

PP:D4M

2. drivers of innovation

key learning objective : understand social, environmental & economic drivers of innovation

- different views on innovation
- environmental drivers and social drivers

innovation is the creation of

new designs

concepts and ways of doing things



innovation is the successful

exploitation

of new ideas



innovation is about bringing

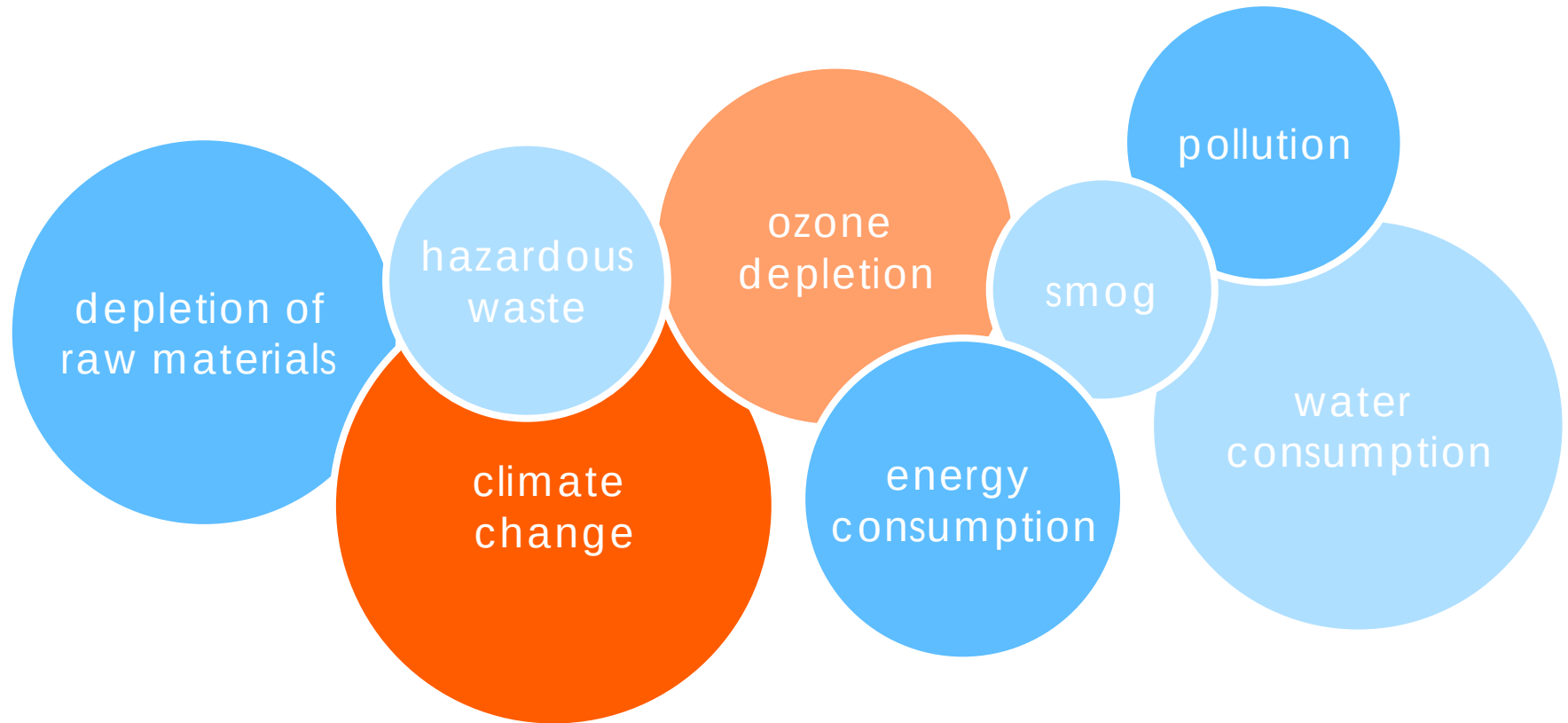
ideas to life

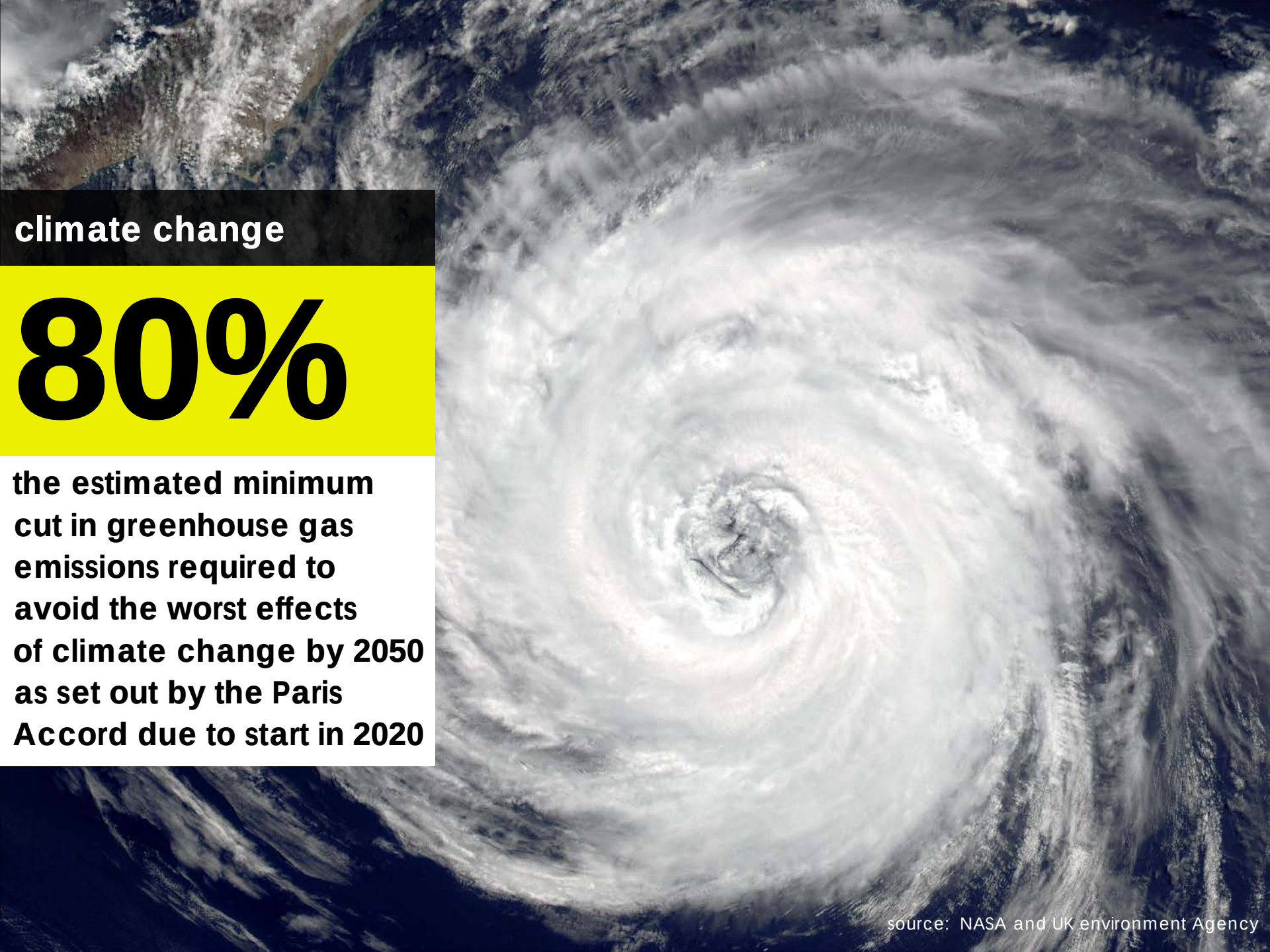


