

## Stockholm session "Is wastewater a She?"

### - Implications of lack of wastewater services - Bruno Tisserand, EurEau

#### o **If we talk about wastewater and gender, is everything fine in Europe?**

- Unfortunately No!
- Wastewater services are obviously more effective in EU than in a number of the world but the poorest population, homeless people, Roma -as a traditionally nomadic ethnic group- are lacking of water and wastewater services
- Girls who are menstruating don't attend school if the school doesn't have toilet (let alone private toilets), this mean that girls might miss eight days on average translates into 11% of the total learning days in a year
- For sure, all EU countries don't provide all schools with safe water, sanitation and hygiene!

#### o **How and why are women differently affected in Europe?**

- The same causes do have the same effects when there is a lack of clean environment
- In the 19th century, Louis Pasteur developed a theory that certain diseases are caused by microorganisms
- Microorganisms don't have any gender mechanism but women are more exposed to them
- Because women used to be in charge of most of the domestic tasks like cooking, washing and they have to take care of the youngest and the eldest people in the family, they are more at risk when microorganisms are present in their environment
- **Please mention especially 2-3 medical aspects**
  - Health effects from **endocrine disrupters chemicals** ("often called Hormones") cost the EU 157 Billion €/y. 98 % are due to pesticides, Phthalates & al , Flame retardants. Water is a negligible source compare to dietary (see tables below)
  - Effect of **Nitrate** on pregnant women, the fact is due to the drinking water consumption. The origins of Nitrate in drinking water resources are well identified in most of the cases: in Europe, a large majority of water bodies are contaminated by agriculture use of fertilizers and very few by wastewater discharges.
  - **Sanitation is critical for preventing many diseases** including diarrhoea, intestinal worms, schistosomiasis (parasite) and trachoma (bacteria) which affect millions of peoples. Ensuring universal access to sanitation in

households and institutional settings such as healthcare facilities and schools is essential in reducing disease, improving nutritional outcomes, enhancing safety, well-being and educational prospects, especially for women and girls. (WHO)

○ **Recommendations?**

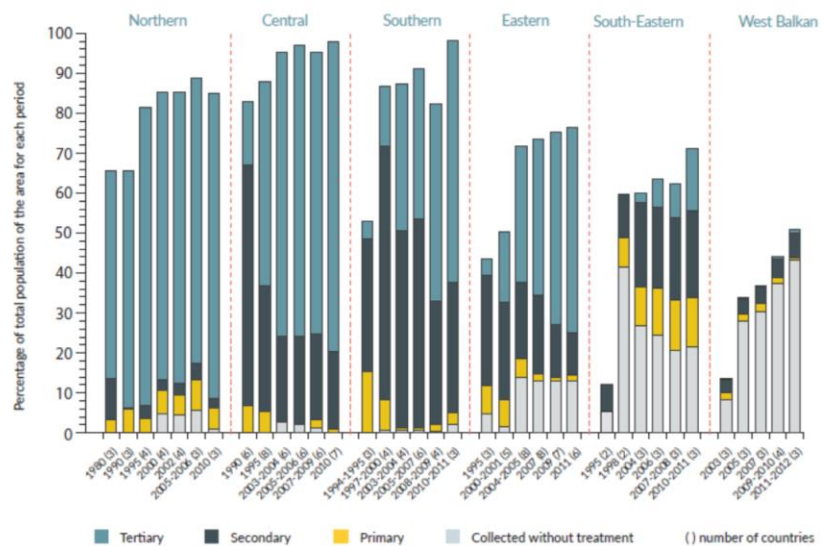
- A gender-sensitive approach must be included in the management of water resources that enhances and strengthens the important role women play in the acquisition, conservation and use of water. Women should be included in decision-making on waste disposal, improved systems water supply and sanitation.

**EUROPE**  
**HIGH ACCESS**  
**AND IMPROVED**  
**WWT**

Emergent pollutants incl. micro-pollutants  
 SE and E Europe is lagging behind,

- increase water efficiency,
- improve tariff policy and business models ('opex'),
- Investment EUR 22 billion

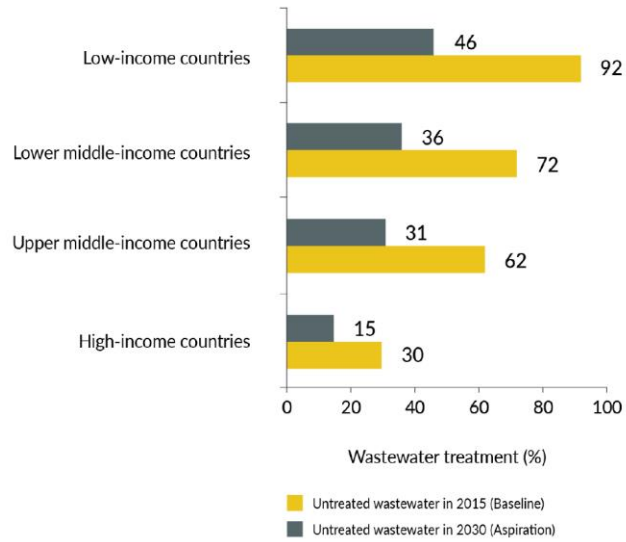
Figure 12.1 Changes in wastewater treatment in regions of Europe between 1980 and 2012



