APSE Renewables & Energy Efficiency
Group 23rd September 2014

Glasgow Energy and Carbon Master Plan

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Content

- Reminder of the STEP UP Project and SEAP process
- Progress on the Glasgow SEAP (Energy and Carbon Masterplan)
- Links to LDP and Future Cities Demonstrator
- Citizen and stakeholder views
- Conclusions

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STEP UP

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- EU FP7 funded energy planning project running until Spring 2015
- 4 European cities: Ghent, Glasgow, Gothenburg and Riga
- 12 Partners: each city council works with commercial and research partner

STEP UP Website:
www.stepupsmartcities.eu

STEP UP Twitter:
https://twitter.com/StepUpEU

STEP UP – Key Outcomes

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- Enhanced Sustainable Energy Action Plans in four cities,
- Pipeline of low carbon, innovative, integrated projects in four cities
- Training in sustainable city planning to cities' learning networks

- 'Companion cities' coached through SEAP process
- 'STEP UP' approach to integrated energy planning addressing:
  - Economics
  - Stakeholders
  - Wider policy objectives

What is a Sustainable Energy Action Plan?

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- Document approved by the EU Covenant of Mayors
- Political document which must be approved by the municipal council.
- Strategic document, designed in collaboration with local stakeholders & citizens.
- Cornerstone for development of operational documents: the SEAP defines concrete reduction measures, time frames and assigned responsibilities, which translate the long-term strategy into action

SEAP process
The Covenant of Mayors approach

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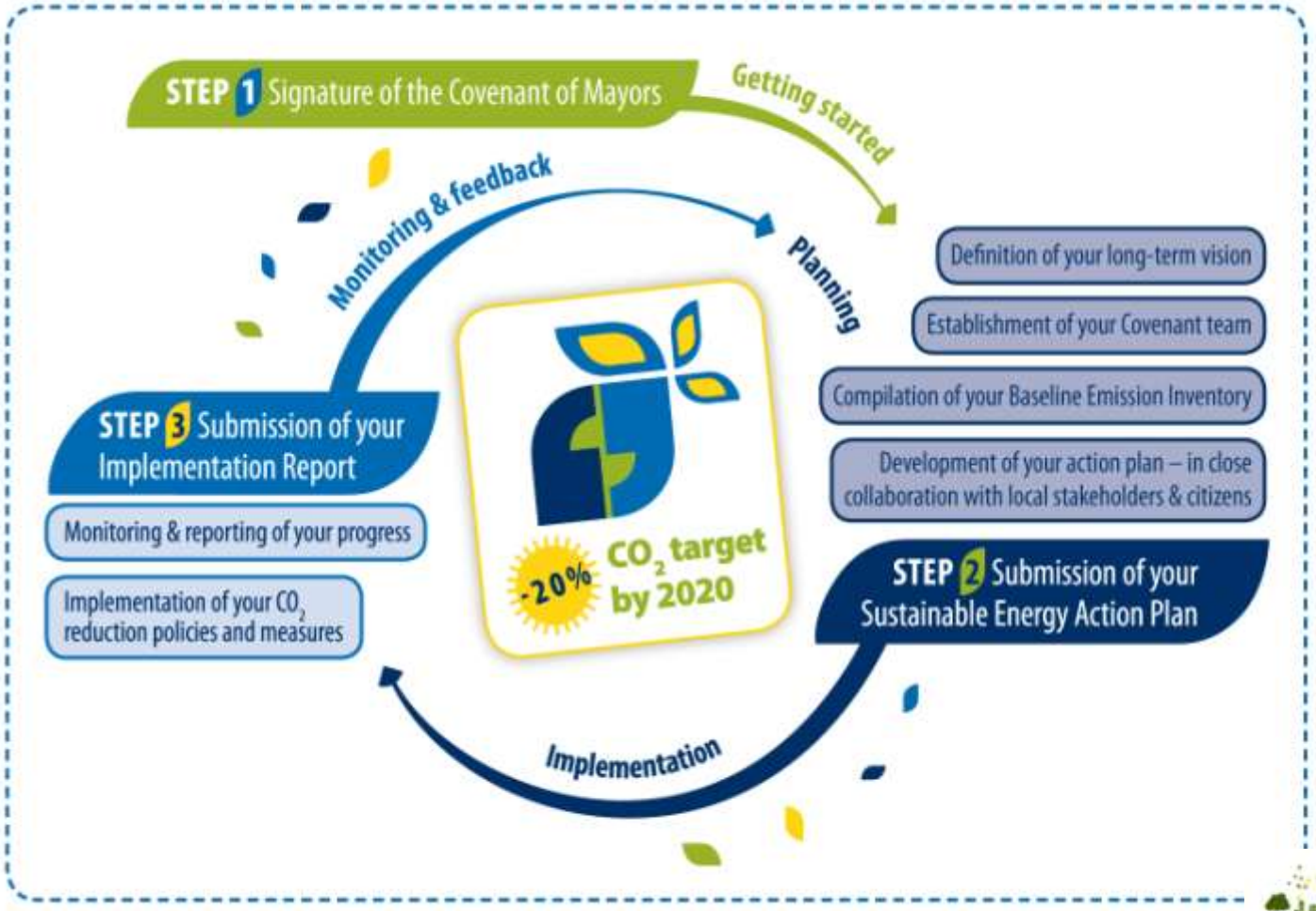
Initiation	- Political commitment and signing covenant. - Form city administrative structures	- Build support from stakeholders
Planning	- Assess current situation. -Establish the vision.	- Develop the plan. - Obtain political approval and submit SEAP.
Implementation and Monitoring	- Implementation of the measures. - Monitoring of progress.	- Reporting and submission of Implementation Report.

