Learning Network of Cities - State of Sustainable City Planning in Scottish Cities and Nuremberg

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Contents

1 Summary

This report by the Glasgow City Council is based on an interview with Companion City Nuremberg and the interviews held with representatives of the other cities of the Scottish Cities Alliance (of which Glasgow is a member): Aberdeen, Dundee, Edinburgh, Inverness, Perth and Stirling. The report is an outline of the state of sustainable city planning in this existing network of these cities.

An interesting feature of the Scottish network is the fact that some of the cities have political administrations at the city level and others are governed at a regional level. This is due to the fact that the concerned cities vary in size from almost 600.000 in Glasgow down to 34.000 in Inverness (which is part of Highland Council). With such variety in the size of populations and administrative boundaries, it can be difficult to compare the status of sustainability planning in different cities and also has implications on SEAP developments.

All the cities interviewed have a diverse range of energy issues and priorities and also have different geographies and needs for development. Each city is at a different stage in their sustainable city planning. Nuremberg is in an advanced state of sustainable city planning, with a SEAP submitted in 2007 and an enhanced SEAP currently being developed to incorporate further stakeholder involvement, energy actions and transport and ICT emissions.

There is evidence in some cases of integration of carbon and energy planning with the wider policy and planning framework, addressing economics, business models and use of innovative projects to drive change into achieving a more sustainable city. However, in general this is an area that needs further work and support perhaps involving collaboration with other professionals within the city administrations; this is true of both cities in Scotland and Nuremberg.

In Scotland, the smaller cities, Inverness, Perth and Stirling, are less developed in terms of a city-wide focus for energy that a SEAP requires and tend to have an internal and project driven approach to sustainability and energy policy. In the case of Inverness and Perth in particular, their relatively small city size within a much larger geographical and administrative area creates a situation that is challenging for SEAP development, due to

inadequate resource and capacity to engage in developing a SEAP. Stirling is concentrating on Council energy and sustainability projects that are achievable with the resources they have available.

From a training and support perspective all the Scottish cities interviewed have expressed interest in participation with STEP UP regardless of whether they intend to produce a SEAP and all requested further training on SEAPs. For general training the following topics were identified as popular needs:

- SEAPs
- Project Appraisal
- Citizen involvement
- Stakeholder Involvement
- ESCOs
- Investment Funds
- Heat Mapping
- District Heating

Depending on the nature of the city, different training and coaching needs have been identified. More specific areas of training interest include:

- Process of SEAP creation
- Production of a Baseline Emissions Inventory
- Finance/Investment/Business Models
- Public/Private Partnerships
- Vision/Governance
- Risk Management of Projects
- Strategy Integration with SEAP
- Developing SEAP Actions and Measures.

Nuremberg is at a very different stage in its sustainable city planning, and as such, its support needs vary substantially from those outlined for Scottish Cities above. Nuremberg is keen to engage in knowledge exchange with other cities and for support on coordinating across city departments and integrating planning processes. Nuremberg is also in a strong position to offer lessons for other cities on their own experiences of SEAP development and implementation.

The STEP UP project is well-placed to provide useful training and assistance with respect to energy planning to all the Learning Network cities, regardless of their respective current state of sustainable city planning or city size and nature.

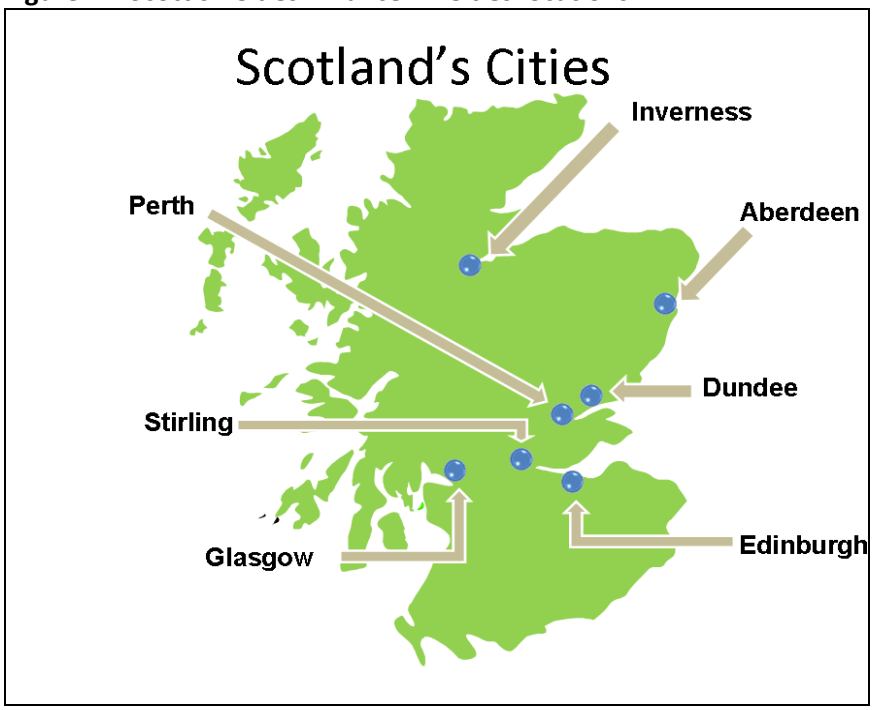
2 Context

At the time of writing, commitment as a STEP UP companion city to Glasgow had only been confirmed with Nuremberg, Germany. The current state of sustainable city planning and implementation in Glasgow's Learning Network was thus also evaluated with a view to cities becoming a companion city in the future.

