Policy statement

Solar energy in Ireland

What is Good Energies Alliance Ireland?

Good Energies Alliance Ireland (GEAI) as an environmental NGO, founded in 2011, situated in County Leitrim in the Northwest of Ireland, who aims to ensure the wellbeing of people and communities on the island of Ireland and elsewhere through the protection and sustainable development of our environment, natural resources and our communities.

Renewable energies, such as wind and solar, play a central role in this transition to sustainable lifestyles and we believe in their transformative and community cohesion potential. For that matter, GEAI works towards doing renewable energies in a way that benefits everyone at the same time is respectful with the environment.

Our main objectives are:

- To carry out the activity of promotion of environmental and climate protection, monitoring of energy production as well as use on the island of Ireland including its territorial waters and any other related activities.
- To establish, promote and operate programmes and services with a view to fostering the economic, personal, cultural, recreational, and social well-being of the local communities and wider areas.

Background

Solar energy is a renewable energy source with the ability to reduce greenhouse gas emissions and dependency on energy imports. There are two main ways to generate this type of energy, photovoltaics (solar PV) and solar thermal for heating. Solar PV convert solar radiation into electricity, while solar thermal energy converts solar radiation into heat, which can be used for heating and hot water in residential and commercial areas. Apart from these two, another solar technology demonstrating high generation capacity is the Concentrated Solar Power (CSP), which is an approach to generating electricity through mirrors that reflect, concentrate and focus natural sunlight onto a specific point, which is then converted into heat. It can also be combined with other power sources to create hybrid power plants[1].

Solar energy in Ireland is provided by direct sunlight (40%) and indirect sunlight (60%). Even if the sky is overcast, its radiation (light) is available on the ground and can be converted into usable heat by solar hot water[2].

There is no up-to-date data on the use of solar energy in Ireland, as its usage is minimal. In 2018 Ireland had an installed solar PV capacity of 29MW, and although there has been exponential growth in its use, it still accounts for only 0.2% of total renewable electricity[3]. Renewables occupying the top positions are wind and bioenergy, including solid biomass, biogas and bioliquids, among others.

Locally, according to data from Leitrim City Council, there are no commercial-scale solar parks in operation in the county. North Leitrim SEC (Sustainable Energy Community) is conducting a feasibility study to provide 5MW and 15MW solar farms to the local community[4]. The new County Development Plan 2023 – 2030 (in draft) has

[1] Brunel (2021). Concentrated Solar Power (CSP), Explained. Link.
[2] GEAI. Solar Energy. Link.
[3] SEAI. Solar Energy. Link.
[4] Leitrim County Development Plan 2023 – 2029 – Appendix IX. Part A - Draft County Leitrim Renewable Energy Strategy.

targets and policies aimed at the promotion and consideration of solar energy in agriculture, industry, residential and commercial sectors.

At the national level, the Climate Action Plan 2021 (CAP-21) sets out targets to increase the use of solar and wind energy by 80% and reduce electricity emissions by 62% by 2030. This was also supported by the first auction of the Renewable Electricity Support Scheme (RESS 1), which supported 82 wind and solar projects, including community-led projects. The outcome so far has been disappointing as the take up of RESS 1 offers has not been fully accomplished to date.

Benefits of solar energy

- Solar Energy is one of the most affordable and cost-effective renewable energies available. The costs of producing solar energy have been drastically reduced, making it a very efficient resource[5].
- It has great potential to be exploited. Less than 0.0005% of the Earth needs to be covered with solar energy systems to power the entire planet[6]. Ireland's solar climate is as effective as 70% of the solar climate on the Mediterranean coast. In Ireland, a horizontal area of 1 square metre receives an average of approximately 1100 kilowatt-hours (kWh) of solar energy per year (the equivalent of 120 litres of oil).
- New forms of sustainable energy such as green hydrogen, capable of substituting fossil fuels and decreasing carbon dioxide (CO2)[7], are made possible by solar energy, which makes more energy available to meet demand and the need for long-term energy security.
- Solar panels have a carbon payback between 8 and 24 months, depending on the type of panel and its components. For example, it is estimated that a typical panel can avoid 900 kg of CO2 per year, which results in a carbon payback of 1.6 years.
- The use of residential solar energy allows for greater energy independence and lower energy bills. Excess energy generated can be stored (via batteries) and used at a later date or sold back to electricity companies for credit or profit[8].
- Because solar panels can be placed on roofs and other surfaces, they are an unobtrusive and less visually disturbing resource.
- Solar projects generate local investment opportunities and jobs, can be community-based and community-driven, building stronger and more resilient communities.

