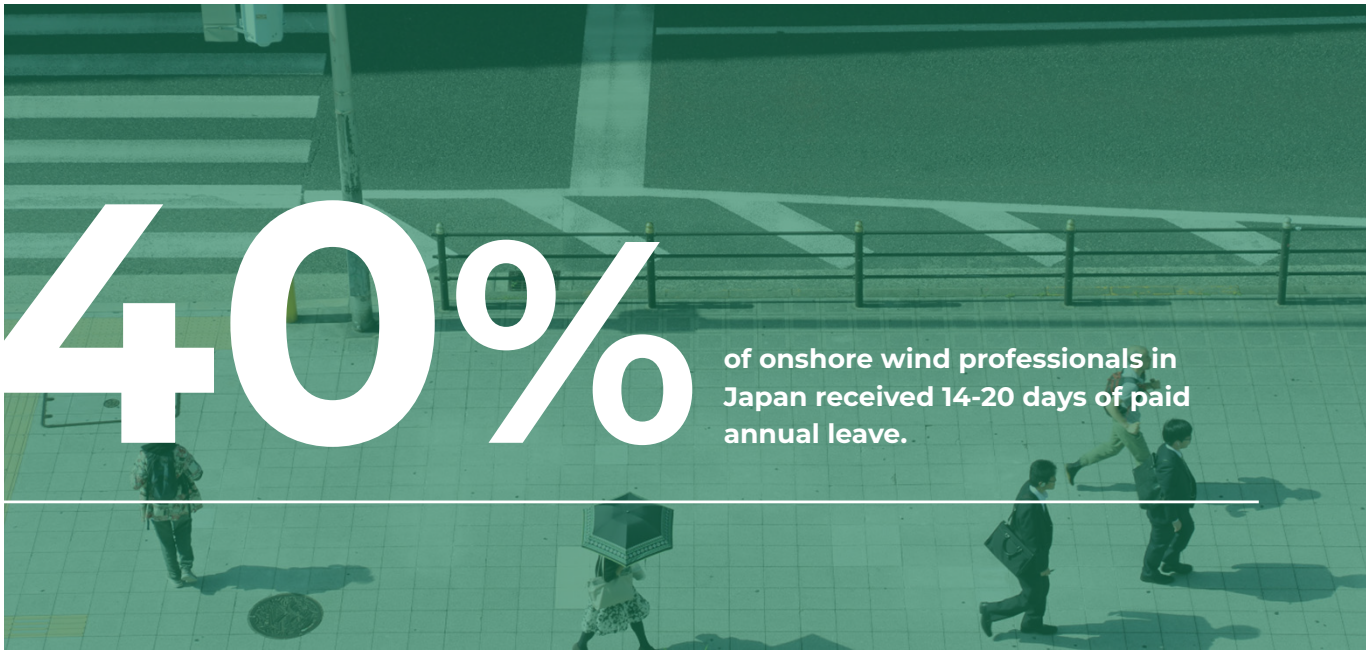
Travel Allowance

Laptop/Mobile

Extra Holiday

LEAVE

40% of our surveyed onshore wind professionals received 14-20 days of paid annual leave. 72% received parental leave, and 21% of those could take 0-7 days of parental leave. In Japan, other industries like insurance and telecommunication are known to have good parental leave policies, so onshore wind energy companies that offer better policies will find it easier to retain their employees.



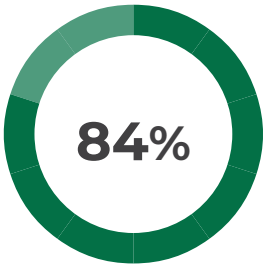
Japan - **Onshore Wind**

FLEXIBILITY

84% of our surveyed onshore wind energy companies professionals currently receive flexible working hours. 88% have flexibility in their remote working, and 30% of them work remotely two days a week. 69% find flexible working/working from home important or very important when considering a new job.

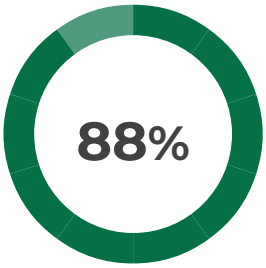
According to the Ministry of Health, Labour and Welfare research, in Japan there are still not many companies implementing flexible working, but there are instances of some implementing the super-flex systems without core time, showing that Japan is getting more open to this form of work.

