# Community energy in Brisbane: what can we learn from international experiences?

The energy transition is key to cutting global emissions. The aggregation of interconnected social, cultural, political, climate, and demographic crises have pushed forward the community-driven renewable energy. Power to people now!! It's one common motto driving the energy transition across Europe and the US and is rapidly growing in Australia.

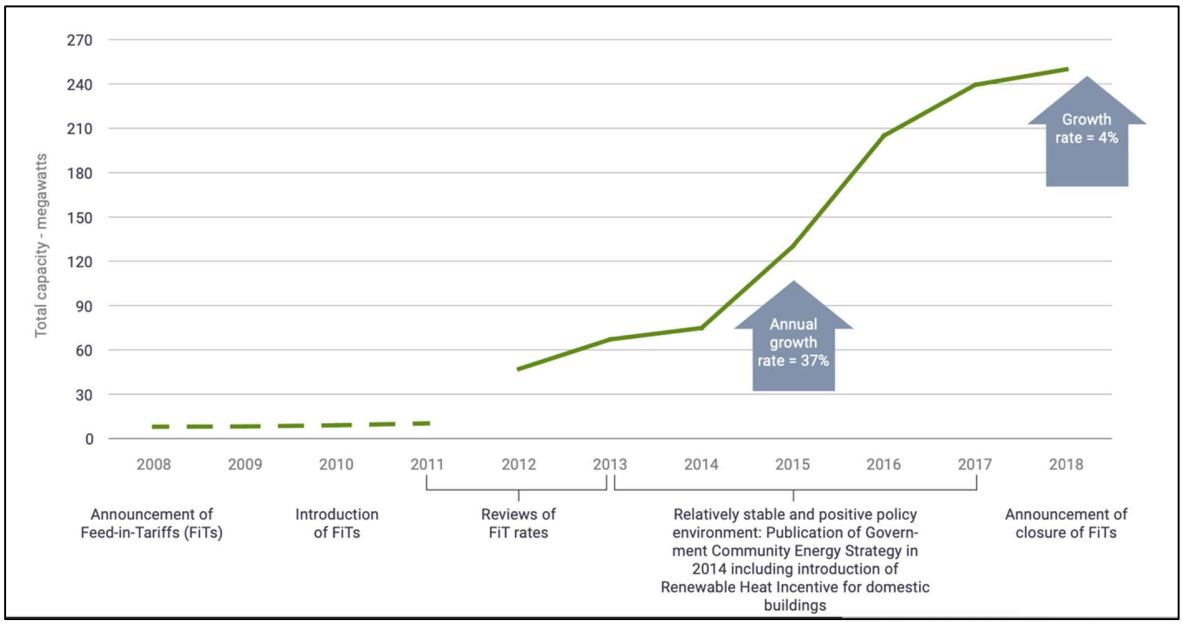
Community-owned energy encompasses projects related to the renewable energy, energy efficiency and energy storage based on the decentralization of energy and with people as the protagonists of this energy change. By putting energy in the hands of people and communities, community energy represents a practical way out of current crises. It provides opportunities to rebuild the energy system, allowing people to shape the energy landscape, creating green jobs and improving energy security, alongside other benefits.

However, the pace of developing community energy projects has not been the same worldwide. Queensland is less progressive in the community energy movement than other countries and Australian states. A one-semester research project was undertaken at the University of Queensland to draw lessons for Queensland from international experiences in community energy. Here, a summary of findings is presented to draw lessons from community energy trajectories in the UK and Germany.

## The United Kingdom Community Energy Trajectory

The UK has published Government Community Energy Strategy in 2014. Since then, community initiatives engaged with renewable energy generation, heating, energy storage, low-emission transportation, and energy efficiency. Figure 1 shows the development of community energy projects in the UK over time. The excellent reception of community energy projects has been attributed to Fit-in-Tarif (FiT) regulation and stable policy environment.

