ENERGY SYSTEMS TOOLKIT

Finance Module

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Highlands and Islands Enterprise
Iomairt na Gàidhealtachd 's nan Eilean

BACKGROUND

The Energy Systems Toolkit (the 'Toolkit') is aimed at organisations, community groups or businesses, at different stages in the project development process, whether exploring ideas to develop into a project or additional options to include in a current project. The toolkit aims to provide further information to organisations on energy systems topics that will help to determine whether a project idea is viable or highlight alternative options that should be considered. The Toolkit also provides support through the development process to construction, highlighting any support available to them. This could include:

- Signposting businesses or communities to additional support (technical or financial) in developing their project, to potential project partners or to potential sources of funding;
- Provide detail on key considerations and barriers across different technology projects; or
- Highlight different technology projects and themes that have been developed successfully across Scotland.

For each of the topics, the guidance provided will be informative and will indicate the actions to be taken and the next steps the organisations should take to progress.

The Toolkit links to other relevant guidance documents, such as the CARES toolkit, which can be used in parallel.

INTRODUCTION TO FINANCING

Adequate funding is essential in order to deliver any energy systems project. Being able to correctly identify the most likely sources of funding at each stage in a project's life can save time and reduce costs, leaving the project development team free to focus on delivering the project. Success will come more easily to groups that are properly prepared for fundraising.

As with renewable energy generation projects, energy systems projects typically have high up-front costs. In addition, energy systems projects typically incorporate new technology or novel configurations of existing technologies. This can make some traditional sources of funding such as debt finance difficult to access during the early stage of a project.

The definition of an "energy systems project" is extremely wide, and there is no single funding route that is applicable to all possible projects. The approach that we have taken in this module is to examine the different sources of funding that are typically available to an energy project, and discuss how each type of funder might regard an energy systems project. We have then looked at a number of hypothetical example projects in order illustrate the types of funding options that might be available to each.

Any financing process is complex and this will be especially true with energy systems projects. It is strongly recommended that professional advice is sought at an early stage from a suitably qualified and experienced adviser. Certain financing options will require this adviser to be authorised and regulated by the Financial Conduct Authority, particularly if funding is to be sought from members of the public. Seeking advice at an early stage will allow all financing options to be assessed, which will help to minimise the cost of funding whilst simultaneously maximising the chances of a successful outcome.

STAGES OF DEVELOPMENT

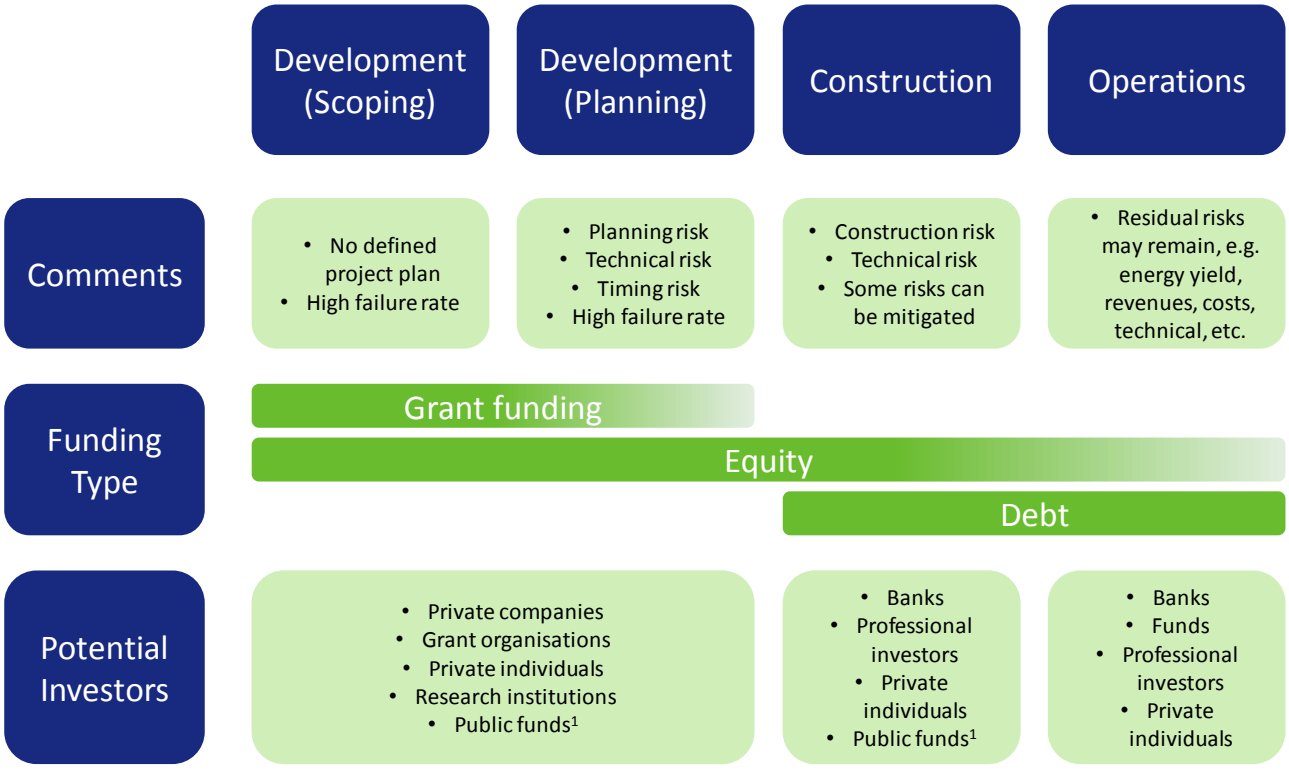
As an energy systems project progresses through the development process, the risk profile of the project changes. Development can broadly be split into three stages, as follows:

1. **Project development (scoping & planning)** can be quite lengthy, and encompasses everything from the initial assessment of a community's needs and technical feasibility studies through to obtaining planning consent and putting in place the necessary legal and commercial structures for the project. There are material risks for funders at this stage due to technical, financial, engineering, planning and regulatory hurdles. A significant proportion of projects fail at this stage.

2. **Project construction** can be quite lengthy if significant civil engineering work is required (e.g. a dam, earthworks or foundations); or a matter of weeks for simpler projects (e.g. the installation of a rooftop solar PV system or a backup battery). The risks during the construction stage vary widely depending on the type of project that is being constructed. It may or may not be possible to mitigate some or all of the risks using insurance or an appropriately structured subcontracting arrangement during construction.

3. **Project operation** is typically lower risk than the other stages of a project. For an energy systems project, there may still be some revenue, technical or operating cost uncertainty and this will determine the types of funders that will be interested in providing long-term finance for the project.

The diagram below summarises the traditional approach to funding renewable energy projects.



[1] Usually only for community projects

Energy systems projects are by their nature more complex and more diverse than renewable energy projects, and will require different approaches to funding. Whilst the above diagram can serve as a general guide, the appropriate funding sources will be in fact be determined by the specifics of each project. The next section looks at the principal sources of funding in more detail and outlines the requirements and limitations of each. The final section contains an outline of several different hypothetical projects in order to illustrate how their funding might be approached.

A long list of different sources of funders is available on the CARES website[1].

SOURCES OF FUNDING

Grant Funding

Grants are a key source of funding for early stage or technically innovative projects. The principal advantage of grants is that they do not require repayment. However, they do suffer from some disadvantages. Sources of grants are typically limited in terms of the types of projects that can apply, the overall amount of funding available, and the timescales for application and deployment. Completing grant applications can be time-consuming and there is no guarantee that any application will ultimately be successful. Once awarded, funds often carry restrictions on when and how they can be used, and recipients must often commit to producing a report explaining how the money was spent and detailing the outcome of the project. State Aid rules can influence the level of public grant you are able to receive over a period of time (known as de minimis) and what grants you can combine (for example, grants for some capital equipment cannot be combine with feed in tariff).

There are many sources of grants targeting different outcomes, and it is often possible to tailor a funding application in order to qualify for different types of grants. For instance, an energy systems project may qualify for grants targeting some or all of renewable energy, energy efficiency, energy resilience, fuel poverty, community regeneration, social deprivation, local enterprise or a specific area of scientific research or technical innovation.

Grant providers can be private trusts, government bodies or other organisations such as the National Lottery. Sources of grants change frequently but up-to date lists are available on the internet from a number of websites including:

- Open 4 Funding (www.grantnet.com), a search engine that provides comprehensive coverage of all available funding opportunities, including European Union, national Government programmes, regional schemes and local initiatives.
- Big Lottery Fund (www.biglotteryfund.org.uk), which includes a searchable list of all open funds. The Big Lottery Fund is responsible for distributing 40% of all of the money raised by the National Lottery.
- The Green Grants Machine (www.greengrantsmachine.co.uk), an information resource for companies which provides information on grants, loans, awards and other funds available to help them become more environmentally friendly.