“ Innovation will be essential for meeting the environmental challenges of the future – including moving to a low carbon economy and reducing waste **”**

UK Department for Business, Enterprise & Regulatory Reform

some of the key environmental challenges





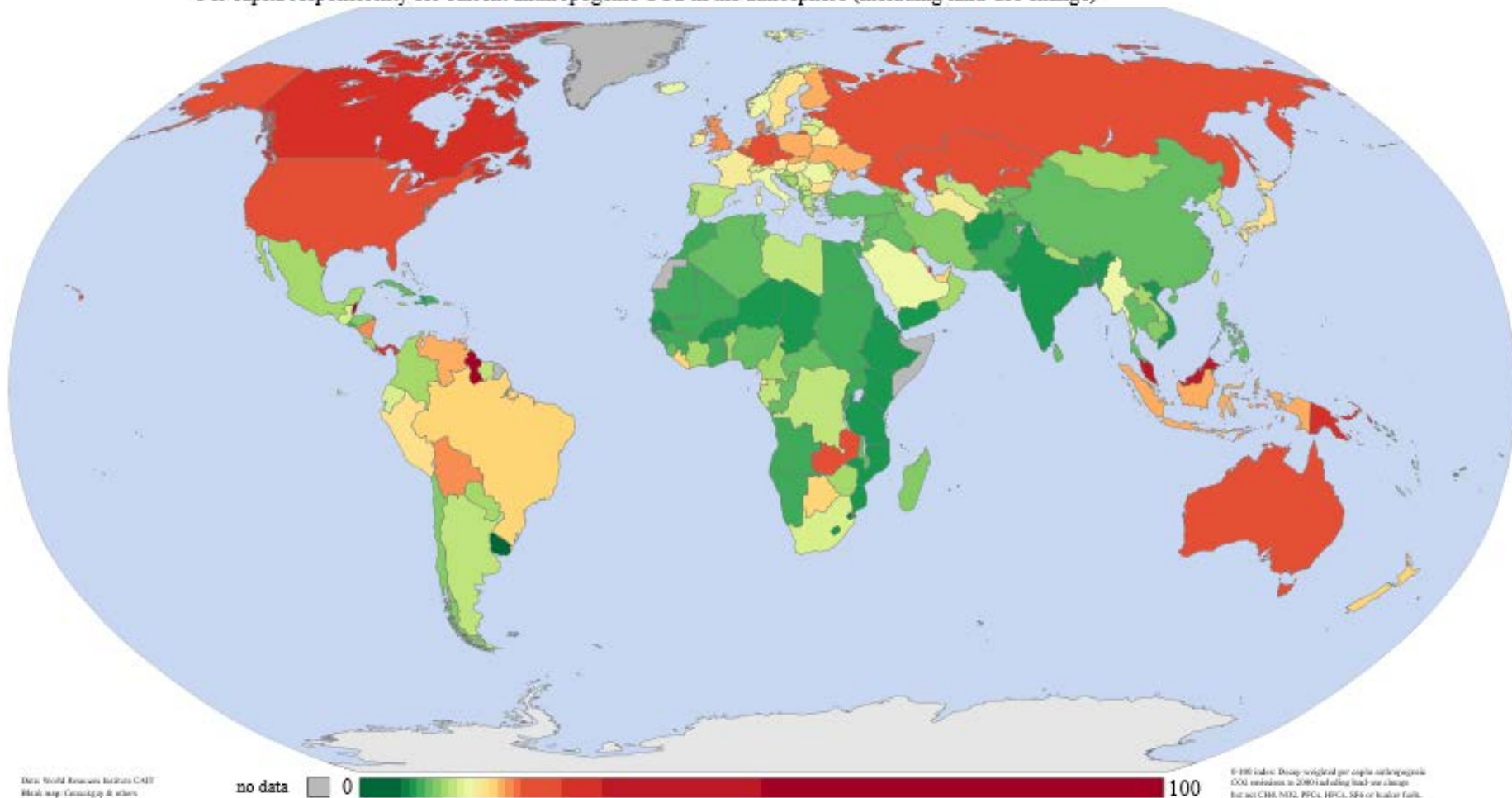
climate change

80%

**the estimated minimum
cut in greenhouse gas
emissions required to
avoid the worst effects
of climate change by 2050
as set out by the Paris
Accord due to start in 2020**