Scottish Cities

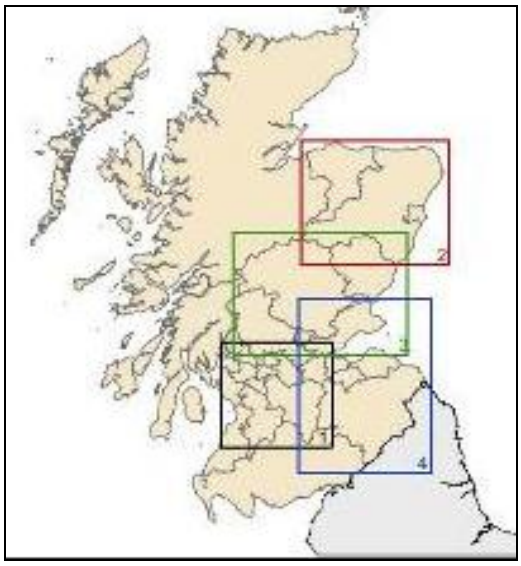
Through the partnership with the Scottish Cities Alliance, the cities in Glasgow's Learning Network as part of the STEP UP project are the six Scottish cities of Aberdeen, Dundee, Edinburgh, Inverness, Perth and Stirling (Figure 1). All of these cities are historic settlements, are of varying sizes and populations and display a wide range of characteristics with respect to energy. All of the cities except Inverness (part of Highland Council) and Perth (part of Perth and Kinross Council) have political administrations at a city level and are also subject to devolved legislation in Scotland from the Scottish Parliament in Edinburgh and national legislation from the UK Government in London. All except Inverness are also included in a Strategic Development Plan (SDP) area designated by the Scottish Government (Figure 2) for strategic spatial planning purposes for the largest city-regions.

Figure 1 – Scottish Cities Alliance - 7 Cities locations.



Source: Scottish Cities Alliance

Figure 2 - Scotland's Strategic Development Plan areas: Index map [1]



1 – Glasgow and Clyde Valley Strategic Development Plan area (Glasgow and the Clyde Valley)
2 – Aberdeen City and Shire Strategic Development Plan area (Aberdeen City and Shire)
3 – Dundee, Perth, Angus and North Fife Strategic Development Plan area (TAYplan) (includes Stirling)
4 – Edinburgh and South East Scotland Strategic Development Plan area (SES Plan)

Around 70% of the country's population live in the Central Lowlands — the region stretching in a northeast-southwest orientation between the major cities of Edinburgh and Glasgow, and including major settlements Stirling, Perth and Dundee. Other concentrations of population include the northeast coast of Scotland, principally the regions around the cities of Aberdeen and Inverness.

The cities all have a high degree of local autonomy in terms of sustainable city planning and decision making (all produce Local Development Plans) and produce their own Carbon Management Plans and Climate Change Scotland Declaration reports (see Appendix A). The cities can all apply for and benefit from funding grants from the Scottish Government, the UK Government and the EU (Aberdeen for example are involved in several EU projects).

By European standards, the Scottish cities are comparatively small, ranging in population from 598,830 (Glasgow) to 34,000 (Stirling). The wider populations of their greater metropolitan areas sometimes greatly exceed the populations within the city boundaries: Many Scottish Learning Network cities are the central hub of areas with populations sometimes three times that of the city itself and many cities' populations increase dramatically every day with commuters arriving to work in the cities. The best example of this is Glasgow itself, which has a city population of approximately 598,000 but which lies in

[1] Source:http://www.scotland.gov.uk/Publications/2008/11/25145654/9

the centre of a greater metropolitan area of 1.2 million residents. This point is particularly relevant for energy planning and city region planning on a wider scale – as reflected in the Strategic Development Plan (SDP) level of strategic planning. Cross-border issues are important when considering energy networks serving metropolitan networks and engagement of other local authorities in SDP areas is important.

Due to the very low population density in some rural areas of Scotland, some of the Local Authorities responsible for the Scottish cities cover wider areas that reach far beyond the city boundaries. E.g. Inverness falls within the remit of Highland Council, covering a large geographical area; the city itself has a population of 75,000 and the whole Council area a population of 230,000, although it has the lowest population density in the UK of 9 persons per km² (Table 1). Population density is important for the provision of energy infrastructure across urban and rural areas and it is notable that some communities (in Perth and Kinross and Inverness/Highland area) are not in fact connected to the national gas grid. The variation in density of population across the city are, as seen in Table 1, considerable.

Table 1 - Glasgow and STEP UP Learning Network cities

City	Inhabitants	Area (km^2)	Density
Glasgow	598,830 (2011)	175.5	3,298/km^2
Aberdeen	222,460 (2011)	186	1,187/km^2
Dundee	147,200 (2011)	67	3,298.0/km^2
Edinburgh	477,940 (2011)	264	1,844/km^2
Inverness *	222,370 (2011)	25,659	8.7/km^2
Perth**	134,380/ (2011)	2157	64/km^2
Stirling	90,770 (2008)	2196	40/km^2

Source: SCA member Councils.
* - Population of the wider Highland Council area beyond urban conurbation.
** - Population of the Perth and Kinross Council area beyond the urban conurbation.

All of the six Learning Network cities have committed to participating in the STEP UP programme and have been interviewed by the Glasgow City Council STEP UP team during July and August 2013 (see Appendix B). The results of these interviews are summarised in this document and the interviews themselves are included in the report on D4.3.

Nuremberg

Nuremberg is a historic city in northern Bavaria in Germany with a population of approximately 500,000. The city lies within a wider metropolitan area with a population of approximately 2.5 million inhabitants. Traditionally Nuremberg was a centre for transport and logistics firms, given its central location, and a freight centre within the city remains a

vital transfer hub in southern Germany. Large industrial plants still exist in the city; however, since the 1970s, the city has developed into a services centre with particular growth in planning, engineering and economic consultancy sectors.

Figure 3 – Location of Glasgow and Nuremberg

Source: Google maps

The city itself lists its economic strengths as within the fields of communication and multimedia services, energy and environment, electronics and the service industry. It has a link with the City of Shenzhen in China (a growth region). Particular emphasis is placed on the strength of research institutes within the Nuremberg region. Nuremberg has been twinned with Glasgow since 1985 and the cities have an ongoing relationship of active cultural exchange across a range of projects and events.