[1] http://www.localenergyscotland.org/media/65471/cares-toolkit-sources-of-finance-v3.pdf

- Funding Scotland (www.fundingscotland.com), a website owned and maintained by the Scottish Council for Voluntary Organisations which lists funders with a track record of supporting projects in Scotland.

Although grant funding is usually available only during the early stages of a project's life (before the project is constructed), some schemes do offer assistance with ongoing operating costs.

Equity Funding

As noted above, the definition of an "energy systems project" is extremely wide, and project returns will depend on the precise nature of the project, the capital costs required to implement it, and the revenues that it will be able to generate once operational. As a rule of thumb, equity returns for a low-risk project should be around 10% per annum over the life of the project (or perhaps even slightly lower for very low risk projects); whereas higher-risk projects should be capable of generating returns closer to 20% per annum.

Private Companies

Private companies are potential funders of energy systems projects, particularly where they are contributing to some of the technology that is being deployed. Funding may come in the form of cash, assets (e.g. electrical equipment or electric vehicles) or other resources such as manpower and expertise. Private companies can get involved from the earliest stages of the project and can remain involved into the operational stage.

For example, a Distribution Network Operator ("DNO") may contribute equipment and manpower to a project to alleviate a local network constraint for a remote community. If the project is successful then the solution might be applicable to other remote communities, saving the DNO significant time and money in managing its network.

Alternatively, a private company may develop an innovative way of installing charging points for electric vehicles in remote areas. They may be willing to contribute equipment and expertise to a project if they believe that it will further their wider business aims.

The identification of suitable private companies to approach will depend on the specific nature of the project being pursued. You may have local contacts that you could approach to invest in the project, with support from financial and legal advisers. They will be able to assist you in identifying likely partners, making initial approaches and engaging with them as well as supporting agreements with potential investors you identify.

Local Energy Scotland has a framework of legal and financial advisors that have been through an initial screening process, with a view to simplifying the procurement process[2].

Venture Capital

Venture capitalists have a higher risk appetite than most other professional investors and seek a high level of return due to the fact that a significant proportion of their investments will not be successful. They usually invest in commercial propositions rather than community projects, and

[2] http://www.localenergyscotland.org/funding-resources/resources-advice/framework-contractors/

typically target highly innovative sectors with very high growth potential such as technology or biomedical sciences.

It is possible that venture capital investors could contribute to early-stage energy system projects. Venture capitalists typically invest their money as equity (i.e. shares) in a project in the hope of making a high return on investment. They will therefore require some rights over the project or the technology that is being developed. A more likely scenario is that a private company involved in an energy systems project would itself receive venture capital investment in order to fund its participation in the project.

Your financial adviser will be able to assist you in identifying potential venture capital investors for your project.

Private Equity

Private equity investors are professional investors with a lower risk appetite than venture capitalists. They seek slightly lower returns and expect a greater proportion of their projects to be successful.

Private equity investors tend to focus on specific sectors in which they have particular expertise, for example infrastructure, energy or technology. Energy investors often look for "platform" investments, where a single project type can be developed that can then be replicated at several other locations. This allows them to deploy significant amounts of capital by investing in additional projects should the first be successful. This reduces the time that they have to spend on due diligence as once the project has been proven in one location, the technology, the contracts and the legal agreements can then be used in another with minimal change, so minimal need for verification, validation and sign off.

As with venture capital investors, private equity investors typically invest in commercial propositions rather than community projects. While it is possible that a private equity investor would invest in an early-stage energy systems project, it is more likely that they would invest in one of the private companies that is involved in the project. This would give them a direct equity interest in the company that owns the technology being developed.

As before, you may have local contacts you can approach, and your financial and legal advisers will be able to assist you with putting together the necessary agreements of this and in identifying potential private equity investors for your project.

Social Funders (Equity / Debt)

Social funders such as Charities Bank or Social Investment Scotland may contribute funding to schemes with demonstrable social benefit. This could occur at either the development or construction stage of the project. Any investment is likely to be dependent on demonstrating that specified social criteria have been met, and may require ongoing monitoring of social impacts and reporting on outcomes. Your financial adviser will be able to assist you in identifying potential social funders for your project.

Debt funding

Bank Finance

Bank finance is used to fund the construction of energy projects. The two most common structures that are used are project finance and asset finance. The requirements of funders are fairly rigid and this type of funding will only be suitable for particular projects. This section summarises the key features of each type of bank finance and the requirements of lenders, is included here for completeness.

