SustainFARM

Public Goods Tool

CASE STUDY: UK

Location

East Anglia is characterised by lower rainfall and more sunshine than elsewhere in the UK, with higher summer temperatures, cool winter temperatures and occasional non-prevailing cold easterly winds from the continent. Parts of the area are characterised by the flatness of the land, although Wakelyns is located in an area of gently undulating land. Soil is depth 25 cm and is sandy-clay to clay loams. They are slowly permeable, seasonally wet and slightly acidic but base-rich.

The farm

Wakelyns Agroforestry is an organic silvoarable farm covering 22.5 hectares. Short rotation coppice willow and hazel are grown in twin rows with 10-12m wide crop alleys in between growing a highly diverse rotation of organic cereals and vegetables. The trees are harvested on a two year (for willow) and five year (hazel) rotation and the woodchip produced is used on the farm to provide heat for the farmhouse. The cereals and vegetables are sold through a number of marketing channels including direct sales and there is some processing carried out on site (producing flour from the cereals).

Figure 1. SIlvoarable system at Wakelyns Agroforestry: hazel SRC with potatoes

Results

As a diverse organic farm, Wakelyns scores highly across nearly all the spurs (Fig. 2) achieving a top score in soil management and agricultural systems diversity. Its lowest score is for the NPK balance; currently the fertility building legume ley fixes more nitrogen than is exported in crops, thus risking leaching of nitrogen from the farm (Fig. 4). This shows how the SustainFARM PG Tool can highlight areas for improvement. The LER is 1.34 which suggests that 34% more land is needed under a monocropping scenario to achieve the same level of production (based on metabolizable energy) as the agroforestry system on the farm. The energy benchmarking shows that the arable enterprise uses only 61% of arable benchmark systems, but that the domestic energy use is considerably higher than an average farmhouse (367% of benchmark). The farmhouse at Wakelyns is a beautiful, but old and leaky building that is hard to insulate. However, 80% of the farm energy use is from renewable sources (photovoltaic panels and woodchip from the agroforestry system), and the CO2 balance is -10.2 tonnes CO_2 equivalent per year.

