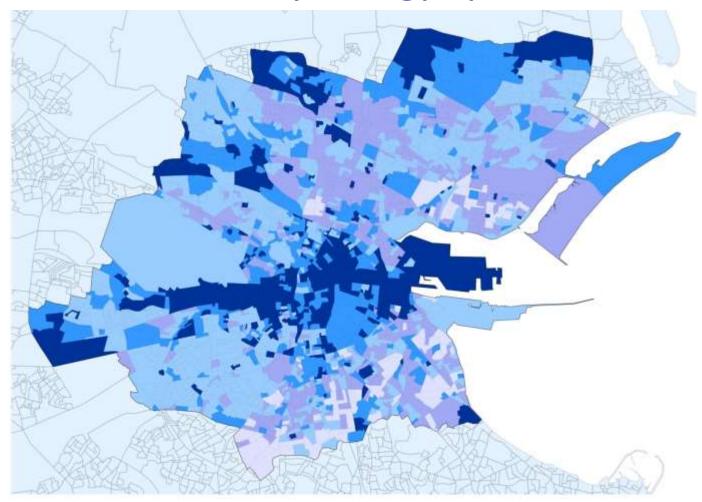


GIS Techniques Applied to Energy Mapping for Local Authority Energy Spatial Planning



Donna Gartland – Strategic Sustainable Energy Planner





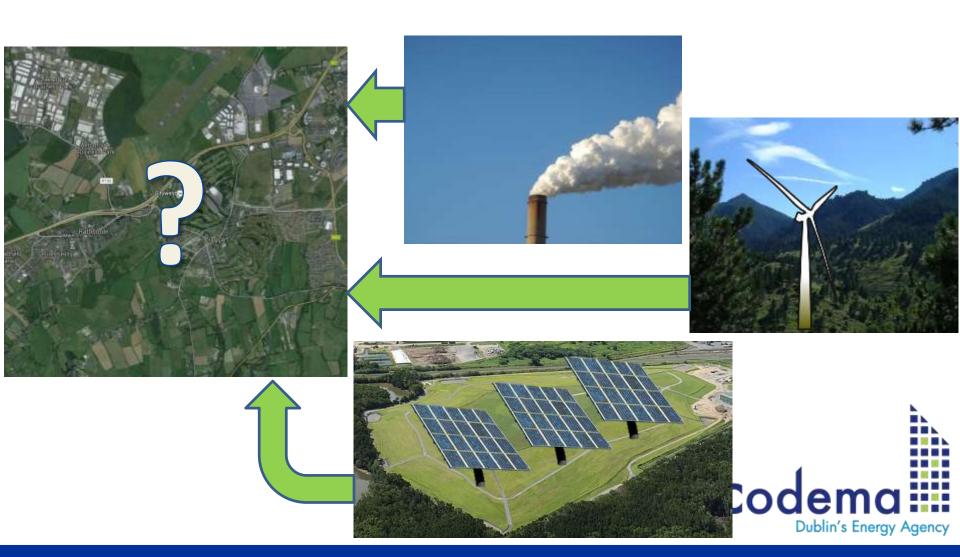
Purpose

- Analyse local level energy demand and production within spatial context
- Bridge the gap between spatial and energy planning
- Enable planners to better answer energy related queries
- Enable planners to create evidence-based energy policy





Matching <u>local</u> demand with <u>local</u> sustainable resources



Target Areas for Energy Efficiency



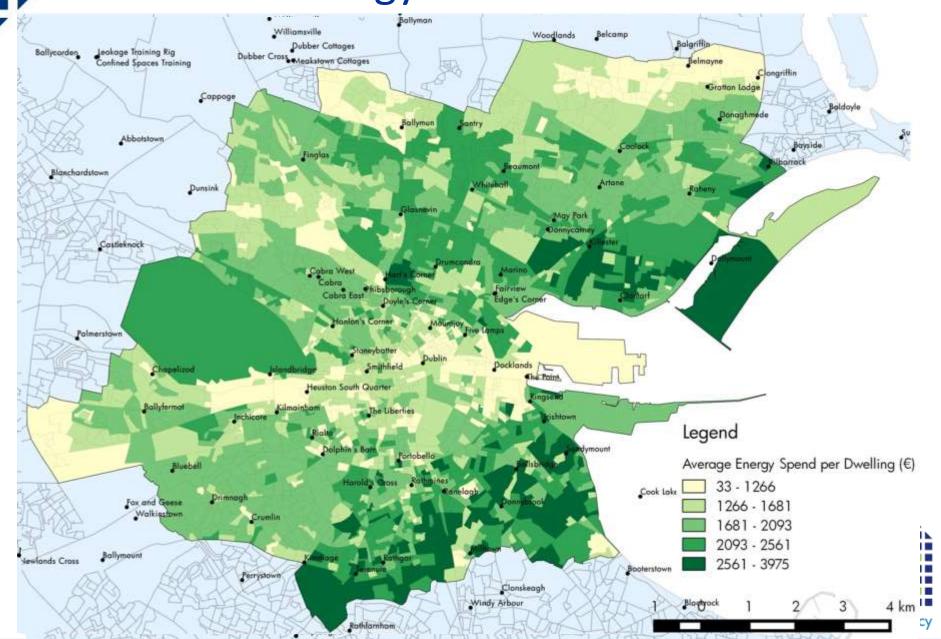


Methodology: Residential Sector

Building Energy Rating Census 2011 **Small Areas** Rathgar 50-200 dwellings per Small Area erenure 4 Dwelling Types 7 Construction Periods **Housing Data Sub-sets**

