**Powerpoint presentations**

**History of agriculture in the world**= science or practice of farming including cultivation of the soil for the growing of crops, to provide foot and other products.  
***1) Civilization of the wheat*** 🡺 America=> in Mesopotamia (pigs, goats, cattle, sheep), the grinded wheel, crop rotation (rotate the crop varieties in the time), use of the horse, potato tomato maize tobacco cacao rubber vanilla.  
  
***2) Civilization of the maize*** 🡺 Europa/Africa=> hunters-gatherers switch to agriculture, domestication of plants (sunflower marsh elder goosefoot wild gourd => seed crops), the Three sisters in Mesoamerica (maize, squash and beans), turkey peanuts guava dog  
Domestication = select and cultivate species with the greatest interest (llamas alpacas guinea pigs)  
Slash and burn techniques in order to retain nutrients in the soil, milpa cycle (7 years to do it)  
Create more land ! => to form terraces Floating plots = chinampas   
Encomendias = indigenous populations grouped and forced to work  
Exchanges between New World and Old World First use of fertilizer in XVIth century  
  
***3) Civilization of the rice*** 🡺 Asia   
North region => wheat and millet growing South region => rice growing  
The plough, waterwheels and smelting Transplanting => improvement of technical sowing  
Chinese scythe, the forced scythe  
  
***4) Civilization of the millet*** 🡺 Oceania/Africa

**Intensive and alternative agriculture  
1) Agriculture through ages**1st signs from the Middle East, agriculture revolution in developed countries (1st traction engine, gas powered tractor).   
Intensive agriculture started after WWI => inputs and plant breeding  
Green revolution => for everybody  
30% of land surface on earth used for agriculture => 1,5 billion hectares cultivated, 43% of global work force, 1,3 billion people (5% in developed countries)  
Subsistence agriculture = self-sufficiency (20%) ≠ Commercial agriculture   
Producers and suppliers : 1st => China (export to USA); 2nd  => EU (export to EU), 3rd => USA (export to Brazil)  
  
***2) Intensification of agriculture***Robotization (robotic milking system, broom or kitchen) and automation   
High mechanization, GPS, agrochemicals (pesticides, fertilizers), GMOs, plants breeding, irrigation (= artificial application of water to a soil, increase capacities to grow  
Negative impacts :waste and quality of water, pollution, desertification of grounds, deforestation   
70% of the water in the world is used for agriculture, sanitary problems (allergies, diseases or cancers)  
  
***3) Towards an alternative agriculture***Organic farming => low energy resources used  
Integrated farming => preserve the environment, quality productions by using principles of ecology  
Small-scale agriculture

**Deforestation and desertification  
*1) Desertification***= degradation of the soil and landscape resulting from several factors, including climatic change and human activites.  
Drylands => 40% of the earth(s land area Destertification => 6-12 million square kilometers  
Lake Chad in => it has shrunk b 95% since 1960's  
Causes : - climatic variations : high temperatures, irregular and infrequent rainfall  
- human activities : overgrazing (plants exposed to intensive grazing for extended periods of time), destruction of plants in dry regions , farming of average land, inappropriate irrigation   
🡺 soil less usable, food loss, damaged vegetation, starvation, flooding, poor water quality, pollution   
  
***2) Deforestation***   
= conversion of a forest or stand of trees land in a non-forest use (farms, urban use…)  
1600 => 2/3 of the world wooded, nowadays => 1/3 80% of the wooded areas were destroyed in the last 30 years  
Causes : - agricultural activities (subsidence farming 48% , commercial agriculture 32%, logging 14%)  
- Urbanization -Desertification of the lands - Mining (gold mining…) - Fires   
Consequences : - climate imbalance (changes local weather) - increase in global warming (disturbance in the carbon cycle) - soil impacts and flooding - biodiversity impacts - social impact (displace people)

***3) Solutions***  
reducing emissions, payments for conserving forests, monitoring deforestation, reforestation

**A foot company : Lipton**  
***1) Structure and organization***  
=> Unilever (from margarine and soap producer), 400 brands, 4th company in volume of sale, 50 billion turnover in 2013, 170 000 employees  
Well known brands : - ice creams and beverages : Ben & Jerry's, Magnum, Carte d'Or, Lipton  
- Foot : alsa, mora, banania - Personal care : dove, signal, Williams - Cleaning agents : omo, skip, sun  
 ***2) Products***=> centered on tea. Major production sites => Kenya, Tanzania and India 🡺 a fluctuating price