Flexible working hours



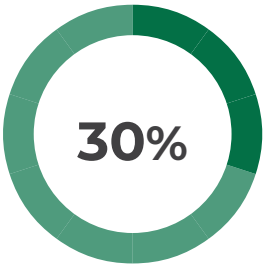
of onshore wind professionals in Japan have flexible working hours in their current role.

Remote working



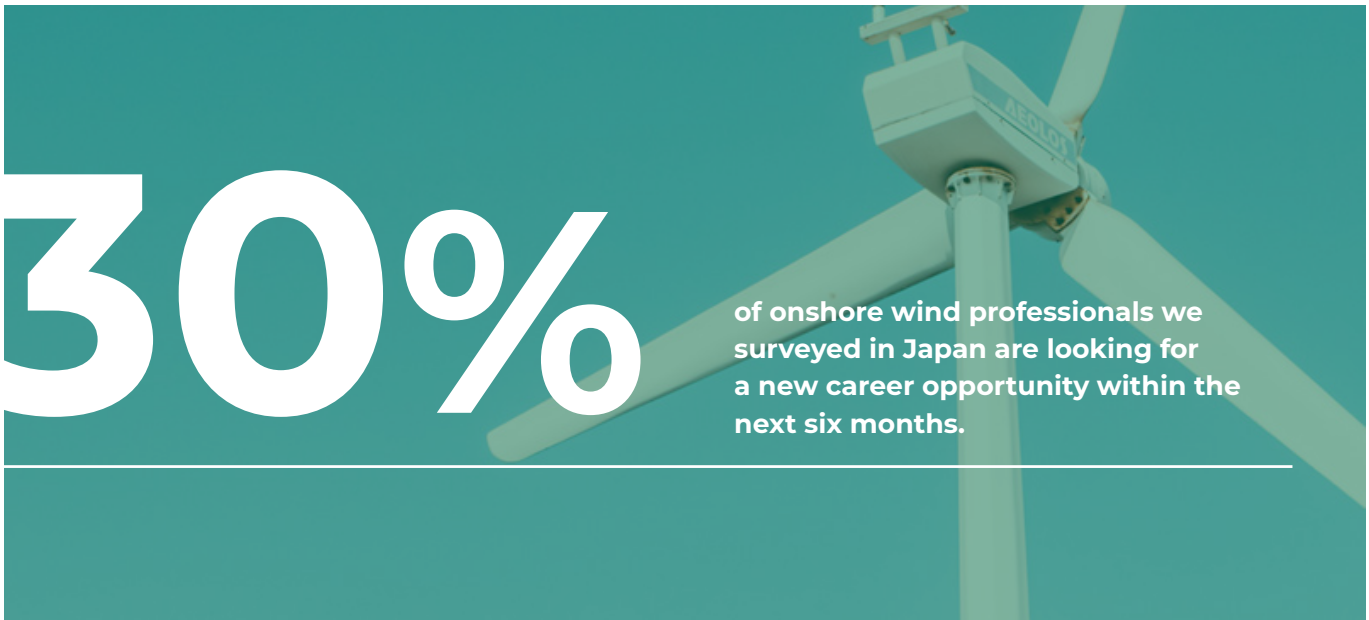
received flexibility in remote working.

Remote working days



have 2 days a week of remote working.

Are **onshore wind professionals** in Japan planning to change jobs?



Japan - **Onshore Wind**

WHAT ARE THEY LOOKING FOR?

Top three PULL factors
What makes onshore wind professionals in Japan consider a new career opportunity?

1. Convenient and accessible location
2. Enhanced role, management, or company opportunities
3. Better workplace culture

Top three PUSH factors
What are the reasons that onshore wind professionals in Japan would change a job?

1. Poor work life blance
2. Limited accessibility and transportation challenges
3. Feeling unchallenged

FACTORS BEYOND SALARY IN ACCEPTING A JOB OFFER

EQUITY/SHARES

33%

of onshore wind professionals in Japan would accept a lower base salary for more shares/equity.

