OxWoodShare

Linking Woods, Energy and People

Business Plan

September 2015

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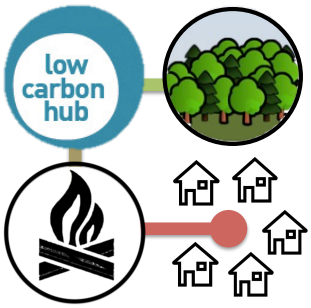


1. Business concept:

1.1 What is OxWoodShare?

- The Low Carbon Hub[1] is proposing to create an enterprise which installs and operates district heat scale woodfuel boilers in Oxfordshire and links or 'twins' these installations with nearby woods that can produce a supply of feedstock that is equivalent to the boilers' demands. This will be a social enterprise, and its working title is 'OxWoodShare'.

- The installations side is the practical and financial focus of the enterprise. At the moment we are focusing on retrofits for schools, care homes, and small clusters of existing dwellings in places that are off the gas grid. The social purpose here relates to providing communities access to affordable sources of renewable energy.

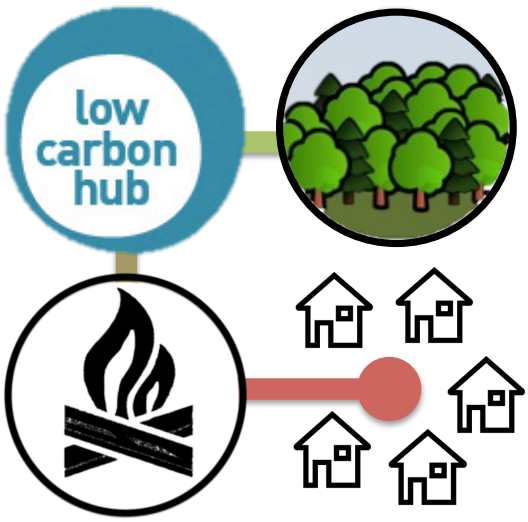
- The enterprise would install, own and operate the boilers – supplying heat to its hosts/customers. This is a model that we know works commercially already, with the support through the Renewable Heat Incentive.

- Twinning the boilers with local woods serves three main purposes:
    a. It helps build a culture of connection and understanding between communities and woods. It also captures people's imagination – people like the idea of having a link to a wood;
    b. It helps us to build capacity in local woodfuel supply chains, and;
    c. It helps us to secure the fuel supply to our boilers, and ensures it is sustainably produced.

- In practical terms the forestry and woodfuel side of the operation may start as a light touch. We want to secure medium to long term 'options' on timber crops so that we can channel them through local woodchip merchants, from whom we supply our boilers. We don't plan to harvest, process, or deliver woodchip directly, because we think this can be done in partnership with existing local businesses. But in the long term we might look to manage, lease, or even buy woods. The more tenure we have, the more we can involve our communities in their woodland 'footprint'.

- OxWoodShare will be centred around a Community-owned Energy Services Company (CESCO). The corporate structure will either be:
    a. Part of the Low Carbon Hub Industrial and Provident Society, OR
    b. A standalone Community Interest Company, Cooperative, or Community Benefit Society

- The CESCO will have three roles:
    a. Securing forestry resources through purchase of woodlands, long leases, purchase agreements;
    b. Raising funding to deploy biomass heat infrastructure (boilers, district heat networks);
    c. Selling heat to end users



