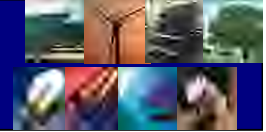




Limerick Clare Climate Change Strategy

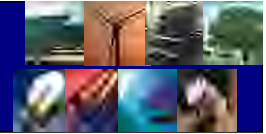
University of Limerick, 19th May 2006





Summary Slide

- Climate Change Strategy - Aims and Objectives
- Key Characteristics/ Trends
- Study Approach
- Combined Study Area – Key Issues
- Limerick County
- Clare County
- Limerick City
- Indicative Abatement Costs
- Carbon Levies Avoided
- Conclusions



Sponsors & Supporters

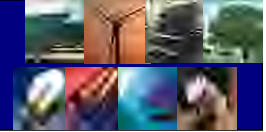


Limerick County Council



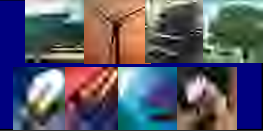
Clare County Council





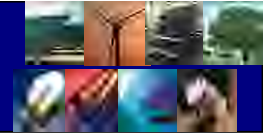
LCEA and TEA

- LCEA established in 2005
 - Energy Balance and Climate Change Strategies key outcomes for first 12 months
 - LCEA first LEA to be funded locally
- TEA established since 1997
 - 5 Full Time Staff plus contract staff
 - Wide range of experience in energy projects
 - Has completed similar energy balance for Co. Tipperary



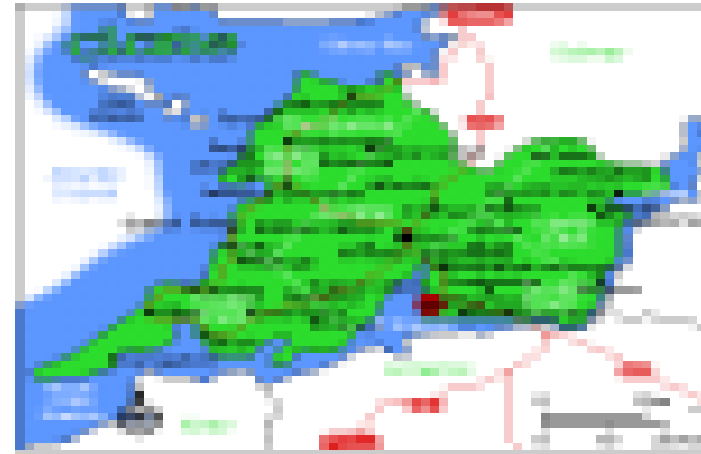
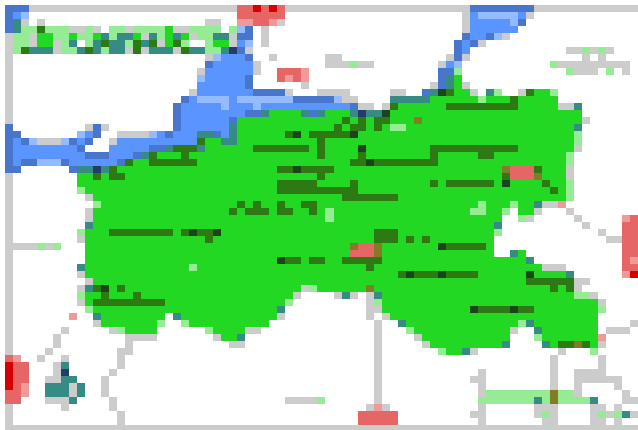
Climate Change Strategy - Aims and Objectives

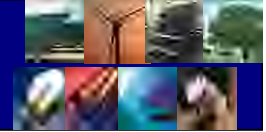
- Aim
 - To develop a strategy to allow the study area to meet its commitment under the Kyoto Protocol
- Objectives
 - Based on the data from the Energy and Emissions Balance identify measures for CO₂ reductions
 - Using data from current actions and initiatives determine potential level of CO₂ reductions achievable
 - Identify the gap to meeting Kyoto requirements
 - Develop indicative CO₂ abatement data



Study Area

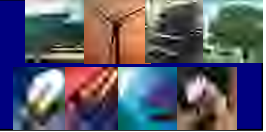
Limerick County, Clare County and Limerick City





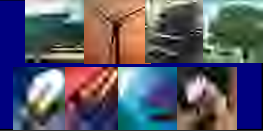
Key Characteristics/ Trends

- The Area accounts for approximately 6% of the National Population
 - ~278,000 people in 2002
- The study area covers over 6,000 square kilometres.
- Total number of households 2004 estimated at 96,000,
- Vehicle ownership has increased dramatically in the region, mirroring the National trends, with a 100% increase evident between 1990 and 2004.
 - ~147,000 vehicles in 2004
- 6.5% of the National employment in the Industrial and Commercial Sectors is based in the study region.
 - ~110,000 people in 2004