PAY RISE

30%

are looking for a 11-15% pay rise in their next role.

FLEXIBLE WORKING

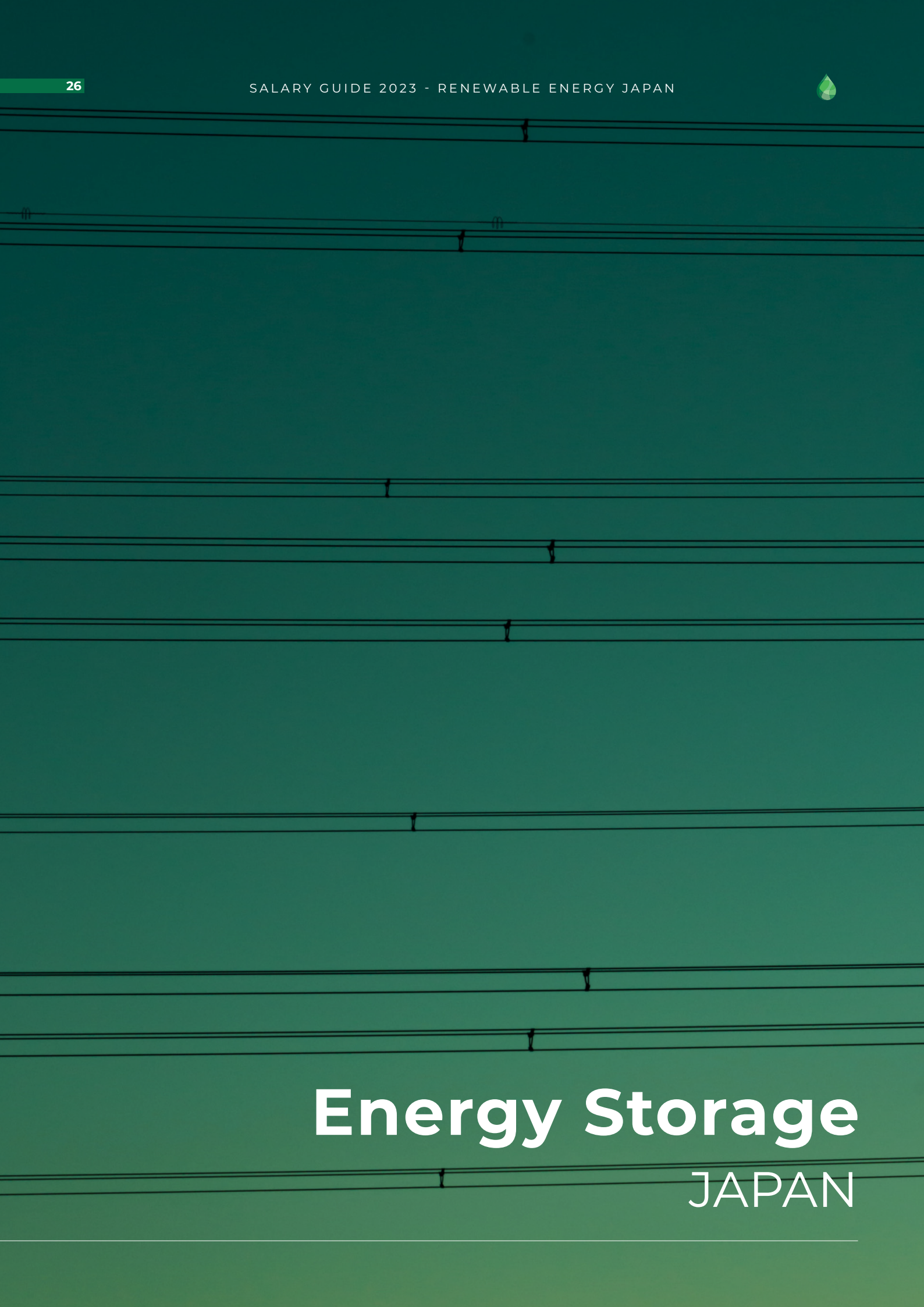
68%

find flexible working/ working from home important or very important when considering a new job.

AND...

77%

of them will still accept a new job offer that requires them to come into the office full time.



