



Infographics for smart people in smart cities

Kersten Nabielek
PBL Netherlands Environmental Assessment Agency



Search



Developing countries' contributions to climate change approach 50%

31-10-2013

There are several ways to calculate countries' contributions to climate change, with widely varying outcomes. Taking into account all greenhouse gas emissions emitted between 1850 and 2010, the relative contribution by developing countries to global cumulative emissions is now 48%.

read more

Current publications

- > Guidance for Uncertainty Assessment and Communication
- > Regional Competitiveness and Smart Specialisation in Europe
- > Countries' contributions to climate change: effect of accounting for all greenhouse gases, recent trends, basic needs and technological progress
- > All publications

Jump to...

- > Changing track, changing tack; Dutch ideas for a robust environmental policy for the 21st century
- > Trends report 'The energetic society. In search of a governance philosophy for a clean economy'
- > Theme sites

Highlights



PBL organizes two seminars during the IABR

As part of the International Architecture Biennale Rotterdam (IABR, the PBL Netherlands Environmental Assessment Agency organizes two symposia. Both will take place in The Kunsthal in Rotterdam. On June, 5: 'The infrastructure of the Smart City' (in Dutch); on June, 19: 'Global challenges, urban futures'.

> You can registrate at the IABR-themesite



Green Gains: In search of opportunities for the Dutch economy

If the Netherlands is to remain a strong player in the global economy, it needs to intensify its efforts in greening its economy. The Netherlands lags behind competing neighbouring countries, who began their transition towards a green economy earlier, focus more on doing so, have ambitious long-term targets in place, and invest heavily in research. The business community by itself cannot bring about a green Dutch economy; the government also has an important role to play. What is needed is a stronger, greener innovation policy.

> to the report

Current topics

- > Climate Change
- > Sustainable Development
- > Biodiversity
- > All topics

Infographics

- > Are global CO₂ emissions still rising?







CITY-LEVEL DECOUPLING

Urban resource flows and the governance of infrastructure transitions

Building upon previous work of the International Resource Panel on Decoupling Natural Resource Use and Environmental Impacts from Economic Growth, this report examines the potential for decoupling at the city level. While the majority of the world's population now live in cities and cities are where most resource consumption takes place, both the pressures and potentials to find ways to reconcile economic growth, wellbeing and the sustainable use of natural resources will therefore be greatest in cities.

Analysing the role of cities as spatial nodes where the major resource flows connect as goods, services and wastes, the report's focus is how infrastructure directs material flows and therefore resource use, productivity and efficiency in an urban context. It makes the case for examining cities from a material flow perspective, while also placing the city within the broader system of flows that make it possible for it to function.

The report also highlights the way that the design, construction and operation of energy, waste, water, sanitation and transport infrastructures create a socio-technical environment that shapes the "way of life" of citizens and how they procure, use and dispose of the resources they require. Its approach is innovative in that it frames infrastructure networks as socio-technical systems, examining pressures for change within cities that go beyond technical considerations. The importance of intermediaries as the dominant agents for change is emphasized, as well as the fact that social processes and dynamics need to be understood and integrated into any assessment of urban infrastructure interventions and the reconfiguration of resource flows.

A set of 30 case studies provide examples of innovative approaches to sustainable infrastructure change across a broad range of urban contexts that could inspire leaders of other cities to embrace similar creative solutions. Of course, innovations in and of themselves do not suffice if they are not integrated into larger strategic visions for the city, and as each city is unique, interventions need to be tailored to the set of challenges and opportunities present in each case.

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United Nations Environment Programme
P.O. Box 30552 Nairobi, 00100 Kenya
Tel: (254 20) 7621234
Fax: (254 20) 7623927
E-mail: unepubl@unep.org
web: www.unep.org

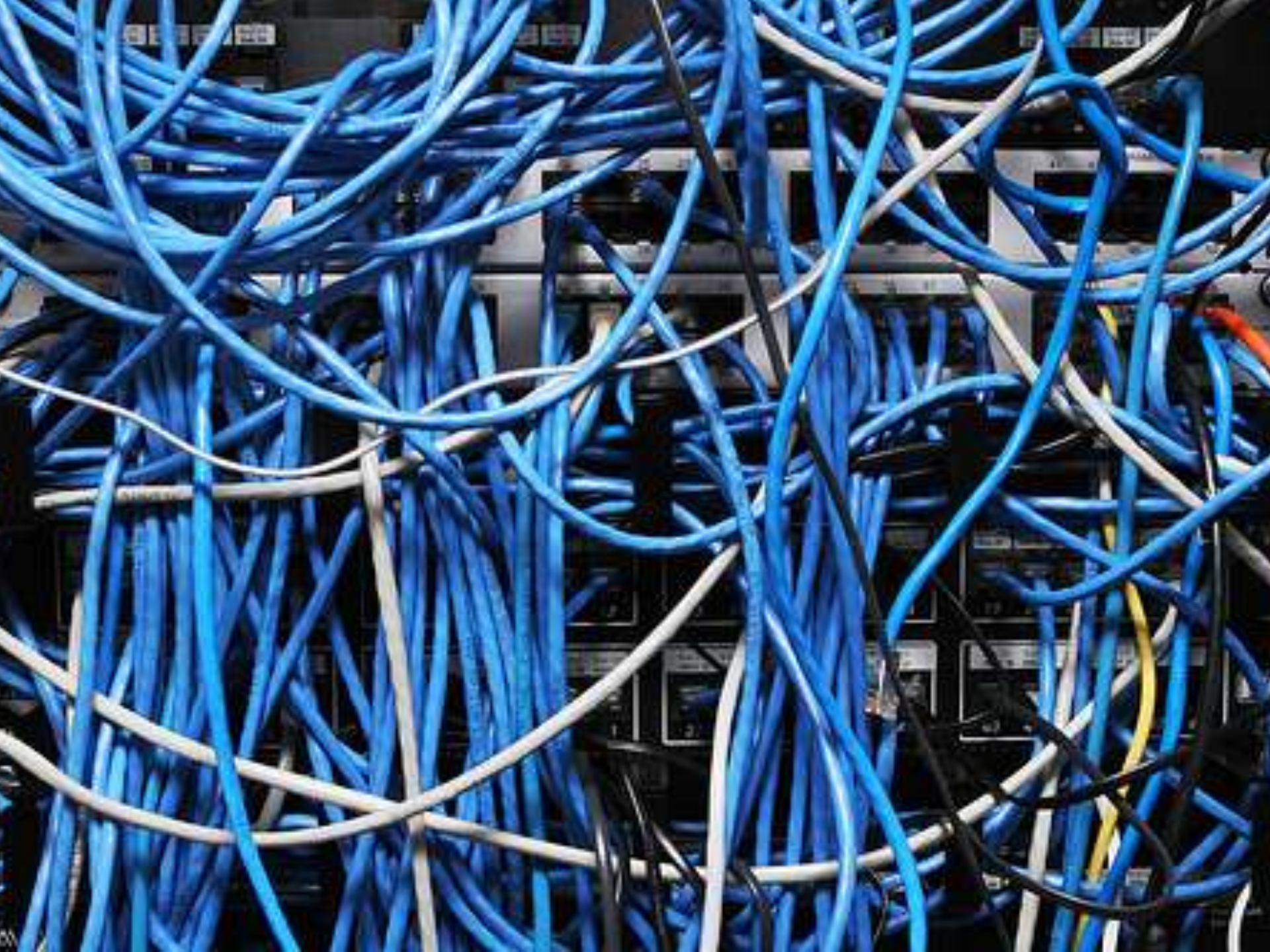


For more information, contact:
UNEP DTIE
Sustainable, Consumption
and Production Branch
15 rue de Milan
75441 Paris CEDEX 09
France
Tel: +33 1 4437 1450
Fax: +33 1 4497 1474
E-mail: unep.tie@unep.org
www.unep.fr/scp