3 Planning – Sustainable Energy Action Plans

Scottish Cities

Two of Glasgow's Learning Network cities, Aberdeen and Edinburgh, have signed the Covenant of Mayors (CoM) and are preparing their Sustainable Energy Action Plans (SEAPs) for submission and publication. Dundee is considering the desirability of producing a SEAP. The other cities are currently focusing on other more internally focused climate strategies such as Climate Change Action Plans, Carbon Management Plans or Climate Change Scotland Declaration reports. In some cases, Councils considered that resources required to produce a SEAP to the requirements of the CoM - given the size of the local authority - were too great and time would be better spent concentrating on delivery of existing local authority carbon projects that will contribute to reduction of CO_2 emissions and greater energy efficiency across the wider council area. Table 2 below shows the state of sustainable city planning in each local authority and whether there are targets across the 'wider Council area' (which may include other settlements beyond the main city but within the administrative boundary of the council) or council only targets.

Table 2 – State of Sustainable City Planning: SEAP and Climate strategies and associated CO_2 reduction targets

City	Council CO_2 Target	SEAP or Climate Plan	City-wide Target	Long Term Goal
Glasgow	30% reduction by 2020	Sustainable Glasgow SEAP (approved)	30% emission reduction by 2020	80% reduction by 2050.
Aberdeen	23% by 2015 (2008/09 baseline)	Smarter Aberdeen Strategy (SEAP in prep)	To be set on completion of BEI	42% CO_2 reduction by 2020
Dundee	5% CO_2 emissions reduction per annum	Commitment to 'Low Carbon Strategy' by 2017	N/A	Assessment of SEAP and city-wide targets in progress.
Edinburgh	N/A	Sustainable Edinburgh 2020, 2nd Carbon Management Plan, SEAP (in prep)	40% CO_2 reduction, 12% increase in Energy Efficiency & 40% energy from renewables	40% CO_2 emissions reduction.
Inverness	Reduction of CO_2 emissions by 21% by 2020	Carbon Management Plan, Scotland's Climate Change Declaration signatory	N/A	Carbon Neutral Inverness by 2025
Perth	5% CO_2 emissions reduction per annum	Climate Change Declaration and Carbon Management Strategy & Implementation plan	N/A	Assessment of SEAP desirability.

Stirling	20% Reduction by 2015/2016.	Carbon Management Plan	N/A	Carbon Neutral Stirling

As can be seen from the Table there is clearly variation between the cities in terms of the CO_2/energy priorities and targets set. All the cities have produced Climate Change Declaration reports and Carbon Management Plans that outline their commitment to lowering CO_2 emissions and the measures they intend to take but only Edinburgh, Aberdeen and Glasgow have extended this to approach the wider Council area. There are a range of projects initiated by the cities (such as Carbon Neutral Inverness) that will potentially accelerate the wider agenda of energy and climate change action but the focus on sustainable energy planning itself as a route to CO_2 reductions varies.

Nuremberg

Nuremberg has a SEAP that was submitted to the Covenant of Mayors and approved in 2007, with an overall target of 40% reduction in CO_2 emissions by 2020 using a baseline of 1990 [2], as shown in Table 3. The SEAP was developed through a top-down process; however, the need for increased stakeholder involvement has been recognised and is now being incorporated into the development of a new SEAP. This enhanced SEAP is currently being developed, with engagement with industry and the public, and is expected to be completed by February/March 2014. This SEAP will incorporate some emission sources that were previously unaccounted for, namely ICT, and will include an updated Baseline Emissions Inventory (BEI) and new action measures. Additionally, possibilities for utilising geothermal energy through heat pumps and further emphasis on transport issues within the city are being incorporated. The enhanced SEAP will also integrate with Nuremberg's long term vision captured in its Climate Protection Plan 2050 (CPP) [3] as much as is possible.

Table 3 - State of Sustainable City Planning: SEAP and Climate strategies and associated CO_2 reduction targets

City	Council CO_2 Target	SEAP or Climate Plan	City-wide Target	Long Term Goal
Nuremberg	40% reduction by 2020	Nuremberg 2009 (approved)	40% emission reduction by 2020	80% reduction by 2050.

[2] Nuremberg's SEAP 2007 - http://www.eumayors.eu/about/signatories_en.html?city_id=35&seap

[3] Climate Protection Plan (The Energy Concept) - http://www.bmu.de/en/topics/climate-energy/transformation-of-the-energy-system/resolutions-and-measures/

So far, Nuremberg has achieved a reduction in CO_2 emissions of 34%; however, it is thought that achieving the remaining 6% may prove difficult as substantial reductions were achieved by the conversion of a coal fired power plant to gas.

4 Cities' Challenges

Scottish Cities

All the cities interviewed have a diverse range of energy issues and priorities and also have different geographies and needs for development. The extent to which cities are integrating their energy planning with their development planning (through local or strategic development plans) is uneven. This is important as several cities are experiencing demographic growth beyond the national average of 5% (Highland, Aberdeenshire, Edinburgh, Perth and Kinross) bringing with it new households, demands for new housing and consequent energy demands that will need to be catered for.

Aberdeen

The city of Aberdeen is recognised as a centre for offshore oil production and reputedly has the second highest concentration of expertise in this field in the world behind Houston, Texas. Aberdeen has prospered over the past three decades from this industry is well aware of its reliance on this finite resource for jobs and the economy in the region and the need to develop expertise in alternative and renewable resources over the next 30 years as oil resources deplete. Aberdeen was an early starter on climate change initiatives and Aberdeen was one of the first cities to sign the Carbon Trust Local Authority Carbon Management Programme (LACMP)[4]. From this Aberdeen produced its Carbon Management Plan (CMP) [5], which aims to reduce emissions from Council buildings, vehicles, street lighting and landfill sites[6] was submitted to the CoM as a SEAP but was rejected due to its lack of an area wide focus.

The city is now looking to create a more integrated approach to energy planning and to prepare a 'Local Climate Impact profile' for Aberdeen. Aberdeen has been pioneering in establishing an Energy Services Company (ESCO) in 2002 to meet the challenge of providing district heating for social housing. Aberdeen Heat and Power is a separate company but strongly guided by the council in its strategy and operations.

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[4] The scheme provides councils with support and guidance to help them accurately measure carbon emissions and identify opportunities to make carbon emissions savings. - http://www.aberdeencity.gov.uk/planning_environment/environmental/your_environment/cma_carbonmanagement.asp

[5] See Appendix A for Carbon Management Plan definition.