source: NASA and UK environment Agency

Per capita responsibility for current anthropogenic CO₂ in the atmosphere (including land-use change)





energy consumption

1.2
billion

**cars on the road. This
is expected to reach
2.5 billion by 2050**





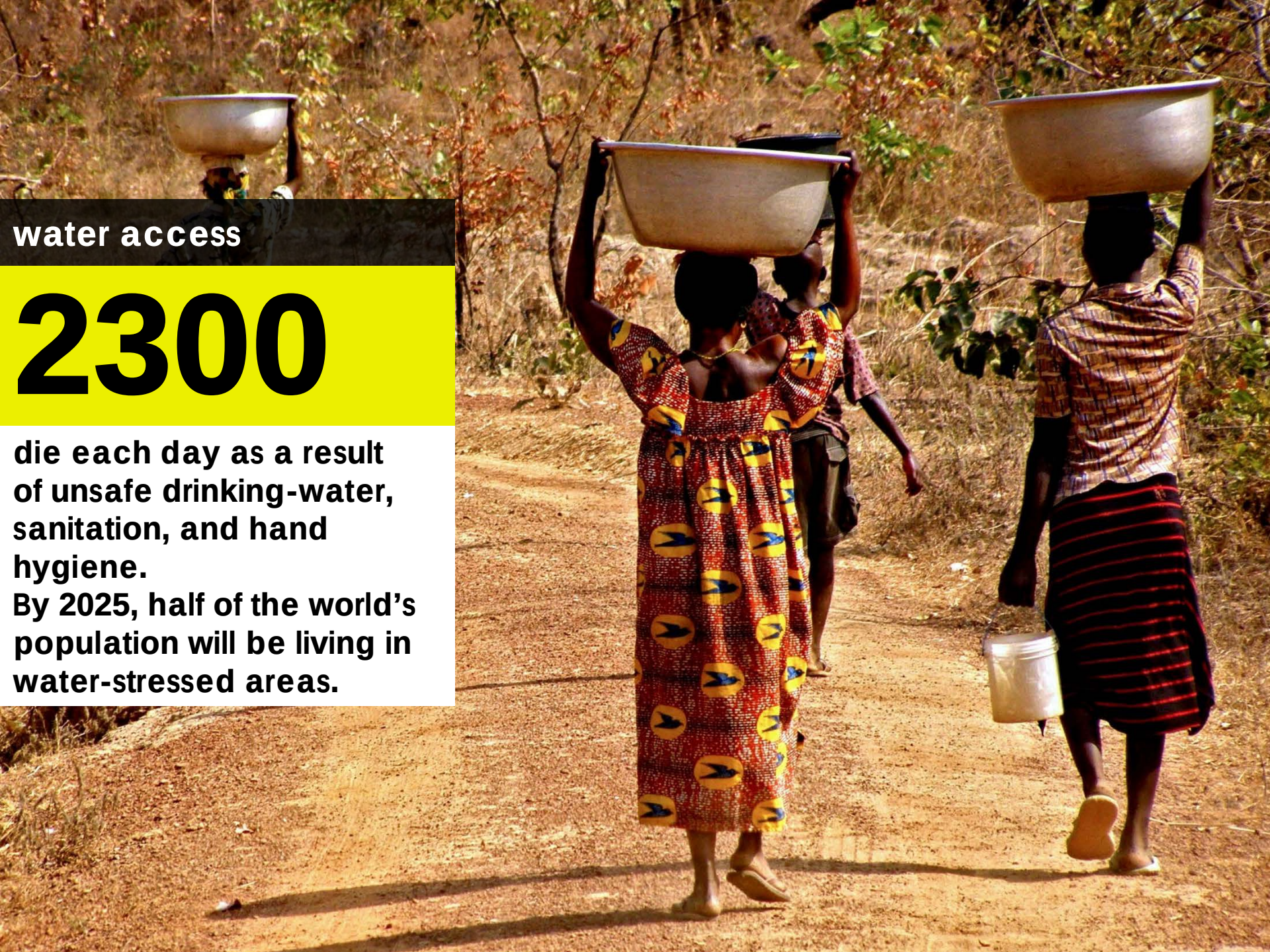
pollution

536
pollution incidents

**had a serious impact
on the environment
in England and Wales
in 2010-15**

River of blood in Ontario Canada

source: Edward Burtynsky and environment agency UK



water access

2300

**die each day as a result
of unsafe drinking-water,
sanitation, and hand
hygiene.**

**By 2025, half of the world's
population will be living in
water-stressed areas.**



resources

**1.8
tonnes**

**the amount of raw
material are required
to manufacture the
average desktop PC
and monitor, at least
240 kilograms of fossil
fuels, 22 kilograms of
chemicals and 1,500
kilograms of water.**

**98% of products are
thrown away within
6 months**

2 billion computers 2015



Landfill Tax UK

£89

Landfill tax in the UK has risen from £7.00 per tonne in 1996 to £88.95 in 2018

Mining waste generated from aluminium production

Sources: European Aluminium Association;
Nachhaltige Stadtentwicklung beginnt im Quartier,
Carsten Sperling et Oekoinstitut e.V. (Ed.), Freiburg, 1999.