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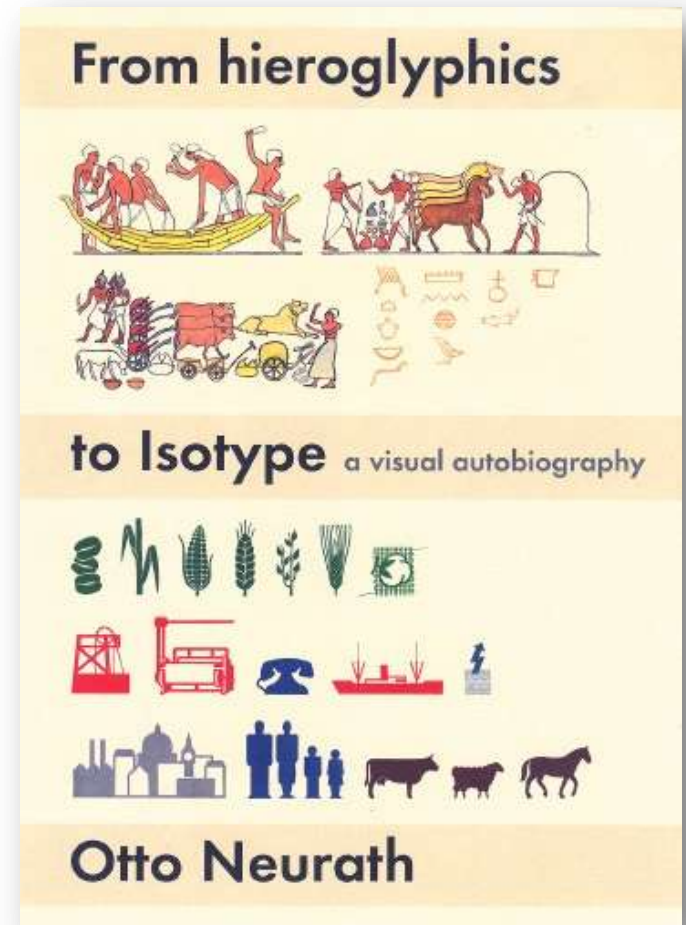
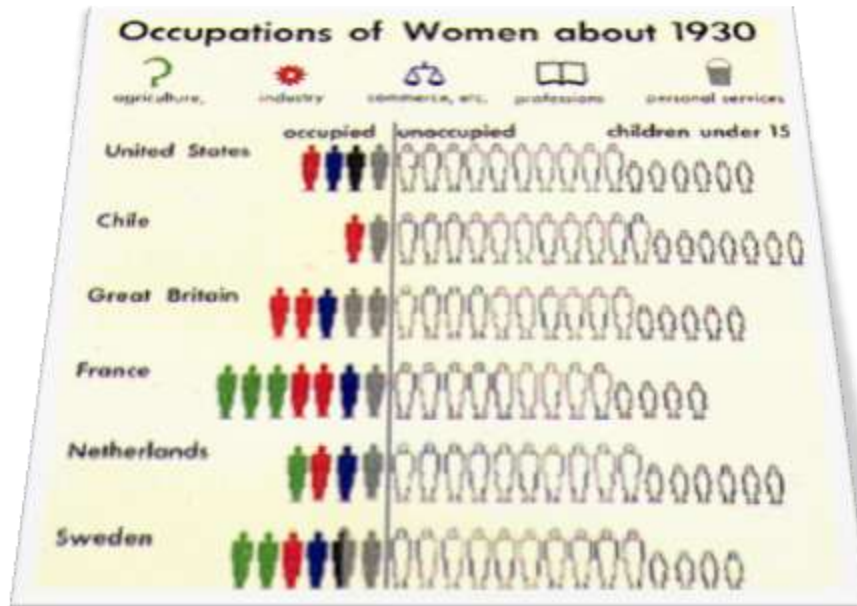
“Technology is the answer,
but what was the question?”

(Cedric Price)

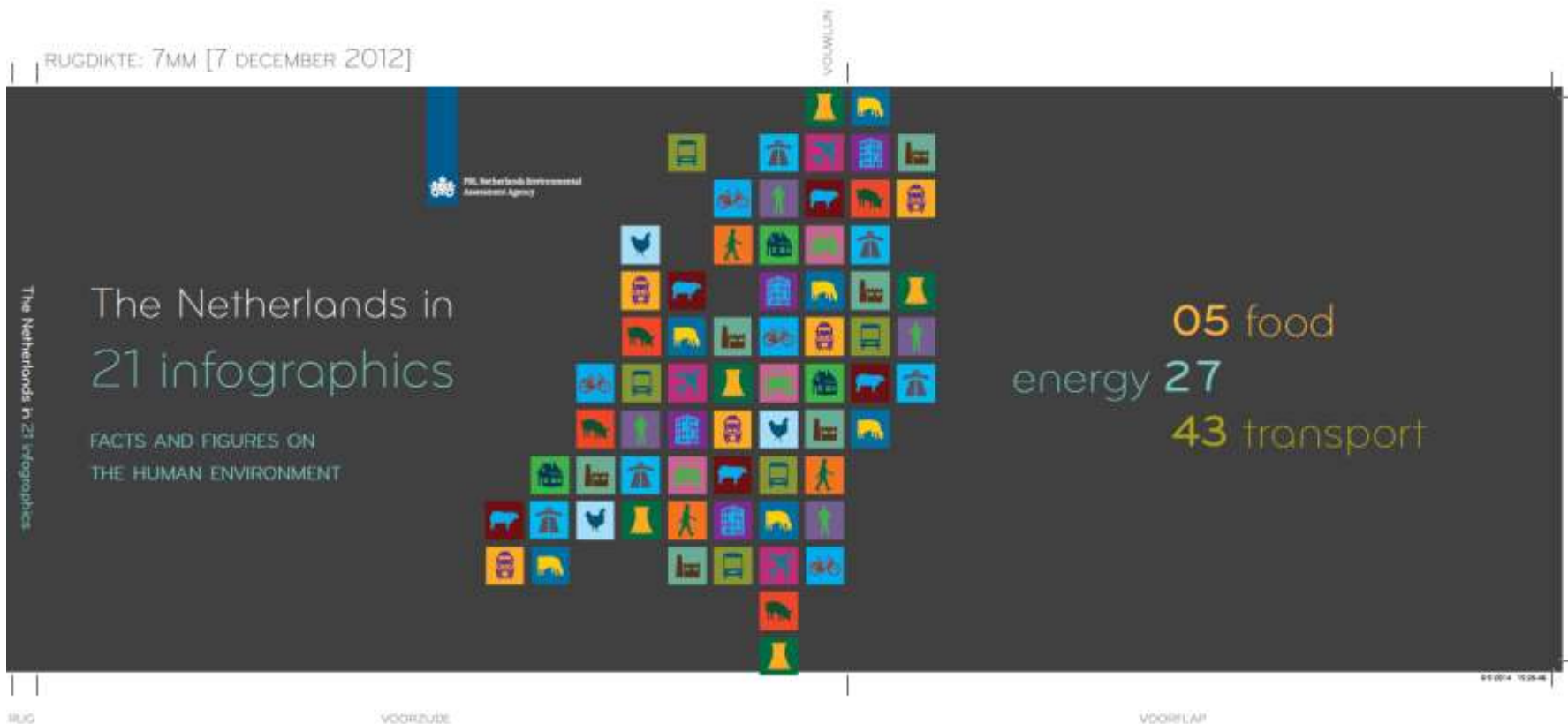
awareness



A picture is worth a thousand words



- Inspiration:
Otto and Marie **Neurath**, Gert Arntz
and the transformer (starting 1930s)





Food

What we use comes from far away

Average annual Dutch consumption, per person, requires about 0.6 hectares to produce. Thus, for the entire population, about 10 million hectares are needed for all the food, timber, cotton and other resources.

Yields per hectare of cropland are high in the Netherlands, for two reasons: the agricultural land is fertile, and the agricultural technology ranks among the world's best.



Per Dutch person, 0.6 hectares is needed. This is slightly less than a UEFA football field.

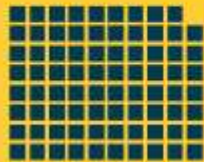


Accommodating the entire population requires a total land surface three times the size of the Netherlands.

■ = 50,000 hectares



Most land related to Dutch consumption is located outside the Netherlands



Western Europe



South America



North America



Netherlands



Central Europe



Asia



Africa



Russian Federation

Dutch consumption of vegetable-based food requires 1.8 million hectares of land.

