

Identifying sources of woodfuel for a biomass project

This exercise gets the group thinking about where woodfuel could come from for their project, and whether relationships could be built with local rural industry such as forested estates or sawmills to ensure a local, sustainable supply. There may also be links to existing suppliers or a centralised local-authority scheme that you could tap into.

This exercise needs one Lead Facilitator and at least one supporter/recorder.

Time needed

To complete this exercise, you will need 60 to 70 minutes

Stage 1) Explanation (5 minutes)

Stage 2) Identifying and measuring (15-25 minutes)

Stage 3) Collating the results (5 minutes)

Stage 4) Identifying woodland ownership (15 minutes)

Stage 5) Estimating volume of woodfuel (10 minutes)

Stage 6) Next steps discussion (10 minutes)

Films that accompany this exercise

You should be familiar with the following films (all disc 1).

- 'An introduction to biomass'
- 'Setting up an individual biomass boiler project'
- 'Setting up a biomass district heating project'
- 'Biomass district heating for a small community in Sussex'
- 'Biomass district heating on a Barnsley estate'

Number of people or groups

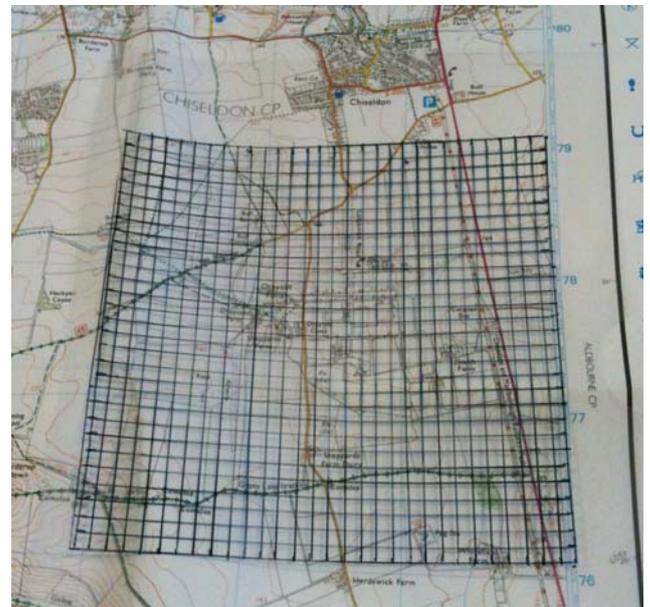
The audience should be broken into 4 or 8 groups – try to keep group size fewer than 8 people.

Materials needed

- 1) The appropriate 1:25,000 (Explorer) Ordnance Survey map that covers your area. (Note that it may be more convenient to order one that has your community in the centre (from <http://leisure.ordnancesurvey.co.uk>). This costs around £17.00. You will need to make photocopies of the map if you have more than one group, but **make sure that people don't take these away** as this would be in breach of copyright.
- 2) Clear plastic squares showing nine OS 1km grid squares divided into tenths as shown in the

photograph. Use a thin tipped permanent marker to make these. You will need enough for each group to have one. These are easy to make by cutting up a few clear plastic document wallets; using a ruler, trace over the grid squares on the map and then use the 100m markers along the bottom of the map to make the divisions. Each tiny square is 1 hectare (10,000m²).

- 3) Felt tipped pens that will wipe off, enough for each group to have one.



- 4) Post-it index tabs (or similar, pictured) the sort used to 'bookmark' pages in documents and which you can write on with a ballpoint pen



- 5) Pieces of string with a mark at every kilometre interval (measured against your OS map) each being a total length of 8km at the scale of your map. If your project is in a large urban area, you may need to extend this radius; assess your map beforehand to decide what area you will be looking at.
- 6) Copies of the OS sheet on working out a grid reference (from the reference section of the folder) one for each group
- 7) A3 printed sheets (or written flipchart sheets) marked up with Table 1 – enough for each group to have one.