[6] Aberdeen's CMP - http://www.aberdeencity.gov.uk/nmsruntime/saveasdialog.asp?lID=31274&sID=10673

The city is working in partnership with the Centre for understanding Sustainable Practice CUSP) at Robert Gordon University on a 'Smarter Aberdeen Strategy' which will be a robust, city-wide SEAP. The main challenge for the city is now to drive the city-wide energy work through this 'Smarter Aberdeen Strategy' and to engage a wider set of stakeholders in the process.

Aberdeen's energy challenges summary:

- Long term planning for energy and jobs beyond finite North Sea oil production.
- Changing the city economy beyond reliance on the oil industry for jobs.
- Areas of deprivation and fuel poverty.
- Lack of citizen and community engagement with respect to energy.
- Need to link SEAP to Local Development Plan[7] (LDP) and other planning processes e.g. Sustainable Urban Mobility Plan (SUMP)
- Need to complete a Baseline Emissions Inventory (BEI) for the city.
- Energy efficiency in solid granite walled historic buildings throughout the city.

Dundee

The city has social challenges and many areas of high social deprivation and consequently significant fuel poverty. There are several areas of community regeneration identified under the Dundee Partnership for which there are local regeneration plans. Although not currently having a SEAP, Dundee is developing (in line with a Single Outcome Agreement commitment) (Appendix A) a 'Low Carbon Strategy' by 2017 which could develop into a SEAP in the future. The Council considers that a SEAP could help in marketing the city for investment in energy. Dundee currently has no targets for city-wide CO_2 emissions and UK Government - Department for the Environment and Climate Change (DECC) data was used for an area-wide assessment. Dundee has a basic heat map in place and is waiting for refinement of data alongside the national heat map process currently underway.

[7] Aberdeen's Local Development Plan was first adopted in 2012. The Local Development Plan is a public document which shapes the future of Aberdeen, and influences significant public and private investment in homes, businesses, shops, infrastructure and facilities.
http://www.aberdeencity.gov.uk/planning_environment/planning/local_development_plan/pla_local_development_plan.asp

The Scottish Government's National Renewables Infrastructure Plan [8] identified Dundee as a strategically important and suitable port for the development of the off-shore renewables industry in Scotland and this is central to the development and regeneration proposals of Dundee's LDP. The Dundee Partnership (Community Planning Partnership) chaired by the Leader of the Council has established Dundee Renewables (a partnership between Scottish Enterprise, Dundee Ports Ltd and Dundee City Council) to help build a renewable energy industry in Scotland. This includes infrastructure, marketing, supply chain and skills aspects. Dundee Renewables links into the East Coast Renewables industry[9]. The city's LDP is to be approved soon and features policies on renewable energy including small scale biomass and district heating schemes.

Dundee's energy challenges summary:

- Better understanding of CO_2 emissions across the city as a basis for energy planning.
- Need to develop a 'Low Carbon Strategy' as a basis for targets for city-wide CO_2 emissions reduction.
- High social deprivation related to high fuel poverty in the city.
- Need to develop energy policies in LDP in tandem with SEAP development.

Edinburgh

Edinburgh already has in place a Sustainable Edinburgh 2020 document, a second version of its Carbon Management Plan, a Climate Change Framework and a draft SEAP about to be consulted upon. The targets are: 40% CO_2 reduction by 2020; 12% energy efficiency and 40% renewable energy by 2020 compared to a 1990 baseline. The city has typical challenges for a city of its size: there are pockets of social deprivation and fuel poverty, and transport is an important issue. The road network in Edinburgh is often congested but a new tram system is about to be launched and cycling is well promoted. Another main challenge for

[8] This report from Scottish Enterprise and Highlands and Islands Enterprise sets out the conclusions of the first stage of the development of the national renewables infrastructure plan (N-RIP). (Stage 1) http://www.scottish-enterprise.com/your-sector/energy/energy-how-we-can-help/renewables-support/energy-renewable-energy-reports.aspx (Stage 2 sets out to is to support the development of a globally competitive offshore renewables industry based in Scotland.)

[9] This regional partnership focuses on a number of strategic priorities, from supply chain development and skills, to research & development and knowledge transfer. It works in partnership with Scottish Enterprise and Scottish Development International to develop the renewable energy sector and promote the region as a location for investment. http://www.eastcoastrenewables.org/location/dundee/

Edinburgh is alignment of its economic and other strategies such as housing and transport with its SEAP. Edinburgh is predicted to have higher demographic growth than other Scottish cities.

Edinburgh's energy challenges summary:

- Areas of deprivation and fuel poverty.
- Need to link SEAP to Local Development Plan, economic and other strategies.
- Sustainable transport development.
- Development pressure and energy demands from projected demographic growth.

Inverness

Inverness is a signatory of the Scotland's Climate Change Declaration[10] and has produced its third Carbon Management Plan (CMP) but does not have a SEAP. Inverness has also achieved the Carbon Trust Standard accreditation twice in 2009 and 2011[11]. The city of Inverness lies within a large geographical area which is administered by Highland Council. Strategic planning for the city, therefore, also includes planning for the wider Highland area but Inverness does not form part of an SDP area. Fuel poverty is a challenge for Inverness itself but also within the wider Highland area due in part to large areas being outside of the main gas grid. Partly due to the rural nature of the area, there is a high dependency on private cars for transport for accessing services and employment. The area also experiences high demand for heating due to its northerly location. The city of Inverness needs to update its ageing sodium street lights which are old and highly energy inefficient.

Inverness energy challenges summary:

- High fuel poverty including in rural areas off the main gas grid.
- Dependency on private car use and consequent impact on transport energy use.
- High heating demand in winter.
- Sodium street lights in Inverness are ageing and inefficient.

