6 Assessing Wind Farm Developer's Projects

This section guides community groups through the process of assessing the risks involved in investing in a commercial developer's wind farm project.

This includes detailed guidance for assessing the rate of return from such an investment utilising the Financial Model contained on the CD Rom which accompanies this guide.

6.1 Assessing Risk

Until it becomes feasible for communities to consider developing their own projects, both broadly-based and narrowly-based community investment groups who wish to become involved in wind energy will be required to negotiate to buy into projects which are already well advanced. The proposed REAG would assist with such negotiations.

Every wind farm project begins when an individual, or a small group of people, start to investigate the possibility. If the preliminary results seem promising, the pioneers will then utilise their own time and money to progress the project to a certain stage before inviting others to invest. The crucial question for both broadly-based co-operatives and narrowly-based companies is therefore "how much money should we pay those who got this project going for the work they did and the financial risks they took?"

This will apply to almost every project for which investment has to be sought from a wider group than those who initiated it. This is because, unless the work and investment by the pioneers was either very small, covered by their employers, or they are very community-minded, they will require some compensation for their efforts. More specifically, as a wind farm project moves successfully through its various stages, it will become increasingly expensive for investors to buy in. This is not just because of the increased investment of time and money made by the pioneers but also because as each stage is achieved, the risk that the project will fail is reduced. The 'Community Ownership of Wind Farm Projects' study,[43] investigated the costs and risks of failure at each stage of the wind farm development process. The results are outlined in Table 3.

Table 3: Opportunity and Risk - Stages in a Wind Farm Development Project

Stage	Risk of Failure Before Farm Opens	Cumulative Cost to Reach End of Stage
1. Site Selection The project may not proceed if the wind resource is poor, a grid connection is too expensive, planners or the landowner object.	95%	Up to €20,000 plus time
2. Planning Permission There is a 50-60% chance that planning consent will be refused. The need for an EIA and a grid connection report are major costs.	70%	Up to €100,000 plus time
3. Getting an Electricity Purchase Contract The current AER system makes this unpredictable.	40%	Up to €140,000 plus time
4. Arranging Finance It may prove impossible to raise the required capital.	30%	Up to €150,000 plus time

The stage at which a community group invests is therefore crucial. Broadly-based community investment groups have little option but to invest only when the wind farm has been successfully commissioned (although they will have agreed at an earlier stage to invest, subject to certain conditions). On the other hand, narrowly-based community investment groups will be able to negotiate better terms if they are prepared to risk putting their money into a project at an earlier stage. Both types of group would, however, need to have access to professional support so that a professional approach can be adopted in relation to community/developer negotiations.

For further information see ***File 16: Definition of Risk and Opportunity in the Wind Farm Development Process***

[43] CSA Group Ltd. Final Report submitted to Renewable Energy Partnership, December 2003

6 Assessing Wind Farm Developer's Projects

6.2 Assessing Rate of Return

Three other factors, besides the level of risk, affect the return that investors can expect from a wind energy investment. These are:

- The scale of the project. The costs of, say, measuring the wind resource, providing road access, and obtaining an Environmental Impact Assessment (EIA), are much the same regardless of the number of turbines to be installed, therefore bigger projects can be expected to give a better rate of return.
- The terms that a group negotiates with the initial developers of the project.
- The way the wind farm is financed. Provided everything runs smoothly, the highest returns can be obtained by borrowing 80 per cent or more of the capital required from a bank at a fixed rate of interest for the life of the loan. Such a loan would normally be repaid over the first ten years of the project's life. However, community investors might decide not to borrow at all or, like the Baywind Co-operative (see Part I, Section 2), only to borrow a small proportion of the required capital. This, of course, would maximise the amount of money coming into the community from the wind farm but reduce the actual percentage rate of return.

The difference to the rate of return that various financing arrangements and project sizes can make can be explored using the Financial Model on the CD Rom supplied with this guide. The model can be run for:

- different sizes of a wind farm project;
- different ratios of debt/shareholders' capital;
- different power outputs from the turbines.

