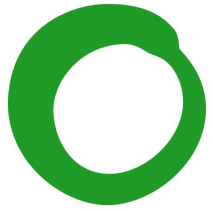


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# **Waste management - Where next for Europe?**

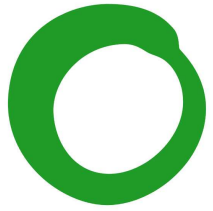
Dr Michael Warhurst,  
Resource and Consumption campaign  
Friends of the Earth Europe  
October 2010



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# Contents

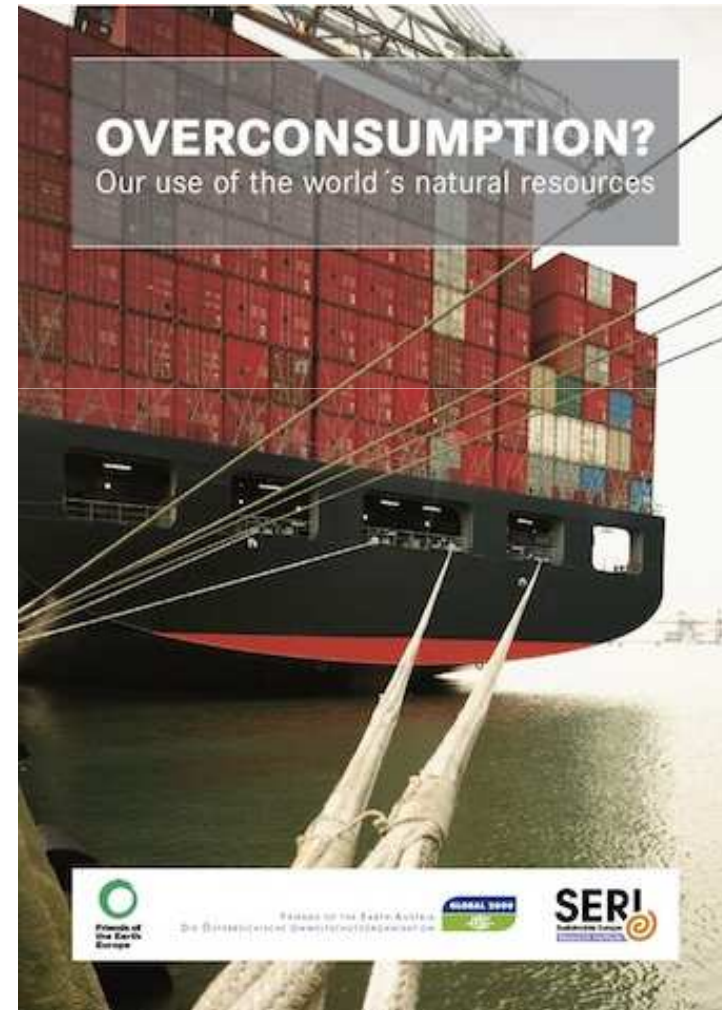
1. A resource efficient EU?
2. Reality of EU recycling
3. Towards Zero waste
4. Residual waste – what is it & what to do with it
5. Conclusions

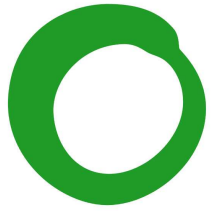


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# The resources challenge

- We are using ever-increasing quantities of the world's resources
- Europe is particularly dependant on imported resources – see our 'Overconsumption?' report [1]
- There is an urgent need for more policies to boost eco-efficiency
- The resources agenda will get more important in future years, as consumption in large countries – e.g. China and India – continues to increase.
- Business pressure is increasing
  - E.g. Raw Materials Initiative