In order
to produce
one tonne
of aluminium ...

1t
Aluminium

... 4 to 5 tonnes
of bauxite
have to be
extracted

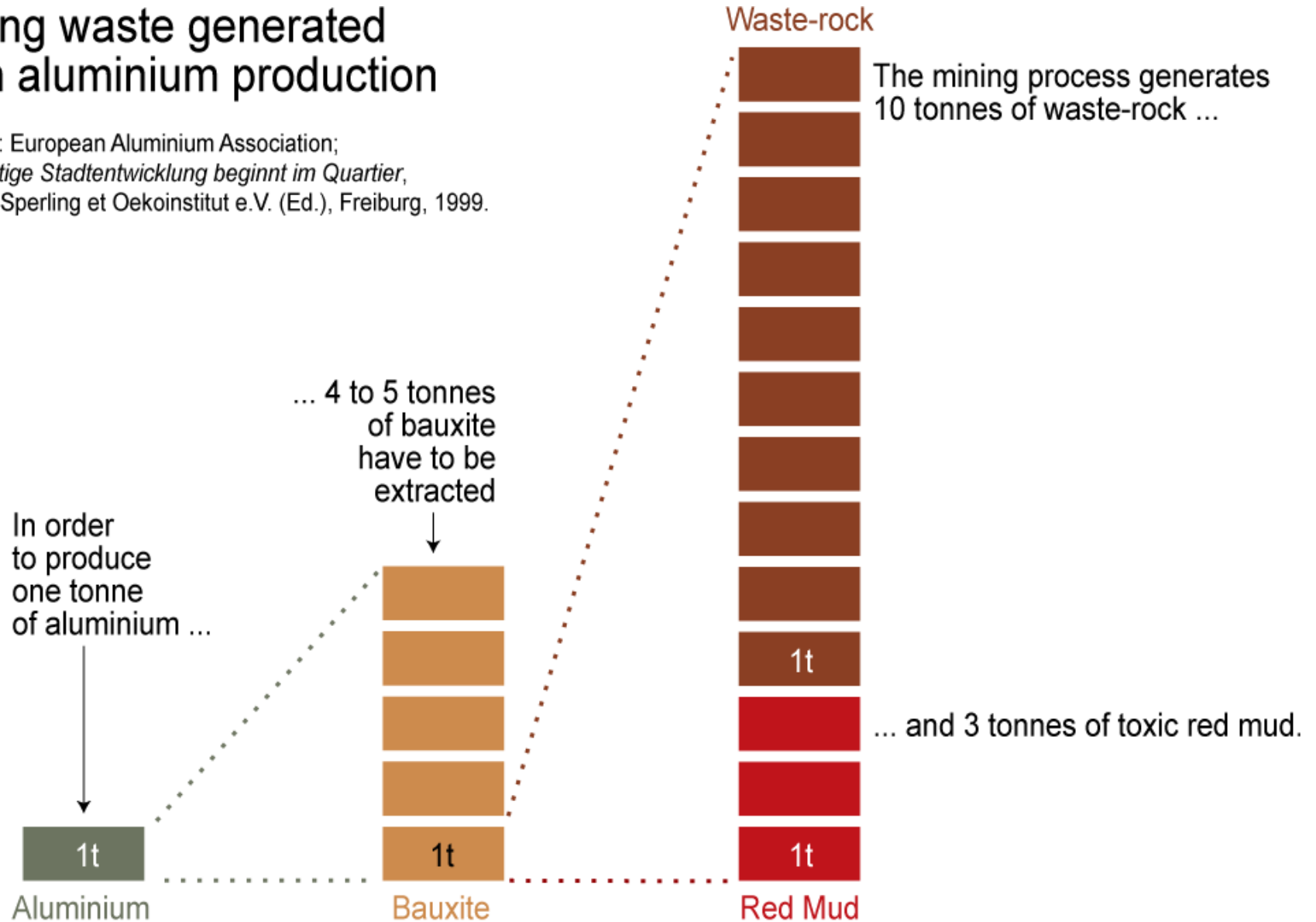
1t
Bauxite

Waste-rock

1t
Red Mud

The mining process generates
10 tonnes of waste-rock ...

... and 3 tonnes of toxic red mud.

