Report of the Special Working Group on Regulation
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For the Scottish Government and the Expert Commission on District Heating

Context

District heating is an important means of both reducing carbon emissions and helping meet fuel poverty targets and can also make a significant contribution to the development of a low-carbon economy and to local economic regeneration. Reductions in carbon emissions as a result of substituting district heating for other forms of heating are estimated at 30-40% and fuel bill reductions can be of the same order. District heating also has significant benefits for both the national and local economies, including creation of jobs in the construction and operation of district heating systems and the retention of wealth in the local economy as a result of fuel bill savings.

District heating networks can support the development of renewables by allowing the flexible integration of conventional and/or a variety of renewable energy sources in one system. Importantly, while electricity is difficult to store, large quantities of heat can be stored for long periods, including inter-seasonally, allowing cost-effective incorporation of intermittent or cyclical electricity-generating renewables such as wind turbines and solar thermal arrays into district heating systems. In addition, district heating networks can contribute to balancing, resilience and efficiency of the electricity grid. They can incorporate large-scale heat and power engines which can function as a flexible short-term operating reserve; in the alternative case where electricity generation from renewable sources is surplus to immediate requirements at the time of generation, this electricity can be converted to heat and stored in thermal stores.

Finally, because a heat network can use heat from a variety of sources which can change over time, such networks are future-proofed against uncertainty over pricing, performance and scale of heat sources and in particular are future-proofed for the path to low/zero carbon heating as they can be repowered as lower carbon heat sources become available.

The district heating sector in Scotland, whilst growing, is small. District heating developments are mostly driven by local authority or other public sector investment of one form or another and even in the public sector interest has tended to be driven by committed individuals acting as champions of the technology. Developments are generally ‘island’ systems, serving a specific group of dwellings and buildings and not connected to a larger network, there are very few conurbation-wide networks as there are in other parts of Europe.

Given the benefits listed above, a step change in the rate and scale of development and installation of district heating in Scotland would make a significant contribution to implementation of several of the Scottish Government’s key priorities in carbon
reduction, fuel poverty, energy efficiency and economic development. The Scottish Government is therefore supportive of district heating and conscious of the current position of the sector in Scotland and has put in place a number of policies intended to drive a step-change in the use of this technology in Scotland. In 2012 the Scottish Government set up an Expert Commission on District Heating which made a number of recommendations which informed and influenced policy in this area; these included recommendations on a number of regulatory aspects. In responses to the Scottish Government’s Heat Generation Policy Statement in 2014, a majority of respondents were in favour of further regulatory measures for heat supply, including district heating. Accordingly, in 2014 the Scottish Government asked a number of members of the Commission, together with district heating practitioners and other key stakeholders from the private and public sectors, to serve on a special working group to look at the current regulatory environment in Scotland as it affects district heating and to make recommendations as to what changes, if any, would be helpful in supporting and promoting district heating. This special working group was also asked to consider the regulatory environment elsewhere in Europe to allow any appropriate lessons from countries with successful district heating sectors, such as Denmark and Sweden, to inform its recommendations.

This work was initiated by the Scottish Government in recognition of the critical importance of a regulatory environment in supporting district heating and the district heating market. District heating projects have a long timescale and they need long-term capital funding to do so at a reasonable cost. A supportive, clear and stable regulatory environment is crucial to providing both developers and their capital funders with the certainty they need to invest in district heating schemes.

The Scottish Government was also conscious of the importance of a clear regulatory environment for customers of district heating projects. Although use of this technology in Scotland is low compared with other European countries such as Denmark and Sweden, it is nevertheless increasing and there are a number of exemplar projects in place or under development. With increasing penetration and therefore customer numbers and a desire for a further step up in the use of district heating it is an appropriate time to ensure that necessary customer clarity and protection is in place.

The regulatory framework affecting district heating at present is nascent, has grown up piece-meal and has not been designed to support the development of the sector or to protect district heating customers. The opportunity exists to put in place a regulatory framework which will encourage the widespread use of district heating where it is the most appropriate and best value solution to heating needs and as part of this provide necessary customer protection. This report from the special working group sets out the components of such a framework.