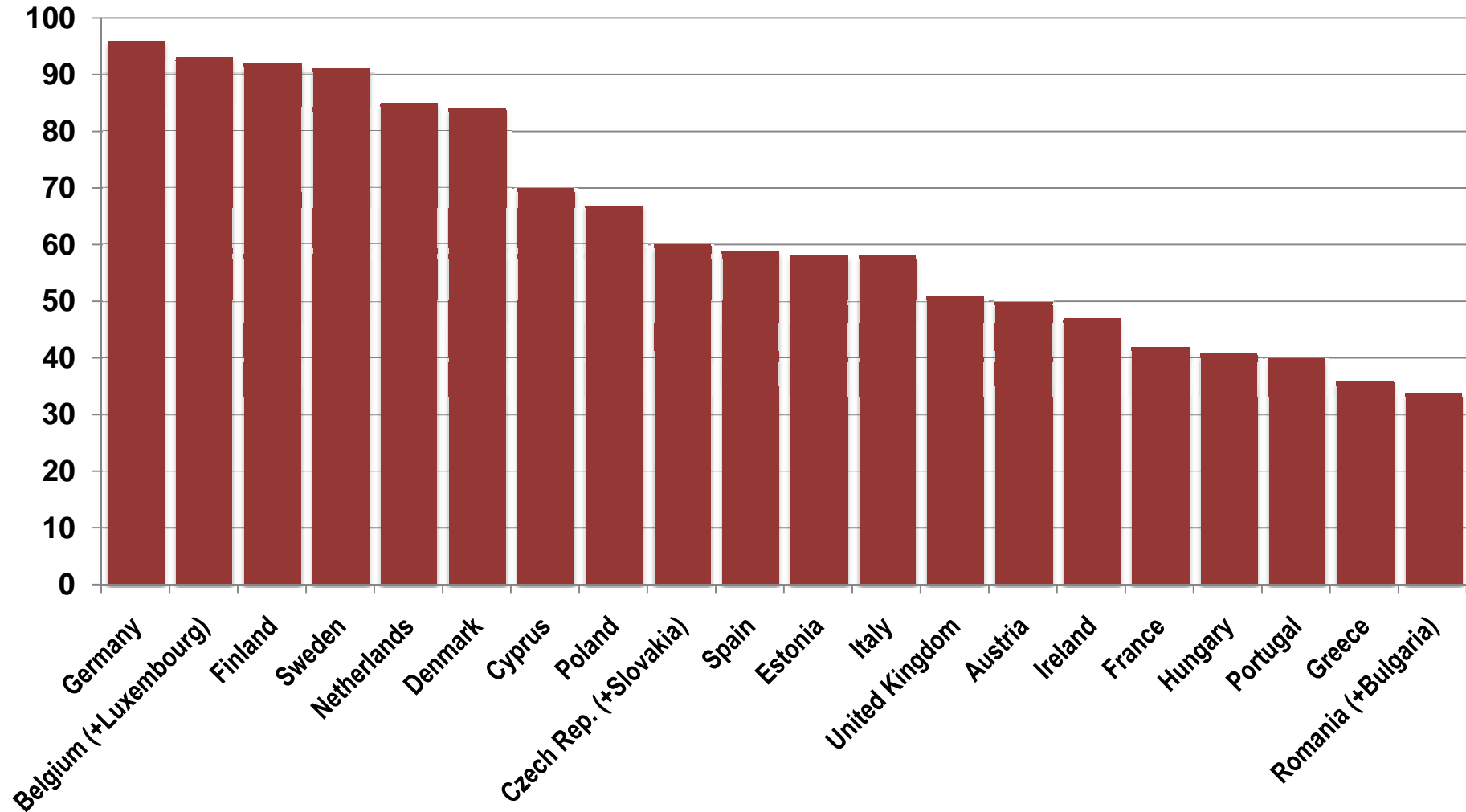


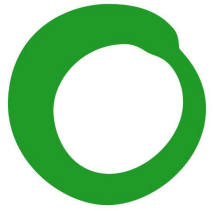


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# Resource efficient?

Aluminium cans recycled in 2008 (%)





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# EU “Resource Efficiency”?

