



Energy Co-operatives Ireland
 Building community energy networks
energyco-ops.ie




South West Mayo
 DEVELOPMENT COMPANY LTD
 Comhacht Forbartha
 Ionaidheoireacht Mhaigh Eo Thu



MAYO CLIMATE ACTION AWARENESS WORKSHOPS



Rialtas na hÉireann
 Government of Ireland



Rialtas na hÉireann
 Government of Ireland

Tionscadal Éireann
 Project Ireland
2040



Climate Action Awareness Group



- South West Mayo Development Company Ltd.
- CARO (Climate Action Regional Office)
- Mayo County Council
- Moy Valley Resources IRD
- Mayo North East Development Company Ltd.



Comhairle Contae Mhaigh Eo
Mayo County Council



Energy Co-Op



Energy Co-operatives Ireland

Building community energy networks

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OVERVIEW

South West Mayo Development Company, as part of a Climate Action Awareness Group, are delivering a bespoke workshop programme 'Mayo Climate Action Awareness Workshops' in 5 Mayo Towns. These workshops will look at a number of topics related to climate change, the relative impacts and adaptation and mitigation actions that can be taken.

The format of these workshops will allow for educating and creating awareness of climate change issues and for interactive discussion around these issues and associated actions that can be taken individually or as a community. The training material will be a combination of both generic and specifically local information using local case studies directed at communities.

This programme will run over a period of 6 weeks, starting the 4th of February 2020 with 3 workshops running in 5 locations around the county. The first two workshops in each location will be common across all 5 locations, with the final workshop focusing on different themes in each location, but open to participants across the whole county.



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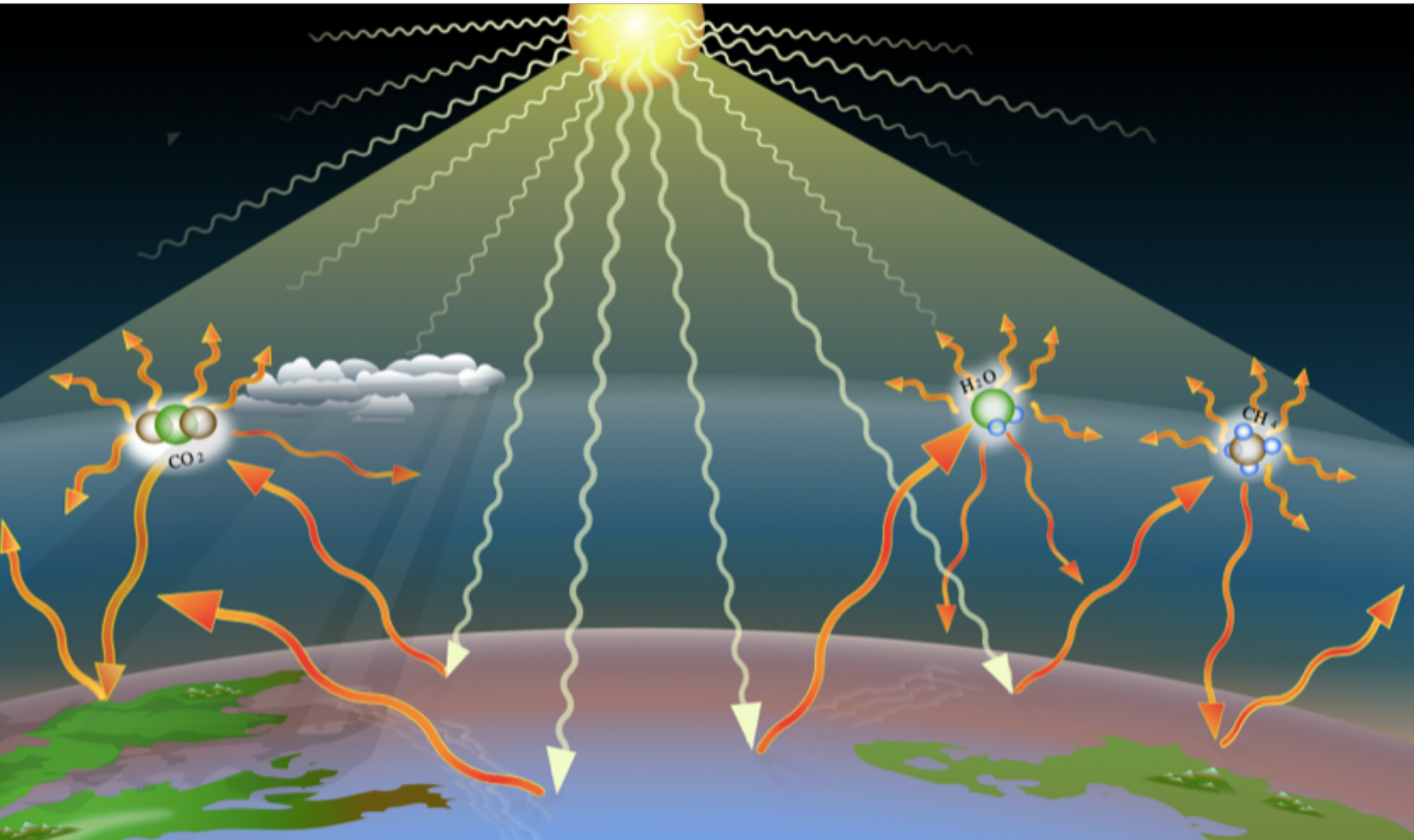


Workshop 1: Understanding Climate Change in Our Community



Global Warming – Greenhouse Gases

Greenhouse Gases collecting in the atmosphere trap heat



Global Climate Indicators

Indicators which show the changing conditions which humans are causing

Surface
temperature

Atmospheric CO₂

Ocean
acidification

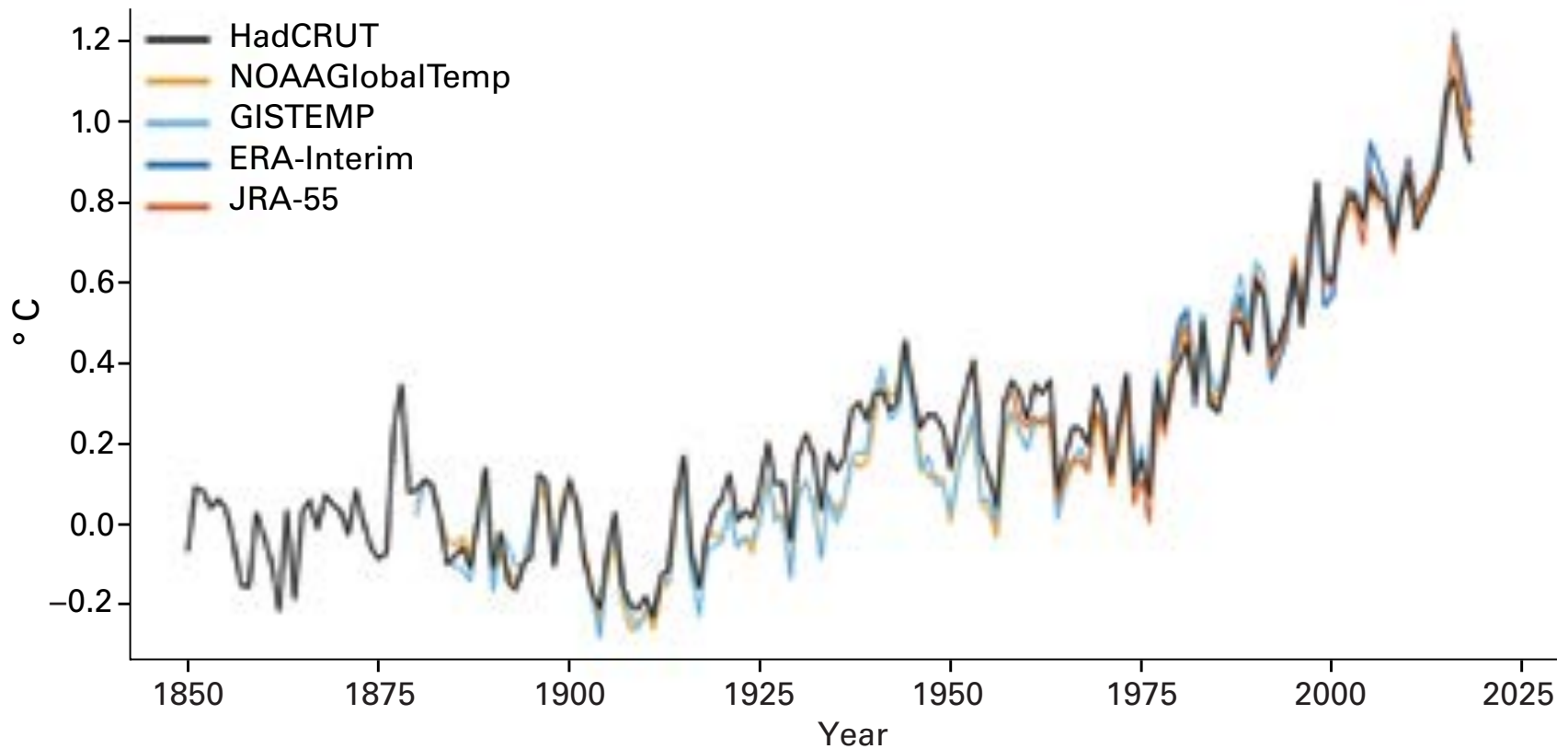
Glaciers

Ocean heat

Sea level

Arctic and
Antarctic
sea-ice extent

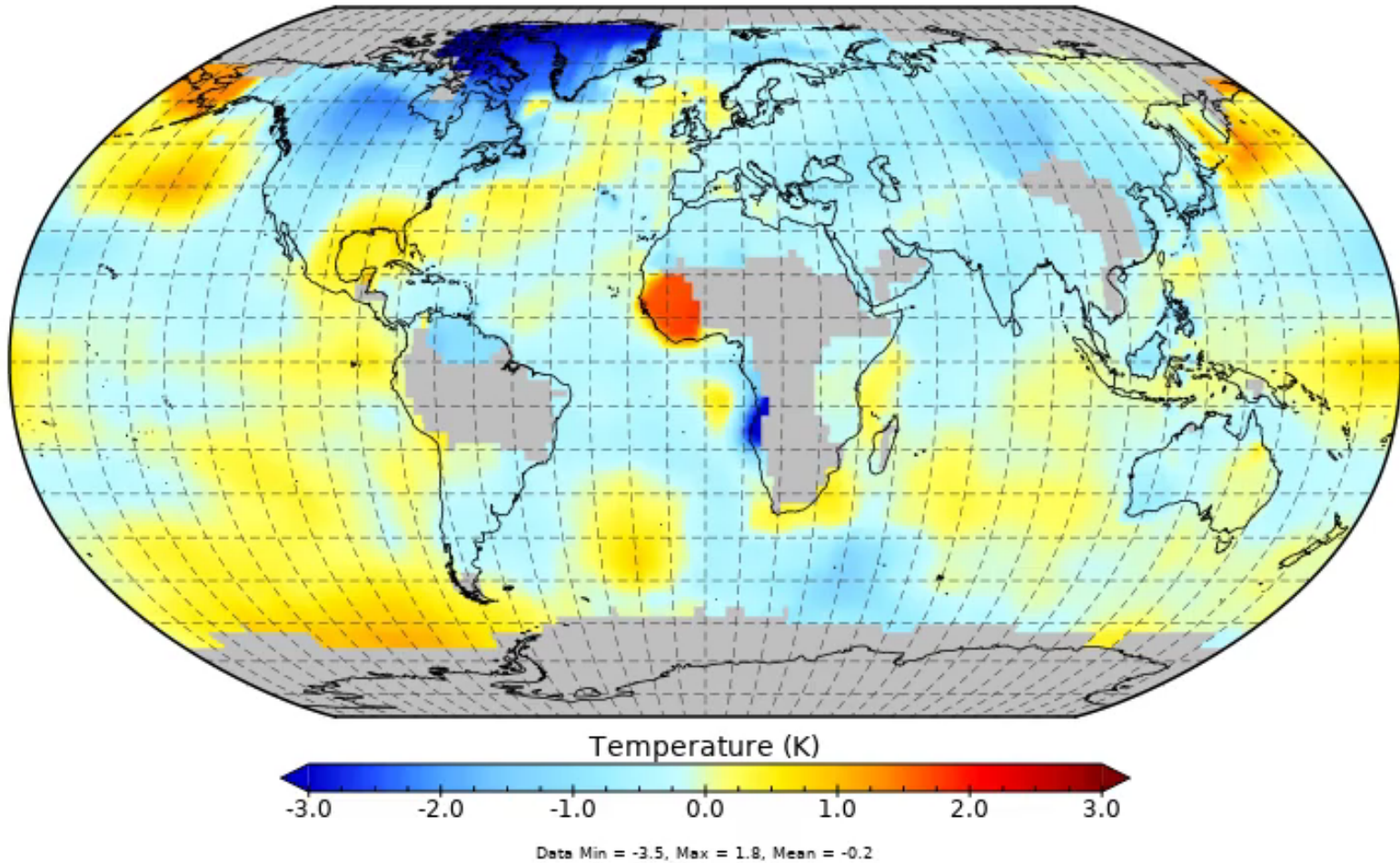
Global Mean Surface Temperature



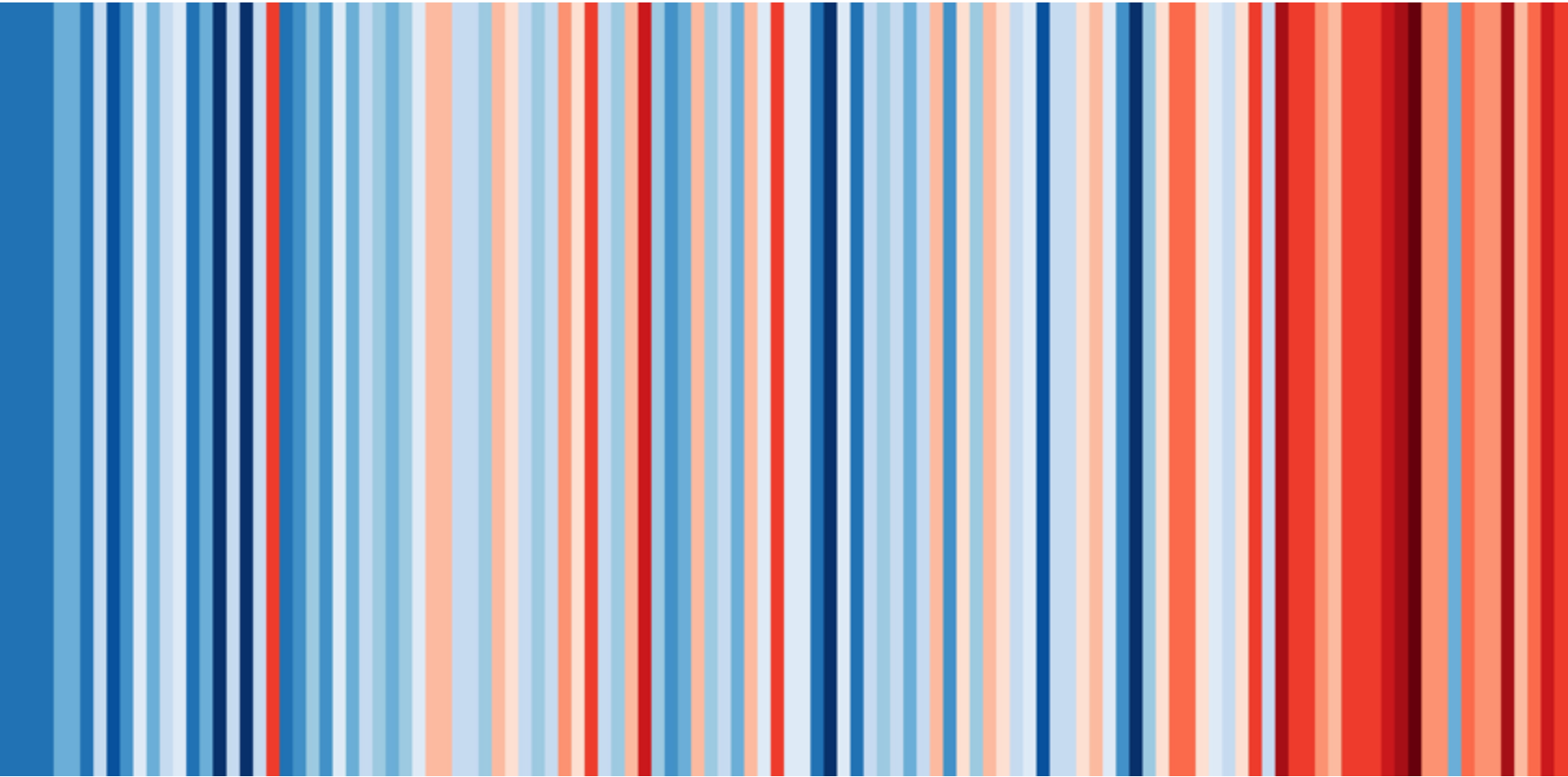
- Combines land & marine data
- In 2015 a record level of 1°C higher than in 1850
- Industrial revolution

