

Fossil Free Frome

Discussion document in response to the Paris Climate Agreement - COP21

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About this document

This document has been prepared by Climate Works Ltd on behalf of Frome Town Council.

It has been produced in response to the Paris Agreement drawn-up at COP21 in December 2015 and sets a possible target for Frome to become 'fossil free' within three decades, by 2046.

It has been written as a discussion document for use within the Council and the wider community to stimulate debate about whether such a target is realistic, something to which Frome Town Council should be committing and whether it is ambitious enough in the light of the most recent evidence of the scale and impacts of climate change.

It is not intended to provide a blueprint for how such a target could be achieved, rather to outline the main areas and issues which will need to be addressed not just by Frome, but every community in the UK, if the commitments made in Paris are to be fulfilled.

1 - Introduction

About this discussion document

This discussion document sets out a new target for Frome to be 'fossil-free' by 2046. That means generating the power and heat we need to live, work and travel without using fossil fuels, or producing greenhouse gas pollution.

To be free of fossil fuels within 30 years is a huge challenge, but it's one which reflects the outcome of the United Nation talks on climate change in Paris in December 2015. It's a challenge which every village, town and city in the UK and beyond, will need to consider.

Since Paris 150 cities around the globe have signed 'L'Appel de Paris' a pledge to put the Paris Agreement into practice¹. In the South West, Bristol has pledged to be 'carbon neutral' by 2050, but Frome is the first town in the UK to take up the challenge, and to set itself the task of being fossil-free within 30 years.

Becoming fossil free is about making Frome even cleaner, less polluted and more efficient than it is now. It's about creating new skilled jobs and business opportunities, and attracting new investment, innovation and ideas to the town.

It's about having greater control and ownership over our essential energy services, so that we reduce the cost of energy to our homes, neighbourhoods and businesses and find fairer ways of paying for the energy we use.

It means strengthening our local economy, with less of the money we spend on energy going to waste, and more of it being spent with local energy providers and community energy companies in which local residents have a stake.

And it's about making Frome more resilient and better equipped to deal with the shocks and bumps which a changed climate will bring over the next three decades and thereafter.

¹ <http://parispledgeforaction.org/whos-joined/?filter=City>

COP21 and the Paris Agreement - what it means

In December 2015 nearly 200 countries convened in Paris for the United Nations Framework Convention on Climate Change.

Delegates agreed to 'emission pathways consistent with holding the increase in the global average temperature to well below 2°C above pre- industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels²'.

The detailed implications of what this lower temperature target means are still being assessed but already it is clear that:

- ▶ The global carbon budget, the total amount of greenhouse gases that can be emitted to keep below the 1.5°C limit will be significantly lower, probably between 1/4 and 1/2 than for 2°C. For the 2°C limit up to 80% of existing, identified reserves of coal, oil and gas, need to remain in the ground - that fraction will be even higher if we are to stay below 1.5°C.
- ▶ By 2035 the world has to be greenhouse gas neutral - meaning we can only emit as much greenhouse gas pollution as can be safely absorbed by carbon sinks such as, for example, forests. That means most of the heat and power the world requires will need to be fossil free and not produce any carbon pollution.
- ▶ Subsidies for fossil fuels estimated to be £340 billion in 2014³ will need to end. Starting now a rapid shift in investment from fossil fuels to energy efficiency and renewable energy is required. The International Energy Agency predict that investment in excess of £37 billion will be needed between now and 2035⁴ to make this transition a reality.
- ▶ The market for energy efficiency and renewable energy is set to become one of the world's biggest, estimated it will be worth £1.4 - 2 trillion a year by 2020.
 - ▶ In the UK, in the three years to 2015, the fastest growing sector of the economy was the clean energy sector which grew 30%.

² <http://unfccc.int/resource/docs/2015/cop21/eng/l09r01.pdf>

³ Global figure. Source: International Energy Agency World Energy Outlook <http://www.worldenergyoutlook.org/resources/energy-subsidies/> The IEA estimates that the figure of \$493 billion was 4 times greater than subsidies provided for renewable energy.

⁴ The International Energy Agency estimate that a 2 °C emissions pathway would require \$53 trillion in cumulative investment to 2035. By 2035, investment in low-carbon energy supply rises to almost \$900 billion and spending on energy efficiency exceeds \$1 trillion. A 1.5 °C emissions pathway will require even higher levels of investment. <http://www.worldenergyoutlook.org/weo2014/> Subsidies and investments converted from US dollars based on exchange rate in February 2016.