>€5 billion worth of  
materials

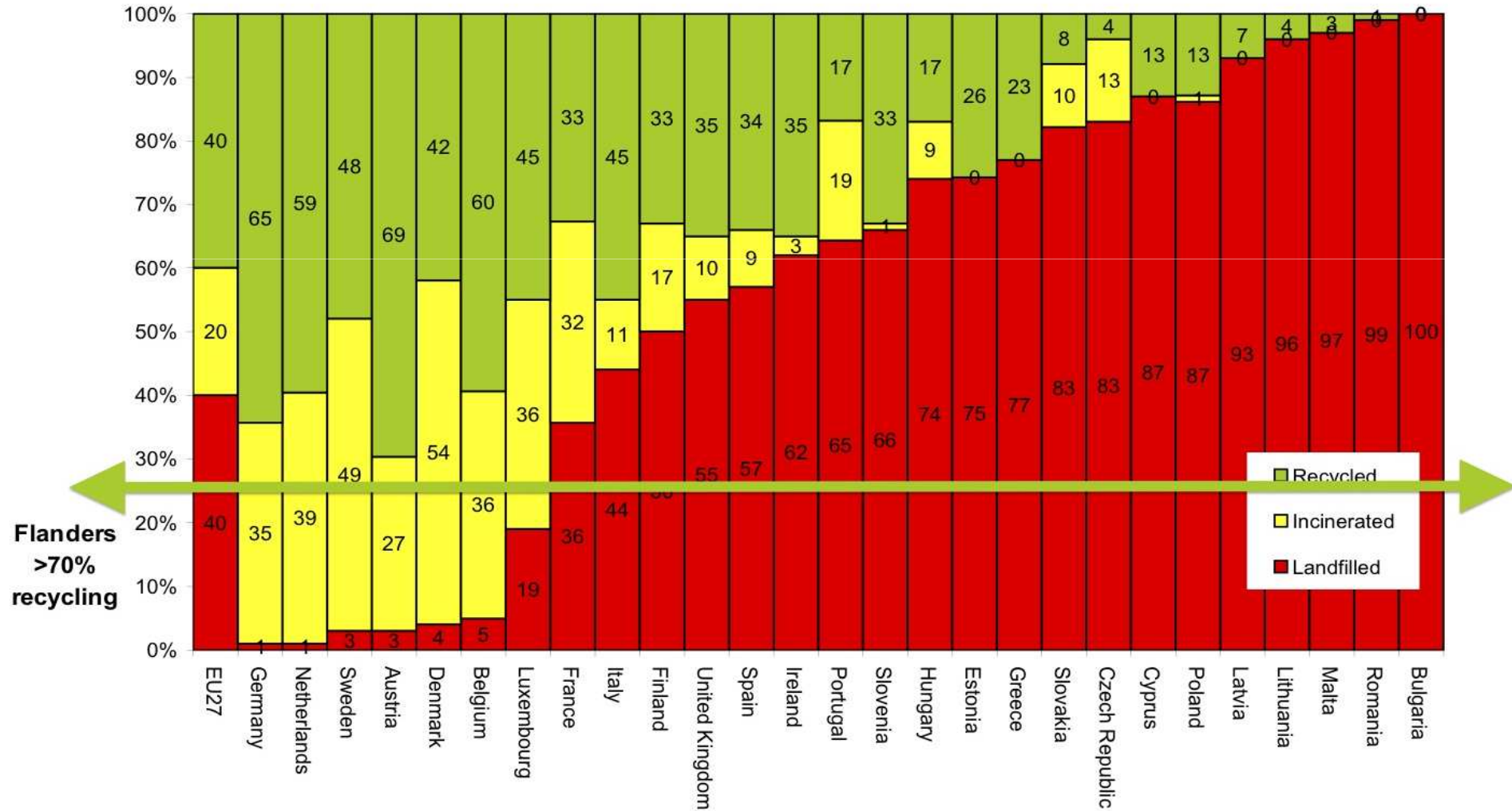
Dumped in landfill or incinerators every year...

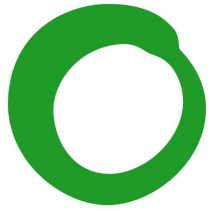
– See our *‘Gone to Waste’* report [2]

Recycling this material would have saved CO<sub>2eq</sub> emissions of 148 million tonnes, equivalent to taking approximately 47 million cars off the road per year.