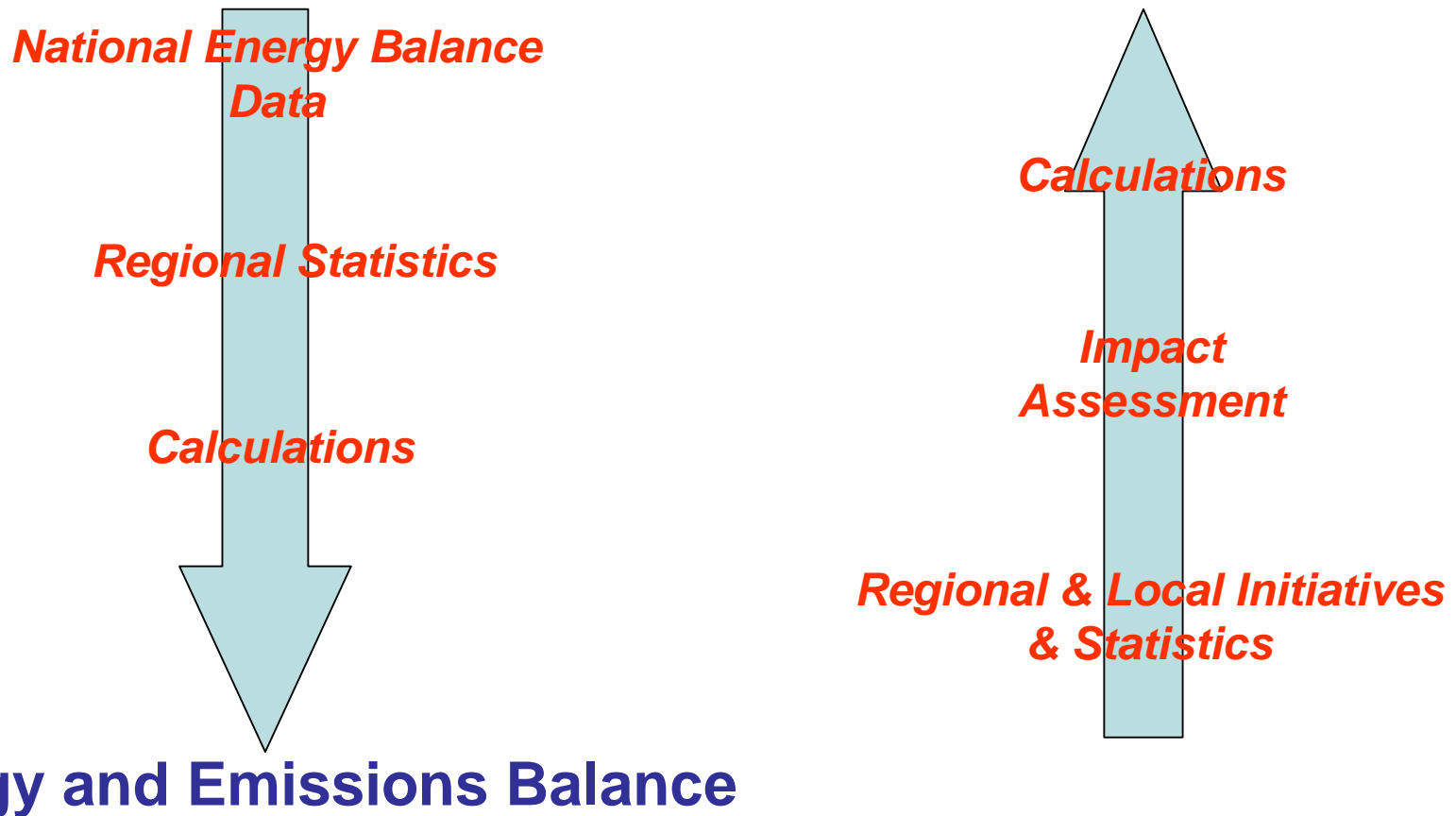
Climate Change Strategy Contents

- Introduction
- Executive Summary
- Climate Change Strategy Approach
- Energy and Environmental Regulation / Legislation
- Financial Implications
- Study Area – Common Issues
- Clare County
- Limerick County
- Limerick City



Study Approach

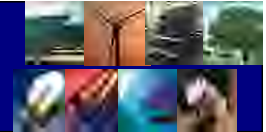
Climate Change Strategy





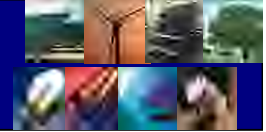
Standard vs Extraordinary!