- ▶ Across the South West the renewables industry now employs 12,800 people and is expected to employ 16,000 by 2020⁵. To fulfil the Paris agreement the renewables sector will need to expand further creating new jobs and opportunities in the region.

The impacts of a changed climate system

COP21 also highlighted just how sensitive the global climate system is to even modest changes in the average global temperature.

As widely discussed at the time, an average rise in global temperature of 2°C means that there is a high probability that island nations such as Kiribati, Tuvalu and the Marshall Islands will be inundated by raised sea levels, resulting in the displacement of these nation states.

An average increase in global temperature of just 1.5°C, combined with acidification of the oceans is expected to lead to the death of coral reefs such as the Great Barrier Reef. (At the time of writing the northern part of the Great Barrier Reef is undergoing what is described as the biggest single bleaching event ever recorded⁶). Reef systems are estimated to directly or indirectly support up to 25% of fish species and the livelihood of millions of people around the world.

2015 to 2016 – unprecedented changes in monthly climate records

Climate change has frequently been approached as a problem for the future - an issue which later generations will encounter and be required to address. But 2015 saw an unprecedented number of exceptional weather events and weather records broken, even after a decade of such events.

According to the Met Office Hadley Centre *"2015 was a record-breaking year for our climate. Global mean temperatures reached 1°C above pre-industrial levels for the first time and the year's average global temperature was the highest ever recorded."*⁷

In 2016 monthly temperature averages have continued to break records. Data released by Nasa in March 2016, shows the average global surface temperature in February 2016 was 1.35°C warmer than the average temperature for that month between 1951-1980. This is a far bigger margin than ever seen before. The previous record, set just one month earlier in January 2016, was 1.15°C above the long-term average for that month.



Carlisle City Centre 7th December 2015. Photo: Andrew Yates/Reuters, The Guardian.

⁵ South West Renewable Energy Progress Report 2015 - Regen South West.

⁶ <http://www.theguardian.com/environment/2016/mar/25/great-barrier-reef-aerial-survey-reveals-extent-of-coral-bleaching>

⁷ Source: Peter Stott Met Office. <http://www.metoffice.gov.uk/news/releases/archive/2016/2015-global-temperature>

Commenting on the findings Prof Stefan Rahmstorf, from the Potsdam Institute of Climate Impact Research in Germany said *"We are in a kind of climate emergency now. This is really quite stunning ... it's completely unprecedented."*⁸

In the UK one of the most direct impacts of climate change is to the intensity and frequency of rainfall, and the incidence of flooding. Flooding in Scotland and the north of England during the winter of 2015-16, in some areas for the third time in 10 years, provided a graphic illustration of how vulnerable large parts of the UK are to climate impacts. The floods in winter 2015-16 came on the back of extensive flooding in Somerset during the winter of 2013-14.



Flooding at Wallbridge, Frome, in January 2014. Photo: Frome Standard, Feb 14th 2016.

In Frome, Wallbridge is vulnerable to flooding when the River Frome breaks its banks and was inundated in January 2014. In February 2016 the Frome Standard reported that according to the Environment Agency⁹ 716 homes in the constituency of Somerton and Frome remain at risk of flooding, and that £1.2million will be needed to pay for improvements, as part of a much larger investment flood defences across the region.

Between 23rd December 2013 and 28th February 2014, the Association of British Insurers found that insurance claims were running at £6.7million a day from homes and businesses hit by flooding.

The increased intensity of rainfall now being experienced, is in-line with climate models, but the frequency, scale and nature of flooding over the last 10 years suggests that we may be underestimating flood risk in the UK, and allowances made for the cost of flooding may need to be increased.

The message is clear - climate change is a problem today and we need to address not just the symptoms and impacts, but also the causes.

The Paris Agreement presents us with a global and a local challenge. Addressing it will create one of the world's biggest markets as investment shifts from fossil fuels to energy efficiency and renewable energy. In Frome, the transition presents us with the opportunity to create new high skill, high value jobs, a stronger local economy and a more secure, prosperous and resilient town.