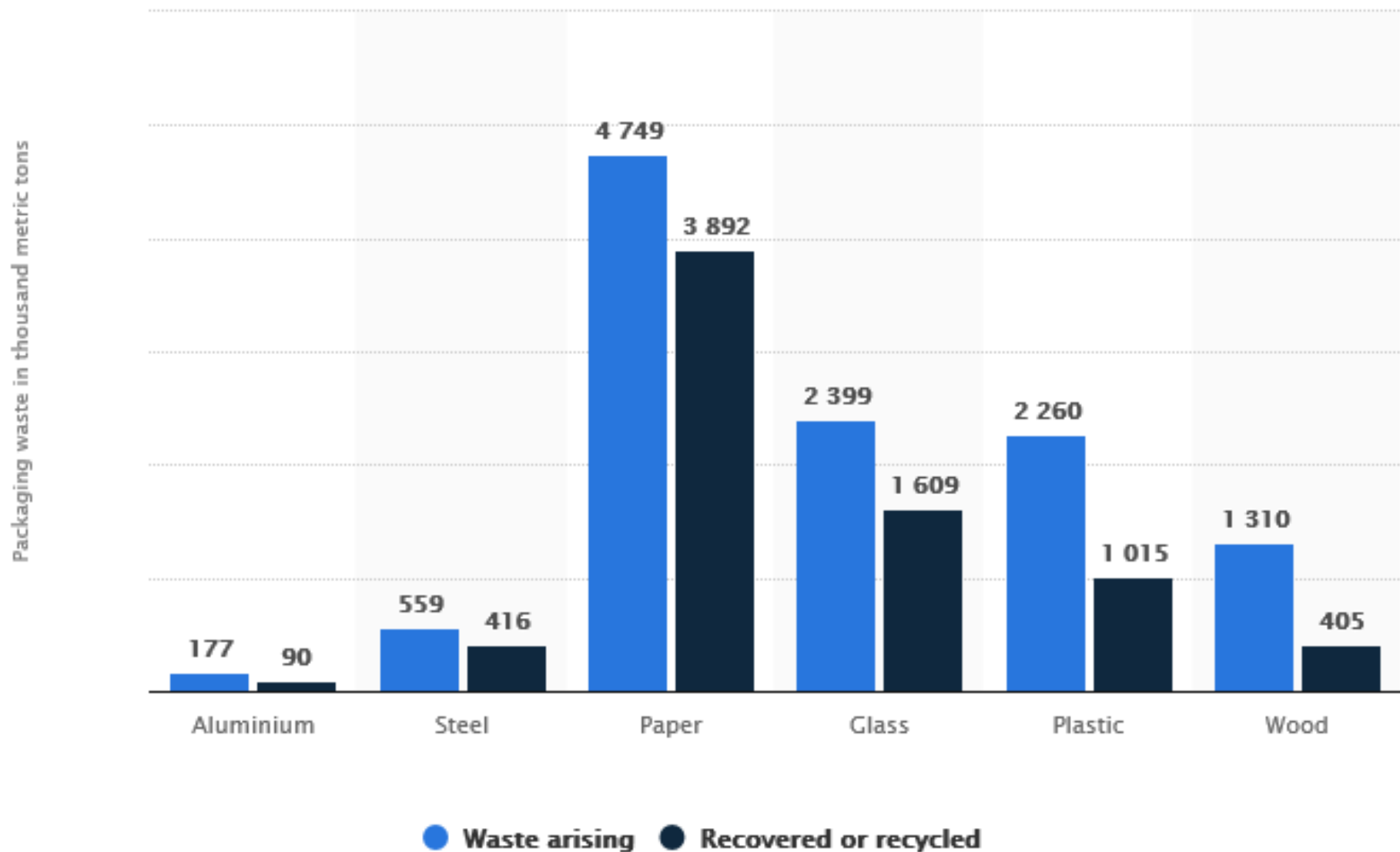




waste

**1.5
million
tonnes**

**of recyclable plastic
waste is generated by
Consumers in the UK, of
which two thirds is
dumped in to landfill.**



Amount of packaging waste and waste recycled in the United Kingdom (UK) for 2016 (in 1,000 metric tons)

A close-up photograph of a hand holding a white disposable coffee cup. The cup is the central focus, with a white lid. The background is a soft, out-of-focus blue and purple, suggesting an outdoor setting. The lighting is bright, highlighting the texture of the cup and the skin of the hand.

consumption

**2.5
billion**

**Coffee cups are thrown
Away each year, about
5000 each minute.
Most coffee cups are lined
with a layer of polyethylene
Which makes the cup
waterproof, but makes it
difficult for the cup to be
effectively recycled,
because it can't be easily
separated.**

design solutions / responses / reactions / evolutions

low carbon housing



source: BEDZED, www.ecoconstruction.org

HELLO MY NAME IS WATTSON.

- I SHOW YOU HOW MUCH ELECTRICITY
YOUR HOME IS USING.

I MAKE ENERGY SAVING EASIER

- AND I'M GORGEOUS



energy saving products



social innovation

Homegrown

people planet profit

Remade - In Context

We're working towards the most sustainable, ethical, and desirable communication solutions for Nokia

16

Nokia manufactures more than 16 phones per second

900,000,000

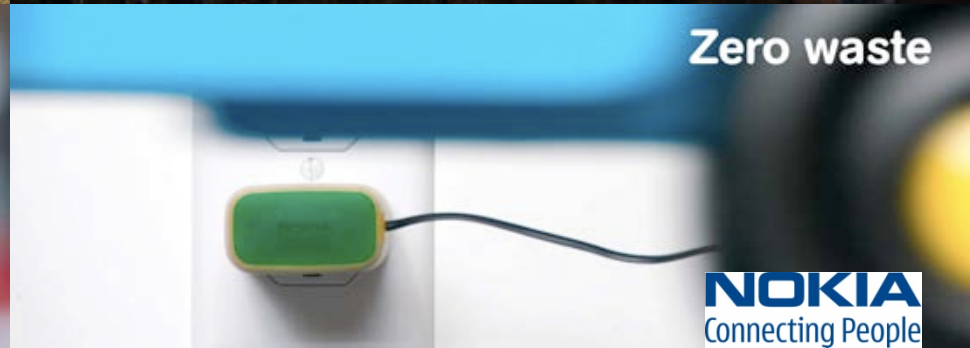
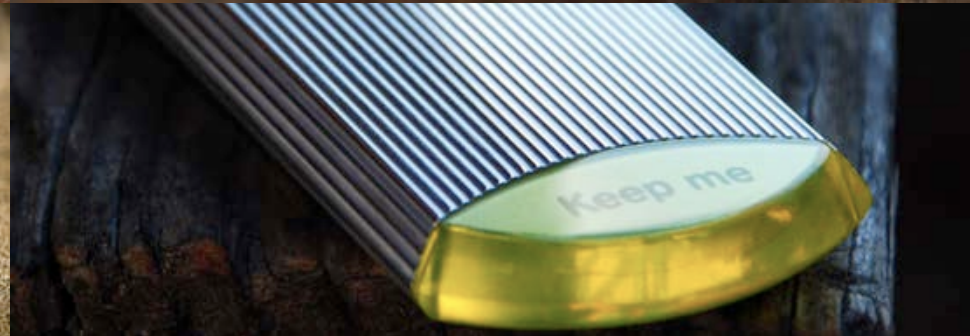
900 million people are in possession of a Nokia phone