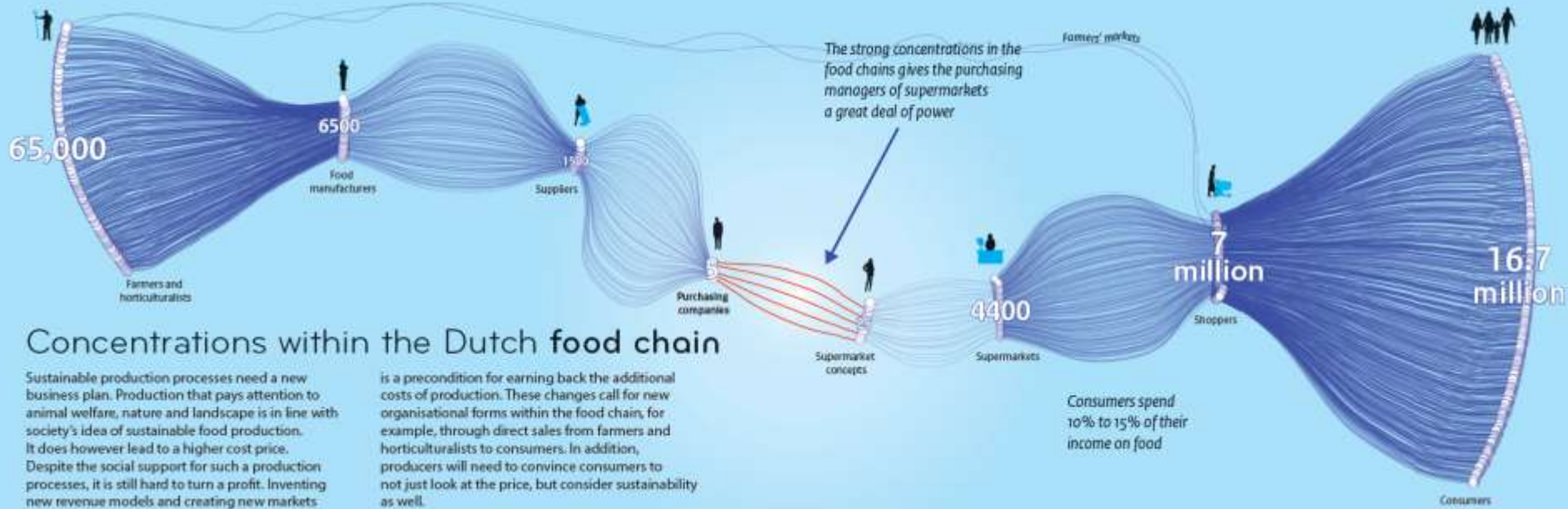


Dutch consumption of meat, dairy and eggs requires 2.3 million hectares of land for growing animal food crops.





Food



Sustainable production processes need a new business plan. Production that pays attention to animal welfare, nature and landscape is in line with society's idea of sustainable food production. It does however lead to a higher cost price. Despite the social support for such a production processes, it is still hard to turn a profit. Inventing new revenue models and creating new markets

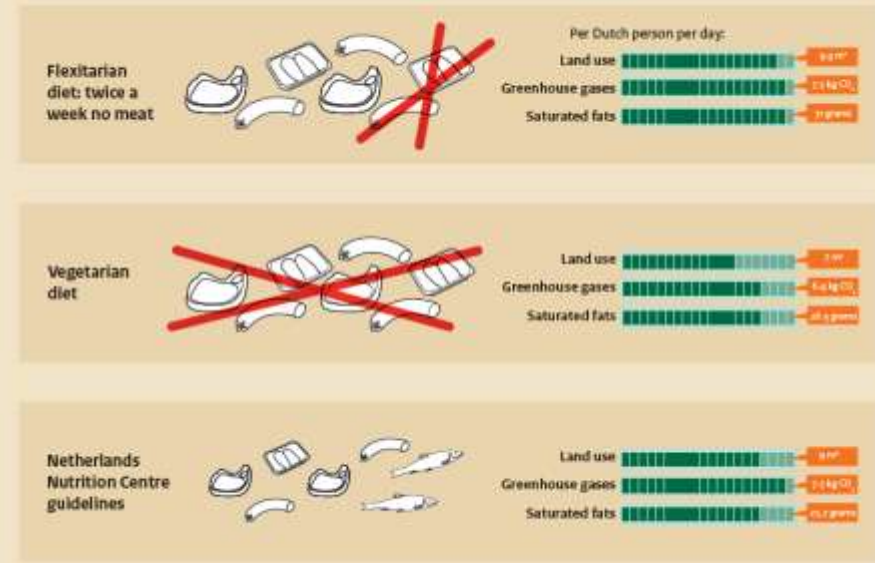
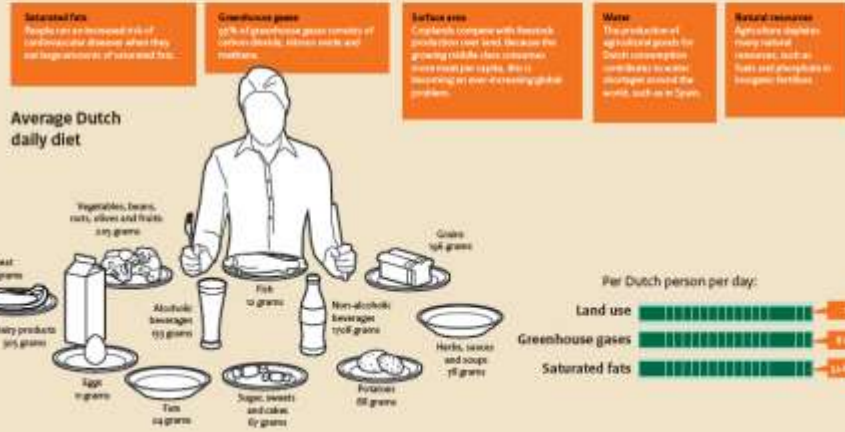
is a precondition for earning back the additional costs of production. These changes call for new organisational forms within the food chain, for example, through direct sales from farmers and horticulturalists to consumers. In addition, producers will need to convince consumers to not just look at the price, but consider sustainability as well.



Food

Diets and their impacts

If all Europeans would become vegetarians today – i.e. they would eat no meat, meat products or eggs – the EU would achieve about half of its environmental targets for 2020. This clearly shows the environmental burden of meat consumption.



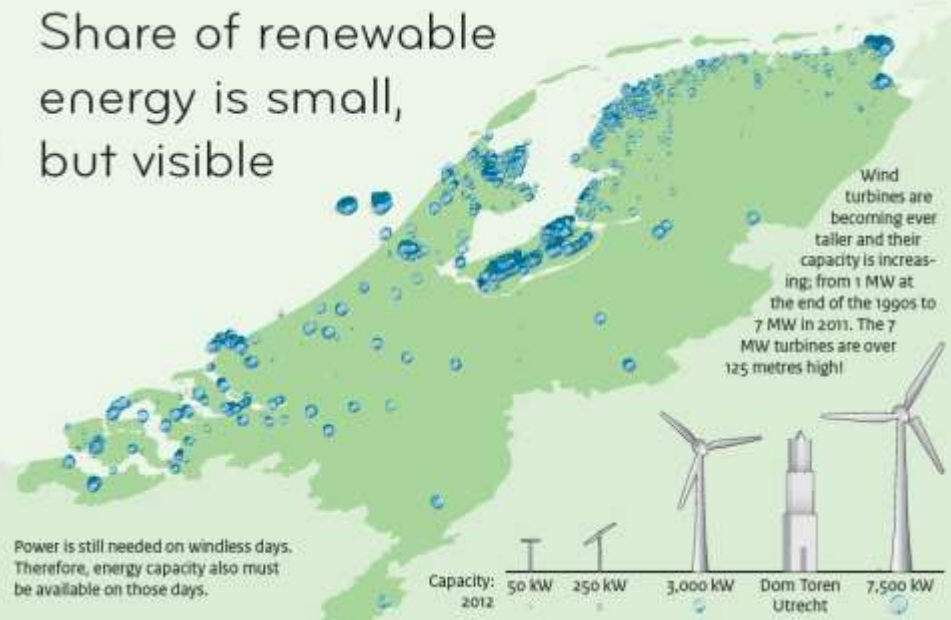


Energy



4% of Dutch electricity consumption is generated by wind energy. In particularly windy months this can reach 7%

Share of renewable energy is small, but visible



Power is still needed on windless days. Therefore, energy capacity also must be available on those days.



