Appendix 7 – drying options

The table below provides a summary on the various ways of producing a consistent firewood product, including the lifetime so that ongoing costs can be taken into consideration.

Drying method	Typical wood drying capacity (something like tonnes of wet wood)[1]	Typical initial investment required	Typical annual running costs	Typical lifetime of equipment	Anything to note
Polytunnel (passive solar)	Assumption that the firewood is loose m3 in ventilated boxes or cages, stacked on pallets approx. 1m3/crate. 2 pallets in height with space for airflow, 2 pallets wide with a 3m turning space for forklifts. Approx. 54m3 per load. Length of time for drying is related to species and moisture content of the processed wood. For example, the processed wood may go into the polytunnel at a moisture content at 25% and then take between one and two weeks to reach a MC <20% depending on time of year, location and all	30x90 (approx. 9X27m) foot polytunnel: £4800, plus delivery and installation £3500 (Price would vary depending on supplier). Plus, cost of base if required. This could be concrete/hardcore and would vary across the UK. A ball-park figure for a yard (hardcore) would be around £15,000.	0 on an annual basis, cost of replacement of the cover after 7-15 years at today's cost would be around £700 plus cost of fitting	Between 7 and 15 years for the cover depending on care taken.	The use of polytunnels for drying should be a stage in the total management of the product from roundwood to sale. The bottom level of the polytunnel should be vented fabric not polythene. The Location and rotation of the polytunnel in relation to prevailing winds is key. Different species will take differing lengths of time to dry. Drying time is also dependent on processes prior to drying in the polytunnel. E.g. an additional drying tunnel could be used to speed up seasoning of roundwood prior to processing. Drying time is directly related to the start

[1] NB it is not best practise to deal with wood in tonnes

	other previously mentioned factors – see also notes				MC, and how long the roundwood has been seasoning prior to movement to the polytunnel. Issue: Use of polythene Additional cost: boxes/baskets for firewood
Solar kiln (active solar)	As above for most points, but active circulation of air should theoretically increase the speed at which moisture is lost. As one factor re rate of loss is the relative humidity around the woodfuel. This would be increased by use of the fans.	Costs unknown we would need to engage a designer and build a test model to assess number of fans required and optimum spacing etc. Too few are already in existence for us to gain any reliable figures.	Electricity would be required. PV could be an alternative to mains. Maintenance costs for fans Lifetime of polycarbonate sheeting is approximately 10 years.	Research required for length of time a fan would last before replacement was required. Also, the lifetime	Active solar kilns are more often than not constructed by the user, they don't yet appear to be available commercially. They are mainly quite small at the moment and dry only around 2m3. Issue: Use of plastic Alternatives are available but the lifetime is only currently around a year (polypropylene)
Storage sheds	These would be required for all, regardless of method of drying. Size can vary. Flooring should be solid – concrete/hardcore. Firewood stacked in boxes/crates on	Approx.£15,000 to £50,000 for a purpose built shed, Sheffield boarding solid floor well ventilated	0	Varies	Required to store firewood when dried so that it is not exposed to higher ambient MC from sitting outside and can continue to dry. If the wood is force dried in a kiln it needs to be kept in a shed for a few days before sale so

	pallets/ventilated flooring. Ventilated flooring – grain floor, woodfuel drying floor could also be used.				that the wood can cool, and MC settles out. Sheds are also useful to store the processed wood prior to force drying to reduce the initial MC.
Drying sheds	Vary in size, they are generally used for drying chip but are increasingly being used to also dry firewood. The floors are located in a shed and may also need the use of extractor fans to draw off the moisture as the firewood dries. firewood is again in boxes or crates, m3 generally and single height. Hence amount dried would be directly related to the floor size, e.g. a 5X5m2 floor approx. 20m3 of firewood, 4mX28m approx. 80m3. It generally takes around a week to dry, again depending on species, initial MC etc.	Shed - £15,000 to £50,000 plus floor. Wooden ventilated flooring approx. £100/m2, plus costs of installation. Plus, costs of a heat source e.g. a biomass boiler. For a concrete based grain drying floor approx. costs: £150,000 – includes a boiler	Servicing, cleaning, general maintenance, fuel costs for the boiler. One drying floor can use approx. 6000kWh of heat per cycle	Lifetime of the boiler and floor approx. 20 years (depending on use and care)	High investment costs, some suppliers may also dry other products, e.g. woodchip, grain etc. This is not a particularly cost effective method for drying firewood alone
Kiln	Generally designed to run around the clock	Boiler (approx. size: 200kW) costs can vary	Servicing, cleaning, general maintenance,	20 years for boiler	Again, it is better to put the firewood in at as low a MC as

	reducing the MC from 50% to 20% and below depending on design, initial MC and the way the firewood is stacked in the kiln. Length of time to dry varies from 2-7 days. Capacities range generally from 20-100m3.	depending on type and size. Kiln costs also vary depending whether they are home or purpose built. An e.g. of a cost for a purpose-built kiln would be between £30,000 and £150,000 plus boiler cost – which depends entirely on size, make and choice of fuel for the boiler. Ranging from a log batch boiler to an automated chip/pellet boiler	fuel costs for the boiler and kiln.		possible to reduce drying time
Natural seasoning	Natural seasoning – managing the fuel using location to best advantage, placing in prevailing winds, time of processing, position when processed etc.	Cost of hard standing (as above)			