⁸ Source: <https://www.theguardian.com/science/2016/mar/14/february-breaks-global-temperature-records-by-shocking-amount>. Source data for Nasa quote available here: http://data.giss.nasa.gov/gistemp/tabledata_v3/GLB.Ts+dSST.txt

⁹<http://www.fromestandard.co.uk/pound-1-2m-stem-flooding-risk/story-28707795-detail/story.html>

Taking up the challenge

A key difference between the Paris Agreement and the first UN climate agreement in Kyoto in 1992 is that in Paris signatories agreed to implement it by working 'bottom-up' rather than 'top-down'. In other words countries themselves would set the targets to limit global warming. Though widely regarded as a step forward, so far, the national pledges to cut carbon pollution mean that by the end of the century the average rise in global temperature will still be 2.7 to 4°C above the preindustrial average - an increase which would be catastrophic for human beings, and the biosphere.

Neither 'business as usual' nor current international commitments will be sufficient to prevent climate catastrophes. To have any prospect of staying below 1.5°C and limiting the worst effects of global warming we have to do things differently, and accelerate the transition to a fossil free society and economy, and we have to start today.

Prior to Paris, Frome was already committed to being a 'One Planet' town. Today we want to take the next step and commit to being fossil free in 30 years. This paper outlines how we can do it by 2046.

2 - Fossil free Frome - how do we get there?

To meet the challenge of making Frome a fossil free town by 2046 we need to focus on six areas:

- ▶ **Energy efficiency** - getting more for less. Making our existing and new buildings as energy efficient as possible so we spend less, and keep more of the money we spend on energy services in the local economy.
- ▶ **Renewable energy** - maximising the heat and power from solar, hydro, biomass and wind energy in and around Frome.
- ▶ **Energy efficient and fossil free transport** - switching to more energy efficient forms of transport and fossil free sources of energy to power the movement of people and goods.
- ▶ **Energy supply** - changing the way we generate, own and manage our energy supply so it's cheaper and fairer and works for us.
- ▶ **Working in partnership** - supporting existing partnerships and developing new ones to generate ideas, energy and investment.
- ▶ **Finance** - funding the investment to make Frome fossil free.

Energy efficiency and fuel poverty

Existing buildings

With a long tradition of building in stone and brick the UK has some of the oldest but also some of the least energy efficient buildings in northern Europe. A survey of the housing stock in Frome conducted in 2009 found that more than a quarter of the dwellings (27%) were constructed before 1945, and less than a third (28%) have been constructed since 1980¹⁰.

¹⁰ Source: Mendip District Council Private Sector House Condition Survey - Managed Services and Consultancy Ltd. Results based on survey work completed in August 2009.

The same survey found that the average SAP rating of homes in Frome was 57 and that Frome had the highest incidence of fuel poverty in Mendip with 44% of households needing to spend more than 10% of their gross income on heating¹¹.

Improving the energy efficiency of buildings is the quickest and most cost effective way of reducing energy demand and expenditure and addressing fuel poverty.

In 2014 energy use in buildings in Frome (and the parishes of Selwood and Berkley) was estimated to be 249GWh at a cost of £22m per year¹².

It has been estimated that we could reduce the total energy consumption in Somerset by 40% through better energy efficiency¹³. Reducing consumption in Frome by this amount would save around £9m a year.

Some activity is already happening to make the homes, businesses, and public and community buildings in Frome more energy efficient, including:

- ▶ **WISH - Warmer Improved Somerset Homes** - a programme of advice and support run by the Centre for Sustainable Energy to help householders living in cold, damp homes or who struggle to pay their energy bills. A team of WISH energy volunteers in Frome offer monthly energy advice sessions in winter and visit homes experiencing fuel poverty.
- ▶ **Frome Open Homes** - in 2014 and 2015 gave local people the chance to visit inspiring households and projects that showcase ways to improve energy efficiency, cut energy costs and carbon pollution. The projects and ideas range from simple cheap measures like draught-proofing to bigger measures such as solid wall insulation, and renewable energy schemes such as local micro-hydro electric generation.

SAP - measuring the efficiency of homes in Frome

SAP is the Standard Assessment Procedure, the method used by Government to assess the energy and environmental performance of dwellings.

SAP works by assessing how much energy a dwelling will consume to achieve a defined level of comfort. SAP ratings are expressed on a scale of 1 to 100 - the higher the number the better the rating.

The survey in 2009 found that the average SAP rating was 57, but for properties constructed after 1980 the average SAP would rise to 65 because the homes were constructed to a higher energy efficiency standard.

The Government updates SAP on a regular basis and the house condition survey completed in 2009 was based on SAP 2009.