8) A laptop for using the 'Biomass woodfuel estimator' spreadsheet, from the downloads section of www.planlocal.org.uk. Make sure you familiarise yourself with this spreadsheet before using it.

9) A projector

... and possibly a few magnifying glasses!

Arranging the room

Everyone in their groups at tables big enough to spread their maps and copies of Table 1 out on. Put your own map on the wall in a place visible to all.

Running the exercise

Stage 1) Explanation (5 mins)

Explain to everyone that they are going to work in their groups to identify woodlands within an 8km radius of your proposed biomass boiler that could potentially be sources of fuel. They will be working out the area of the woodland, how far it is from your project, and identifying what type of woodland it is. Knowing what type of woodland it is will be important in estimating the likely volume of woodfuel that could potentially be sustainably extracted from it, which you will do later in the exercise.

Explain that there are some assumptions about this exercise:

Assumption 1

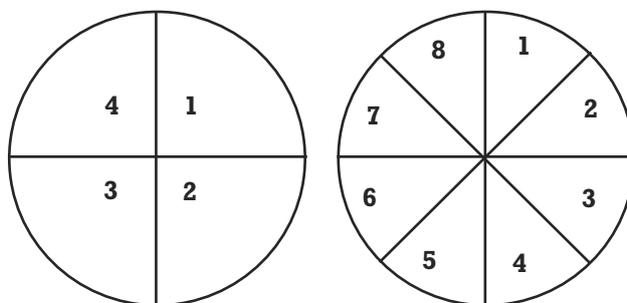
8km is a fairly arbitrary radius. In most rural areas and for small towns, it will be a useful rule of thumb to identify genuinely *local* fuel supply. The smaller the collection distance, the better, if the carbon neutrality of biomass is to be maintained. If you're in the middle of a large urban area you may need to expand this radius, and should perhaps think of your woodland as one of several supply streams, others of which could include the significant wood resource from the management of street and park trees in towns and cities.

Assumption 2

This exercise looks at fuel from managed woodland only. It does not assess the likely production of energy crops within a certain radius of your project. This is because, from a biodiversity point of view, and to reduce the ongoing chances of conflict between food and fuel production, we recommend that you should first look to source biomass fuel from nearby sustainably managed woodland, rather than agricultural land.

Stage 2) Identifying local woodland types

Assuming that the woodland resource is reasonably evenly distributed around your community, you should assign a section of the compass to each of the four groups – if you have lots of people, you can do this with eight groups instead, dividing the compass up once more, i.e. for four groups split the compass like the circle on the left, and for eight groups split like the one on the right.



With the groups gathered around their maps, ask one person in each group to take the measuring string and place one end on the point where your proposed biomass boiler will be. The string can now be pivoted around this point 'drawing' a circle of 8km radius from where you need your fuel delivered. Group 1 will be starting with the string making a line directly north of the community, and moving it slowly around clockwise until it points directly east (or north-east if you have eight groups). Group 2 will do the same, but will cover the quadrant east to south, and so on.

As they go round they should put a sticky index tab on any woodlands that are within the radius marked out by the string. They should use the plastic grid to quickly assess the size of very small woodlands. Isolated small woods of less than 3ha should be ignored unless it seems reasonably clear that there are several of them all on the same farm or estate, where they would probably be managed together.

On the sticky index tab, they should mark with a ballpoint pen, the name of the woodland (if it appears on the map) or a description like 'adjacent to Harcourt Farm' if no name is given on the map.