[10] Note – All the Scottish Local Authorities have signed the Climate Change Declaration. http://www.keepscotlandbeautiful.org/sustainability-climate-change/sustainable-scotland-network/climate-change/scotlands-climate-change-declaration/

[11] (For the city's municipal emissions.) http://www.highland.gov.uk/yourenvironment/sustainabledevelopment/climatechange/

Perth

The city of Perth is situated within a Council that administers a larger geographical area than the city itself and experiences some similar issues to Inverness. Within Perth and Kinross Council area, there are a large number of people who are beyond the reach of the main gas grid and are dependent on other fossil fuels (coal, oil etc) for heating. There is also a dependency on private cars for transport. Funding for infrastructure projects is a challenge, exacerbated by the fact that the population of Perth is due to rise by 30% by 2032. There is also a shortage of low cost housing in the area.

A lack of engagement with local stakeholders on energy is an issue hampering some initiatives such as creating an Energy Services Company (ESCo). There has been little communication thus far between potential stakeholders on how an ESCO could provide more affordable heating services for citizens in fuel poverty and how it could be effectively delivered and administered. However, Perth has been pioneering in developing heat mapping in the city to meet the challenge of providing district heating to communities.

Perth energy challenges summary:

- High fuel poverty in rural areas especially those with no access to main gas services and dependent on other fossil fuels for heating.
- Dependency on private car use.
- Difficulty in finding funding for infrastructure projects.
- Demographic growth, causing development pressures and energy demands.
- Lack of affordable housing.

Stirling

The city of Stirling has had a CMP in place from 2011. They have a Climate Change Adaptation Strategy and have produced a Climate Change Declaration report but do not have or currently plan to produce a SEAP. Stirling has an ageing population and suffers from pockets of social deprivation both in the city and the surrounding rural area that Stirling Council covers. There is a significant amount of fuel poverty in the area and this is compounded by a lack of affordable housing. The small size of the Council means that there is a lack of staff resource to drive a robust sustainability agenda. However, Stirling has developed a comprehensive heat map for the city which highlights challenges and opportunities for district heating.

Stirling energy challenges summary:

- High fuel poverty.
- Potential for district heating to transform energy use.
- Areas of social deprivation.
- Demographic growth and future housing and energy demands.
- Lack of affordable housing.
- Lack of staff resource to drive robust sustainability agenda.

Nuremberg

Nuremberg faces a range of challenges to city planning and development:

- Demographics – Nuremberg is a growing city. Whilst the number of young people of school age is relatively stable but Nuremberg is experiencing an ageing population.
- Transport – Work is underway to develop an effective and reduced emissions multi-modal transport service
- Education – Across Germany, the transition to a new education system is underway; this has required significant planning and operational resources in German cities
- Rising energy prices – The "Big Four" energy companies in Germany are known to be price setting, and consequently fuel poverty is becoming a growing issue. Public utility companies have grown, but require more influence to help address rising energy prices.
- Project finance – City projects have occasionally encountered difficulties in generating sufficient finance for successful delivery

Additionally, Nuremberg has been affected by some industrial closures; however, the challenges this has created have been offset somewhat by the growth of new industrial sectors, particularly in electronics.

5 Training and Support Needs

Scottish Cities

All of the six STEP UP Learning Network cities have confirmed that they wish to participate in STEP UP workshops and training sessions. Cities also responded to a Survey Monkey survey on their general and specific training needs in August 2013. Five of six cities responded to the survey. Their responses are tabulated below.

Table 4 – Cities' General Training Needs
Cities were asked – "What general training would you be most interested in?"

Training	Response
Sustainable Energy Action Plans	100%
Citizen Involvement	75%
Project Appraisal	75%
Stakeholder involvement	75%
Investment funds	50%
European cities good practice	50%
Heat Mapping	50%
District Heating (DH)	50%
Energy Services Companies (ESCOs)	50%
Developing integrated projects	25%
Decentralised Energy	25%

Comments – One respondent replied: "All of the above but only to a limited extent."

Table 5 – Cities Most Pressing Support Needs for Strategic Energy Planning.
Cities were asked: "What are your most pressing support needs for strategic energy planning in your local authority?"

Support Needs	Responses
Process of SEAP production	75%
Producing a Baseline Emissions Inventory	75%
Vision, leadership and governance	75%
Developing actions and measures	50%
Public/private partnerships	25%
Stakeholder involvement	25%
The Benefits of Energy Planning	25%
Financing projects	25%

Comments – One respondent replied: "Additional resources, (Officers)."

It is clear from the survey that all cities that responded are interested in learning more about SEAPs and the citizen and stakeholder engagement that goes along with them. In terms of

specific support needs, 75% wanted help with SEAP production including production of a Baseline Emissions Inventory together with vision and leadership for energy planning in their city. Table 5 below tabulates responses from the structured interviews and survey, to show the specific training and support needs in each city.

Table 6 - Matrix of Cities' Training and Support Needs

Topic	Aberdeen	Dundee	Edinburgh	Inverness	Perth	Stirling
Risk Management of Projects	x	x	x			
District Heating				x	x	
Process of SEAP Production	x	x	x	x	x	x
Baseline Emission Inventory	x			x		x
Vision, Leadership, Governance	x	x	x			x
Stakeholder Involvement	x			x		x
Finance/Investment/Business Models	x	x		x	x	x
Strategy Integration (SEAP with LDP)	x		x			
Heat Mapping		x		x		x
Public/Private Partnerships			x	x	x	
ESCOs				x	x	

As can be seen from the structured interviews, all wanted help with the process of SEAP production and all but one city wanted help with Finance, Investment and Business Models to implement measures and projects coming out of the SEAP.

Nuremberg

Nuremberg is a city in an advanced stage of sustainable city planning, currently developing its enhanced SEAP. As such, the city's training and support needs are quite different from those of the Scottish cities outlined above.

- Integrated planning is an area in which Nuremberg would benefit from support. In particular, challenges exist for the city in integrating city planning services with infrastructure and energy planning for the future.
- Support around improving coordination between city planning services, the traffic unit and green areas planning departments would also be of benefit to the city.

- Improving knowledge exchange and sharing experiences with other cities pursuing sustainability agendas was also identified as an area which would be of interest and benefit to Nuremberg.
- SEAP development – The only notable gap in the city's SEAP is the measurement of emissions from the city airport; however, methodological issues related to this are currently being addressed by the city.