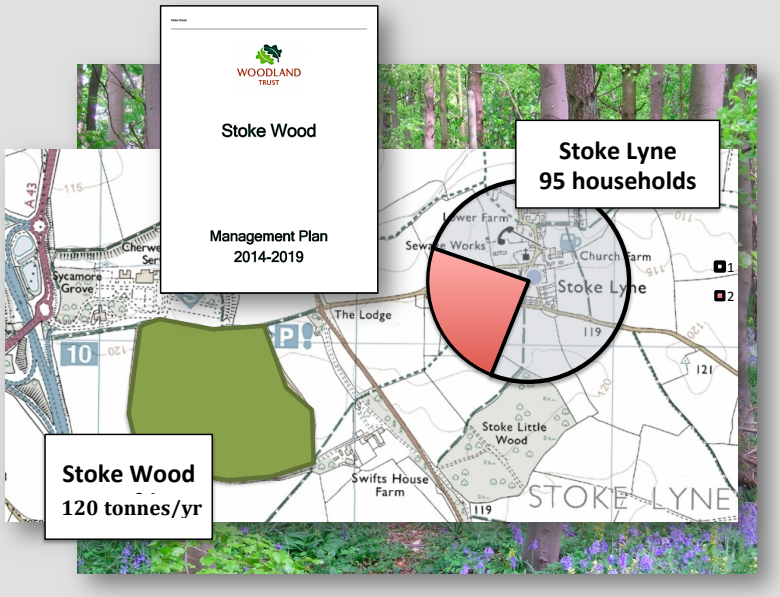
[1] www.LowCarbonHub.org

1.2 Background 1 – Woodchip-fired heat systems

- Chip fired district heat systems have been installed and operated by local authorities and housing associations for some time. In part as a result of the Renewable Heat Incentive, there is now a growing sector of 'Energy Services Companies' that install and operate these systems on behalf or business and domestic clients
- The technology involves a central boiler, which supplies heat to a cluster of small buildings, or to a larger single building, via a hat main.
- Woodchip is supplied periodically (typically every few weeks) by truck to a hopper, from which it is fed by auger into the boiler system.
- Typically the system is maintained and operated by external contractors – with users simply taking off metered heat within their dwelling or business.
- A system, such as the one pictured right, and operated by HW Energy (www.hwe.co.uk) serves 23 dwellings, though biomass boiler, and consumes around 120 tonnes of woodchip per year.

1.3 Background 2 –sustainable forest management and woodfuel

- Woodland in the UK has been harvested for fuel and timber for building for many hundreds of years. The result is that much of our woodland ecology flourishes with the occasional opening of the forest canopy that is associated with active woodland management.
- A well-managed wood balances the volume of timber taken out with the growth rate of trees in the wood. This is called the 'sustainable yield', and it varies between one or two tonnes per hectare per year for a mature broadleaved wood, up to almost twenty tonnes per year for some short rotation coppice management systems.
- The productive capacity of a sustainably managed wood will be recorded in a forest management plan. This document sets out how a wood will be managed over coming years, and provides us with a forecast of the amount of timber that can reasonably be expected to be available for harvest, from year to year.
- For example, Stoke Wood near Stoke Lyne is a 30-hectare mixed conifer-broadleaved wood, owned by the Woodland Trust. Its management plan indicates that over the next 5 years an average of 120 tonnes of roundwood will be available per year. In theory, this could provide heat for over 20 homes – or one fifth of the village of Stoke Lyne.



