# Dingwall Wind Co-op

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Sharing wind power in Ross-shire

## Introduction

The Dingwall Wind Co-op was developed by David and Richard Lockett (the owners of the land) in partnership with Sharenergy, a co-operative helping to set up RE cooperatives. The turbine operates on the property of the Knockbain Farm near Dingwall.The Locketts' acquired planning permission and grid connection, after they approached Sharenergy, which assured they can help them with the share offer to the rest of the community. The co-op structure, mitigated some of the risks associated with developing a wind project. Furthermore, Richard specified that he was fond of the idea of shared ownership.

The Wind Co-op owns and runs a 250kW wind turbine (WTN 250) just above Dingwall in Ross-shire. The turbine is the first 100% co-operatively owned wind development in Scotland. The Co-op was launched in September 2013 and the turbine was commissioned in June 2014. The Co-op has 179 members, 90% of whom are from the local area. The shares are between £250 and £20 000, with an average about £4000.

The co-op contributes to a community fund estimated at between £2000 and £8000/year. Members of the Co-op receive a return on their investment and EIS (Enterprise Investment Scheme for Investors) tax relief. The landowners, who originated the project, receive a rental payment for use of their land.

## Case Study Approach

The data on the market access of renewable energy technologies were collected both from the case studies in different renewable energy technology projects and from the secondary sources. To collect specific project data, a template was established with following subsections:

- **Technology description and a project summary**
  - Innovative characteristics
  - Technology readiness level
  - Available product / service supports from the manufacturer
  - Any standard procedures / requirements for integrating the technology into existing electricity networks, buildings and/or mainstream energy appliances / systems
- **Commercialisation of the technology**
  - Is the technology already a commercial solution?
  - Are there re-sellers of the technology, or is the technology available only from the manufacturer?
  - Identified main market area
- **Cooperation partners and networks**
  - Description of the roles of the co-operation partners and networks in the RE technology project.
  - How have they supported the market access of the technology?
- **Assessment of the technical and economic risks**
  - What kind of procedures have been made for assessing the technical and economic risks of the project
  - Who is bearing the risk of the investment (manufacturer, client, shared between them)?
  - Is the public sector involved in risk sharing? (e.g. co-financing, or platform for technology demonstration)
- **Drivers and barriers in the RE technology project**
  - Main drivers in carrying out the RE technology project
  - Barriers, and how they have been overcome (such as price of energy, availability of resource, specific expertise, policy enabling the technology)
- **Funding and support mechanisms**
  - The financial support received by the project: amount/support rate, type and purpose of the support, agency providing the support, significance of the support for the project
  - Types of soft support/advisories received during the project: the use of soft supports (advisory, training, mentoring etc.) during the technology development or implementation, and how successful these have been
- **Monitoring the performance**
  - How are the technical/non-technical aspects of the RE technology case monitored?
  - Information on the design, installation requirements and procedures, operational performance, and costs/financial arrangements
- **Conditions for the technology transfer & adaptation in different partner regions**
  - What are the main requirements/preconditions for transferring the technology and applying it in other partner regions?
  - Description of the main drivers and barriers for the technology transfer (such as. Energy price, resource needs, certain support etc.)
- **Project results**
  - Benefits & lessons learnt
  - Post- project benefits

## Technology Description

The company Realise Renewables helped to develop the project idea. They've discussed a range of different types of wind turbines before they came to a decision to choose WTN 250kW turbine. The wind power technology is from WTN (Wind Technic Nord). The WTN 250 kW turbine is manufactured in German, and there are about 150 plants operating worldwide. However, in the particular area, the turbine is first of a kind. The manufacturer WTN describes technology in detail.

The annual energy production was estimate to be around 400-450 MWh but in reality it less, amounting to around 350 -400 MWh. Technology has 5-year warranty and service takes place in 6 and 12-month periods. Richard indicated that other than minor hydraulic and electrical issues in the first year, there haven't been any problems with the turbine since it's been erected.