Energy

All Dutch wind turbines together ...



... supply as much power as the 'Amercentrale' power plant

3,727,000 tonnes CO₂
2,300 tonnes NO_x
40 tonnes PM₁₀
700 tonnes SO₂

The Amercentrale is fuelled for 65% by coal and for 35% by biofuel in the form of wood chips.

**21 PJ
Electricity**
 (+ 3.7 PJ Heat!)

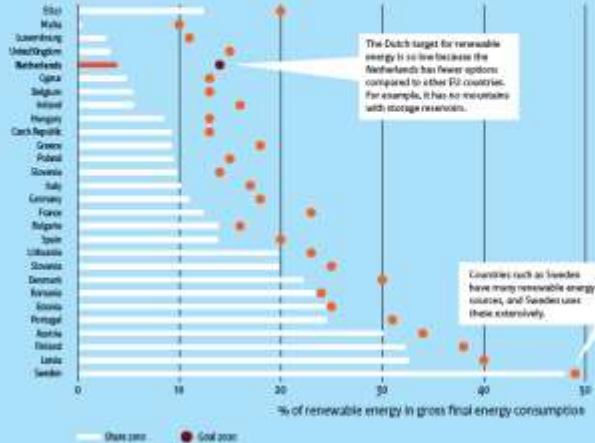
Energy production | it.com



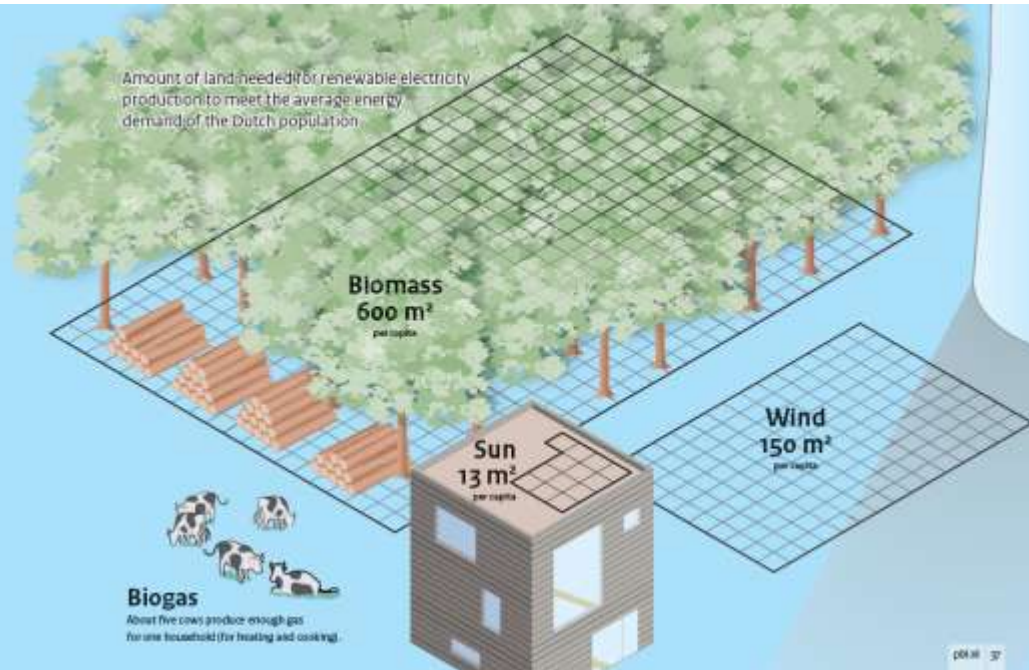
Energy

Change requires space

The Netherlands has a relatively small share of renewable energy, and a low EU target for renewable energy compared to other EU Member States in 2012.



Renewable energy production takes up a great deal of space. The Netherlands is unable to meet its energy demand using domestically grown biomass – there is simply not enough land available.

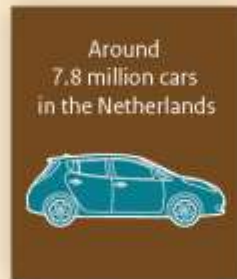




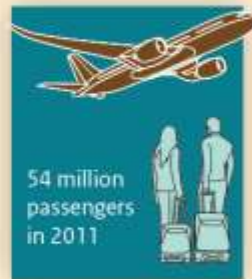
Mobility

The environmental consequences ...

The Dutch have never been more mobile. Having the freedom to move around makes life more pleasant. Passenger vehicles and aeroplanes have enabled people to spend their leisure time wherever they want. Compared to a decade ago, Dutch commuters today live further away from their jobs, but – thanks to higher travel speeds – they still spend about the same time commuting. This despite all the fuss about traffic jams. The challenge of drastically reducing greenhouse gas emissions, however, remains.



This is a 50% increase compared to 1990 levels.

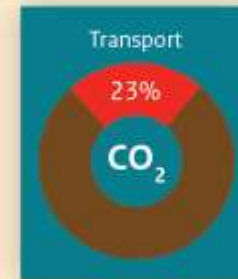


Air traffic to and from Dutch airports has tripled since the 1980s.

... of increased motorised travel



The Netherlands is the world's number 1 bicycle country. A quarter of all journeys takes place by bicycle.



Motorised transport is responsible for a quarter of CO₂ emissions in the Netherlands, not even counting the emissions from international shipping and aviation.



The EU has set a target of 60% reduction in greenhouse gas emissions from transport for 2050, compared to 1990 levels.

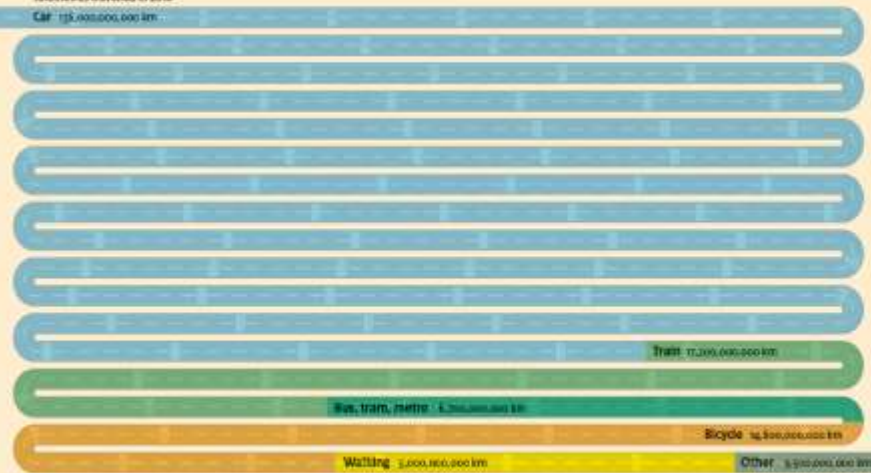


Mobility

The Dutch travel mostly by car ...

Kilometres travelled in 2010

Car: 113,000,000,000 km

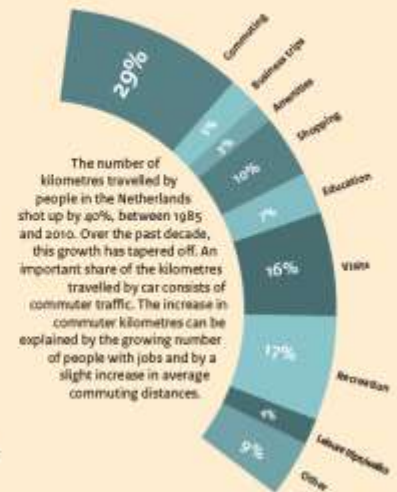


... but the strong growth in car transportation seems to have tapered off



183,000,000,000 km

Where do Dutch people travel to?





Mobility

More journeys, longer distances

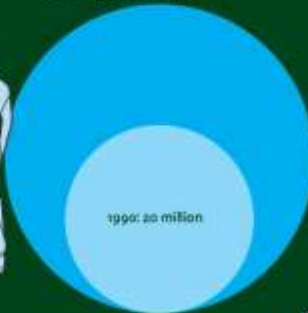
International travel has increased, both in the number of journeys per year and in the distance per journey.

For longer distances, the Dutch often travel by aeroplane, because it is fast and, since the arrival of low-cost carriers, increasingly affordable.