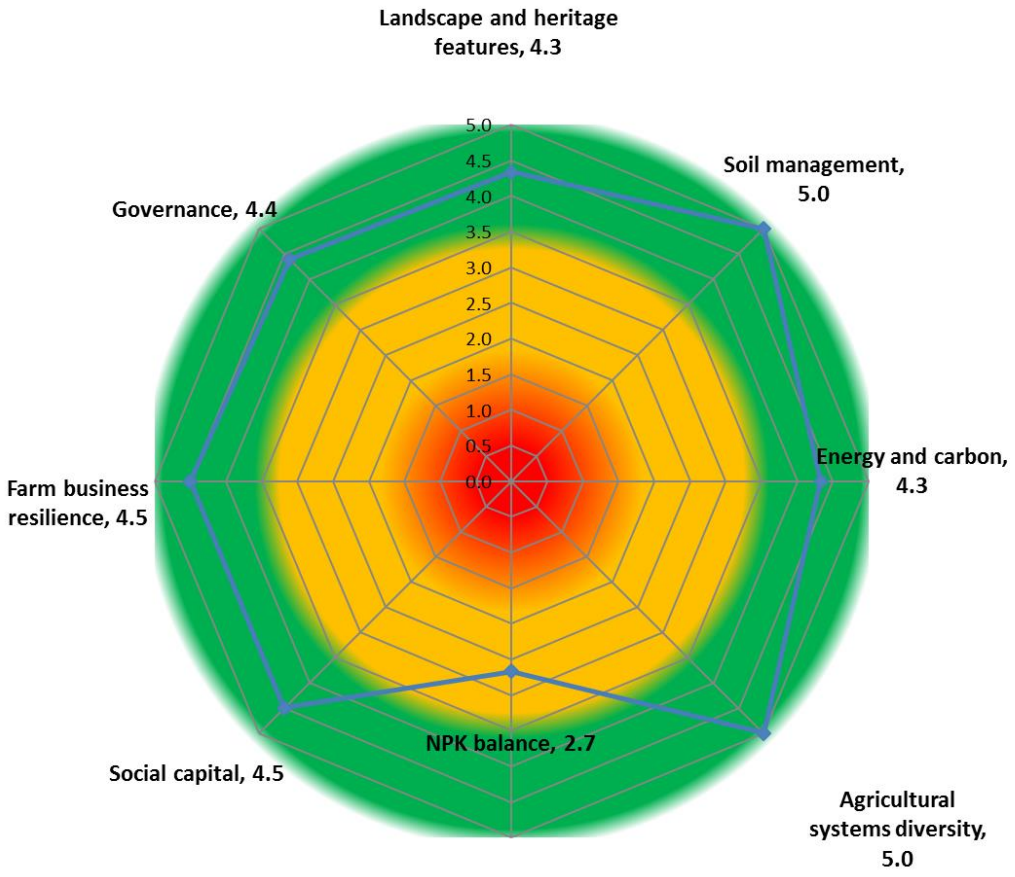

Figure 2. Spur scores for Wakelyns Agroforestry, UK

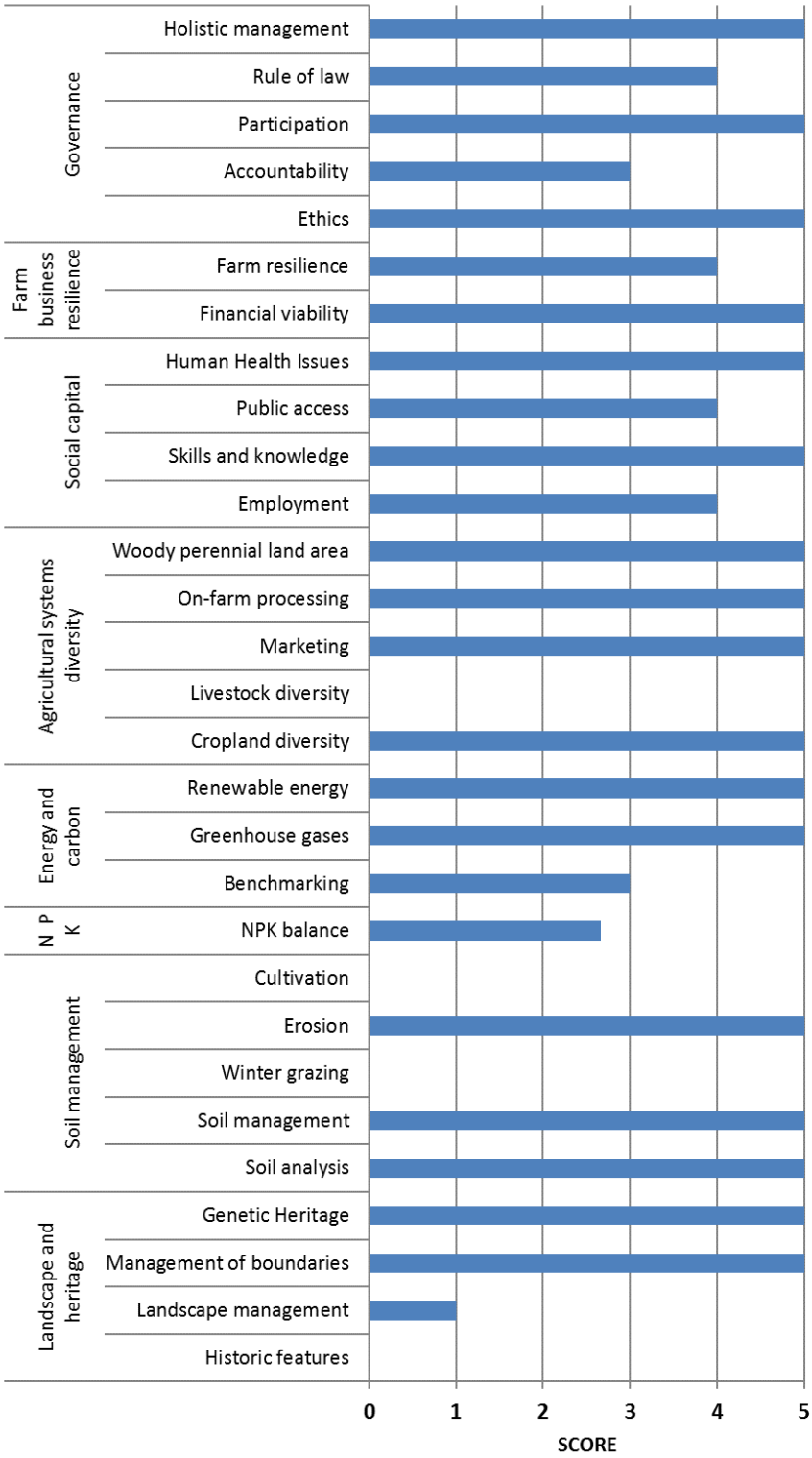

Figure 3. Bar chart showing sub-spur scores for Wakelyns Agroforestry, UK

Key assessment criteria			
Land Equivalent Ratio	**1.34**		
Farm gate NPK balance			
N balance per ha	91	kg	
P balance per ha	-2	kg	
K balance per ha	-12	kg	
Energy benchmarks (energy use as % of average figures)			
Arable	61%		
Beef & sheep	No beef or sheep		
Dairy	No dairy		
Pigs	No pigs		
Poultry - layers	No layers		
Poultry - broilers	No broilers		
Domestic	367%		
Total farm renewable energy	80%		
CO_2 balance	-10.2	tonnes CO_2 equivalent yr	
Labour use - ALUs	2.7	**Please note:** 1 ALU is one full-time employee working 2200 hours per year	

Figure 4. Key results for Wakelyns Agroforestry, UK

Acknowledgements

SustainFARM is a three year project, funded in the UK by Defra, in Denmark by Innovations Fonden (InnoFond), in Italy by Ministry of Education, Universities and Research (MIUR), in Poland by the National Centre for Research and Development (NCBiR) and in Romania by Executive Agency for Higher Education, Research, Development and Innovation Funding as part of the European FACCE SURPLUS ERA-NET co-fund programme formed in collaboration between the European Commission and a partnership of 15 countries in the frame of the Joint Programming Initiative on Agriculture, Food Security and Climate Change (FACCE-JPI).