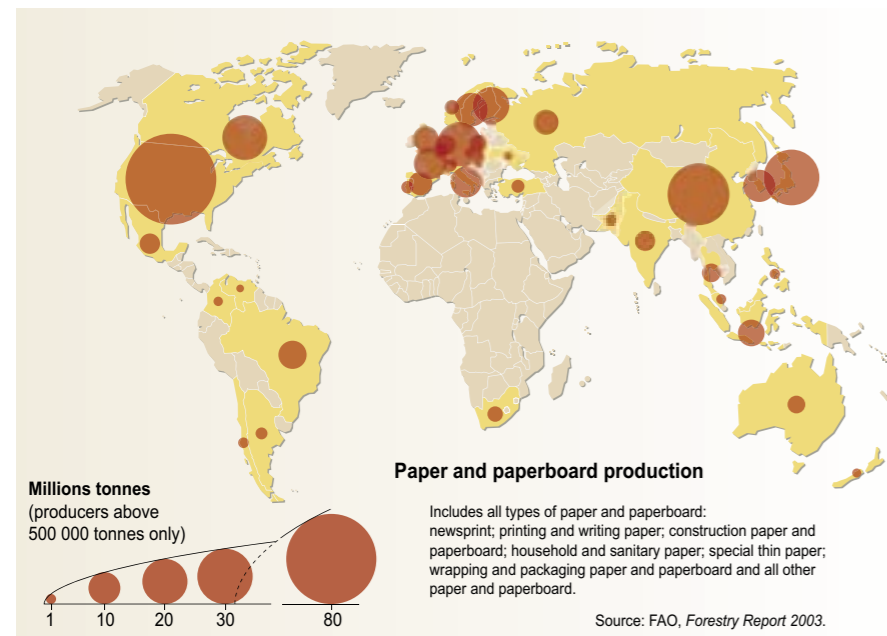


# The big waste factory

Have you ever considered the volume of waste caused by manufacturing the little implement for cleaning your teeth? One toothbrush causes 1.5 kilograms' waste. About 94% of the materials extracted for use in manufacturing durable products become waste before the product is manufactured.

Industry is the top producer of waste in developed countries. A large proportion of industrial waste is hazardous, because industrial processes often involve chemicals. Cleaner production – reducing the amount of problematic components in a product and additives used in the production process – waste avoidance and a life cycle approach to waste management are attempts in the right direction. For some, this is not enough: they promote a complete rethinking of material use – only use components that have a positive influence on the environment! There is talk of a “new industrial revolution” and ‘cradle to cradle design’.



## Waste water stains on white paper

Though it is based on wood, a natural renewable resource, the pulp and paper industry is one of the worst sources of pollution. It absorbs more than 40 per cent of all timber felled worldwide. Despite the development of digital communications tools global paper production is expected to increase by 2.2 per cent a year from 330 million tonnes at present to 440 million tonnes worldwide by 2015. The main growth areas are Asia and Eastern Europe, but annual per capita consumption in Western Europe is also expected to rise from 207 kilograms currently to 264 kilograms.

Regulations and legislation introduced in Europe and North America in recent years require improved production processes both in terms of energy consumption, resource usage and pollution control. Bleach-free production is technically possible now and water pollution could be cut to a minimum. Thanks to labels that communicate environmental standards, consumers could and should be aware of the possibilities of choosing paper with less environmental impact.

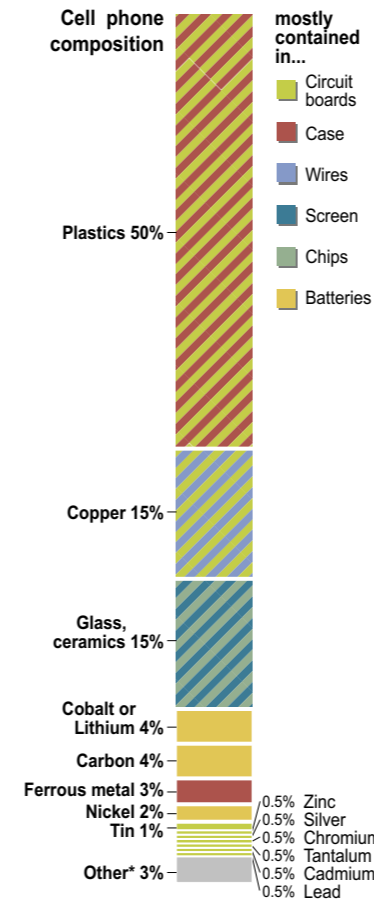
Transferring production from Europe and North America to other parts of the world where standards tend to be lower (China, South America) partly outweighs these gains.

## Producing paper differently

The Julius Schulte Söhne GmbH paper mill in Düsseldorf manufactures paper from recycled waste paper, with zero effluents. Thanks to proprietary technology the mill cleans its own waste water and reuses it. It thus saves some 260 000 cubic metres of water and €400 000 in sewage expenses. The gas produced by the effluents is scrubbed to remove the sulphur and used to generate electricity, covering all the requirements of the mill.

