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Can Digital Environments Help Us to Create More Sustainable World?

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Digital environments [1]

- Digital communication environments: Digital communication environments (DCE) are well-known as computer networks. E.g. Internet
- Digital social environments (DSE) are well known as social networking sites. Many digital social environments need one central server to distribute information to each of its clients. E.g. SoMe
- Many of the environments we encounter can be reproduced in a digital environment, such as an immersive digital environment in which an artificial, interactive, computer-created scene or "world" is generated for the user to be placed in. E.g. Theme parks (Laser shooting, Angrybirds etc.)

Types of Pollution, Land e.g. [2]

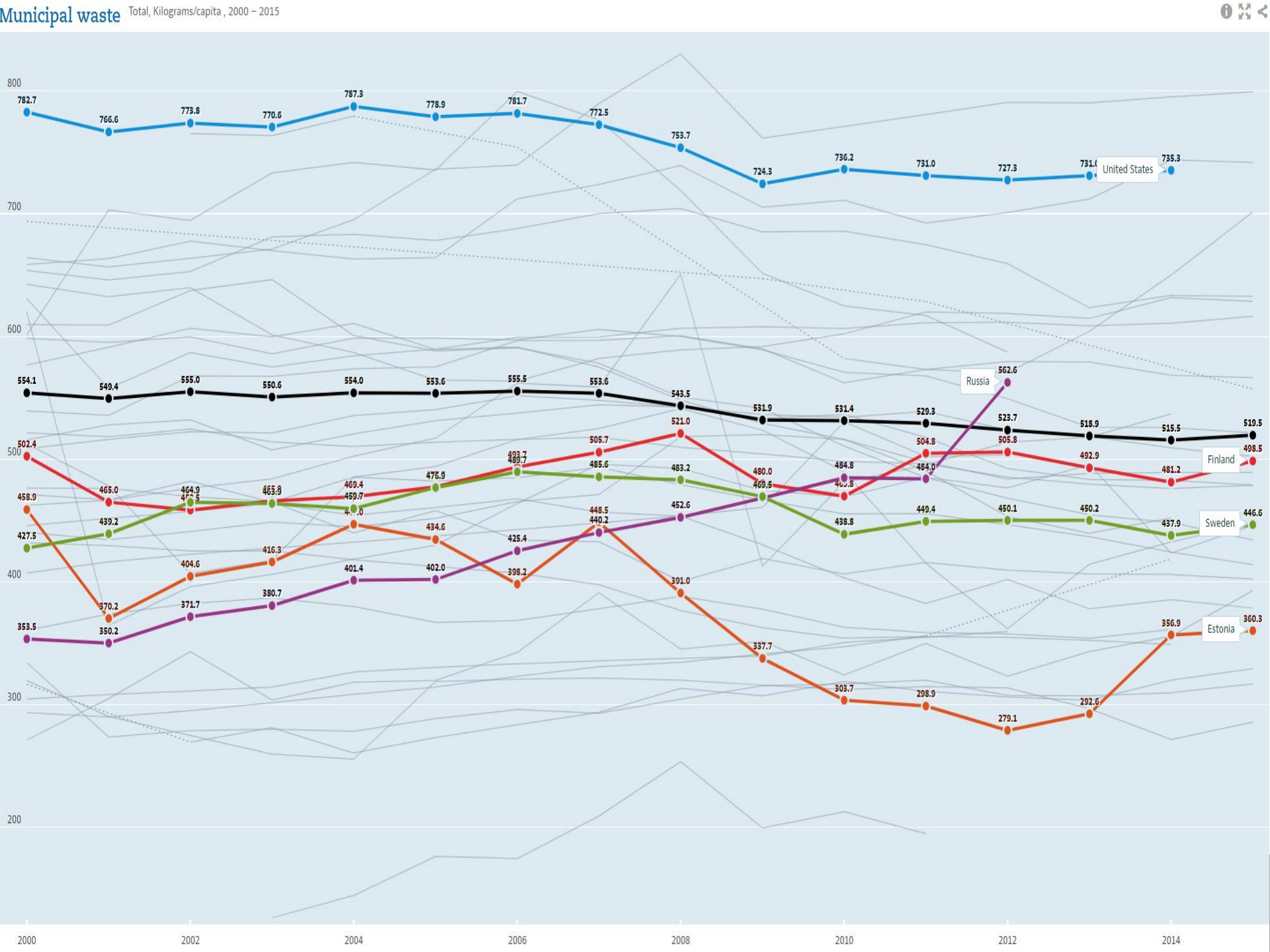
- Household garbage and industrial waste.
- Product packaging, grass clippings, furniture, clothing, bottles, food scraps, newspapers, appliances, paint and batteries etc.
- Around half of the waste is gathered in landfills. About third percent is recycled. Food is a big contributor to landfill waste.
- Commercial or industrial waste is a significant portion of solid waste.