- Strategy took the approach of assessing actions with the current legal, policy and regulatory climate – Standard Measures
- Extraordinary measures defined as those which require change in
 - Policy
 - Supports
 - Significant Infrastructure



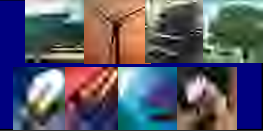
Ireland and the Kyoto Protocol

| Energy Related Emissions | Total Emissions '000 tonne-CO₂ | Projected Difference to Target '000 tonne-CO₂ | Projected Cost of CO₂ / T Trading Price (€) | Annual CO₂ Costs (Million €) |
|---------------------------------|--|---|---|--|
| 1990 Levels | 30,649 | - | - | - |
| Kyoto Targets +13% | 34,635.4 | - | - | - |
| 2005 Estimate | 43,758 | 9,125 | 27 | 246 |
| 2010 Business As Usual | 51,451 | 16,818 | 35 | 589 |



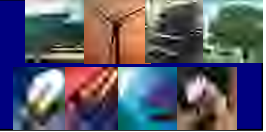
Combined Study Area – Key Issues

- Large CO₂ Emission Sites
- Transport
- Renewable Energy Development – National Grid
- Tidal/Wave
- Fuel Supply & the Agricultural Sector – Wood, Energy Crops
- Residential Sector



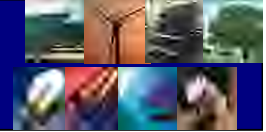
Key Energy Sites

- Energy Production
 - ESB Power Station, Moneypoint Co. Clare
 - Largest Power Station in Ireland. (5,500 GWh in 2004)
- Energy Consumption
 - Aughinish Alumina, Co. Limerick
 - Irish Cement, Castlemungret, Co. Limerick
 - Shannon Airport, Co. Clare
- Responsible for 12,300,000 Tonnes CO₂ in 2004



Combined Study Area – Transport

- Transport
 - Identified as area with greatest share of energy related CO₂ emissions
 - 984,000 Tonnes CO₂ in 2004
 - 31% of all energy related CO₂ emissions
 - Also most difficult to achieve significant change
 - Standard Measures identified ~110,000 Tonnes Savings



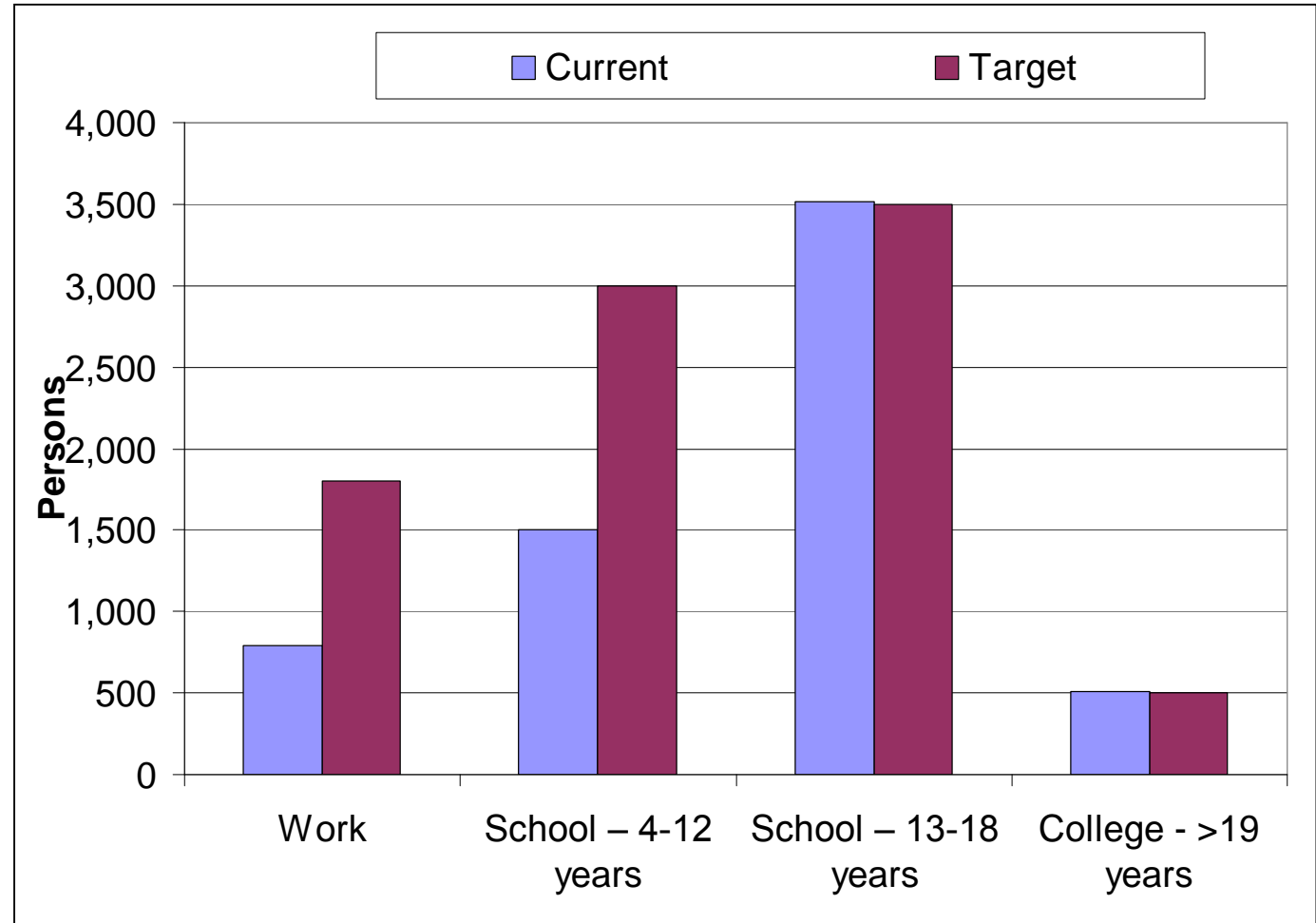
Combined Study Area – Transport

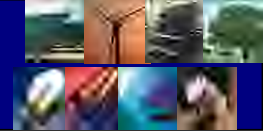
Travel by bus for work and education in Co Clare

