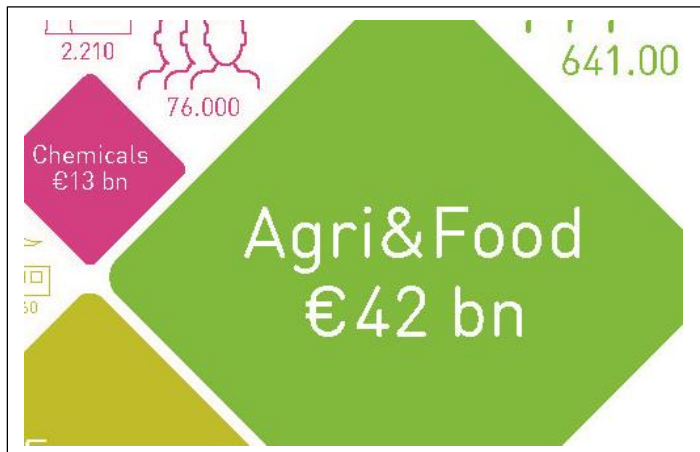

Opportunities in AgriFood



Investing in “High”Service for AgriFood - 7 June 2017, the Hague

Jan Hak - NAFTC, Metropolitan Food Security and QuaTerNes Group

Entering Fourth industrial age

| From Industry 1.0 to Industry 4.0



COMMITTED TO
IMPROVING THE STATE
OF THE WORLD

1.0 | 1784 | based on mechanical production
equipment driven by water and
steam power



2.0 | 1870 | based on mass production
enabled by the division of labor
and the use of electrical energy



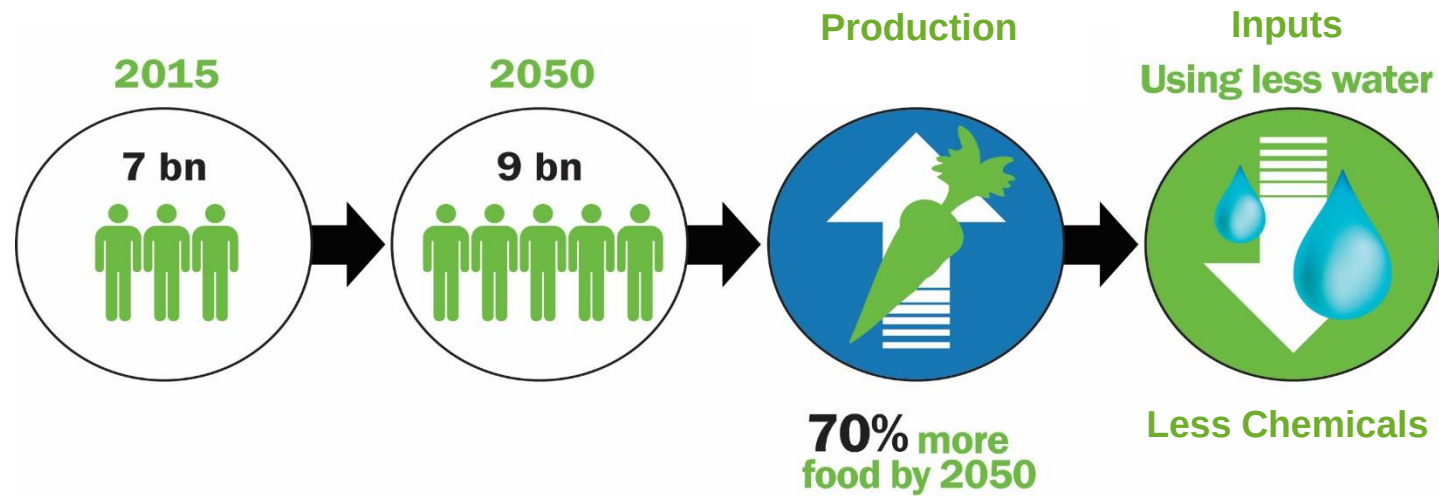
3.0 | 1969 | based on the use of
electronics and IT to further
automate production



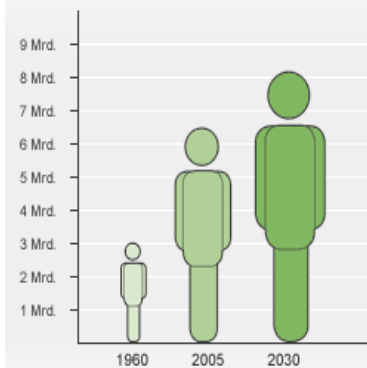
4.0 | tomorrow | based on the use
of cyber-physical
systems