Covenant of Mayors
Committed to local sustainable energy

Reporting and Monitoring Timeframes

Covenant of Mayors SEAP process



Enhanced SEAP process

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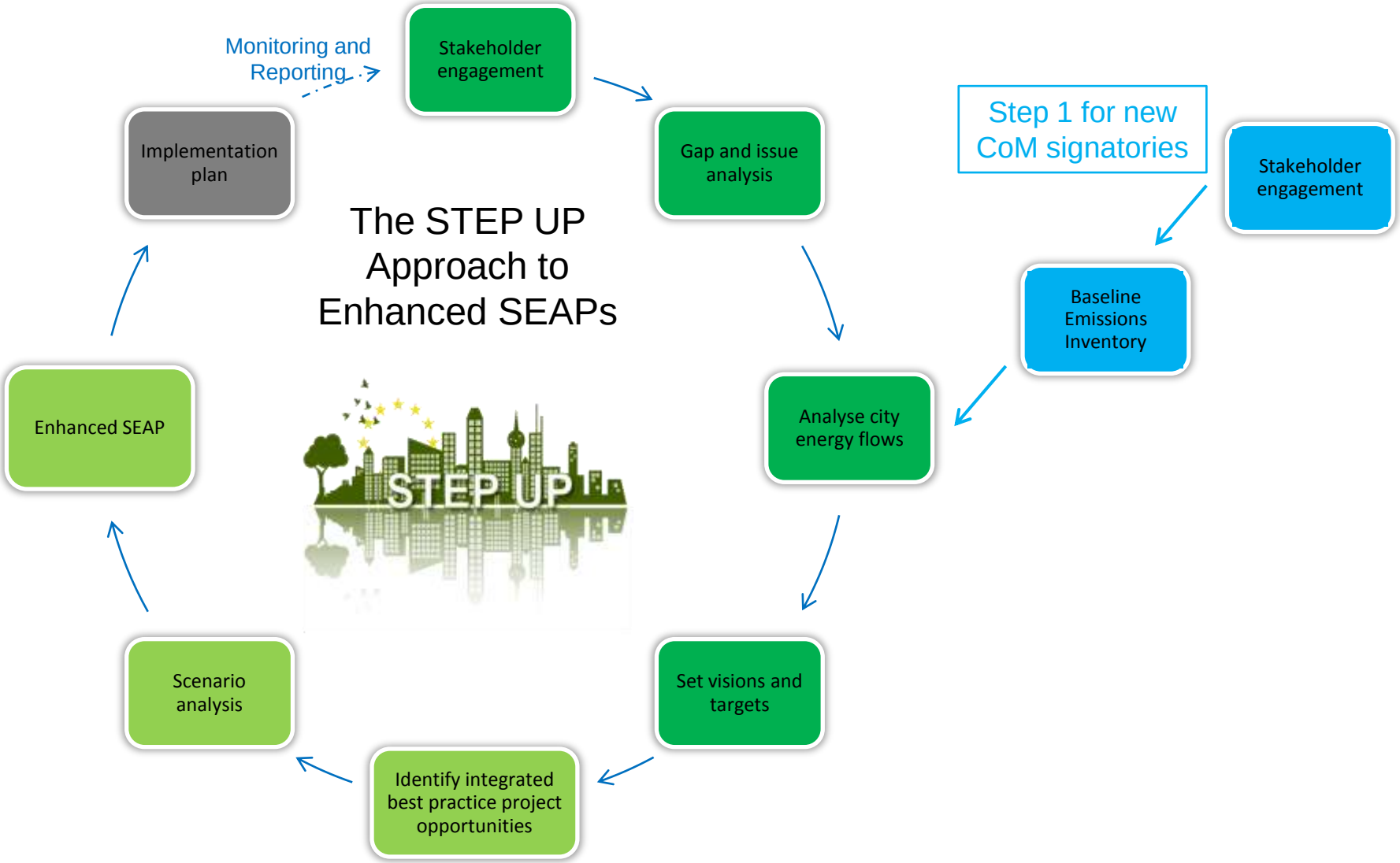

Key components of Glasgow's Energy and Carbon Masterplan

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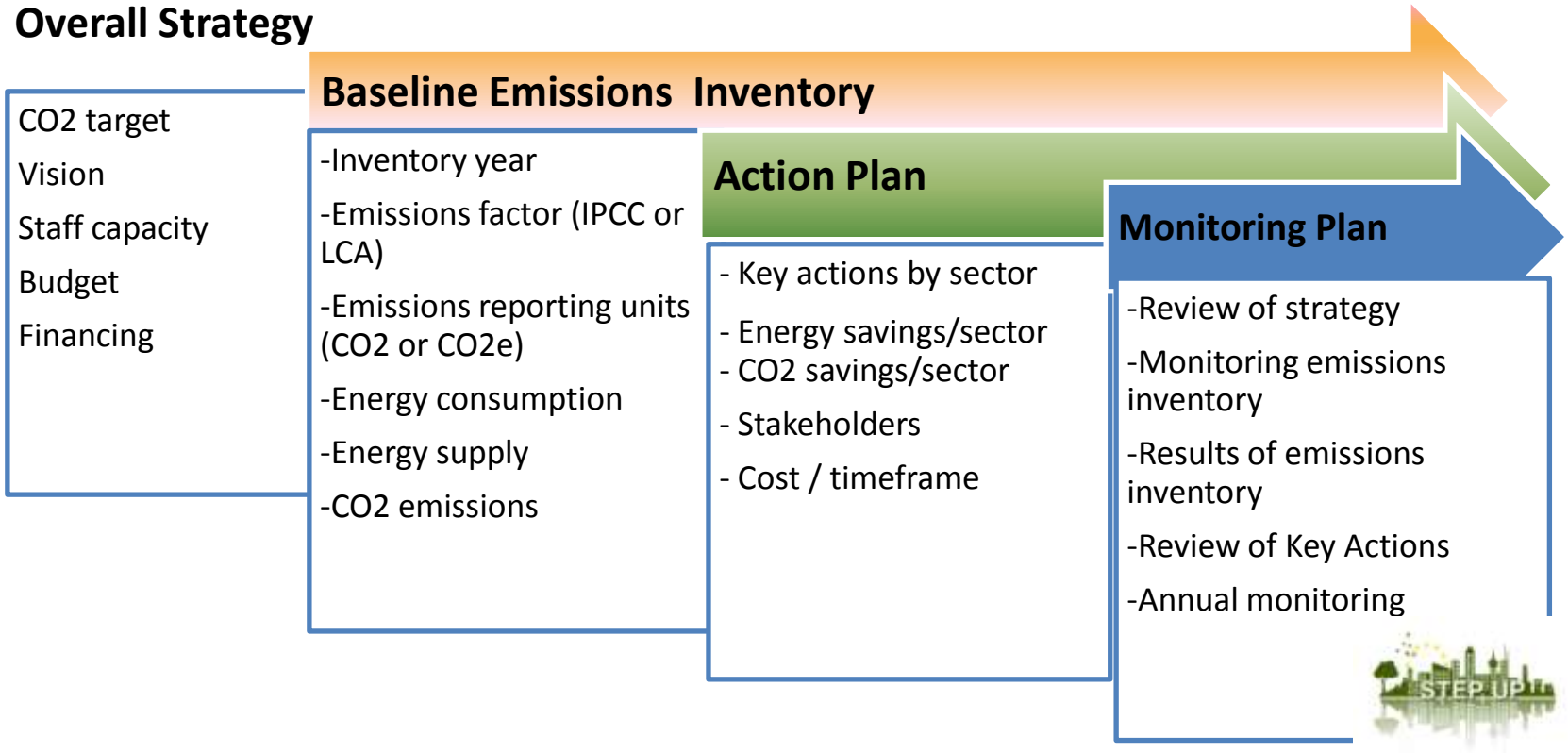
- A plan that uses the Baseline Emissions Inventory to identify reduction actions and outlines how actions will be implemented

- Covers:
  - ➢- Built Environment
  - ➢- Transport
  - ➢- Renewable Energy

- Shows low carbon opportunities in the city

Glasgow

Sustainable Energy Action Plan



Glasgow's Baseline Emission Inventory (BEI)

