# Tavistock and District Local Economic Blueprint

## Energy

Developed by Transition Tavistock

# Executive Summary / 1

- Our patterns of spending on food and energy have a significant impact on our local economy. The **Tavistock and District Local Economic Blueprint** evaluates how much is spent in these sectors, how much benefit this brings to the local economy, and what steps might be needed in order to achieve increasing proportions of our needs through local supply chains. The project was led by Transition Tavistock, www.transitiontavistock.org.uk with support from local public, business and community stakeholders.
- **This section covers energy.** The focus is on Tavistock and nearby ("Southern Link") parishes: about 32,000 of us live in this area.

## Our vision

We have a resilient network of locally owned and generated heat and power providing affordable energy. Our housing, new and old, is high quality and local energy generation and efficiency is an important source of employment.

## Recommendations for getting there

- Collaborate for a better local energy economy
- Encourage demand for retrofitting homes
- Support energy efficient new housing development
- Enable an adequate level of home comfort for all
- Develop opportunities for local supply networks
- Grow local energy generation capacity
- Develop the local biomass industry
- Strengthen local skills, businesses and supply chain

# Executive Summary / 2

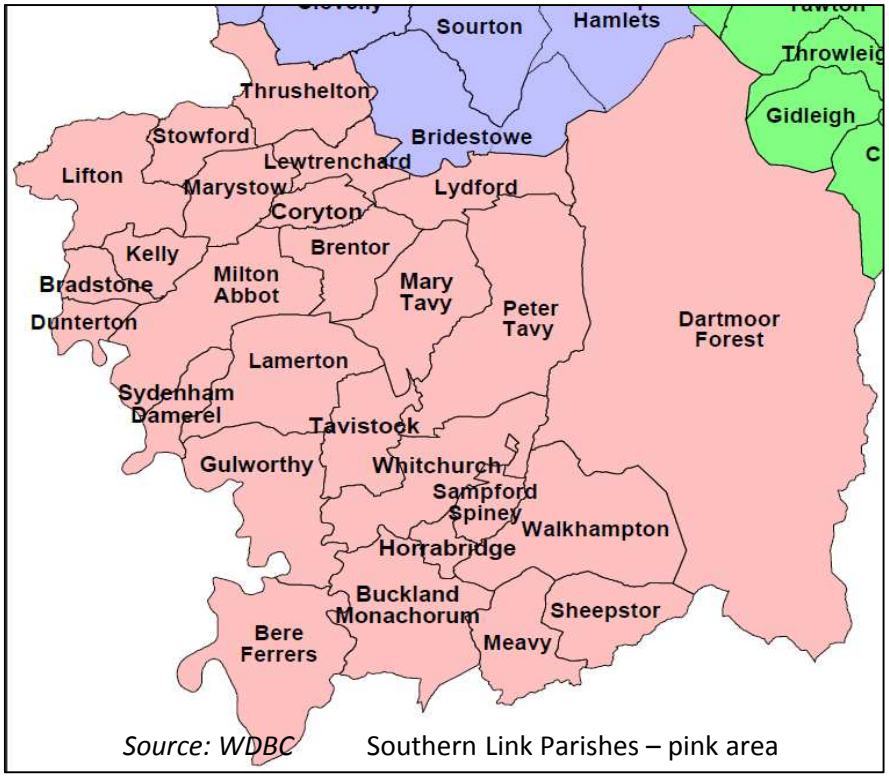
## Headline findings ...

- *Energy is essential to our daily lives, health and wellbeing and accounts for about 5% of household expenditure. Domestic and non-domestic spend is approx. £40m per annum, much of which is spent with large national and international companies, leaving the local economy.*
- *We could cut this in half by reducing our usage, making our properties more energy efficient and ensuring new properties are built to meet high energy efficiency standards.*
- *To improve our existing housing we need to invest around £20m for basic improvement, £100m to achieve a high standard. £7m should be invested as a priority to support those in fuel poverty to improve inadequate levels of home comfort. These improvements could generate 50 to 950 jobs.*
- *Our natural resources could support more local energy generation. Whilst wind and large scale solar may not be feasible in the short term, small scale solar and hydro have potential. Community owned schemes retain local benefit; and short to medium term grid constraints are leading to innovation in local supply networks and storage which can increase local benefit further.*
- *Locally generated heat has promise. An extensive programme of biomass, heat pump and solar hot water installations could provide 40% of local need.*
- *A biomass supply and distribution network could be developed. W. Devon's hedges alone, if farmed for fuel, could heat up to 800 farmhouses, producing wood chip to a value in excess of £1.2m pa, and generating lots of livelihoods. This network could supply clusters of homes/businesses, or large organisations such as colleges, sharing heat infrastructure (district heating). Such schemes could be developed and managed by the community.*
- *Whilst there are many excellent tradespeople across the area, there is a need to attract more skilled people versed in newer techniques and technologies, or provide support for those keen to develop.*

# Brief introduction to TAD LEB

- Spending on food and energy are essential to meet our everyday needs. Across Tavistock and District (TAD) this adds up to over £120m pa. Much of this is spent with large organisations based elsewhere.
- The question we're asking … Do we understand what benefits this brings to our local economy and communities, and what opportunities there are for these sectors to deliver more for our future health, wellbeing, resilience and prosperity?
- The TAD Local Economic Blueprint (LEB) has developed an initial evidence based understanding of this, supported by recommendations for securing more local benefit.
- We are not producing a conventional report. We hope you enjoy this format. More detailed supporting figures are available on request.

Two years work has been invested from initial idea to final report!




*Source: WDBC* Southern Link Parishes – pink area

## Geographical scope

- Tavistock and District, for the purposes of this study, includes all West Devon Borough Council Southern Link Parishes
- Population: 32,200 (PPSA estimates, West Devon 2012)
- Households: 13,481 (2011 Census Data)

# Approach to preparing TAD LEB

- Transition Tavistock promoted project and secured initial funding from WDBC, Tavistock Town Team and Tamar Valley AONB
- Recruited local stakeholders to own project
- Agreed initial vision for our food and energy economy with stakeholders
- Recruited food and energy sector experts to support project
- Undertook secondary research from information available in public domain
- Worked with sector experts and others to gather primary research
- Reviewed findings with stakeholders and sector experts
- Developed analysis and findings and prepared report
- Now – sharing findings and developing actionable plan for next 3 years.

# TAD LEB Stakeholders

We are grateful to all who have contributed time and ideas to this project.

- Stakeholders include:
  - Devon County Council
  - West Devon Borough Council
  - Tamar Grow Local and Tamar Valley Food Hubs
  - Tavistock Town Council
  - Buckland Monachorum, Bere Ferrers and Dartmoor Forest Parish Councils
  - Dartmoor National Park Authority
  - Tavistock Chamber of Commerce
  - Tavistock BID
  - Tavistock Business Association
  - Federation of Small Businesses
  - Mount Kelly Foundation
  - Tavistock College
  - Institute of Sustainability Solutions Research (ISSR) at Plymouth University.