Energy Storage

JAPAN

Overview of the **Energy Storage Market in Japan**

Renewable energy plays a pivotal role in Japan's mission to establish a carbon-neutral society. However, a significant challenge lies in efficiently transmitting energy from Hokkaido to Kyushu without energy losses, so further research and development is needed to improve electric power systems and transmission technology. In addition, solar and wind energy outputs fluctuate depending on weather conditions and the time of day, so achieving a stable demand and supply remains another crucial challenge. As a result, Japanese battery technologies, particularly those designed for electricity grids, have garnered substantial attention.

The Japanese government, as outlined in the document "Green Growth Strategy Through Achieving Carbon Neutrality in 2050," underscores the necessity for policies and regulations that promote investments in grid batteries. Under the Act of Promotion of the Green Transformation, the combined green investment budget for the next decade from both the public and private sectors amounts to 150 trillion yen ($1.06 trillion) in total, with a portion of 80 trillion yen allocated for the development of the battery industry. Despite the government's active encouragement of industry development, energy storage businesses are still categorized as "energy generation" under Japan's Electricity Business Act. This classification subjects these businesses to electricity industry regulations, posing additional challenges for business owners, and highlights a pressing need for better business support and a clearer regulatory framework for battery businesses.

Japan has demonstrated a keen interest in cutting-edge energy storage technologies, with a particular focus on lithium-ion batteries. Numerous companies store surplus renewable energy and operate large-scale lithium-ion battery businesses, which release stored electricity during periods of supply shortages. Several cases highlight the benefits of integrating batteries into renewable energy generation plants. For instance, two solar plants equipped with batteries, boasting capacities of 19.0 MW and 27.8 MWh, were recently constructed in Hokkaido to mitigate output fluctuations in generation plants. There are also initiatives centered on reusing small-sized EV batteries, which are collected and repurposed to form large battery systems. This approach has the potential to reduce costs and contribute to green energy efforts.

Considering the potential of battery systems in various electricity markets, it is expected that they will reach a capacity of 0.9 GW in the capacity market and the supply and demand adjustment market by 2030. In the latter category, secondary and third-order capacity adjustment markets are projected to reach 3.3 GW each. In the primary market, capacity estimates include 7.8 GW for household batteries and 1.3 GW for commercial batteries. The combination of revenue streams from capacity markets, supply-demand adjustment markets, and wholesale markets presents a very promising business model for the utilization of grid batteries.

Collaboratively, NEDO (New Energy and Industrial Technology Development Organization) and major Japanese companies have installed and connected a redox flow battery with a capacity of 2 MW/8 MWh in the state of California, USA. They are conducting tests to assess how generated energy can be sold within the wholesale electricity market. In addition, a startup originating from Tokyo University has developed a power-type battery system, contributing to the stabilization of electricity systems in Ireland and the UK, where renewable energy sources are widely distributed. Lastly, in June 2023, multiple Japanese companies formed a joint venture to operate a grid battery plant. They have installed a large-scale grid battery with a rated output of 20 MW and a rated capacity of 56 MWh. By harnessing energy within various market segments, these companies aim to bolster the stability of the Japanese electricity system.

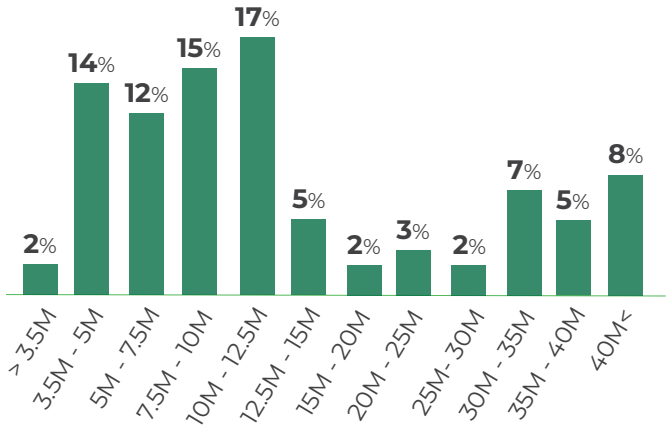
Japan - **Energy Storage**

BASE SALARY

According to the energy storage professionals we surveyed in Japan, 58% of respondents received a basic salary of between 3.5-12.5 million yen. 12% earned 30-40 million yen, and 8% earned over 40 million yen.