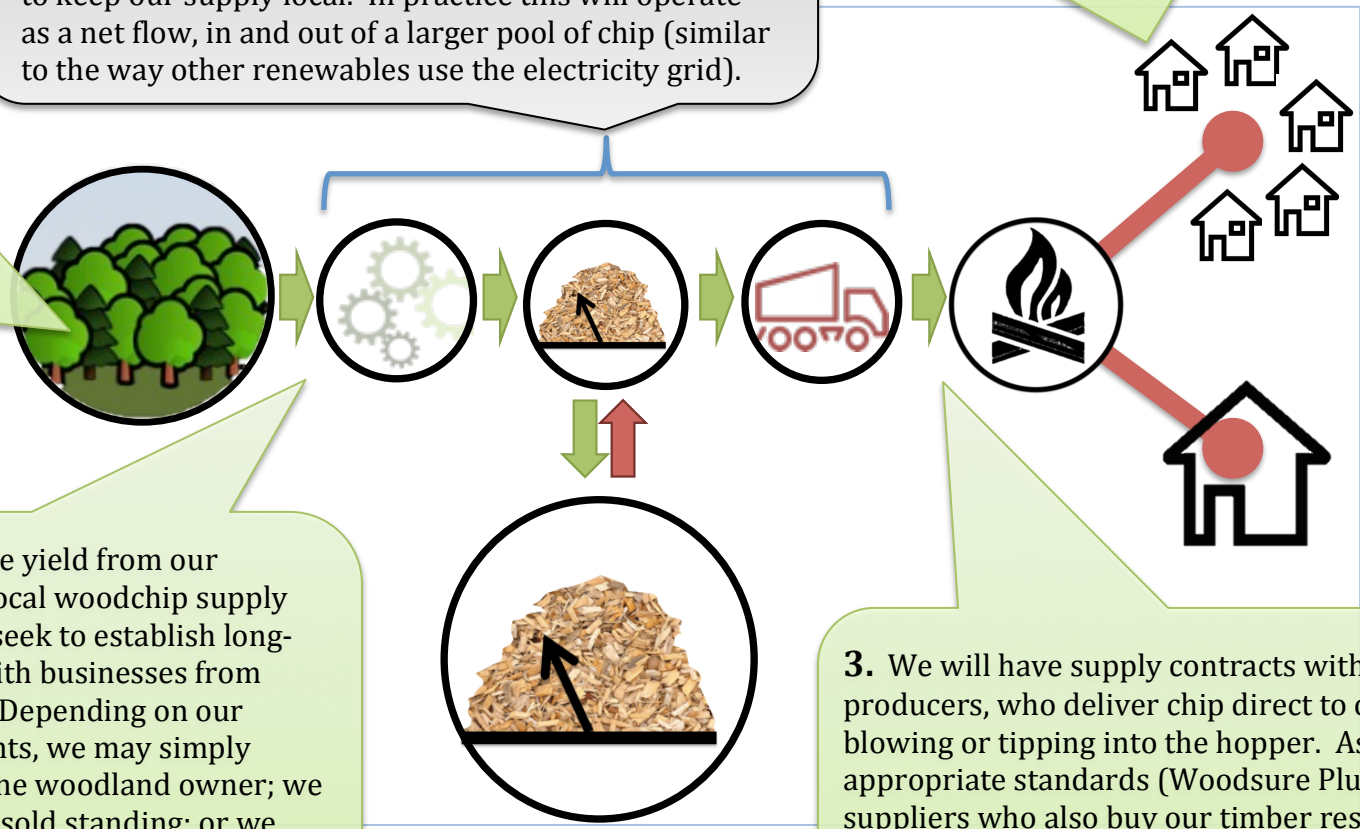
1.5 How it works in practice

OxWoodShare will operate a secure chain of contracts with a series of service and goods providers – and organise this into an energy service offering for our customers.

1. Our woodland resource is secured through three main types of arrangement – (1) straight ownership, (2) lease, and (3) through long-term timber purchase agreements with the woodland owner

We do not plan to operate in the woodchip supply chain (processing, storing, delivery) beyond buying-in and buying-out from supply partners. Our aim is to supply in an equivalent volume to that which we use – to keep our supply local. In practice this will operate as a net flow, in and out of a larger pool of chip (similar to the way other renewables use the electricity grid).

4. We will own, and use specialist contractors to operate, boiler and heat main infrastructure – supplying metered heat into small clusters of buildings, or single larger units. This will involve a simple heat supply contract with participating customers. In many cases, we might anticipate customers will also be shareholders in OxWoodShare.



2. We will sell the sustainable yield from our woodland resource into the local woodchip supply chain. In most cases we will seek to establish long-term supply arrangements with businesses from which we can also buy chip . Depending on our woodland tenure arrangements, we may simply broker the supply deal with the woodland owner; we may arrange for timber to be sold standing; or we may work with an agent to organise harvesting and sell the timber at roadside.

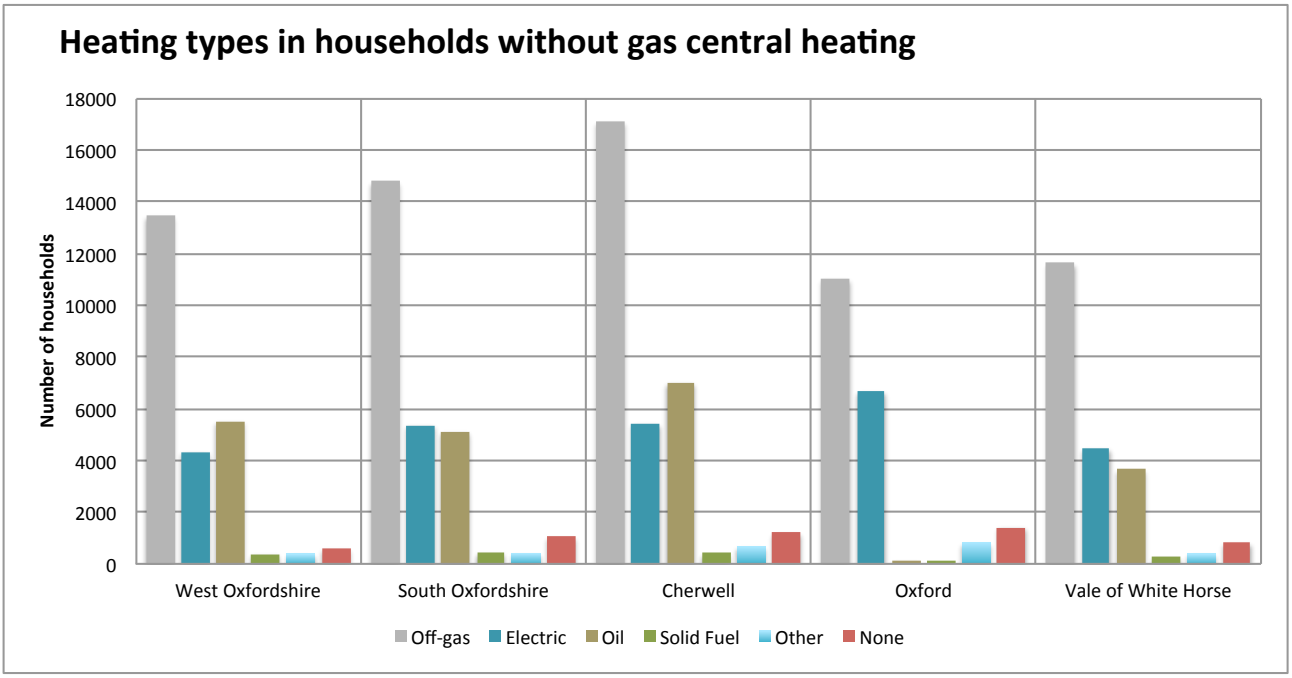
3. We will have supply contracts with local woodchip producers, who deliver chip direct to our boilers - blowing or tipping into the hopper. As well as meeting appropriate standards (Woodsure Plus) we will seek suppliers who also buy our timber resource, so that we can trade security of chip supply to us with security of timber supply to them.