# Energy - Introduction

- This section of Transition Tavistock's Local Economic Blueprint gives our research findings and recommendations for Energy
- Energy is essential to our daily lives and accounts for about 5 % of our household expenditure [E1].
  - **Energy**: electrical **power** for lighting, running appliances etc.; **heat** to keep us warm and provide domestic hot water; f**uel** to power our **transport**.
  - This report excludes our requirements for transport.
  - It is also based on energy consumed by buildings and productive processes across the area. Embodied energy in goods and services exported and imported is not taken into account.
- Where does our energy come from now, and where does the money go?
- Could we change the pattern to benefit the current and future community?
- Tavistock and area's mining heritage was built upon energy innovation.
- Are we making the most of our skills, expertise and natural resources?

# A vision for our energy economy

- We have a resilient network of locally owned and generated heat and power …
  - Supporting a growing proportion of our needs
  - Delivered through a locally owned decentralised network
  - With a wide mix of sources of heat and power, and storage, from micro to larger scale
  - Delivering community benefit
- Our area enjoys affordable energy and high quality housing – new and old
  - Every householder has access to support to make their home energy efficient supported by schemes to enable access to improvement measures, including micro-generation, whatever their means
  - The most appropriate retrofit techniques for each house type are understood, and applied
  - District heating is the norm for new developments and opportunities are sought for its use on existing sites (domestic and non-domestic).
  - All new build is to zero carbon standard, incorporating appropriate micro-generation
  - Fuel poverty has been eliminated wherever possible
- Our local energy and retrofit sectors are an important source of employment throughout the supply chains …
  - Supported by an excellent skilled network of tradespeople and other professionals
  - A thriving local biomass market is enabling improved biodiversity of woodlands and hedges, and is providing skilled local employment

*But why? The quotes that follow are from local, national and international sources, from a wide range of stakeholders, setting out the rationale and benefits of rethinking our approach to energy.*

# Why it matters –

*"While the UK's community energy sector is relatively small today compared to Germany's or Denmark's, the evidence we have gathered for this Strategy illustrates the huge potential of community energy here. On generating electricity, for example, estimates suggest that schemes involving local communities could supply enough electricity for 1 million homes by 2020, if we get the support right."* Ministerial Foreword to Government's Community Energy Strategy, Jan 2014 [E2]

*"In some places, cooperatives are being developed to exploit renewable sources of energy which ensure local self-sufficiency and even the sale of surplus energy. This simple example shows that, while the existing world order proves powerless to assume its responsibilities, local individuals and groups can make a real difference …"* Pope Francis in Laudato Si' - Care of our common home, June 2015 [E3]

*"… Community-owned projects keep money in the Devon economy and reinvigorate communities by bringing people together with a common purpose. Schemes are already operating in Plymouth, South Brent and Totnes."* 'Community Energy' from Devon County Council [E9)

# Local distributed energy systems – the future?

**Views from the Institute of Mechanical Engineers (IMechE)**

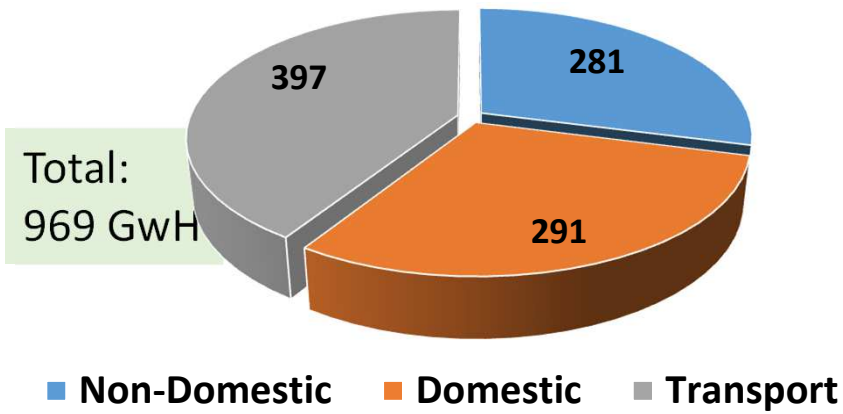
*"Just as in the food industry, where there is a movement towards producing local food for local people, so in the energy industry,* ***distributed energy*** *is all about* ***the local supply of electricity and heat which is generated on or near the site where it is used*** *…* ***The ethos of distributed energy is local ownership of local energy****: encouraging working partnerships between local businesses and local people, to share in the production and supply of energy to the local community"* What is decentralised energy, IMechE [E10]

*"Distributed Energy Systems … will* ***help address a range of issues in addition to carbon reduction****; these are* ***energy costs, exposure to price volatility, distribution losses, and energy reliability****. In addition, Distributed Energy Systems can provide opportunities for* ***local economic development*** *and provide* ***energy for communities*** *which are* ***off*** *the gas or electricity* ***grids****"* Distributed Energy Systems: the local energy solution. IMechE [E11]–

*"****Choosing distributed, local solutions*** *for their own energy needs,* ***householders, communities, businesses and schools*** *can gain a* ***sense of ownership of their energy****, becoming* ***energy producers rather than just consumers****. This is already a norm in many parts of northern Europe, in particular, where local communities routinely generate electricity and heat for their towns"* Benefits of decentralised energy, IMechE [E10]

# Overall energy use across Tavistock and District

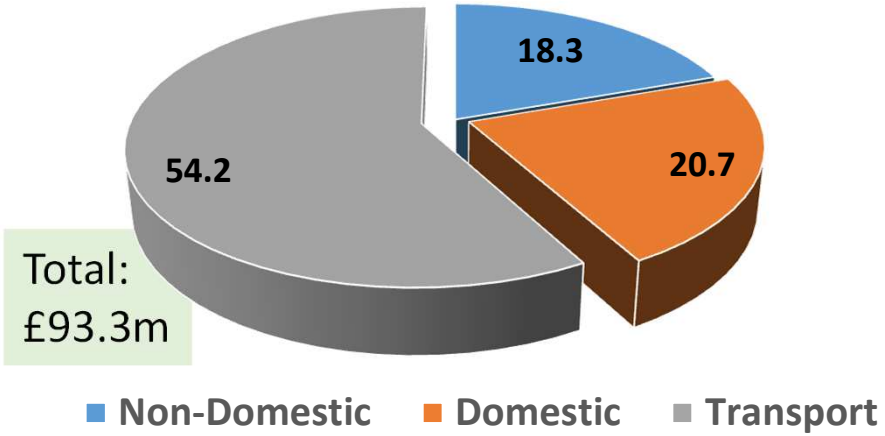
**Tavistock and District Energy Use in GwH per annum**




- Overall energy use, including transport, approx.:
  - 969 GwH energy used
  - Costing £93.3m
    - Per person: £2,897
  - Domestic energy per household: £1,538

- Transport accounts for 41% of overall energy use, and 58% of cost.
  - Its economic impact is significant, but challenging to impact at a local level
  - Potential for local generation of transport fuel is limited (without significant electrification?)