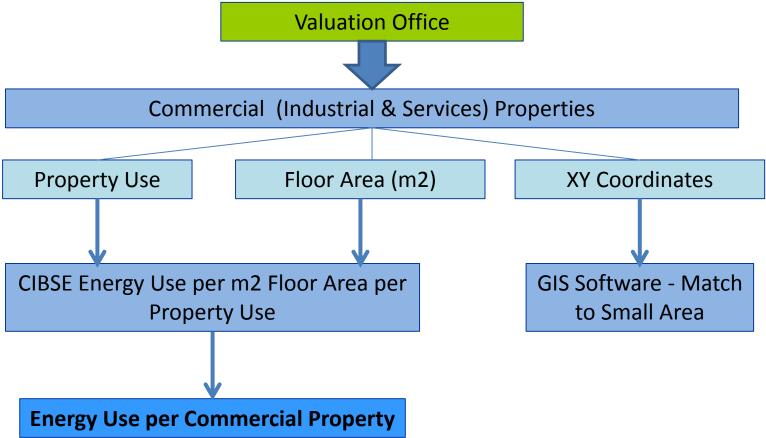
Dublin's Energy Agency

Methodology: Residential Sector





Methodology: Commercial Sector





Methodology: Commercial Sector Balgriffin Pubber Cottages Ballycorden Leakage Training Rig Confined Spaces Training Meakstown Cottages

Dubber Crass Belmayne Congriffin Grattan Lodge Cappage Abbotstown Blanchardstown Raheny Dunsink Glasnevin May Park Donnycarney Killester Castleknock Drumcondra Marino Hart's Corner Phibsborough Cabra East Clontari Poyle's Corner Hanlon's Corner Palmerstown Stoneybatter Chapelizod Islandbridge Point Heuston South Quarter Legend Ringsend Kilmainham The liberties Inchicore Irishtown Total Commercial Energy Demand (MWh) 0 - 1094 allsbridge Bluebel 1094 - 3815 3815 - 7674 Fox and Go 7674 - 13021 Crumlin 13021 - 25134 25134 - 45913 Ballymount Rathgar Newlands Cross Kimmage 45913 - 71270 Jerenure Perrystown 71270 - 116525 Clonskeagh Windy Arbour 4 km

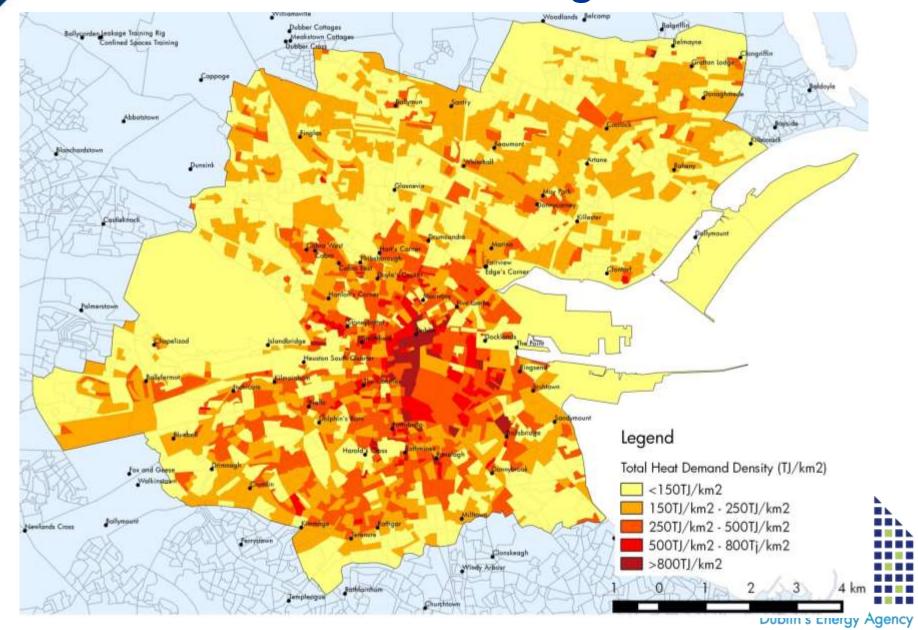
Results: District Heating Potential

- DH plays large role in de-carbonisation and sustainability of cities like Stockholm and Copenhagen
- Flexibility allows higher % RE and low-carbon resources into heat supply