[5] Leaman, 2015.
[6] Leaman, 2015.
[7] Hosseini, Seyed Ehsan; Wahid, Mazlan Abdul (2019). Hydrogen from solar energy, a clean energy carrier from a sustainable source of energy. International Journal of Energy Research.
[8] Leaman, Chris (2015). The benefits of solar energy. Renewable Energy Focus, 16(5-6), 113–115.

GEAI's concerns

- Solar power in Ireland is still in a very early stage of development. There is only one solar farm in the republic supplying to the national grid in 2022 (Millvale project, in County Wicklow)[9] and other two under construction, showing levels of solar power generation very small in comparison to Ireland's total energy needs.
- The use of large areas of land for power facilities can affect vegetation and wildlife as in loss of habitat and affect species classified as sensitive (Solar Energy Development Programmatic EIS, 2016). Central concentrator power systems could be a danger to birds and flying insects can also be burnt when flying close to the reflector's area[10].
- Storage: The availability of sunlight is not consistent and solar power has a low-capacity factor (measurement that compares produced energy with the energy that it would produce if operating at full capacity for the same amount of time) comparing with other sources of energy.
- Many communities do not have the capacity or organisational experience to empower themselves to take full advantage of renewable energy opportunities that arise. In addition, a community may not have the necessary specialist skills to develop a project[8]. There's a need for mentoring in the process. Technical leadership and guidance to develop the renewable projects; scope, goals and needed partnership. Without specialist support, it is likely that expensive mistakes will be made[11].
- The current grid is not designed to accommodate diffused amounts of renewable energy, and significant upgrades will be necessary to make it "solar ready." Similarly, the way that electricity is billed needs to be reformed in order to provide a fairer return for solar power producers.
- Tension over electricity supply: Renewable energy sources such as wind, solar and hydropower supplied 20% of Ireland's electricity in July, according to EirGrid. The presence of large multinational companies and the rapid expansion of data centres - which are big energy consumers - is exacerbating tensions over electricity supply in Ireland. Regulator proposals to compel reduced consumption in peak demand periods have sparked anxiety over shortages, according to IDA, Ireland's inward investment agency which supports over 1,700 multinationals in Ireland.

Actions GEAI believes should be considered

- The government should decide targets for solar power and heat for domestic and industrial use. Right now, almost all efforts are focused on wind energy. More efforts to put solar on public buildings and for SMEs use should be pursue.
- Engaging citizens and investors is fundamental for the transition to a low carbon future and for the development of solar energy in Ireland. The Government needs to play a role in this transition and should focus on the priorities of social acceptance of renewable energy sources and citizens education, particularly as a way of reducing demand.
- GEAI supports and encourages community ownership of solar energy projects and defends the development of local energy co-operatives as a way of domestic and industrial auto-production at a grid-scale with direct benefits for the local communities.

[9] Solar 'transformation' on the way as 66 new solar farms approved to supply electricity. Link.
[10] GEAI (2016). Solar Energy in Ireland Position Paper. Link.
[11] Platt, Reg. (2011). Green Streets: Strong Communities. Institute for Public Policy Research. Link.

- Create an EU-like consultative platform[12] (Advisory Hubs look alike) that supports key stakeholders such as citizens or local authorities, by providing targeted technical and administrative support for the promotion and implementation of such projects. These hubs can also be places to share best practices and connect with communities that want to develop projects or have already implemented them. One of the positive aspects of the initiative is the collection of reliable and straightforward information on which action and support frameworks are better suited for future programmes, and what changes to current regulations should be made to benefit rural communities.

- Conduct workshops and webinars to raise awareness and the capacity of communities to rapidly create community-led solar projects. Their aim will be to share as much information as possible on the resources available in terms of financial, material resources and community impact strategies. If the wider community is to develop such a project, it is crucial for it to be accompanied by a clear strategy for engagement and building trust.