This is below the average level in the renewable energy industry, so our results uncover a need for higher salaries overall to prevent professionals seeking employment in other areas of renewable energy.

What is your current annual base salary in YEN?



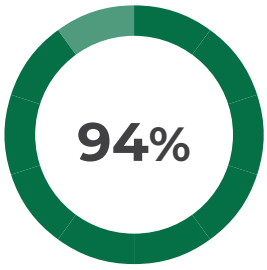
KEY: **YEN**

YEARLY BONUSES

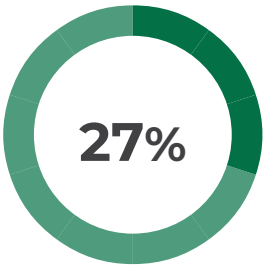
According to our survey results, 94% of energy storage professionals have received a bonus in the past 12 months, and 27% of those received 6-10% of their base salary as a bonus. On average this is equal to one month's salary. This is below the level that Japan's top revenue-generating companies offer, and highlights another area for concern if companies want to retain their talent.

YEARLY BASE INCREMENT

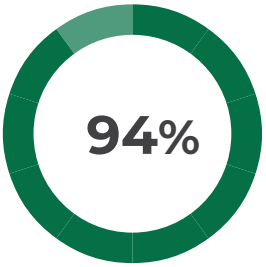
There's better news when it comes to annual salary increases: our survey results showed that 94% of energy storage professionals received an increment this year, and 38% of those received a 6-10% increment to their salary. This is higher than the average increment rate of 3.7% among large Japanese companies, so serves as an attractive part of compensation packages for potential employees.



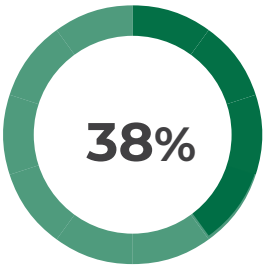
of energy storage professionals in Japan have received a bonus.



have received a 6-10% bonus this year.



have received a yearly increment.



have received 6-10% yearly increments in the past 12 months.

Japan - **Energy Storage**

BENEFITS

The most common benefits received by our surveyed energy storage professionals are travel allowances, company cars, and extra holiday, like charity days, birthday leave, and anniversary leave.

These results are in line with the rest of the renewable energy industry, but a wider variety of benefits that meet the unique needs of your employees can improve their wellbeing and job satisfaction even further.

