

# **CARDIFF'S ECOLOGICAL FOOTPRINT**

## **-Cardiff Council Perspective**

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# CARDIFF AND SUSTAINABLE DEVELOPMENT

**Local Sustainability Strategy** is Cardiff Council's response to the sustainable development agenda.

- promoting sustainability through Council policies, strategies and services
- raising awareness of sustainable lifestyles in the community and partnerships across the city.
- 60+ commitments passed by Council in November 2000
- implementation through a Sustainability Programme

this Programme is co-ordinated by the **Sustainable Development Unit**

# MAKING THE COUNCIL MORE SUSTAINABLE

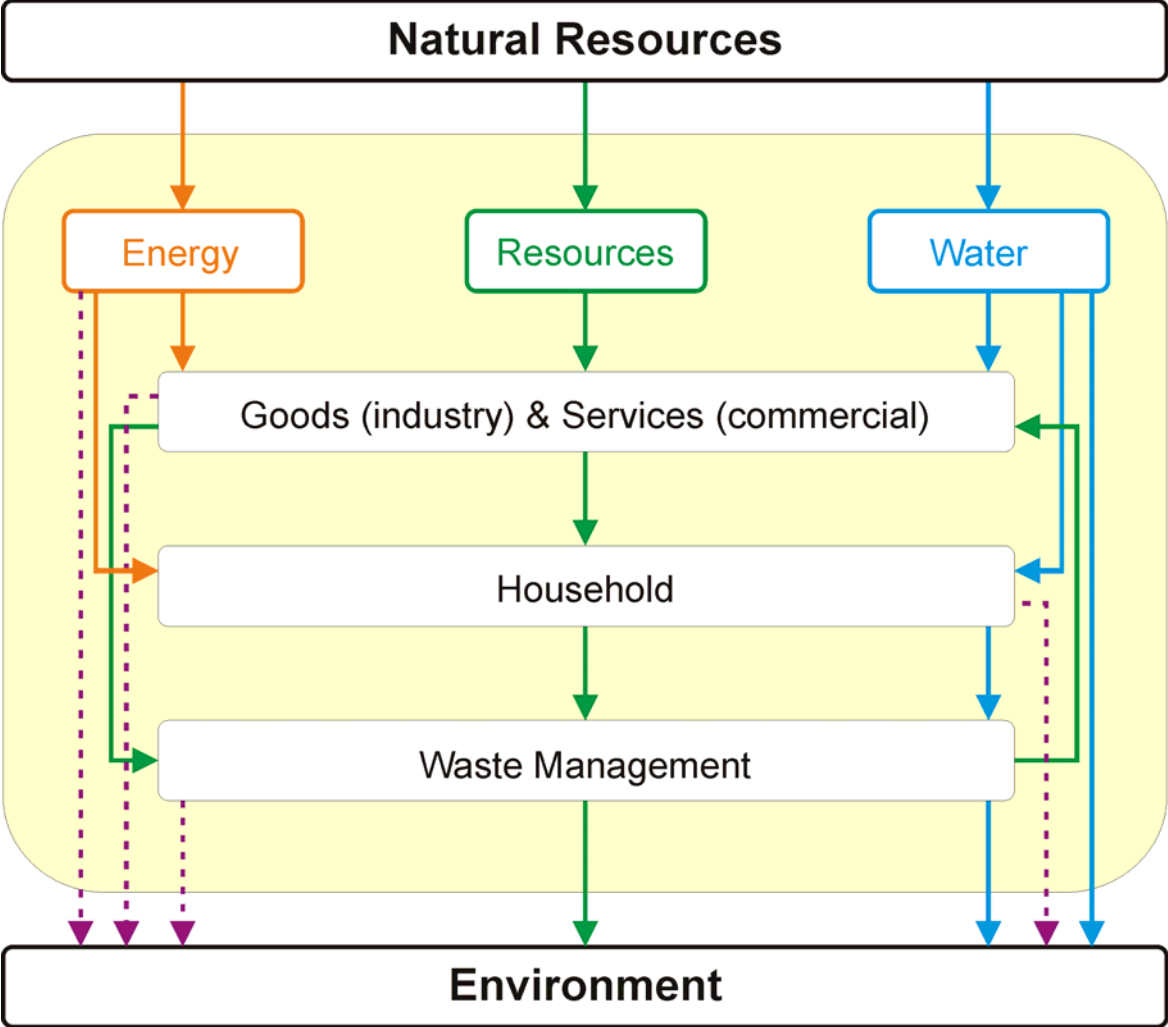
## The SDU facilitates corporate working on Sustainable Development