Global Mean Surface Temperature 1880-2017

Annual Surface Temperature Anomaly base 1951-1980
1880-1884



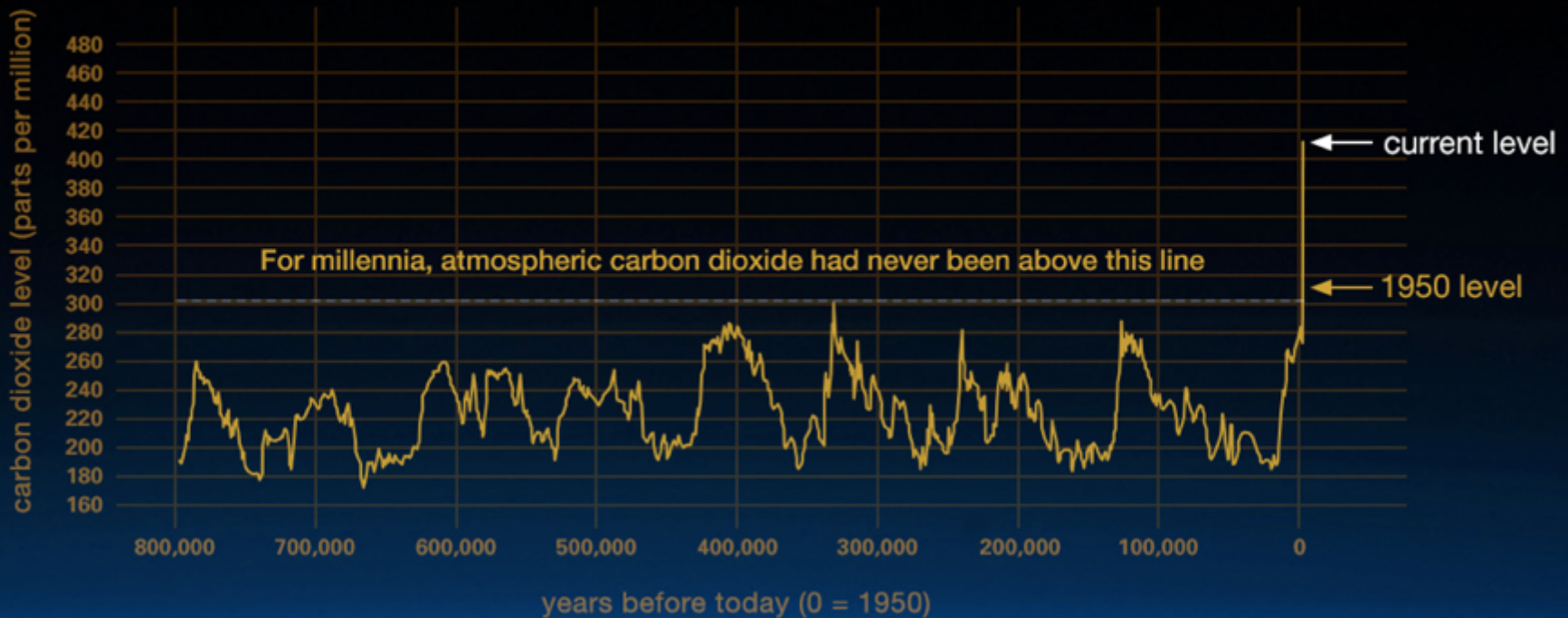
Annual Average Temperatures for Ireland



- The first line on the left is the temperature in 1801 and the temperatures increases as we move across to the 2018 temperature (far right)
- Berkeley Earth data

<https://showyourstripes.info/stripes/EUROPE-Ireland--1901-2018-BK.png>

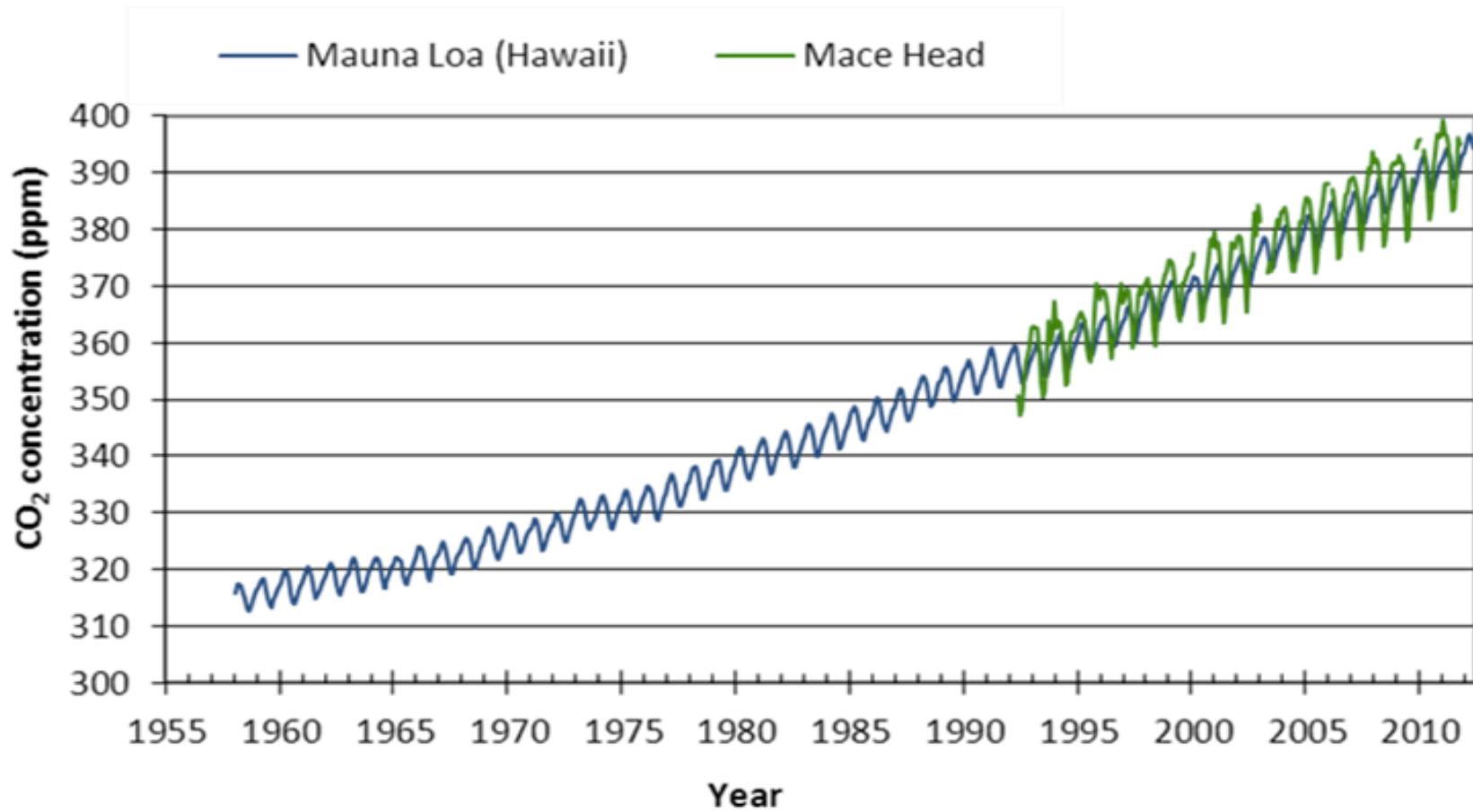
CO₂ Concentration in the Atmosphere



- Graph shows scale of the CO₂ spike over 800,000 years
- Record highs >400 ppm
- Other Greenhouse Gases also like: CH₄, H₂O and N₂O

Atmosphere CO₂ Concentration in Mace Head

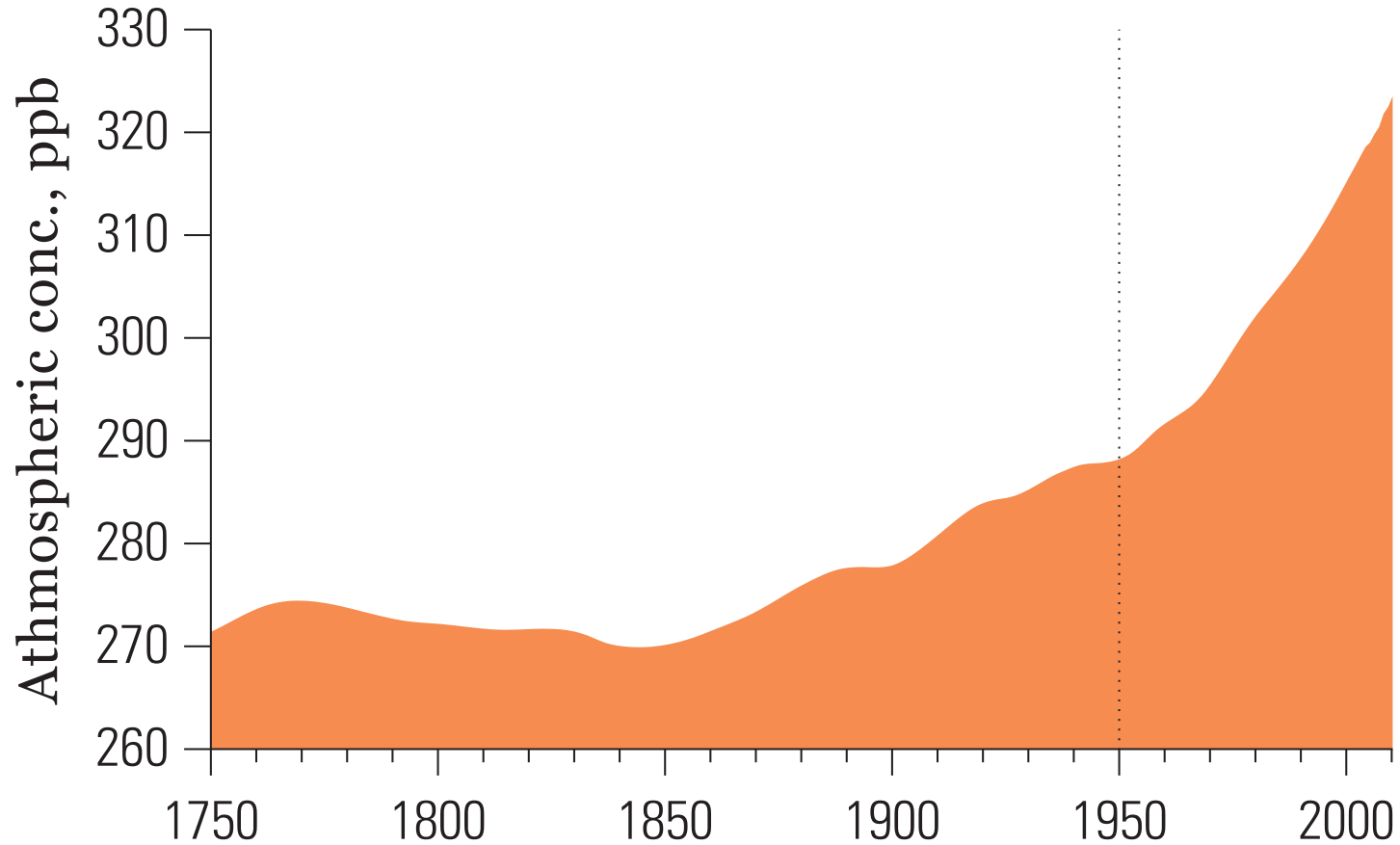
Carbon Dioxide (CO₂) (1958-2012) monthly mean concentration



(Dwyer,2013)

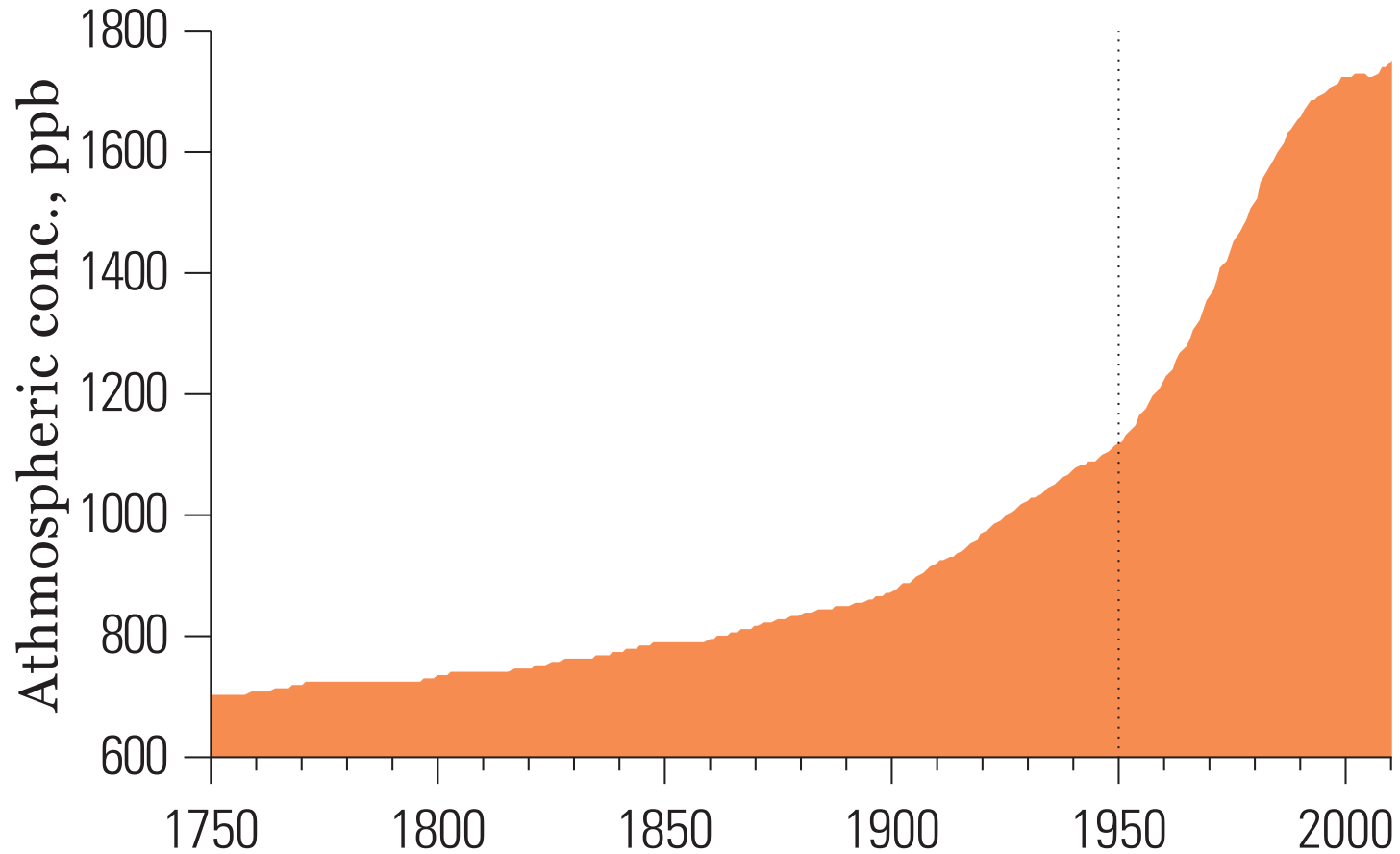
Nitrous Oxide Concentrations in Atmosphere