¹¹ The definition of 'Fuel Poverty' has been changed since 2009. At the time, a household was deemed to be in Fuel Poverty if it needed to spend 10% of more of its gross income to provide adequate warmth.

¹² Source: The Converging World 2014. Based on publicly available data up to 2012. Estimate includes parishes of Frome, Selwood and Berkley and the Commerce Park. Based on data from 19 Lower Level Super Output Areas.

¹³ The Power to Transform the South West - The Resilience Centre 2015.

Eco-refurbishment of a Victorian Terrace

Jon Tolson converted an old Georgian shop in Frome to a home built to the Passivhaus standard (photo bottom right). This means that large amounts of insulation have been added and the design has paid particular attention to air tightness. Jon added 6 inches of internal celotex insulation to the existing building and 150mm of hemp insulation to the extension. Triple glazed skylights have been added to the extension to bring natural light to the kitchen area.

The steel beams are inside so there is no cold bridging. Vents have been added in each room – mechanical ventilation with heat recovery – extracting air from the kitchen and bathroom and bringing fresh air into living areas. The house has LED lighting throughout. The whole building has been wrapped with a breathable vapour check which lets moisture, not air, through.

- ▶ Cutting energy and carbon in schools - since 2014 Frome Renewable Energy Co-op and Frome Town Council have been working with local schools including Selwood Academy, St John’s Primary School and Frome College to provide the schools with a bespoke energy audit and activities for students and staff to help reduce energy costs and emissions.

For Frome to become fossil free, we first need to develop and expand these initiatives to make every building in the town as energy efficient as possible. That means installing straight-forward measures such as draught-proofing, loft insulation and where appropriate cavity wall insulation, as well as measures such as better heating controls and external and internal wall insulation in older buildings with solid walls¹⁴.

We also need to reduce our power consumption by accelerating the switch to the most energy efficient appliances such as LED lighting and A++ rated electrical goods.

New buildings

The construction of new buildings in Frome is an opportunity to ensure they are ‘fossil free’ - meeting their requirement for heat, summer cooling and power without fossil fuels - from the outset. Where possible we want new domestic and non-domestic buildings to be designed to the Passivhaus standard to minimise energy needs, and to incorporate renewable energy such as solar PV to generate electricity and solar thermal to provide hot water.

We also need to address the ‘performance gap’ so that in use, new buildings consume only as much energy as they were designed to



¹⁴ Where appropriate - not all solid wall properties will be suitable for internal or external wall insulation. For example they may be listed.

and not 2 to 3 times as much as is commonly the case today.

Changing behaviour

The cheapest and quickest way of reducing our energy consumption and costs is to change our behaviour and the way we use energy, to cut out unnecessary use and waste.

With initiatives such as Open Homes and WISH to share advice and ideas Frome is already leading the field. But we want to go further and find new ways of encouraging energy saving behaviours that we can adopt and share in our homes, businesses and communities.

Renewable energy

In the last five years we have seen a revolution in the generation of heat and power from renewable sources across the South West of England. In 2014/15 renewable electricity capacity increased by nearly 88%, and renewable heat capacity by 45%¹⁵. At present the South West meets 6% of its total energy demand from renewables.

In Frome there are currently 648 photovoltaic installations with a total installed capacity of 2.77MW, two hydro generators with a total installed capacity of 17kW, and a micro-wind turbine with an installed capacity of 2.5kW¹⁶ registered under the Microgeneration Certification Scheme. Of the PV capacity in Frome, 200kW was installed by Frome Renewable Energy Co-op on Frome Medical Practice and a community stand at Frome Town Football Club.

A study by the Resilience Centre has calculated that Somerset could go much further and meet 152% of future energy needs through renewable energy generation¹⁷ using technologies such as steady tidal flow, tidal range and coppice biomass energy generation alongside wind, solar and small scale hydro.

The total amount of potential renewable energy that could be generated in Somerset is estimated to be:

- ▶ Electrical energy (power): 8,685,252MWh_ehrs

¹⁵ South West Renewable Energy Progress Report 2015. Regen South West.

¹⁶ Data from Renewable Energy Foundation - FiT Generation Search for installations in BA11 as of 25-02-2016. www.ref.org.uk

¹⁷ Assuming that we also reduce energy demand by 40% through the energy efficiency measures.

Passivhaus - the house is the heating!

Passivhaus or 'Passive House' is a 'super' energy efficiency standard for new homes and non-domestic buildings.

