

# Cranmore Masterplan | Sustainable Energy

## What is Sustainable Energy?

We all know what energy is; it's the electricity in our sockets, warmth in our radiators and fuel that makes our cars able to take us from one place to another. But what is sustainability?

Sustainability simply means ensuring our children and grandchildren can enjoy the same energy without damaging their environment. Instead of being dependant on lots of coal and oil (fossil fuels), we can create a new system that can keep homes warm using less or no fossil fuels.

Sustainability also means keeping the air we breathe clean, to make sure we don't get ill from burning fossil fuels our homes. It is making sure that we think about what is best both now and in the future when making decisions.



## What have we looked at?

To improve the homes in Cranmore, both now and in the future, we have looked at different technologies that can provide hot water for our taps and showers as well as heat for the radiators, in a way that makes us all less dependent on fossil fuels which are likely to increase in price in years to come.

Similar to the way we heat our homes from different fuel sources, be it from electricity, coal or oil, a district heating system at Cranmore could be powered from different sources and technologies. Therefore we have also looked at different ways we can make hot water in the heating plant to be sent out in the pipes.

### Individual Household Sustainable Energy Solutions

- 1

**Install a solar panel to heat water**

Along with an oil boiler we could install a solar panel on the roof to heat the water in your homes. On the negative side we would still have to get oil for the boiler if there is not enough sun. On the positive side we would need less oil than normal.
- 2

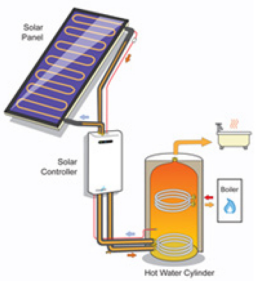
**Install a biomass boiler in each home**

We could put in a new boiler that uses wood often pressed into pellets. This would be good as we would not need fossil fuels, but the boilers are bigger and we need space to keep the wood.
- 3

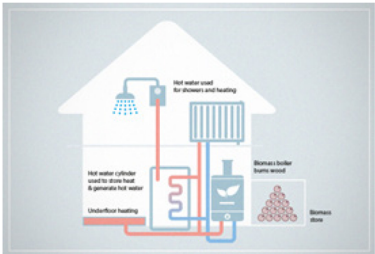
**Install a pump that can create heat from the air outside**

The pump is a machine that uses electricity to take the air from outside your house and make it warmer to provide heating and hot water for the house, like a refrigerator working backwards. This will make sure that we do not need fossil fuels, but it can sometimes be a bit noisy.
- 4

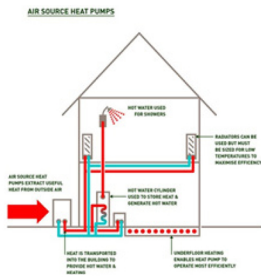
**Instead of having a boiler or pump in each house in Cranmore we have thought about building a system where the heat is made in a central location on the estate and then transported to every house by putting hot water pipes in the ground. This is called a district heating network.**



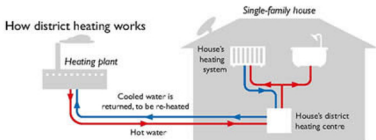
[http://www.vindisolar.co.uk/Products\\_Solar\\_for\\_Housing.htm](http://www.vindisolar.co.uk/Products_Solar_for_Housing.htm)



<http://energyshare.com/wp-content/uploads/2013/05/biomass-heating-diagram.png>



<http://www.willmakenergy.co.uk/heat-pumps.html>



<http://www.lfn-energy.co.uk/district-energy/how-district-energy-works.html>

### Neighbourhood Network Sustainable Energy Solutions

- 1

**Install an engine that can create electricity and heat**

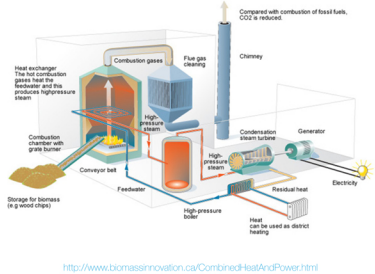
This is known as a Combined Heat and Power (CHP) engine. It uses the heat that is normally wasted when electricity is made, to heat the water in the water pipes delivering the heat to our homes. It can use different fuels such as biomass, oil, coal, gas or even rubbish from our bins. This is good because it's a 2-in-1 technology using 1 unit of fuel to make both heat and electricity. It may be more expensive to build, but cheaper to run than a normal oil boiler, when thinking of all the costs that you would normally have over 10-15 years.
- 2

**Install a large pump to create heat at the plant**

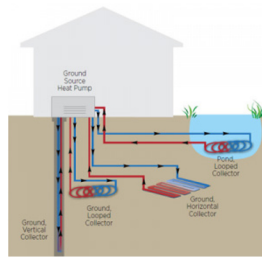
This is very similar to that explained earlier, where we can use the outside air to create heat for our homes. This time it is a much bigger machine that can create enough heat for the whole area, using the heat from the ground we walk on or even the water in the Garvongie River. This alsomay be more expensive to build, but cheaper to run than a normal oil boiler, when thinking of all the costs that you would normally have over 10-15 years.
- 3

**Install a large biomass boiler**

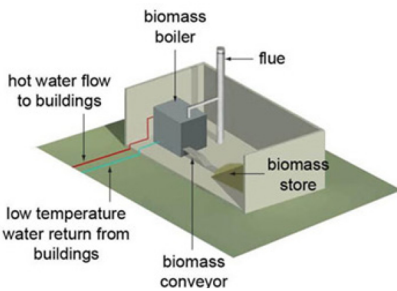
This is the same technology as with the smaller boilers for each home, just with a bigger boiler to create enough heat for everyone. It is practical as this means that each house does not need the space to store the woodchips to be burned in the boiler. Also this means that we would not need oil or coal, but small wood pieces that can be collected from around Ireland.



<http://www.biomassinnovation.ca/CombinedHeatAndPower.html>



[http://www.local.gov.uk/climate-change/journal\\_content/56/10180/3510396/ARTICLE](http://www.local.gov.uk/climate-change/journal_content/56/10180/3510396/ARTICLE)



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## Recommendations

All the above technologies look at **improving the supply of energy to Cranmore**, this is something that takes some years to develop and design as funding is not freely available at the moment.

While further developing and designing the possibilities for delivering heat, we can still look at ensuring the need for energy is decreased by making small changes to our homes. By **improving insulation** of the walls and ceilings and putting in new double glazed windows, we can **reduce the need for heating**.