Project finance was first used in infrastructure to finance the construction of the Panama Canal. It became widespread in the 1970s and 1980s as a method of financing North Sea oil & gas projects, and has since been widely used to finance the construction of onshore and offshore wind farms and large solar PV sites. The main benefit of this structure is that the bank debt is secured solely on the assets and cash flows of the project. If the project fails to generate sufficient cash to repay the bank debt, the bank will ultimately take control of the project. However, the bank has no other recourse to the ultimate owners of the project. The principal disadvantage of project finance is that it is expensive and time consuming to put in place. Because the bank needs to be highly confident that the project will be constructed as planned, very detailed due diligence investigations must be carried out before any loan is finalised. This cost is ultimately borne by the borrower, either in the form of up-front fees or higher interest costs.

Asset finance is secured solely on the assets of the project. Assets must be easily movable (usually not fixed to the ground) and must have a readily identifiable second hand value. For example, it should be possible to obtain asset finance to part-fund the purchase of an electric vehicle. On the other hand, it would be impossible to obtain asset finance to fund the construction of a hydroelectric scheme as the asset itself is not readily transportable. Asset finance has the advantage that it is usually much faster to put in place than project finance, and the interest rate payable on the debt is often lower. However, it is only possible to borrow a percentage of the value of certain identified assets, so the overall amount of debt funding that can be raised is often lower than for project finance. This means that more finance must be raised from other sources in order to fund the construction of the project.

Regardless of the financing structure being adopted, there are a number of factors that banks generally prefer when providing finance for a project, including:

- Established technologies with a proven track record
- Revenue visibility and predictability, for instance a FIT contract or a long-term offtake agreement
- Well-established, financially strong counterparties for project delivery
- Long term operations & maintenance contracts with reputable and experienced providers

Financing terms vary depending on the type of project, size of loan, market interest rate outlook, project counterparties and financing structure being adopted. However, developers of suitable projects may be able to borrow 50-75% of the project's capital costs at an interest rate of 6-8% per annum and a repayment period of 5-10 years.

Your financial adviser will be able to advise you on whether your project is likely to meet the requirements of banks, and (if so) on the most appropriate banks to approach.

Innovative funding streams

The different sources of finance available on the market are changing rapidly to meet the demands of the market.

Crowdfunding (Equity)

Crowdfunding is a general term that encompasses the raising of equity or similar finance from the public, typically with a very small minimum investment size. It can be limited to a local community or open to investment by anyone in the UK (or beyond). Investment opportunities are usually marketed directly to the public via specialist websites that contain details for several different projects or companies seeking funding.

Some crowdfunding opportunities are sold as being debt instruments, but, in reality, the majority of them have a very similar risk profile to equity. Equity investments rank at the bottom of the capital structure, meaning that investors are exposed to a loss of dividend income if the company or project does not perform as predicted. If the project proves not to be financially viable and is wound up, equity investors are the last to be repaid, and their investment is only be returned after the senior and junior debt holders have been repaid in full and all costs have been paid. For these reasons, equity and equity-like instruments are a high risk form of capital from the investors' point of view.

From an investors' point of view, there are a number of factors that make crowdfunding a risky proposition:

- Exposure to a single company or asset (or a very small number of assets). This means that any shortfall in performance relative to expectations is likely to have a material adverse impact on investor returns.
- Often high transaction costs, which are ultimately borne by investors. If a company has to pay transactions costs then less money is available to provide a return to investors.
- Often limited liquidity, meaning that investments are difficult to sell if the investors need their money back. Many crowdfunding investments, particularly in renewable energy, are designed to be held for the full term of the investment product, which can be 15-20 years.

These risks create a public relations risk for anyone that chooses to use crowdfunding to finance their projects. This is in addition to the risks that crowdfunding shares with green bonds, i.e. funding uncertainty, high legal and advisory costs, and a requirement to comply with Financial Conduct Authority regulations.

In general, it is unlikely that crowdfunding will prove to be a viable financing option for many energy systems projects. Your financial adviser will be able to advise you further as the market for crowdfunding continues to develop.

Green Bonds - Debt

There is increasing discussion about the potential for green bonds to part-fund the construction of renewable energy schemes. There are a number of instruments that could potentially fall under this heading, but the most common involves raising money from the public in order to fill a "funding gap" for a small project, often one that is community-owned.