A full list of group members is given in Appendix 1.
**Approach of the working group**

The group identified four key areas where appropriate regulation could support and stimulate the district heating market in Scotland.

These are:

- **Regulation to support the growth and development of district heating systems**

  At the moment very little of Scotland’s heat demand is delivered by district heating; in 2011 it was less than 1%. The group considered what forms of regulation would support the growth of the sector through the development of district heating systems in optimum locations and at sufficient scale and with interconnections where appropriate to deliver wider system benefits.

- **Regulation to align local development of district heating systems with national strategic objectives**

  Local actors developing district heating systems will be driven by factors unique to each project and in assessing and accommodating these will not necessarily automatically align with national strategic goals. The group considered how regulation might provide a national strategic framework for individual district heating developments, for example how to ensure that district heating networks aid the Scottish Government’s strategic policy of a smooth transition to low-carbon and renewable heat sources.

- **Regulation to promote use of heat from industrial and other processes**

  In other parts of Europe ‘waste’ heat from industry and energy from waste plants is extensively used by district heating systems to supply domestic heating but there is little use of such sources of heat in Scotland’s district heating sector. This is partly a function of the small size of the sector and the limited networks that are currently deployed but as district heating networks grow it will be important to encourage use of this source of heat. Experience elsewhere in Europe shows that regulatory drivers are important to ensure that industry supplies waste heat to district heating systems. Without regulation, heat sales are generally seen by those producing waste heat as a distraction outside core business, with potential costs and risks of which they have no experience and which they prefer to avoid.

- **Regulation for customer protection, including pricing and service standards.**

  District heating systems are invariably operated as supply monopolies and it is therefore important to ensure customers are charged reasonable tariffs and that service standards are high. The group considered what forms of regulation could
best ensure that customers receive an affordable, high quality heat supply and are treated fairly by their supplier.

The working group was conscious that in all these areas, regulation alone is not always the full solution to what are complex issues and that other policy tools may well also be needed. However, the group’s view was that a positive regulatory environment could achieve a great deal. Scotland has the opportunity to learn from the regulatory experience of other countries in Europe where district heating supplies a substantial proportion of total heat load and in forming its recommendations the group closely considered the various approaches used elsewhere.

We believe that the recommendations of the group offer Scotland the chance to move to a regulatory regime which would be in line with best practice across Europe and will put an important and necessary building block in place for the step change in district heating that the Scottish Government seek.

Given limitations of time and resources, the working group has deliberately not attempted to supply detailed regulatory solutions but has concentrated on setting out the principles and structure by which regulation can address the issues identified above. It is recognised that there will be much further work needed to flesh these out but at this point the task is to propose for discussion and decision the foundations of regulation for district heating, on which relevant detail can then be built.

The remainder of this report sets out the conclusions of the working group in each area along with a rationale; the latter has necessarily been kept brief wherever possible to provide an accessible and hopefully clear document which will inform both debate and government policy.

**Regulation to support the growth and interconnection of district heating**

Current growth of the district heating market in Scotland is limited and slow and there is a need to drive growth faster if a step change in district heating is to be achieved and contribute to carbon and other targets as the Scottish Government desires. This is unlikely to be achieved through market forces alone, given the large sunk costs in the gas grid, the UK regulatory framework to secure gas grid investments, the dominance of building scale heating systems such as gas boilers and the low rate of VAT applied to domestic gas use.

In addition, it is the nature of district heating systems that the larger they are, the more efficient and resilient they become. Strategic expansion and interconnection of district heating schemes thus delivers benefits to the network and to the wider energy system which will not be realised through isolated development of smaller individual networks; the latter are, however, currently the norm in Scotland. As a result, the most likely outcomes at the moment of an increase in district heating
activity are a welcome increase in the number of district heating systems but it is most probable that these will be relatively small, isolated island networks which may use potentially incompatible systems, making it more difficult to interconnect them in the future.

There is thus a role for use of regulation to drive the market, promote the use of district heating and, critically, ensure integrated strategic development. By the latter we mean that district heating systems as they develop in Scotland should be integrated within an overall strategic framework and that interconnection should be facilitated by requiring use of compatible systems and building in options for interconnection in each network as it is developed, even if these will not be used until other development build-outs allow interconnection.