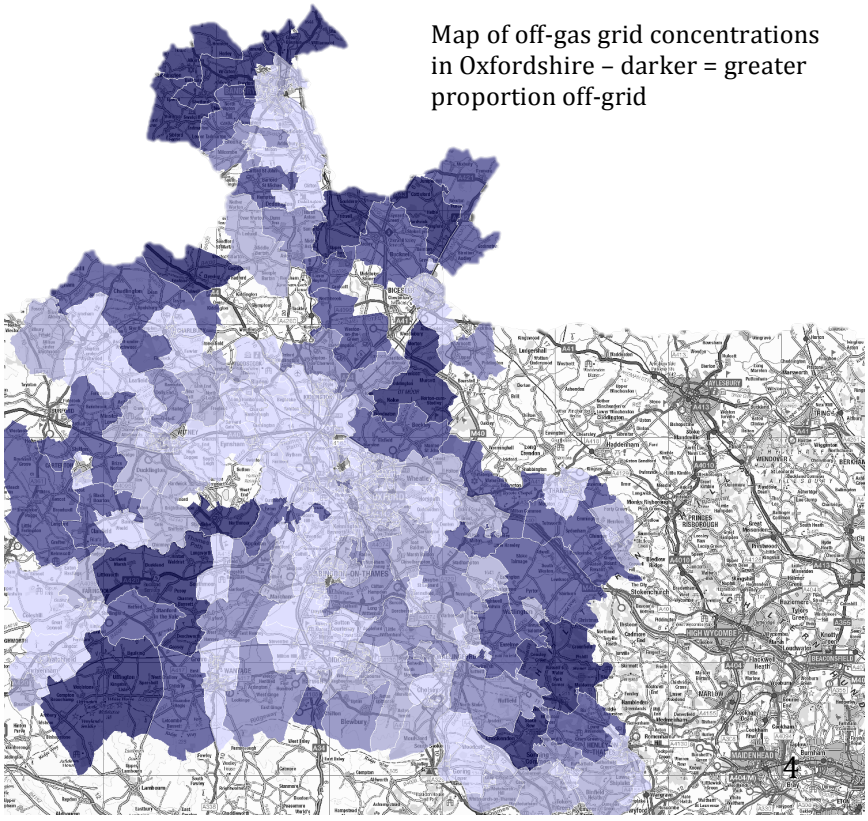
In practice transactions 2 and 3 may be linked – into a single 'closed loop' supply deal with a chip merchant.

2. Market:

2.1 Who this is aimed at

- Our focus will be on areas of Oxfordshire that do not have access to mains gas (see map below left), targeting the replacement of electric or oil-fired heating systems. This is where we can be price-competitive, and make the biggest carbon emissions savings.
- Within this area, our three main installation types will be:
  1. Retrofits of medium-scale commercial and public sector (e.g. school) heating systems
  2. Retrofits of small clusters of dwellings
  3. Installations in redevelopments of existing buildings – for instance farm building developments for housing or business units.
- This is a relatively large market – for instance over 20,000 homes in Oxfordshire use oil for their heating, and almost 70,000 (26%) do not have gas central heating – see chart below: (Source: DECC/Census)





Map of off-gas grid concentrations in Oxfordshire – darker = greater proportion off-grid

2.2 Is there enough woodland?

Estimates of the productive potential of Oxfordshire woods suggest that a yield of up to 50,000 tonnes may be available per year for woodfuel – taking into account the proportion that should be used for higher value markets.

This roughly equates to 100 MWh energy per year – or enough to heat 8,000 households (40% of the current oil-fired market.

What this tells us is that there is plenty of scale to build a business. For instance, 10% of this market would translate into 40 district heat installations.

It also tells us that Woodheat has an important medium-scale part to play in Energising Oxfordshire.