Developed in Germany in the 1990's more than 30,000 buildings have been built to the standard around the world, including the UK.

Passivhaus buildings are so energy efficient that the heat from the occupants, appliances and the sun is enough to keep them warm in the winter without a boiler or heating system. They are also designed to remain cool in the summer without air conditioning, meaning they will be able to withstand rising summer temperatures.

Renewable energy in Frome - further and faster?

Dr Keith Barnham, Emeritus Professor of Physics at Imperial College London, and resident of Frome, has been considering how quickly the UK, the South West and towns such as Frome could meet 100% of their electricity requirements from renewable sources.

In 2006, the Kombikraftwerk project in Germany modelled 1/10,000th of electricity demand in the country and matched this against real-time output from PV, wind and biogas. The study found that PV and wind could supply 78% of Germany power demand with only 17% back-up power by biogas electricity and 5% back-up from storage. By modelling energy demand in the South West Prof Barnham believes it will be possible to assess what capacity and mix of renewables will be needed to meet 100% of electricity demand without burning fossil fuels.

Additional renewable capacity installed in Germany in the last 10 years means that the country is on track to meet 100% of its electricity by 2025. In the UK renewable capacity was growing at a similar rate (albeit from a lower base) prior to the cuts in Government support since the General Election in May 2015.

- ▶ Thermal energy (heat): 2,829,627MW_{th}hrs

Frome, and the surrounding area has excellent potential for generating electricity from solar PV, small scale hydro, anaerobic digestion and wind; and heat from solar thermal, coppice biomass, anaerobic digestion, and ground and air source heat pumps. Mendip Power Group estimate that small scale hydro on the rivers Frome and Mells could add 1127kW of renewable electricity capacity¹⁸.

¹⁸ Anthony Battersby, Mendip River Power



In 2014 Frome Town Council secured £16,000 from the Department for Transport to establish a car club. The Co-wheels car club now has two electric solar powered cars and one hybrid vehicle available for affordable hire in Frome. Image: Frome Town Council.

Transport

Moving people and goods to, from, and within Frome requires a large amount of energy. At present almost all of this comes from burning oil the byproduct of which is pollution that contributes to climate change and local air pollution. In 2008 Mendip District Council identified several hotspots in and around Frome which were at risk of breaching European air quality thresholds¹⁹.

The Department of Energy and Climate Change (DECC) estimate that in 2013 the movement of people and goods in Mendip required just over 850,000MWh of energy²⁰. (That's the energy equivalent of running 1000 one-bar electric fires continuously for 97 years).²¹.

¹⁹ Local Air Quality Management - Progress Report 2008. Mendip District Council Environmental Protection, September 2008.

²⁰ Source: Department of Energy and Climate Change (DECC): Sub-national Road Transport Fuel Consumption 2005-2013. DECC figures show that 47,730 tonnes of oil equivalent (toe) were required to move people, and 25,528 tonnes of oil equivalent required to move freight in 2013. That equates to 555,100MWh of energy to move people and 296,900 MWh to move freight based on a conversion factor of 11.630MWh of energy per 1 tonne of oil equivalent.

²¹ 1000 one-bar electric fires would use 1000kWh of electricity in one hour. In 97 years they would consume $1000 \times 24 \times 365 \times 97$ kWh = 849,720,000kWh or 849,720MWh.

Part of the reason so much energy is needed for the movement of people and goods is that petrol and diesel engines are very inefficient. About three quarters of the energy we put in to vehicles as fuel is wasted as heat²². To meet our objective of a fossil free Frome, we need to switch to much more efficient ways of moving people and freight around which don't require us to burn fossil fuels in very inefficient engines.

Within Frome we want to make it as easy as possible for people to walk and cycle and make sure that those with restricted mobility can move about easily with good access to shops, businesses, public and community buildings.

We also need to make it as straightforward, and financially attractive as possible for people to use public transport to get to and from Frome. And we need to speed up the transition to much more efficient forms of transport such as electric vehicles, which can be powered using renewable electricity and which eliminate exhaust pipe emissions.

We've got off to a good start with the Co-wheels car club which is proving very popular with three cars in town including a hybrid and an all-electric Nissan Leaf available for members to use.

Because electric motors are smaller and lighter than petrol and diesel engines and can be up to 90% efficient they already compete with the most frugal petrol and diesel cars in terms of 'miles per gallon' and greenhouse gas pollution²³.