**Move from 10% to
13% (2,000
persons)**

Results in

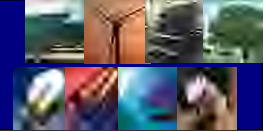
**750 Tonnes CO₂
Savings per annum**





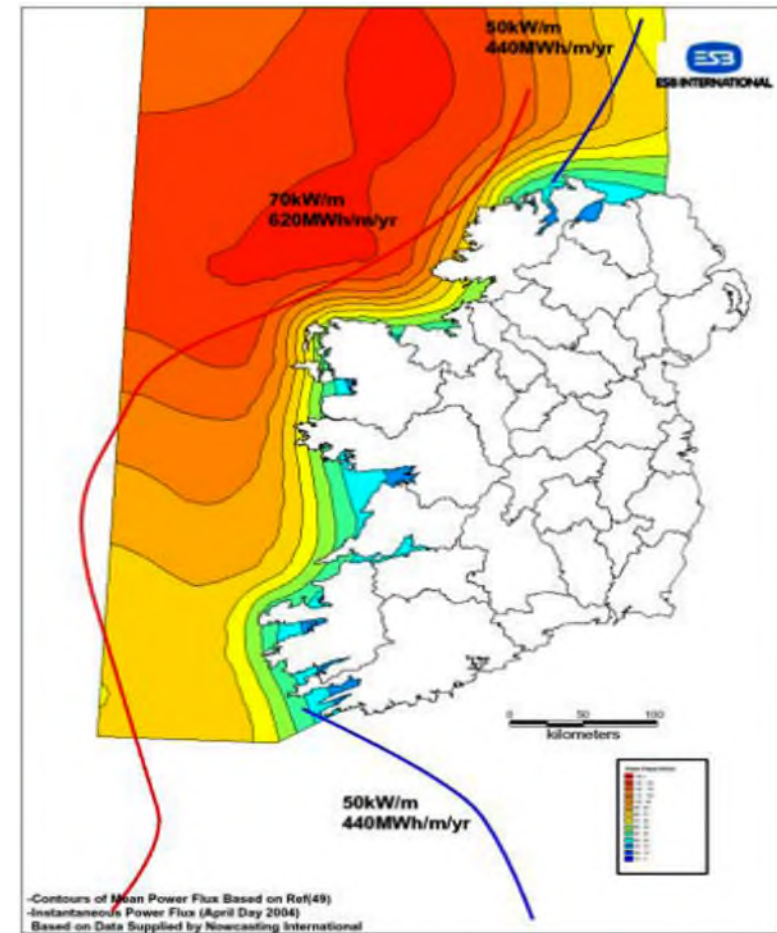
Combined Study Area – National Grid

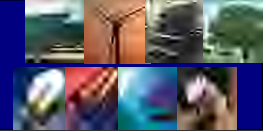
- A key national issue for renewable energy
- ‘Gate’ Process in progress
 - CER and ESB Networks
- Future developments will require Local Authorities to work together with National Organisations so that the RE Electricity targets in the area can be achieved



Combined Study Area – Tidal/Wave

- Large National Tidal Resource located in Shannon/Estuary
- Research on-going
- Will need major investment but provide significant benefits

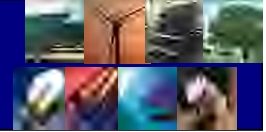




Combined Study Area – Fuel Supply

- Region a leader in solid biomass for fuel
- Fuel supply chains and end uses could be driven by the public sector
- Mid West Regional Authority aiming to investigate opportunities

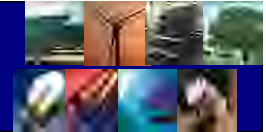




Combined Study Area – Residential Sector

- Significant housing development in Study Area
- Promotion of best practise
- Energy Performance of Buildings Directive