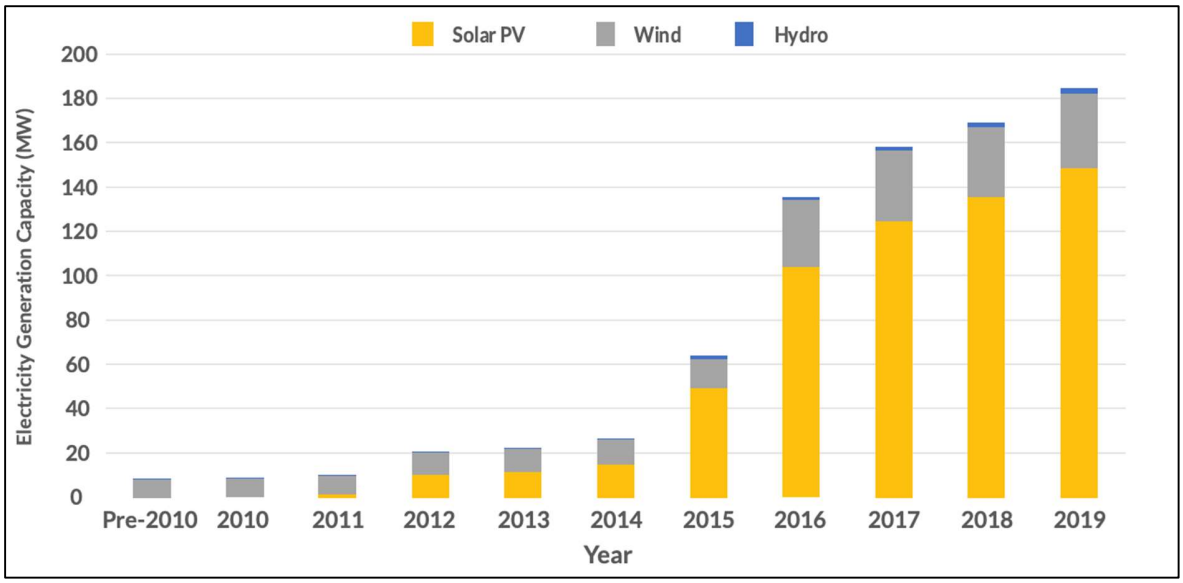
*Figure 1 Growth of community energy electricity and heat generation capacity in the UK. Retrieved from: (WPI Economics, 2020)*




By 2020, more than 400 community energy organizations operated in the UK, with 290 in England, 72 in Scotland, 60 in Wales, and 2 in Northern Ireland (Community Energy Association, 2021). Community groups focus primarily on energy generation (268), but also community initiatives drive developing low carbon transport (47), energy storage (39), and energy efficiency (102) projects (Robinson & Stephen, 2020).

In terms of energy generation, the installed capacity of total renewable energy from community-owned projects amounted to 273.1 MW, with 8.2 MW of renewable energy installed in 2020 alone. Figure 2 illustrates the development of community-owned electricity generation by technology in England, Wales, and Northern Ireland from 1997 to 2019. The dominant technology is solar PV (155.4 MW), wind accounted for 33.6 MW, and hydro for 4.9 MW (Robinson & Stephen, 2020).

*Figure 2 Community-owned electricity generation by technology in England, Wales, and Northern Ireland (1997 - 2019). Retrieved from: (Robinson, 2020).*




Energy storage has been a vital dimension for communities, as an increasingly distributed and digitized energy grid provided opportunities for flexibility and generation of greater local value. By the end of 2019, 39 community organizations developed energy storage projects and invested in more innovative initiatives such as methane and hot water storage (Robinson & Stephen, 2020). The community-owned electricity storage capacity amounted to 547 kWh, counting off-grid and on-grid projects seeking to develop new revenue streams from services offered to the grid.

New opportunities have arisen with the trend towards lowering the price of low-emission transport technologies and consumers' increasing preference and acceptance. As of 2019, 47 community organisations were involved in developing low-carbon transport schemes. They primarily focused on electric vehicles, community transport, and charging infrastructure. Other projects targeted the use of hydrogen and biofuels, educational campaigns, and mobilization schemes (Robinson & Stephen, 2020).

UK's energy community organizations address energy efficiency through community education and engagement, providing services for energy audits and carbon accounting, device improvements and upgrades, and grants or loans for energy efficiency projects, such as installing draft proofing, efficient lighting, and energy monitoring systems. They also raise awareness and

provide information about how households or businesses can improve their energy efficiency (Robinson & Stephen, 2020).

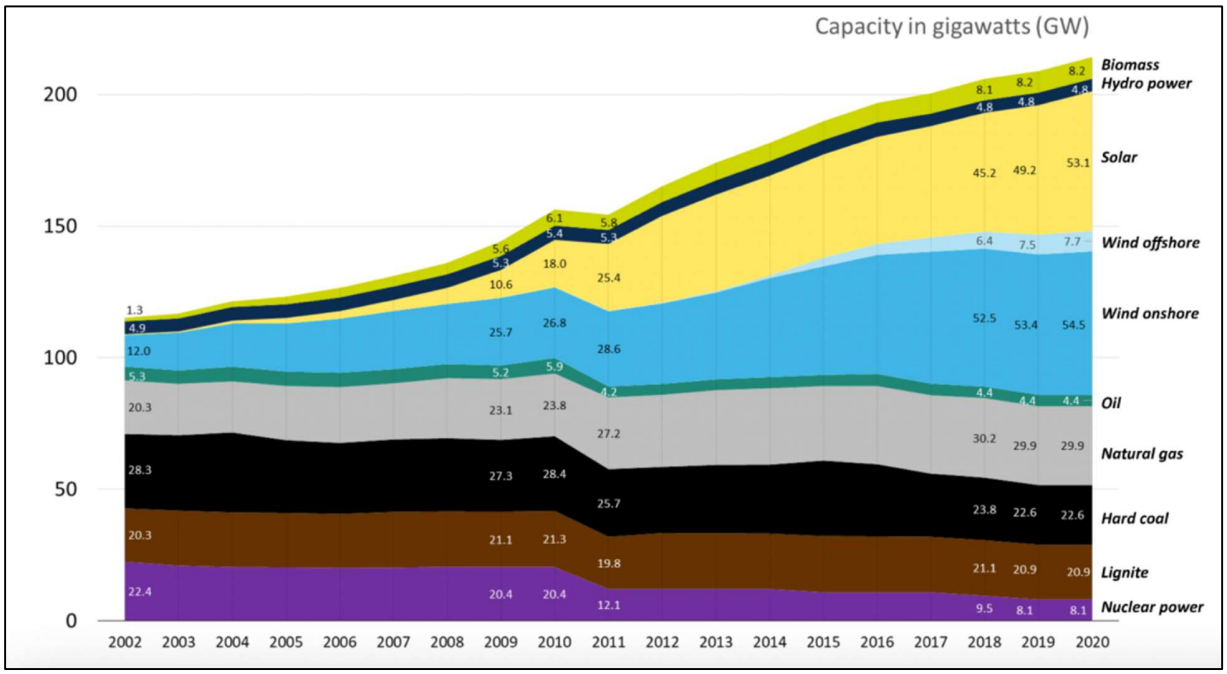
During 2020, when the Covid-19 pandemic heavily impacted the global economy, community energy organizations in the UK provided crucial relief to local communities, including free EV charging points for essential workers, provision of free electricity to community caters, food distribution, and funding of food banks. In addition, community energy organizations provided financial support to affected families within the communities (Community Energy Association, 2021).