As more of our electricity comes from renewable sources the greenhouse gas pollution for each passenger mile will fall. What's more electric vehicles can be recharged by connecting to homes, businesses and public buildings and there is a growing network of public and fast charging points that is expanding rapidly.

Energy supply

The electricity grid, the network of wires that transmits power to our homes and businesses, was designed and built for a very different energy system, comprising a relatively small number of large, centralised power stations, to the one we need today. The shift from centralised fossil fuel power generation to renewable energy requires a distribution system capable of carrying power from thousands of renewable energy generators distributed across the UK, in combination with larger power plants. Regen South West



²² Source: Sustainable Energy Without The Hot Air 2009 edition. David JC MacKay.

²³ Even allowing for the additional weight of the battery.

reports that capacity constraints on the distribution network in the South West region are already creating a bottle-neck in the installation of larger renewable energy systems in the region. Upgrading the electricity grid to make it sufficiently flexible and adaptable to a new energy infrastructure provides one of the biggest single opportunities to reduce energy waste, increase renewable energy capacity and make the best use of energy generated renewably.

As part of the transition to fossil free power, locally, we have the opportunity to change the ownership of our energy system, so that we have a greater stake and control in order to reduce costs and retain a greater proportion of the profits within the local economy.

Energy storage

Our demand for heat and power varies seasonally and daily. Because electricity cannot be stored in the grid, electricity supply must match demand at all times. Meeting this variable demand for power is inherently inefficient. New technologies such as battery packs which can be installed in sub-stations, homes and businesses, will enable us to store electricity for later use, and bring three big benefits.

- ▶ Smoothing out the peaks and troughs in demand making it easier to match electricity supply and demand and turn-off the least efficient forms of generation.
- ▶ Allowing us to shift demand so that we buy electricity when it is cheapest (for example buying energy at night for use in the day).
- ▶ Making better use of electricity generated locally from renewable sources. For example electricity generated in the day using solar PV during the day can be stored for use at night or the next day.

Local energy storage is going to be key to reducing our reliance of fossil fuels and making Frome fossil free.

Smart grids - managing our energy demand

In tandem with local energy storage the electricity grid is set to get 'smarter' which will enable us to manage energy demand reducing the peaks and troughs which are expensive and inefficient to meet. The 'smart grid' will be able to tell certain appliances (such as washing machines, fridges and electric cars) when there is a high demand for electricity. We will be able to opt to delay when they come on, or conversely when there is lots of renewable electricity being generated to turn them on to make use of the fossil free power.

Smart grids and 'demand response' are ways we can drive down the cost of energy across the network and in Frome.

Community energy - cutting costs and retaining the benefits of the energy we use

A recent survey of 80 community energy organisations on behalf of Community Energy England found that they had delivered 30MW of capacity in 175 schemes with a further 143MW planned. With a public spending investment of £7.4m the schemes had attracted over £50m in private investment and generated revenue to local economies of more than £45m²⁴.

In January 2014 the Coalition Government recognised the benefits of community energy to reduce the cost of energy, improve energy security and the resilience of power generation, speed the transition to renewable energy whilst generating revenue for local communities, and creating new skilled jobs. The Government published its *Community Energy Strategy: People Powering Change*²⁵ which suggested that by 2020 community electricity could generate up to 3000MW (3GW) from a mixture of solar PV, onshore wind and hydro - enough electricity for over 1 million homes.

However, since May 2015 the Conservative Government has steadily reduced and removed the incentives to invest in renewable energy in the UK and made it significantly harder for community renewable energy groups to raise the finance needed for investment.

Despite this, Community Energy remains one of the best options for reducing the cost of heat and power in Frome, boosting the local economy and generating revenue for use in the local community.

In 2013 Frome Renewable Energy Co-op (FRECo) which was set up to enable the local community to invest in clean, renewable energy through community shares. Their first community share offer in 2015 for two solar PV

Community energy - renewable, local & democratic energy generation

In the last ten years community energy has grown from an idea to the means of delivering energy projects of all scales around the world.

Community energy or community renewable energy is an approach to developing energy projects that involve significant levels of community participation and/or ownership.

Some community energy groups refer to the '3D's' of community energy:

- ▶ Decarbonising the energy supply by the installation of new renewable heat and power technologies.
- ▶ Decentralising and localising the supply of energy; and
- ▶ Democratising the governance of the energy system through community ownership and participation.