Travel Allowance

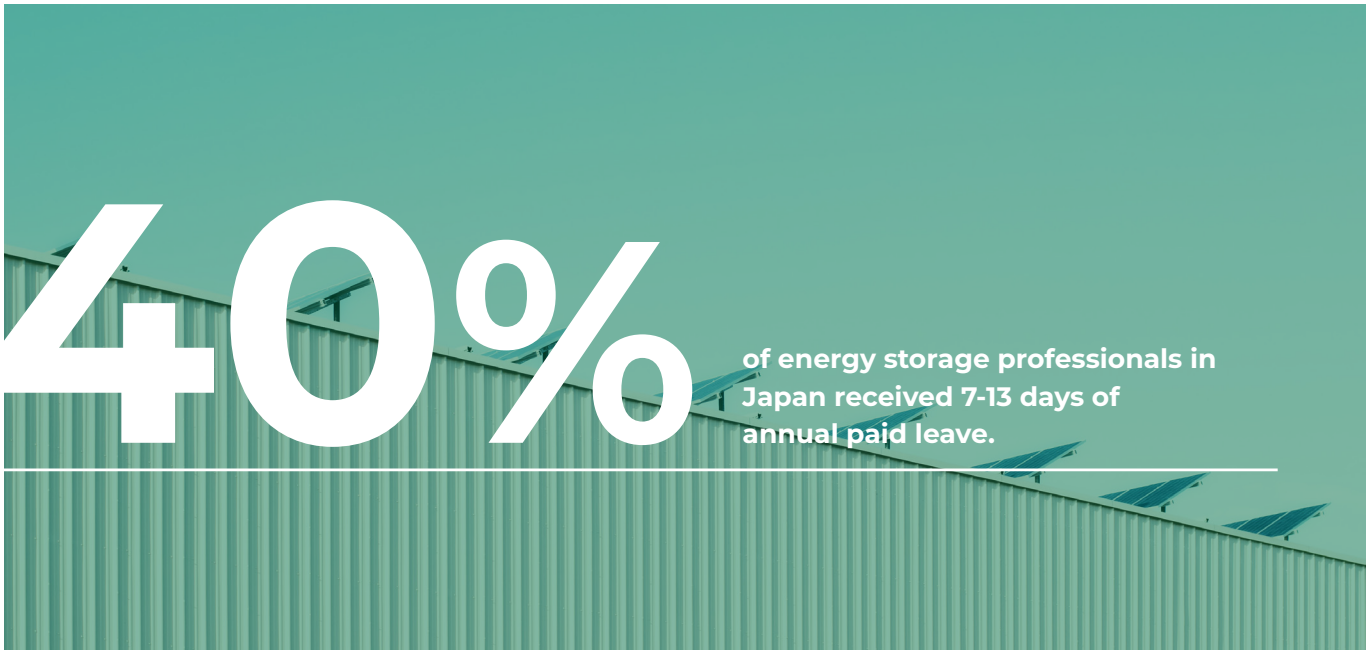
Company Car

Extra Holiday

LEAVE

40% of our surveyed energy storage professionals received 7-13 days of paid annual leave. 84% received parental leave, and 32% of those could take between 8-12 days of parental leave.

This is within the average range, but still lower than other renewable energy companies and Japan's largest companies, so energy storage companies that design strong leave policies put themselves in a good position to attract the most in-demand professionals.

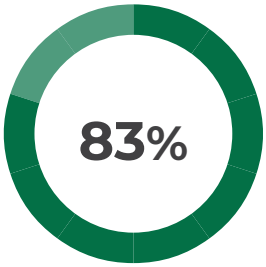


Japan - **Energy Storage**

FLEXIBILITY

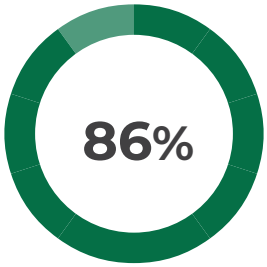
83% of our surveyed energy storage companies professionals received flexible working hours. 86% were offered flexibility in remote working, and 40% worked remotely two days a week. 71% reported that they find flexible working/working from home important or very important when considering a new job. Much like the rest of the renewable energy industry, energy storage companies not offering any flexible working options may struggle to attract new talent.

Flexible working hours



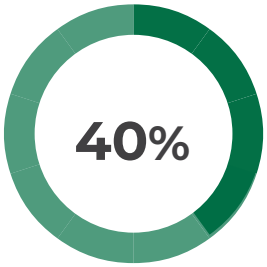
of energy storage professionals in Japan have flexible working hours in their current role.