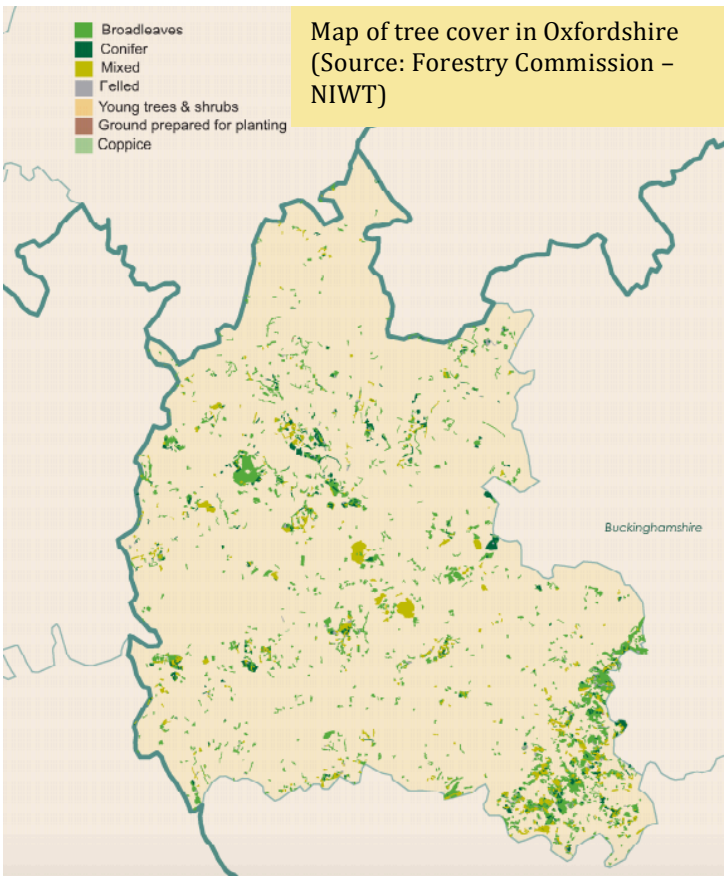
2.3 How we compare to other options

- Our comparison chart below summarises a range of criteria, from various sources.
- The key selling points of OxWoodShare compared to other off-gas grid options are price[2]; GHG emissions[3]; enjoyment[4], and long-term security of supply.
- The main barrier is around the inconvenience associated with installation. This is especially significant for retrofits of district heat systems to existing housing clusters.

	Price	Long-term security of supply	Convenience		GHGs	Enjoyment
			Installation	Operation		
OxWoodShare	★★★★	★★★★★	★	★★★	★★★★★	★★★★
Independent woodfuel	★★★	★★★	★★	★★	★★★★	★★★
Oil	★★	★★	★★	★★	★	★
Electricity	★	★★★	★★★★	★★★★★	★	★
Gas from grid	★★★★★	★★	★★★	★★★★	★★	★

2.4 How we'll get the word out

- The Low Carbon Hub already has close links to 20 climate change community groups in rural parts of Oxfordshire. These will be our first port of call for communicating the possibilities of OxWoodShare.
- Communication will be through an outreach manager, employed by the Low Carbon Hub
- Our strategy is first to locate and develop one installation from a range of possibilities already identified in discussions with our existing network.
- We will follow this up with a second phase of around half a dozen installations – still from within our network – in order to make the business fully operational.
- Beyond this we will use publicity and our growing reputation to expand around the County.



Map of tree cover in Oxfordshire (Source: Forestry Commission – NIWT)

[2] 3.5p/kWh compared to 7.8p/kWh for heating oil

[3] 18gCo2/kWh compared to 314g/kWh for oil, or a saving of 60 tonnes CO_2 per year for a 200kW system.

[4] Our ability to create practical links between people in Oxfordshire and Oxfordshire woods.

3. Financial information:

3.1 How OxWoodShare makes money

Although OxWoodShare has an involvement at both ends of the woodheat supply chain – the woodland resource and the supply of heat – it is at the heat supply end that we expect to generate profits. As ever the business is based on the difference between costs and income.