- Encourage the use of solar energy on farming through *agrivoltaics* (combining solar farms with productive farmland). This strategy aims to address competition for land use and increase the income of landowners, by integrating solar panels on active farms. This will remove the separation between energy and food production. In fact, data show that under agrivoltaics land productivity increases by 35% to 73% on farms that integrate these systems into their crops and also, reduce competition for land, since generates renewable electricity without taking away arable farmland resources for food production[13, 14, 15].

- Access to finance: Providing financial options to rural areas where the costs of developing renewable energy projects are difficult and are perceived as a high-risk investment would help communities that sometimes compete with development companies without the resources and knowledge to access to finance. These options could include low-interest loans, loans from green banks, tax exemptions and carbon taxes, etc.

- Electrification strategy: Focusing on allowing community projects to connect to the grid more easily. To deliver stable connection to rural areas, a long-term electrification strategy is needed, including an energy access plan, which should categorize different areas in accordance with the possibility of being reached by the grid at reasonable costs or considering connection to the national grid for communities at no cost.

- A priority of the Government must be the upgrading of the existing grid together with the establishment of adequate transformer networks allowing communities to connect to the grid without huge costs, as is the case at present. It is fair to say that the greatest impediment to community energy in Ireland is the lack of access to the grid, requiring extraordinary connection costs.

- Benefit fund: direct funding, supporting projects being developed in the region and incentivizing local small businesses… These should be identified and agreed upon according to the size and type of SSG, especially to provide flexibility for smaller communities and communities in rural and vulnerable areas. In these cases, support and targeted advice must be provided.

- Accountability: Projects under the SSG with the support of the Government, if needed, could present reports on ways they are going to identify vulnerable households to prioritize their access to the Benefit Fund; Work on strategies with local NGOs on the best ways to help these specific vulnerable groups;

[12] Examples: Energy Cities Hub; Energy Poverty Advisory Hub; Eu Science Hub; Energy Efficiency - European Energy Hub.

[13] Pascaris, A. S., Schelly, C., Burnham, L., & Pearce, J. M. (2021). Integrating solar energy with agriculture: Industry perspectives on the market, community, and socio-political dimensions of agrivoltaics. Energy Research & Social Science, 75, 102023. doi: 10.1016/j.erss.2021.102023

[14] Fraunhofer (2017). Harvesting the Sun for Power and Produce – Agrophotovoltaics Increases the Land Use Efficiency by over 60 Percent. Link.

[15] Metsolar (2021). What is agrivoltaics? How can solar energy and agriculture work together? Link.

establish indicators or following-up methods to monitor whether the actions implemented are being effective in this area; Local Authorities can create support frameworks in the form of financial and non-financial schemes to provide the necessary incentives; and finally, by producing impact reports and assigning community leaders to oversee the transparency of the process.

Strategies to create community engagement could include the following

The International Renewable Energy Agency's brief on Community ownership models (2020) offers different techniques based on community owned projects. For example[16]:

- Electricity generation plants where the electricity generated is used by the community, thereby becoming "prosumers" (producers and consumers)
- District heating systems following the same scheme
- Community energy storage or
- Energy efficiency systems

However, Community Engagement is not limited to these examples, there are different ways to empower companies to include communities in their projects. One of the primary steps is to accept that engagement with the local population and leading organisations is vital for the success of any project and must be initiated long before the project starts. Social acceptability plays a very important role and this is not only achieved through the creation of community funds or low compensation, but also by listening to and validating the concerns of the community.

Having community representation figures within the company's staff is vital, as well as training relevant personnel (engineers, developers, decision-makers…).

Finally, it is also important to create codes of conduct, best practices and action plans on community engagement to facilitate this work and allow a real inclusion that can be monitored, measured and improved in the long term.

GEAI already has published an article on *Community Engagement in Renewable Energy projects* offering better insight.

Final conclusion

Ireland has set ambitious targets for reducing its carbon emissions, but it has yet to put in place the medium-term policies that would make those targets achievable. Without a clear plan for how to transition to a low-carbon economy, Ireland is at risk of falling behind its European peers. Policymakers should invest in solar energy and set ambitious targets for its growth. solar energy is not just a viable option for energy production, but it is also an increasingly attractive option.

GEAI reaffirms its previous position, solar energy is an important renewable heat and power energy source. Ireland's energy policy should focus on stimulation of the use of solar energy to accelerate the transition to a low carbon energy future while ensuring buy-in from communities in the implementation of such policies.

[16] IRENA (2020). Community-ownership models: Innovation Landscape Brief.