NITROUS OXIDE

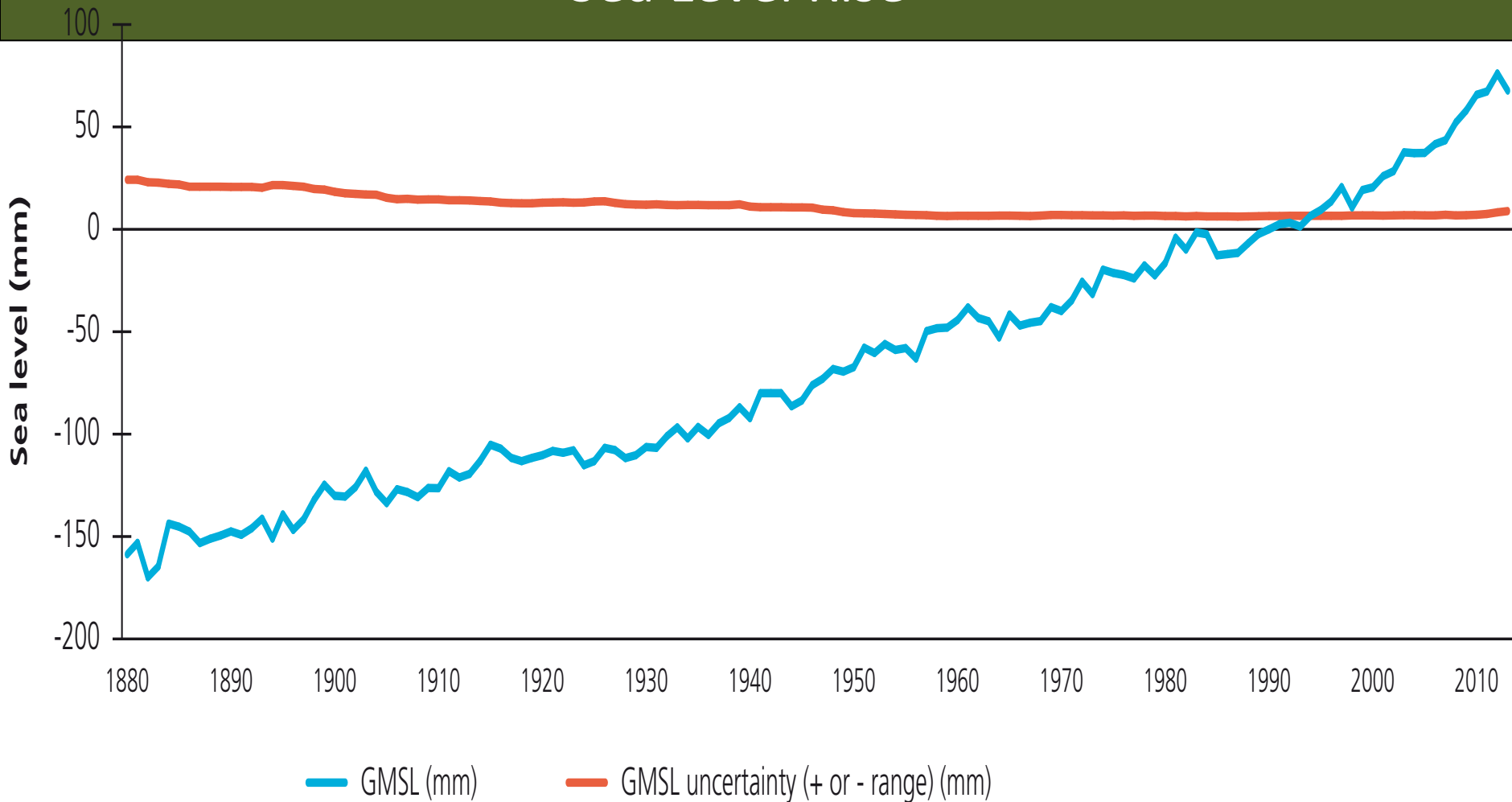


Methane Concentrations in Atmosphere

METHANE



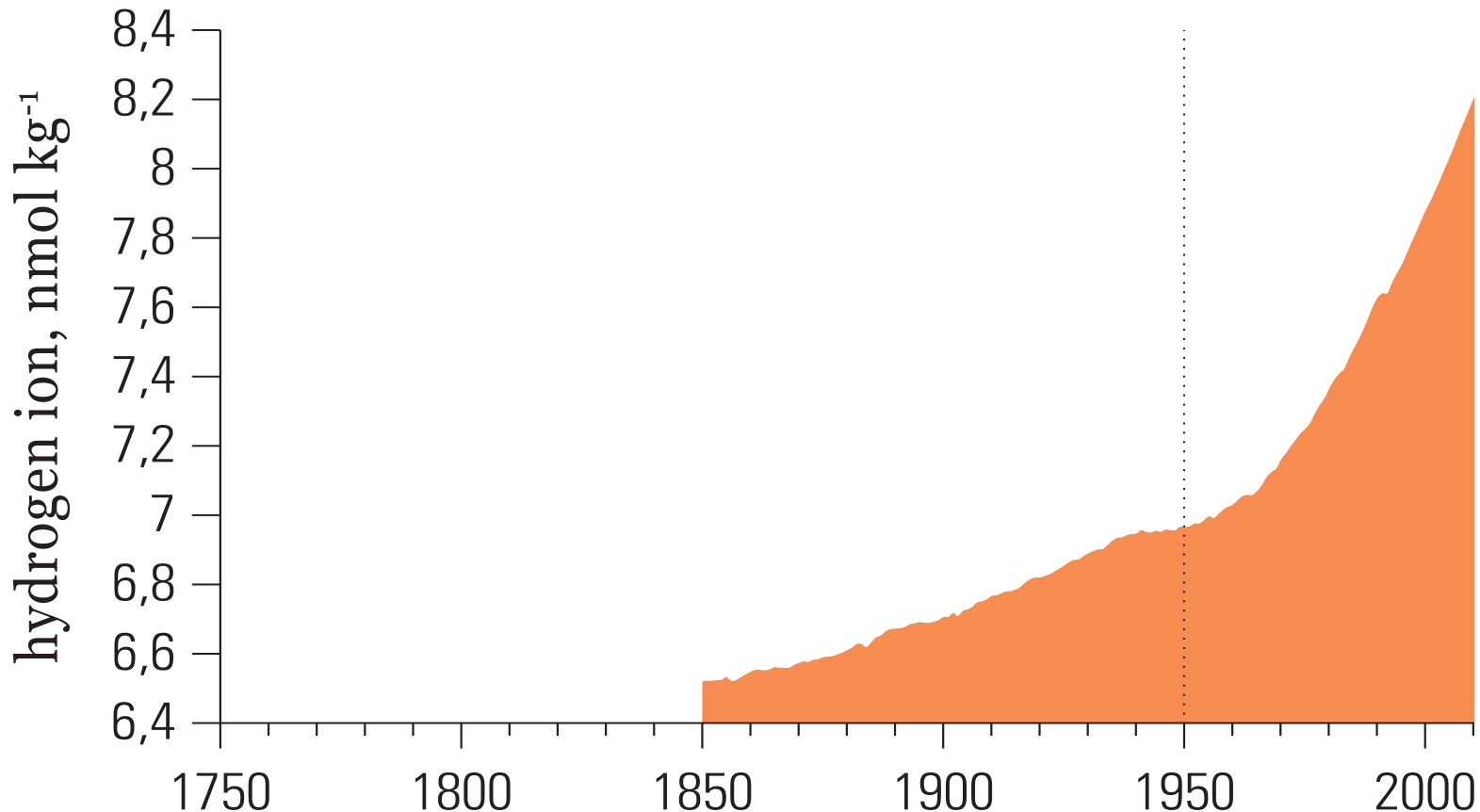
Sea Level Rise



- Heat trapped by oceans leads to thermal expansion
- Global sea level rise of 2 cm each decade in the last century
- Since 1993, average sea level by just over 3 cm per decade

Ocean Acidification

OCEAN ACIDIFICATION



- CO₂ combines with sea water making it acidic
- Changing the chemistry of our oceans

Ice Melt



- Muir Glacier disappears (1941-2004)
- National Snow and Ice Data Centre (link below)
- Photos by W.O. Field and B.F. Molnia

http://nsidc.org/data/glacier_photo/index.html

Iceland Mourns Loss of Glacier

Bréf til framtíðarinnar

Ok er fyrsti nafnkunni jökullinn til að missa titil sinn.
Á næstu 200 árum er talið að allir jöklar landsins fari sömu leið.
Þetta minnismarki er til vitnis um að við vitum
hvað er að gerast og hvað þarf að gera.
Aðeins þú veist hvort við gerðum eitthvað.

A letter to the future

Ok is the first Icelandic glacier to lose its status as a glacier.
In the next 200 years all our glaciers are expected to follow the same path.
This monument is to acknowledge that we know
what is happening and what needs to be done.
Only you know if we did it.

Ágúst 2019
415ppm CO₂

Climate Change



Local Impacts

Winter Storms 2013/2014 County Mayo

- Mayo's coastline severely impacted
- Westport, Carrowholly, Achill, Erris
- Roads and pavements destroyed
- Bridges destroyed (Carrowholly)
- Piers damaged
- Blue flag beaches spoiled
- River Moy burst its banks in Ballina

At Elly Bay near Belmullet, a man had to be rescued from his car by the Belmullet fire brigade.



Local Impacts

Storm Eleanor – January 2018 Sligo



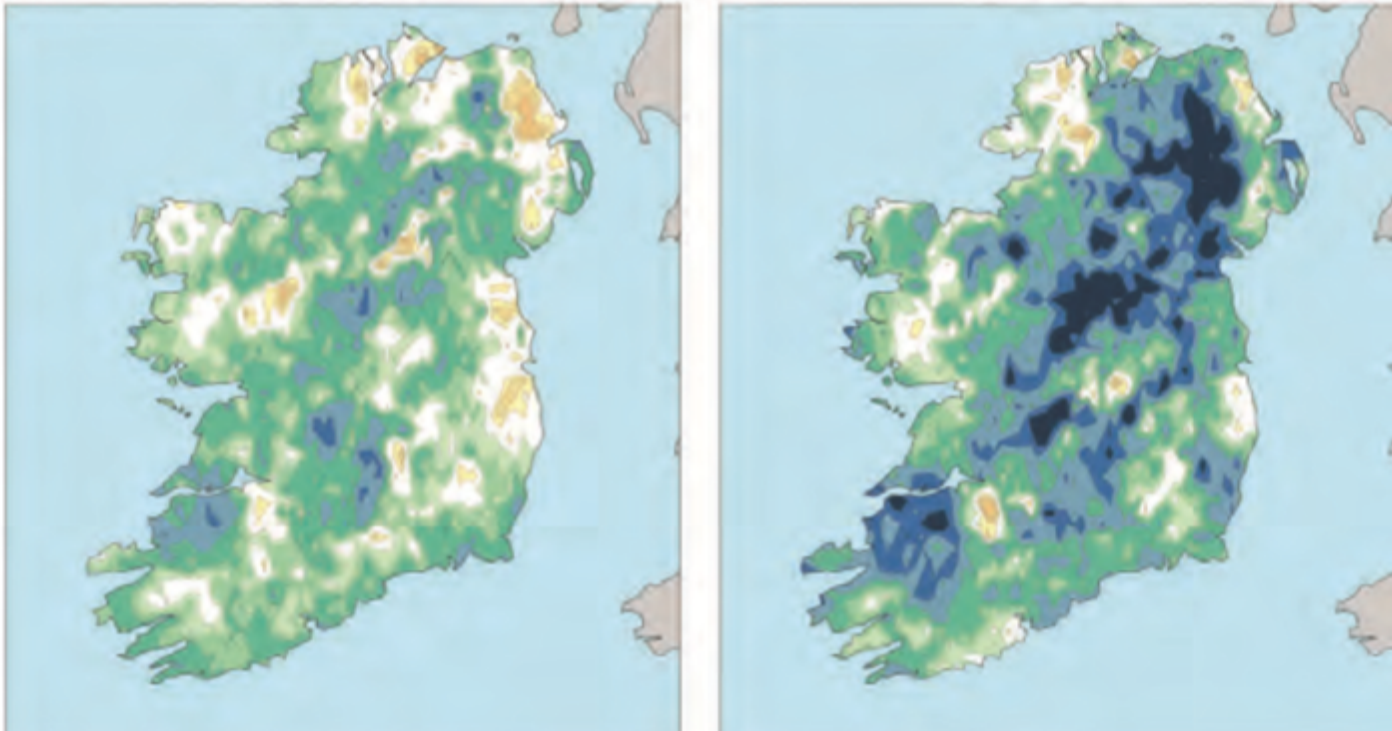
Storm Ophelia – October 2017 Galway



Storm Eleanor – January 2018 Galway



Projections on Precipitation and Temperature



Projections for 2041-2060 compared to 1981–2000

- Increases in summer dry periods
- Increase in the number of “wet days” (>20mm rainfall)
- Increase in the number of “very wet days” (>30mm rainfall)
- The number of frost days is projected to decrease by over 50%
- Increase in the length of growing season of over 35 days per year

Projections on Wind and Storms



Projections for 2041-2060 compared to 1981–2000

- A decrease in wind speeds for summer and increases for winter
- Small increases in extreme wind speeds
- The tracks of intense storms will extend further south
- Increase in the intensity of extreme wind storms affecting western Europe

Projections on Sea Levels and Surge



- Satellite observations indicate that sea level around Ireland has risen by 4-6cm since 1990

[The Status of Ireland's Climate 2012. N. Dwyer]

- Increase in global sea levels by 26-55cm (low emissions) and 52-98cm (high emissions)

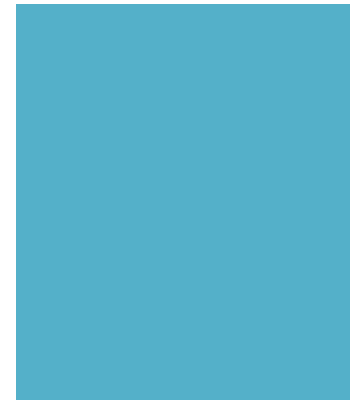
[The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change]

- Surge levels likely to increase by up to 9cm to 2100

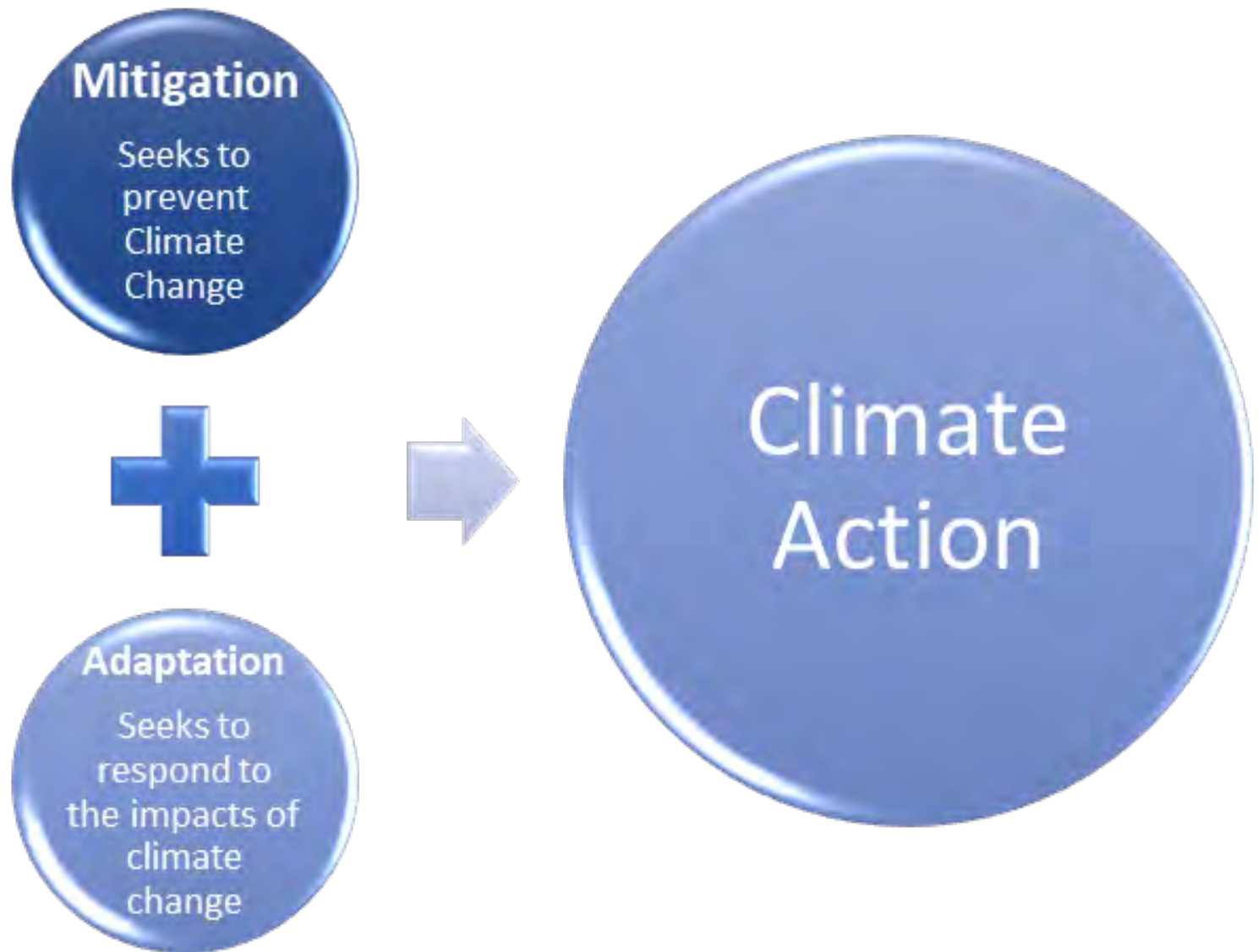
[The Impact of Climate Change on Storm Surge over Irish Waters. Ocean Modelling]

Any questions?

So far.....



Mitigation and Adaptation



Mitigation and Adaptation



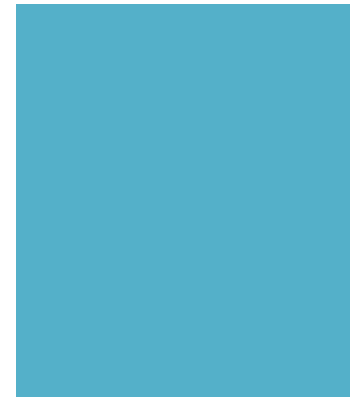
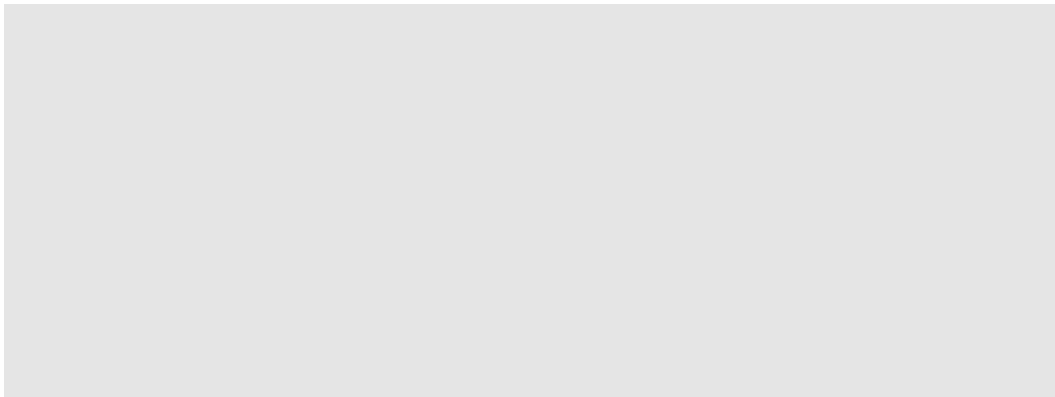
Climate Change: Adaptation and Mitigation

Adaptation

- Seeks to respond to the impacts of climate change
- Anticipating the adverse effects of climate change
- Taking action to prevent or minimise its damage
- Include planning for flooding, storms, winds, precipitation, supporting the vulnerable, heat and drought conditions, coastal fortification and snow and low temperatures
- Planning against flooding impacts on animal welfare, emergency services, & sand bagging.
- Opportunities



Any examples where adaptation is needed?