The global challenge

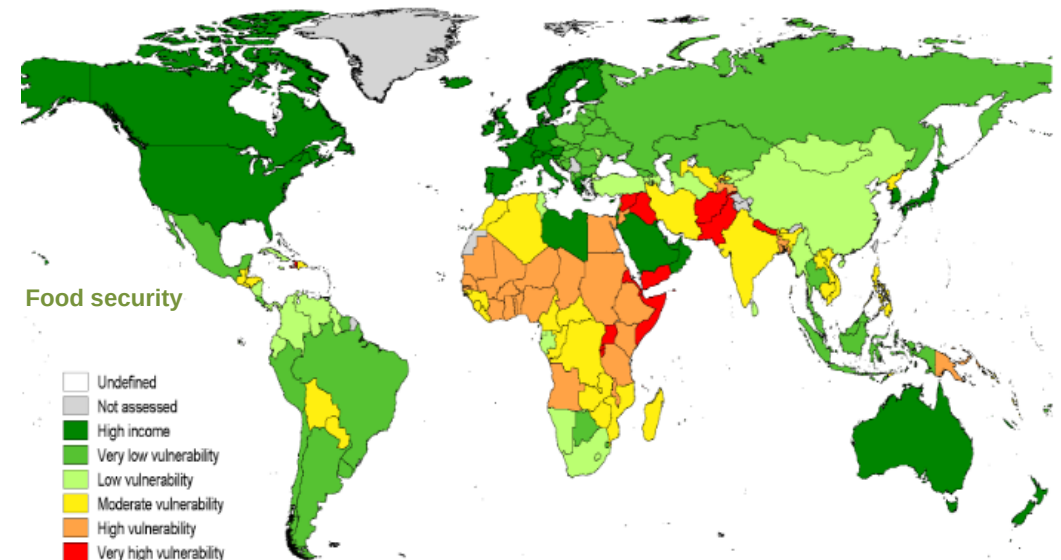
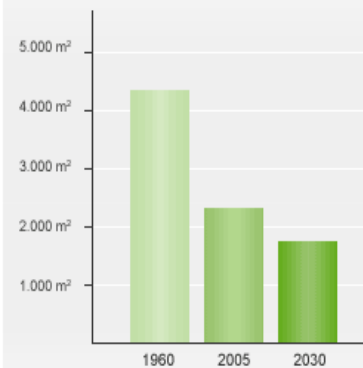


World population growth



Source: FAO

Arable land per capita

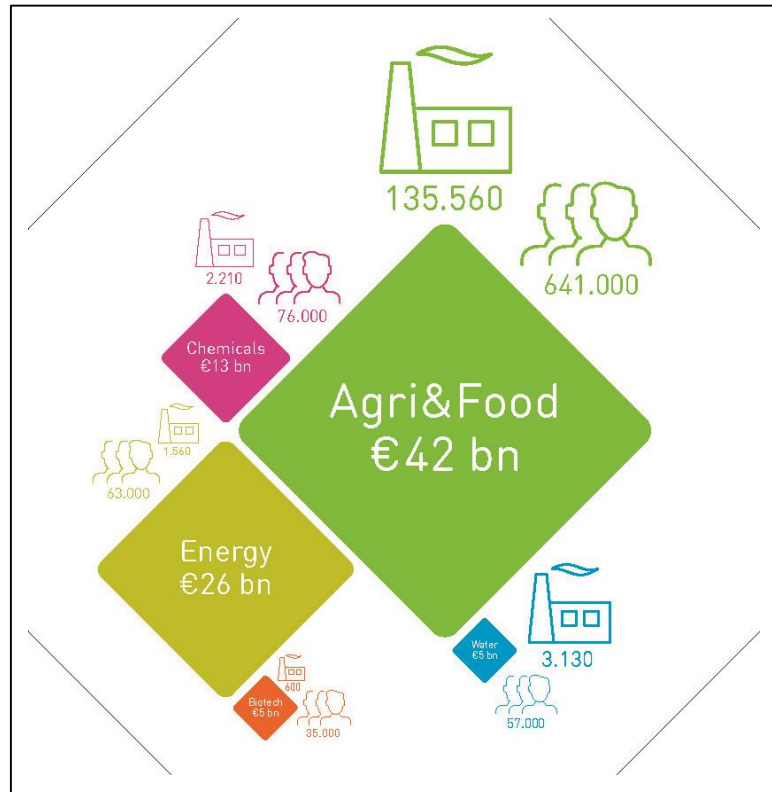


Technology will drive the future of Agri and Food



'70% of the production needed to meet the growing global demand is going to come from technology.' (World Agriculture towards 2015 / 2030, rapport FAO 2008)