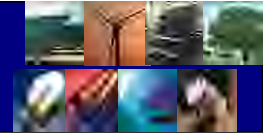




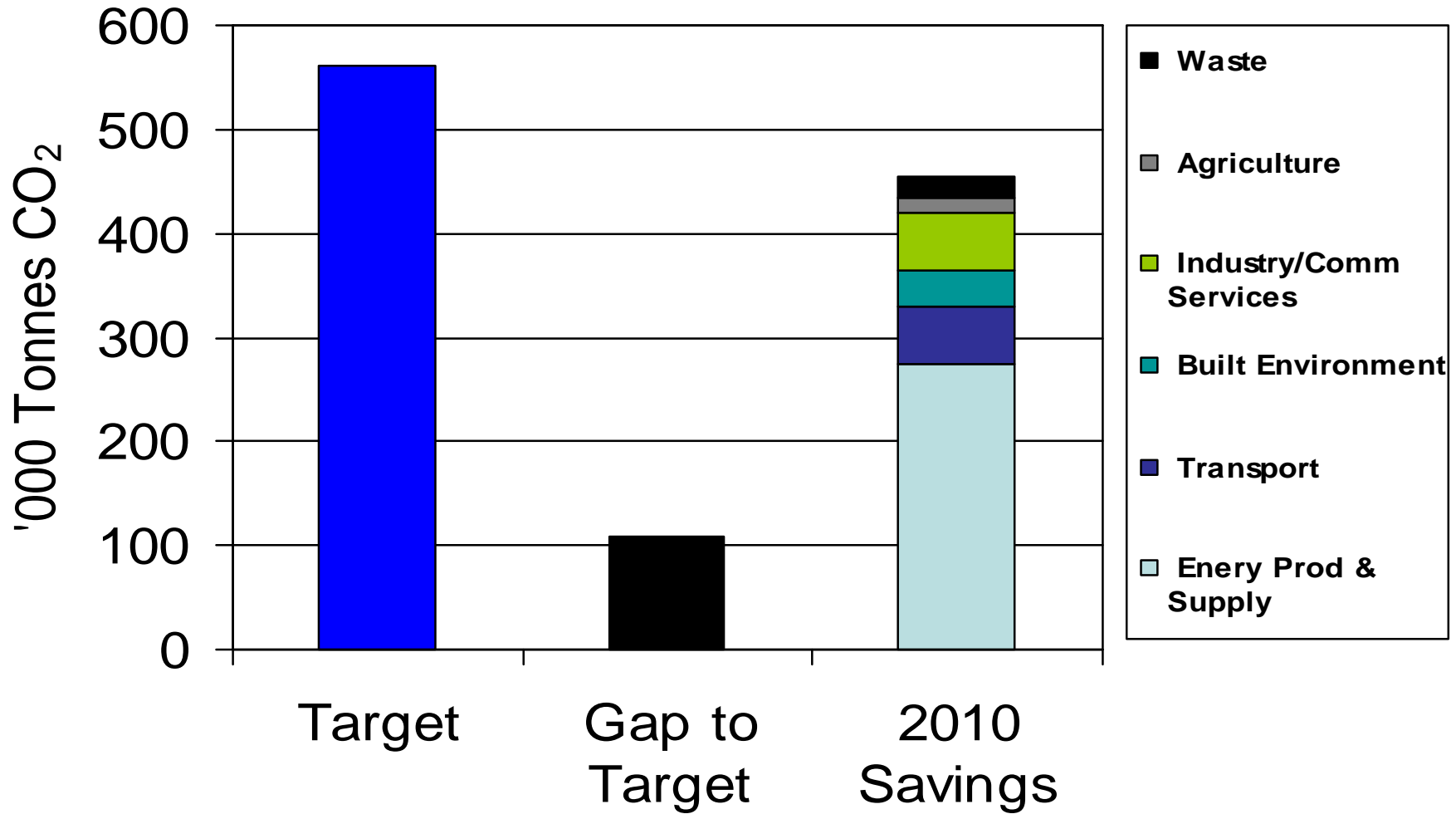
Limerick County

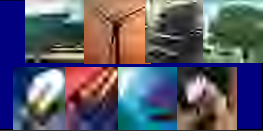
Potential Standard CO₂ Reductions – '000 Tonnes CO₂

| Sector | 2010 |
|----------------------------------|------|
| Energy Production & Supply | 274 |
| Transport | 54 |
| Built Environment | 34 |
| Industry and Commercial Services | 55 |
| Agriculture | 16 |
| Waste | 19 |
| Total | 454 |
| Target | 562 |
| Gap to Target | 107 |