### Germany Community Energy Trajectory

Germany's energy sector has been undergoing a constant transformation in recent years. The strategic plan called Energiewnde was initially driven by the population's dissatisfaction with nuclear energy and the environmental crisis. It represents Germany's transition to a low-carbon nuclear-free economy. The country seeks to phase out nuclear power by 2022 and phase out coal by 2038 by reaching a 65% contribution of the renewable energy to the country's total production by 2030 and 80% by 2050 (Wire, 2021a).

The development of renewable technologies in Germany has been rapid since the publication of the Renewable Energy Act in 2000. Figure 3 shows the development of Germany's electricity generation capacity from 2002 to 2020. By 2021, almost half of the electricity production was generated by renewables accounting for 41.4%, comprising solar, hydro, wind, and biomass technologies. The most significant contributor is onshore wind turbines.

*Figure 3 Germany's Net power generation capacity by source. Retrieved from: (Wire, 2021b)*




However, it is no coincidence that Germany is among the countries with the highest contribution of renewable energy in its net production. Different authors argue that this phenomenon is due to the substantial inclusion of citizens in energy projects (Roberts., Bodman., & Rybski., 2014). By 2012 the country reached 72,907 MW of renewable energy installed capacity, of which 25,049 MW were considered as community energy projects, contributed 34% of the total installed capacity of renewable energy in the country, and 12.4% of the total electricity generated that year (Community Power, 2017).

In 1991, Germany published its first FiTs agreement (Einspeisegesetz) for electricity from renewable energy, where only specific projects were eligible. Shortly, the law was expanded to include a broader spectrum of eligible projects, incorporating community energy projects. Under the legislation two main aspects were considered:

- Priority dispatch: the right to sell renewable electricity to the national grid, and
- Guaranteeing a minimum price for the renewable electricity generated (Morris, 2019).

Initially, the FiT's price was set regarding a fraction of the retail rate; 90% for solar PV and wind and 75% for hydro and waste-to-energy. Until 2000, the law became attractive to investors by

publishing the Renewable Energy Act. The minimum price was decoupled by switching to the cost of the equipment and not to the retail rate. At that time, solar PV technology needed more extensive support to be profitable, so at that time, the price for the technology was higher than the retail rate; however, its expansion was limited to 350 MW annually, avoiding generating greater economic impacts on the system. By 2004 this limit was removed, and the solar PV market exploded, reaching around 7.5 GW, with most of that growth coming from small solar PV communities' arrays and homes with rooftop systems (Morris, 2019). Solar PV and wind systems dropped dramatically in price, which meant reductions in the FiT prices of these technologies. After 2004, new projects were regulated by the current year's FiT, where a fixed price was agreed for the coming 20 years. This was decreasing consecutively year after year due to the drops in the technology's costs (Morris, 2019).

**Summary**

Some of the lessons taken from the UK and Germany case studies for Queensland's CE rate development are:

The success of community energy is mainly due to the incentives and support from the government at the state and federal levels. In the case of the UK, the strategic plan for community energy represented a solid guide for the development of this type of energy project. In the case of Germany, government regulations and incentives, modified over the years, have been the driving force behind the adoption of renewable energy.

CE projects are not limited only to electricity generation; they can also address a broad landscape such as; free-carbon transport, heating, citizen participation and empowerment, energy efficiency, and energy storage.

The major drivers behind the CE projects are tackling climate change and community benefit and empowerment. The support of the local community is constant, even during hard times such as the Covid 19 pandemic.

Looking ahead, significant work needs to be undertaken by people like you and me to contribute to Queensland decarbonization. Ask now how to join or contribute to that aim.

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