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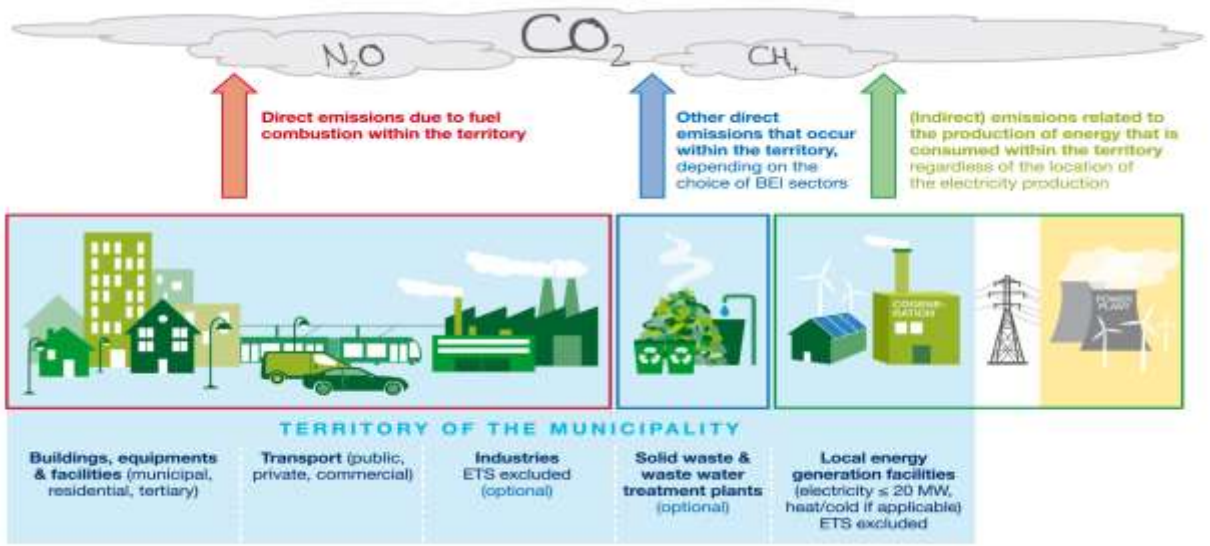
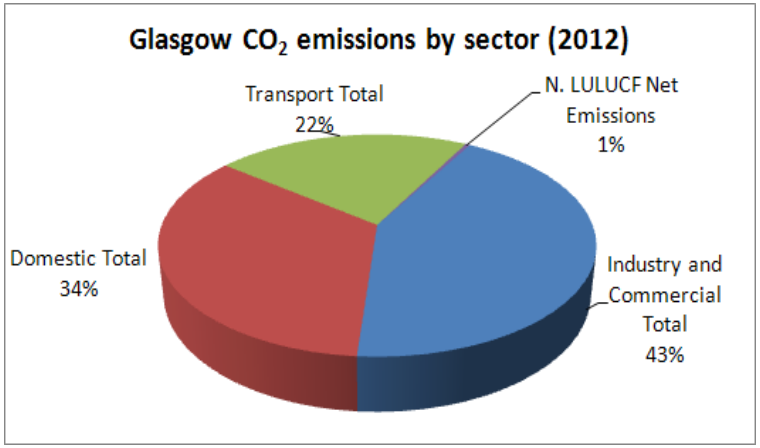
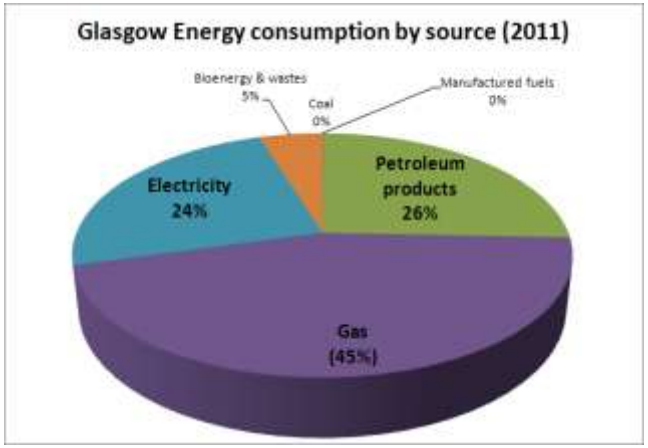
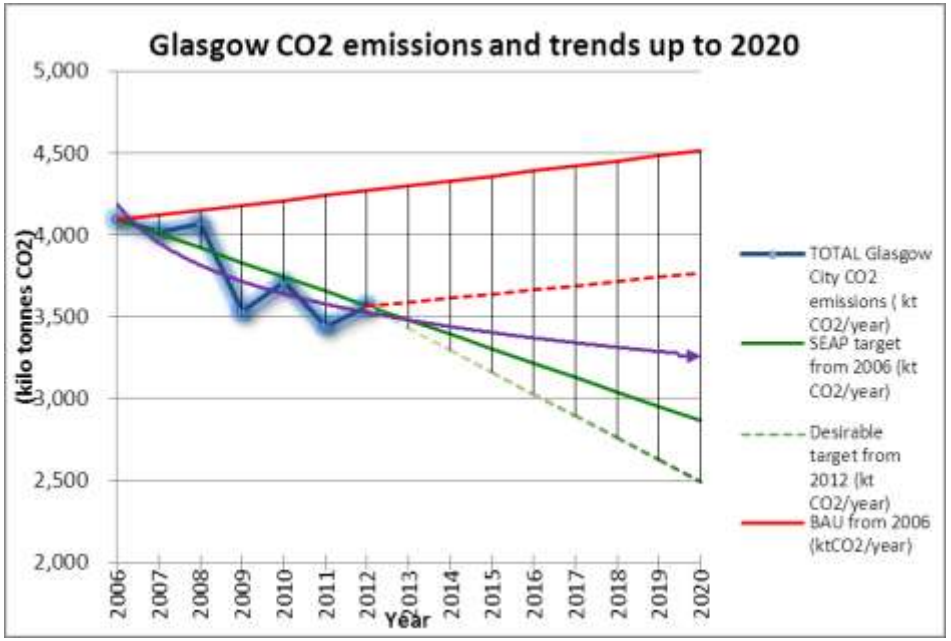