116,378

As of March 31, 2008, we employed a total of 116,378 people

80

Nokia supports 80 spoken languages with 50 different keymats



NOKIA
Connecting People

resource efficiency



NOKIA
Connecting People

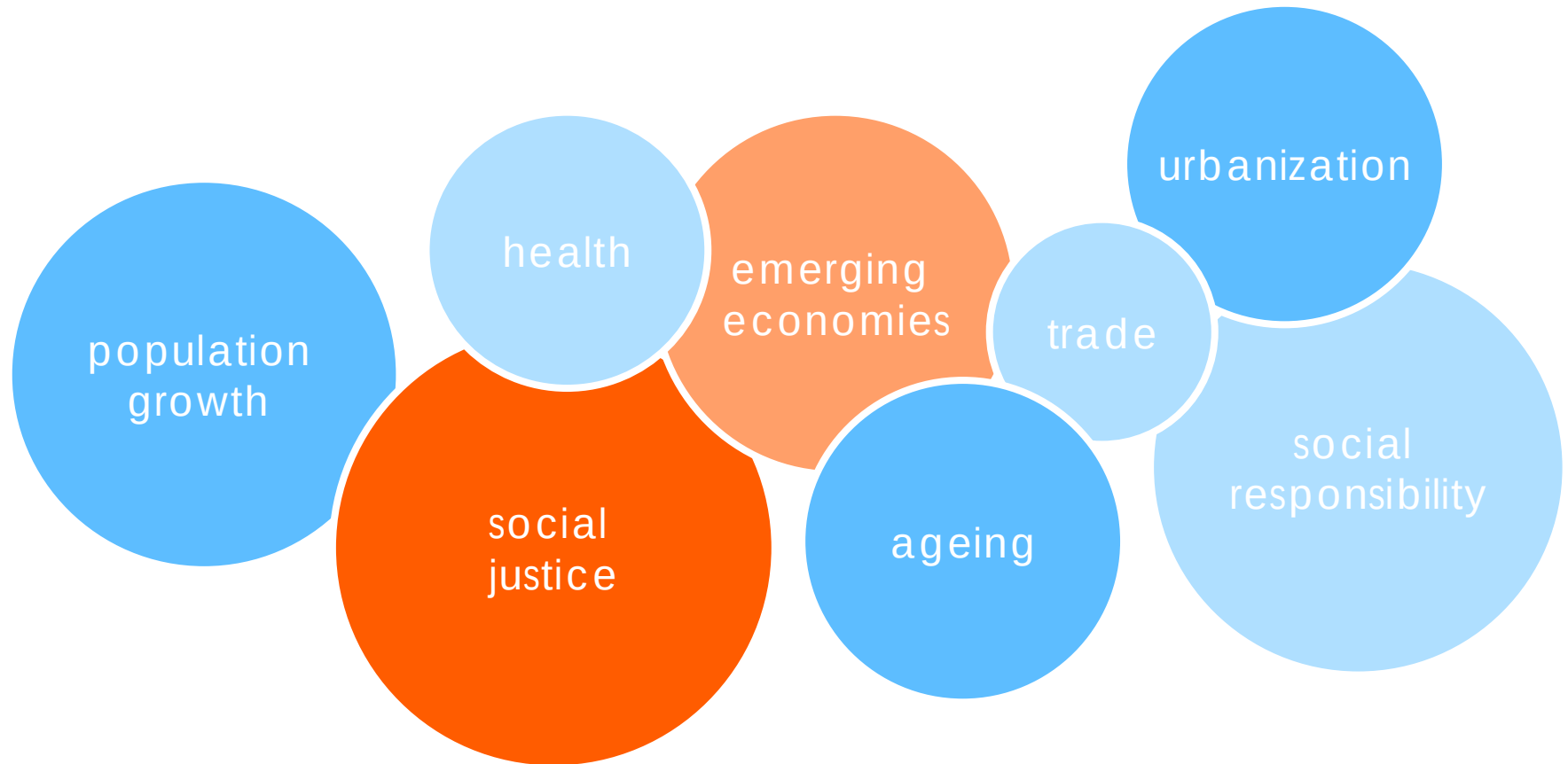
**metals from upcycled aluminium cans
plastics from drink bottles form the chassis
rubber key mats provided by old car tyres.
printed electronics
energy saving graphics**

rethinking waste



what are the social drivers of innovation?