6 City Strengths and Projects

Scottish Cities

In the case of those cities that have no SEAP, the development of innovative energy and sustainability projects are crucial to driving the cities towards a more sustainable energy scenario. This section summarises the measures the cities are undertaking to increase sustainability and outlines the projects that are driving change, with or without a SEAP in place.

Aberdeen

Aberdeen has a working ESCO (Aberdeen Heat and Power)[12] with several CHP schemes across the city. Council carbon management is in an advanced state and the city is involved in several EU projects. Projects include:

- Aberdeen Heat and Power has its own list of projects and is now expanding beyond social housing to supply heat to public buildings in the city centre.
- Biomass boiler for Aberdeen City Council HQ building.
- Member of NE Scotland Climate Change partnership, bringing together 17 organisations.
- Member city of EU projects:
    - North Sea Sustainable Energy Planning Interreg IVB
    - MUSIC – Mitigation in Urban Areas: Solutions for innovative Cities
    - LOWCAP Cluster project - ICLEI Framework for Sustainable Cities[13]

Dundee

The city has huge potential for becoming an offshore renewables industry operations centre which could have positive effects on employment. The Dundee Renewables Partnership has significant potential and covers infrastructure, marketing, supply chain and skills for off-shore renewables. There are several CHP plants in the city and the Dundee Waterfront regeneration project is well underway. There are also long standing plans for a waste-to-energy project in the city at Baldovie. Projects include:

[12] Aberdeen Heat & Power Ltd is a 'not for profit' company that was set up by Aberdeen City Council in 2002 to develop and operate district heating and CHP (Combined Heat & Power) schemes in their area..
http://www.aberdeenheatandpower.co.uk/

[13] - North Sea Sustainable Energy Planning Interreg IVB http://www.northsearegion.eu/ivb/projects/details/&tid=120
- MUSIC http://www.themusicproject.eu/
- LOWCAP http://www.lowcap.eu/

- 10 existing CHP plants across the city and a new biomass and oil fired CHP plant in development.
- Capital programme for retrofitting existing buildings.
- Electric vehicle infrastructure , Park and Ride proposals and cycle parking stations.
- Forth Ports assessing Biomass CHP in docks area.
- PV assessed for all Council roofs.
- Potential for district heating linked to energy from waste plant.

Edinburgh

Edinburgh has developed a draft SEAP document with a BEI completed. There is some integration between the SEAP and the city planning process and there are numerous projects underway in the city. Edinburgh is working with the Scottish Futures Trust [14] to identify funding opportunities for these projects. Projects include:

- Consideration of the creation and development of city ESCO to deliver energy projects.
- Electric vehicles, LED street lighting and energy efficient ICT.
- Miller Hill Waste-to-Energy plant is due for completion in 2015. The wider energy agenda is addressed around Miller Hill including: renewables, decentralized energy, district heating, solar PVs, community energy and a micro Hydro electric scheme.
- District heating to include bio quarter with University of Edinburgh.
- Fountainbridge development to include a new school, and a residential development with social housing to be included in DH scheme.
- SEAP identifies integrated economic, social and environmental projects e.g. the Edinburgh Guarantee where private companies (including low carbon businesses) guarantee to take on new apprentices.
- Range of investment and funding opportunities for projects under assessment including funding from the Green Investment Bank for street lighting work.

[14] Scottish Futures Trust (SFT) is an independent company, established by the Scottish Government in 2008, with a responsibility for delivering value for money across all public sector infrastructure investment. SFT operates at arm's length from the Government but works closely with the public sector to seek and deliver improved value for taxpayers. http://www.scottishfuturestrust.org.uk/

Inverness (Highland Council)

Highland Council achieved Carbon Trust Accreditation in 2009 and 2011. Inverness has a well-developed Carbon Management Plan that is regularly updated and reviewed. Highland Council has engaged the local population effectively over 'green' issues. Climate Change is given a high priority in the political agenda. Highland Council has already developed good heat maps for the area, providing a good potential for developing informed energy and heat decision making based on heat map outputs. Projects include:

- Carbon Clever Highlands is Highland Council's flagship project and has the highly ambitious ambition of achieving a 'carbon neutral' Inverness by 2025.
- A Park and Ride scheme will remove congestion from Inverness centre.
- Inverness is pursuing funding opportunities for Street Lighting pilot scheme.
- Retrofitting of social housing is already taking place.
- DH potential identified at University of Highlands and Islands campus.
- Pilot scheme of allowing bikes on buses to enable commuters to mix cycling with public transport journeys for longer commutes.
- Westlink – proposal for new road around west of Inverness to alleviate congestion in city and creating new links with other major roads.

Perth

For its relatively small size, Perth has a large number and range of projects that could have a positive effect on energy sustainability and quality of life in the city. It has potential for four or five small district heating schemes in the city and it is also actively managing heavy transport in the city centre. Projects include:

- Biomass boilers in 6 schools.
- Ongoing programme of energy audits in all public buildings.
- Freight Distribution Hub with funding in place to convert existing premises and remove freight from the city centre.
- Real time energy monitoring in schools.
- Range of ICT energy efficiency projects and energy efficient lighting in public buildings.
- Promotion of Active travel programme underway. [15]
- 6 x Hybrid buses and 30 electric vehicles across council fleet.

[15] Active travel programme – An initiative to encourage children or adults to use an active mode of transport to get to school or work.

- Potential for 4-5 small district heating schemes including multi-storey flats, a retail park, schools and National Health Service (NHS)[16] buildings.

Stirling

Stirling is a relatively small city with potential for a number of good energy projects. However there have been barriers to getting some projects into the capital programme given the economic climate and competing priorities. Stirling Council has a Carbon Management Plan and other measures in place to tackle energy and climate change issues. Projects include:

- PV installations on social housing and shelters for the homeless.
- Homes insulation scheme and energy saving measures in place for social housing.
- Pilot project adding 3 electric vehicles to council fleet.
- Waste management Strategy, adding food waste collection from homes.
- 'Carbon Neutral Stirling' by promotion of walking and cycling and developing walkways in the city.
- Biomass boilers to be installed.
- Active travel promotion scheme.