# EU MSW Recycling rates

EUROSTAT, MSW 2008

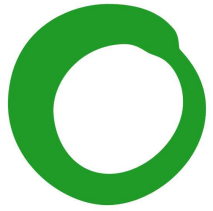




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# Green jobs

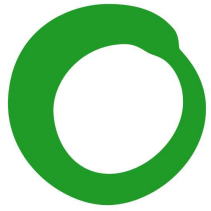
- More than **500,000** jobs would be created...
- If the EU chose to recycle 70% of waste by 2020 – rather than the 50% in the Waste Framework Directive
- See our new “More jobs, Less waste” report [3]



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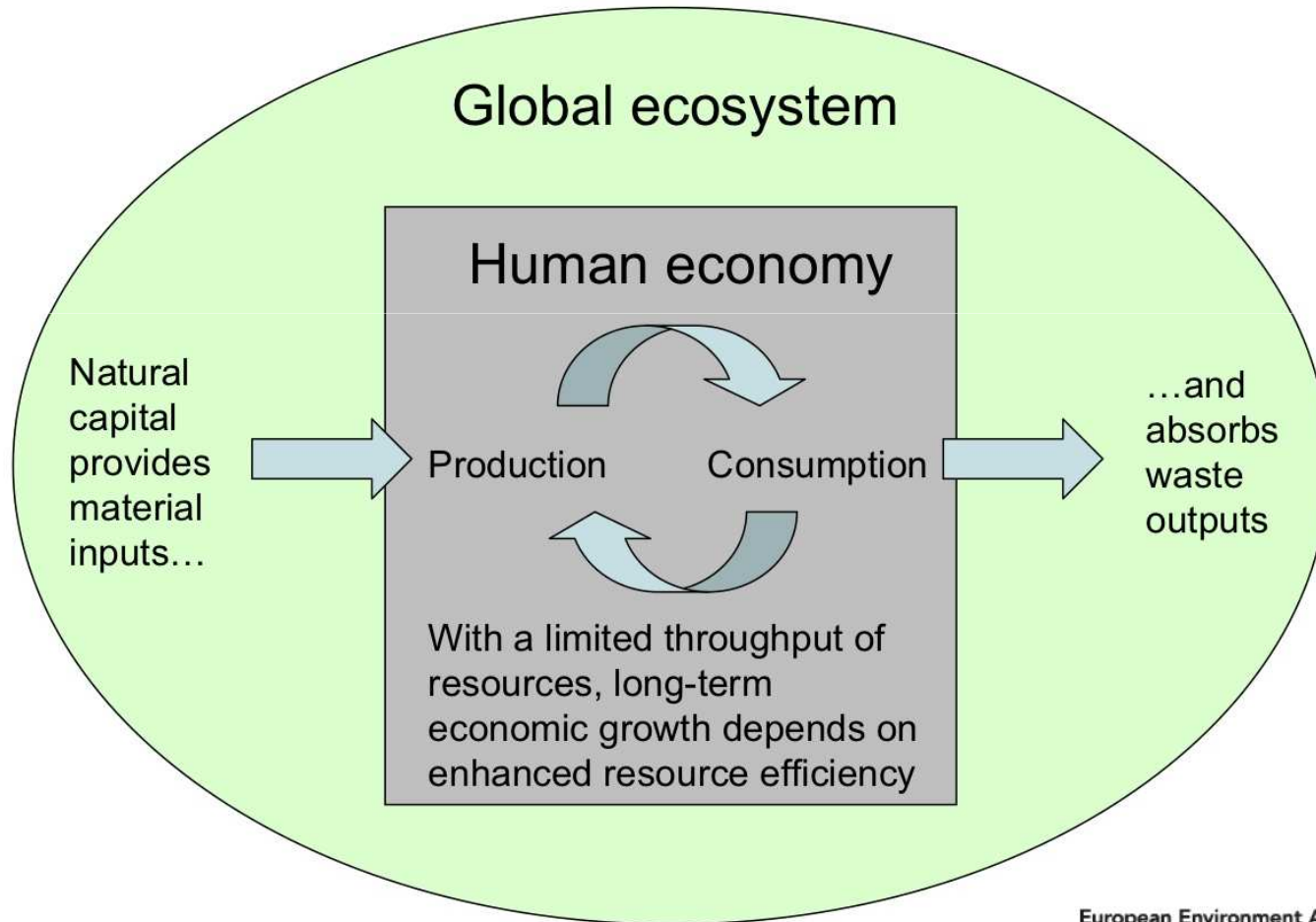
# Next - towards *Zero waste*