some of the key social challenges





population growth

7.7
billion people

**and the population is
projected to be more
than 9.7 billion by 2050**

<http://www.worldometers.info/world-population/>

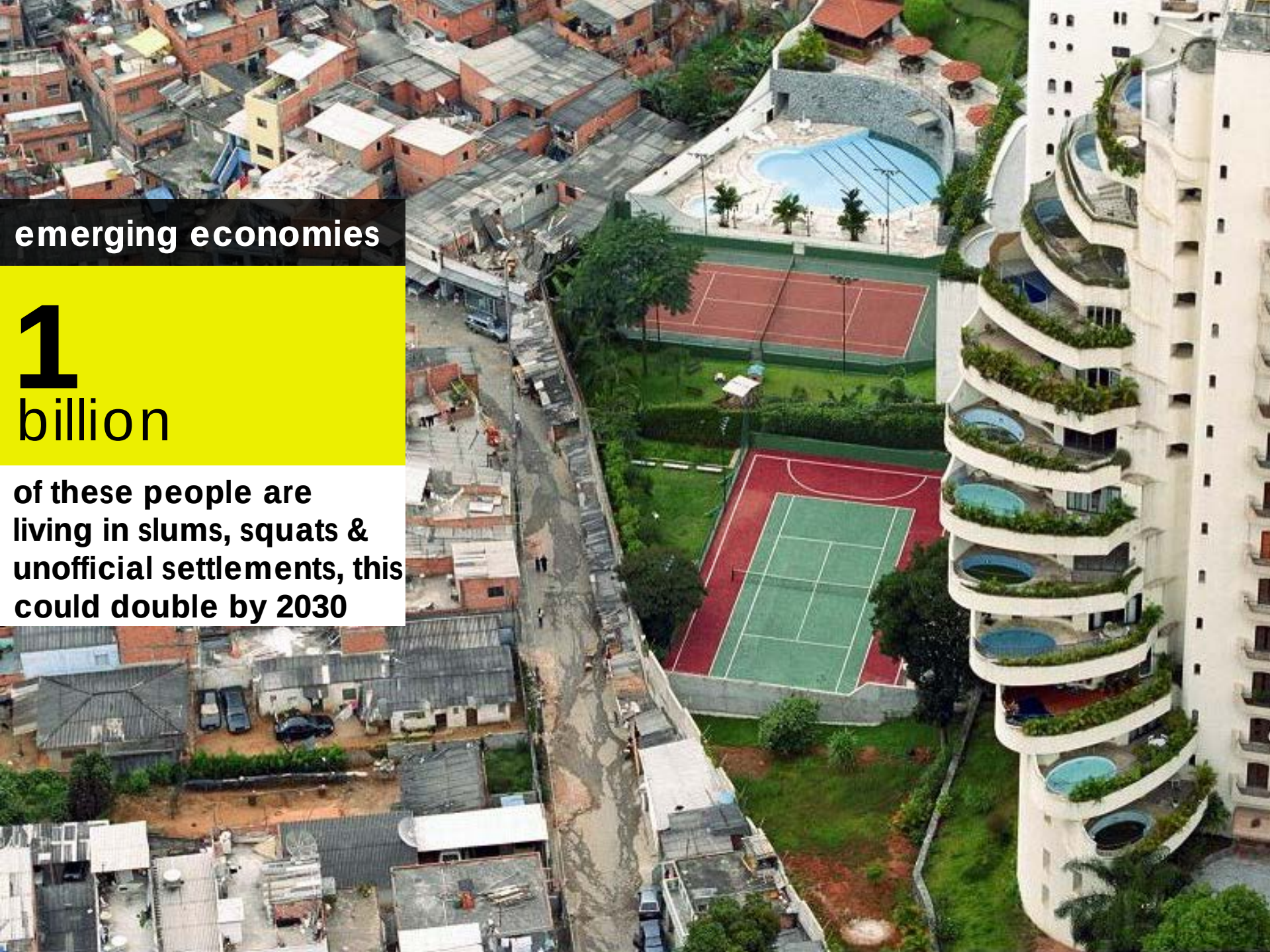
source: <http://www.un.org/en/development/desa/news/population/2015-report.html>