Remote working



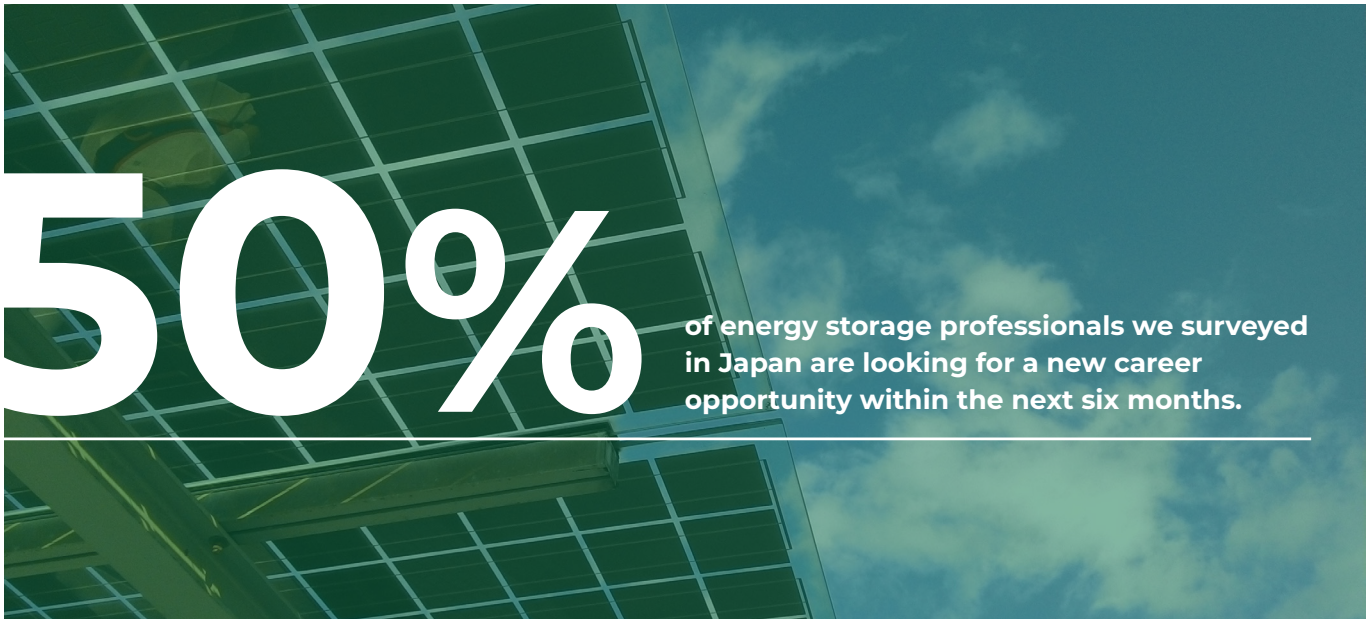
received flexibility in remote working.

Remote working days



have 2 days a week of remote working.

Are **energy storage professionals** in Japan planning to change jobs?



Japan - **Energy Storage**

WHAT ARE THEY LOOKING FOR?

Top three PULL factors
What makes energy storage professionals in Japan consider a new career opportunity?

1. Convenient and accessible location
2. Enhanced role, management, or company opportunities
3. Better workplace culture

Top three PUSH factors
What are the reasons that energy storage professionals in Japan would change a job?

1. Poor work life balance
2. Limited accessibility and transportation challenges
3. Feeling unchallenged

FACTORS BEYOND SALARY IN ACCEPTING A JOB OFFER

EQUITY/SHARES

49%

of energy storage professionals in Japan would accept a lower base salary for more shares/equity.

PAY RISE

33%

are looking for a 11-15% pay rise in their next role.

FLEXIBLE WORKING

71%

find flexible working/ working from home important or very important when considering a new job.

HOWEVER...

75%

of them will still accept a new job offer that requires them to come into the office full time.

Renewables Challenges and Opportunities in Japan

Japan's transition towards renewable energy as a primary energy source, and its ambitious goal of producing 36-38% of the country's energy from renewable sources by 2030, will present numerous challenges. A crucial step involves reducing renewable energy generation costs and construction expenses through a buyback system to ensure that green energy costs are competitive.

In comparison to Europe, Japan faces high electricity generation costs. For instance, the construction and operating expenses for solar energy generation systems in Japan amount to 289,000 yen/kW, whereas in Europe, the figure stands at 155,000 yen/kW. According to the IRENA report, generation costs decreased by 14% for offshore wind energy, 2% for onshore wind energy, and 35% for solar energy between 2010 and 2020[15].

The next important step is to develop a grid capable of meeting the renewable installation goals outlined in the 6th Strategic Energy Plan. This involves the use of interconnected power lines between regions and incentives for non-farm grid connections when grid expansion proves challenging. On the grid policy level, there is a need to formulate a plan for relevant transmission expansion that will help surpass the 2030 goals, all while considering the construction of an international transmission system to facilitate future international energy transmission.

Renewables Challenges and Opportunities in Japan

Furthermore, long-term policy is crucial to drive green energy innovations, as demonstrated by initiatives such as the Green Innovation Fund. Equally important is the improvement of investment conditions to mitigate risks associated with clean energy ventures. In particular, onshore wind energy needs not only substantial investments but also time for business development, underscoring the necessity of long-term policies.