Then on their copy of **Table 1** they should fill in:

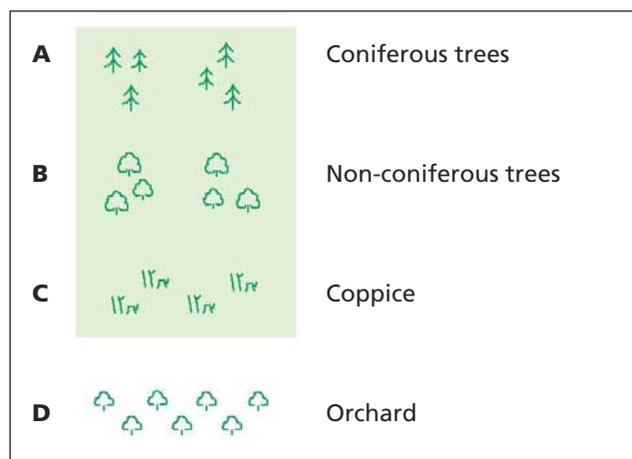
Column 1: The name or description they have put on the index tab

Column 2: The grid reference of roughly the centre of that woodland

Column 3: The distance (in km) from where the boiler will be based (estimated from the km markings on the string).

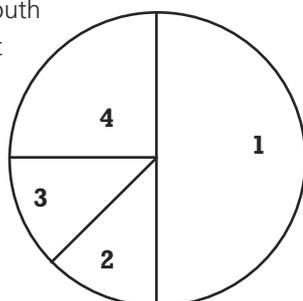
Column 4: The area of the woodland in hectares. This can be done by overlaying the clear plastic grid squares and, using a felt-tipped pen, making a dot in each square that is at **least half full** of woodland. Any little squares that have less than 50% woodland in them are not dotted. The total number of dots is roughly the area of the woodland in hectares. Using a felt tip allows you to wipe off the dots and start again for each woodland being measured.

Column 5: Probable type of woodland. They can identify this from the symbols on the OS map or the inset below. If your venue is not that brightly lit, you might need to provide magnifying glasses for this bit!



- If the symbol is A, enter 'Conifer, 5-year thinned'
- If the symbol is B, enter 'Broadleaf high forest – 5-10 year thinned'
- If the symbol is C, enter 'Broadleaf, mixed species coppice'
- If the symbol is a mixture of A and B, enter 'Conifer and broadleaf mixed woodland'
- If the symbol is a mixture of B and C, enter 'Broadleaf, coppice with standards'
- If the symbol is D, discount it. Orchards are not suitable for woodfuel production.

NB Make sure you assess the maps before you set up this exercise; if the woodland resource looks to be heavily concentrated in one segment, then adapt the segments slightly to give all the groups a similar workload. For example in the diagram below, there is lots of woodland visible on the map in the south west, less in the north west and less again in the east..



Depending on how many woodlands you have, you should allow between 15 and 25 minutes for this stage.

Stage 3) Collating the results

Ask all the groups to come and stick their copies of Table 1 next to each other on the wall, and to transfer their sticky index tabs to the same place on your map on the wall (so that you end up with one big map showing all the woodlands). Quickly delete duplicate entries for any woodlands that might have overlapped two groups' work and which are therefore on more than one table.

Allow 5 minutes for this stage.

Stage 4) Woodland ownership

Now ask whether anyone knows who owns or manages the woodlands – if they use them for recreation they might be familiar with seeing Forestry Commission, Woodland Trust, Wildlife Trust or National Trust signs, or references to the private estate that the woodlands are part of. If they are very close to a farm house with a name, there's a good chance they are owned or managed by that farm or estate. Fill in column 6 with this information where known.

Take not more than 15 minutes for this stage.

Stage 5) Will it produce enough woodfuel for our proposed project?

At this stage, you are going to use the spreadsheet called 'Biomass Woodfuel Estimator', which CSE has adapted from an original created by the Forestry Commission*. Use a projector so that everyone can see what you are doing.

If it is a single-boiler project, then you will use the sheet called '**How much land single boiler?**', and for a district heating system you will use the sheet called '**How much land district heating?**' as well as the sheet called '**Back?**'. Make sure you have familiarised yourself with this spreadsheet beforehand.