urbanisation

55%

**of people are living in
urban areas. By 2050,
this will rise 68%**





emerging economies

**1
billion**

**of these people are
living in slums, squats &
unofficial settlements, this
could double by 2030**



ageing

60
and over

**in 2008 there were more
over 60's than under 16's
in the UK for the first time
ever**

source: engine group and UK statistics

vulnerable poor

90%
of lives lost

**through natural
disasters occurred in
poor communities**

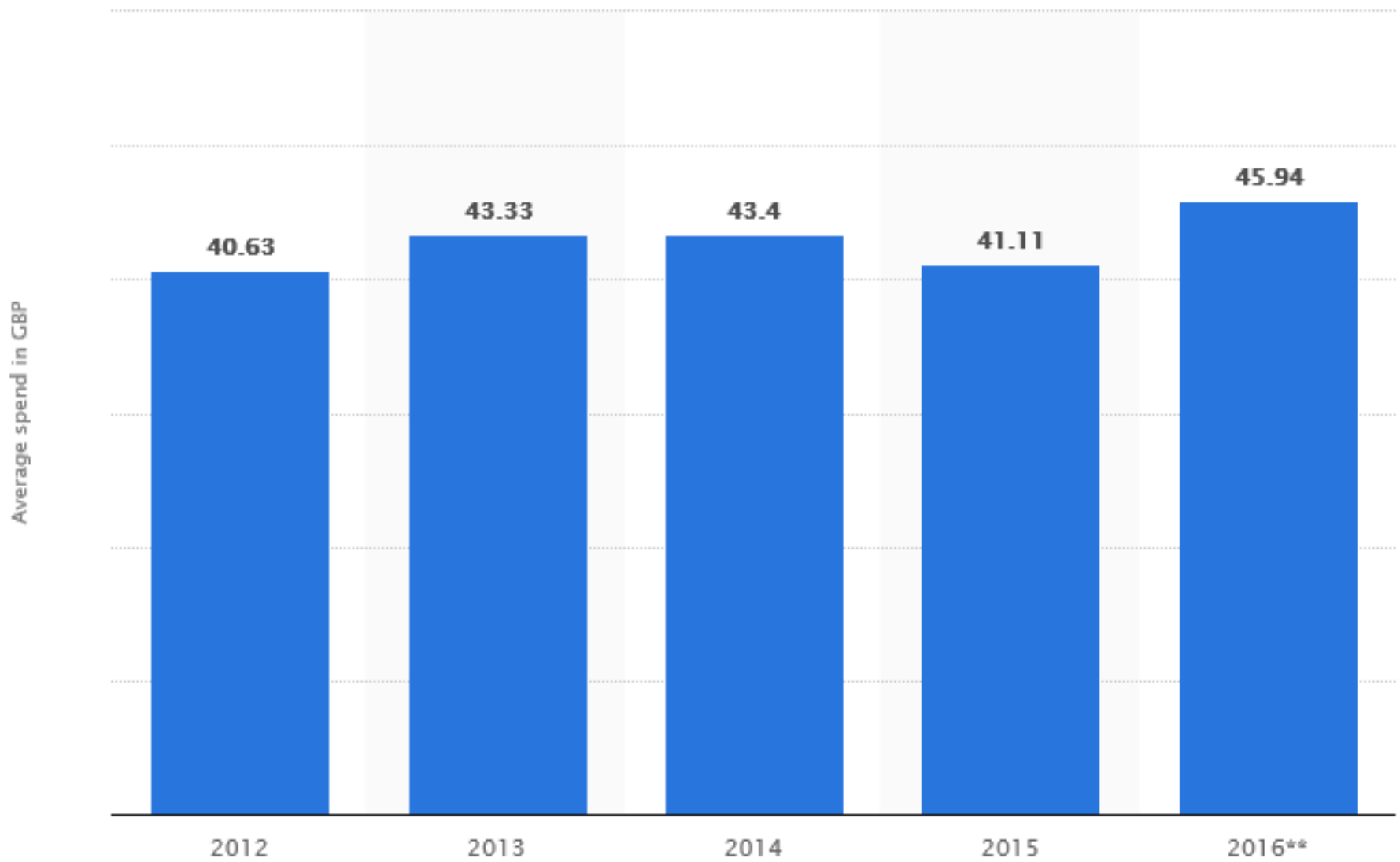


trade

60,000
tonnes

of Christmas decorations
were imported into the UK
from China in 2006





social responsibility

50
million tonnes

of e-waste is estimated to be dumped in 2018, much of it sent to China, India & Africa. Gold worth more than £7bn is being thrown away amid the 42 million tons of electronic and electrical equipment.



design solutions / responses / reactions / evolutions

1.

product innovation

the product concept stays the same, but parts of the product are developed further or replaced by others

2.

function innovation

involves changing the way the function is fulfilled e.g. a move from answering machines to voice mail.

3.

system innovation

new products and services requiring changes in the related infrastructure and organisations.



social design



source: design21, Lifesaver

urban mobility



source: ser_is_snarkish

usable design



Problem	Response	Result
Why can't kitchen utensils be designed to be easy to use by people with arthritis?	Extensive user research and innovative design create comfortable tools for all	Sales increase by 50% year on year

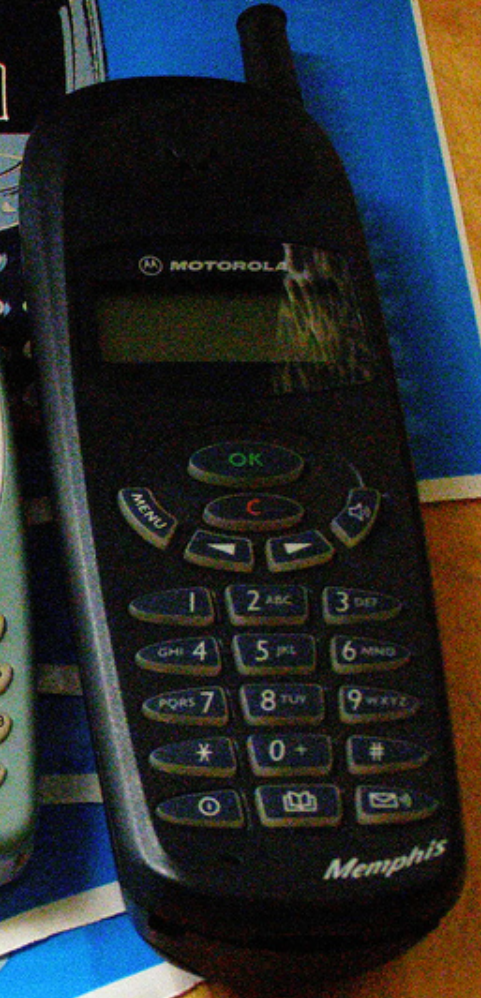
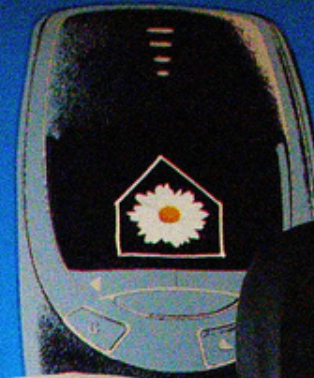


THE BODY SHOP.

DONATE A PHONE SAVE A LIFE

PLEASE USE THIS ENVELOPE TO
POST YOUR OLD MOBILE PHONE*

ERS OF
safety.



**COMIC
RELIEF**

ARE CO-FUNDERS OF
fonesforsafety

"I've seen for myself the real difference fonesforsafety
can make to women experiencing domestic violence.
By donating your old mobile phone today you can help
women at the most critical time in their lives. Thank you."

Karina McCall, Comic Relief



producer responsibility

fair trade

source: Fairtrade Foundation



Guarantees
a **better deal**
for Third World
Producers





low-cost technology

Unknown Unknowns

“There are known knowns; there are things we know that we know.

There are known unknowns; that is to say there are things that, we now know we don't know.

But there are also unknown unknowns – there are things we do not know, we don't know.”

United States Secretary of Defence,
Donald Rumsfeld, 2002

http://www.theworldcounts.com/stories/current_world_energy_consumption

<https://www.un.org/sustainabledevelopment/sustainable-development-goals/>