This proposal for such a regulatory role is far-reaching but reflects experience from the original development of a national gas network. In 1945, uncoordinated development of gas networks had led to more than 1000 network operator companies and as a result a fragmented and inefficient network; there are clear analogies to the developing district heating market. In the case of the gas network the policy response was nationalisation to create integrated networks; here the proposed solution is to use regulation through planning to create similarly integrated and efficient district heating networks.

A role for local authorities

Clearly it is inherent in the nature and scale of district heating systems that strategic planning and regulation should take place on a local rather than a national scale and this will require a long-term view as district heating projects are typically long in development and build-out timescales. Given these factors, the working group proposes that this strategic role should be carried out by local authorities who operate at the right scale and have the ability, through their existing planning expertise, to operate on the required timescales. Local authorities already have strategic energy planning capacities; the National Planning Framework and Scottish Planning Policy envisage local authorities using local plans to encourage district heating in new developments. However, the working group’s view is that this role requires further strengthening. We propose that, as part of their overall planning responsibilities, local authorities are each required to develop and publish a strategic plan for developing district heating in their area and to exercise their planning powers to implement these plans. It is envisaged that these plans will include the promotion of the development, expansion and integration of networks and also designation of areas where district heating is encouraged or required, as commonly used elsewhere in Europe.

If local authority powers are insufficient to carry out this role then they should be upgraded appropriately, similarly if additional resources are required to allow local authorities to deliver this new regulatory role then these should be supported. Given
the very long timescales for district heating developments and for turnover of heating
systems in existing building stock, we suggest that these strategic plans should have
an overall timescale of 25 years; with 5 year action plans delivering the overall
strategy to ensure that effective action begins on a much shorter timescale than this.

Driving connection to district heating networks

One key aspect of strategic planning is to clearly identify and promote large-scale
users of heat from district heating systems, including buildings with an appropriate
heat demand to act as ‘anchor loads’. Uncertainty over revenues from future heat
sales, particularly in retrofit schemes, is challenging for district heating business
models. Driving demand, including but not restricted to anchor loads taking a
significant percentage of total heat network capacity, is key to solving this problem
and producing sustainable business models. The working group therefore proposes
that in producing a strategic plan for district heating, local authorities should have the
power to require buildings with a significant heat load (as defined in consultation with
stakeholders) to connect to a district heating network where such a network can offer
heating at a competitive cost.

This builds on a recommendation in the original report of the Expert Commission on
District Heating that public bodies owning buildings or groups of buildings with
significant heat loads should adopt a policy of connecting them to district heating
networks so that practice in the public sector and Scottish Government policy on
district heating are aligned. The working group continues to support this
recommendation of the Expert Commission, but going further we believe that the
local authority via its strategic plan for district heating should also be able to require
appropriate private sector buildings to connect, either when they are built or when
heating systems are replaced during the natural lifecycle of existing buildings; again
this should be where district heating can offer heat at a competitive cost.

Future proofing for expansion and interconnection

Other key areas which should be required in each strategic plan are that district
heating schemes should be future proofed in that they should have built in from the
beginning the ability to expand in line with the published strategic plan for district
heating in the area and that they should operate in line with defined technical
standards, both to maximise efficiency and benefits to network customers and to
facilitate the ability for future integration of individual isolated district heating
networks. Local authorities should achieve these ends through their strategic
planning powers for district heating by only approving schemes which are structured
for expansion and meet defined technical standards. For simplicity for the district
heating industry and to allow cross-authority networks to be constructed without the
complication of potentially varying technical standards, there should be a single
national technical standard established by the Scottish Government in partnership
with the industry and other stakeholders. To minimise regulatory impacts this should
aim to achieve maximum commonality with relevant standards elsewhere in Europe, as many developers already work to these standards.

Although it is not a regulatory issue and not required to enable the strategic planning approach, the working group did note that some element of financial support would be an important accompanying tool for these strategic plans, particularly in reducing the regulatory burden of requiring investment in the ability to interconnect and expand networks. As recommended by the Expert Commission on District Heating, consideration should be given to providing financial support, through grants, loans or underwriting debt to lower the cost of finance for district heating schemes.