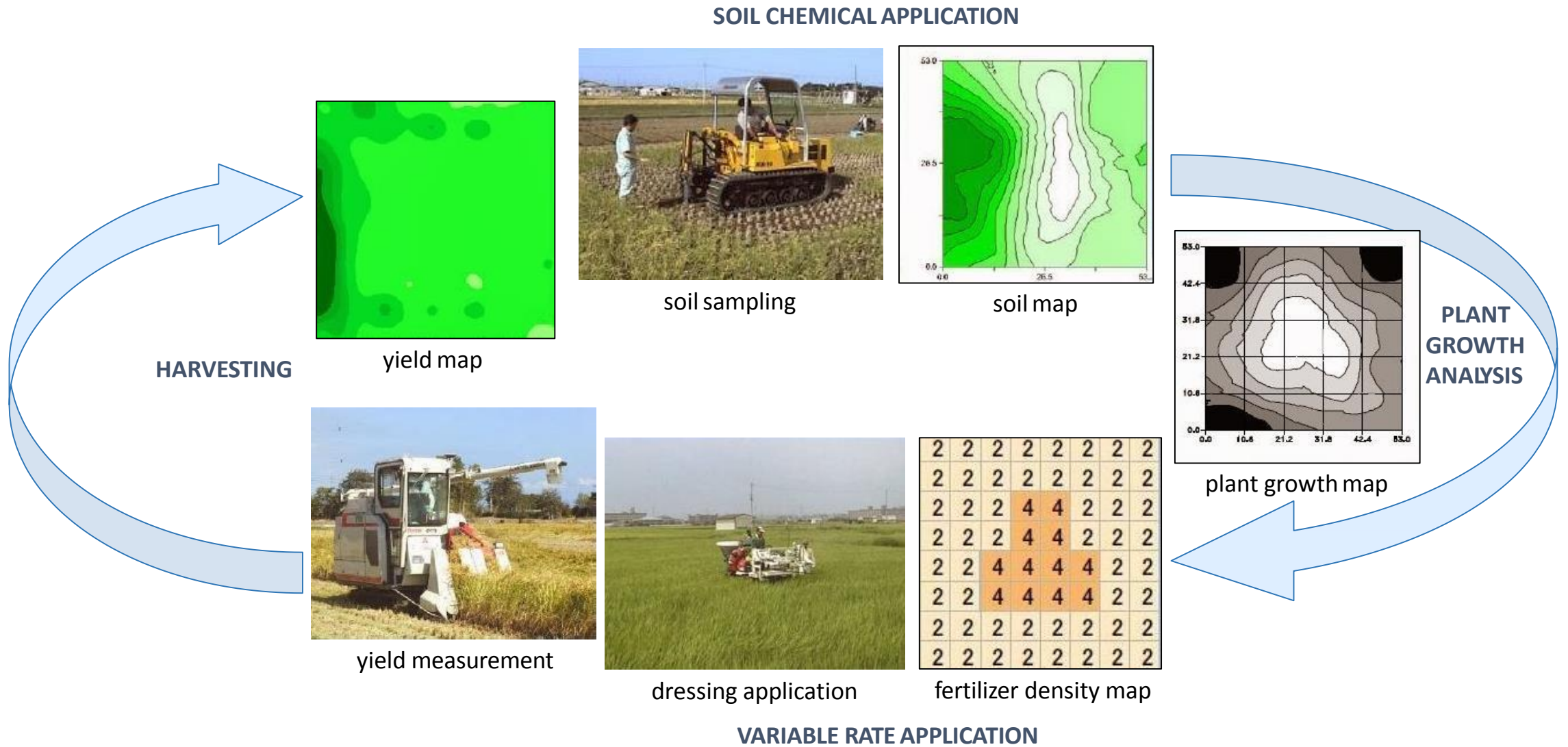
The Netherlands' strategic innovation agenda