- Co-ordinates Network of 21 Sustainability Advocates
- Support 18 service based Green Teams
- 100+ Officers trained 2002-2004
- Advice on Climate Change to Flotsam
- SD included in Whole Authority Analysis, Community Strategy and Procurement
- Partnerships on Ecological Footprinting and Fair Trade
- ‘Green Dragon Environmental Management Standard–27 recommendations to improve environmental performance – Transport, Energy, Waste, Procurement, Design.
- Sustainability Appraisal of projects and strategies (UDP)

# ECOLOGICAL FOOTPRINTING – A SIMPLE GUIDE

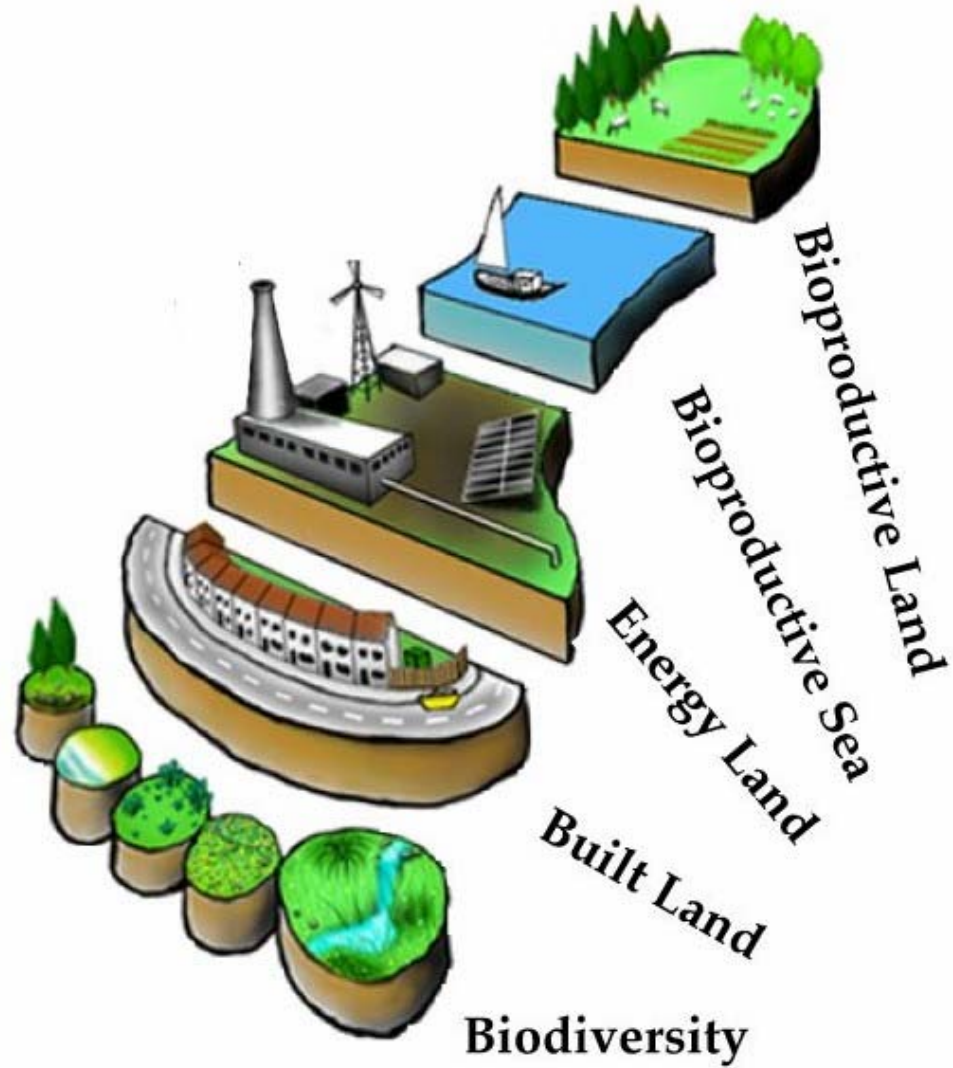
- The footprint measures human demand for resources against nature's available supply.
- How much nature have we got compared to how much we use?
- If everyone lived western lifestyles we would need nearly three planets worth of resources to survive.
- Our fair 'earthshare' is 1.9 global hectares (gha)
- A United States citizen has a 'footprint' of 9.6 gha
- A citizen of India has a 'footprint' of 1 gha
- A citizen of Wales has a footprint of 5.25 gha (based on proxy data)
- What is Cardiff's global footprint per capita and what are the most significant areas of resource use?
- What can we do to make our levels of resource consumption sustainable?
- How can this information be used to inform policy and raise awareness of sustainable lifestyles?