Number of Dutch holidays spent abroad (million):



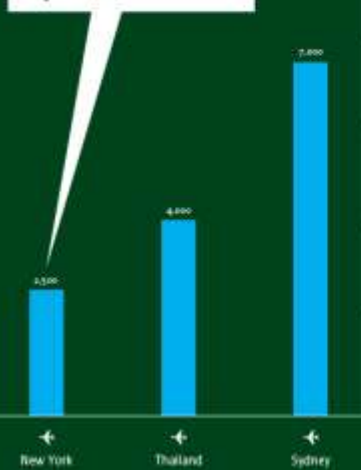
Number of travellers through Dutch airports in 2011: 54 million



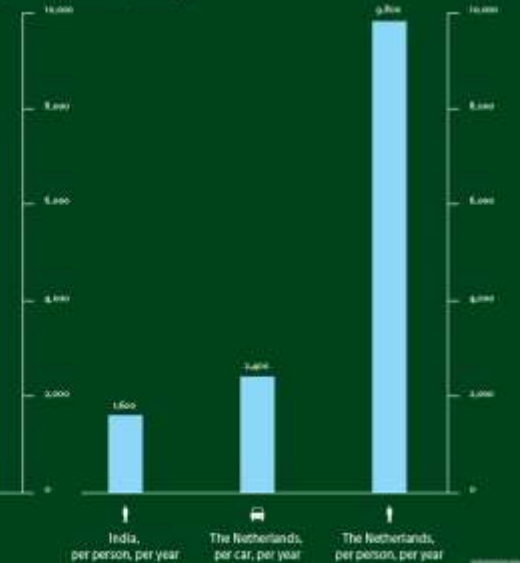
Greenhouse gas emissions in kg CO₂ equivalents, per person, per destination (return trip)




A return flight to New York causes the same amount in CO₂ emissions as a daily car journey of 35 kilometres for one year.



Greenhouse gas emissions in kg CO₂ equivalents, per person, per destination (return trip)

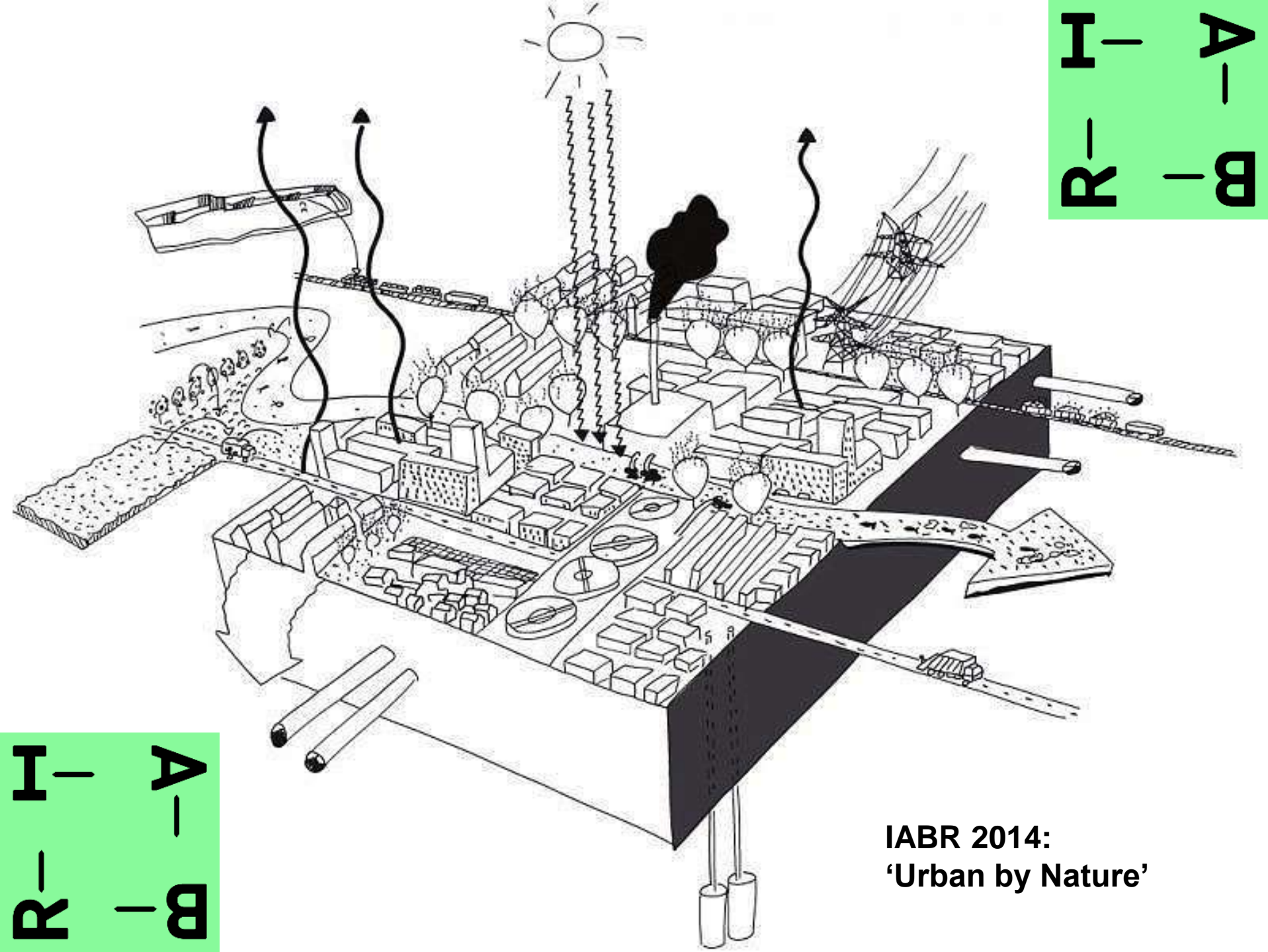




SMART — ABOUT — CITIES

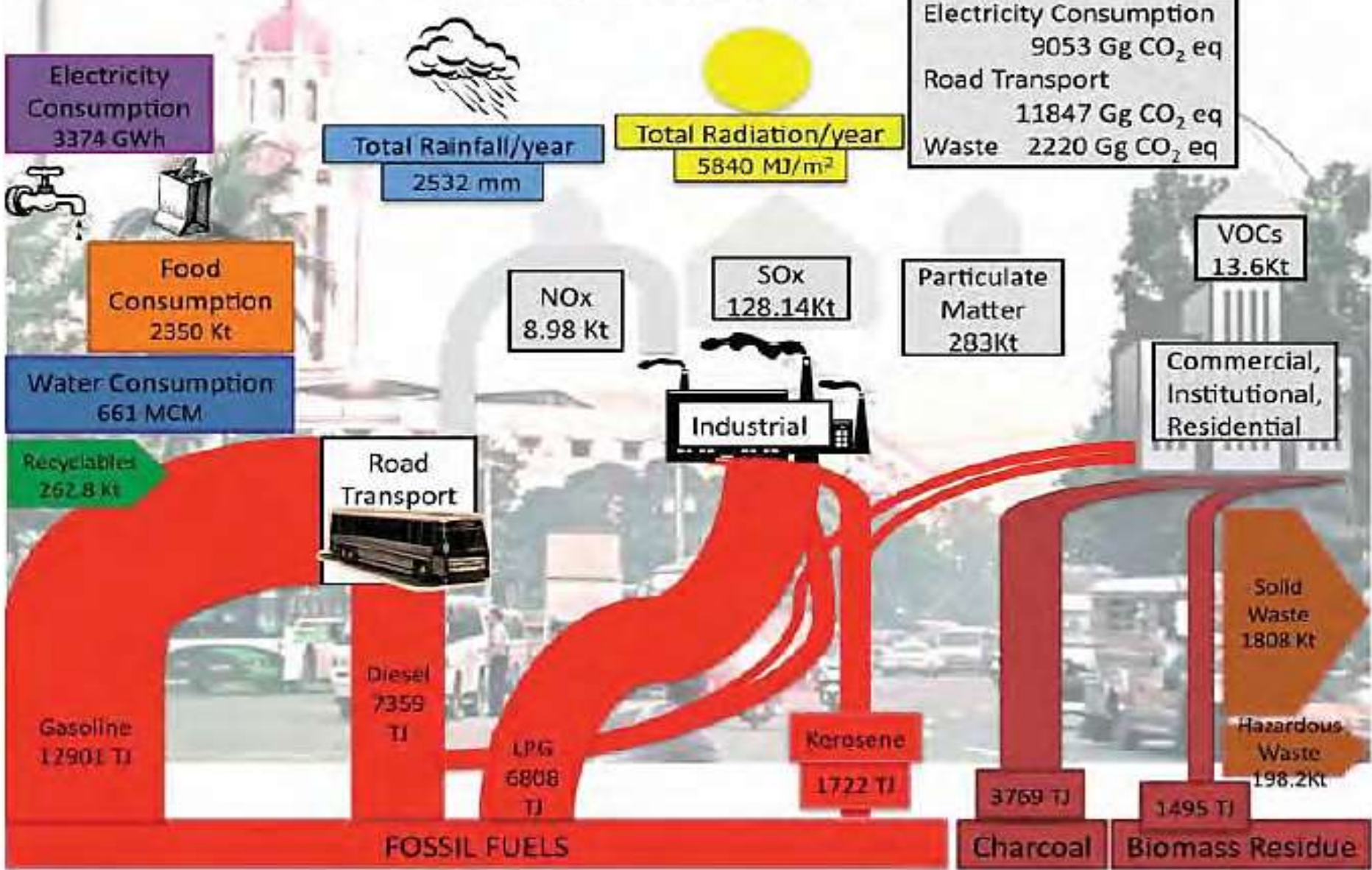
**Visualizing the Challenges
for 21st Century Urbanism**
Maarten Hajer en Ton Dassen