From a funding perspective, one of the key attractions of this type of structure is that it offers a way of generating relatively high returns relative to the risks being assumed by investors. The usual structure is that the bonds will take the form of junior (or mezzanine) debt, i.e. they will rank above equity but behind senior debt in the project's financing structure, meaning should there be any shortfall in the projects ability to repay its' debt, the senior debtor receives payment first, then the junior debtor and finally the equity investor. This means that no dividends will be payable to shareholders until returns have been paid to the bondholders; and if the scheme is wound up then any value remaining after the senior lender has been repaid will accrue to the bondholders first, and only then to the shareholders. This additional security is important when selling direct investments to the public as they may not have a lot of direct experience of the financial characteristics of renewable energy projects.

The main difference between crowdfunding and green bonds is that investors in green bonds are usually exposed to a portfolio of assets; whereas those in crowdfunded propositions are often exposed to a single asset. This makes crowdfunding significantly more risky for the investors than green bonds.

The potential for green bonds to be used to part-finance an energy systems project would depend entirely on the specifics of the particular project. Because this structure usually involves selling investments directly to the public, it is important that investors are not exposed to undue risk. This explains why they are usually discussed in relation to the re-financing of operational wind farms or solar PV projects, as the risks and returns of these types of projects are very well understood. It is unlikely that a green bond would be an appropriate solution to part-fund any project involving novel technology or unproven revenue streams.

The market for green bonds is at an early stage of development, and is expected to continue to evolve over the coming years. Your financial adviser will be able to assist you in determining whether green bonds are likely to be a viable option for your project.

Community Shares

The term 'community shares' refers to withdrawable share capital issued by co-operative or community benefit societies. Members have one vote, regardless of how much money they invest, and there are limits on how much each individual can invest to prevent a society being dependent on a handful of large investors. The shares can never be worth more than was initially paid for them, but they can go down in value if the society gets into financial difficulties.

The main reason that people invest in community shares is to support a community purpose, not to make financial gain. The shares are unregulated, which reduces red tape and helps to keep the cost of making a share offer affordable.

From the perspective of a developer, it is unlikely that significant capital could be raised via a community share offer to support an energy systems project. However it may be a useful mechanism for generating local support for a project.

It is also worth noting that, because they are unregulated, community shares are not covered by the Financial Services Compensation Scheme and there is no right of appeal to the Financial Ombudsman.

EXAMPLE PROJECTS

Because the definition of "energy systems project" is very wide, the discussion of potential sources of funding has necessarily been general. The purpose of this section is to illustrate some of the principles outlined above using hypothetical examples of potential projects. In each case, we have sought to identify the key risks and to suggest what sources of funding might be most appropriate.

Resolving an Export Constraint

An existing electricity generator is forced to artificially limit the amount of electricity that they produce due to insufficient electricity network capacity. A new project is proposed which will increase electricity demand at certain times in order to allow the generator to maximise its output, thereby increasing revenue.

A project of this type is likely to involve the use of some novel technology in order to monitor the local supply / demand balance and despatch the new demand when necessary. Technical risk will therefore be a key consideration for funders. The key beneficiaries of the project will include the owners and funders of the existing electricity generation project, and this may provide additional funding options.

- **Grant funding** may be available, but this will depend on the priorities of funding bodies at the time when the project is seeking finance.
- **Private companies** who are developing active network management technology. They (or their investors) may be willing to contribute finance and/or expertise into the development of the project. If the new demand being installed is a battery, battery technology companies or aggregators may be interested in investing directly in the project in order to develop a business model for other sites.
- The local **Distribution Network Operator** may be willing to contribute funding or expertise, particularly if the proposed project has wider applications on other parts of their network.
- The owners and funders of the **existing electricity generation project** will be the direct beneficiaries of the new project as they will be able to sell more electricity from the existing project. They may be able to extend existing financing facilities in order to contribute to the cost of the project.
- A **private equity** or **venture capital** investor may be interested in investing if the project involves the use of some novel technology. This may be structured as an investment in a technology provider which in turn invests in the project.
- A **social investor** may be willing to invest if the proposed scheme will have a demonstrable positive social impact, for instance if the original electricity generation project is community-owned.
- A **green bond** or **crowdfunding** could be used to refinance the existing operational electricity generation project, and the funds re-deployed into the new project. Care would be needed to ensure that investors were protected in the event that the new project did not have the intended impact.

Off-Grid Wind Turbine

A new wind turbine is to be built in a location where a grid connection is not viable. It is therefore proposed that the energy generated by the turbine is used to power an electrolyser producing hydrogen and oxygen, which are then sold.