District heating project

- 1) On the sheet called 'Back', if there are blocks of flats to be connected to your district heating system, enter the number of flats in each block in the empty cells in column G, then the total number of blocks of that kind in column H (e.g. if you have 2 blocks of 6 flats, and 1 block of 12 flats, cell G15 = 6 and cell H15 = 2, then cell G16 = 12 and H16 = 1)

- 2) On the sheet called 'Back', enter a figure in column H for each type of building to be connected to your district heating system. For example, 35 domestic dwellings, 1 Community Hall, 1 Primary School, 2 blocks of flats (with the number of flats in each block specified in column G).
- 3) On the sheet called 'How much land district heating', from the drop down list in cell B10, choose the type of woodland from the first woodland on the tables that the groups have filled in.
- 4) Cell B27 will now show the number of hectares of woodland of that type that would be needed to fuel your chosen system – enter that figure into column 7 of that row on your table. Do this for every woodland on the tables that the groups filled out.

Allow 10 minutes for this stage.

Single boiler project

- 1) From the drop-down list in cell B8, choose the type of building that best represents the project you have in mind.
- 2) Then from the drop down list in cell B11, choose the type of woodland from the first woodland in your Table 1 (i.e. whatever is written in Row 3, column 5).
- 3) Cell B27 will now show the number of hectares of woodland of that type that would be needed to fuel your chosen system if the fuel is harvested from your chosen type of woodland – enter that figure into column 7 of that row.

Stage 5) Discussing next steps

The final step is to complete column 8. For each row in your table, compare the number of hectares of that type of woodland needed to produce fuel for your project (column 7) and the approximate area of each woodland (column 4). Discuss briefly what the next steps might be. In the example Table 1 below, Harcourt Spinney seems to be very small compared to the total land area needed for the chosen system, so the notes suggest discarding it as an option, unless it can be combined with the larger Rookery Copse. But when the exercise is repeated for Redhill Plantation in the next row down (a different type of woodland over a larger area) the results look much more promising.

Do this exercise for all the rows in your table – the end result will be a list of local woodland resources, with a rough estimate of whether they are likely to be big enough in theory to supply the needs of your proposed project.

Make sure you ask for volunteers to help make contact with chosen woodland managers. You will also discuss fuel supply options with your boiler installer, but carrying out this exercise and making contact with local sources of potential supply could give you more to choose from, and may help you secure a more competitive fuel supply contract in the long run.

Remember to stress that during this exercise a lot of assumptions have been made, so the results of this exercise should absolutely not be taken as an accurate measurement of woodfuel supply potential, and really represent a rough starting point.

Allow 10 minutes for this stage.

Table 1 with examples completed

1	2	3	4	5	6	7	8
Name of woodland	Grid reference of centre	Distance from our project	Approx. area of woodland (ha)	Probable type of woodland	Owner or manager	Hectares of this type needed to fuel our project	Next steps?
Harcourt Spinney	236792	5km	17	Broadleaf high forest	Harcourt Estate	58.3	Too small? But near to Rookery Copse: combine supply?
Redhill Plantation	432897	3km	63	Conifer thinned 5-yearly	Forestry Commission	17.5	Contact local FC office to discuss
Somer Common woods	433834	9km	38	Broadleaf - mixed species coppice	Woodland Trust? Or Wildlife Trust	29	Confirm ownership and then call to discuss
Rookery Copse	234798	5.5km	48	Broadleaf high forest	Not sure	58.3	Slightly too small. But near Harcourt Spinney – combine?

The original Forestry Commission spreadsheet that CSE adapted (with permission) for this exercise can be found at www.forestry.gov.uk/forestry/INFD-7TJKPC under the section 'How much woodland do I need to heat my building?'

Handout 2 Visual guide to different woodland types



Broadleaf High Forest, thinned on a 5-10 year cycle



Conifer and broadleaf mixed woodland



Broadleaf, mixed species coppice



Conifer, thinned on a 5-year cycle



Broadleaf, coppice with standards



Short rotation coppice willow on a 3-year harvest cycle



Broadleaf, sweet chestnut coppice

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