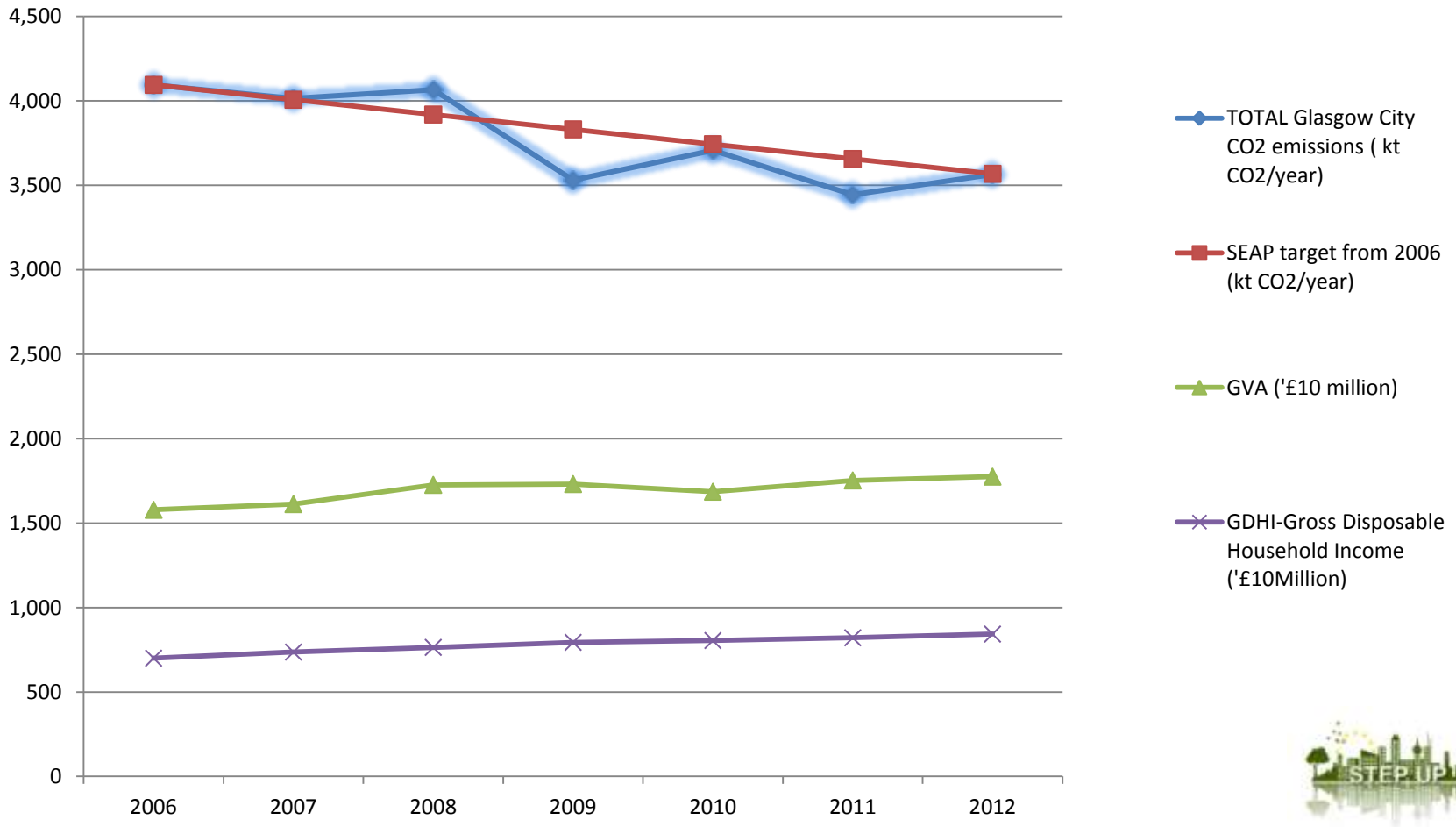


What does the BEI tell us?

- Glasgow emitted around 4,000 kt of CO_2 in 2006
- Glasgow needs to be below 3,000 kt CO_2 by 2020
- Glasgow's CO_2 emissions reduced by 13% from 2006 – 2012
- Trendline shows that we have 'challenges' beyond 2013
- A new set of actions is required