Gorse Fires in Cavan



38% Mayo is peatland, significant risk of Gorse fire

Adaptation in Action Leenane Bridge

- Bridge over Lahill River
 - Carried up to 4,000 cars each day
 - Collapsed 18th July 2007
 - Torrential rain brought landslides
 - Significant repair
- A senior engineer, Martin Lavelle said: "It wasn't the bridge that was at fault, it was the combination of flood waters and the landslide"



Adaptation in Action



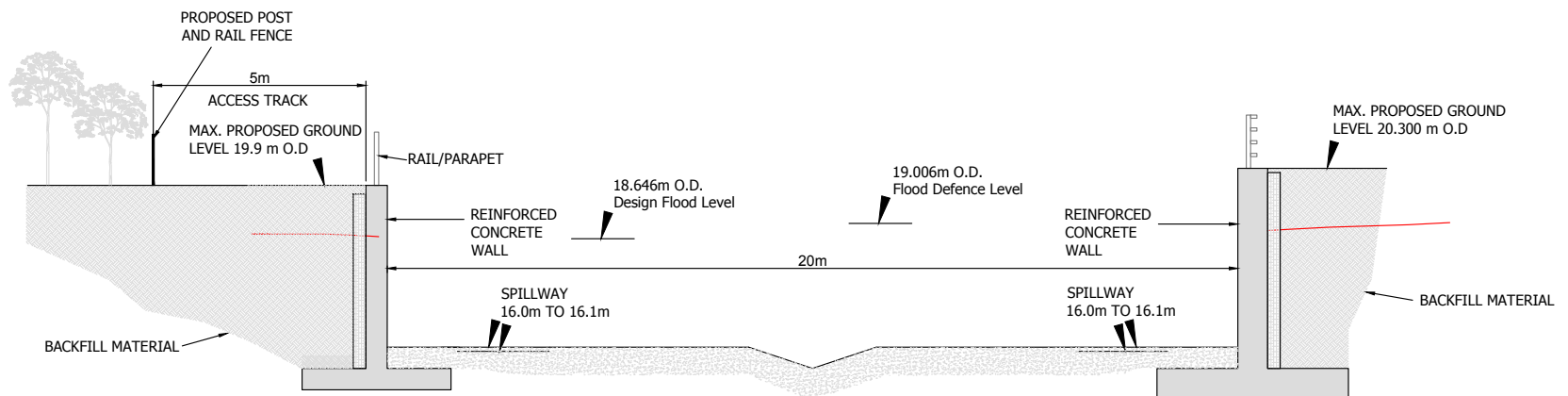
- Lahinch promenade damaged
- Clare Co Co repair
- Consultation
- Shore armour
- Surfers not happy
- Reduced access to shoreline



- Shoreline defence structures
- Armour/boulders
- Waterville, County Kerry
- Typical of shoreline protection works commonly found at Irish coastal sites

Adaptation in Crossmolina

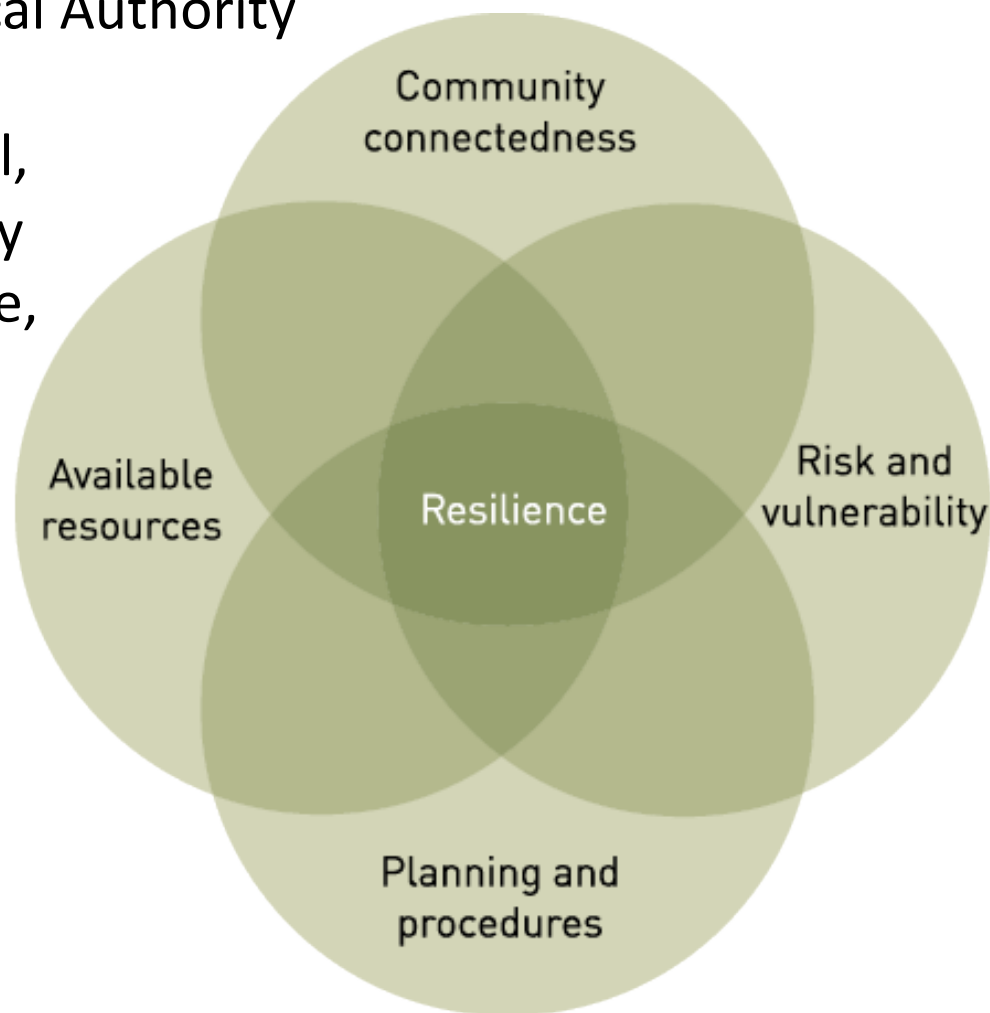
- Plan to divert flow away from Crossmolina
- Crossmolina Flood Action Group
- Collaboration with OPW
- Design stage
- 2 new bridges and road diversion
- Local wardens monitor river depth
- Flood barrier response
- Local Adaptive response to flooding



Building Resilience – Key Elements

Adaptive capacity:

- Flexible and effective governance
- Collaboration community & Local Authority
- ID Risk and response
- Resources such as: social capital, economic resources, community and Local Authority competence, adaptation tools like sandbags, flood barriers etc
- Information - communication
- Resources available to a community



(Norris *et al.* 2008)

Breakout Session



Breakout Session


Breakout session - Building Community Resilience

- 5 minutes – current and past impacts
- 5 minutes - how projected impacts will worsen the impacts?
- 5 minutes - what can be done to build local resilience
- 5 minutes - discussion

Tea Break – 15 minutes



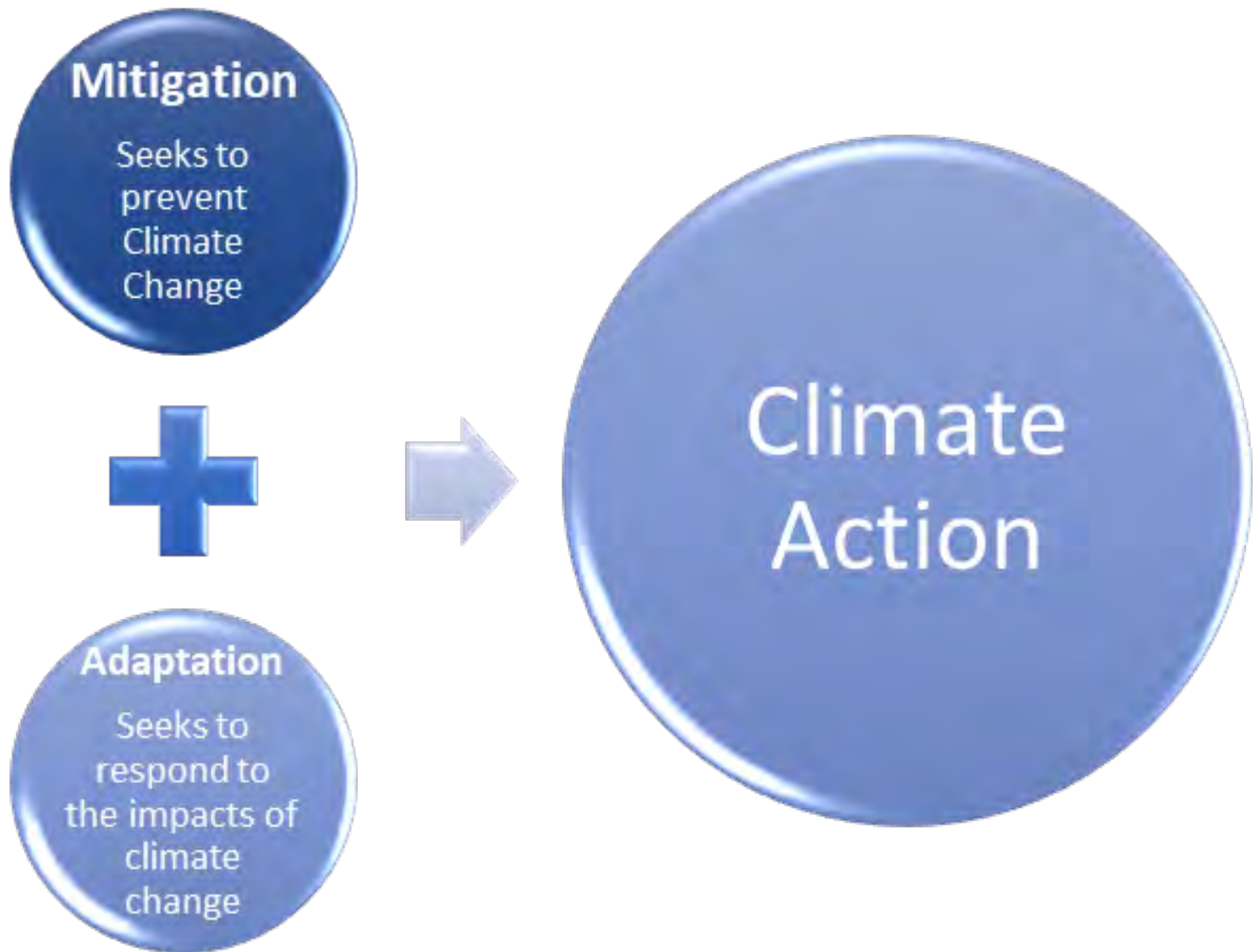
Global Warming



The evidence of human induced climate change is clear and 97% of scientists agree that recent climate warming trends are due to human activities.

Mitigation

Mitigation and Adaptation Session



Mitigation

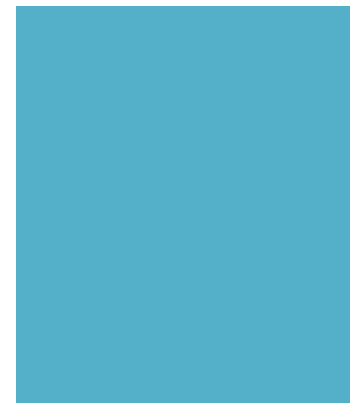
Mitigation

- reduces carbon pollution and greenhouse gas emissions
- energy efficiency
- sustainable energy sources
- sustainable practices and practices
- storing carbon in vegetation, trees, soil and peat
- energy retrofit
- behaviour change and practice
- infrastructure change

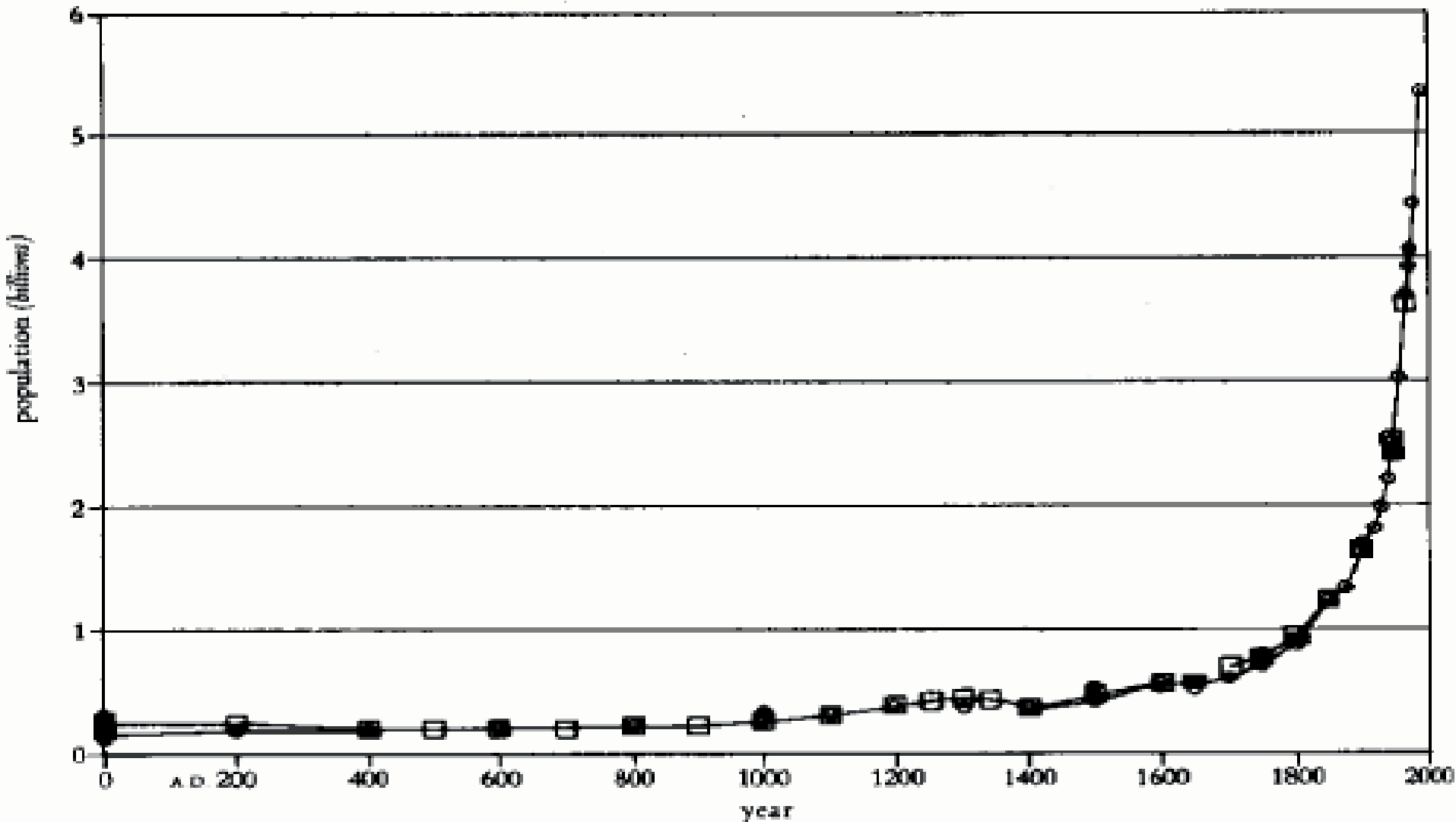


How many of you have heard of the Anthropocene?

What is the Anthropocene?



Population Pressure 2000 years – The Anthropocene



Includes agricultural revolution, industrial revolution now > 7 billion

Your Consumption, your Emissions and your Footprint

Footprinting can use:

- Import and
- Export data

Footprinting also:

- Uses local data
- Carragher
- Foley
- Peters

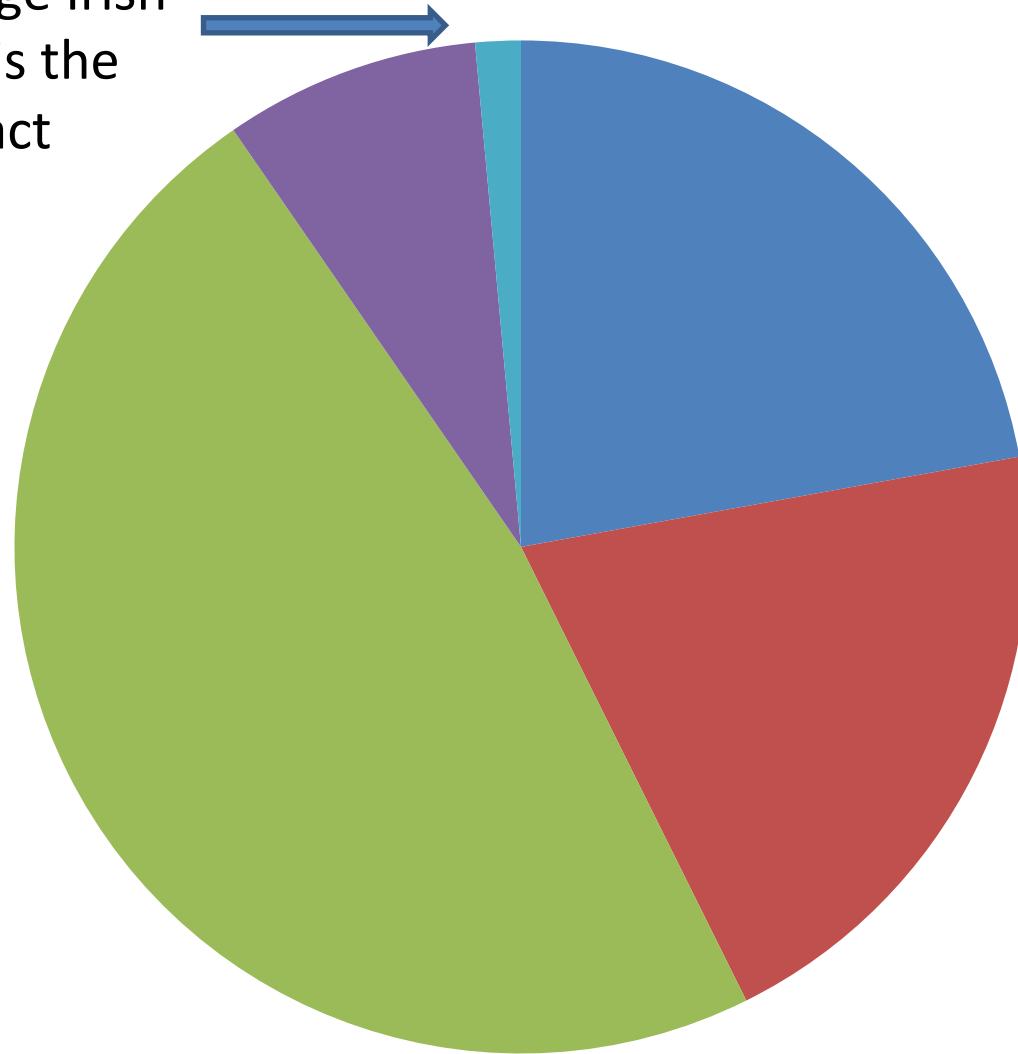


Which of these impacts is Bigger?

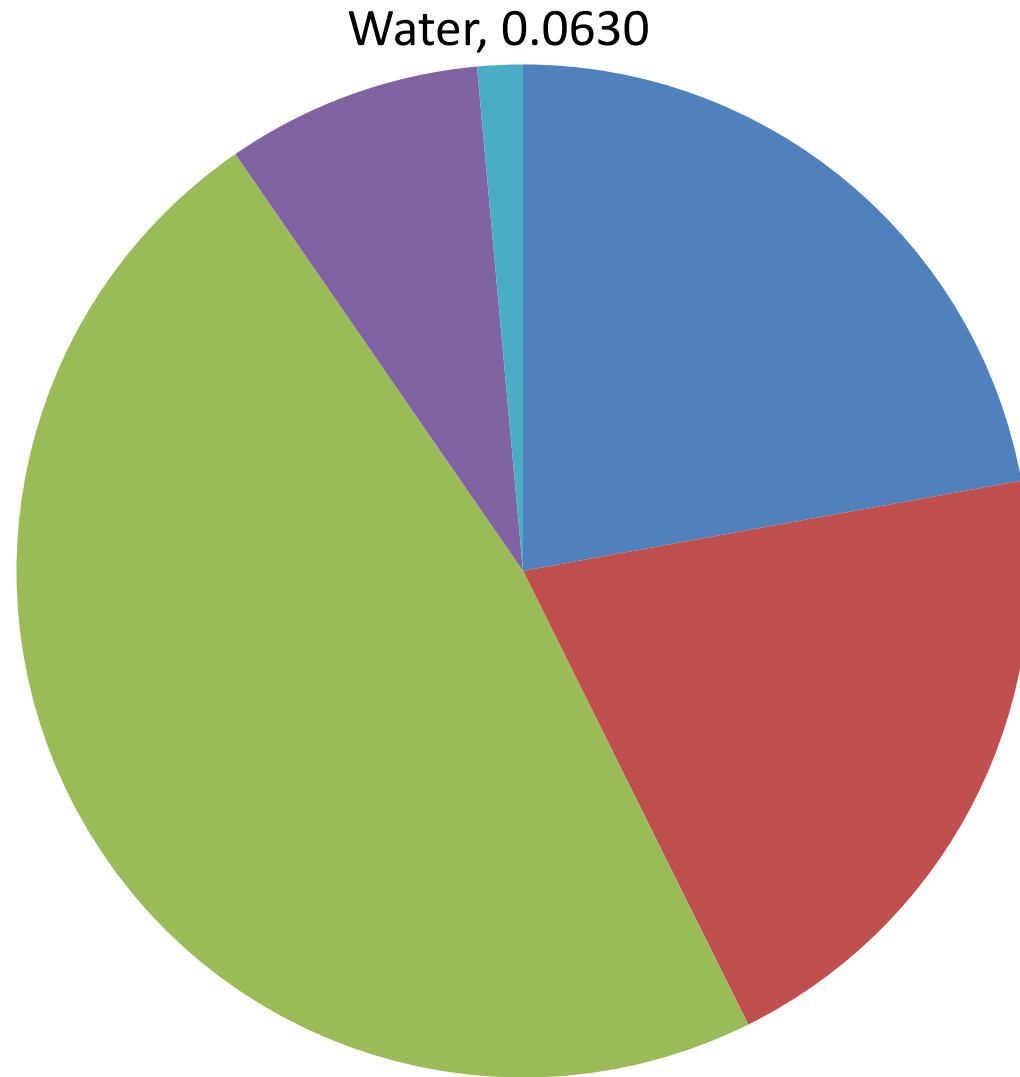


Ecological Footprint (4.3 gHa) 79 Irish Communities

For the average Irish person what is the smallest impact here?

