

Land dedicated to bioenergy

In 2013, Ireland used 156 km² of land to grow energy crops, which is less than 0.2% of the country. For comparison, 45,000 km² of land was used for arable crops, livestock, and fallow land.

Trajectory 1

Trajectory 1 assumes that in long-term land management decisions until 2050, food production has priority over bioenergy. Land is split between activities similar to today, although we are able to get more food from the land due to increased crop yields. There is a significant increase in the fraction of wood cuttings and manure collected for energy use. If livestock numbers increase by 30%, the resulting energy available in 2050 is 12 TWh/y up from 1 TWh/yr in 2013.

Trajectory 2

Trajectory 2 assumes that current trends and drivers in land management continue to 2050, with more land covered by housing. However the area planted with bioenergy crops also increases, such that an additional 4,000 km² of grassland is converted to the production of woody energy crops in 2050. The collection of straw, manure and forestry clippings for energy use also increase. The resulting energy available in 2050 is 42 TWh/y.

Trajectory 3

Trajectory 3 assumes that bioenergy becomes a significant part of domestic agricultural output, with 10% of Irish land used for growing energy crops by 2050, an area almost the size of Cork. There is an appreciable improvement in soil and crop management technologies, with some land now used for food crops being reassigned to bioenergy production and forestry. The resulting energy available in 2050 is 85 TWh/y.

Trajectory 4

Trajectory 4 assumes that Ireland has a strong domestic bioenergy production focus, with 15% of the country planted with energy crops. There is extensive carbon capture through forestry, and highly effective management and collection of waste materials for bioenergy use. The resulting energy available in 2050 is almost 130 TWh/y.

For comparison, Denmark's production of straw, woodchips, firewood, woodpellets, woodwaste, biogas, biooil, and biodiesel for energy in 2012 was 19 TWh/y. Denmark has an additional million people compared to Ireland (5.6 million in 2013) and around half the land area. Scaled by the land area ratio of Ireland to Denmark, this energy production is equivalent to around 40 TWh/y in Ireland.

Figure 32: Energy production from purpose grown energy crops, straw, manure collection/biogas, bio-oil and biodiesel under 4 trajectories in TWh (primary energy)/yr assuming Trajectory 1 in the 'livestock and their management' lever.