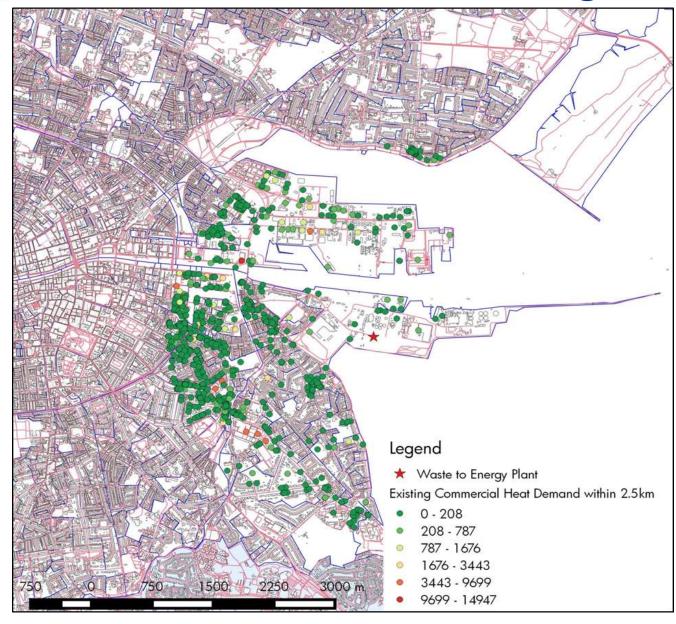
Feasibility of DH depends on the Heat Demand Density (kWh/km2)

- Shorter pipelines to connect more users less investment in pipes
- More cost-effective than individual solutions economies of scale
- Lower heat losses in pipes and less pumping requirements lower running costs
- Dublin City Heat Map reveals over 75% of small areas have a high enough heat density to be suitable for DH
- South Dublin Heat Map revealed 10 key areas suitable for DH development

Results: District Heating Potential

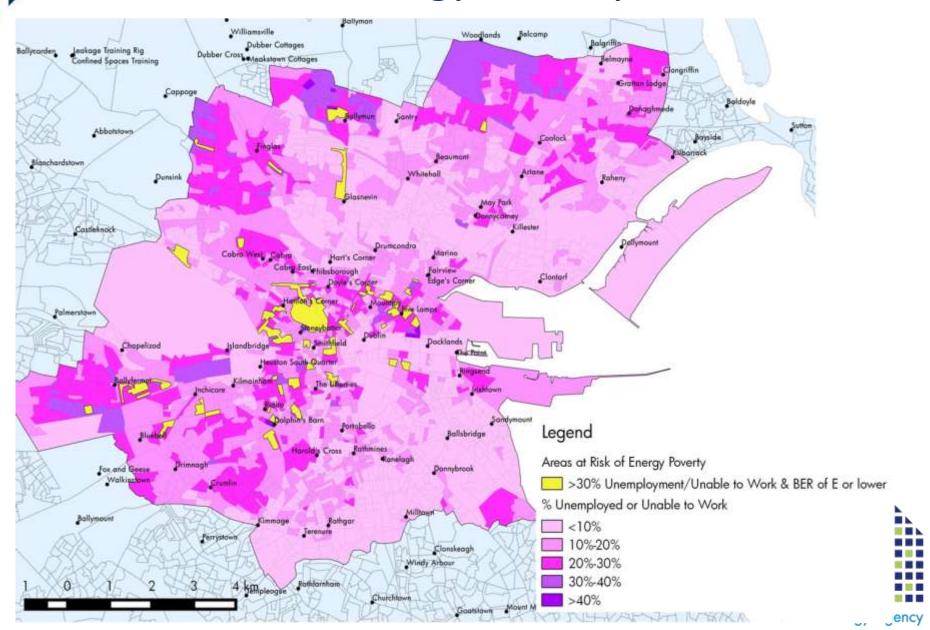


Results: District Heating Potential





Results: Energy Poverty Areas





Policy Implications

Heating – A local level issue

- DH best way to integrate high levels of RE and EE into heating sector of urban areas
- EU policy already states that if DH is cost-effective, measures must be put in place to ensure development
- Energy White Paper states a DH framework to be put in place
- Low-cost DH will lower running costs for businesses and dwellings
 help to combat energy poverty
- Areas outside of DH zones analysis of most suitable individual solutions, i.e. heat pumps, biomass/wood systems, solar thermal





Policy Implications

Residential Sector

- New building regulations helping to lower energy in new builds,
 but no affect on the old, inefficient housing already built
- Often high number of rentals in areas with poor BER no incentives for landlords to improve
- Energy costs are increasing, cost of rent increasing, no change in energy efficiency = more at risk of energy poverty

Renewable Resources

- Identify local sustainable resources and quantify impact on local energy demand
- Example: If all dwellings in Dublin City had 1kW of PV = output of
 13% residential sector electricity demand





Thank you

Contact: Donna Gartland

donna.gartland@codema.ie

Ph: 01 7079818