**Tavistock and District Energy Cost in £m per annum**




*Source:* SWD CEP Strategic Energy Study (E7). Tavistock and District data derived from West Devon energy consumption per person (2009 and 2010) results multiplied by number of people in Tavistock and District (as per 2012 PPSA estimates).

# Energy

## Domestic Retrofit

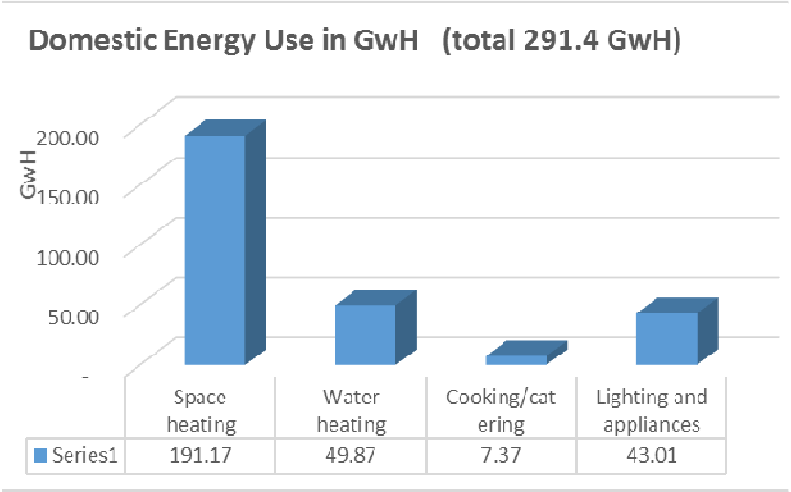
Improving the energy efficiency of our homes

# Introduction to Domestic Retrofit

- UK energy policy requires an 80% reduction in CO2 emissions by 2050
- A significant source of emissions are from household energy use for heating and lighting. Reducing these across our aging housing stock is challenging.
- The Energy Saving Trust estimates that around **£1.5 billion** needs to be invested to enable **SW housing to meet 2050** energy efficiency **targets**. This is a big potential market for local tradesmen.

## Scope

- This report covers domestic retrofit i.e. energy costs arising from the use, occupation and maintenance of domestic properties.
- Retrofit refers to the steps taken to improve the energy efficiency of the home through the fabric or through micro-generation of locally generated heat and power from renewable sources.
- The impacts of the behaviour of householders and the efficiency of appliances used will also be highlighted.

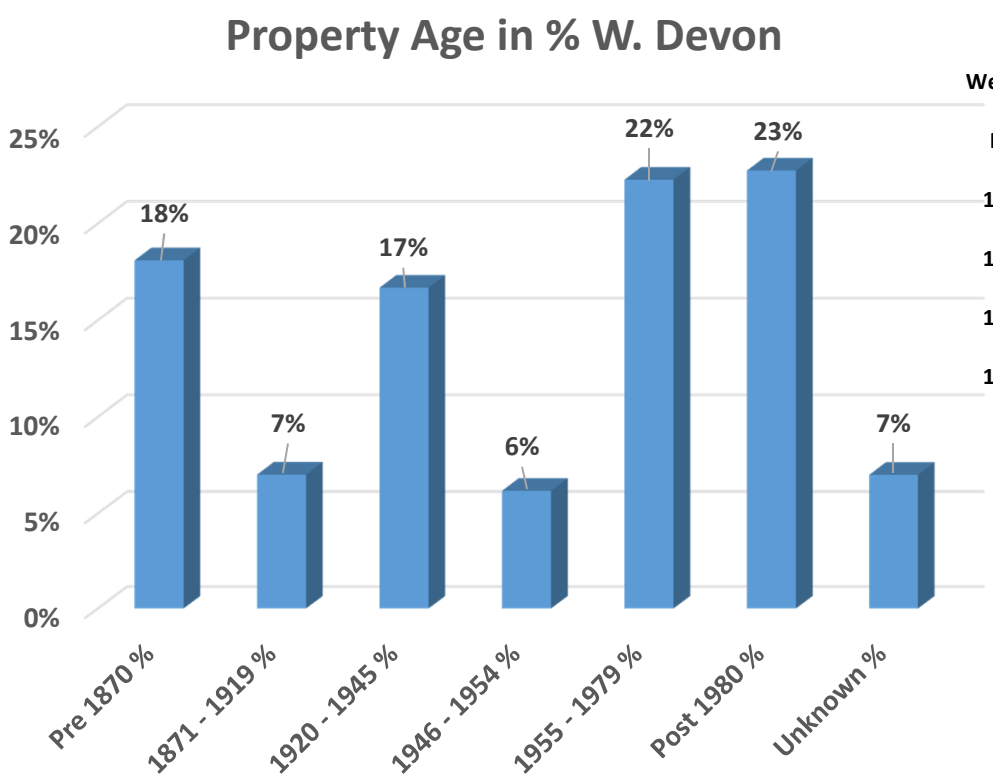


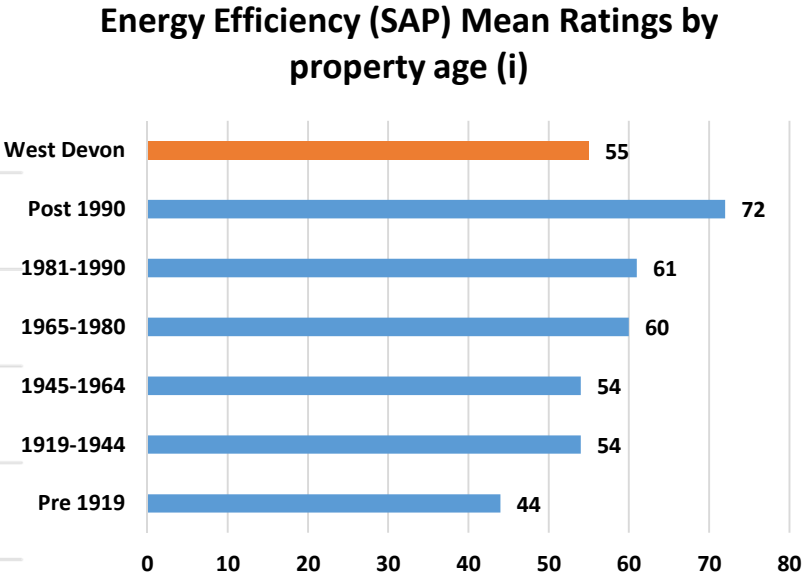

*Source:* SWD CEP Strategic Energy Study, 2013

Space Heating is the most significant domestic energy use to tackle

# Our aging housing stock is challenging …

- 70% of our housing stock is pre-1980; 43% pre-1955
- Improving the energy efficiency of many of these properties is challenging and can be costly – *many also listed and in conservation areas*