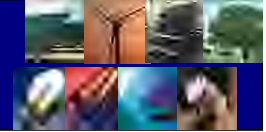
Limerick County



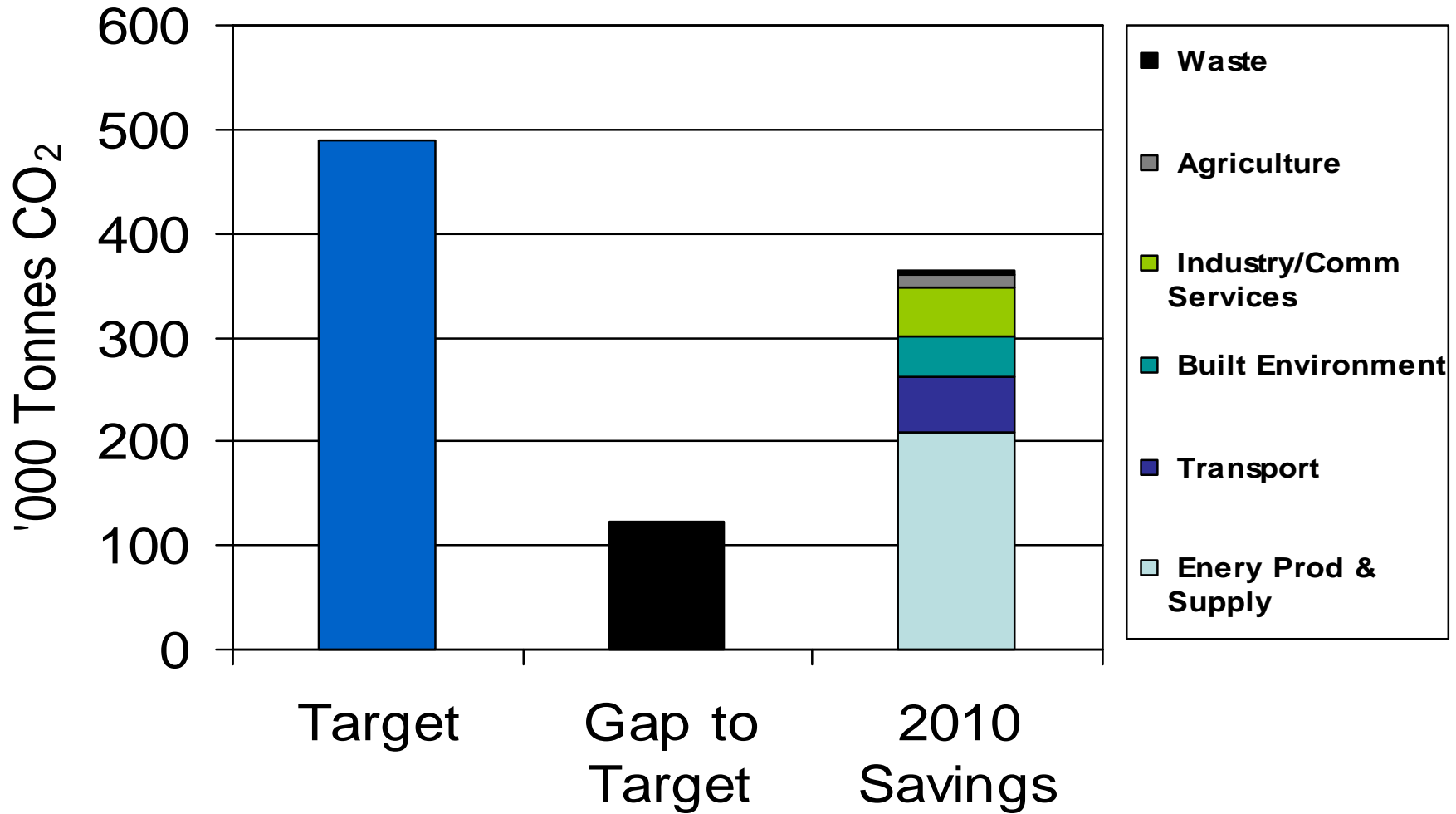


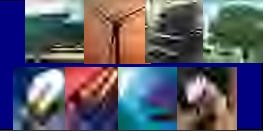
Limerick County - Highlights

- Wind Energy
 - 71 MW to be developed by 2007
 - Projected total of 95 MW installed by 2010
 - Avoiding over 200,000 Tonnes CO₂
- Miscanthus
 - 150 ha planted by end of 2006
 - Projected to have 1,000 ha planted by 2010
 - Pellet Production expected by 2008
 - Potential to avoid 9,000 Tonnes CO₂/annum