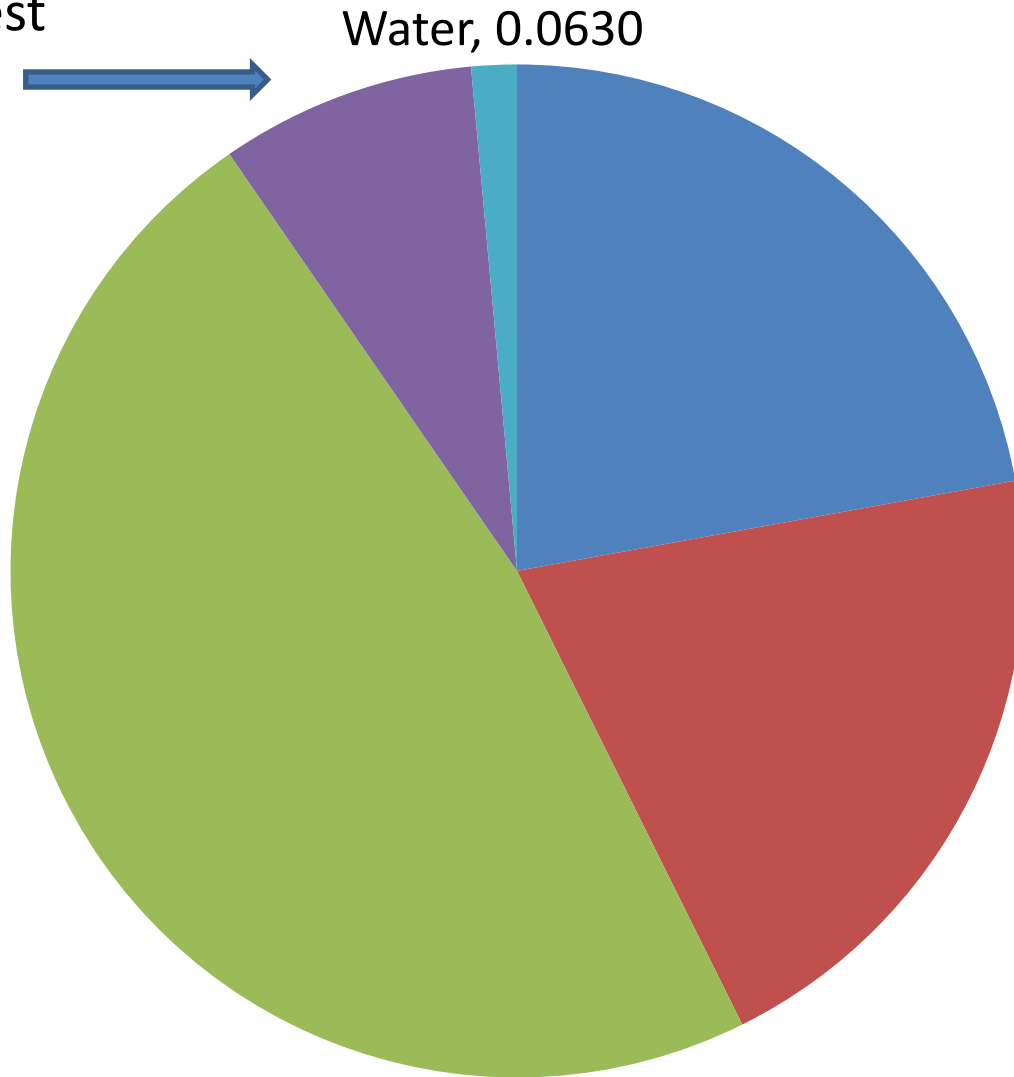


Ecological Footprint (4.3 gHa) 79 Irish Communities

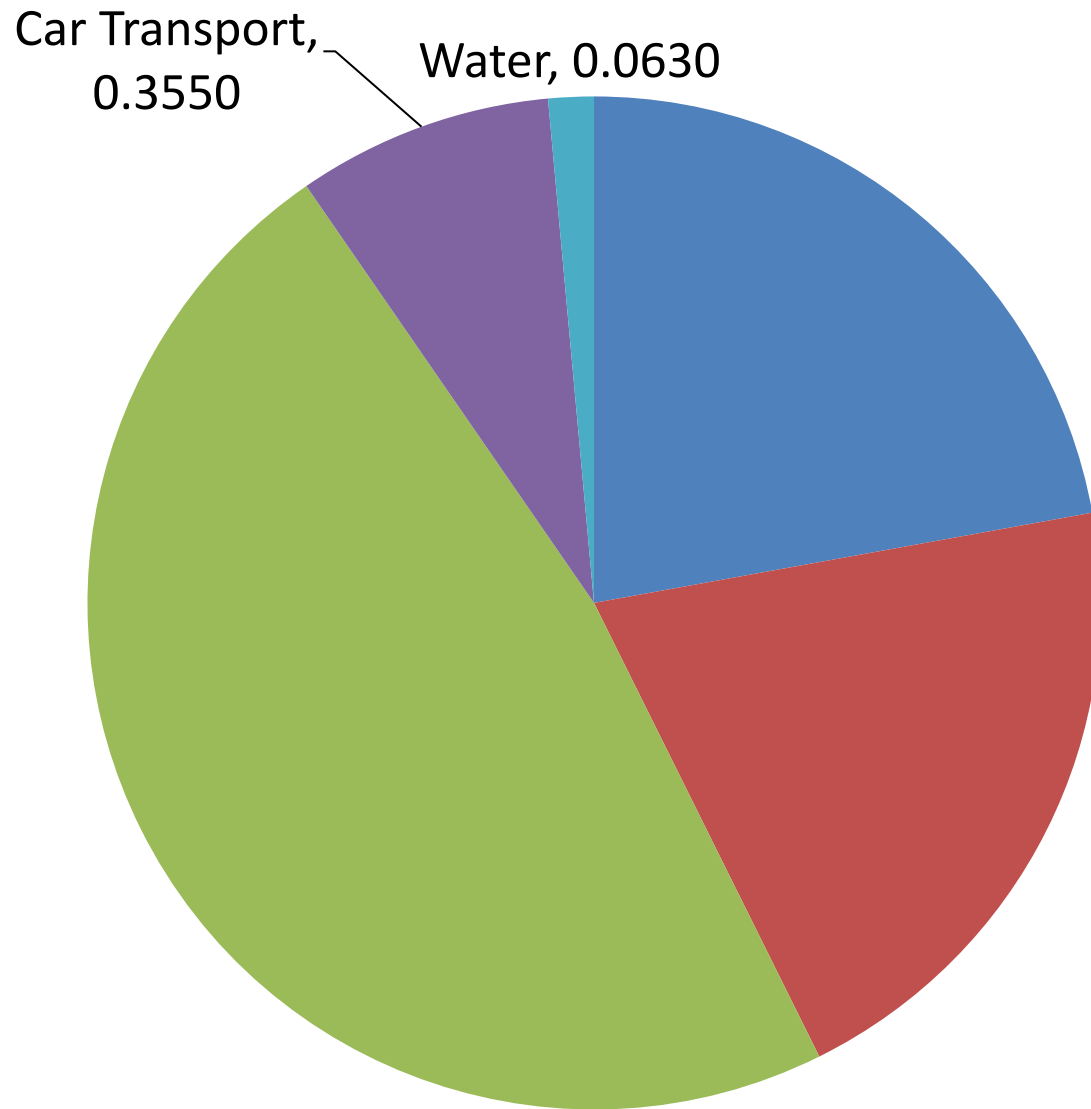


Ecological Footprint (4.3 gHa) 79 Irish Communities

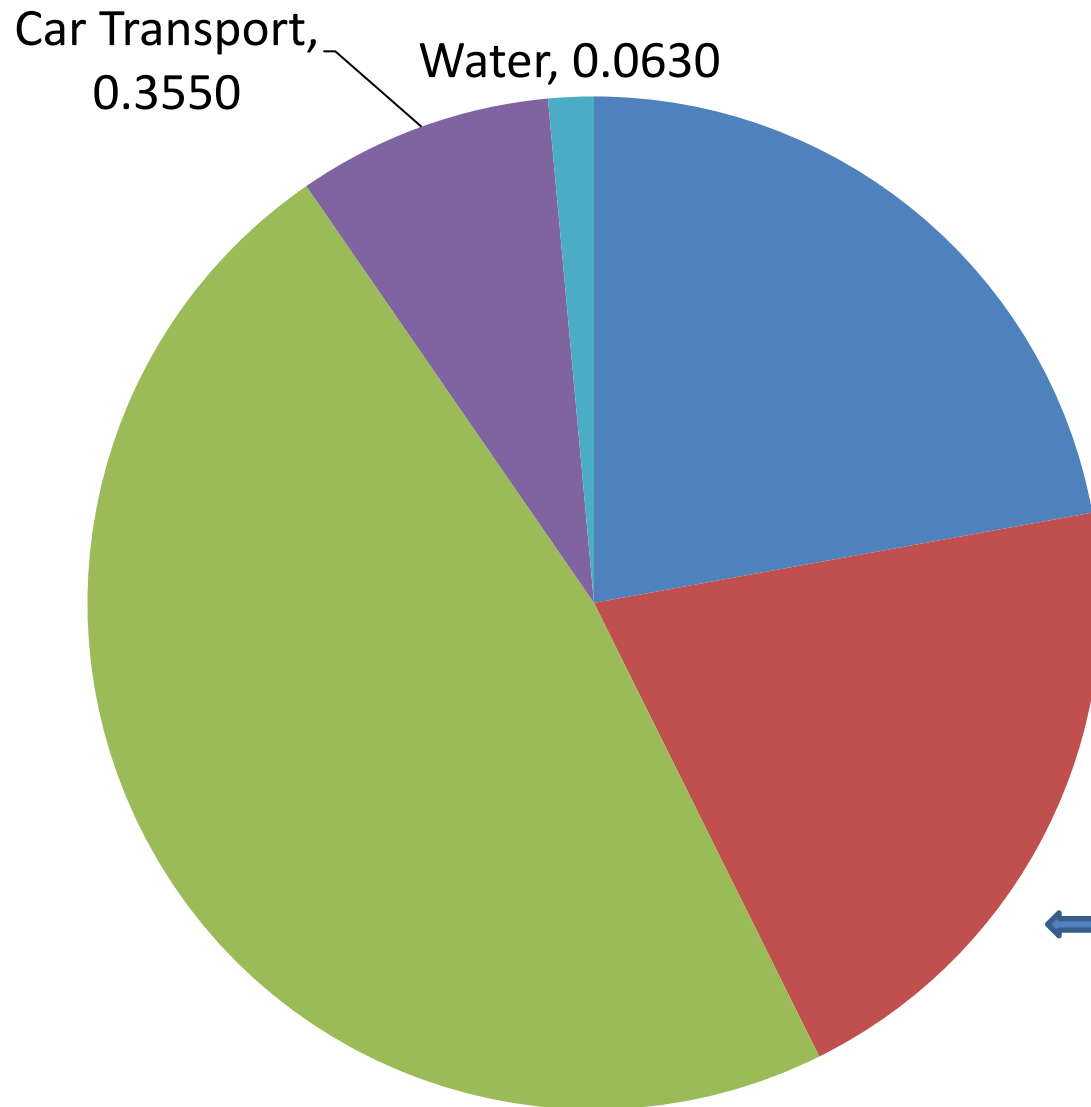
What is next largest impact here?