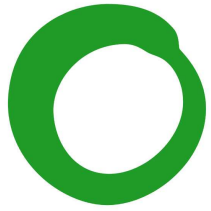
- What is Zero waste?
  - 1) Making sure that you keep materials within the economic system
    - Using less, re-using, recycling, composting
  - 2) Avoiding – phasing out – residual waste
    - The material that isn't reused, recycled, composted (that isn't kept 'in the loop')
      - Residual waste is a problem whether incinerated or landfilled
  - 3) Reducing our use of natural resources
- In a global context:



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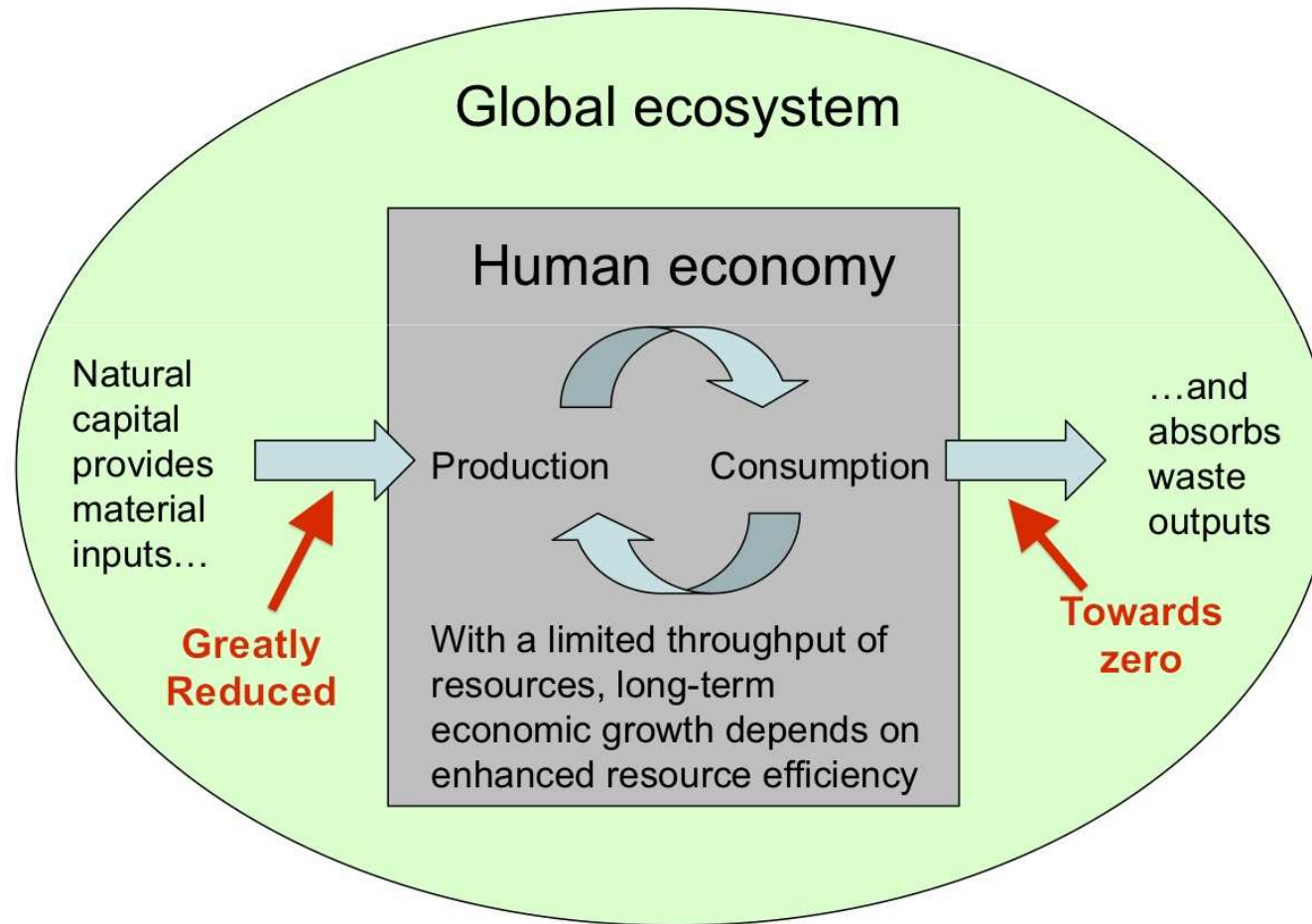
# The global context