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Artesa Saldivar-Sali

Urban Metabolism: Metro Manila



People (demographic flows)

Mobility (traffic flows)

Cargo

Food

Fresh water

Air

Energy

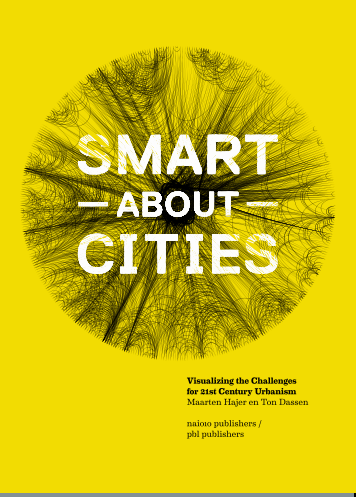
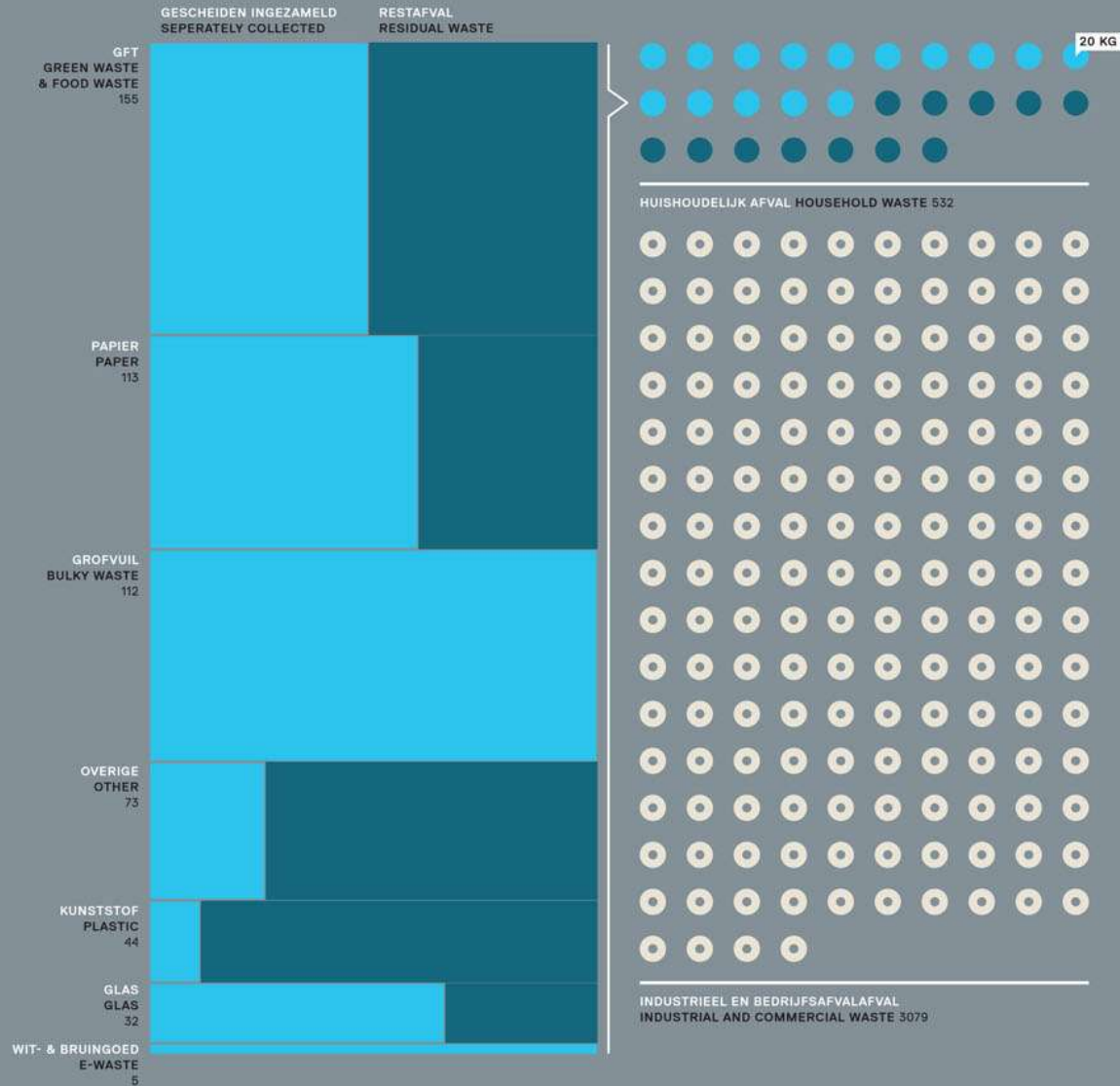
Construction material

Biodiversity and nature

Waste

WASTE 01: scale

WASTE IN THE NETHERLANDS 2010 IN KG PER INHABITANT

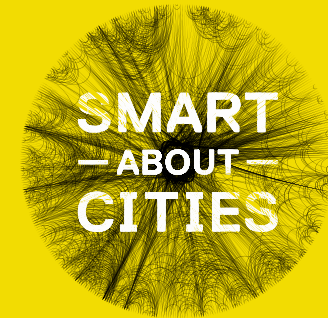
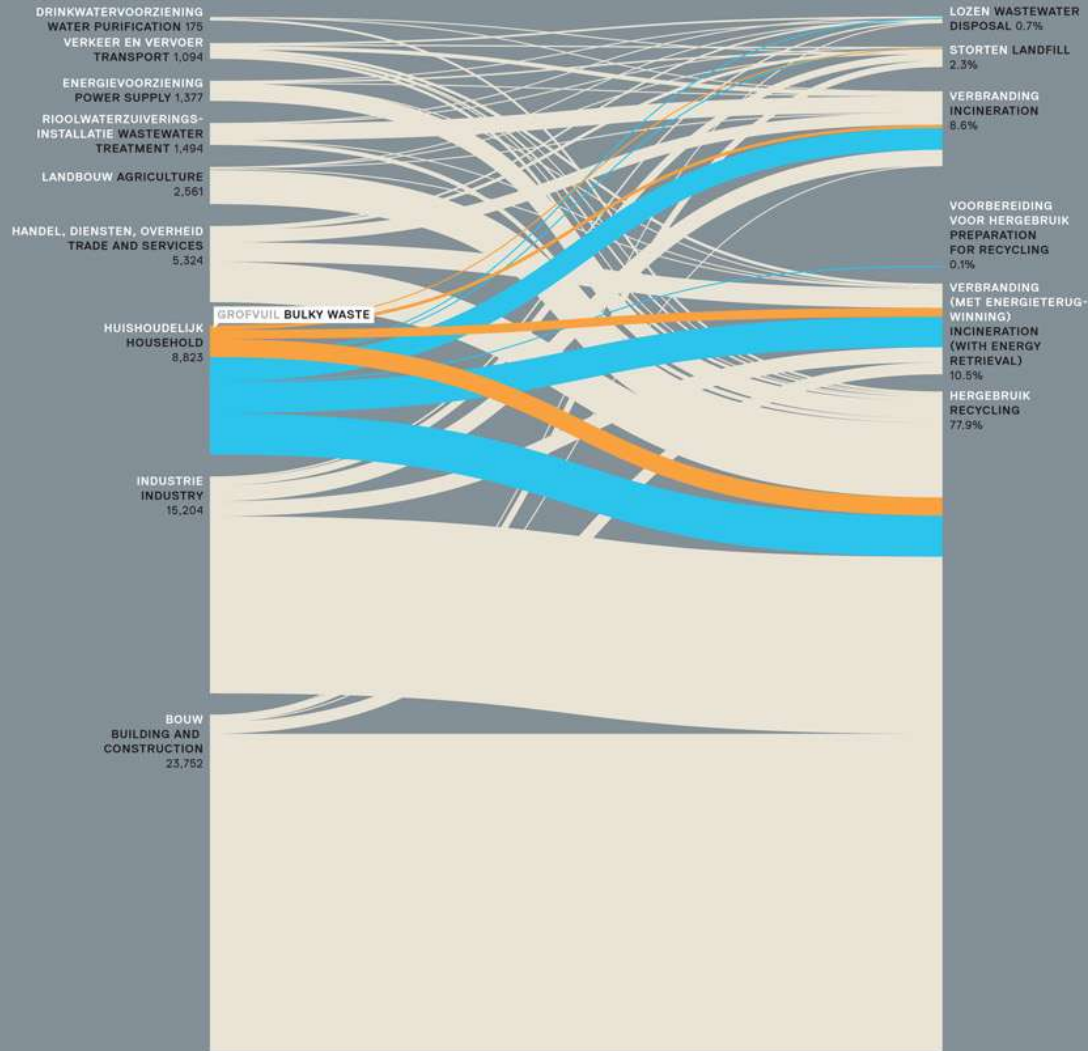