The forecasted expansion of generation capacity for solar and wind energy to 104 GW and 9 GW respectively by 2030 also highlights the need for significant growth in the supply chain and labor force. In Japan, local wind turbine manufacturing is not prevalent in every region, so new workforces need to be established and trained to develop and produce the equipment needed to meet targets.

However, it's essential to acknowledge that solar and wind energy sources have their limitations. In Japan, hydrogen, ammonia, geothermal energy, and energy storage all hold promise as future sources of renewables.

By 2030, there are plans to initiate small-scale hydrogen imports using ammonia. This endeavor requires the expansion of both local and foreign supply chains, leveraging robust Japanese technology, and establishing a supply infrastructure capable of ensuring large-scale and stable energy storage and distribution. While hydrogen is regarded as effective for gas turbines, it demands substantial infrastructure and investment in new technology to reduce future costs, which is paramount to the success of Japan's targets. According to McKinsey's forecast, the use of low-carbon hydrogen in end-use applications will become viable at a price of $2.5/kg without gas stations and $3.5-4/kg with hydrogen stations.

Given the limitations of solar and wind energy sources, battery capacity is expected to reach 50 GW by 2050. Given its cost efficiency, this presents significant long-term potential. Geothermal energy also plays a pivotal role in Japan as a domestic energy source. Japan commands a 70% world share in the geothermal energy generation turbine market and possesses world-class technology in this field, which will contribute significantly to the Japanese economy in the future.

Summary

Japan's renewable energy industry is undergoing a pivotal period of growth and change, but while the country is making strides towards achieving its renewable energy goals, these targets can't be met without the help of experienced professionals.

Our survey results show that the compensation packages many renewable energy employers are offering may leave them at risk of losing their talent to competitors or traditional energy companies, so hiring managers must be prepared to offer attractive and competitive salaries, bonuses, and benefits packages.

If you would like further information or advice following this report, please get in touch. Whether you need support attracting candidates from this in-demand talent pool, or are a professional looking for your next opportunity with the most reputable companies in the industry, contact LVI Associates today and our expert team will guide you.

About LVI Associates

LVI Associates is a leading talent partner in the energy & infrastructure industries across the US, Europe and APAC.

Energy & Infrastructure plays a critical role in creating a future that works for everyone, which is why it is essential to work with the right talent partner who can source and deliver extraordinary people that make a difference.

Providing bespoke talent solutions from our hubs all over the world, we cover the full life cycle of energy & infrastructure projects, across Architecture, Engineering, Construction, and Post-Construction.

As a strategic advisor with a proven track record in helping businesses scale through our services, we are integral to the energy & infrastructure ecosystem, focusing on the talent solutions needed to let organizations get back to what matters – building a better world.

OUR SPECIALISMS

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- Power Delivery
- Renewable Energy
- Technology

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Registration number: 201314810G
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References

1 https://www.fuji-keizai.co.jp/press/detail.html?cid=22114&la=ja

2 https://www.meti.go.jp/shingikai/enecho/denryoku_gas/saisei_kano/pdf/052_01_00.pdf

3 https://www.tsr-net.co.jp/data/detail/1190617_1527.html

4 https://www.mof.go.jp/about_mof/zaimu/kannai/202301/tokubetsu.pdf

5 https://www.e-stat.go.jp/dbview?sid=0003248225

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7 https://www.nta.go.jp/publication/statistics/kokuzeicho/minkan/gaiyou/2020.htm

8 https://hataractive.jp/useful/3762/

9 https://www.jtuc-rengo.or.jp/activity/roudou/shuntou/2023/houshin/data/matome20230601.pdf?2905

10 https://www.keidanren.or.jp/policy/2020/129_honbun.pdf

11 https://www.meti.go.jp/shingikai/enecho/denryoku_gas/saisei_kano/pdf/052_01_00.pdf

12 https://www.renewable-ei.org/pdfdownload/activities/REI_JapanOnshoreWindAnalysis2022

13 https://www.nomuraholdings.com/jp/services/zaikai/journal/pdf/p_201301_03.pdf

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