**Enabling powers for district heating infrastructure**

The group also considered whether district heating operators should have similar enabling rights to those of gas and electricity utilities to install district heating infrastructure under roads and railways, across land and through buildings. It is clear that there is a case for such powers but it is not equally clear to what extent they currently exist. The Local Government (Scotland) Act 1973 confers a discretionary power on local authorities to produce and supply heat and electricity and makes provision for installing the necessary infrastructure, local authorities have powers comparable with laying water pipes; they can also create bylaws to allow third parties to provide this service on their behalf. However, whether or not this means in practice that a third party could exercise these rights with local authority authorisation seems to be unclear even to local authorities themselves.

As the ability to install infrastructure will be crucial to development of many district heating schemes, which could well be held up due to third party complications if they cannot exercise enabling powers, it is recommended that such powers be clearly established for district heating infrastructure. This could be done either through the Scottish Government establishing greater clarity on local authority ability to confer such powers on third parties, or by making enabling powers available to district heating developers and operators via the licence system proposed below.

Whatever the system adopted, such powers should only be exercisable for projects which are approved by a local authority under its strategic plan for district heating, thus providing an additional mechanism to ensure that district heating development conforms to this plan.

**Recommendations:**

1. Local authorities to produce strategic plans for district heating and use their planning powers to enforce implementation.

2. Local authority powers should include the power to require buildings with significant heat loads to connect to a district heating network where this can offer heating at competitive cost.
3. A single set of national technical standards for district heating systems, to be developed by the Scottish Government working with the district heating industry and other stakeholders.

4. The establishment of clearly understood enabling powers for district heating infrastructure.

Regulation to align local development of district heating systems with national strategic objectives

District heating has the potential to make a significant contribution to a number of Scottish Government strategic policy objectives, including alleviating fuel poverty, promoting lower-carbon heating and economic development. However, in a purely market-driven, unregulated situation, it may very well not deliver on this multiple potential; for example in the absence of any countervailing factors a natural focus on financial performance and profitability by those investing in district heating is likely to lead to cherry picking of the most profitable sites. Similarly, because of the additional initial investment required without certain returns, there is likely to be less interest in developing systems with potential for expansion and integration designed in, despite the longer term advantages for the sector as a whole of doing so. It is even less likely that developments will include designed-in options for allowing producers of waste heat to supply the network or for future repowering using the lowest-carbon heat sources.

There are some mechanisms already in place which act as drivers towards integration of Scottish Government’s policy objectives, for example the Scottish Government’s low-interest loans for district heating prioritise projects where those benefitting are likely to be fuel poor. However, the special working group’s view is that a regulatory framework is required which can provide a means of ensuring that district heating development is in line with strategic Scottish Government priorities. This is the approach which has been successfully adopted in other European countries such as Denmark.

National guidance for local strategic plans

The special working group’s view is that local authorities’ strategic plans for district heating, as proposed above, provide a means by which national policy priorities can be promoted. The Scottish Government should provide binding guidance on key national priorities for these plans, such as benefit to the fuel poor, promotion of low-carbon heating, which would then be incorporated into each local authority’s plan. Such guidance should consist of principles and minimum requirements, for example the proportion of fuel-poor households to be served by district heating under the plan. Whilst guidance will clearly need to cover a variety of important areas, the group considered two areas of particular strategic importance. Firstly, it will be important that guidance minimises the risk of ‘carbon lock-in’. This is the risk whereby the long lifetimes of district heating systems mean that any decisions over
the next decade to allow higher carbon fuels such as gas may mean the continuing use of these fuels in district heating up to 2040 or beyond, which could compromise the trajectory to lower-carbon heating in the longer term. Secondly, the guidelines should take cognisance of the opportunity for non-profit and community owned models for district heating, in line with the Scottish Government vision of a greater role for these sectors in the Scottish energy market.