A feature of many community energy projects is that profits are paid to share holders in the form of a dividend and also to the local community to create a fund for energy and or other projects or activities.

²⁴ Community Energy: Generating More than Renewable Energy. October 2015. Research conducted by Quantum on behalf of Community Energy England.

²⁵ Department of Energy and Climate Change, January 2014.

projects on Frome Football Club and Frome Medical Practice sold out in four days.

FRECo have teamed up with Bath and West Community Energy - the leading community energy provider in the UK and Mongoose Energy Ltd which supports a network of Community Energy projects. Together they are looking to launch the UK's first community energy tariff in Frome in 2016.

Fairer energy pricing

At present the more energy you use the cheaper each kWh of energy becomes. And the cost of energy relates to how you pay for it; so you pay more with a pre-payment meter than if you buy energy by direct debit.

As part of our commitment to address fuel poverty we need to find fairer ways for those on low incomes to pay for the energy they use and ways of encouraging good energy saving behaviour rather than rewarding energy waste.

Working in partnership

Frome Town Council cannot achieve the objective of making Frome fossil free within 30 years working alone. We need to work in partnership, supporting existing networks and partnerships and establishing new ones which involve local residents, businesses, community and faith groups as well as the District and County Council.

Amongst the groups and partnerships we want to work with are:

- ▶ Somerset County Council,
- ▶ Mendip District Council,
- ▶ Frome and District Chamber of Commerce,
- ▶ Community groups such as Sustainable Frome and Fair Frome,
- ▶ FRECo,
- ▶ Sustrans,
- ▶ Churches and other faith groups,
- ▶ Frome Medical Practice,
- ▶ Frome Town Football Club,
- ▶ Local political parties.

There are also opportunities to partner with towns in cities in Europe and other parts of the world which are also working to be fossil free in order to share ideas and expertise, create new business opportunities and learn from each other.

Financing the transition

The transition to a fossil free Frome will require an inward investment of funding, skills, and the creation of new jobs and businesses. In the next four years the global market for energy efficiency and renewable energy is predicted to grow to £1.4 to 2 trillion. Realising the full potential of renewable energy in Frome could create in excess of 800 new jobs and financial benefits in the order of £42 million.

By becoming a leader in the transition to a fossil free economy we will be well placed to attract the inward investment we need.

To aid the transition we will work to:

- ▶ Seek European funding for new projects, programmes and businesses.
- ▶ Attract support from the UK Government as and when it comes available.
- ▶ Divest funds held by Frome Town Council from fossil fuel companies and invest in clean energy alternatives including local generation.
- ▶ Find new ways of funding energy efficiency and renewable energy measures in Frome and new opportunities for local residents to invest local initiatives.
- ▶ Make Frome the 'go to' destination for businesses wanting to invest in the clean energy transition.

3 - What it means for Frome

By committing to becoming the first fossil free town in the UK, Frome will be in the vanguard of towns and cities responding to COP21 and the Paris Agreement. We will also reap the benefits of making the transition to being a truly low carbon town:

- ▶ **A cleaner, quieter Frome** - by reducing our use of fossil fuels, and switching to electric vehicles we will improve local air quality and reduce noise pollution in the town - making Frome a more attractive place to live and work.
- ▶ **A stronger local economy** - by cutting energy waste, reducing the cost of energy and increasing local ownership of energy generators we reduce the flow of money out of Frome and increase the revenue circulating in the local economy. That's good for Frome and its residents and businesses.
- ▶ **A more resilient town** - the impacts of climate change combined with volatility in the global economy will produce bumps and shocks over the coming decades. By making our homes, businesses, community and public buildings more efficient, reducing our reliance on imported energy and fuels and generating and owning more of the energy we use, we can make Frome more resilient to the challenges ahead.
- ▶ **New skills, new jobs, new investment** - Realising the full renewable energy potential in Somerset could create over 16,500 jobs and over £815m a year in direct financial benefits. On a per head basis Frome could see the creation of more than 800 new jobs and financial benefits in the order of £42 million.

Questions for wider discussion

- ▶ Should Frome Town Council be taking a lead on the issue of climate change?
- ▶ Should the council be setting a target in response to COP21 and the Paris Agreement?
- ▶ Is a commitment to being 'fossil free' the right way to frame such a target?
- ▶ Is Frome becoming fossil free by 2046 too ambitious or not ambitious enough in the light of the changes to the climate system experienced today and anticipated in the future?

Please send comments to:

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