BRONNEN SOURCES

RWS, CBS, PBL

WASTE 02: flows

WASTE SOURCES AND TREATMENT IN THE NETHERLANDS 2010 IN KILOTONNES



SMART
- ABOUT -
CITIES

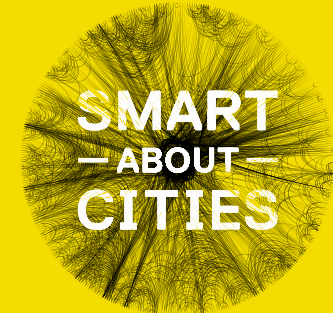
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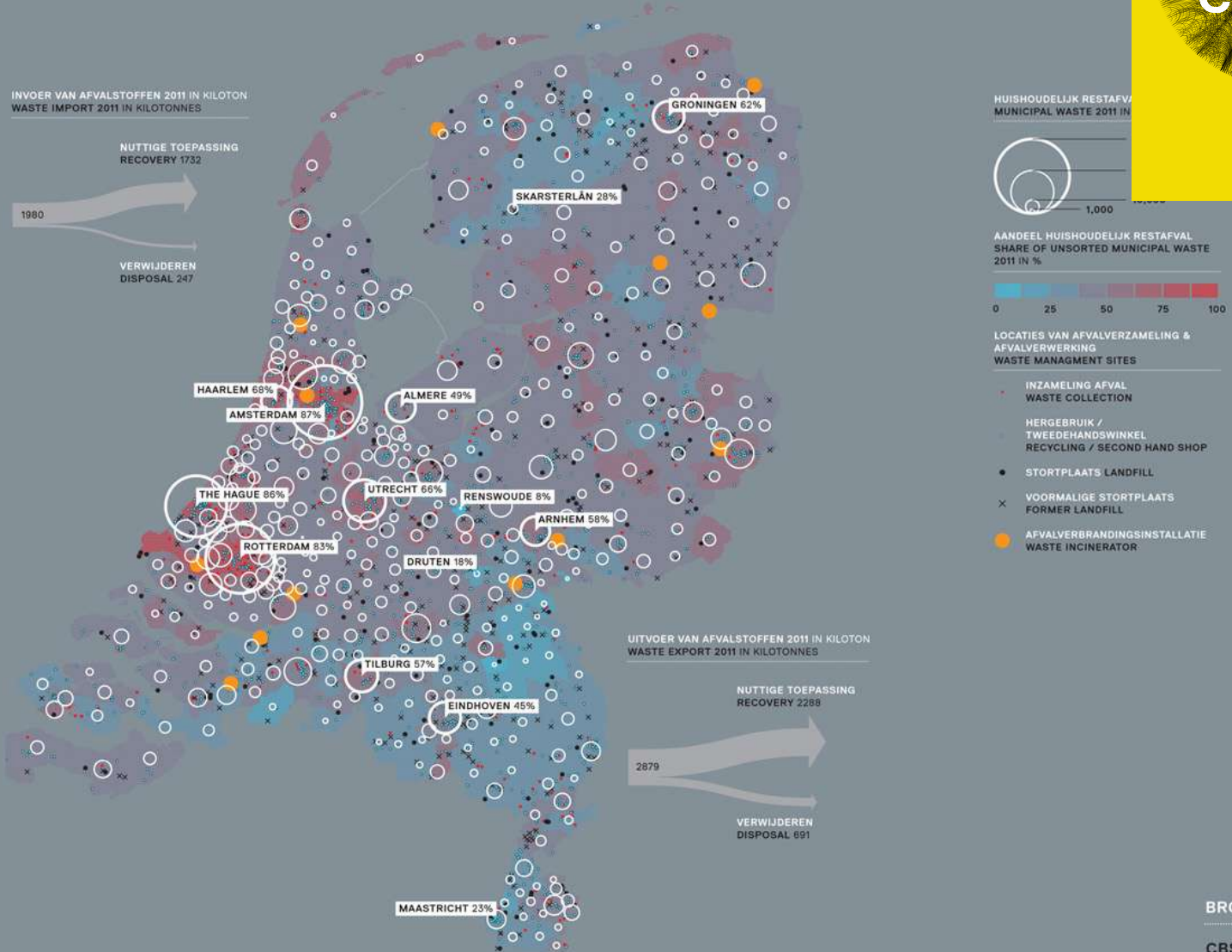
RWS, CBS, PBL