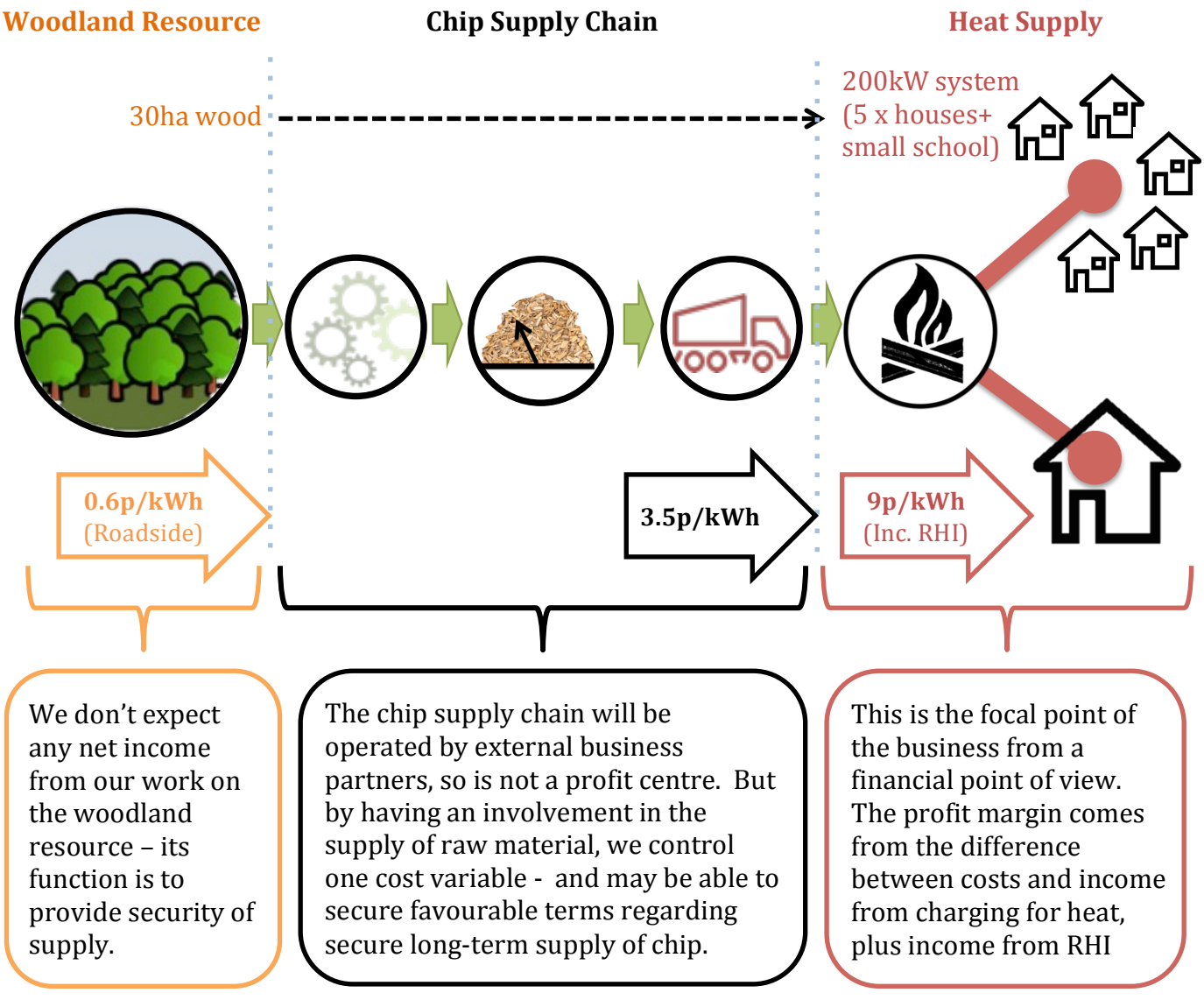
Costs:

- Installation of boiler and heat main – capital cost at the start of the project
- Woodchip, delivered
- Operation and maintenance – on-going costs via external contractor
- Billing, customer service – on-going costs via external contractor
- Woodland resource (purchase, agent costs, as appropriate)
- Core business management costs – pooled with other Low Carbon Hub business activities

Income:

- Income from customers for supply of heat
- Renewable Heat Incentive payments[5]
- Timber sales

The Woodheat Value Chain:



[5] https://www.ofgem.gov.uk/environmental-programmes/non-domestic-renewable-heat-incentive-rhi

3.2 How it looks for one project

Here we look at our estimates for profit and loss for a single 200kW project, with capital expenditure of £200,000.

PROFIT & LOSS	Year																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
RHI	15,776	16,249	16,737	17,239	17,756	18,289	18,838	19,403	19,985	20,584	21,202	21,838	22,493	23,168	23,863	24,579	25,316	26,076	26,858	27,664
Direct Sales	13,234	13,631	14,040	14,461	14,895	15,342	15,802	16,276	16,765	17,268	17,786	18,319	18,869	19,435	20,018	20,618	21,237	21,874	22,530	23,206
TOTAL REVENUES	29,010	29,881	30,777	31,700	32,651	33,631	34,640	35,679	36,749	37,852	38,987	40,157	41,362	42,603	43,881	45,197	46,553	47,950	49,388	50,870
Operations and maintenance	(2,451)	(2,525)	(2,600)	(2,678)	(2,759)	(2,841)	(2,927)	(3,014)	(3,105)	(3,198)	(3,294)	(3,393)	(3,495)	(3,599)	(3,707)	(3,819)	(3,933)	(4,051)	(4,173)	(4,298)
Cost of woodfuel	(8,798)	(9,062)	(9,333)	(9,613)	(9,902)	(10,199)	(10,505)	(10,820)	(11,145)	(11,479)	(11,823)	(12,178)	(12,543)	(12,920)	(13,307)	(13,706)	(14,118)	(14,541)	(14,977)	(15,427)
Lease/rent, rates, insurance	(980)	(1,010)	(1,040)	(1,071)	(1,103)	(1,137)	(1,171)	(1,206)	(1,242)	(1,279)	(1,318)	(1,357)	(1,398)	(1,440)	(1,483)	(1,527)	(1,573)	(1,620)	(1,669)	(1,719)
Administration	(1,961)	(2,020)	(2,080)	(2,143)	(2,207)	(2,273)	(2,341)	(2,412)	(2,484)	(2,558)	(2,635)	(2,714)	(2,796)	(2,879)	(2,966)	(3,055)	(3,146)	(3,241)	(3,338)	(3,438)
TOTAL OPERATING COSTS	(14,190)	(14,615)	(15,054)	(15,506)	(15,971)	(16,450)	(16,943)	(17,452)	(17,975)	(18,514)	(19,070)	(19,642)	(20,231)	(20,838)	(21,463)	(22,107)	(22,770)	(23,454)	(24,157)	(24,882)
EBITDA	14,821	15,265	15,723	16,195	16,681	17,181	17,697	18,227	18,774	19,337	19,918	20,515	21,131	21,764	22,417	23,090	23,783	24,496	25,231	25,988
EBITDA %	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%