Ecological Footprint (4.3 gHa) 79 Irish Communities

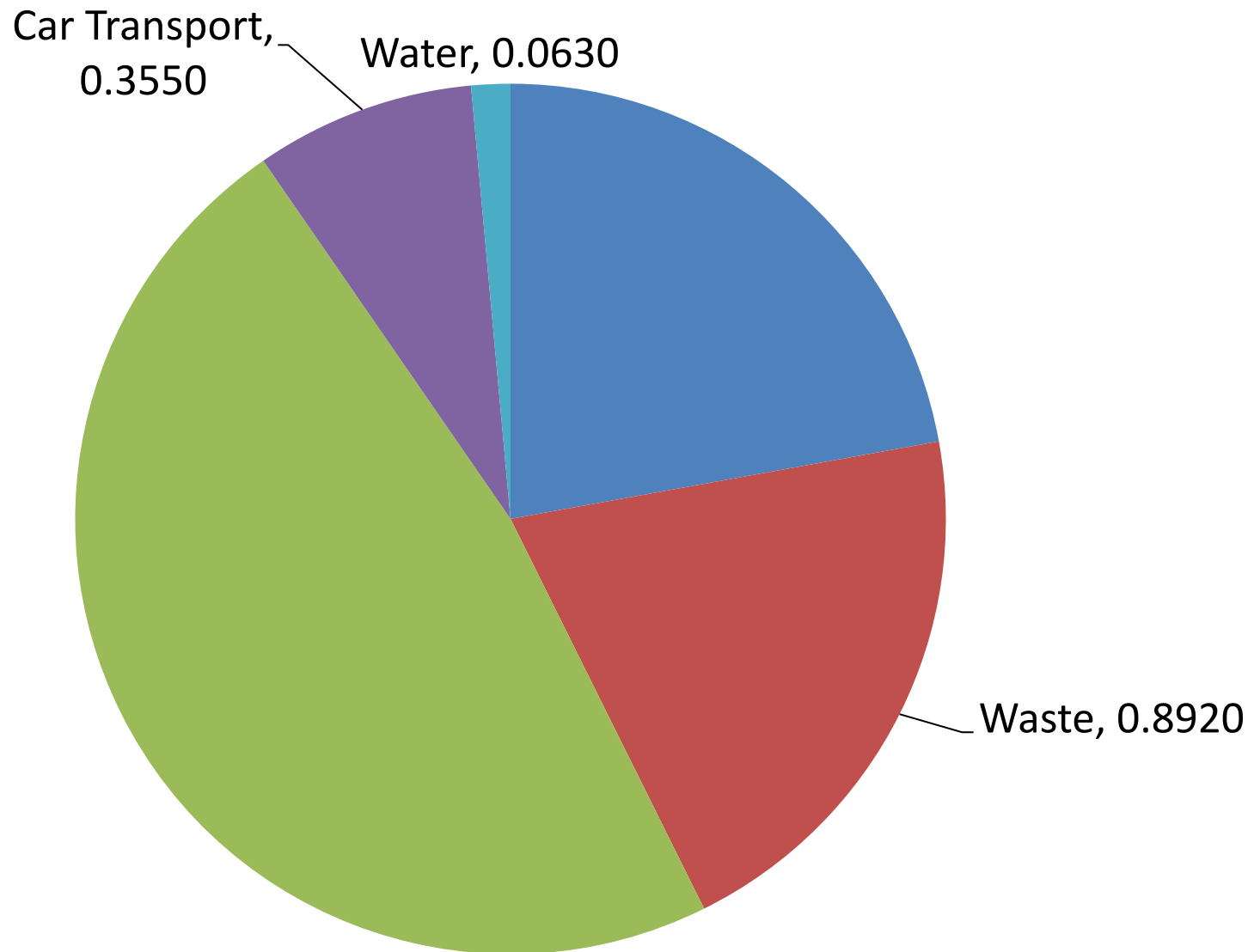


Ecological Footprint (4.3 gHa) 79 Irish Communities

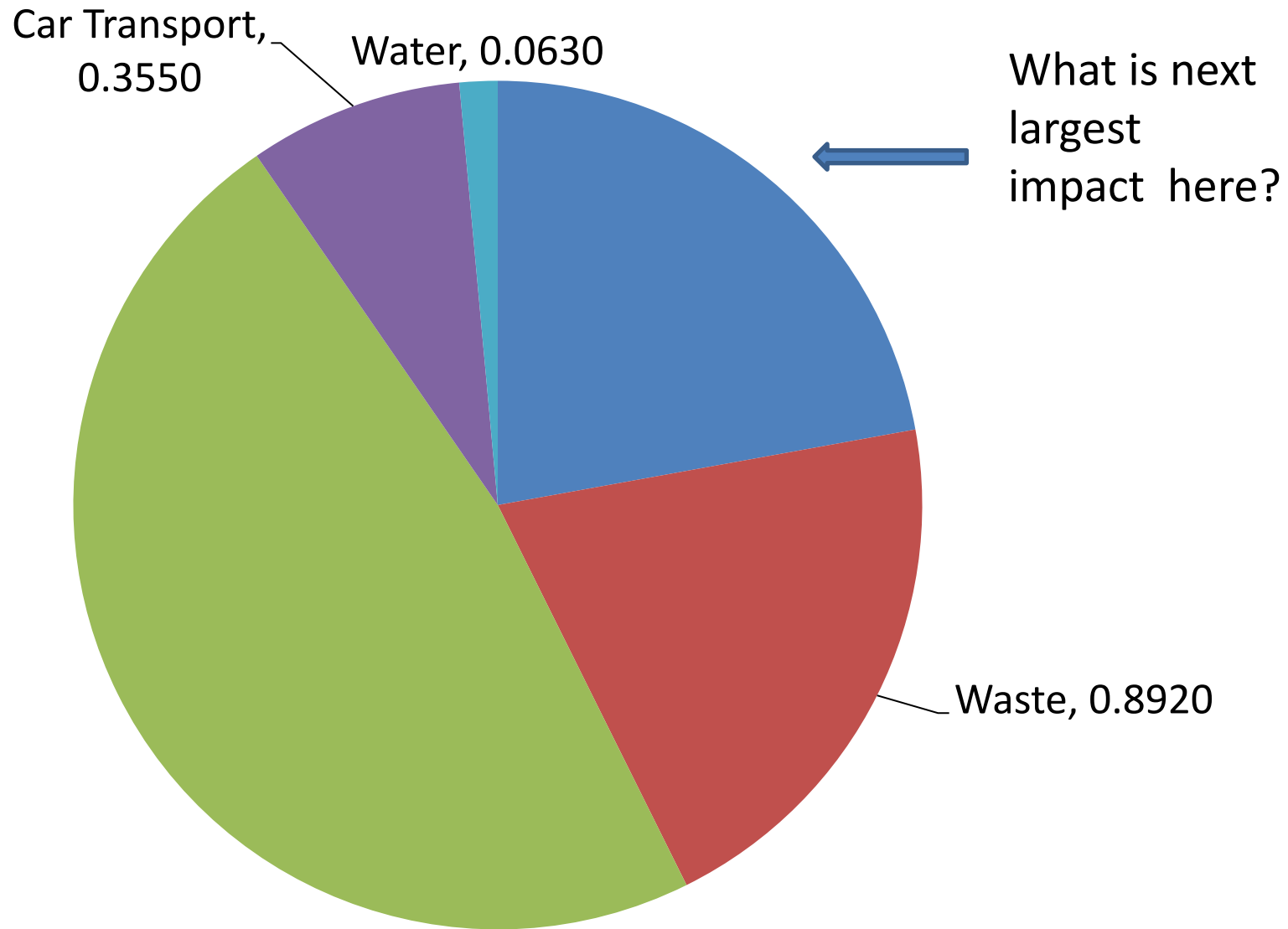


What is next largest impact here? ←

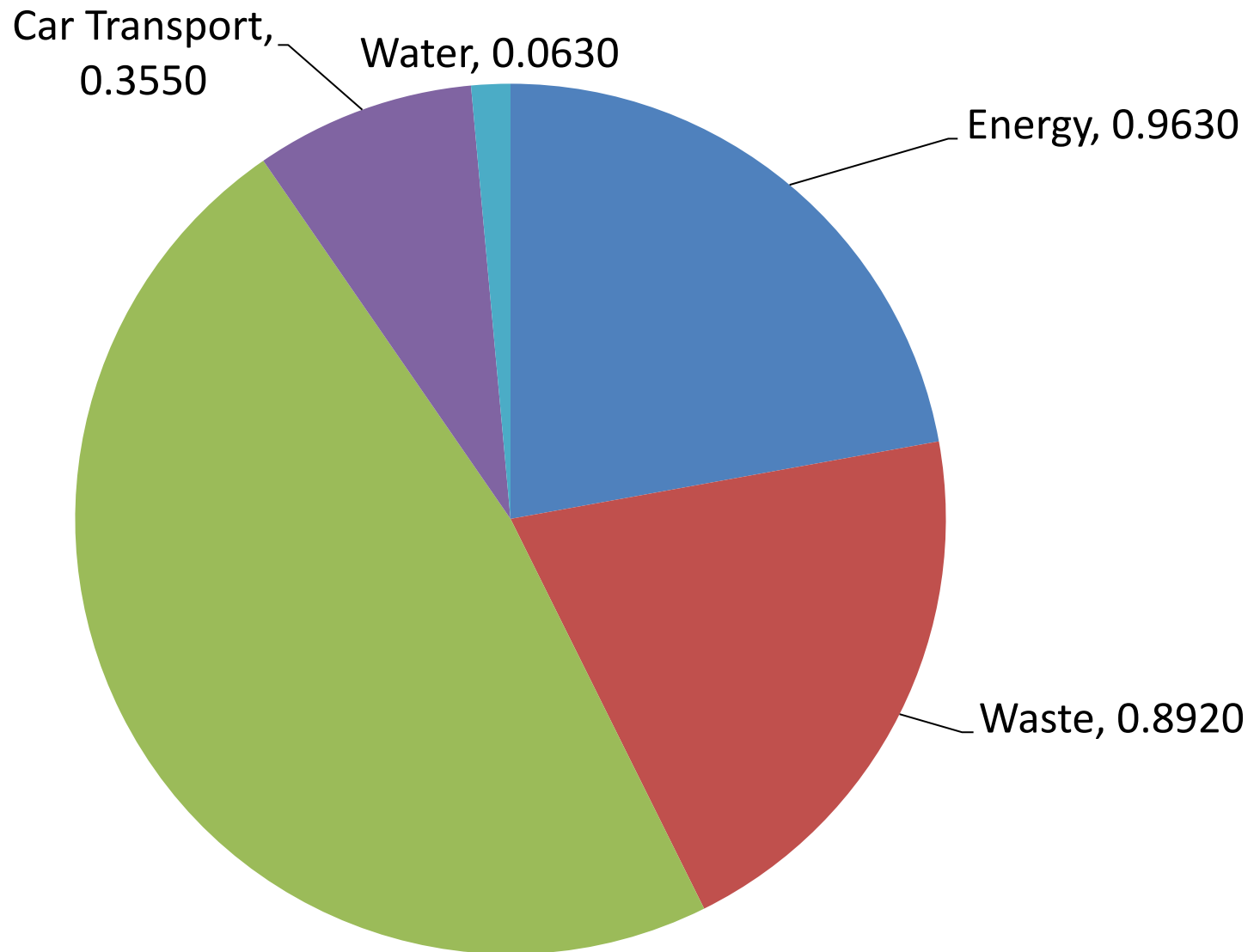
Ecological Footprint (4.3 gHa) 79 Irish Communities



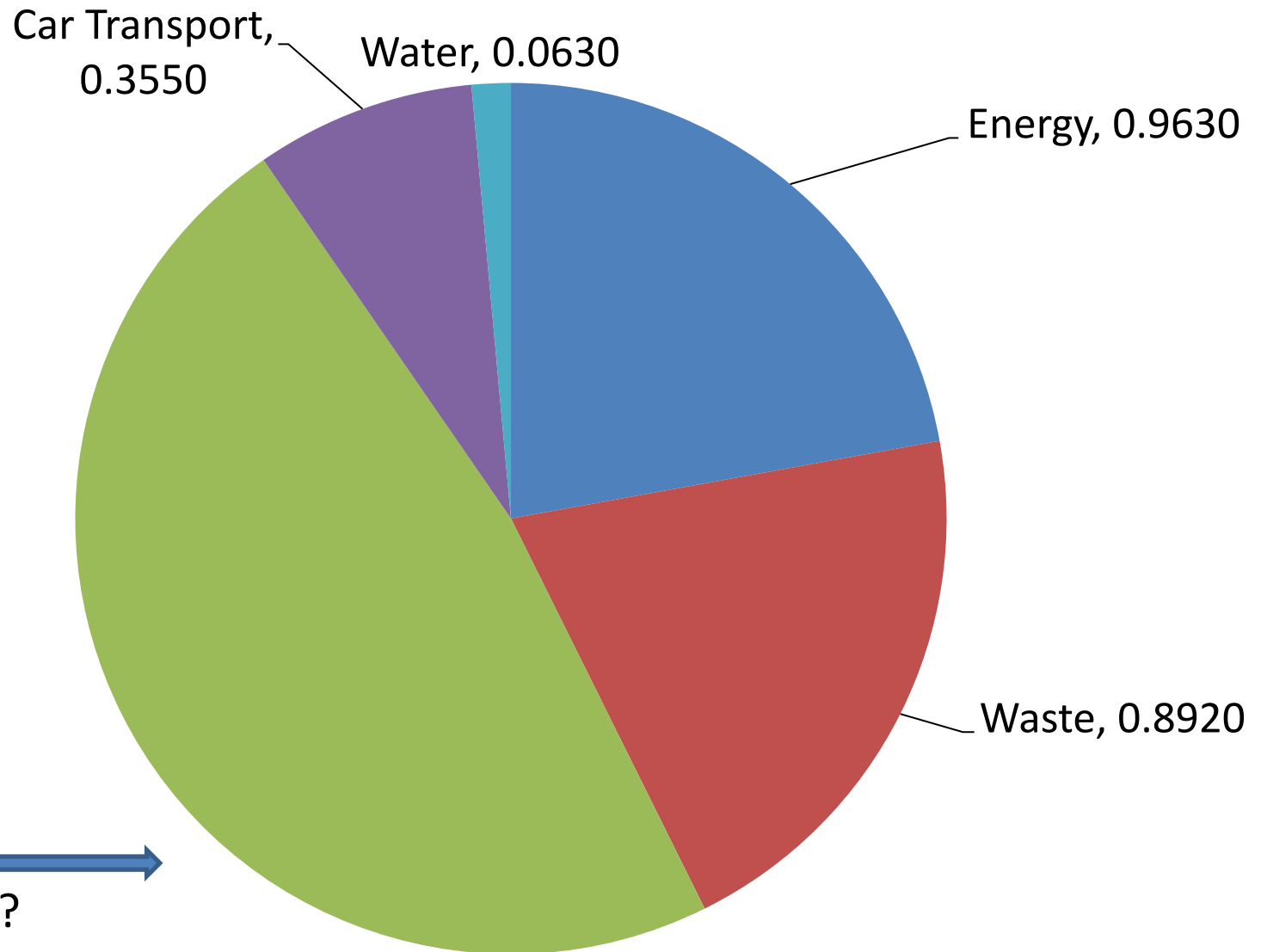
Ecological Footprint (4.3 gHa) 79 Irish Communities



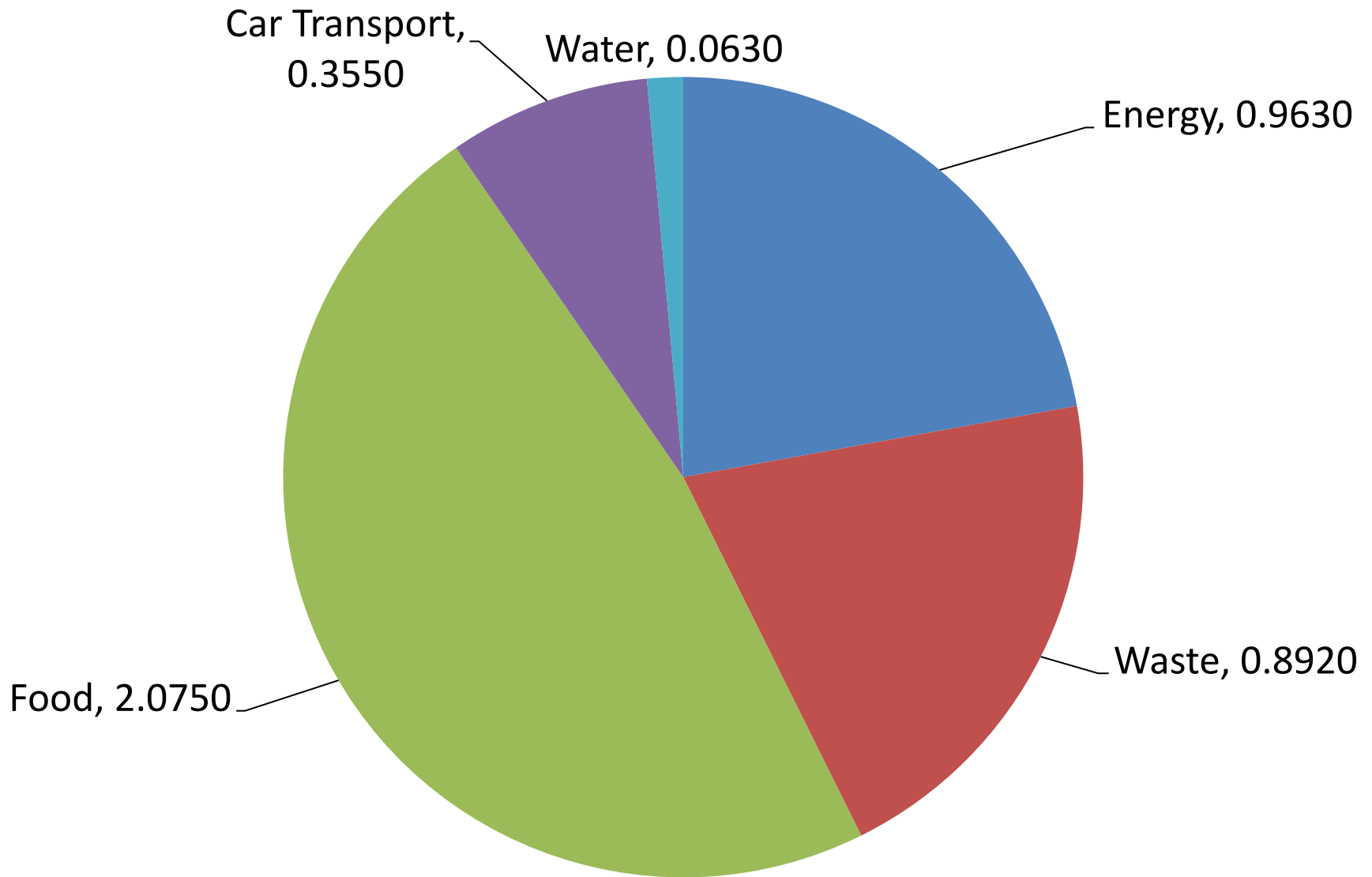
Ecological Footprint (4.3 gHa) 79 Irish Communities



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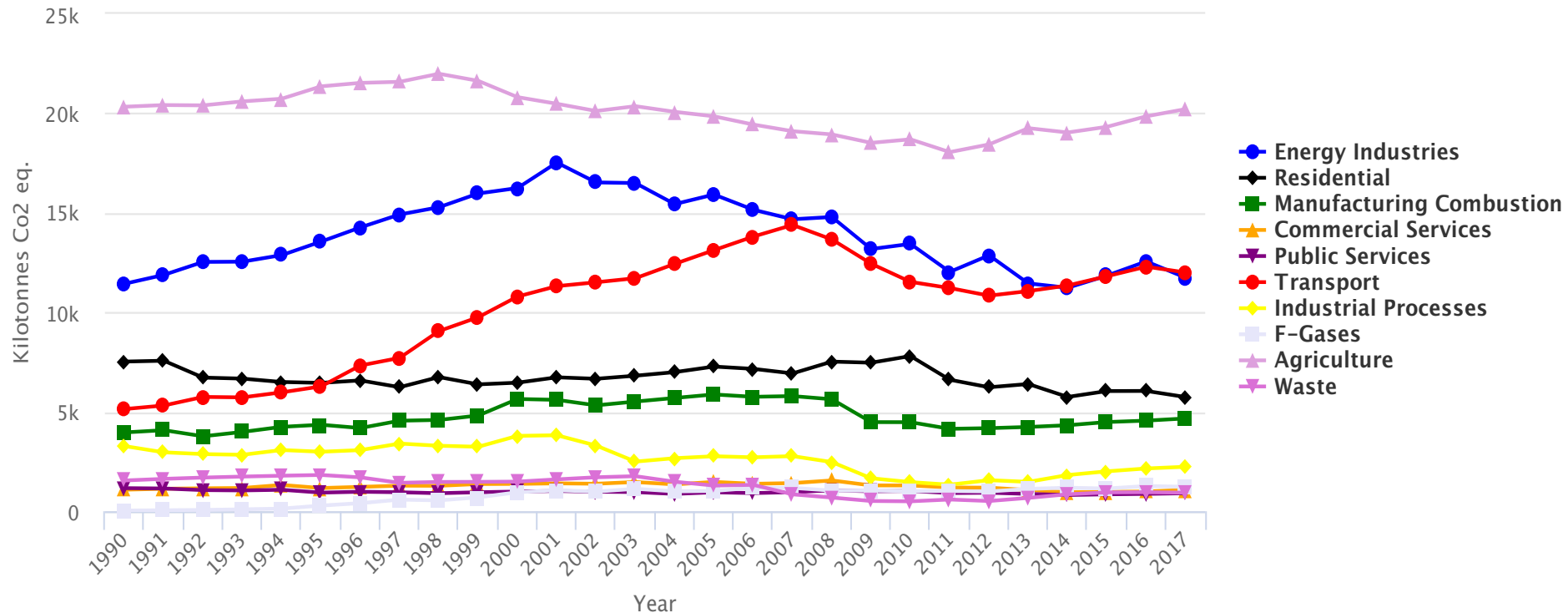
Ecological Footprint (4.3 gHa) 79 Irish Communities



Top-Down GHG Emissions Ireland

Greenhouse Gas Emissions By Sector

Source: EPA

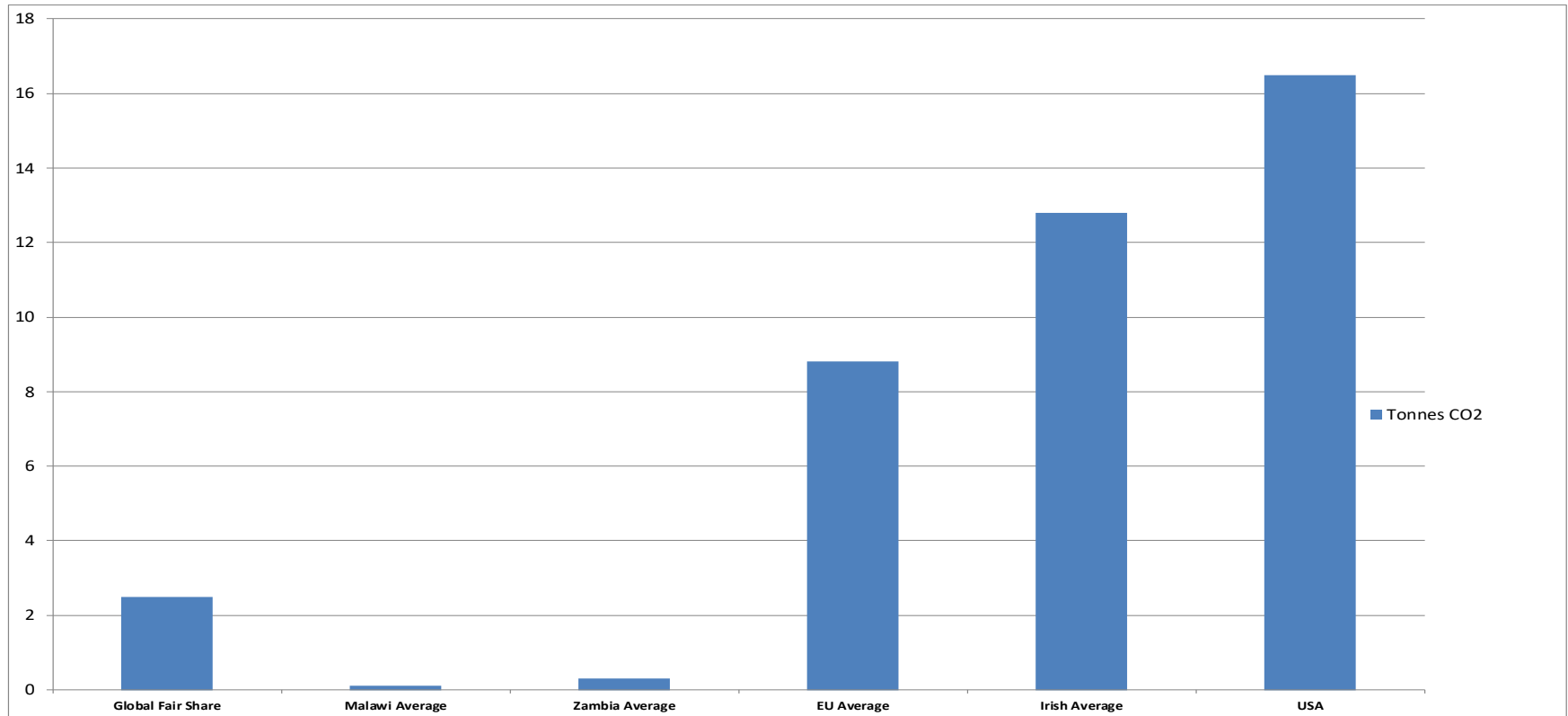


Highcharts.com

- Unlike the previous footprint this uses country data
- Agriculture (food) is top of our emissions (33%)
- Energy Industries are next
- Transport in red has doubled since 1990

CO₂ Emissions per capita

How do you compare?