From 2009 the Forscot mill in Scotland plans to produce paper in a fully integrated mill supplied by timber from Scotland and the north of England, delivered by train or boat. Waste materials (bark, sawdust, etc.) and effluents linked to pulp production will be used for the mill's electrical power supply. About 90 per cent of the 144 megawatt output will be used on the spot, the rest being fed into the power grid. Forscot plans to produce about 970 000 tonnes of paper and pulp, of various grades, primarily targeting customers in the United Kingdom, where demand is high. Deliveries will be made by rail or sea.

For an example of how waste from the paper industry can be reduced by reusing paper directly see pages 30–31.

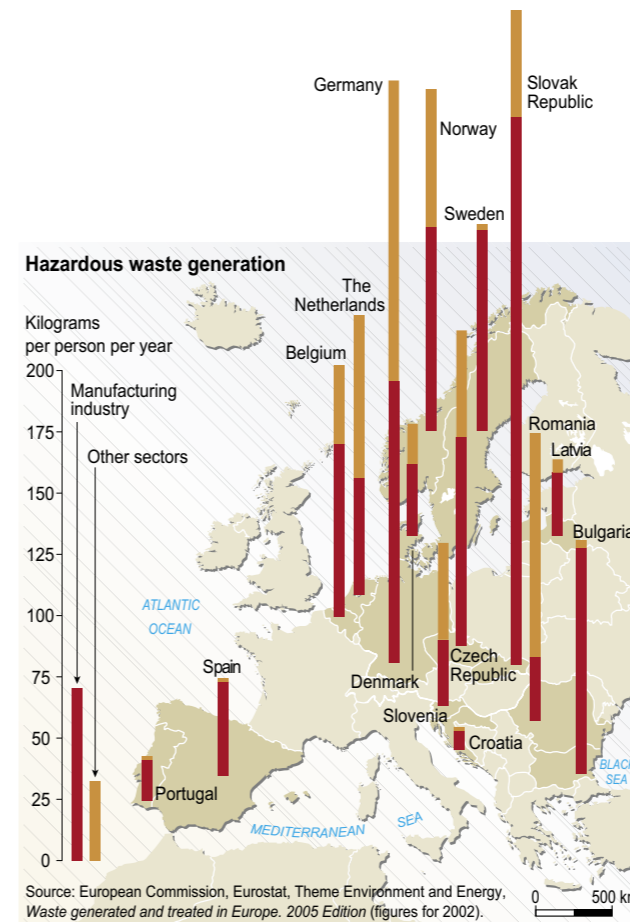


\*among them, less than 0.1% of antimony, gold and beryllium  
Sources: Basel Convention, 2006; Lindholm (Nokia report), 2003.

## Made in elsewhere

It is impossible to detail all the types of waste directly or indirectly involved in manufacturing mobile phones. In developed countries production processes manage to keep sensitive materials in a closed circuit, without any waste escaping to the outside world. Production – “Made in Elsewhere” – does not usually take place where the phones are most widespread. Degrees of efficiency in health and environmental protection vary. In some assembly facilities, workers can be exposed to a mixture of toxic chemicals, with waste finding its way into the atmosphere, ground and water supply, posing a serious risk to their health and that of the people living in the neighborhood.

Let us take three of the most hazardous metals for both the environment and human health. Lead is used in monitor screens, in solder for mounting integrated circuits (chips) on printed circuit boards (the brains of your phone). Micro-processors contain mercury. And there is cadmium in the circuits and battery (mobile phones use 60 per cent of rechargeable batteries produced worldwide).



Source: European Commission, Eurostat, Theme Environment and Energy, Waste generated and treated in Europe, 2006 Edition (figures for 2002).

## Typical hazardous wastes generated by selected manufacturing industries

Strong acids and bases Reactive wastes Ignitable wastes Discarded commercial chemical products	Chemistry
Tanning liquor and effluent treatment containing chromium Dyestuffs and pigments containing dangerous substances	Leather and textile
Paint wastes containing heavy metals Strong acids and bases Cyanide wastes Sludges containing heavy metals	Metal
Ignitable and corrosive wastes Ink wastes, including solvents and metals Photography waste with heavy metals solutions	Paper and printing
Heavy metal dusts and sludges Ignitable wastes Solvents Strong acids and bases	Cleaning and cosmetic
Ignitable wastes Spent solvents Paint wastes	Furniture and wood
Paint wastes Ignitable wastes Spent solvents Acids and bases	Vehicle maintenance shops
Animal waste (not always hazardous) Cleaning wastes CFCs (refrigerants)	Food and beverages

Sources: UACPA, 2002; Commission Decision 2001/118/EC on the European List of Wastes (2001).