Municipal waste [3]

- Municipal waste is defined as waste collected and treated by or for municipalities.
- Waste from households, including bulky waste, similar waste from commerce and trade, office buildings, institutions and small businesses, as well as yard and garden waste, street sweepings, the contents of litter containers, and market cleansing waste if managed as household waste.
- The definition excludes waste from municipal sewage networks and treatment, as well as waste from construction and demolition activities.

Municipal waste

Total, Kilograms/capita , 2000 – 2015



Types of Pollution, Water [2,4]

- Water pollution: Water pollution happens when chemicals or dangerous foreign substances are introduced to water, including chemicals, sewage, pesticides and fertilizers from agricultural runoff, or metals like lead or mercury.
- The volume of freshwater resources is around 2.5 % of the total volume of water. Of these freshwater resources, about 70 % is in the form of ice and permanent snow cover in mountainous regions, the Antarctic and Arctic regions.
- The food sector contributes respectively 40 and 54 percent to the production of organic water pollutants in high-income and low-income countries.

Freshwater facts, more [4]

- Projected increases in fertilizer use for food production and in wastewater effluents over the next three decades suggest there will be a 10-20 percent global increase in river nitrogen flows to coastal ecosystems.
- Half of the world's wetlands have been lost since 1900.
- Every day, 2 million tons of human waste are disposed of in water courses.
- Many industries – some of them known to be heavily polluting (such as leather and chemicals) – are moving from high-income countries to emerging market economies. Despite improvements in some regions, water pollution is on the rise globally.
- ETC…more negative news

Types of Pollution, Air [2,5]

- The breathing air has a very exact chemical composition; 99 percent of it is made up of nitrogen, oxygen, water vapor and inert gases. Air pollution occurs when things that aren’t normally there are added to the air.
- Household combustion devices, motor vehicles, industrial facilities and forest fires are common sources of air pollution.
- 92% of the world’s population lives in places where air quality levels exceed WHO limits.
- In 2012, an estimated 6.5 million deaths (11.6% of all global deaths) were associated with indoor and outdoor air pollution together.

Aviation and air pollution [6]

- Among others airplanes emit particles and gases such as carbon dioxide (CO2), water vapor, hydrocarbons, carbon monoxide, nitrogen oxides, sulfur oxides, lead and black carbon which interact among themselves and with the atmosphere.
- Rapid growth of air travel contributes to an increase in total pollution attributable to aviation. From 1992 to 2005, passenger kilometers increased 5.2% per year. Greenhouse gas emissions in EU from aviation increased by 87% between 1990 and 2006.
- The Intergovernmental Panel on Climate Change (IPCC) has estimated that aviation is responsible for around 3.5% of anthropogenic climate change, a figure which includes both CO_2 and non-CO_2 induced effects.

Types of Pollution, Noise and Light [2]

- Humans can’t see or smell noise pollution, but it still affects the environment. Noise pollution happens when the sound reaches harmful levels.
- Research has shown direct links between noise and health, including stress-related illnesses, high blood pressure, speech interference and hearing loss.
- Electric lights have changed the way that days and nights work. Consequences of light pollution are many.
- There are affect for animals like birds and turtles.
- Study of the American Geophysical Union suggest, that light pollution could be making smog worse by destroying nitrate radicals that helps the dispersion of smog.

Greenhouse gases, 5 biggest ton/m2 [7]

	Country	co2 ton/km2
1	Singapore	76855,77
2	Gibraltar	67833,33
3	China, Macao SAR	53620,69
4	Monaco	46030,01
5	China, Hong Kong SAR	36198,37

Greenhouse gases, Finland ton/m2 [7]

102	Finland	195,33
103	Sri Lanka	187,68
104	Saudi Arabia	187,21
105	Egypt	184,29
106	Venezuela (Bolivarian Republic of)	181,51

Greenhouse gases, smallest ton/m2 [7]

211	Niger	0,72
212	Mali	0,47
213	Central African Republic	0,41
214	Chad	0,30
215	Greenland	0,24

Scenario 1: Totally digital

- People do mainly their work in distance using digital network. Work travelling is minimized.
- Aviation is expensive due high taxing of fuel.
- People think environmentally: Grow as much vegetarian food as possible themselves and avoid eating meat. Also plastic packages are avoided. Recycling is common. Equipment's are used to the end before they are replaced.
- People mainly read and write using computers, tablets, e-books, phones and other gadgets.
- Lots of freetime is spend using digital games, watching movies and in virtual realities.

Conclusions

- We are living in scenario 2 that is partly digital and there is no way we go back to scenario 3 that would have been totally non-digital.
- Scenario 1 offers some benefits that likely people would travel less in case they are offered good digital realities instead.
- Paper would be produced less.
- Going digital is not enough to solve environmental problems. People attitudes have to change in many fundamental ways before nature can heal.

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ANY QUESTIONS
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