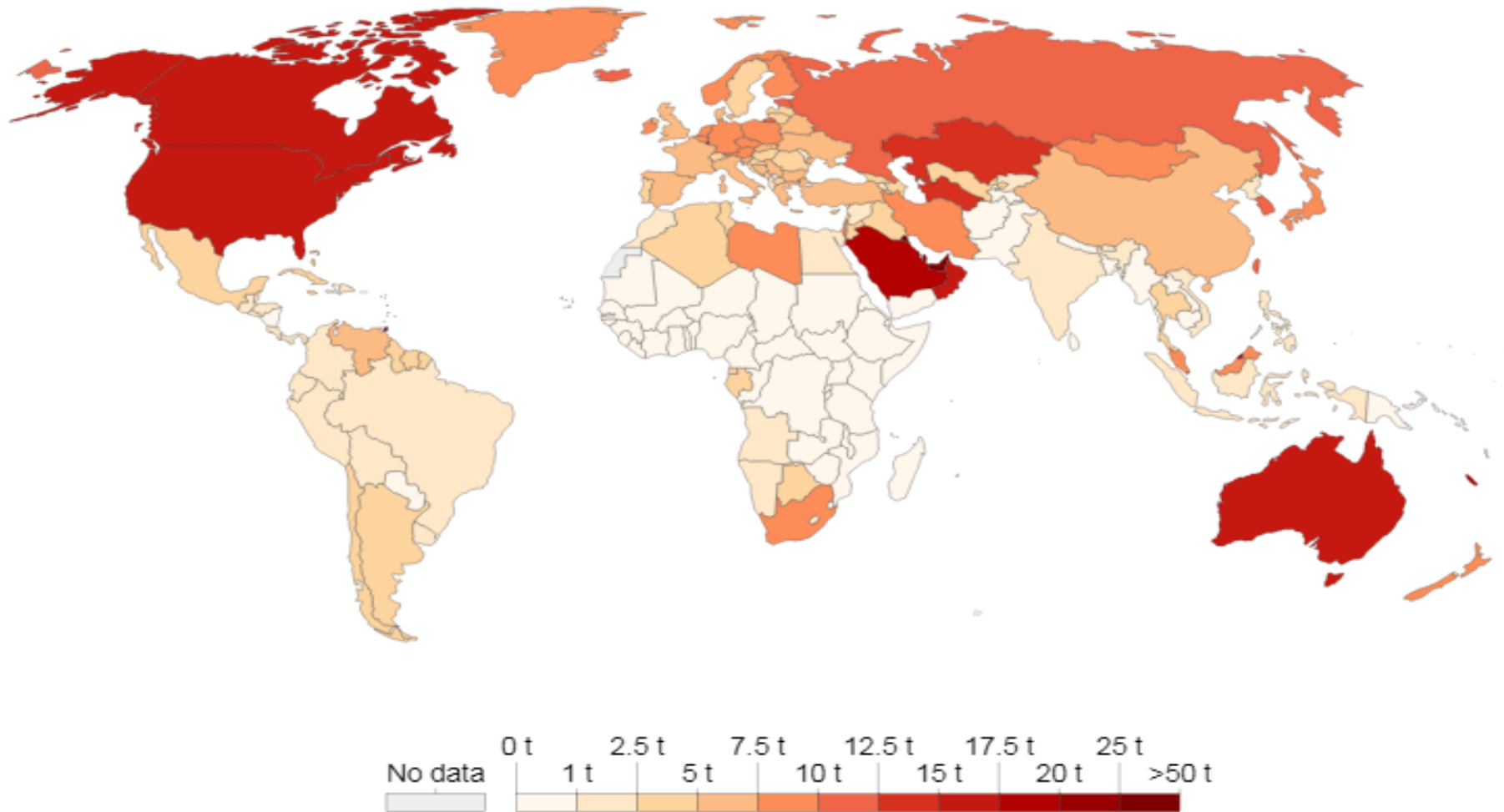


Carbon Dioxide emissions for some countries with Ireland 45% above the EU average

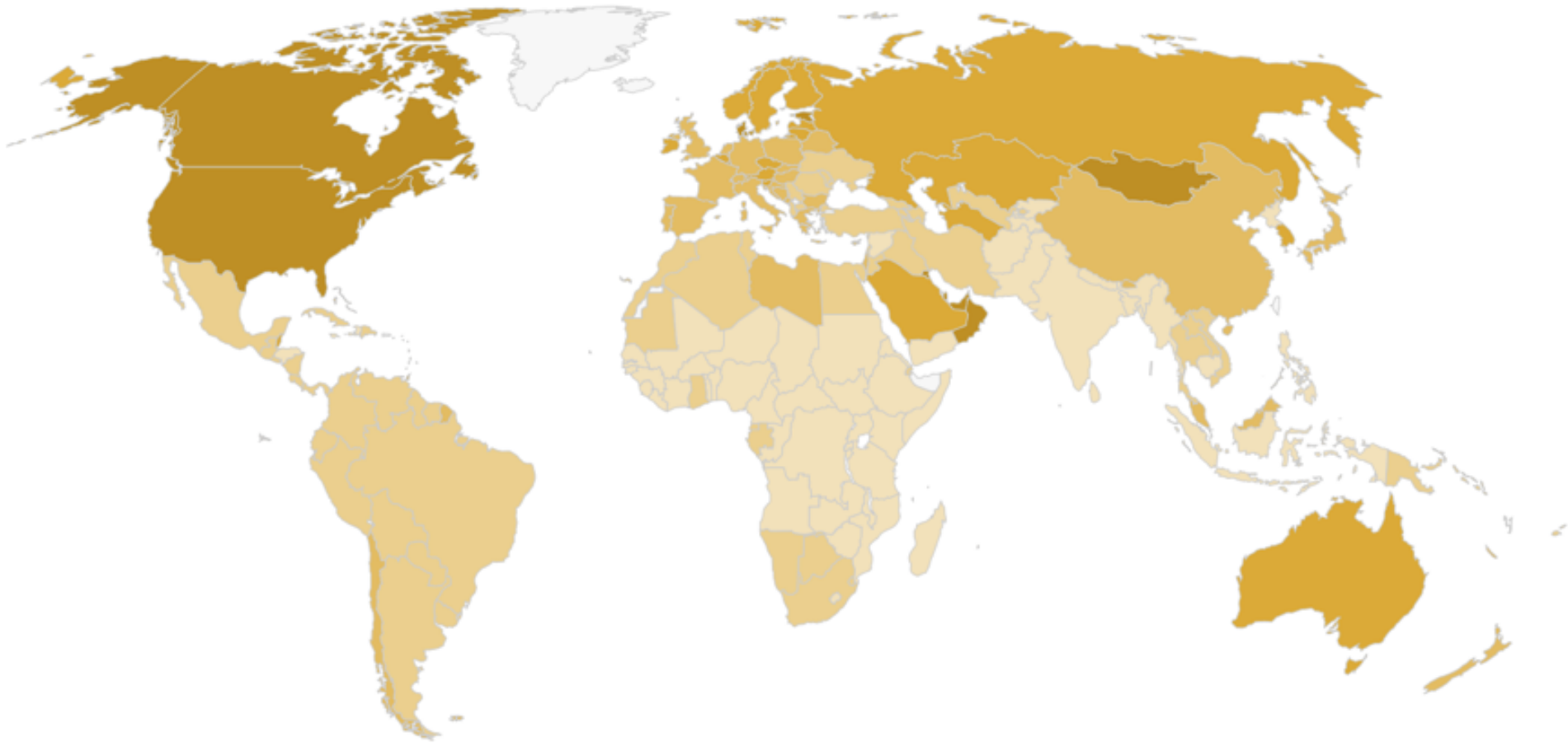
CO₂ Emissions per capita

CO₂ emissions per capita, 2016

Average carbon dioxide (CO₂) emissions per capita measured in tonnes per year.



Country Ecological Footprints – National Data



ECOLOGICAL FOOTPRINT PER PERSON OF COUNTRY'S POPULATION (in global hectares)



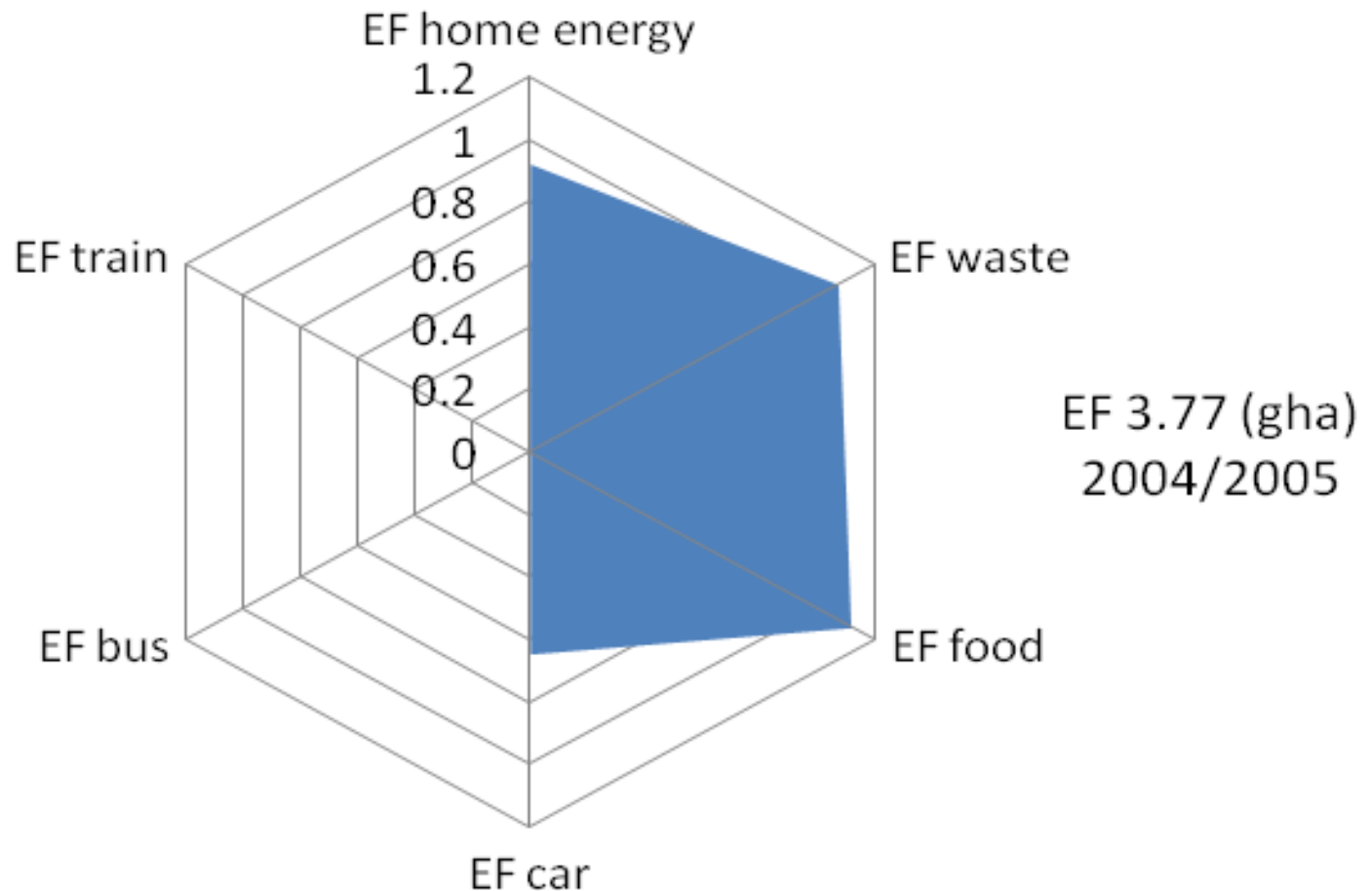
<https://www.footprintnetwork.org/licenses/public-data-package-free/>