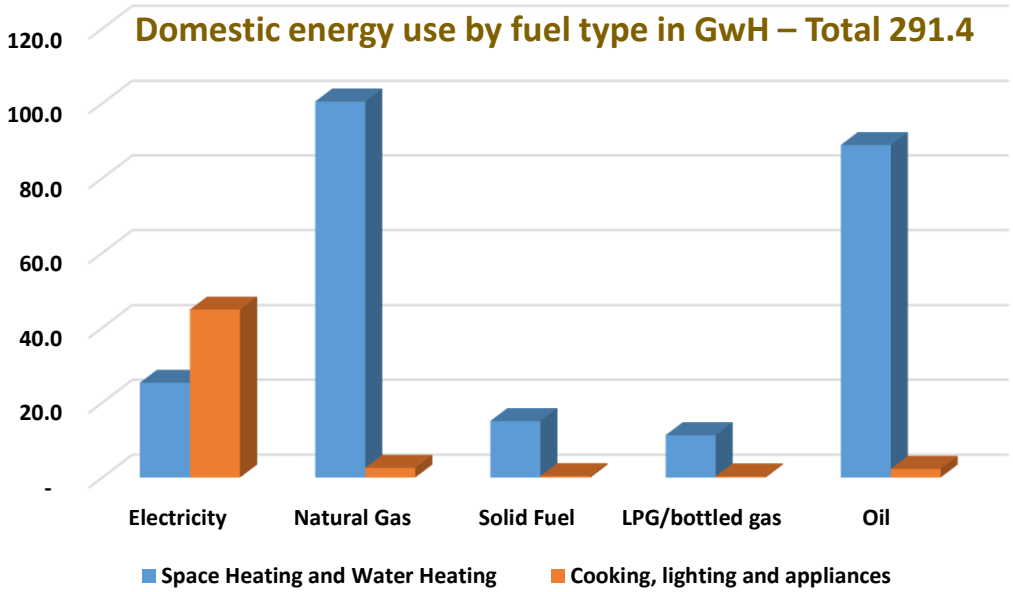

| EPC SAP Range Band | Whole Stock (i) |
|---|---|
| Band A/B (81-100) | 5.7% |
| Band C (69-80) | 20.9% |
| Band D (55-68) | 30.6% |
| Band E (39-54) | 25.5% |
| Band F (21-38) | 12.9% |
| Band G (1-20) | 4.4% |

Best

Worst

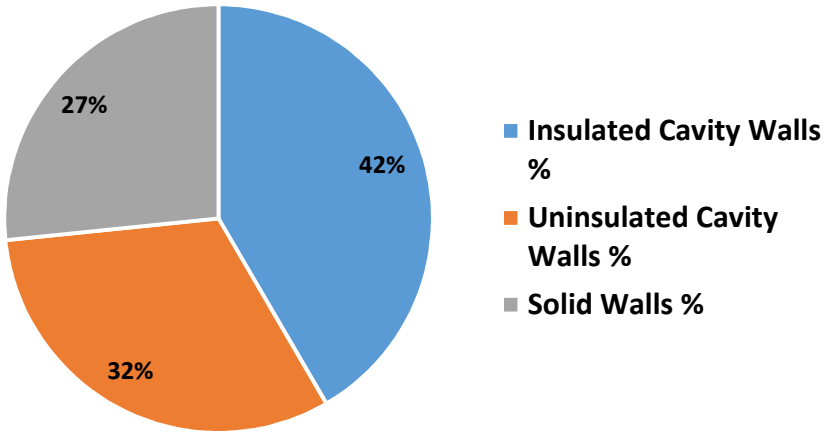
*Source: W. Devon 2010 House Condition Survey*
*(i) Excludes social housing*

# More about the buildings …

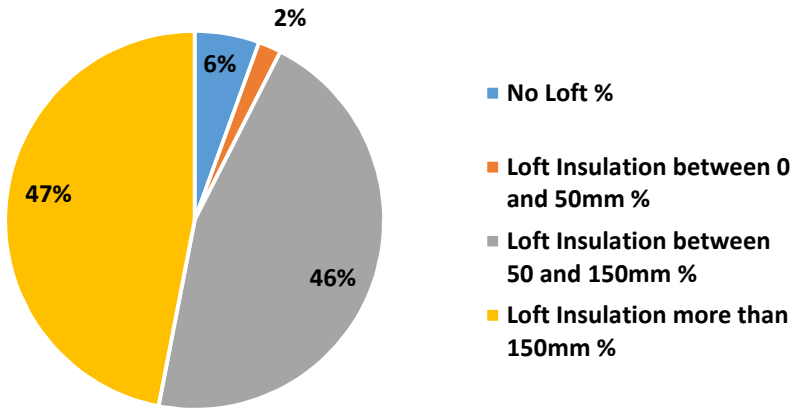



- Off-gas homes have higher cost heating making fuel poverty more likely.
- Only three other LAs in the S. West have a higher proportion of off-grid homes [E12]

