

Optimistic assumptions required for food sufficiency for 10 billion people by 2050

1. Climate change will not prevent continuing increases in crop yields;
2. Ocean acidification will not reduce fisheries;
3. Water will continue to be readily available for farming;
4. Salination of land irrigated from groundwater will somehow be eliminated;
5. Aquifer abstraction rates will reduce to recharge rates without affecting crop yields;
6. Sea level rise will not submerge major food-producing river deltas;
7. Agriculture will reduce its dependence on fossil fuels, notably oil;
8. The energy-intensive Haber-Bosch process will maintain sufficient nitrogen fertiliser supplies;
9. Phosphate supplies, notably from Morocco, will not suffer geo-political or other disruption;
10. These macro-nutrient fertilisers can continue to replace sound soil husbandry in the long term;
11. 'Integrated pest management' can replace the pest-control services of both winter (in mid-latitudes) and natural predators;
12. These predators (birds, bats, insects etc) will suffer no population decline;
13. Natural pollination services (bees etc) will be maintained at current levels;
14. Growing demand for meat, biofuels etc will not reduce grain supplies to the poor;
15. Grain prices will not rise faster than the incomes of the poor;
16. Population growth will rise only with the medium UN projection, without any policy intervention;
17. Civil unrest at price rises or violent competition for food will not disrupt food production;
18. Distribution systems will operate with near-perfect efficiency;
19. Food-exporters will not apply export bans in times of domestic scarcity;
20. As yet unknown 'techno-fixes' will compensate for all adverse eventualities.

Transition towards a sustainable steady state economy - initial policy changes

1. Stabilize population;
2. Cap-auction-trade systems for all non-renewable resources;
3. Ecological tax reform (tax 'bads' like non-renewables, not 'goods' like jobs, and internalize externalities by regulation and subsidy);
4. Reform the national accounts (replace GDP with Quality of Life/Wellbeing);
5. Reduce/eliminate fractional reserve banking (creation by bank computers of additional claims on real resources);
6. Reduce inequality in income distribution;
7. Shorten the working day, week and year;
8. Re-regulate international trade, internalizing externalities;
9. Add to the mandates of the IMF and WTO an overriding duty to promote bio-physical sustainability.

(Source: Centre for the Advancement of the Steady-State Economy, CASSE, Leeds U)

March 2014