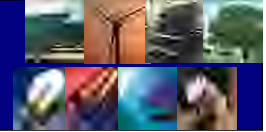
Clare County



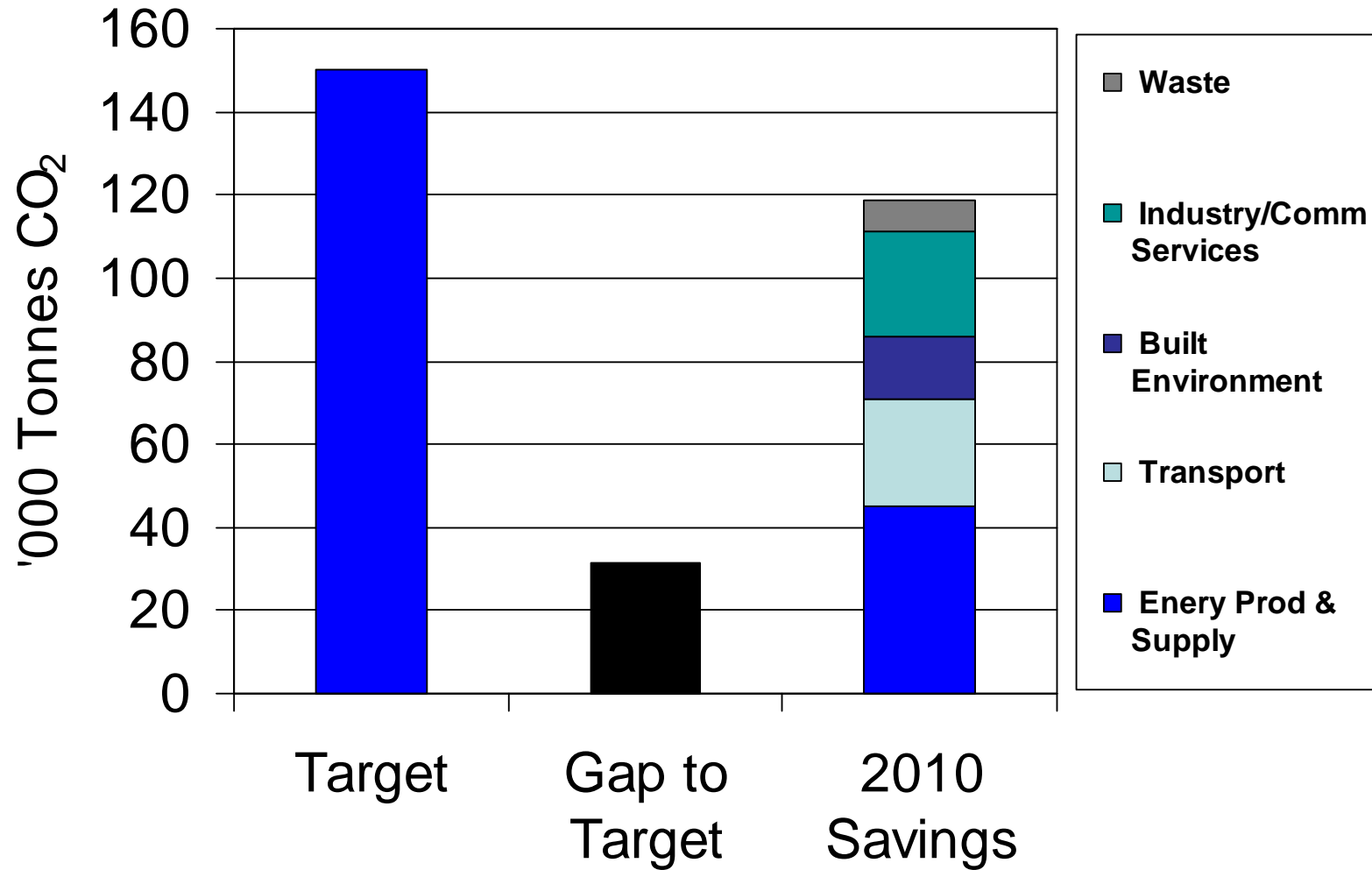


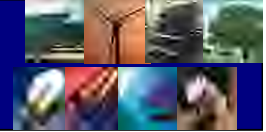
Clare County Highlights

- Wind Energy
 - 54MW by 2007 rising to 71MW by 2010
 - Avoiding 157,000 Tonnes CO₂ per annum
- Clare Wood Energy Project
 - 6 sites already identified for use of wood energy
 - 2,000 Tonnes Wood Chip per annum
 - Potential Resource of 125,000 Tonnes available from Private Forestry Thinning alone



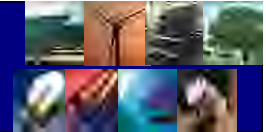
Limerick City





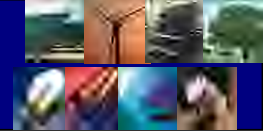
Indicative Abatement Costs

- Total Investment costs were estimated for each action in different areas.
- Indicative abatement cost was calculated based on total CO₂ savings expected
- Some administrative and other costs may need to be included to give a complete picture
- Significant private investment underpins projected savings to date



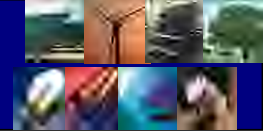
Indicative Abatement Costs – e.g. Clare

| Sector | CO ₂ Savings 2010 '000 Tonnes | Indicative Total Abatement Cost (€M) | Indicative Unit Abatement Cost (€/T) |
|----------------------------------|---|--|--|
| Energy Production & Supply | 208 | 130.00 | 627 |
| Transport | 54 | 7.00 | 128 |
| Built Environment | 38 | 25.40 | 662 |
| Industry and Commercial Services | 47 | 7.00 | 148 |
| Agriculture | 12 | 6.60 | 549 |
| Waste | 5 | 1.00 | 186 |
| Average | | | 486 |