***3) Social responsibilities***The rain forest alliance   
The Farmer Field School project (for Kenyan smallholder tea growers) => to learn to farmers and people

***4) Environmental impacts***- On water, soil and species => soil layers becomes thinner, deterioration, decrease of the nutrients rate, pollution  
1 liter of tea = 120 liters of water  
- Carbon emissions => Unilever Sustainable Living plan = reducing CO2 emissions from factories (17% 2008->2012)  
- Waste on landfill => "zero-landfill" facilities = recycle/reuse, compost, convert into usable energy  
- Packaging => problem of over-packaging, need to reduce by 2020, reduce the weight of bottles for Iced tea

**New technologies in food industry  
*1) Pulsed light***=> an athermal process, in order to decontaminate surfaces by killing microorganisms, short light pulses of an intense spectrum, white and UV light. Discovered by PurePulse. Moderate energy consumption. UVC are the most destructive for microorganisms, there are low and high UV lights.   
🡺 to disinfect food, packaging, tools, water 🡺 no water consumption and no pollution

***2) 3D printing***=> first self-replicable printer in 2005, use of FDM (fused deposition modeling), SLA (stereolithography), selective laser sintering,

***3) Active and intelligent packaging***active packaging => a packaging which includes constituents to increase performances of the packaging  
intelligent packaging => an extension of the packaging to communicate some information to the consumer  
🡺 anti microbial system to extend the shelf life of the food  
- Inclusion of active components in the packaging to avoid oxygen presence  
- Time temperature indicator for temperature exposition   
- Gas indicators => information about the nature of the gas  
- Biocensors for toxins identification => a small device send signals to the consumer  
- Microwave doneness indicator

**Water and waste management  
I) Causes 1) In agriculture**70% of the planet's water consumption; 2,5 billion liters per year  
causes => leaky irrigation systems, wasteful field application methods, cultivation of thirsty crops  
Desert farming in Saudi Arabia => Pivot irrigation, ½ of the water's reserves have disappeared   
Cultivation of cotton => 1st consumer of water, 1 t-shirt = 3 years of drink = 3000 liters  
  
**2) The case of food**1 billion of tons/year of waste, 2 million people could be fed for a year with the amount of food the USA trow away each year, 1/3 of all food produced is wasted before reaching a human stomach

**3) E-waste**= electronic equipment near the end of its useful life which is trown away, 20-50 million of tons/year in the world  
The planned obsolescence = policy of planning a product which has a limited useful life 🡺 benefits for the producer (some printers, apple products, light bulbs…) => useless waste

**II) Consequences  
1) The water scarcity a) On environment**½ of the world's wetlands have been destroyed since 1900  
**b) On population**More than a billion people live without clean drinking water, 4000 children die every day from water borne diseases  
2,5 billion people without sanitary facilities  
**c) On politics**MDG = millennium development goals => human right to water

**2) The global garbage crisis a) On biodiversity**mercury pollution on dolphins, toxic waste from mines in Artic, pesticides/fertilizers on dolphin in India  
**b) On human health**Without safe recycling, most of toxic components would end up in landfill   
**c) On economy**California => 180,000 additional jobs; $8 billion in total income

**III) Solutions  
1) Policies over the world**Zero Waste 🡺 project which encourage people to re-use and recycle materials  
India 🡺 No waste collection, no technology, neither waste or water management policy  
Delhi 🡺 8000 tons of waste each day  
 **2) How to reduce wastes ?**Reuse (repair, sell, give…); recycle and reduce (less packaging, short showers, consume less…)  
Governments ? 🡺 preventing campaigns in schools, legislations, guidelines, regulations, distributing safe surplus of food, compost garbage in cities  
Industries/farmers 🡺 stop vegetable and fruits' caliber, better food harvesting, smart irrigation, reducing food packaging

**3) New technologies in waste and water management?**nanotechnology in filtration 🡺 membrane chemistry 🡺 intelligent irrigation