Nuremberg

In Germany, countrywide "Energiewende" (Energy Turnaround) policy has been driving debate and action on how to cope with climate change and secure sustainable energy supplies for the future. Under this policy, there are commitments to CO_2 emission reductions, as well as the decommissioning all nuclear power plants by 2011. For Nuremberg, this entails the decommissioning of the areas only nuclear power plant by 2016.

Sustainability and energy efficiency actions are high on the political agenda in the city, particularly with respect to improving the energy efficiency of existing building stock, which includes a high proportion of social housing. Renewables and insulation measures are being extensively developed, with examples of solar, hydro and wind energy in the wider city area. Energy from municipal waste incineration supplies the city's large district heating system, supplemented by biomass woodchips and waste heat from a gas power plant. There is also one large Energy Service Company (ESCO) that serves the city and wider city region area of northern Bavaria, an area of approximately 60-80km^2.

7 Conclusions

Scottish Cities

It is clear from the interviews with the Scottish cities carried out by the Glasgow STEP UP team, that each city is at a different stage in their sustainable city planning. As may be expected, the larger cities appear to be more progressed and have more capacity to produce and tackle issues covered in an effective SEAP. Apart from Glasgow, only Edinburgh has progressed the development of a SEAP to submission to the Covenant of Mayors. However, Aberdeen is in the process of developing a 'Smarter Aberdeen Strategy' which they consider will effectively be a SEAP. Dundee is also considering the benefits of a SEAP process to the city. Only in the case of Edinburgh has a Baseline Emissions Inventory (BEI) already been carried out and Aberdeen has asked for specific help on this in the context of developing their SEAP. All Scottish Learning Network cities have confirmed they would benefit from training in the process of SEAPs including the establishment of area-wide emissions inventories.

There is evidence in some cases of integration of carbon and energy planning with the wider policy and planning framework, addressing economics, business models and use of innovative projects to drive change into achieving a more sustainable city. However, in general this is an area that needs further work and support perhaps involving collaboration with other professionals within the city adminstrations.

Smaller cities - less developed in terms of a city-wide focus for energy that a SEAP requires - have an internal and project driven approach to sustainability and energy policy. In the case of Inverness and Perth in particular, their relatively small city size within a much larger geographical and administrative area creates a dynamic that is challenging for SEAP development. Against this background some smaller cities such as Stirling are concentrating on Council energy and sustainability projects that are achievable within the resources they have available.

From a training and support perspective all the cities interviewed have expressed interest in participation with STEP UP regardless of whether they intend to produce a SEAP and all requested further training on SEAPs. For general training the following topics were identified as popular needs:

- SEAPs
- Project Appraisal
- Citizen involvement
- Stakeholder Involvement
- ESCOs
- Investment Funds
- Heat Mapping
- District Heating

Depending on the nature of the city, different training needs have been identified. More specific areas of training interest include:

- Process of SEAP creation
- Production of a Baseline Emissions Inventory
- Finance/Investment/Business Models
- Public/Private Partnerships
- Vision/Governance
- Risk Management of Projects
- Strategy Integration with SEAP
- Developing SEAP Actions and Measures.

The STEP UP project is well-placed to provide useful training and assistance with respect to energy planning to all the Learning Network cities, regardless of their respective current state of sustainable city planning or city size and nature.

Nuremberg

Nuremberg, is at an advanced stage with its sustainable city planning. With a SEAP developed in 2007, significant progress has been made towards reaching its ambitious target of a 40% reduction in CO_2 emissions by 2020. The city is now developing an enhanced SEAP, due to be completed in early 2014.

The city engages with a wide range of relevant stakeholders and has a pragmatic approach in using 'top down' and 'bottom up' approaches where appropriate. It has a clear vision as part of its own city plan but also has a clear idea of where this lies within a national wide Climate Protection Plan looking to reduce CO_2 emissions by 80% by 2050.

The city has a wide range of measures in place to bring about the CO_2 reductions it seeks, including the change from a coal- to a gas-fired power plant and the introduction of Energy from Waste plants. Energy efficiency in private, industrial and domestic buildings is being extensively addressed and transport and ICT are being further addressed in the enhanced SEAP.

Nuremberg has identified some areas for development and support from STEP UP. The city could benefit from better integration between the various planning - related departments with the city administration. There are currently several planning strands that could operate in a more coordinated fashion through greater integration. The city is also keen to engage in knowledge exchange and share experiences with other cities; as an early SEAP implementer, Nuremberg is also likely to be in a strong position to offer worthwhile lessons to other cities engaging in sustainable city planning.

Appendix A: Climate Change Strategies and Initiatives

Climate Change Declaration

Scotland's Climate Change Declaration was developed in 2006 by the Sustainable Scotland Network in partnership with the Scottish Government, the Convention of Scottish Local Authorities (COSLA), the Society of Local Authority Chief Executives (SOLACE) Scotland, and others. The Declaration was launched in January 2007.

By April 2007, all 32 local authorities had signed the Declaration, recognising the role they play in responding to the challenge of climate change. By signing the declaration, the councils' commitment to action requires that they pledge both to mitigate their impact on climate change (by reducing the emissions of greenhouse gases such as carbon dioxide) and to adapt to predicted climate change impacts (by preparing for the impacts that a changing climate will bring). The Declaration also contains a strong commitment to sustainable development.

Local authorities are also required to issue an annual report detailing the progress of their climate change response.

Source: http://www.keepscotlandbeautiful.org/sustainability-climate-change/sustainable-scotland-network/climate-change/scotlands-climate-change-declaration/

Carbon Management Plan (CMP)

A Carbon Management Plan (CMP) is a document outlining a Local Authority's measures to reduce carbon emissions caused by its own operations and activities. Councils have joined the Carbon Trust's – Local Authority Carbon Management Programme and develop their own specific targets. A CMP outlines exactly how changes in the local authority's behaviours and practices will deliver a reduction in carbon emissions. It does not factor in carbon emissions produced by third parties from activities within the council area. Therefore a CMP does not qualify as a Sustainable Energy Action Plan (SEAP) due to its lack of focus beyond the activities of the local authority.