If the wind turbine secures a feed-in tariff (FIT) then it will benefit from a long-term guaranteed revenue stream, and this can be used to underpin the financing. If a long-term offtake contract can be negotiated for the sale of the hydrogen and oxygen produced, this may provide further reassurance for funders. The key risks for this project would be wind risk (as this will impact both the FIT revenue and the volume of hydrogen and oxygen produced), technical risk (if the electrolyser incorporates novel technology) and possibly counterparty risk (if the ultimate purchaser of the hydrogen and oxygen does not have a robust balance sheet).

- **Grant funding** may be available, but this will depend on the priorities of funding bodies at the time when the project is seeking finance. The project may be eligible for renewable transport grants if the hydrogen and/or oxygen is being used to power low emission vehicles ("**LEVs**").
- It should be possible to raise **debt** to finance part of the construction costs of the wind turbine due to the FIT income. It may also be possible to raise debt to pay for part of the cost of the electrolyser if the offtake contract is "bankable" (i.e. acceptable to lenders). This will ultimately depend on the balance sheet strength of the party buying the products.
- **Crowdfunding, community shares** or **green bonds** could potentially be used if the revenue streams are sufficiently certain. Care would need to be taken in order to ensure that the public were not exposed to undue risks.
- It may be possible to secure equity funding from **private companies**, including the manufacturer of the electrolyser, manufacturers of fuel cells, manufacturers of LEVs, or companies that produce and sell industrial gases.
- If the project has the potential to be repeated at multiple locations, it may be possible to attract **private equity** funding, as it would have many of the characteristics of a platform investment.

Sustainable Car Club Project

A new solar PV project is to be built in a location where a grid connection is not viable. It is therefore proposed that the energy generated will be used to power a LEV charging station, which will charge an electric "car club" vehicle for use by the local community.

The key risk for this type of project is that the revenues are

unlikely to be sufficient to support the up-front capital costs. The only sources of revenue will be the FIT and (potentially) a low level of subscription revenue for the "car club". The approach would therefore be to target grant providers, social funders and technology companies who are willing to donate capital equipment and expertise to the project.

- Some form of **grant funding** or **social impact funding** is likely to be essential for this type of project. There are several categories that could be pursued, including community energy; renewable energy; social impact (for example if the project is in a remote area that is poorly served by public transport); social deprivation (if the community fulfils relevant deprivation criteria) or low carbon transport.
- **Private companies** may be willing to contribute capital equipment, expertise or human resource to help to deliver the project, in return for which they will expect their contribution to be publicly acknowledged. Companies that could be approached might include manufacturers or installers of solar PV panels, LEV manufacturers, or large local employers such as distilleries or oil companies.
- If the project can generate sufficient income to support ongoing debt repayments, it may be possible to use **asset finance** to pay for part of the cost of the electric vehicle.

Cost Reduction for a Community Building

A community swimming pool with a large energy demand is to have electrical and heat batteries installed to reduce ongoing energy costs.

Although it may be possible for this project to generate some revenue by providing ancillary services to the electricity market, it differs from the other examples in this section because the principal benefit of the project is in costs avoided rather than revenues generated. The economics of these types of systems are reasonably well-established (particularly for buildings with on-site electricity generation) and it is likely that this type of project could be built using a conventional commercial funding structure.

- **Grant funding** may be available for the feasibility stage due to the fact that the swimming pool is community-owned.
- It should be possible for the project to support **debt** which would be underpinned by the long-term energy savings that the swimming pool would make.
- Some equity will be required, and this could come from either **crowdfunding** (e.g. a community share offer) or a **social funder**. Again, care would need to be taken in order to ensure that members of the public were not exposed to undue risks.
- Another potential source of funding could be **private companies**, for instance the manufacturers or installers of the electrical or heat batteries that are to be installed.

SUMMARY

The purpose of this module has been twofold: to outline the principal sources of finance that are available to developers of energy systems projects; and to illustrate how these might be applied to

a selection of hypothetical projects. As stated above, the definition of an "energy systems project" is extremely wide and it is not possible to recommend a single financing route which will be applicable to all projects. However, the intention of the above examples is to illustrate how different funders might approach different projects according to their own requirements for risk exposure and financial returns.

Any financing process is likely to be complex and time-consuming and it is strongly recommended that professional advice is sought at an early stage from a suitably qualified and experienced adviser. Early advice will help to ensure that the project being developed does not suffer unnecessary delays and expense.

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