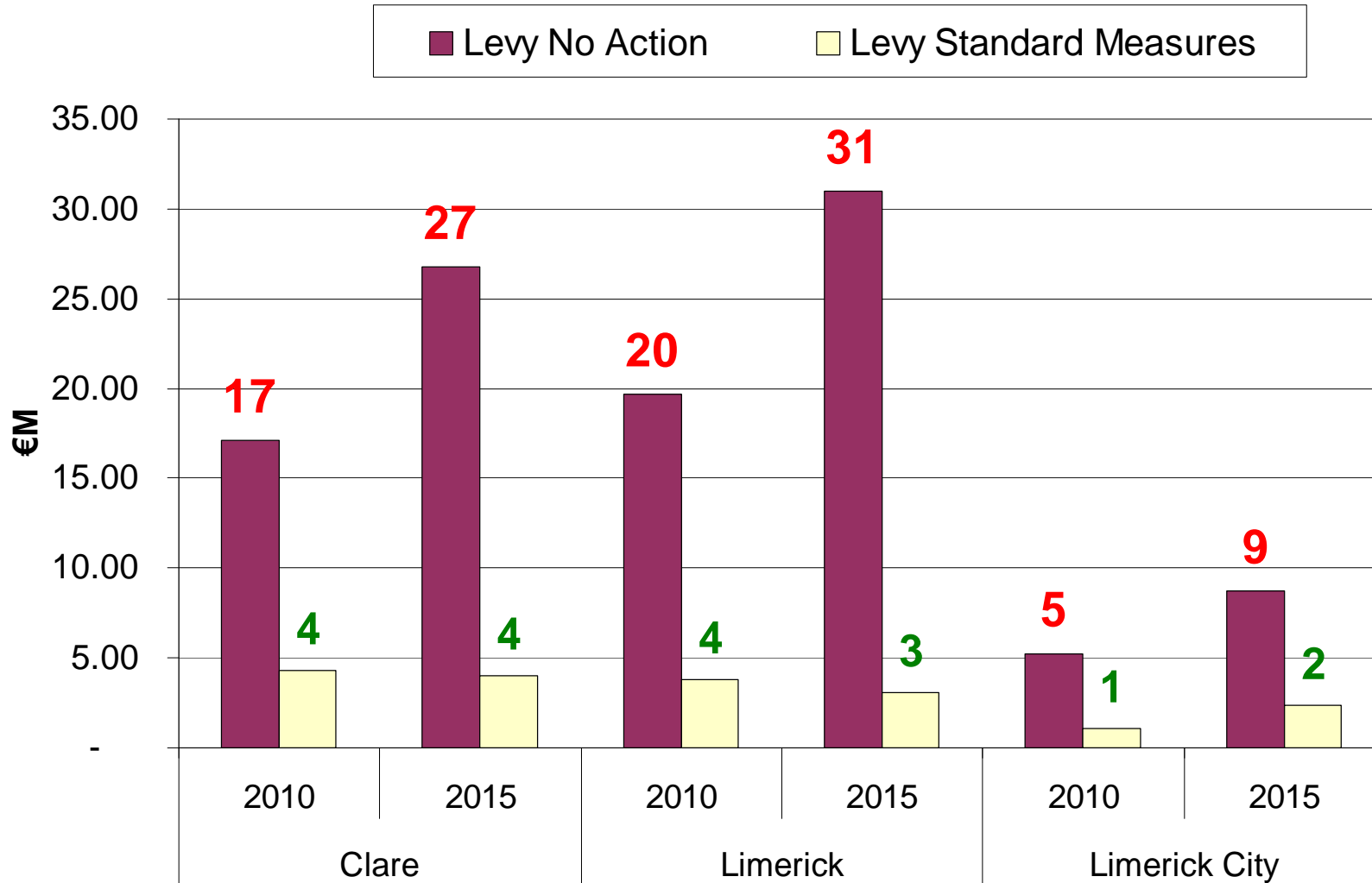


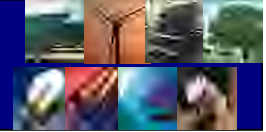
Combined Study Area

- Indicative Cost Per Tonne between €400-€ 500
- For Standard Measures Only
- Cost will increase for Extraordinary measures
- Mix of private and public finance will be required



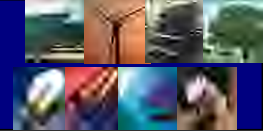
Carbon Levies Avoided





Conclusions

- All areas in the Study Area will exceed their Kyoto target unless action is taken
- National policy needed to facilitate regional development of sustainability
- Ordinary measures identified will accomplish 85% of Study Areas Kyoto commitment
- Extra ordinary measures will eliminate our Kyoto levies, but substantial investment required now
- Transport has emerged as a sector with the greatest need for action
- Renewables will play a major role in the short term



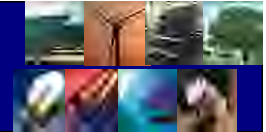
Individual Responsibility

| | Clare | Limerick | Limerick City |
|---|--------------|--------------|---------------|
| Target '000 Tonnes- CO₂ | 489.6 | 562.8 | 150.8 |
| Target / Person Tons CO₂ | 4.7 | 4.6 | 2.8 |



Thank you.





Contacts

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