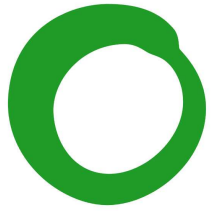




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# Zero waste in summary

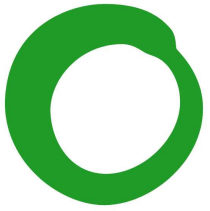




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# Moving to zero waste

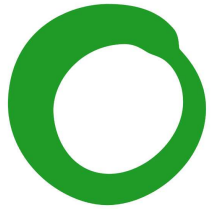
- The top of the hierarchy is the priority:
  - 1) Prevention
  - 2) Reuse
  - 3) Recycling, Composting/Anaerobic Digestion
- Not covered in this talk; see briefings for Best Practice examples
  - [http://www.foeeurope.org/activities/waste\\_management/index\\_resources.html](http://www.foeeurope.org/activities/waste_management/index_resources.html)
  - <http://www.foe.co.uk/waste>



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# Now the residual...

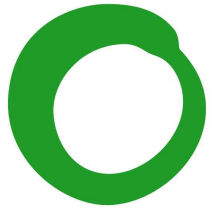
- In a true 'zero waste' world there would be no residual
  - Zero waste to landfill is not zero waste - zero residual waste is zero waste
- Residual waste is a problem to be prevented
  - Prevention of residual waste is the best climate option
  - Residual waste has economic cost, while keeping material out of the residual often has economic value.
  - Avoiding residual waste increases resource efficiency.
- Everyone claims they want to minimise residual waste
  - Yet many technologies depend on a continuous stream of it...
  - Some people even sign 25 year contracts guaranteeing it!



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# Residual waste - what is it?

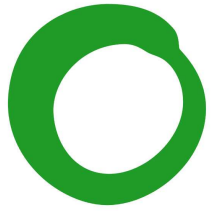
- How much is there?
  - As a percentage of total municipal waste, Wales is assuming a maximum of 30%, Flanders is burning around 25%
  - The Hovedstaden region of Denmark burns around 77%, recycling just 21%.
- What is in residual waste [4]?
  - 1) Material that could be reused or recycled:
    - but isn't being collected adequately (e.g. food waste, furniture)
    - but isn't being collected due to limited participation
    - but isn't being collected due to poor markets (e.g. mixed plastics)
  - 2) Materials that can't currently be recycled, some of which might become recyclable in the future due to improved design or markets
- Therefore..
  - The amount of residual waste will vary
  - Given the advantages of prevention, reuse, recycling and composting/AD...
    - Waste policy should aim at reducing residual waste



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# Why not incinerate the residual?

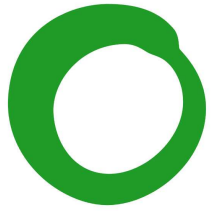
- The incineration advocate would say...:
  - An incinerator will generate some electricity, maybe some heat (if you can really find a market)
  - They aren't as polluting as they used to be, and you can hire an architect to make them look weird
  - They are a low risk technology, if rather expensive
- But...
  - The electricity is created at a cost in terms of climate emissions, as the technology (even if heat is used) is inherently inefficient [5].
  - Incinerators will burn recyclable materials, unlike other residual waste technologies that will separate out e.g. plastics
    - And it's better for the climate to landfill plastic, not incinerate it, if you can't recycle it [6]
  - Incinerators are large, expensive and inflexible, and must be fed with a constant stream of waste, thus removing flexibility



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# An alternative....