WASTE 03: infrastructure

UNSORTED HOUSEHOLD WASTE 2011 IN TONNES / WASTE MANAGEMENT SITES



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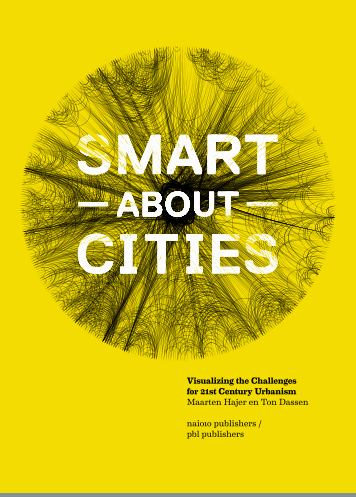
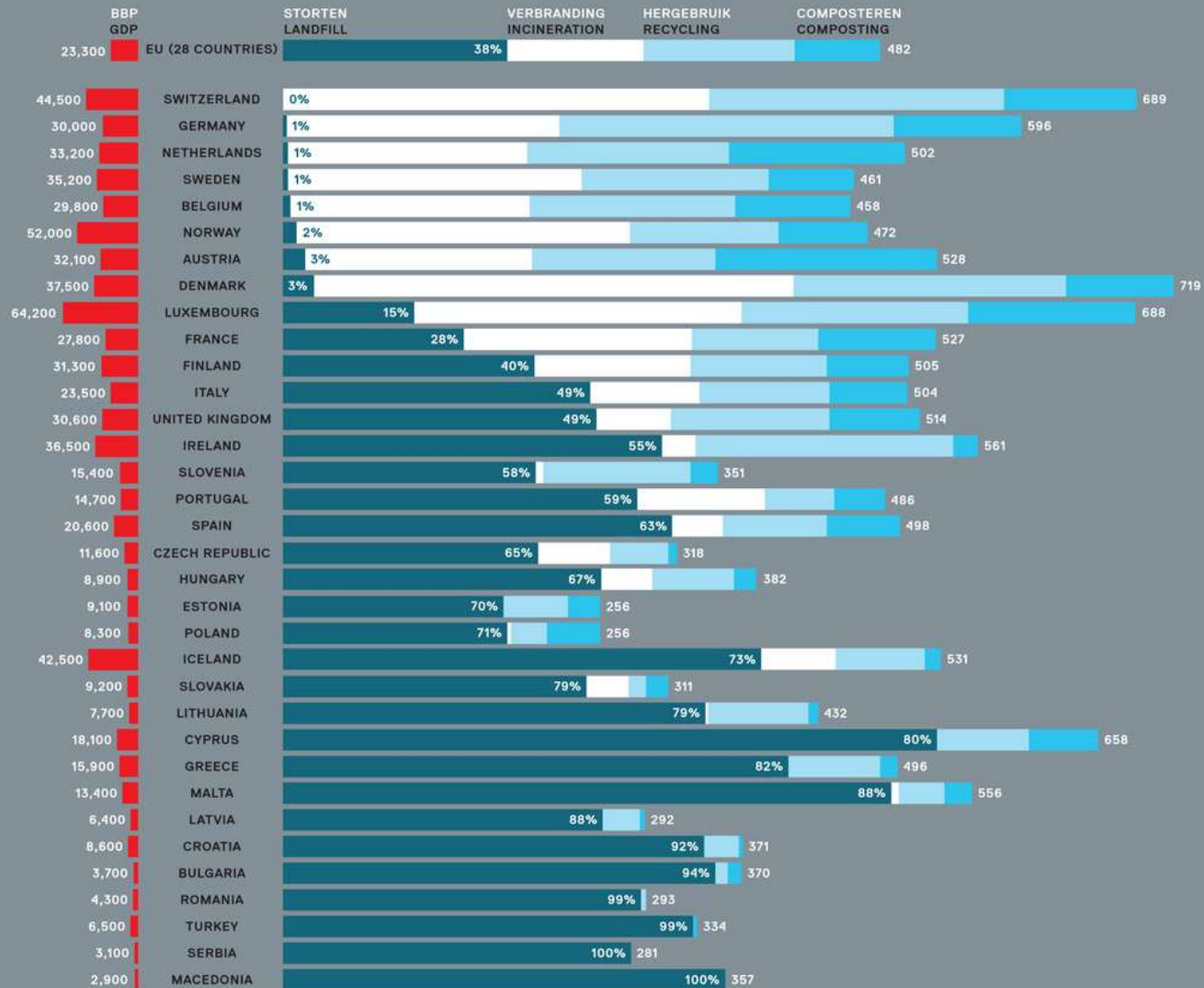


BRONNEN SOURCES

CBS, LISA, PBL

WASTE 04: European comparison

GDP 2011 IN EUR PER CAPITA / MUNICIPAL WASTE 2011 IN KG PER CAPITA



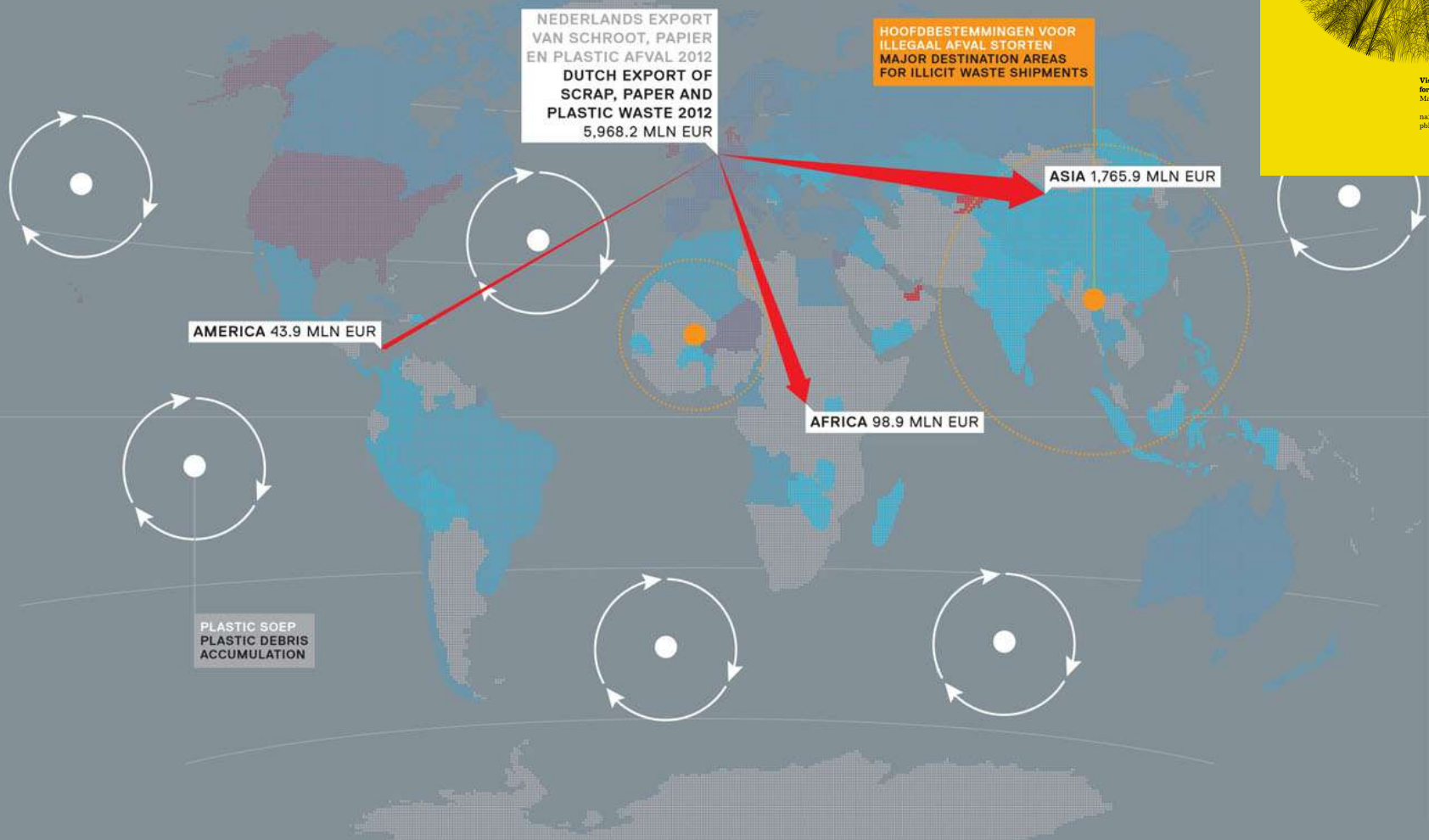
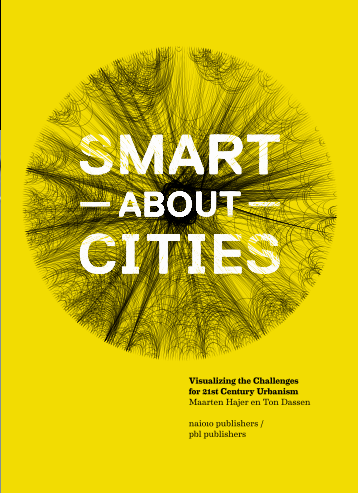
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BRONNEN SOURCES

EUROSTAT, CBS, PBL

WASTE 05: global issues

MUNICIPAL WASTE 2009 IN KG PER CAPITA / DUTCH WASTE EXPORT TO NON-EUROPEAN C



BRONNEN SOURCES

UNSD, UNEP, INECE, CBS, PBL

Infographics

> Are global CO₂ emissions still rising?



> More infographics

How to make good infographics?

Scientific
knowledge and
relationships



Making stories
by finding,
cleansing,
structuring
and visualizing
data



Creative design,
infographic
production



Form a **infographic project team** consisting of:
scientific **expert**, **transformer** and graphic **designer**

Lessons learned



- Scientist are never finished...
- Infographics are much more confronting than text
- Data quality issues everywhere due to new look at data...
- Infographics can be very time-consuming and now every project manager wants infographics, so we have to choose carefully.
- We **enjoyed the teamwork!**



Questions?

<http://www.pbl.nl/publicaties/2012/nederland-verbeeld>

<http://www.pbl.nl/en/themesites/iabr>