# MATERIAL FLOW ANALYSIS

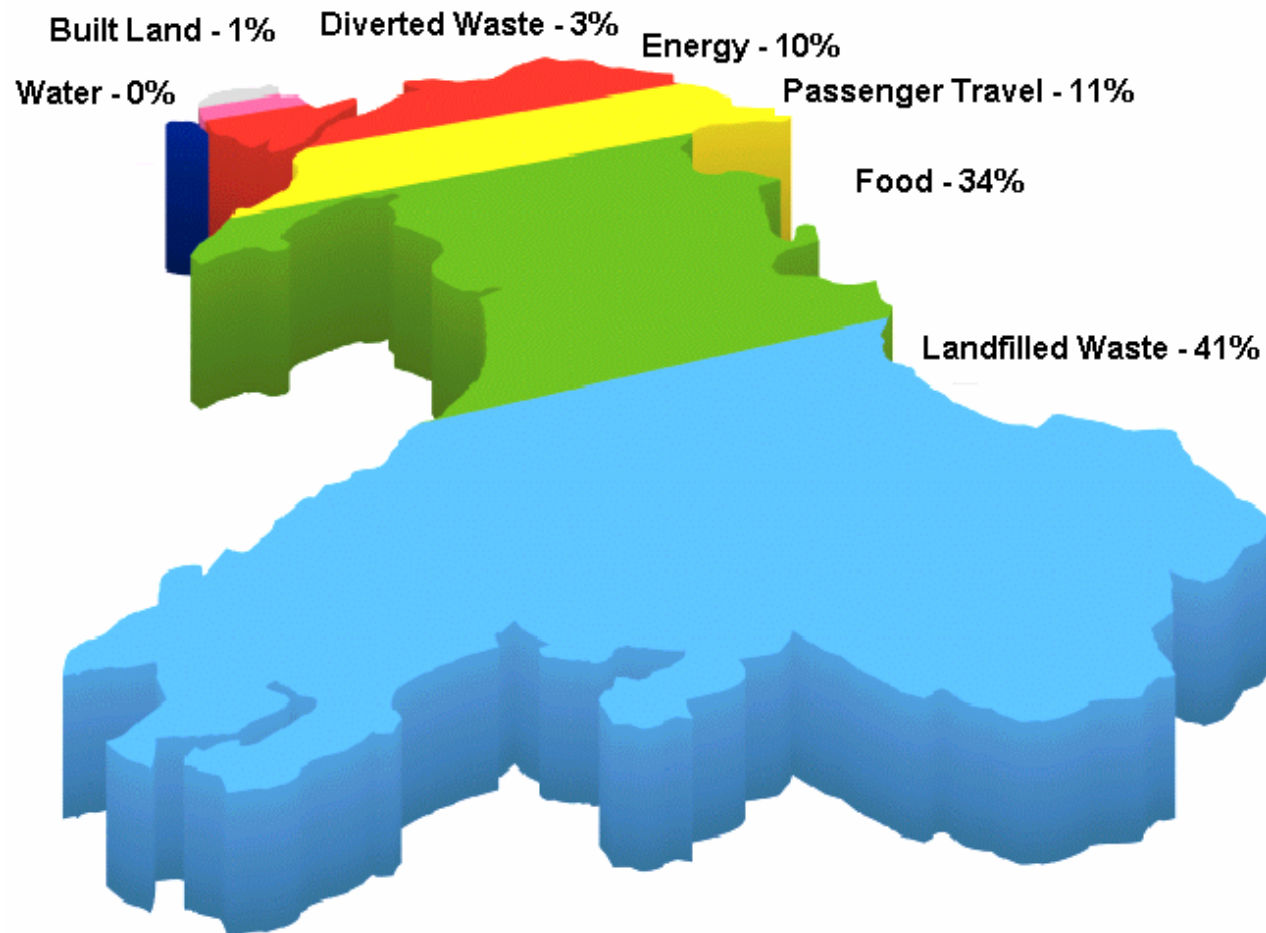


..... GHG Emissions

# MFA TO FOOTPRINT



# WHAT MAKES UP THE WELSH FOOTPRINT?



# WHAT DO FOOTPRINTS TELL US?

A Londoner per annum uses

- 13MWh of electricity (only 1% is sourced from renewables)
- Produces 0.5 tonne of household waste (only 10% recycled)
- Travels 8400 km (66% by car)
- Eats 680 kg of food (81% imported from outside the UK)

28% of London's water (876 million litres) is lost through leakage

For London to be sustainable by 2050 each citizen would need to:

- Reduce gas consumption from 9.5 MWh to 6.2 MWh
- Install 11m<sup>2</sup> of solar panels
- Travel 3000km less every year
- Consume 70% less meat
- Reduce food waste by 100kg
- Produce 1 tonne less waste
- Eat 40% seasonal, locally produced food

York - 33% of food purchased goes directly to landfill



# THE PROJECT PARTNERSHIP

- 18 month project to measure the Ecological Footprint of **Wales, Cardiff** and **Gwynedd**. **Complete September 2004.**
- Partnership includes: Welsh Assembly Government, Cardiff Council, Gwynedd Council, Cardiff University, Stockholm Environment Institute, Bangor University, WWF, CCW, Environment Agency, Welsh Development Agency.
- £330,000 from BiffAward with 10% matched funding from Councils and Welsh Assembly Government. (£5000 from Cardiff)
- Stockholm Environment Institute to undertake **materials flow analysis** and measure footprint, Universities to gather data and develop **sustainable scenarios** with Council policy officers.
- This project is cutting edge, no city has used footprinting like this and worked so closely with policy officers in the Council – on policy outputs rather than as an academic exercise.