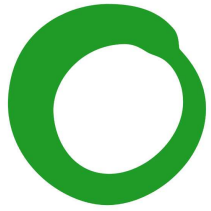
- Don't treat residual waste as material to be burned or buried
- View it as a resource:
  - Use Material Recycling Facility (MRF) technology to separate out recyclables - including plastics, before and after...
  - Composting the residual:
    - to remove the bulk of the biological activity (in case the output is landfilled)
    - to release further recyclables
    - to create a low-grade compost output.
- Other advantages of this approach:
  - Much cheaper and faster to build than incineration, so can be built with much shorter contracts.
  - Very flexible, new 'lines' can be added or removed, MRF can be used on recyclables, composting can be used for source separated compost.
  - Climate - and resource - performance is better than incineration, even if output landfilled [5].
  - Already happening in UK, e.g. New Earth solutions, Dorset



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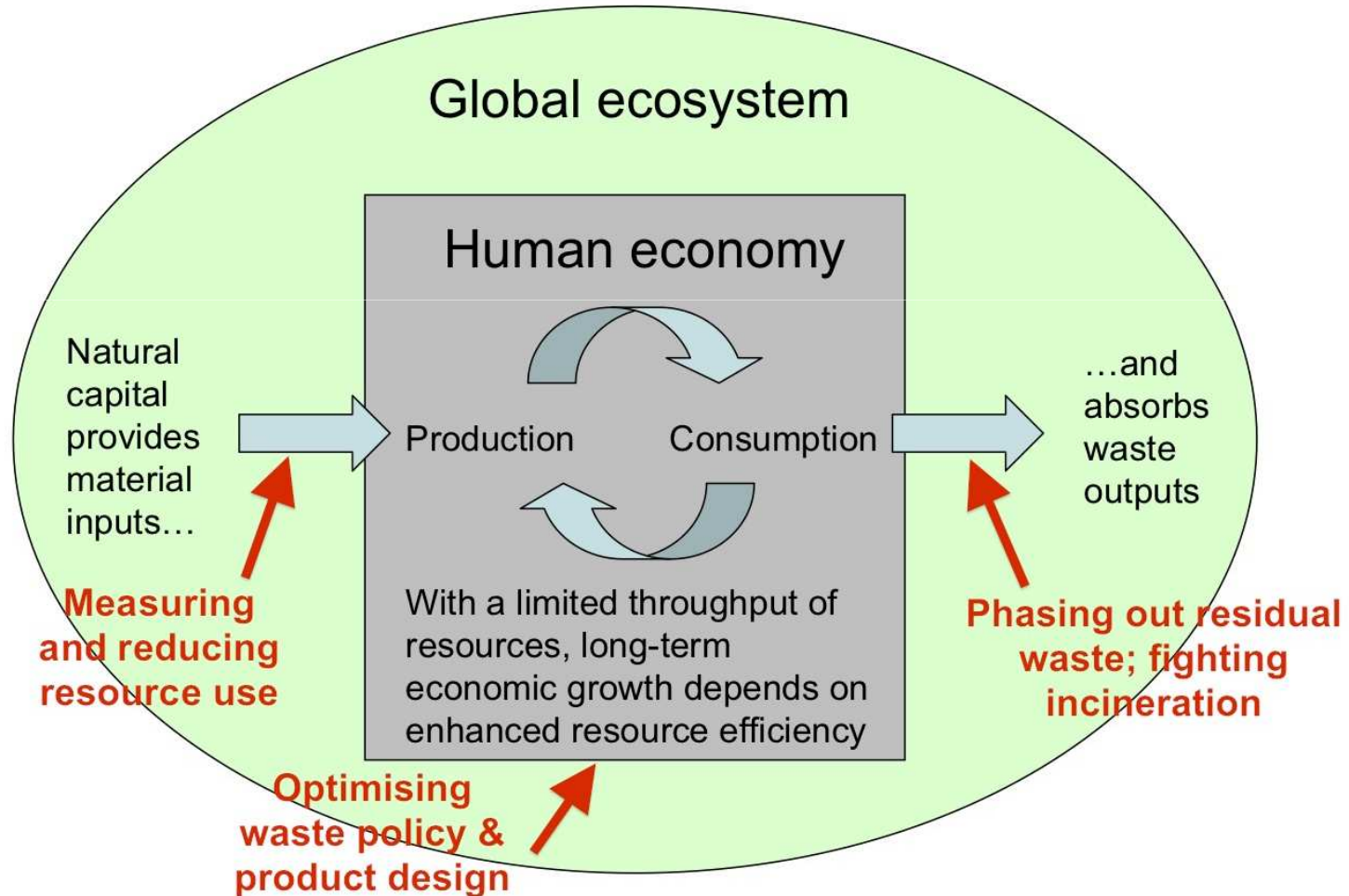
# The balance...