Glasgow CO_2 emissions, GVA and GDHI 2006 - 2012



Glasgow Energy Summary

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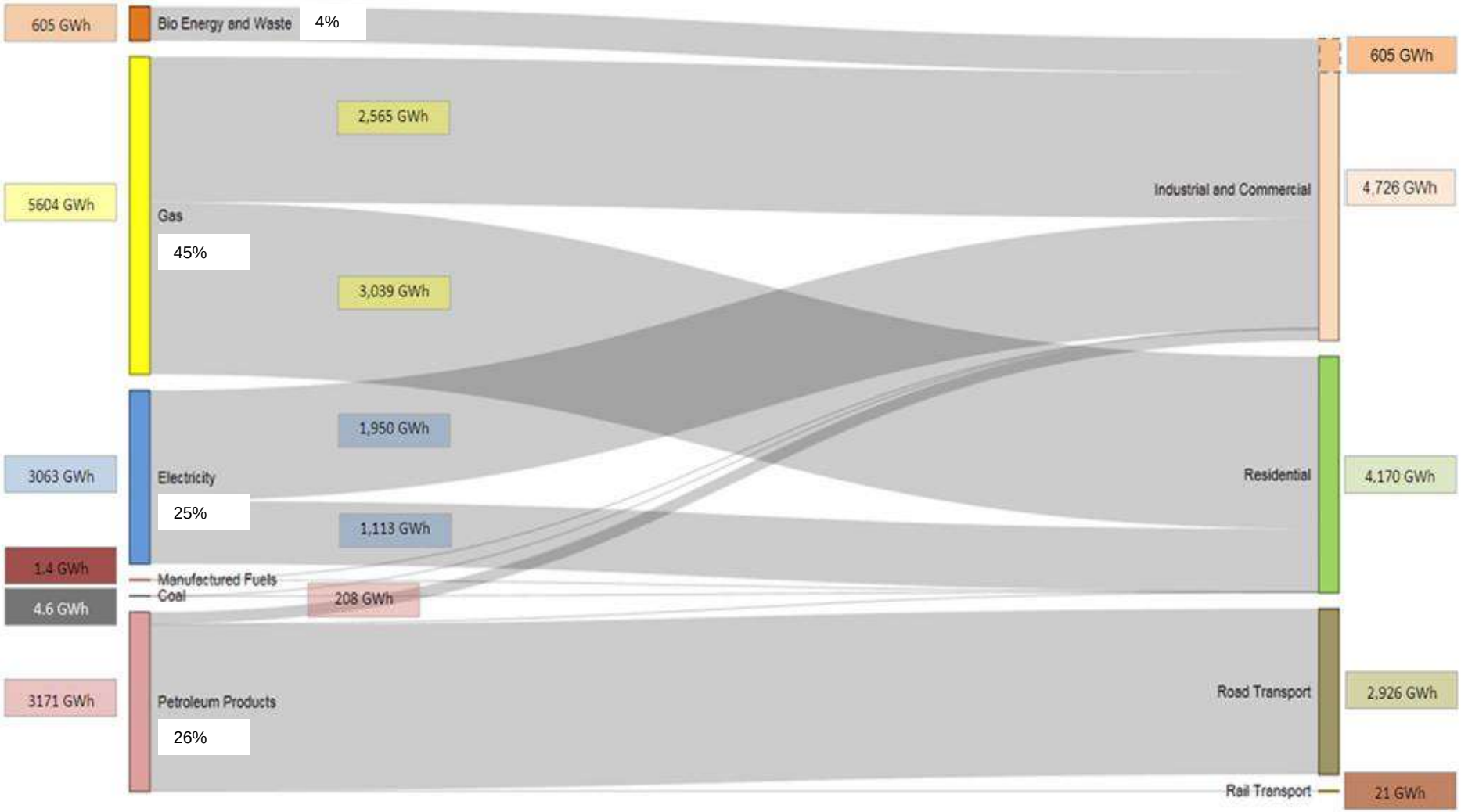
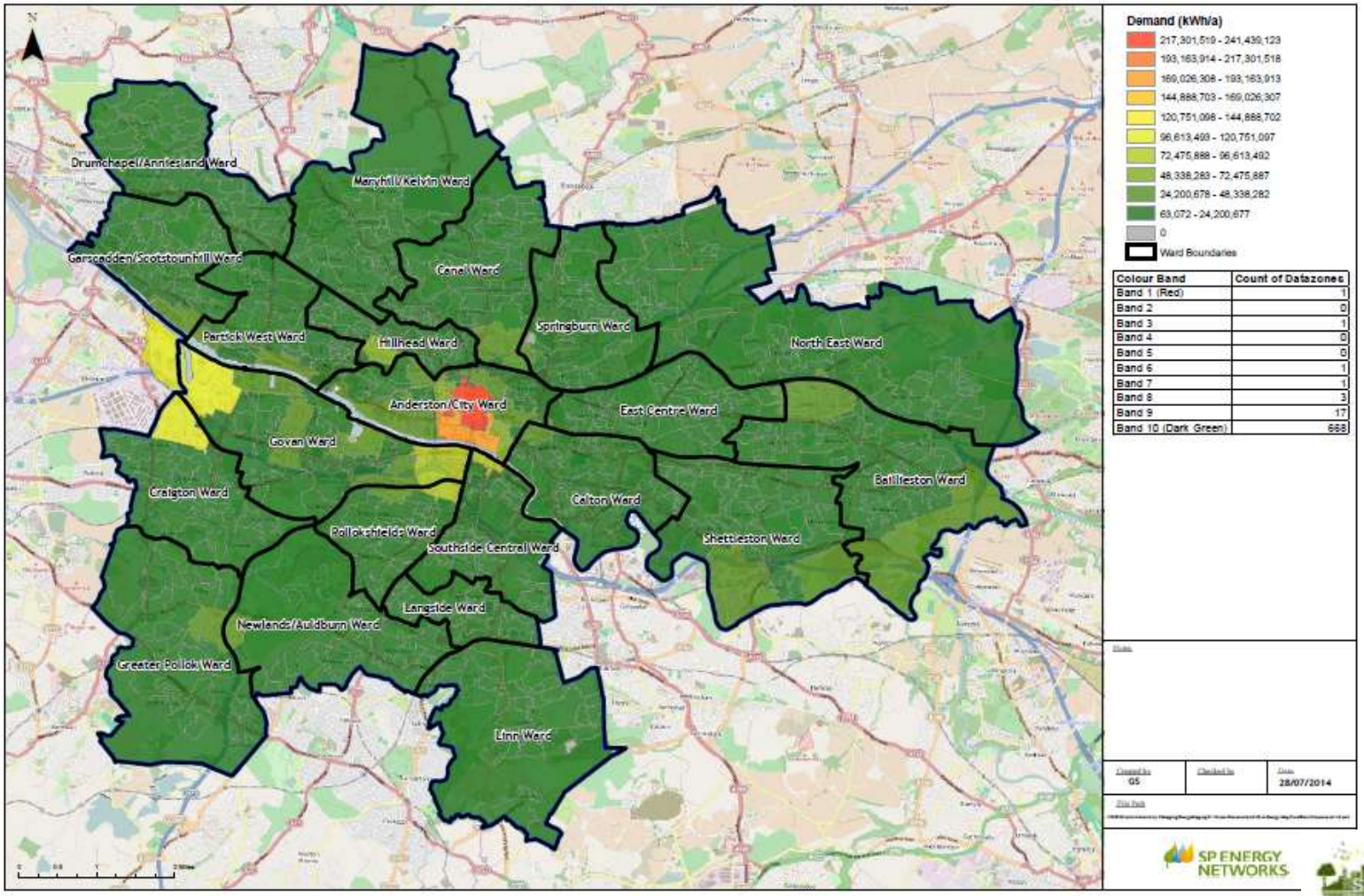


Glasgow consumes approximately 12,500 GWh of energy per annum

Glasgow buildings energy consumption by ward



Issues and Opportunities

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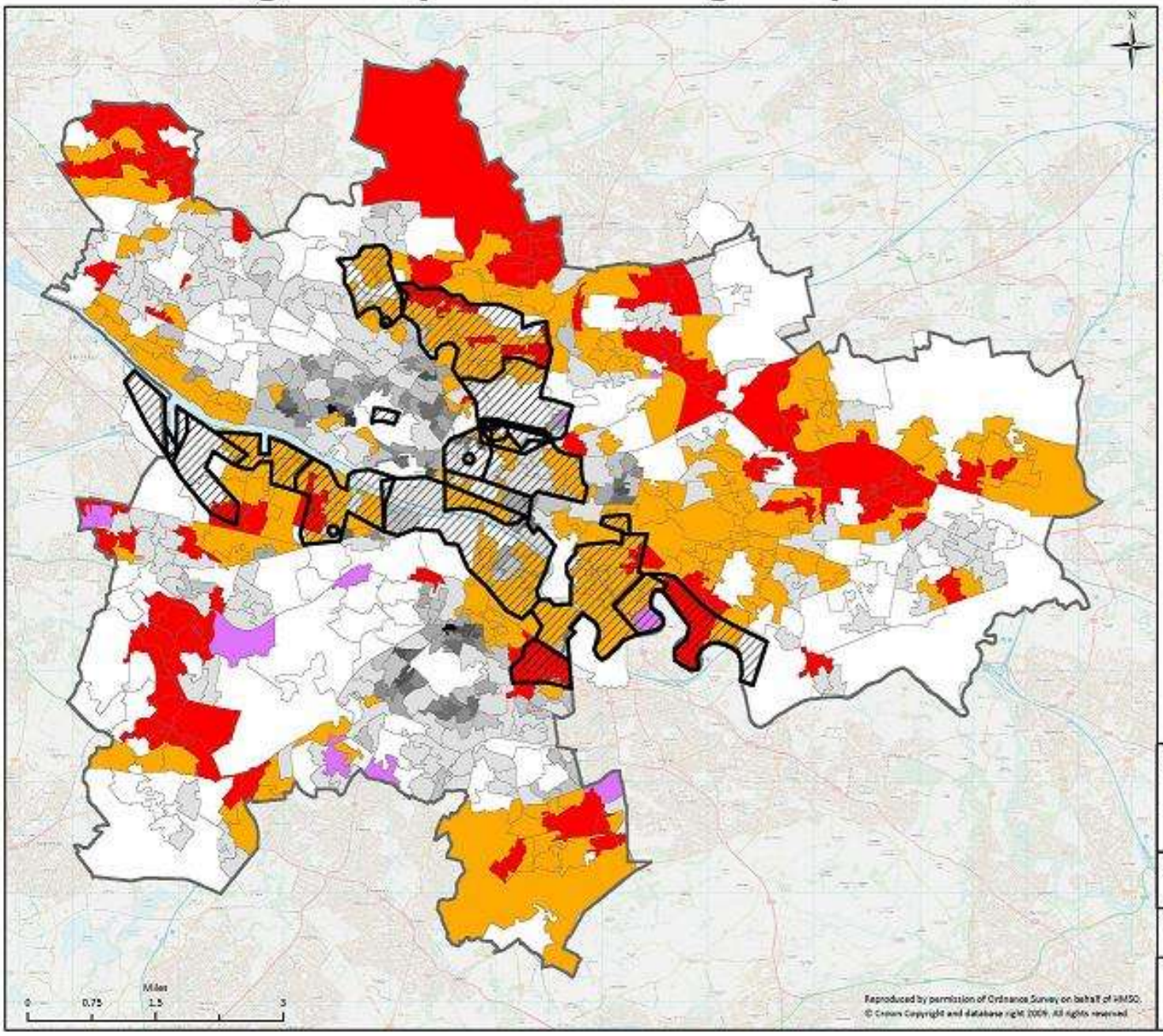
Area of Interest	Issues	Opportunity
City Centre	High Density Energy Demand Building, planning, land use constraints High utilisation of existing infrastructure High cost of new infrastructure	Demand side management / energy efficiency Align LDP, Policy to needs of target areas Engage with Key Stakeholders Integrated Planning Approach
Residential	Fuel Poverty & High Energy Costs Poor Building fabric Inefficient heating / hot water systems	Lower cost fuel sources Improve insulation Replace with more efficient systems ~ DHN
Large Energy Consumers	Large energy consumption! Individual energy systems Large grid connections	Demand side management / energy efficiency Integrated Planning Approach Localised generation ~ anchor loads for DHN
Distributed Generation	Grid network constraints High initial investment Availability of renewable resources	Integrated Planning Approach Engage with Key Stakeholders ~ funding sources