3.3 How it looks when we scale up

Here we present the overall financial projections for the business, given an average growth rate of four additional 200kW projects/ yr

	Year																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Installed Capacity (MW)	0.20	0.80	2.00	3.20	4.00	4.80	5.60	6.40	7.20	8.00	8.80	9.60	10.40	11.20	12.00	12.80	13.60	14.40	15.20	16.00
Deployed CAPEX	200	800	2,000	3,200	4,000	4,800	5,600	6,400	7,200	8,000	8,800	9,600	10,400	11,200	12,000	12,800	13,600	14,400	15,200	16,000
Total Revenue	29	120	308	507	653	807	970	1,142	1,323	1,514	1,715	1,928	2,151	2,386	2,633	2,893	3,166	3,452	3,753	4,070
Total Operating Costs	-14	-58	-151	-248	-320	-395	-475	-559	-647	-741	-840	-943	-1,053	-1,168	-1,288	-1,416	-1,549	-1,690	-1,837	-1,992
Overheads																				
- Staff	-30	-30	-50	-65	-65	-69	-73	-77	-82	-87	-92	-98	-104	-110	-116	-123	-131	-139	-147	-156
- Infrastructure		-10	-12	-14	-15	-16	-17	-17	-18	-19	-20	-21	-22	-23	-24	-26	-27	-28	-30	-31
Total Overheads	-30	-40	-62	-79	-80	-85	-90	-95	-100	-106	-112	-119	-126	-133	-141	-149	-158	-167	-177	-187
EBITDA	-15	21	95	180	253	327	406	488	575	667	764	865	972	1,085	1,204	1,328	1,459	1,596	1,740	1,891
Depreciation	-10	-40	-100	-160	-200	-240	-280	-320	-360	-400	-440	-480	-520	-560	-600	-640	-680	-720	-760	-800
EBIT	-25	-19	-5	20	53	87	126	168	215	267	324	385	452	525	604	688	779	876	980	1,091
Project Finance		-18	-45	-72	-90	-108	-126	-144	-162	-180	-198	-216	-234	-252	-270	-288	-306	-324	-342	-360
EBT	-25	-37	-50	-52	-37	-21	0	24	53	87	126	169	218	273	334	400	473	552	638	731

Note: results in £'000

4. Perspectives:

4.1 Heat end-users

Heat end users may be domestic dwellings, community buildings – like village schools, and businesses.

The offering

The basic offering for heat end users will be metered heat from a wood-fired system, which is owned, maintained and operated by OxWoodShare. In addition, we link our heat to an Oxfordshire-wide woodland initiative – with practical links to a growing network of woods and forest resources, some of which may eventually be owned and managed by the project.

Why they might be interested:

- Financial advantages. Metered heat from OxWoodShare will almost certainly represent a cost saving on other heat energy options for users who do not have access to the gas grid.
- Convenience. Although the installation stage of joining up with OxWoodShare will be inconvenient, beyond this much of the hassle associated with key alternatives such as oil will be removed. Ordering, delivery, fuel storage and maintenance will be dealt with centrally.
- Dependability. Because OxWoodShare has control over the basic raw material resource that fuels its boilers, customers can have more confidence in their long-term 'fuel security' than they might for fossil fuels, or indeed for other sources of wood-heat.
- Sustainability. Efficient, local woodfuel performs significantly better that all conventional heat sources, in terms of carbon emissions. Being linked to a network of identifiable local woods, we can ensure that woods are sustainably managed; with benefits rather than impacts on the natural environment and for communities.
- Enjoyment. As our network of woods grows, OxWoodShare will be able to create opportunities for its communities to engage in and enjoy the woods where their fuel comes from.

4.2 Woodland Owners

Woodland owners will come from a wide range of circumstances and perspectives. They may already be actively managing their woods, producing and selling timber; they may have woods that wish to keep but which are no longer in active management, or they may be wishing to sell or lease their wood. They may be private, NGO, or government (Forestry Commission) owners.

The offering

Our most straightforward offering will be a long-term (5years+) purchasing contract for a set volume of timber at a set price. Linked to this, we may provide links to agents or organisations who can assist with management and harvesting arrangements – depending on the owner's needs. Some owners may be interested in leasing woods, or timber concession within woods. This is something we would seek to do, perhaps in partnership with another partner – such as conservation NGO.