## Wall types in West Devon

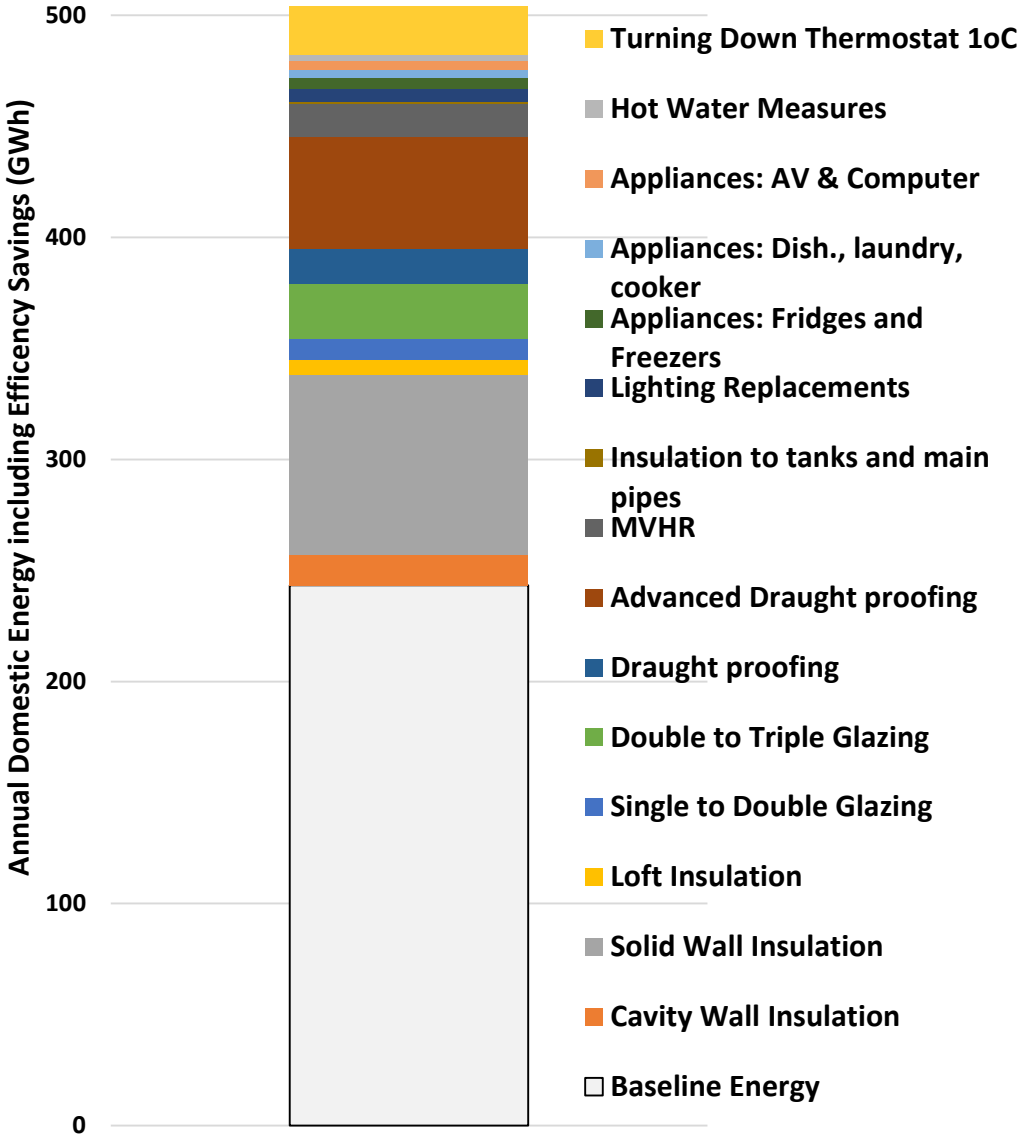



## Loft Insulation in West Devon




*Source:* SWD CEP Strategic Energy Study, 2013

# We could reduce domestic usage by half …




- **Potential energy savings** from a series of energy reduction and behaviour measures.
- The height of the stack represents **current domestic energy usage in West Devon**.
- **If all the measures** are **implemented** in full, then the **remaining** energy (white bar) **represents 'baseline energy'**
- More aggressive efficiency or behaviour measures could reduce this further.
- The measure with greatest potential is insulation of solid walled homes.

# Indicative investment needed in Tavistock & District

*Extrapolated from WDBC Private Housing Condition Survey [E12]*

**Basic measures** – loft and cavity wall insulation, double glazing, lagged cylinder, boiler and central heating where none

Approx: 11,000 dwellings - £1575 average per dwelling - **£17.2m** investment

**Raising efficiency to average SAP of 76 – Band C** – requires basic measures + more complex such as solid wall and micro-renewables

Approx: 13,500 dwellings - £7560 average per dwelling - **£101.9m** investment

**Highest priority homes –improving Bands F/G to E** – depending on property – range from easy to expensive

Approx: 2,300 dwellings - £2930 average per dwelling - **£6.8m** investment

**Focusing on properties in fuel poverty** – range of measures needed

Approx: 2,300 dwellings - £2980 average per dwelling - **£6.8m** investment

**This can generate a lot of local jobs**
**and investment with local businesses and supply chains**

# Potential local jobs

- Retrofitting domestic properties requires a range of skills from generalists to specialists.
- RegenSW estimate that the domestic retrofit market in the south west has 6,500 businesses and supports 16,000 jobs. In 2012-13 the sector had an annual turnover (incl. micro-renewables) of £1,100m.
- A rough calculation suggests that fitting out all TAD privately owned properties with loft and cavity wall insulation and replacing all G-rated boilers would support 50 jobs.
- Implementing a full scale eco retrofit – could need up to 940 jobs – although some of these may be in the supply chain outside the area.

# Consumer receptiveness

- Research and experience have shown that householders, in general, are reluctant to invest in energy saving measures
  - More work may be needed to highlight the value this may add to a property
- Affordability is an important factor for some
- Mistrust and lack of information for others together with a shortage of skilled local suppliers
- Providing independent, good quality advice and support is important, together with local case studies
- Energy Saving Trust research on 'Trigger points' highlights the need to work with local businesses to encourage householders to include energy efficiency as part of home improvement e.g. kitchen upgrades.

# Energy

## Local Energy Generation

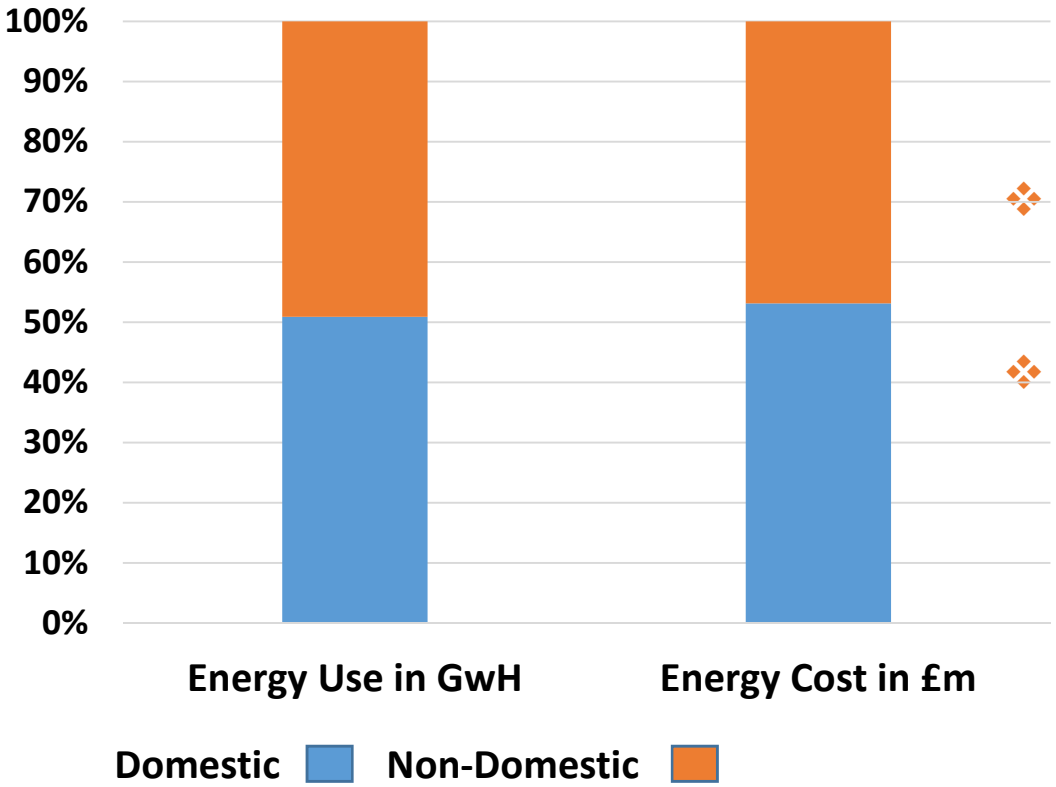
# The case for local energy … generation