Sustainable Energy Action Plan (SEAP)

Signatories of the Covenant of Mayors have committed themselves to a minimum reduction in carbon emissions of 20% by 2020. This formal commitment is to be achieved through the implementation of Sustainable Energy Action Plans (SEAPs). Signatories should produce a Baseline Emissions Inventory (BEI) which provides knowledge of the nature of the entities emitting CO_2 on the municipality's territory and will thus help select the appropriate actions. A SEAP takes full account of emissions across the territory.

Single Outcome Agreement (SOA)

An Agreement between Scottish Government and Community Planning Partnerships in all Scotland's Local Authorities that sets out how all parties will work towards improving outcomes for local communities, reflecting local circumstances in a national policy context. - http://www.scotland.gov.uk/Topics/Government/PublicServiceReform/CP/SOA2012

Appendix B: Interviews conducted

The Glasgow STEP UP team carried out interviews with the other six members of the Scottish Cities Alliance. Table 6 below shows the summary details of the interviews.

Table 7 – Scottish Cities Alliance interview Summary

City	Interviewer	Interviewee	Date
Aberdeen	Graham Pinfield, Glasgow City Council	Amy Smith, Sustainable Development Officer, Aberdeen City Council	22.07.2013
Dundee	Graham Pinfield, Glasgow City Council	Group discussion. - Mike Galloway, Director Dundee City Development. + 5 others.	12.08.2013
Edinburgh	Graham Pinfield, Glasgow City Council & Dominic Sims, Scottish Power.	Janice Pauwels. Local Carbon and Green Projects Manager, Services for Communities, Edinburgh City Council	08.08.2013
Inverness	Ewan Wilson, Glasgow City Council.	Stephen Carr, Policy officer - Climate Change - Highland Council.	30.07.2013
Perth	Ewan Wilson, Glasgow City Council	Graham Esson, Team Leader - Sustainability, Policy and Research – Perth and Kinross Council	23.07.2013
Stirling	Karina Mirza, Glasgow City Council.	Angela Heaney, Policy Officer (Sustainability), Stirling Council.	22.07.2013

Aberdeen, Scotland – 22/07/2013

Interview with Amy Smith, Sustainable Development Officer, Aberdeen City Council.

Title of Document	City	Date of Publishing/Completion	Language of Document	Short explanation
Carbon Management Plan 2010-2015	Aberdeen	2010	English	Commitment to delivery of 23% CO2 emissions reduction by 2015.

Smarter Aberdeen strategy	Aberdeen	N/A	English	Not yet published. Will be SEAP in future.

Dundee, Scotland, 12.08.2013.

Interview with: Mike Galloway, Director, City Development Dept.
Bryan Harris, Senior Community Planning Officer, Corporate Division, Chief Executive's Dept.
Alex Gibson, Team Leader, Property/Energy Management, Property Division, City Development Dept.
Gordon Reid, Senior Planning Officer, Planning Division, City Development Dept.
Caroline Morgan, Development Officer, Business Development Division, City Development Dept.
Kenny Kerr, Head of Environmental Protection, Environment Dept.
Andy Lorimer, Principal Building Services Engineer, Architectural Services Division, City Development Dept.

Title of Document	City	Date of Publishing/Completion	Language of Document	Short explanation
Carbon Management Plan 2010-2015	Dundee	2011	English	Commitment to delivery of 5% CO2 emissions reduction per annum. No SEAP in place.

Edinburgh, 08.08.2013

Interview with Janice Pauwels. Local Carbon and Green Projects Manager, Services for Communities, Edinburgh City Council.

Title of Document	City	Date of Publishing/Completion	Language of Document	Short explanation
Sustainable Edinburgh 2020	Edinburgh	2012	English	Sustainable Edinburgh 2020 sets out the Council's vision for the sustainable development of the City to 2020.

Climate Change Framework	Edinburgh	**2007**	English	Framework for the Council's own activities, identifying key areas for action to mitigate carbon emissions and adapt to the impacts of climate change.
Carbon Management Plan (Second)	Edinburgh	**2008**	English	Targets are: 40% CO2 reduction by 2020; 12% energy efficiency and 40% renewable energy.
Draft SEAP	Edinburgh	n/a	English	In progress

Inverness, 30/07/2013

Interview with Stephen Carr, Policy officer - Climate Change - Highland Council.

Title of Document	City	Date of Publishing/Completion	Language of Document	Short explanation
Carbon Management Plan 2013-2020	Inverness	2009	English	Commitment to delivery of 12% CO2 emissions reduction by 2012.

Perth, Scotland, 23/07/2013

Interview with Graham Esson, Team Leader - Sustainability, Policy and Research – Perth and Kinross Council.

Title of Document	City	Date of Publishing/Completion	Language of Document	Short explanation
Carbon Management Plan	Perth	2007	English	Commitment to delivery of 5% CO2 emissions per annum.

Stirling, Scotland, 22/07/2013.

Interview with Angela Heaney, Policy Officer (Sustainability), Stirling Council.

Title of Document	City	Date of Publishing/Completion	Language of Document	Short explanation
Carbon Management Plan	Stirling	2006	English	Commitment to delivery of 20% CO2 emissions reduction by 2016.

Nuremberg, 25/10/2013

Interview with Dr Peter Pluschke – respectively Deputy Mayor of Nuremberg for Environment and Health.

Title of the document	City	Date of publishing/completion	Language	Short explanation
Nuremberg SEAP template	Nuremberg	2007	English	Template submitted to Covenant of Mayors
Strategic Cornerstones for Sustainable Development in Municipalities – German Council for Sustainable Development	Nuremberg	2010	English	Outcome of dialogue between Lord Mayors from German cities meetings with German Sustainable Development Council.
Making Energiewende a success story thanks to strong local authorities	Nuremberg	2013	English	Overview of 'German Energiewende' (Energy Turnaround), national policy framework for the transition to safe supply and renewable energy.
ECOCITY World Summit, Nantes 25 Sept 2013 – Sustainable urban Development in the City of Nuremberg: Green ICT as Strategic Elements for the Smart and Carbon-Neutral City.	Nuremberg	2013	English	Presentation given by Dr Pluschke at ECOCITY World Summit, Nantes, France, September 2013.