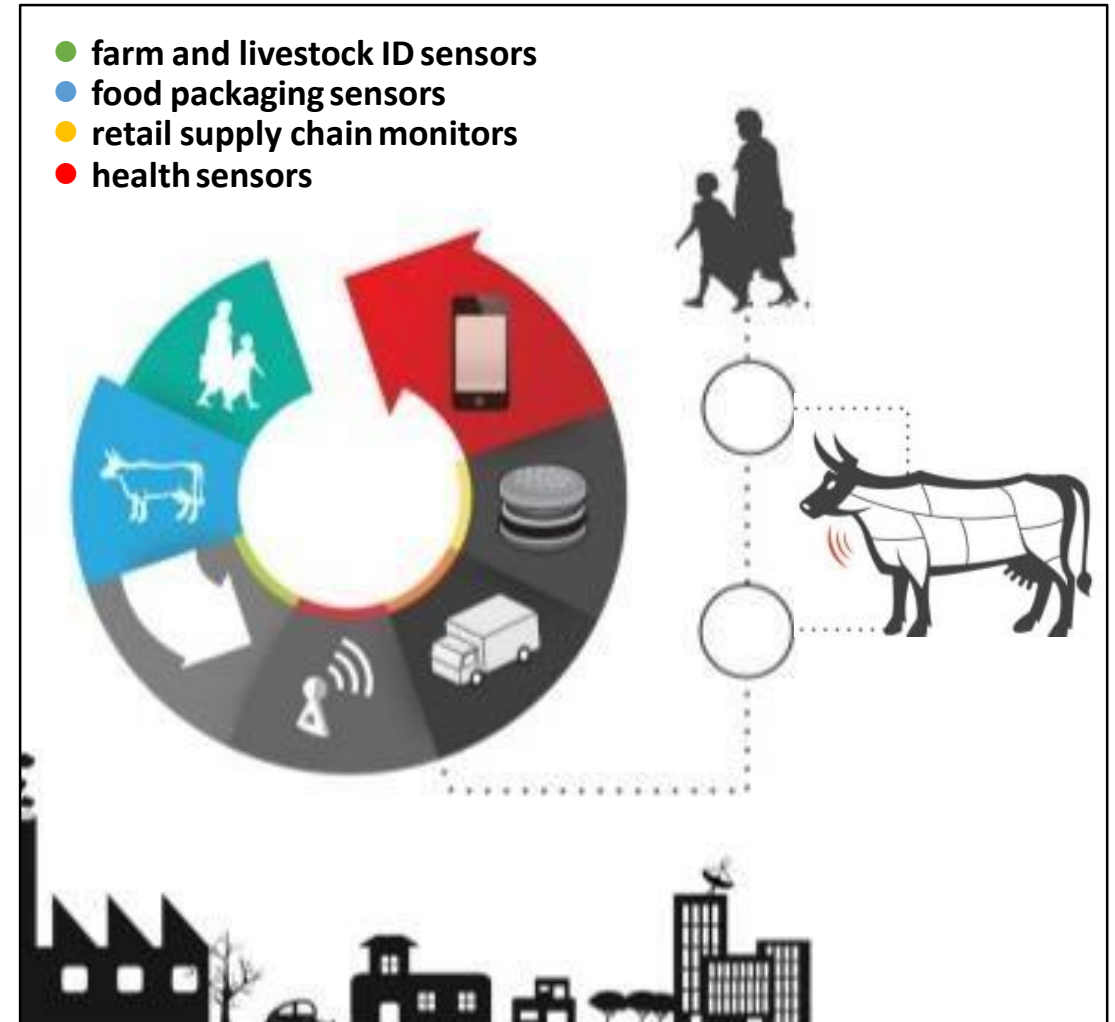
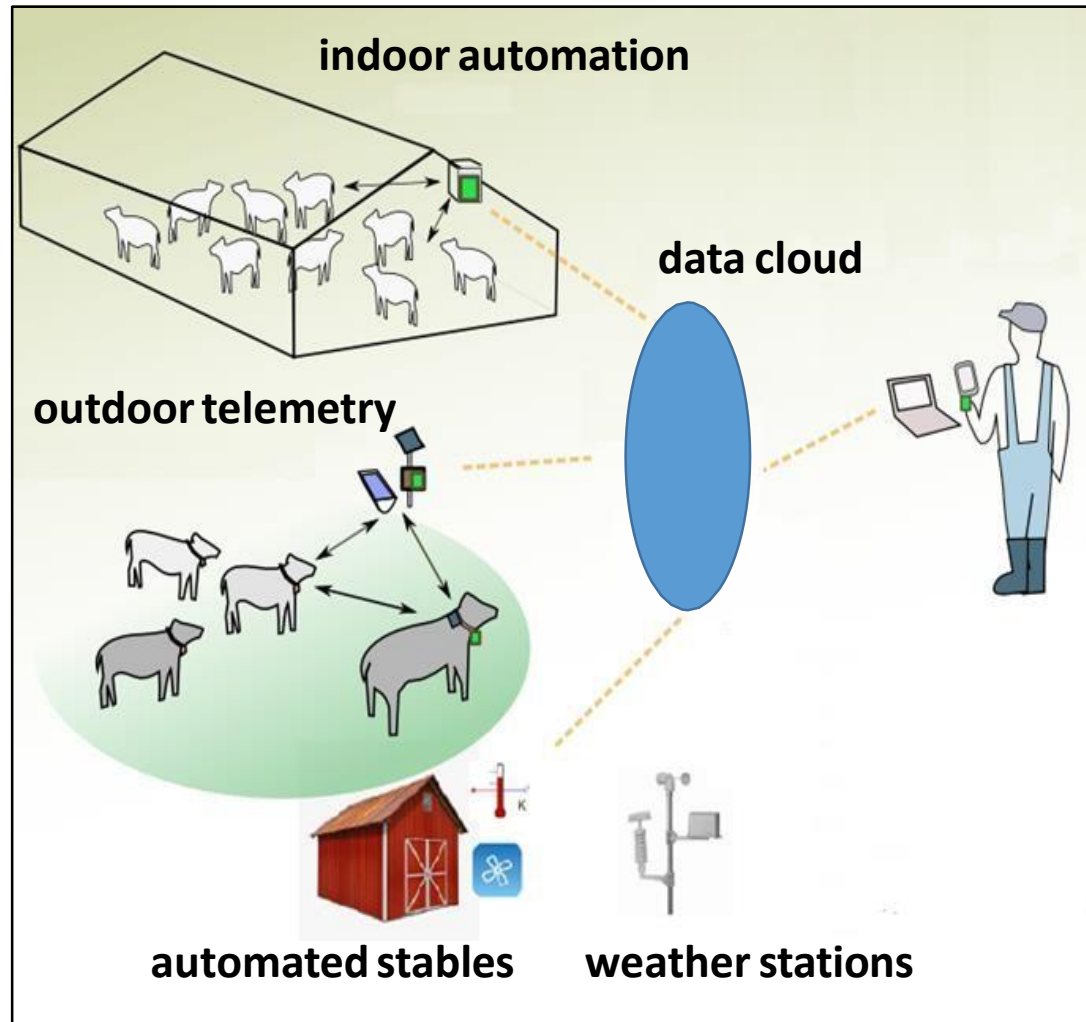
High Tech is giving farming a new face