- A key benefit of local supply is “enabling the economic benefits to be maximised locally, through job creation and keeping the profits in the local economy” (Stephens Scown, RegenSW, E6)
- As grid capacity and management becomes more challenging, particularly in the S. West, (WPD, E4) local decentralised generation which is used locally is beneficial. Western Power Distribution are actively working with local groups to pilot approaches to develop this further e.g. Wadebridge Sunshine Tariff
- Good Energy has introduced the ‘Delabole Local Tariff’, UK’s first local tariff, for customers living within 2 km of their Delabole wind farm in Delabole … recognising that local communities should benefit from wind farms in their local area (Good Energy, E5)
- In the past, before the advent of a regional and national transmission network, all of our heat and power requirements would have been locally generated.
  - Tavistock had significant hydro power supplemented by a coal gas works
- As a householder or non-domestic user … owning or having access to your own infrastructure, from solar panels to a district heating network, is probably about as local as it can get
- Community and economic benefit will likely ripple out with most benefit closest to the source of generation. The more we can generate within our nearest communities the greater the local benefit, whilst a strong regional industry will bring added resilience to us all.

# Tavistock and District Local Energy Generation Potential

- TAD is situated in, and surrounded by
  - the Tamar Valley Area of Outstanding Natural Beauty (AONB) and Dartmoor
  - Farmland, woodland, hedges, rivers and streams and many buildings
  - We generate waste of various kinds
  - We enjoy a wet, but also very sunny, and at times windy, climate
  - All of these resources provide us with opportunities for local energy generation, in various combinations, taking into account social, environmental and economic considerations
- Local Energy Generation can be an important source of income … for landowners and building occupants including householders and communities
- We have the potential to work together, developing opportunities to benefit our environment and local economy, reduce local fuel poverty … and create 'Something Wonderful In My Backyard'

# Domestic and Non- Domestic Energy use across Tavistock and District

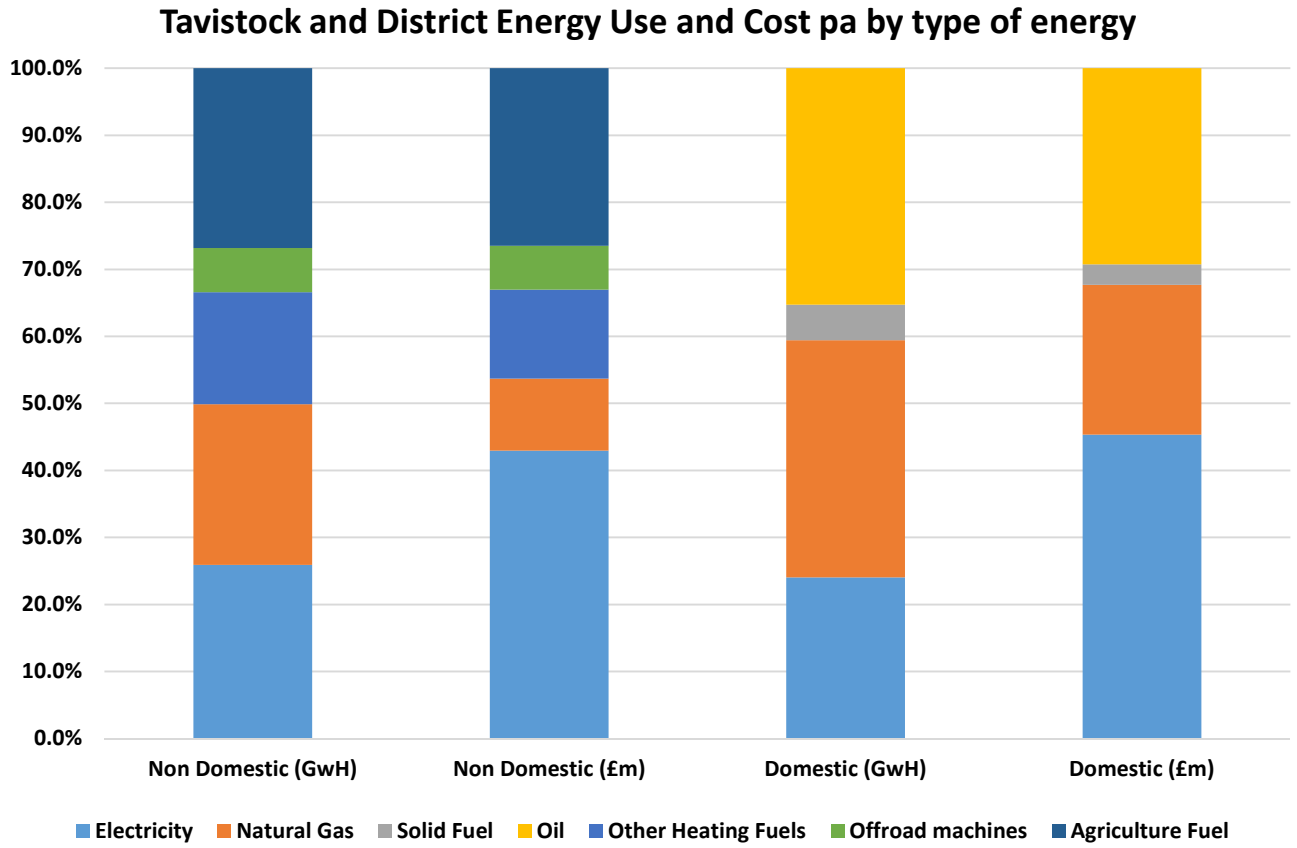



| Annual Energy Use | Non-Domestic | Domestic | Total |
|---|---|---|---|
| In GwH | 281 | 291 | 573 |
| in £m | 18.3 | 20.7 | 39.0 |
| p/kWh | 6.5 | 7.1 | 6.8 |

- **Domestic energy** – heating and powering our **homes** (£20.7m pa)
- **Non-Domestic energy** – heating and powering our **businesses, public services** etc. (£18.3m pa)
- **Amount and cost** of domestic and non-domestic energy used are **very similar**

*Source:* SWD CEP Strategic Energy Study [E7]

# The types and cost of energy being used




| Annual Energy | Non-Domestic | Domestic | Total |
|---|---|---|---|
| Use in GwH | 281 | 291 | 573 |
| Cost in £m | 18.3 | 20.7 | 39.0 |

- Key observation is the cost of electricity compared to gas.