Why they might be interested:

- A guaranteed long-term customer for their lower value timber outputs.
- The basis on which they can plan and undertake a long-term management programme.



4.3 Chip suppliers

We will seek long-term business relationships with Oxfordshire based chip suppliers, who can deliver certified standard (e.g. Woodsure Plus[6]) local woodchip. We will be especially interested in working with suppliers who can deal with us at both ends of our operation – linking the supply of chip with long-term supplies of timber feedstock from our woods.

The offering

Long-term chip purchasing contracts, in conjunction with long-term timber feedstock supply of an equivalent volume.

Why they might be interested:

- A guaranteed long-term customer for their woodchip.
- A guaranteed timber feedstock supply – matching their obligation to supply us with chip, reducing the risk that they will not be able to honour their supply obligation.

4.4 Investors

Investors may be seed investors, who will put money in early to fund the pilot stages of the business, or community investors, who will invest as the business becomes operational and grows. Either may also be heat end-users, woodland owners, or chip suppliers.

The offering

Depending on our corporate structure, we will be issuing a combination of withdrawable and non-withdrawable shares in the Low Carbon Hub IPS, or in a standalone OxWoodShare CIC, Cooperative, or Community Benefit Society. These will pay interest over a twenty-year, in addition to repayment of capital. Previous and similar share issues have forecast returns of 5%, and have been eligible for EIS[7] tax relief.

Why they might be interested:

- A new, viable social enterprise investment
- A healthy return on investment
- Increased uptake of renewable energy in Oxfordshire
- Energy cost savings for the community
- Reductions in GHG emissions,
- Support of sustainable woodland management,
- Building healthy and fun links between people and woods

[6] http://woodsure.co.uk

[7] www.gov.uk/government/publications/the-enterprise-investment-scheme-introduction

5. Business development plan

5.1 The Process

The project is to be organised into 3 main phases with two milestones acting as gateway points in the project:

Stage 1: Business planning.

This will take the first 6 months of the project and produce an investable business plan. This is the first milestone of the project.

GATEWAY 1: If there is no investable business plan, the project will stop at this point.

Objectives for this phase:

1. *Create a viable business model*
    a. Ability to articulate a value proposition that attracts end users and local communities;
    b. Ability to show financial returns to attract investors;
    c. Ability to show Social Impact that appeals to private investors, institutional investors, LCH board, CIC community shareholders and partner organisations;
2. *Define the operating model*
    a. Corporate structure;
    b. Operating and Maintenance (O&M) schedule for contractor specification;
    c. Resource requirement;
    d. *Legal templates;*
3. *Identify potential pilots sites*

Resources required:

1. Management, community engagement and technical expertise;
2. Early funding

Stage 2: Proof of concept

This will run from month 7 to month 18 to produce the technical feasibility and agree contracts for the pilot project. This will deliver the second milestone of the project.

GATWEAY 2. If there is no agreement to contracts, the project will stop at this point.

Full delivery of the project, i.e. project installation, is likely to happen after month 18.

Objectives for the phase:

1. Install, commission and start operation of a pilot site;
2. Trouble free installation;
3. Capture lessons for scaling up;

Resources required:

1. Management and technical expertise;
2. Community engagement expertise;
3. Community Group active support;
4. Project management expertise;
5. Seed capital;
6. Forestry resource;

Stage 3: Scale-up

This will run from month 18 onwards. It will identify a range of potential villages for a repeat of the pilot project. By month 36 heads of terms, leases and signed framework contracts will be in place. First installations will be complete and task orders will be signed for the remainder.

Objectives for the phase:

1. Develop a network of installations across Oxfordshire
2. Develop a network of woods and woodland resource links
3. Operate an efficient and value for money service to customers
4. Deliver social and financial returns to investors
5. Achieve a NPS of 75%

Resources required:

1. Capital (Equity + Debt);
2. Sales expertise (pipeline development);
3. Project management expertise;

5.2 Business Model

OxWoodShare will be centred around a Community Energy Services Company (CESCO). The CESCO has three roles:

1. Secures forestry resources through purchase of woodlands, long leases, purchase agreements;
2. Raises funding to deploy biomass heat infrastructure (boilers, district heat networks);
3. Sells heat to end users

OxWoodShare will either be part of the Low Carbon Hub IPS or will be established as a standalone CIC, Cooperative or Community Benefit Society

Sources of funding:

- Grant funding for early stage business planning – County Council
- Seek grant funding for further feasibility and business planning – H2020, Esmee Fairban etc
- Seed Capital into organisation to fund detailed feasibility and installation of pilot
- Share offer to bring capital into the organisation as a whole
- Debt from Social Impact Institutional investors
- Bonds to individuals through SITR

5.3 Partners

We've been developing our ideas in discussion with the following organisations:

For more information please contact:
The Low Carbon Hub
23 Park End Street
Oxford OX1 1HU
01865 246099