Mitigation Case Study – Ballina, Tipperary



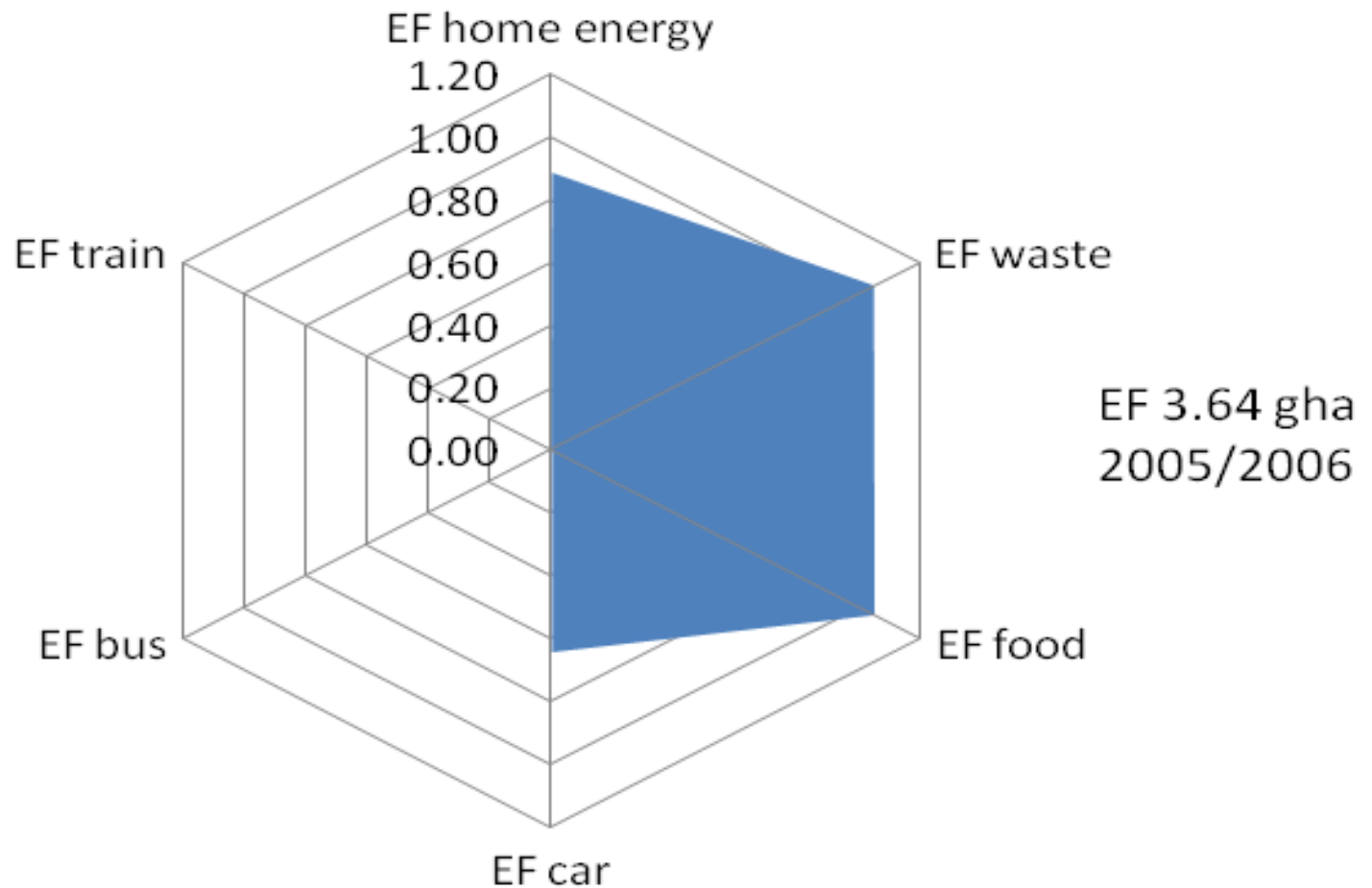
Mitigation Case Study - Ballina

Four Year Ecological Footprint Campaign – year 1



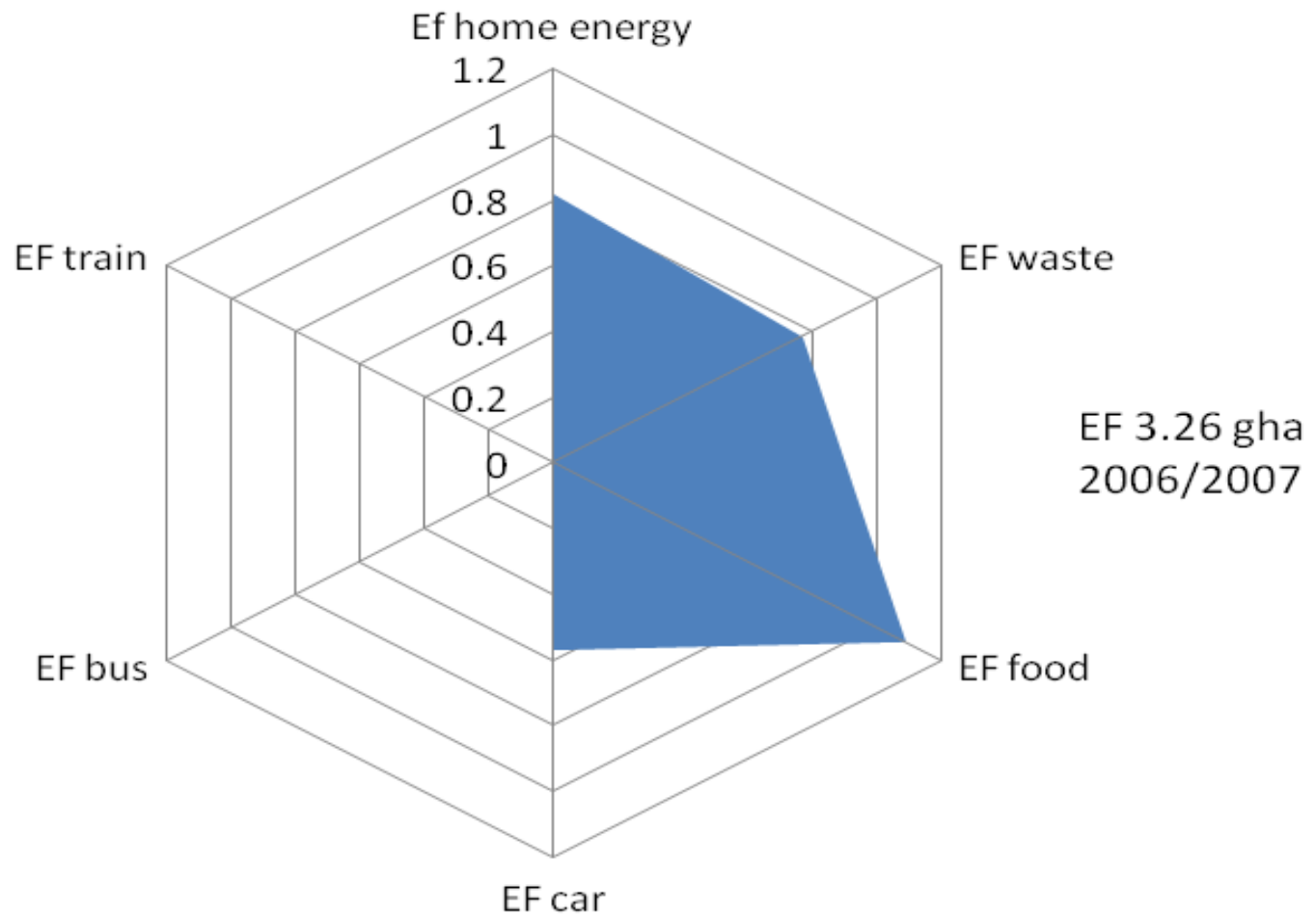
Mitigation Case Study 2 - Ballina

Four Year Ecological Footprint Campaign – year 2



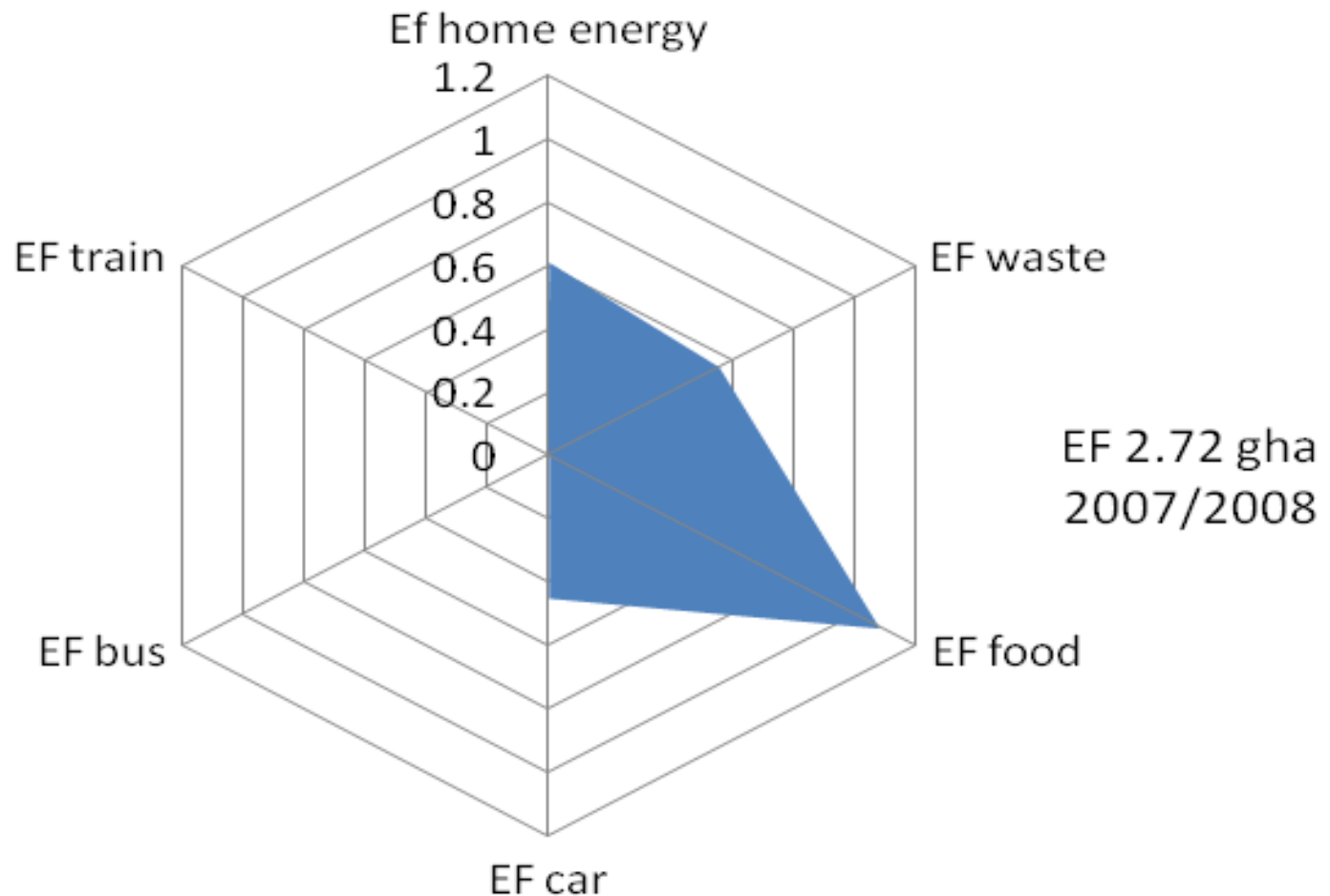
Mitigation Case Study 2 - Ballina

Four Year Ecological Footprint Campaign – year 3



Mitigation Case Study 2 - Ballina

Four Year Ecological Footprint Campaign – year 4



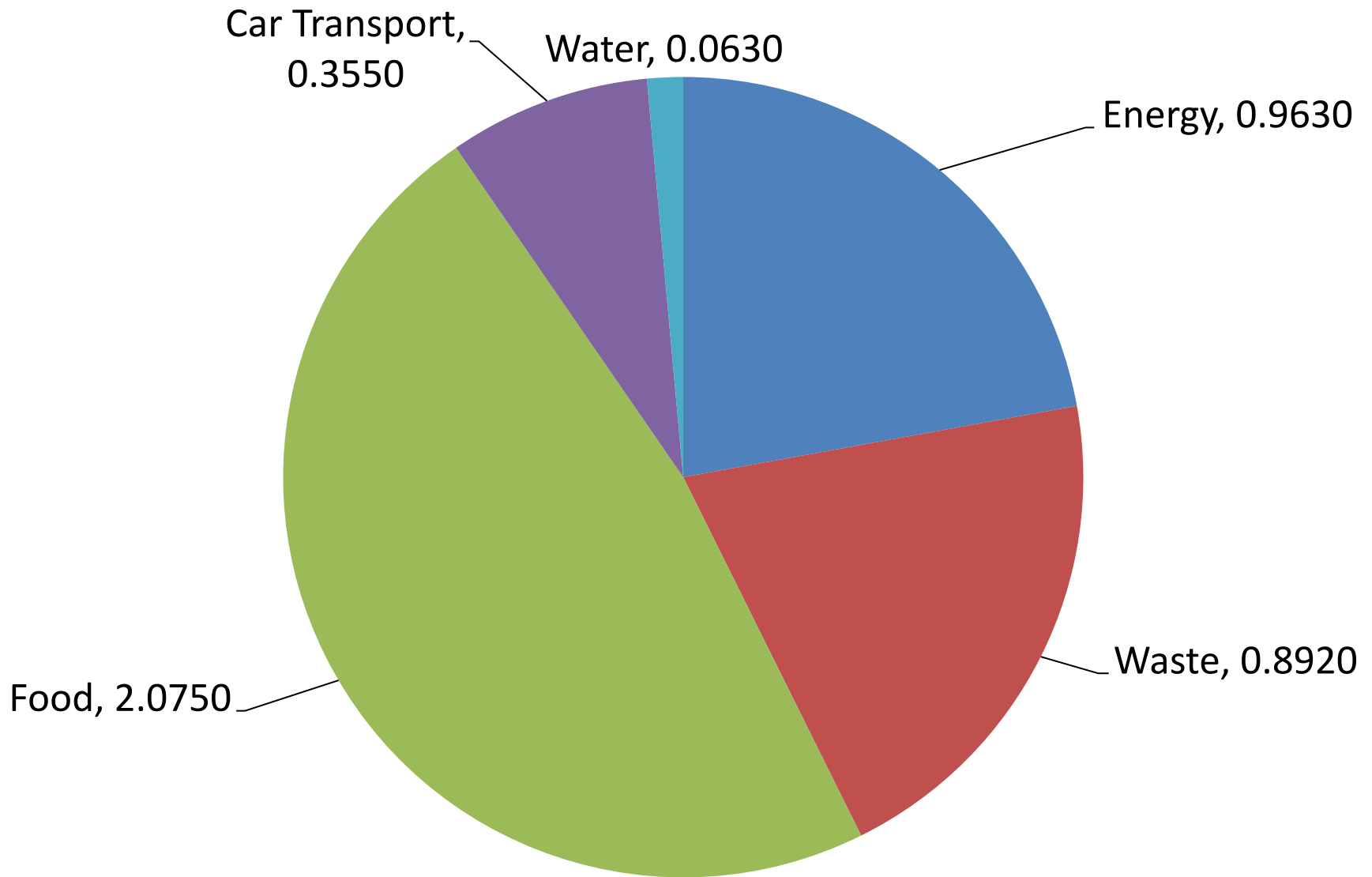
International Blueprint

- Developed an EF method
- 95 community EFs
- 5 year intervention
- 1800 residents
- reduced its emissions by 28%
- equates to 4,900t CO2
- High Level Political Forum (2018)
- Measure impact
- Foster conversation about solutions



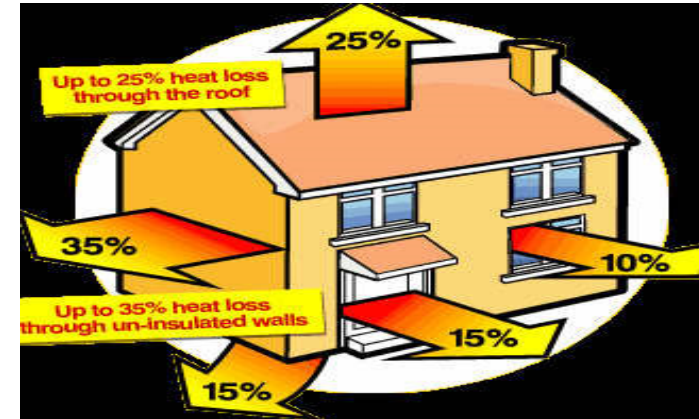
https://iges.or.jp/en/pub/sustainablelifestylespolicyandpractice/en?fbclid=IwAR1XTxe3z1G2nomIL5alfzqvTf5BzelccLOnfUzBvTI2XPQqwBBGsVq_H70

So what can we do?



Energy at Home?

- Check your bills
- Lights – CFL and LED
- Portable energy meter
- Check individual appliances
- Kill standby
- Retrofit your home – SEAI grants
- Make your home less leaky (AC rates upon one hour)
- Open fires
- Stoves
- Attic insulation
- Heating controls
- New boiler
- Heat Pumps
- Solar PV – grants
- If you are buying a new appliance or car check www.sust-it.net
- Together



Which house would you buy?

Waste at Home?

The impact of waste

- Prevent plastic
- Landfill
- Recycling
 - Empty without cardboard, paper and plastic
- Composting
- Prevention
- Textiles and clothes in landfill?
- Textiles and clothes in recycling bins?
- Together:
 - Bere Island
 - Inis Mor
 - Community composter
 - Zero Waste movement



Transport?

- The average new car emits 120g of carbon dioxide for every kilometre travelled. SUV's can emit a staggering 330g!
- Try the bus ¾'s of journeys use the motor car
- Just 6.1% of journeys have a passenger
- Take the ferry: 18g CO₂ per pkm for ferry
- Short Haul (91g CO₂ per pkm) and Long Haul (109g CO₂ per pkm) flights.
- Reducing the most inefficient car journeys – 3 miles or under
- An energy-aware driving style can save 13% on fuel and emissions
- Inflate tyres correctly to manufacturer's recommendation
- Avoid harsh acceleration or heavy breaking also slowing down in good time saves fuel
- The sun-roof fully open consumes up to 4% more fuel, half-open - 3%
- Rear screen heater's increase fuel consumption by 3% - 5%, so switch it off when demisted, roof racks can increase fuel use by 40%
- Compare cars on sust-it.net



Food?

The impact of food choices on climate change

- Food waste (platters)
- Animal and dairy emissions
- Beef
- Fish
- Emissions of a vegetarian diet
- Rice
- Food miles
- Organic efficiencies
- Industrial farming
- Together
 - Edible Landscapes
 - CSA – Loughrea
 - Foodture: <https://foodture.ie/fair-food-map/>
- Food Markets



Water?

- **Dishwashers and washing machines** – Use a full load and the **low temperature programme** with modern detergents uses less water and overall
- Turn **off** taps fully and **fix** dripping taps. In just one day, a dripping hot water tap can waste enough water to fill a bath
- An **ordinary shower uses 2/5's the water** and heat for a bath
- Showers use **5L/minute**. Power Showers use **15L/min**. You could easily **save lots of water, €100 & carbon dioxide emissions** on water heating every year by taking **shorter showers, and not baths**, and using slightly lower temperatures
- **Eco-kettles** cost €30 - 45 at www.ethicalsuperstore.com and make a great present. Some can also dispense clean, cool filtered water so no need to buy bottled water either!



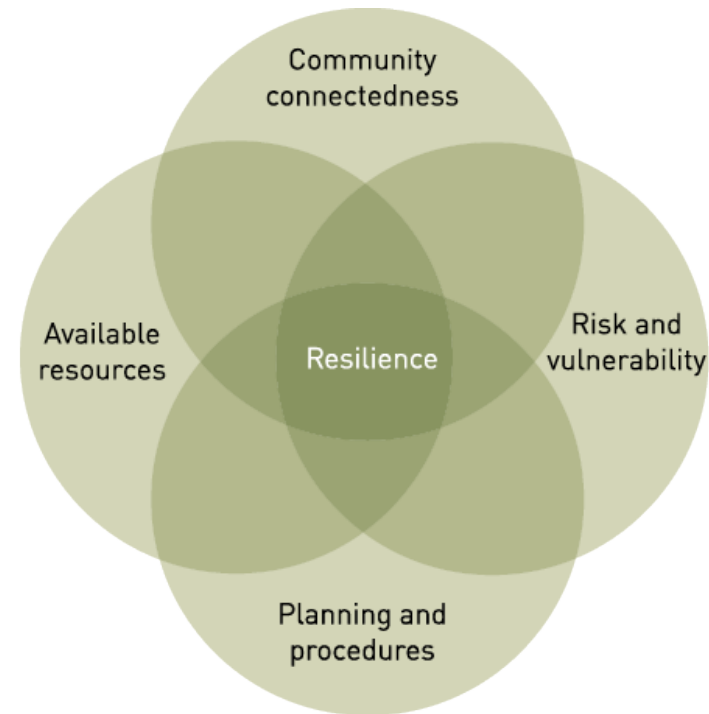
Breakout Session - What can we do?



Plans

Resilience is strengthened when you work with your Local Authority and generate and submit to plans, local, regional and national:

1. Neighbourhood Climate Action Plan
2. Community Futures Plans
3. Business Continuity Plan
4. Community Resilience Plan
5. Biodiversity Management Plan
6. Peatland Management Plan
7. Invasive Species Management Plan
8. Surface Water Management Plan
9. County Development Plans
10. Climate Mitigation Strategy Plan
11. Local Economic and Community Plan



More to come!



- Expanded in workshops over the next short while...
- We measure your footprint for food, water, waste, transport and household energy use
- Detail on where you can make big differences
- Detail on where others make a big difference
- Plenty of information and conversation

Closing

- Please complete evaluation please

		Belmullet	Ballina	Castlebar	Claremorris	Westport
Tuesday	04/02/2020	WS1				
Thursday	06/02/2020		WS1			
Saturday	08/02/2020			WS1		
Tuesday	11/02/2020				WS1	
Thursday	13/02/2020					WS1
Saturday	15/02/2020	WS2				
Tuesday	18/02/2020		WS2			
Thursday	20/02/2020			WS2		
Saturday	22/02/2020				WS2	
Tuesday	25/02/2020					WS2
Thursday	27/02/2020	WS3				
Saturday	29/02/2020		WS3			
Tuesday	03/03/2020			WS3		
Thursday	05/03/2020				WS3	
Saturday	07/03/2020					WS3
Saturday	14/03/2020			Conference		



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Building community energy networks

energyco-ops.ie



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