The CD Rom includes financial templates which enable communities to assess the rate of return for a wind farm project. The cash flow forecast on the CD Rom is for a 5MW wind farm with typical wind speeds[44] and earning 5.216 cent per kWh[45] for the power it sells, but all these parameters can be changed. The price can be increased or decreased, the farm made larger or smaller, the wind speed increased or lowered.

The example on the CD Rom shows that the revenue generated would be sufficient to service the debt and provide a dividend payment annually to investors. (***File 2: The Financial Model for a Sample Wind Farm)*** Terminology used for calculating the return on investment is shown in Appendix III. Also see ***File 17: Terminology for Calculating Return on Investment***

[44] The community group can consult the recently published Wind Atlas of Ireland (SEI, November 2003) to obtain a reasoned estimate of the average wind speeds for their locality.

[45] The Government's AER VI documentation fixed a price cap for wind energy at 5.216 cent per kWh for large-scale projects (up to 25MW) and 5.742 cent per kWh for small-scale projects (up to 5MW).

6 Assessing Wind Farm Developer's Projects

To illustrate how the Financial Model can be used, three scenarios have been selected and the process of finding the required answers is set out below.

To Begin:

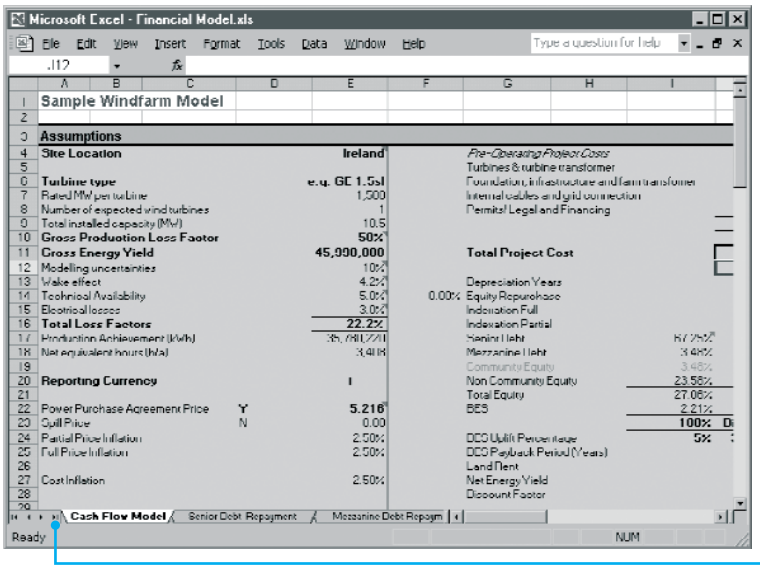
Double click on ***File 2: The Financial Model for a Sample Wind Farm*** on the CD Rom.

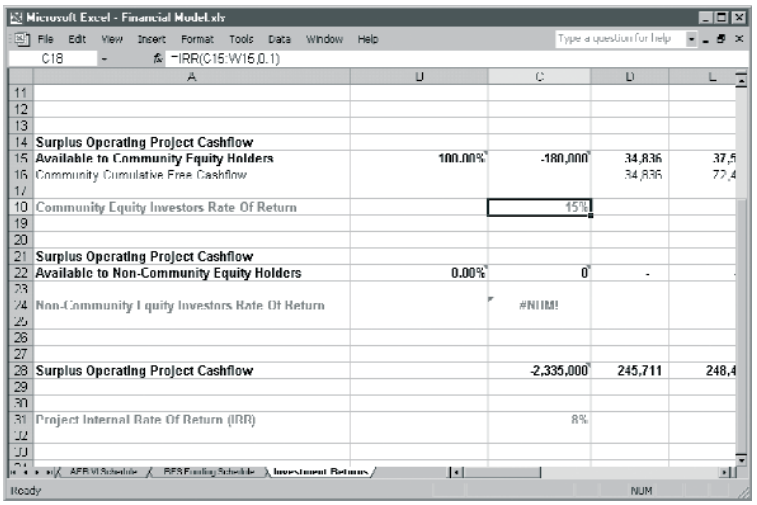
Click on the left arrow on the bottom left hand side of the worksheet tab area until you can see the **Cashflow Model** tab.