A standard socio-economic benefit methodology

Such guidance would ensure that local authority plans for district heating align to national policies. However, the working group’s view is that to allow objective assessment of individual district heating developments against the policy priorities informing local authority district heating plans, the Scottish Government should go further and also develop a clear, standard socio-economic methodology, incorporating national priorities, which can then be used to establish the overall socio-economic benefit of a district heating project; such socio-economic analysis is used in both Denmark and Norway. The Scottish Government should then set a threshold for benefit under this methodology which district heating projects have to pass.

Local authority plans would thus establish the overall local district heating strategy in line with national priorities and require all district heating projects brought forward to show that they meet the minimum threshold under a socio-economic methodology based on the same policy priorities. The methodology would provide a clear and objective means by which developers of district heating projects could establish at an early stage that their development would be likely to meet the requirements of the local authority strategic plan, for local authorities to assess that it would in fact do so and for the Scottish Government to ensure that its policy priorities are reflected at the project level.

Ensuring decarbonisation of district heating over time

Finally in this section, it is appropriate to consider how to ensure that the development of district heating systems contribute to the overall decarbonisation of heating in Scotland. Currently most district heating networks are supplied with heat from gas CHP engines and given the long life of such engines (up to 20 years) it is important that, over time, reliance on this technology reduces or there is a danger of ‘carbon lock in’ when district heating networks are built; as stated above, guidance from the Scottish Government should reflect the need for this transition. However, in addition, because the life of the heat pipe network itself will be much longer even than that of the CHP engine supplying heat to the network, district heating networks will typically be ‘repowered’ in their lifetime; furthermore, as networks expand/acquire more customers they may add new sources of heat to meet demand. Whilst the national guidelines and local authority strategic plans will provide a means to reflect national carbon policies and budgets at the time a network is built, an ongoing
obligation to conform to the current local authority plan should be required for repowering or addition of heat sources, to ensure that these reflect future lower-carbon policies and trajectories.

Recommendations:

5. The Scottish Government to provide binding guidance on key priorities for local authorities’ strategic plans for district heating.

6. The Scottish Government to develop a socio-economic methodology which can establish the overall socio-economic benefit of a district heating project and then set a threshold for benefit required under this methodology for a project to receive planning permission.

7. When a network is repowered or new heat sources are added there should be an ongoing obligation to conform to the local authority strategic plan for district heating to ensure these changes remain in line with national carbon policies and budgets.

Regulation to promote use of low carbon heat from industrial and other processes

At present the Pollution Prevention and Control (Scotland) Amendment Regulations 2014 require a cost benefit assessment to be carried out on the use of waste heat from certain new or refurbished industrial and thermal electricity generation plants. However, given the current lack of district heating networks in Scotland this analysis normally comes up negative. For new waste thermal treatment plants, SEPA’s Thermal Treatment of Waste Guidelines expects such plants to provide a heat and power plan when applying for a permit under Part A of the Regulations. The plan must detail how an initial operational energy recovery at least 20% will be utilised (by various means including heat), and demonstrate that the initial design of the plant does not preclude future heat recovery if not already included. Furthermore SEPA’s Guidelines states that the plan must demonstrate how further energy can be recovered to achieve an Indicative Efficiency of at least 30-35% within 7 years of commissioning, which in effect requires the use of heat produced as well as electricity generated. However these regulations will take a long time to produce an effect and the guidelines are untested. There is no regulation of existing plants and industries regarding waste heat unless these undergo substantial renovation and are then subject to the Pollution Prevention and Control (Scotland) Amendment Regulations 2014 as above.

Requiring collection of data on waste heat

The working group considers that regulation in this area needs strengthening or it is unlikely that waste heat will be used in any quantity in district heating systems in
Scotland in the foreseeable future; this would be a significant missed opportunity. The first requirement is that sources of potential waste heat that which could be used for district heating are identified. We propose that a duty should be imposed on all plants, including existing ones, which generate significant amounts of usable waste heat to provide data on such heat for inclusion in the Scottish heat map developed by the Scottish Government. The definition of a significant amount of usable waste heat should be set by the Scottish Government following consultation with stakeholders. We further propose that such plants should be required to supply their waste heat to district heating network operators as long as the operator will pay an economic price for it, i.e. there will be no obligation to supply if the price paid does not at least cover the full lifetime additional costs of supplying that heat to a district heating system instead of the default method of disposing of it. In addition, we are aware that potential waste heat suppliers can be daunted by the risks of signing an uninterruptible heat supply contract when they may well in the course of their main business occasionally need to cease or reduce production of waste heat for a variety of reasons. We therefore suggest that whilst there should be an obligation to supply there should not be an obligation to provide an uninterruptible supply.