Glasgow City - Areas of High Deprivation/ Fuel Poverty



Datazone Statistics

- In SIMD and Fuel Poverty (99 zones)
- In SIMD, not in Fuel Poverty (190 zones)
- Not in SIMD, in Fuel Poverty (10 zones)
- Not in SIMD or Fuel Poverty (392 zones)
- Proposed District Heating Zones
- GHA Stock
- Registered Social Landlords
- Primary Substations
- 11kv cable

Dwellings per Square KM

- 0 - 1868
- 1869 - 3736
- 3737 - 5604
- 5605 - 7472
- 7473 - 9340
- 9341 - 11208
- 11209 - 13076
- 13077 - 14944
- 14945 - 16812
- 16813 - 18680
- Glasgow City Boundary

Notes
- 'In SIMD' = zones in the SIMD 2012 15% Most Deprived
- 'In Fuel Poverty' = zones with >50% properties in fuel poverty, based on Experian data

Prepared By:	Checked By:	Prepared On:
GS		20/02/2014

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SP ENERGY NETWORKS

New Energy and Carbon Masterplan

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- Maintain same Vision as 2010 report
- Retain 30% CO_2 savings by 2020 target
- Tackle key challenge of reducing electricity consumption for heating
- Enhanced Plan:
  - Partnership
  - Energy efficiency
  - Renewable energy
  - District Heating
  - Smart grids
  - ESCo
  - Sustainable Transport
  - Waste, wastewater treatment
  - Citizen and stakeholder involvement

Energy Efficiency

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- **Municipal Buildings**
  - Carbon Management Plan aligns to 30% reduction target by 2020
  - 74% carbon emissions from buildings, 18% street lighting, 8% transport
  - Actions: retrofitting buildings, high efficiency lighting, voltage & boiler optimisation, electric vehicles, LED street lighting
- **Tertiary Buildings**
  - Glasgow Climate Change Partnership worked with public sector organisations on carbon reduction
  - SPEN heat mapping identifies large public and private sector energy consumers we need to work with
- **Residential Buildings**
  - Energy efficiency & insulation retrofit in social housing, G-HEAT team
  - Private housing

Local electricity production and District Heating

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Local electricity production

- Wind turbines
- Solar photo-voltaics
- Energy from waste
- Potential for heat pumps and
- Micro-HEP

District Heating

- North Glasgow/City Centre North
- Polmadie/Gorbals
- Athletes Village

Energy Services Company (ESCo)

Smart Grids

Intelligent technology and smart meters

Transport

- **Municipal Fleet**
  - Reduction in numbers, journeys, route rationalisation, procuring most efficient vehicles
  - Driver education
  - Electric fleet vehicles
- **Private and commercial**
  - Free electric vehicle charging points
  - City bike hire scheme
  - Bus operators – electric vehicles
- **Sustainable Transport**
  - Local Transport Strategy
  - Active travel – cycling, walking
  - Improvement to public transport

Waste

- **Waste hierarchy**
  - Using waste hierarchy in strategic waste management
- **Waste Strategy 2010**
  - Aligns with Scottish Government Zero Waste Plan
  - Covers –
    - Collection
    - Recycling
    - Residual Waste Treatment
    - Landfill
- **Glasgow Recycling and Renewable Energy Centre**
  - Divert 90% of green bin residual waste away from landfill
  - Releasing recyclable resources
  - Produces heat and power

SEAPs in STEP UP cities

Riga

- CO2 emissions
- 55-60% CO2 reduction by 2020
- Riga Smart City SEAP now published

Ghent

- CO2 emissions
- Climate neutral by 2050
- Climate Action Plan (SEAP 2014)

Gothenburg

- CO2e emissions
- 75% per capita reduction by 2050
- Climate Strategy (SEAP 2014)