Click on the **Cashflow Model** tab. This is the worksheet where the community may enter variable data about the wind farm project in which they wish to invest.

Scenario 1: One turbine to be bought by the community with local equity and bank debt

What would the cash flow revenue be from one turbine owned by the community group and bought with a combination of bank loan and locally raised equity?



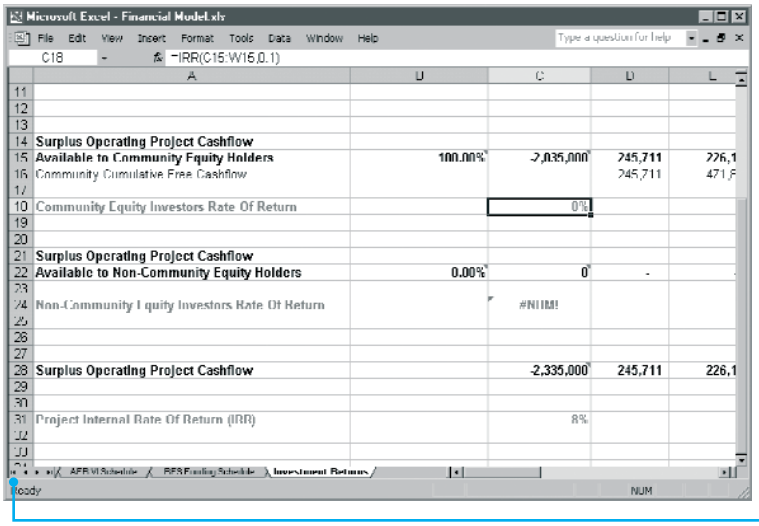


1. Go to the **Cashflow Model.**
2. Click on Cell **E8**, number of expected turbines, and type in 1.
3. Click on **J17**, senior debt, read the comment box and type in, for example, 1,900,000 as the amount of senior debt.
4. Click on **J19** and type in the amount of community equity, for example 180,000. Click on **J18** and type in the amount of mezzanine debt as 0. Click on **J20** and type in the amount of non-community equity as 0.
5. Click on the right arrow on the bottom left hand side of the worksheet tab area until you can see the **Investment Returns** tab.
6. Click on the **Investment Returns** tab.
   - Note that cell **C18 Community Equity Investors Rate of Return** is 15 per cent.
   - Note that cell **C31 Project Internal Rate of Return (IRR)** is 8 per cent.
   - Note that the surplus operating project cashflow available to community equity holders (i.e. revenue) from the wind farm electricity sales for each year is shown from **D15** through to **D20**.

6 Assessing Wind Farm Developer's Projects

Scenario 2: One turbine owned by the community without bank debt

If the community bought a turbine outright instead of getting a loan what would the rate of return be?



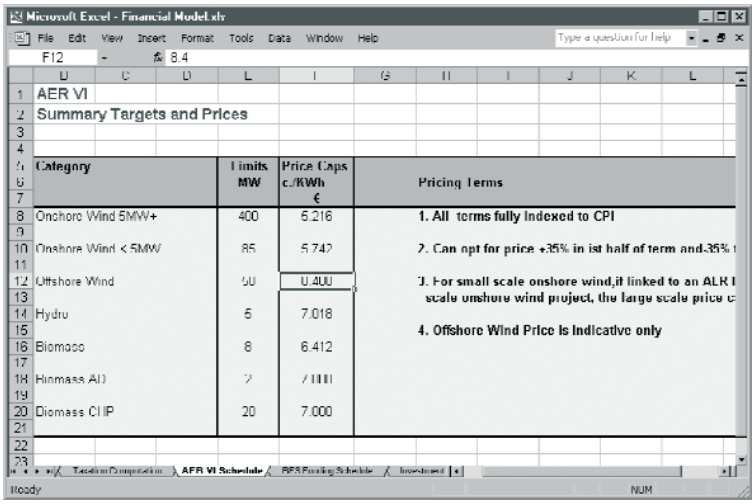
1. Click on the left arrow on the bottom left hand side of the worksheet tab area until you can see the **Cashflow Model** tab.
2. Click on the **Cashflow Model** tab.
3. Click on **J17**, senior debt and type in 0.
4. Click on **J19**, community equity, and type in 2,035,000.
5. Click on the right arrow on the bottom left hand side of the worksheet tab area until you can see the **Investment Returns** tab.
6. Click on **Investment Returns** tab.
   - Note that cell **C18 Community Equity Investors Rate of Return** is 8 per cent.