This would mean that district heating developers would be able to build sources of waste heat identified in the Scottish heat map into their plans from the beginning and would not be subject to the inhibiting uncertainty of obtaining heat from businesses which have no incentive and little interest in becoming involved.

New plants producing significant waste heat to be district heating ready

We further propose that all new plants producing significant quantities of waste heat should be required to build in a take-off point for supplying that heat to a district heating network, i.e. that such plants should be ‘district heating ready’. Building in district heating readiness will be much more cost-effective than retrospective connection to plants which have not been designed with such connections in mind and will mean that new plants can be economically connected to district heating networks as these develop.

There is also the question of the location of major generators of waste heat which can determine if that waste heat is ever used or not; positioning of such plant a long distance from any potential users of its waste heat would mean that such heat is very unlikely to be used. Accordingly, we suggest that local authority strategic plans for district heating should normally indicate that new energy generation or industrial plants with a significant waste heat potential must, so far as possible, be located within a useful distance of potential users of that heat.

Finally, a further option, which is not regulatory in nature but which would reduce the impact of the introduction of the above new requirements on waste heat producers would be to introduce grants or low-interest loans to cover a proportion or all of the cost of supplying waste heat to a district heating network. This would reduce the
costs of such heat to a network and also lower the initial investment required and hence the perceived risks of supply by a heat producer. Such financial support would facilitate the establishment of pioneer projects in this area which would demonstrate potential and reassure heat producers about the risks of such projects, increasing overall participation rates over time.

**Recommendations:**

8. A duty to be imposed on operators of all plants, including existing ones, which generate significant amounts of usable waste heat to require them to supply data on that heat for incorporation in the Scottish heat map and to supply that waste heat to district heating network operators at an economic price.

9. All new plants producing significant quantities of waste heat to be required to build in a take-off point for supplying that heat to a district heating network, i.e. that such plants should be ‘district heating ready’

10. New energy generation or industrial plants with a significant waste heat potential should, so far as possible, be located within a useful distance of potential users of that heat.

**Regulation for customer protection, including pricing and service standards**

District heating systems are operated as supply monopolies and it is therefore critical to ensure customers are charged reasonable tariffs and that service standards are high. The group considered what forms of regulation could best ensure that customers receive an affordable, high quality heat supply and are treated fairly by their supplier, with clear information, transparent bills and routes to redress. The aim should be to provide protection which is comparable to that for gas and electricity customers to avoid the situation where real or perceived lack of regulatory protection acts as a disincentive to potential district heating customers.

Current customer protection structures centre on the Heat Trust voluntary consumer code which sets standards including customer service, transparency of billing and service provision. However, there are very important areas which are not covered; the code includes no ‘supplier of last resort’ who will take over district heating schemes whose operators have gone into administration. Schemes where a third party is involved in heat sales are not currently covered by the Heat Trust and this would include many housing association and local authority schemes. Finally, there is no form of price protection under the Heat Trust scheme, although it does provide a price comparator so householders and other district heating customers can establish if the prices they are paying are in line with industry norms.
Licencing for district heating operators

The working group, whilst acknowledging the advance on the preceding situation that the Heat Trust code represents, felt that it still does not supply sufficient and comprehensive protection for customers in an industry where they can have no recourse to a competitive supplier of equivalent services. The group view is that, in line with an original recommendation from the Expert Commission on District Heating, there should be an appropriate licencing regime for district heating operators in Scotland which would include service and technical standards and measures to prevent operators exploiting a monopoly position to over-charge customers. An additional advantage is that if this recommendation is adopted it would provide a route by which the national technical standard discussed above could be implemented. Such a licencing regime could be operated economically by a lean regulator with a specific, focused remit.