Glasgow

CO2 emissions

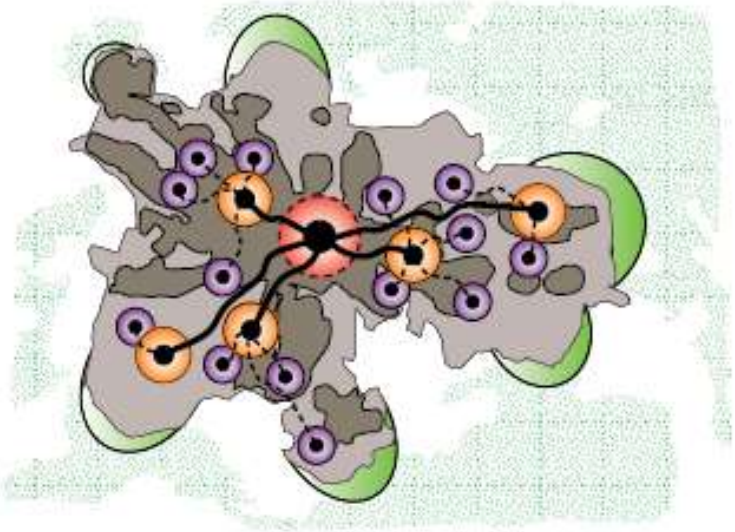
30% reduction by 2020

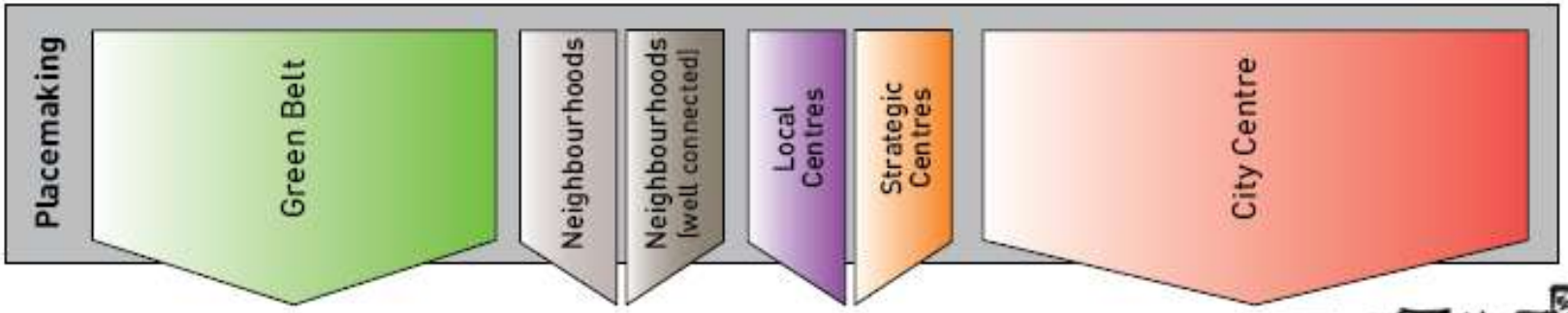
-Energy and Carbon Masterplan (SEAP 2014)

GLASGOW

PROPOSED CITY DEVELOPMENT PLAN

Figure 5 Directing Development in the City through the Sustainable Spatial Strategy





Resource Management

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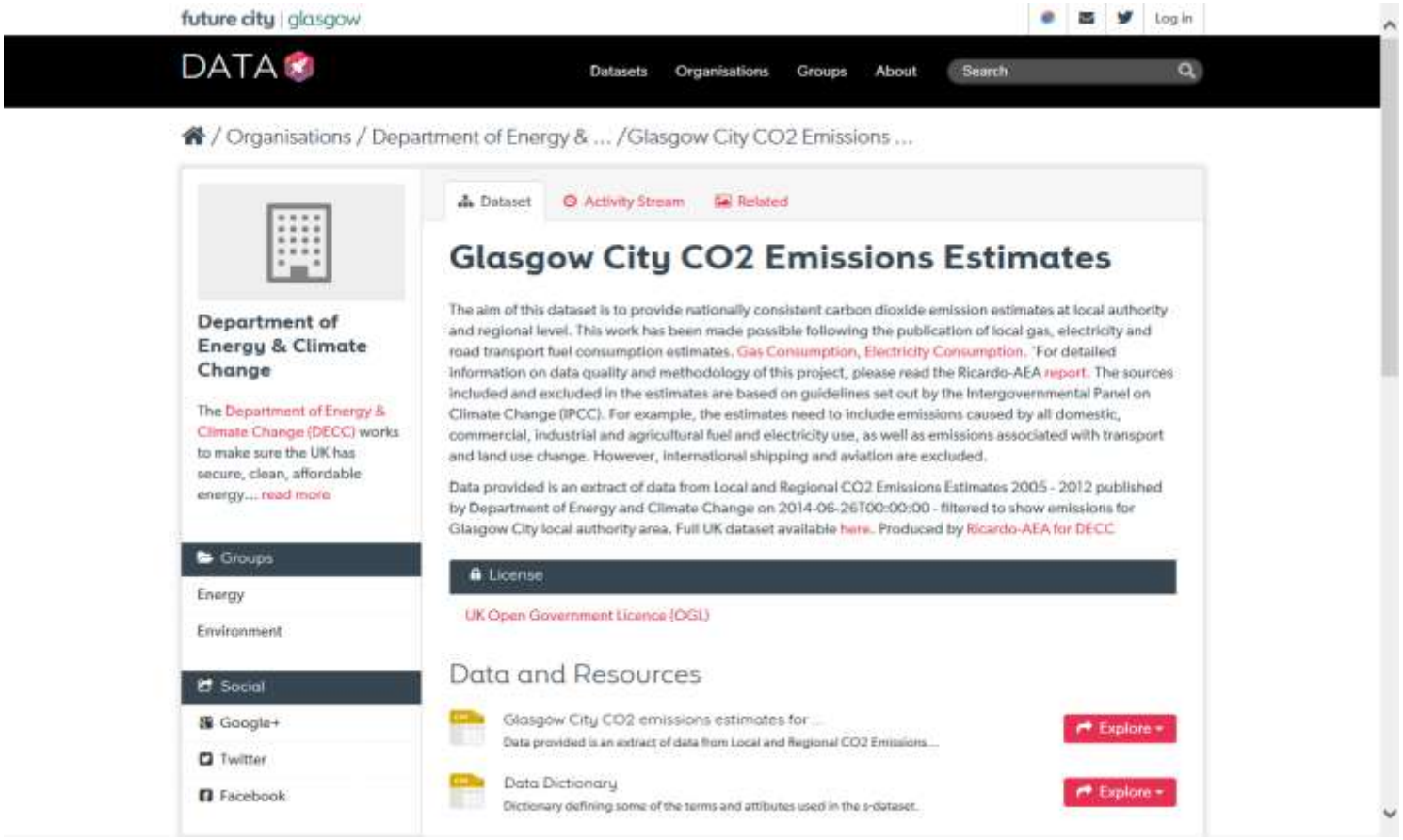
‘Resource Management’ Policy CDP5 covering