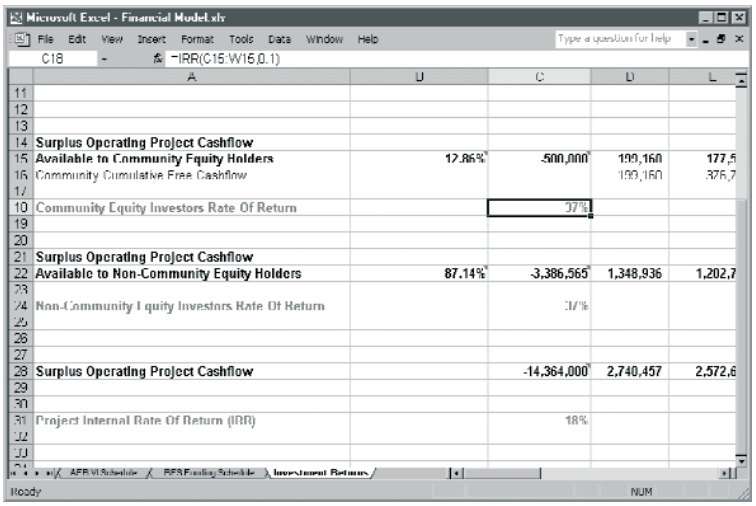
Scenario 3: Variations in power purchase agreement electricity prices

What would be the effect of different price scenarios? For instance, if the German price of 8.4 cent per kWh was applied in Ireland what would be the effect on the rate of return for a 10.5MW wind farm? (Incidentally, the German price is the same as the price offered for offshore wind under AER VI).

1. Click on the left arrow on the bottom left hand side of the worksheet tab area until you can see the **Cashflow Model** tab.
2. Click on the **Cashflow Model** tab.
3. For a 10.5MW wind farm we need to enter a few figures in the **Cashflow Model** worksheet.
   - Type 7 in **E8**, the number of expected wind turbines.
   - Type 1,383,000 in **J6**, Foundation, infrastructure and farm transformer costs.
   - Type 706,000 in **J7** Internal cables and grid connection.
   - Type 9,660,000 in **J17**, Senior Debt.
   - Type 500,000 into **J18**, Mezzanine Debt.
   - Type 500,000 into **J19**, Community Equity.
   - Type 3,386,565 in **J20**, Non-Community Equity.
4. Click on the right arrow on the bottom left hand side of the worksheet tab area until you can see the **Investment Returns** tab.
   - Note from cell **C31 Project Internal Rate of Return (IRR)** that the rate of return is 10 per cent for the existing model for a 10.5MW wind farm.
   - Note that cell **C18 Community Equity Investors Rate of Return** is 15 per cent at the AER VI price of 5.216 cent per kWh.

6 Assessing Wind Farm Developer's Projects





5. Click on the left arrow on the bottom left hand side of the worksheet tab area until you can see the **Cashflow Model** tab.
6. Click on the **Cashflow Model** tab.
7. To change the price click on **E22 Power Purchase Agreement Price:**
   - In the formula bar at the top of the screen change **F8** to **F12**.
   - Click on the right arrow on the bottom left hand side of the worksheet tab area until you can see the **AER VI Schedule** tab. You will see that **F12** is a price of 8.4 cent per kWh.
8. Click on the right arrow on the bottom left hand side of the worksheet tab area until you can see the **Investment Returns** tab.
   - Note that cell **C18 Community Equity Investors Rate of Return** is now 37 per cent.
   - Note that cell **C31 Project Internal Rate of Return (IRR)** is now 18 per cent.