# WHAT'S IN IT FOR CARDIFF COUNCIL?

- a **policy commitment** in the Local Sustainability Strategy for Cardiff to measure the City's ecological footprint.(Section 7)
- included as a quality of life indicator in the **Community Strategy** for Cardiff.
- it is the best available tool to measure the city's impacts on the global environment
- provides a resonant tool and metaphor to **promote awareness** of sustainable consumption and production and sustainable lifestyles.
- new data on materials flows and the city's impacts will provide a clearer picture to the Council on the **scale of the problems the city faces.**
- provides **evidence** to inform debate and policy within the Council
- put Cardiff's impacts in a **global context** for politicians, officers and the general public.
- footprint aligns the Council with **regional** government thinking on sustainable development.
- **Innovation** -Cardiff Council (along with Gwynedd Council) will be the first Welsh local authorities to use this tool.

# CARDIFF FOOTPRINT PROJECT - OUTPUTS

- **Material Flow Analysis** for the city
- **Ecological Footprint Analysis** of
  - Food
  - Waste
  - Households
  - Tourists
  - Energy
  - Transport
  - Commuters
- REAP **software** tool developed by SEI
- **Website** developed by WWF Cymru
- University expertise to develop **sustainable scenarios** up to 2030
- **Summary and Technical Reports** and Leaflet
- **Schools** footprint template
- **FA Cup Final** Footprint template
- **Sports Village** Footprint template
- **Schools Pack**
- Footprint of **Cardiff Partnering Scheme**
- One Year support from SEI