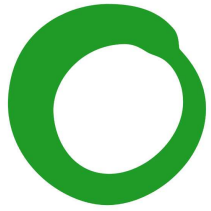
	<b>Incineration</b>	<b>Composting &amp; separation</b>
<b>Cost &amp; contract</b>	Very expensive, usually financed through 25-30y contract	Cheap, can be financed through 5y contract
<b>Planning &amp; Build time</b>	Long, usually with local opposition, sometimes engineering problems	Short, generally less opposition, simple technology
<b>Diversion from landfill</b>	Diverts BMW; produces toxic fly ash and less toxic bottom ash - some or all is landfilled	Diverts BMW; produces low grade compost which may be landfilled
<b>Climate &amp; resource efficiency</b>	Inefficient generation of electricity; burning of plastic worse than landfilling it [6].	Increased recycling is positive in climate and resource efficiency terms. Un-recyclable plastic can be landfilled, sequestering carbon [5]
<b>Flexibility</b>	Stable demand for waste for >25 years, regardless of changes in waste composition, new technologies etc.	Very flexible, adapting to changing waste volumes and composition. Able to provide feedstock for new technologies.



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# Zero waste in summary

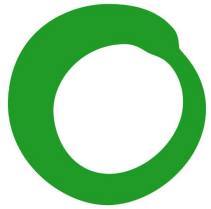




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# A 2020 vision for waste

- The EU is measuring its resource use, and creating policies to reduce it. (see our briefing – [7])
- Product policy is making things more long lasting, more reusable and more recyclable
- Waste volumes are reducing, with waste prevention targets in place.
- All Member States are aiming beyond 70% reuse & recycling, with many exceeding this by some margin
  - All waste streams and types are being addressed, with a focus on ensuring best practice around Europe (including in market development).
- All Member States are planning for a rapid reduction in residual waste, and are investing in flexible, climate & resource efficient residual waste processes (i.e. not incineration).



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# References

- [1] “Overconsumption? Our use of the world’s natural resources”, Friends of the Earth Europe/Sustainable Europe Research Institute, September 2009:  
[http://www.foeeurope.org/publications/2009/Overconsumption\\_Sep09.pdf](http://www.foeeurope.org/publications/2009/Overconsumption_Sep09.pdf)
- [2] “Gone to waste: the valuable resources that European countries bury and burn”, Friends of the Earth, October 2009:  
[http://www.foe.co.uk/resource/reports/gone\\_to\\_waste.pdf](http://www.foe.co.uk/resource/reports/gone_to_waste.pdf)
- [3] *More jobs, less waste*”, Friends of the Earth, September 2010:  
[http://www.foe.co.uk/resource/reports/jobs\\_recycling.pdf](http://www.foe.co.uk/resource/reports/jobs_recycling.pdf)
- [4] See presentations and write up from the Friends of the Earth Residual Waste conference in May 2009:  
[http://www.foe.co.uk/campaigns/biodiversity/news/taking\\_rubbish\\_20031.html](http://www.foe.co.uk/campaigns/biodiversity/news/taking_rubbish_20031.html)  
and also our “*Sorting residual waste*” briefing  
[http://www.foe.co.uk/resource/briefings/residual\\_waste.pdf](http://www.foe.co.uk/resource/briefings/residual_waste.pdf)
- [5] “*A changing climate for energy from waste?*”, Eunomia Consulting, May 2006.  
[http://www.foe.co.uk/resource/reports/changing\\_climate.pdf](http://www.foe.co.uk/resource/reports/changing_climate.pdf)
- [6] Eriksson, O., & Finnveden, G. (2009). *Plastic waste as a fuel - CO2-neutral or not?* Energy & Environmental Science, 2(9), 907-914.
- [7] Friends of the Earth Europe. (2010). *Measuring our resource use: A vital tool in creating a resource-efficient EU.*  
[http://www.foe.co.uk/resource/briefings/measuring\\_resource\\_use.pdf](http://www.foe.co.uk/resource/briefings/measuring_resource_use.pdf)

For more information on Friends of the Earth Europe’s work on Waste & Resources, see  
[http://www.foeeurope.org/activities/waste\\_management/index\\_resources.html](http://www.foeeurope.org/activities/waste_management/index_resources.html)