The group regards this as a step that will inevitably become necessary. If the Scottish Government realises its stated ambition of a step change in the use of district heating then this will mean large numbers of households and businesses are connected to district heating systems and in effect will have a key energy resource supplied by a monopoly. Under these circumstances, there is little alternative to a licence to supply and regulation covering pricing, service and technical standards associated with this licence. This is the approach which been regarded as essential with the electricity and gas networks.

Mandatory consumer protection –building on the Heat Trust

The working group is conscious that any such system should impose the minimum burden on district heating developers and operators commensurate with effective customer protection and consider that the most effective way forward would be to build on the existing Heat Trust code, in consultation with industry stakeholders. However, the resulting code should be mandatory rather than voluntary and include new provisions to close the gaps identified above, specifically including:

- Protocols to cover local authority and housing association schemes developed in conjunction with the Scottish Housing Regulator.
- A mechanism for providing a supplier of last resort.
- Price transparency and comparability and protection against unjustifiably high prices which abuse a monopoly position.

We believe that such clear protection for customers is an important piece of infrastructure for the developing Scottish district heating market and will increase the confidence of potential customers in connecting to district heating systems and will support rather than inhibit the market. It will thus both drive the step change that the government seeks and protect the much larger numbers of district heating customers who will result from this step change; accordingly we recommend that the
government should consult with stakeholders on it as soon as practicable and introduce it rapidly thereafter.

**Recommendations:**

11. Implementation of an appropriate statutory licencing regime for district heating operators in Scotland.

**Conclusions**

All the above proposals will individually enhance the district heating market in Scotland, however, the working group wishes to emphasise that their value will be greater in combination. Taken together long-term strategic plans, national standards for socio-economic cost-benefit analysis, increased availability of anchor loads, defined technical standards, clear enabling powers for infrastructure, increased access to waste heat and effective customer protection will provide a clear and supportive context and framework for the development of district heating projects which is largely missing at present.

Importantly, the reduction in planning uncertainties and infrastructure issues which this will provide will give the stability and certainty that developers of district heating projects and, crucially, suppliers of capital for those projects require in a market where capital expenditure is high and projects have multi-year and in some cases decade-long timescales. In addition from a customer perspective, defined technical standards and a customer protection regime will enhance confidence in district heating and increase demand for this technology.

We therefore believe that, although regulation is often presented as at best neutral in its effects or more negatively as a burden on those regulated, here we have the opportunity for all stakeholders to benefit from the straightforward and constructive regulatory proposals outlined here and we recommend them to the Scottish Government as a key building block for its ambition to drive a step change in the use of district heating in Scotland.

Finally, we further recommend that the Scottish Government takes forward work on regulation based on these recommendations here as quickly as possible. If a step change in district heating is to be achieved in time to make a significant impact on ambitious low-carbon heat and climate change targets then, given the long timescales of district heating projects, it is important that a supportive and effective regulatory environment to be put in place as soon as possible. If the introduction of appropriate regulation takes too long there is a danger of failing to maximise the significant opportunity in the transition to a low-carbon economy that district heating represents.
Appendix 1 - contributors

Working group members have jointly drawn up and endorsed these recommendations. A list of members is given below, together with the organisations they work for. However, working group members have contributed their expertise and knowledge as individuals and their views should not be taken as necessarily representing the views of their employers.

The members of the working group were

1. Mike Thornton, Head of the Energy Saving Trust in Scotland (Chair)
2. Dr Sam Gardner, Head of Policy, WWF
3. Pete Leonard, Director of Housing and Environment, Aberdeen City Council
4. Jim Leiper, Director of NHS National Services Scotland
5. Dave Gorman, Director of Social Responsibility and Sustainability, University of Edinburgh
6. Colin Reid, Wheatley Group
7. Kate Morrison, Citizens Advice Bureau
8. Tim Rotheray, Director, Association for Decentralised Energy
9. Craig Ibbetson, Director, Ignis Biomass
10. Hazel Gulliver, ScottishPower
11. Bill Watson, Angus Biofuels

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