# DATA COLLECTION

Services	Cardiff Input/Output tables Employment and Workplace Survey
Waste	Waste Management Survey Commercial Waste Survey
Transport	Civil Aviation Authority Cardiff Harbour Authority Wales and Borders Trains
Energy	Gas consumption by postcode
Food	National Food Survey Allotment Survey
Tourism	Visitor and Tourist Data (CC)
Commuters	Travel to Work (2001 Census)
Housing	Existing and new Stock (Type)
Consumables & Durables	Family Expenditure Survey and ACORN Data

# INITIAL FOOTPRINT RESULTS

## Ecological Footprint of Cardiff:

Food	30.1%
Infrastructure	18.5%
Energy	16.3%
Waste	15.6%
Transport	13.6%
Households	5.8%
Water	0.08%

These results hide more specific patterns:

- Food eaten in the home
- Commercial infrastructure
- Passenger transport
- Municipal waste
- Domestic energy

# FOOD:DATA COLLECTION

- 🌱 Each food item has its own ecological impact
- 🌱 Conversion factors are applied to each individual food item to take account of the contribution of each item to the impact of food consumption in Cardiff.
- 🌱 e.g. Chicken (cooked) take into account:
  - Energy used to rear chicken
    - (Conventional or Organic)
  - Amount of land required
  - Energy used for food processing
  - Energy required to import (air, ship, road)
  - Energy required for UK food distribution
- Only 1% organic
- 31% of food consumed in Cardiff is imported
- National Food & Expenditure Survey
- Allotment Survey

# FOOD FOOTPRINT: SOME INITIAL RESULTS

- ☞ The food footprint for Wales is 1.24 gha per capita; for Gwynedd 1.25 gha per capita
- ☞ Cardiff's food footprint is **1.28 gha per capita**.
- ☞ This means that each Cardiff resident is using resources equivalent to almost the size of 1.25ha football pitch to support their current food consumption.
- ☞ The main contributors are:
  - Skimmed milk (0.117 gha/capita)
  - Other meats (0.097 gha/capita)
  - Wholemilk (0.64 gha/capita)
  - Processed vegetables (0.34 gha/capita)
- Only 1% organic
- 31% of food consumed in Cardiff is imported

# FOOD POLICY OPTIONS

1. Food Items and their sustainability
2. Increase in food consumption
3. Food Production (Conventional & Organic)
4. Food Processing (Fresh & Processed)
5. Reducing Food Transport & Food related transport
6. Reducing Food related Waste

How can this information inform our:

- school catering (Florence model)
- economic development of food industry
- healthy eating/schools
- food and health strategy
- allotments
- event management

How can we encourage more localised flows of organic and 'in season' food?



# TRANSPORT: INITIAL RESULTS

- Each mode of transport has its own ecological impact.
- Conversion factors or weightings are applied to individual modes of transport in Cardiff.
- 🌱 The transport footprint for Wales is **0.778 gha** per capita; for Gwynedd 0.799 gha per capita
- 🌱 Cardiff's transport footprint is **0.986 gha per capita**.
- 🌱 This means that each Cardiff resident is using resources equivalent to almost the size of a football pitch to support their transport use.
- 🌱 The main contributors are:
  - Car (53.9%)
  - Air (36.7%)
  - Local Bus (3.2%)



# TRANSPORT POLICY OPTIONS

1. Modes and their sustainability
2. Increase/decrease in travel by car & air
3. Reducing the car travel footprint
4. Car free day & car free week
5. Working at home & internet shopping
6. Reducing the school travel footprint

Policy options:

-do we need to be more radical -how would a congestion charge impact on the ecological footprint of passenger travel?

-can the business community and the Council focus on video and teleconferencing instead of car and air travel, what impact would this have?