One key driver for choosing specifically the WTN 250kW turbine is associated with the fact that this was the biggest turbine that could get up the road without building a new road and changing the landscape. This was of imperative importance to the land owners.
The turbine could not be located in most optimal site; however, the chosen site has less landscape impact.

Figure 1. The landscape

## TRL and Technology Scale

TRL 9

Turbine scale - 250 kW. Digital wind sped metering suggested and average speed of 6.5 m/s.

Figure 2. WTN 250kW turbine

## Cooperation partners and networks

Sharenergy helps communities to set up and own renewable energy projects. It has been essential partner providing support for the Dingwall Co-op business and funding models, and linkages to the technology providers.

Sharenergy uses existing resources where possible, and works to build up local capabilities. The services they offer are: site finding and initial assessment, B=business planning, society set up, share

offers, administration, landowner engagement, technical, regulatory, installation, outreach and trouble shooting. Further information can be found on their website: http://www.sharenergy.coop/services/.

## Risk assessments and supports received

The cooperation with the Share energy and available business model and technology consultancy was a significant driver for the project. The community has also good local cooperation network / action group and dedication for improved energy self-sufficiency and sustainable energy. The production support is a significant economic driver for the project. Major barriers were not identified; there were only minor challenges related to site construction.

The capital finance for the project was estimate at £856,000. The money were raised through share offer, where members of the public could invest between a minimum of 250 and maximum of 20,000 shares at £1. Almost half of the shares were sold within 4 days of the release of the share offer, and 75% of all shares sold to members of the public within 15 miles radius of Dingwall. The total costs were estimated to be around £790,000 and the remaining £66,000 were put in the Co-op budget.

Dingwall Wind Energy co-op received assurance in advance form HMRC that the first 150,000 shares can benefit from Seed Enterprise Investment Scheme (SEIS) and Enterprise Investment Scheme (EIS) tax relief: 50% of the value of shares for SEIS and 30% for EIS can be claimed back against income tax. Richard specified that if it wasn't for the EIS tax relief, that they would have struggled to raise the capital finance needed.

David Lockett financed the procedure of obtaining a planning permission and connection to the national grid, which was later reimbursed by the cooperative.

The expected average return on the investment for the members, over the 20 year lifespan of the turbine, is around 7.5 per cent. The members of the co-op will start reaping the benefits of their investment starting next year. This will be the start of the return on their investment for the next 16 years plus interest. The energy sells price is about 5.4 p/KWh and production support 18 p/KWh, i.e. there is good guaranteed return for the investment.

## Drivers and barriers

Drivers for community schemes are mainly connected with economic benefits received at local level and own energy resource, which is imperative for the long-term sustainability of remote and rural areas.

Repowering of sites reaching their expiry date are seen as another option to involve communities, where developers will be urged to give opportunities to communities – such as shared ownership and local involvement, as when the early wind farms were consented there were no policies on shared ownership and community benefits.

Barriers to small – scale community wind is the reduction of FITs and deployment caps. Currently, 25 projects supported by CARES are at a halt, this is as result that the very nature of a community energy

project. Most of the times they are led by local volunteers; thus, they take longer to develop and impacted more by the FIT changes.

## Conditions for the technology transfer, adaptation and new market deployment

This case is an example of the impact of the shared experiences and available technology and business models for successful technology transfers. The experience on the technology in central part of Scotland resulted in market expansion towards north. The business model advice, among other factors, resulted in successful fund-raising. The significance of shared models and consultancy is evident for the technology market access.

Conditions for the transfer of this model of development of wind farms are reliant on early engagement with stakeholders, distribution of consistent and relevant information about the wind power proposal and ensuring the benefits stay in the community and are used for the benefit of the community.