Smart cycles (innovation), Precision Agriculture are data driven



Livestock farming is data driven



Food fully traceable

Internet-based processes and services play a major role in 21st century retailing

Suppliers and retailers are increasingly linked in a collaborative business network

ICT and e-Communications are utilized to enhance processes and transform business models



Knowing your inventory

Finding goods in the warehouse

Shipping the right products

Tracking where shipments go

Ensuring quality of food

Everything in the store – all the time

Customer service and information

Returns without the receipt

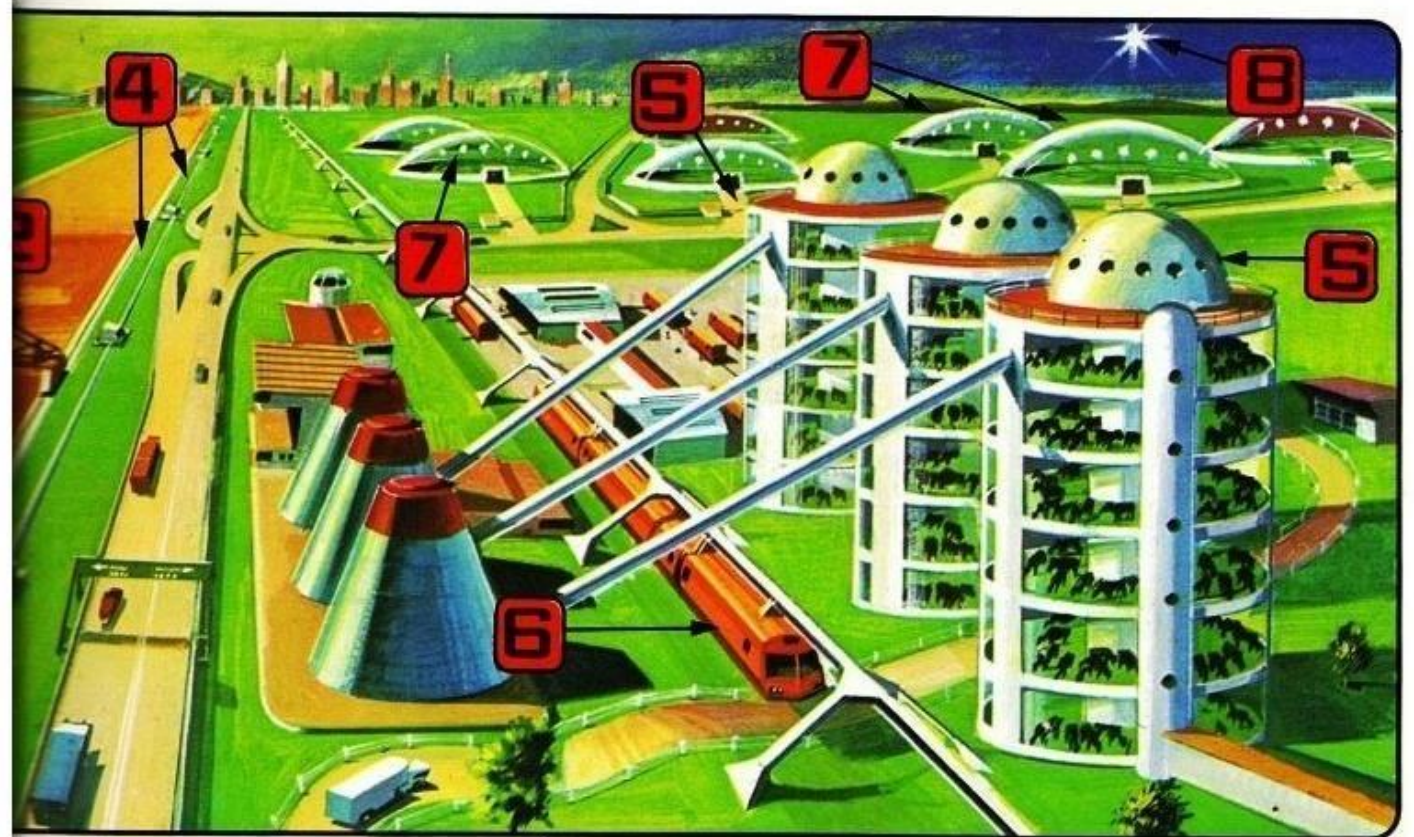
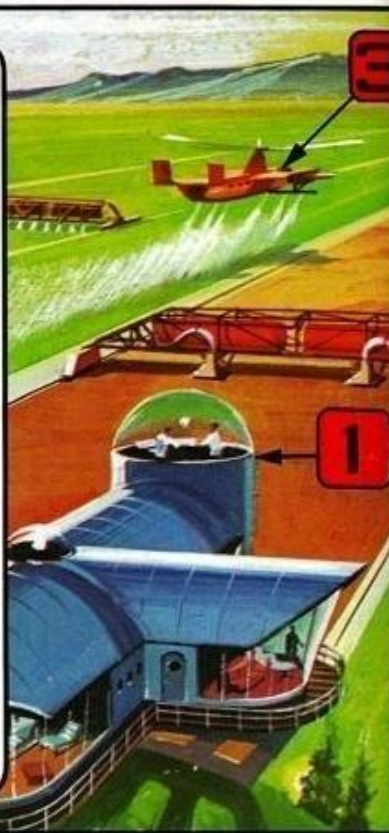


Smart Farms: integrated, fully automated factories

Superfarm, year 2020

Compared with a farm of the present-day, this one seems more like a factory. The high food production required by a vast human population may make factory farms the only way to avoid mass starvation.

- 1 Farmhouse. Weather reports arrive via satellite; computers keep track of stock and grain yields.
- 2 Automatic harvester glides along monorail tracks.
- 3 Helijet sprays fertilizer and weedkiller.
- 4 Grain is pumped along tubes to nearby city. Old-fashioned trucks are little-used.
- 5 Many people regard present-day factory farming of animals as cruel and unnecessary even though most housewives are happy to buy cheap factory-farmed chickens. If people still want cheap meat, more of it may have to be produced in this way. Here, cattle are shown in space-saving multi-level pens.
- 6 Monorail train, loading up with beef.
- 7 Plastic domes protect crops like tomatoes and strawberries.
- 8 Orbiting space mirror provides night-lighting to boost crop yield.



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Smart farming: part of a circular economy