# ENERGY: INITIAL RESULTS

- The energy footprint for Wales is 0.932 gha per capita; for Gwynedd 0.935 gha per capita
- Cardiff's energy footprint is **0.986 gha per capita**.
- Domestic energy footprint is two thirds of the footprint
- Commercial sector, public services and industry have the next highest energy footprints
- A Cardiffian produces 3.5 tonnes of CO<sub>2</sub> per capita from energy use:

Domestic	= 2.3 tonnes
Industry and Commerce	= 0.7 tonnes
Public Services	= 0.5 tonnes

# ENERGY: POLICY OPTIONS

1. Fuels & their associated ecological impacts
2. Increased domestic energy consumption
3. Reducing domestic electricity consumption
4. Increased use of lighting & appliances
5. Maintaining the impact of consumption at 2001 level.
6. Increasing energy efficiency

Policy options: should we focus our energy policy on?:

- minimising use of fossil fuels through efficiency and switching to green energy (where available)
- maximising use of renewable energy in developments
- maximising energy efficiency on domestic stock and large organisations in Cardiff
- setting targets to reduce CO<sub>2</sub> per capita
- use the Councils purchasing power to stimulate the market in renewables
- energy efficient design in new developments

# WASTE:INITIAL RESULTS & POLICY OPTIONS

- Municipal Waste:

Paper and Card                      29%

Food & Garden                      29%

Dense Plastics                      9%

Construction/Demolition is 21% of all waste produced in Cardiff

- we don't know where 80% of our commercial waste goes
- Recyclables – China, Holland, Ireland (added transport impacts)
- Policy options: should we focus our waste management policy on?:
  - minimising paper, card and food waste
  - maximising recycling and markets for recyclates
  - maximising composting and treatment of food and garden waste
  - recycling and re-use of construction and demolition waste
- Which combination of waste management methods has the lowest ecological impact?

# FOOTPRINTING SPIN-OFFS

1. Calculation of the Tourist Footprint
2. FA Cup Final Footprint (2004)
3. Footprint of the Sports Village Development in Cardiff Bay
4. Schools footprint template
5. Cardiff Partnering Scheme – Sustainable Housing project

# WHAT HAPPENS NEXT – SCENARIO PLANNING

- REAP tool and final data sets Autumn 2004
- Key policy officers and University to work in brainstorming sessions on energy, food, waste, transport and households. June–September 2004
- Training for policy officers to use the tool
- Recommendations on policy implications of the footprint to Heads of Service, CMT and Cabinet
- Communication of results via Member seminar on the Ecological Footprint in November 2004
- Launch – technical November 2005, Summary Feb 2005
- Awareness raising - Family Footprints – School Footprints in 2005

# A MANAGED PROCESS

- Policy options
  - Quality local data
  - Data validation
  - Training with SEI
  - Investigating data behind the footprint
  - Policy workshops
  - Building capacity
  - Repeatability
- How do the different policy areas inform each other?
  - What is the data and footprint telling us about our listed policy options in these areas? What are our best policy options up to 2030?
  - Are we prioritising the right things to reduce the ecological footprint for the city?
  - Where can our policies and activities have the biggest impacts in reducing the footprint?



# ECOLOGICAL FOOTPRINTING - A ROBUST TOOL?

- 👉 Has anything changed as a result of the footprint? What difference is it making?
- 👉 Are the consultants doing this with the Council or to the Council?
- 👉 Is the project adequately reflecting local characteristics?
- 👉 Is the data verified by the people who are going to use it?
- 👉 Are the authority able to use the tool for policy making and repeat it after the consultants have gone?
- 👉 Are you intending to use this as a true policy tool or just an awareness raising device?
- 👉 Are you really engaged with policy and decision makers?
- 👉 You only get out what you put in.

# ECOLOGICAL FOOTPRINTING – FURTHER INFORMATION

For more information on footprinting and specific projects in Cardiff, London and York then see the following websites:

[www.redefiningprogress.org/programs/sustainability/ef/](http://www.redefiningprogress.org/programs/sustainability/ef/)  
[www.walesfootprint.org](http://www.walesfootprint.org)

General  
Wales

[www.cardiff.gov.uk/sustainabledevelopment](http://www.cardiff.gov.uk/sustainabledevelopment)

Cardiff

[www.citylimitslondon.com](http://www.citylimitslondon.com)  
[www.yorkfootprint.org/](http://www.yorkfootprint.org/)

London  
York

If you would like more information on the Cardiff Ecological Footprint project then please email: [sustainabledevelopment@cardiff.gov.uk](mailto:sustainabledevelopment@cardiff.gov.uk)