Levelized cost of electricity (LCOE) for onshore wind in expected to fall under £63 per megawatt hour, according to the Scottish Government, which is projected to be cheaper than the cost of a CCGT gas station in 2020. Thus, LCOE, combined with savings on bills would be a driver for further deployment of the technology.

In the Everoze Report, commissioned by Scottish Renewable, is argued that cost can be reduced and investment can be upheaved under three conditions: smarter planning system (use of latest products, coherent consenting & repowering), transformation of the grid and revenue revolution.

Repowering is a further incentive for new market deployment, as the 25-year planning permissions in Scotland are reaching their expiration date, repowering can reduce costs and increase returns by maximizing efficiency; thus, maximize value of the sites.

Barriers to new deployment established by the Scottish Government include, need for further investment in transmission and distribution networks reinforcement, so they can take on the new capacity.

## Project Results

## Benefits

The key benefits that resulted from the project include:

- Yearly displacement of 240 tonnes of CO2e.
- Power generation enough to supply 120 households.
- FIT income and local community fund.

## Lessons Learnt

A wind resource assessment was carried out to investigate the energy yields. Technology was assessed basing on the earlier examples in central part of Scotland; there was recommendation from the technology consultancy. Business model was also derived from earlier examples of Share energy.

## Post Project Benefits

Dingwall Community fund makes regular calls for applications aimed at offering grant schemes to local organisations. The last call offered grants of £250-£2000 for projects that will improve public access to the countryside.

Heartland Community Wind is a Community Benefit Society. Following Dingwall Wind co-op, the society invested in two WTN 250kW turbines. The turbines are 100% owned by the members (locals and members from further afield). They are reinvesting the profit from the turbines by providing scholarships for local young people.

## Contact Information

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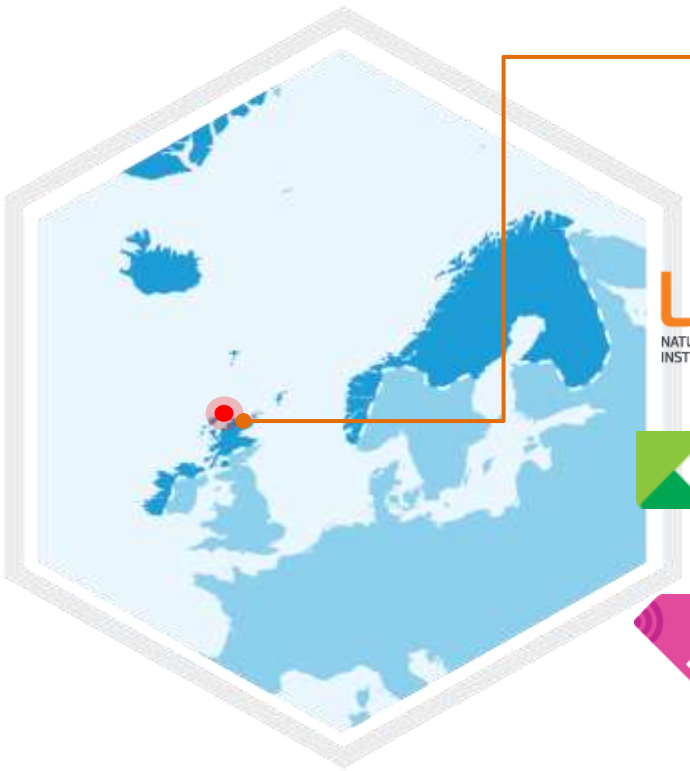
## PARTNERS

GREBE will be operated by eight partner organisations across six regions:

- **ERI**



Innovation Center Iceland

eri environmental research institute

WDC WESTERN DEVELOPMENT COMMISSION COIMISIÚN FORBARTHA AN IARTHAIR

Luke NATURAL RESOURCES INSTITUTE FINLAND

Fermanagh & Omagh District Council
Comhairle Ceantair Fhear Manach agus na hÓmaí

Karelia

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