Source: EEA (2013), data based on Eurostat

# THE 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT

**SDG Target 6.3:** By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally

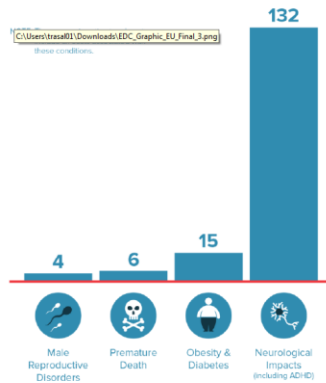


Source: Based on data from Sato et al. (2013)

## HEALTH EFFECTS FROM ENDOCRINE DISRUPTING CHEMICALS COST THE EU 157 BILLION EUROS EACH YEAR.

This is the tip of the iceberg: Costs may be as high as €270B.

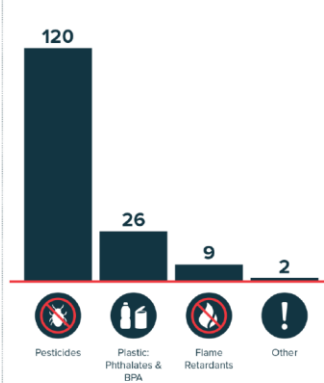
### €157B Cost by Health Effect



#### SOME EDC-RELATED HEALTH OUTCOMES NOT INCLUDED:

- Breast Cancer
- Prostate Cancer
- Immune Disorders
- Female Reproductive Disorders
- Liver Cancer
- Parkinson's Disease
- Osteoporosis
- Endometriosis
- Thyroid Disorders

### €157B Cost by EDC Type



#### SOME EDCs NOT INCLUDED:

- Atrazine
- 2,4-D
- Styrene
- Triclosan
- Nonylphenol
- Polycyclic Aromatic Hydrocarbons
- Bisphenol S
- Cadmium
- Arsenic
- Ethylene glycol



Endocrine Disrupting Chemicals (EDCs) interfere with hormone action to cause adverse health effects in people.

### "THE TIP OF THE ICEBERG"

The data shown to the left are based on fewer than 5% of likely EDCs. Many EDC health conditions were not included in this study because key data are lacking. Other health outcomes will be the focus of future research.

See Trasende et al. The Journal of Clinical Endocrinology & Metabolism <http://press.endocrine.org/edc>

## DW contribution of endocrine burden compared to other dietary sources

**Table 3** | Estimated daily intake of selected e-EDCs from dietary sources, current drinking water and recycled water (all in µg/d)

	Daily intake from dietary sources (70-kg adult)	Daily intake from current drinking water (2L/d) <sup>*</sup>	Highest daily intake from recycled water (2L/d) <sup>*</sup>
4-Nonylphenol (4-NP)	3.0–35.3 <sup>†,‡,§</sup>	0.006–5.4	0.006
4-t-Octylphenol (4tOP)	Up to 0.05 <sup>§</sup>	Up to 0.01	<0.0002
Bisphenol A (BPA)	100 <sup>§</sup>	0.004–0.05	0.024
di- <i>n</i> -Butylphthalate (DnBP)	8.4–114 <sup>**</sup>	Up to 0.064	0.0018
Genistein <sup>††</sup>	Western-style diet: 2,250 <sup>‡‡</sup> Asian diet: up to 30,000 <sup>§§</sup>	<0.004	<0.0002
Daidzein	Western-style diet: 830 <sup>‡‡</sup>	<0.002	<0.0002
17β-Estradiol (E2)	0.045–0.135 <sup>  ,¶¶</sup>	Up to 0.004	<0.0002
Estrone (E1)	0.10 <sup>***,  </sup>	Up to 0.0012	0.0002
Estriol (E3)	0.01–0.018 <sup>  ,¶¶</sup>	<0.01	<0.0002
Ethinylestradiol (EE2)	–	Up to 0.001	0.00054
p,p'-DDT	0.035–1.8 <sup>†††,‡‡‡</sup>	<0.01	0.04
Endosulfan	0.16–1.5 <sup>†††,‡‡‡</sup>	<0.01	<0.0002
Cadmium (Cd)	4.9–20.3 <sup>†††</sup>	Up to 0.4	0.008

<sup>\*</sup>Calculated from Table 2. <sup>†</sup>Lu et al. (2007). <sup>‡</sup>Guenther et al. (2002). <sup>§</sup>Thomson et al. (2003). <sup>¶</sup>Ferrara et al. (2005). <sup>||</sup>EFSA (2006). <sup>¶¶</sup>Fromme et al. (2007). <sup>††</sup>Intake of phytoestrogens can vary significantly between Western-style and Asian diets (Coward et al. 1993; Fukutake et al. 1996). <sup>‡‡</sup>Clarke & Lloyd (2004). <sup>§§</sup>Fielden et al. (2003). <sup>||</sup>Hartmann et al. (1998). <sup>¶¶</sup>Malekinejad et al. (2006). <sup>\*\*\*</sup>Combined estimated daily intake for 17β-estradiol and estrone. <sup>†††</sup>FSANZ (2003). <sup>‡‡‡</sup>Safe (1995).

