

AGRICULTURAL LAND

1. **Food.** The three basic requirements for life are Food, Shelter, Warmth. Here we consider Food, and the Agricultural Land needed to produce it.
2. **Population.** In 1798, the average life expectancy was 28 years. It is now (2012) 67 years, world population exceeds 7 billion, and is rising at the rate of 73 million p.a. Thomas Malthus correctly observed (in 1798) that population increases geometrically (i.e. 2,4,8,16), whereas food supply can go up in number sequence only (i.e. 1,2,3,4).
3. **Land.** There is effectively a fixed amount of land in the world. Farmland has halved since 1960, with land lost to development and degradation. The average amount of agricultural land worldwide is about 0.5 acre / person, and in the UK it is about 0.68 acre / person. Yet UK imports 41% of its food, so it is far from self-sufficient.
4. **Land Use.** It follows that we need to conserve all agricultural land, especially arable, for food production. Any use for such matters as housing or renewables must be controlled very carefully.
5. **Grain.** Rising wealth has led to increased demand for meat, and 25 pounds of grain are required for one pound of beef on the table. The UN calculates that global grain production needs to rise by 40% to meet forecast demand in 2020.
6. Yet global grain production has fallen short of consumption in 7 of the last 12 years, and stocks are worryingly low, so vulnerable to price shocks. Partly due to poor weather, and thus low yield, the price of corn rose by 90%, and the price of soya beans by 67%, on an annualised basis, in the 4 months to September 2012. One must question therefore the use of 40% of USA corn crop for ethanol production in 2011, which use is up from 7% 10 years ago.
7. **Meat.** In China, meat demand has risen 15% in the past 3 years. Factory farms now account for 72% of poultry production, and 55% of pork production, so it is much easier for diseases such as bird flu to spread. Reduced biodiversity means that pests and diseases can wipe out an entire crop. The widespread use of neo-nicotinal pesticides has been implicated in the bee colony collapse.

8. **Dairy.** In England, a fair sum for the cost of milk production now (2013) is 35p / litre. Milk retails between 100-130p / litre and so the middlemen take the large sum of 90p / litre. In 1995 the return to the farmer was 58%, in 2005 36%, in 2013 27%. Whilst these days dairy tends not to need as much farm land as it used to, it does indicate the very small return to farmers for food production. This makes it very difficult for farmers to resist the offers from renewables (e.g. Solar PV) developers for easy money for the use of farmland for non-agriculture.
9. **Soya.** China became a net importer of coarse grains in 2007, and of Soya in 1995. Arable land in China per head is only about 14% of that in USA, and in India the equivalent figure is 25%.
10. **Yield.** With the use of pesticides and fertilisers, arable yield has increased, but levelled off about 25 years ago at about 3.5 Tons/acre for wheat. The gestation period does not change, e.g. 10 months for cattle. GM needs less pesticide, and yield is good, but whatever the product, it needs arable farmland in which to grow.
11. **Solar PV.** This renewable energy source will not do base load, nor assist security of supply, nor keep the lights on as it does not work at night. It has an achieved load factor of about 7%. Yet because it claims to reduce CO₂, it receives substantial subsidies (ROC and FIT). In the last 12 months (2012) in Devon, 1500 acres of farmland has gone to Solar PV. In Cornwall 4500 acres are under PV. This is a massive loss of arable farmland, which the UK cannot afford.
12. **Security of Supply.** It is important for the UK to become more self-sufficient in food, as we currently have the requisite farmland. Indeed in the 1980's UK was self-sufficient for indigenous foods for over 90%, and over 75% for all food. This was brought about by the CAP and the emphasis on boosting food production through subsidies to farmers. Whilst not wishing to revert to butter mountains, this would be a far better way to use the subsidy money currently going to renewables, and would preserve the UK farmland which renewables such as Solar PV do not.
13. **Water.** Agriculture uses about 70% of all fresh water, and demand for water increases dramatically as meat consumption rises. In China, water pollution is widespread, with 58% of rivers too polluted to use for drinking, and 28% too polluted for irrigation. In UK, we need to develop a national water grid for the long term future, inter alia to protect our way of life.

- 14. Weather.** Because it is unpredictable, weather is one of the most difficult things for farmers to deal with. In order to be sufficiently flexible to take planting opportunities, one must retain the maximum arable land.
- 15. Hunger.** There is a strong link between hunger and political unrest. Poor harvests preceded the French Revolution of 1789, the European Revolutions of 1848, and the Russian Revolution of 1917. The political fires which burnt across Africa and the Middle East in 2011 and 2012 were partly kindled in the drought and resulting poor harvest. No UK administration for the last 25 years has paid attention to Security of Supply of Food, nor of electricity, and we really do want to avoid the civil unrest that could arise from loss of either.
- 16. Conclusion.** The floods of 2012 left the Somerset levels flooded for many months. The very firm impression given by all politicians is that agricultural land is not deemed important, nor are the livelihoods of those involved. This crass approach has to be reversed. These islands need a Land Use Policy that puts security of food supply first, and thus farming, and places much lower priority on stochastically intermittent renewables such as Solar PV. Supply and demand of food remain far from in step, and a National Land Use Policy should be part of the solution.