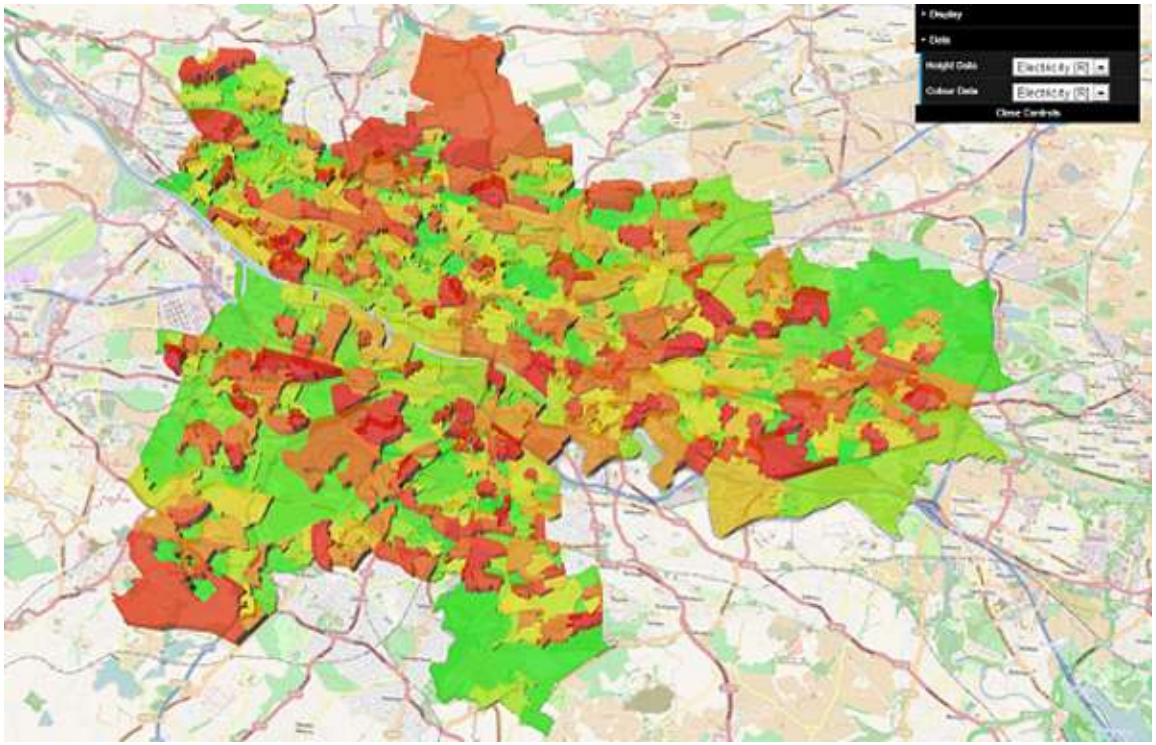
- Energy efficiency and low and zero carbon generating technologies
- Building and development design wrt energy demand, transport, access to facilities
- Integrated approach to energy, transport, water infrastructure
- Opportunity areas for DH
- 3 further sites for wind turbines
- Supplementary Guidance to follow to detail location and number turbines
- Policy:
  - Supports energy generation from renewable and low carbon sources
  - Promotes energy efficient design and LZCGT
  - Supports CHP and DH networks
  - Supports developers who wish to connect to DH schemes
  - Sustainability to Gold level by 2018 (Building Standards Technical Handbook)

Open data Glasgow

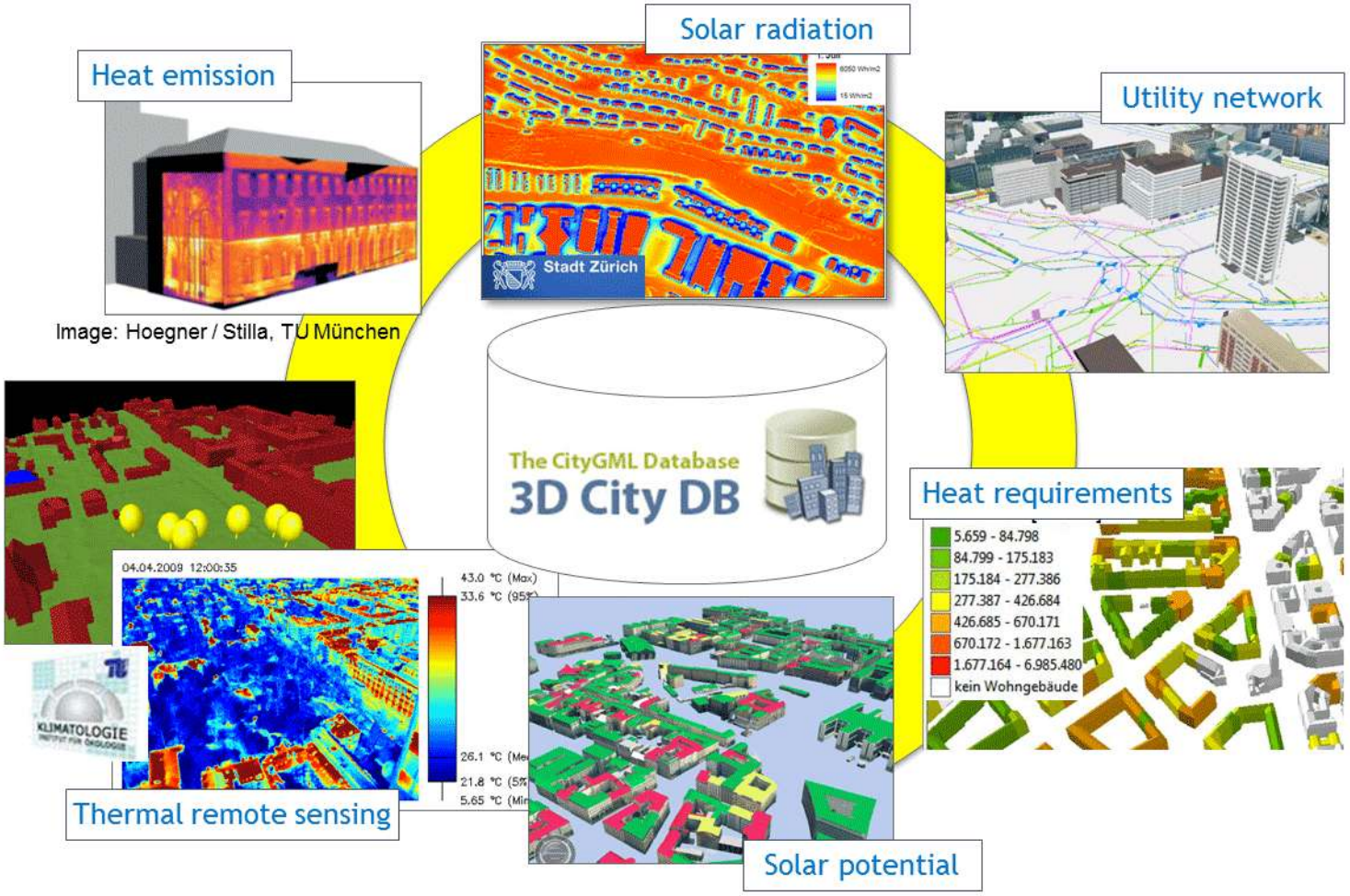
Open data Glasgow



TSB Future Cities – Online energy model



3D City Models



Stakeholders views

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- 200+ organisations (public, private, academia, community groups, housing associations) surveyed Dec-Jan 14
- 126 responses
- 90% agree with Glasgow's energy vision
- 50% agree with 30% CO_2 reduction target
- 70% willing to share energy data
- 80% want to be involved

Citizens' views

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- 507 responses
- 3 most important aspects of Glasgow's green agenda –
  - Energy efficiency
  - Recycling and waste
  - Local transport
- 60% would support a district heating scheme in their area
- Preferred local renewable projects –
  - Waste to energy
  - CHP/Solar PV
  - Local wind turbines

Conclusions

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- STEP UP developing enhanced SEAP model
- Glasgow developing new Energy and Carbon Masterplan 2014
- Revised action plan and projects to meet 30% target
- New district heating zones and ESCo
- Tackling fuel poverty, promoting low carbon energy, creating jobs
- Smarter, greener Glasgow

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More information

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Website:

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Join learning network:
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