*Source:* SWD CEP Strategic Energy Study, 2013

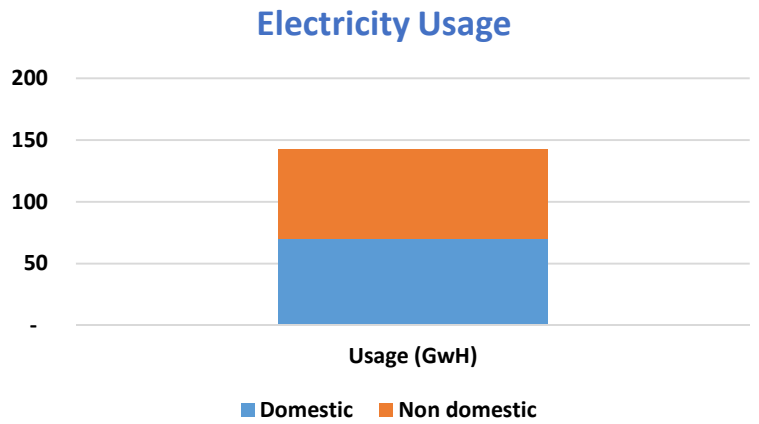
# How much electricity do we need as a household?

- In Tavistock and District annual electricity use per household is approx. 5200 kWh
- A determined household energy efficiency programme might reduce this by 30% (*) to 3600 kWh
- A 3.6 kWp solar panel installation (approx. 16 panels) might generate around 3600 kWh per annum – which could meet 100% of a household's needs after an energy efficiency programme
  - This assumes connection to the grid, exporting energy when not required and importing when required and not generating … or installing storage!

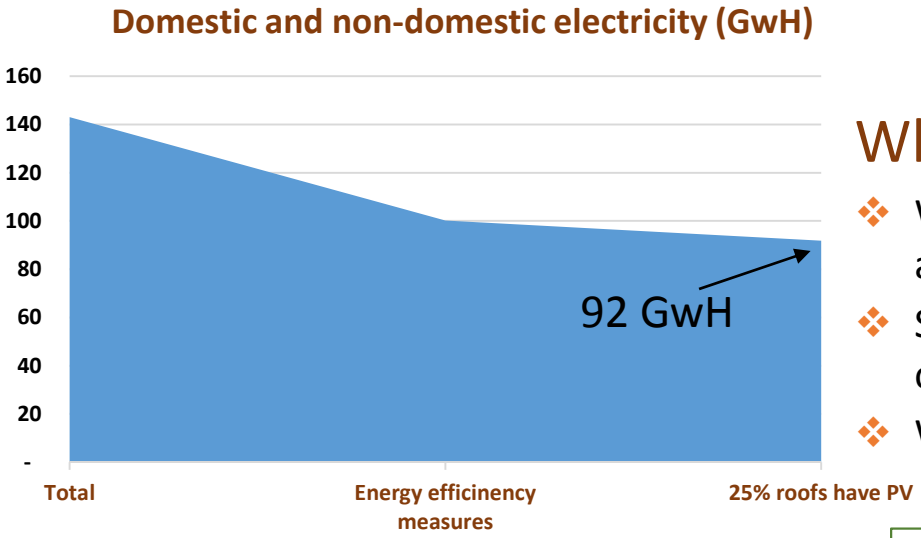
(*) SW Devon Strategic Energy Study (E7) suggested a 50% reduction in energy use could be achieved from a series of energy reduction and behavioural measures with even greater savings achievable through a more aggressive programme. 30% may be considered conservative.

# Could we generate enough locally to meet our electricity usage?

## Our current needs:




*Source:* SWD CEP Strategic Energy Study [E7]




## What if?

- We reduce our usage by 30%[(i)] through an ambitious programme?
- Solar panels are installed on at least 25% [(ii)] of our buildings (dom & non dom [(iii)])?
- What else would we need to generate?

- Net 'energy import' could be reduced from 140 GwH to 92 GwH
- The residual balance could be met by community-scale generation

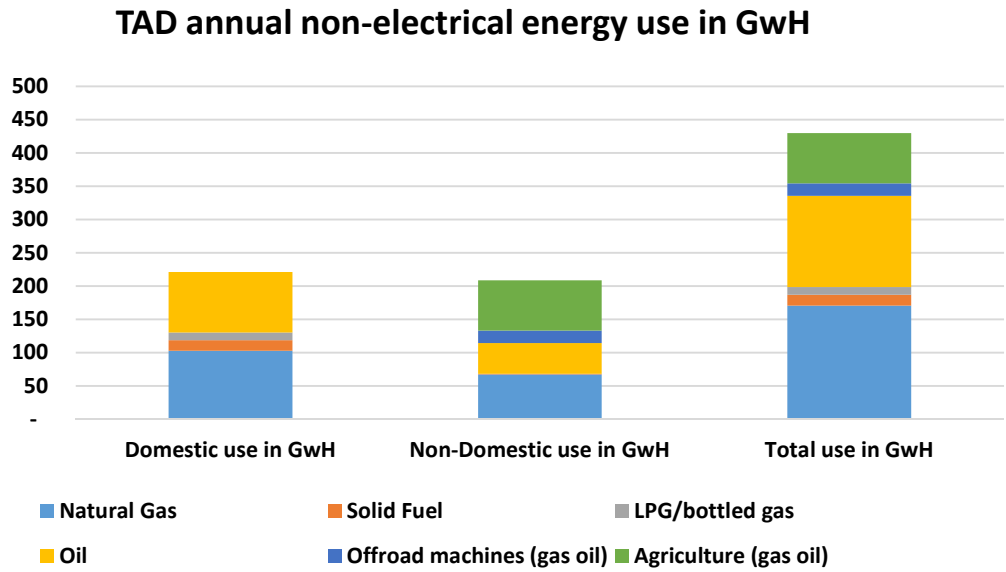
For example

- 92 MW of solar power or
- 46 MW of wind or
- 22 MW of hydro

(i) See previous slide (*)
(ii) Assumes 3.6kw non dom systems

# Could we generate enough heat locally to replace our use of natural, LPG and bottled gas, solid fuel and oil?

Our current needs:



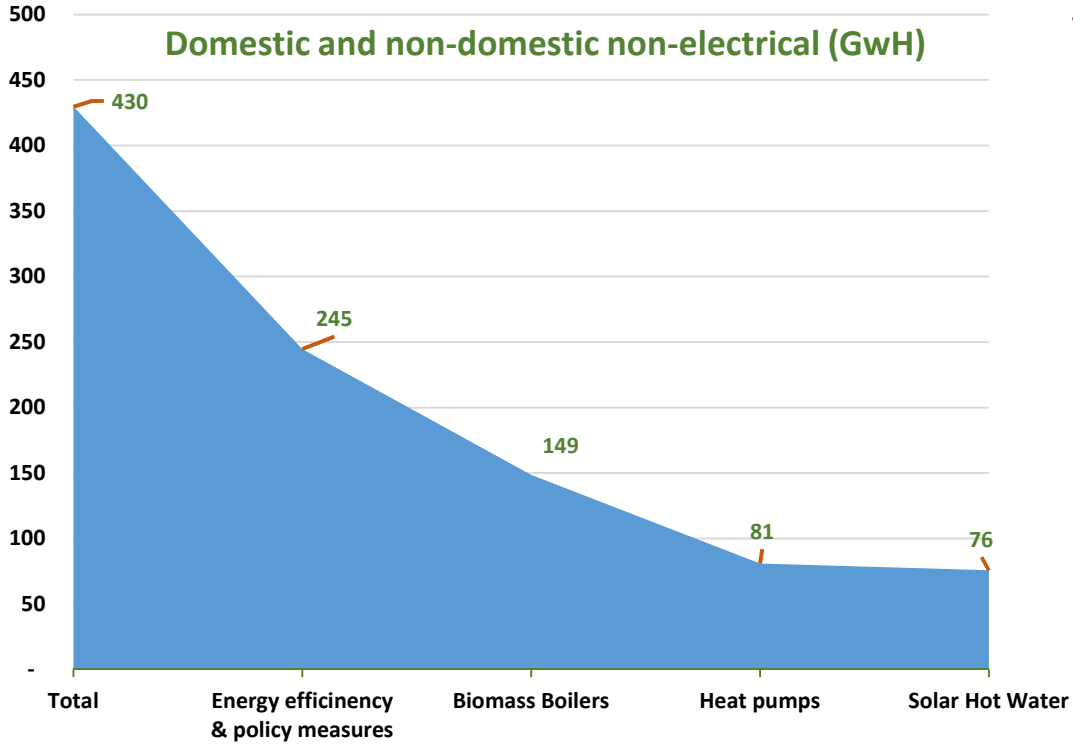

Space heating is a challenge.

But what if …

- We reduce our usage by through an ambitious programme of energy reduction?
  - Domestic – 50%; non-domestic 36% [E7]
- What else would we need to generate and how?

- Local generation options …
  - For our homes
  - For our farms, other businesses, schools, hospitals, community buildings etc.
  - Biomass
  - Heat pumps
  - Solar water heating

# Options for generating heat locally




## What if?

- We reduce our usage through energy reduction [E7]
- Install biomass boilers, heat pumps and solar water wherever possible? (ii)
- Net 'energy import' could be reduced from 430 GwH to 76 GwH

- How could we meet the balance?
- Could wider spread use of shared (district) heating systems improve efficiency and reduce demand?
- Could increased use of 'diverter systems' diverting power from renewable power generation into heat storage?

(i) Reduction figures as per SW Devon Strategic Energy Study [E7]

(ii) SWD SES suggests a more ambitious level could be achieved.

# Local energy generation resources – what's installed already

## Installed renewable electrical capacity across W. Devon [(i)] is 18.4 MW (3.7% Devon total) – delivering

- 72% solar PV
- 21% hydro
- 7% onshore wind

## Installed 8.1 MW renewable heat (8.1% Devon total) [(ii)]

- Biomass 79%
- Heat pumps 17%
- Solar thermal 4%

*Source:* RegenSW Progress Report 2015 [E8] (i)

## Potential capacity – 876.4MW

*Source:* SW Devon Strategic Energy Study [E7]

(i) Please note that this data is only available at the West Devon level

(ii) Note that this data is based on installations registered for ROCs, FIT and RHI. Installations prior to xxxx, and installations such as wood stoves not qualifying or registered for FIT or RHI will be excluded.

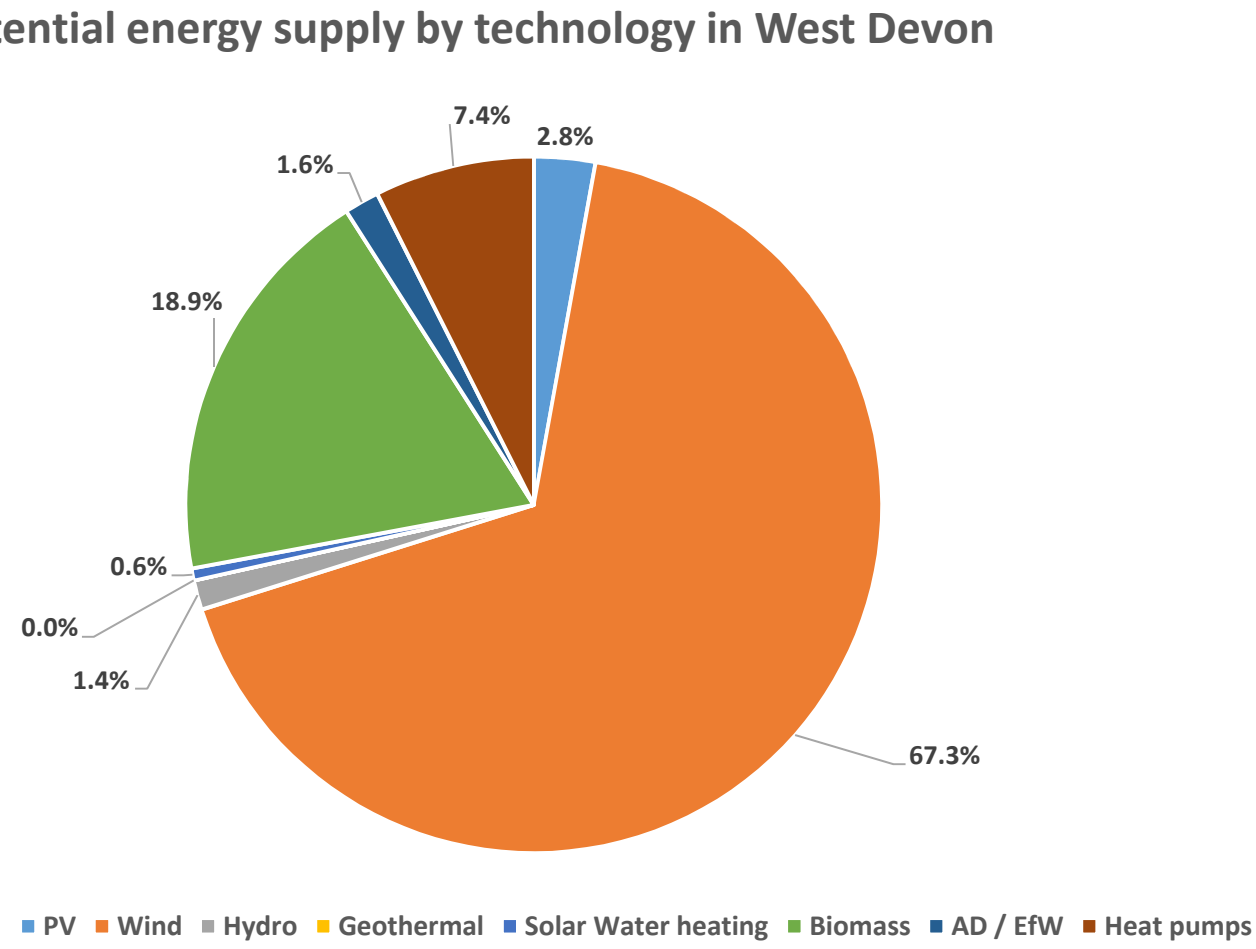
# What's the potential?

Total potential:
1593 GWh pa

These figures provide an indication of potential.

The graph should, however, be viewed with caution as the large potential sensitivity in the calculations for each technology could result in a totally different actual distribution.

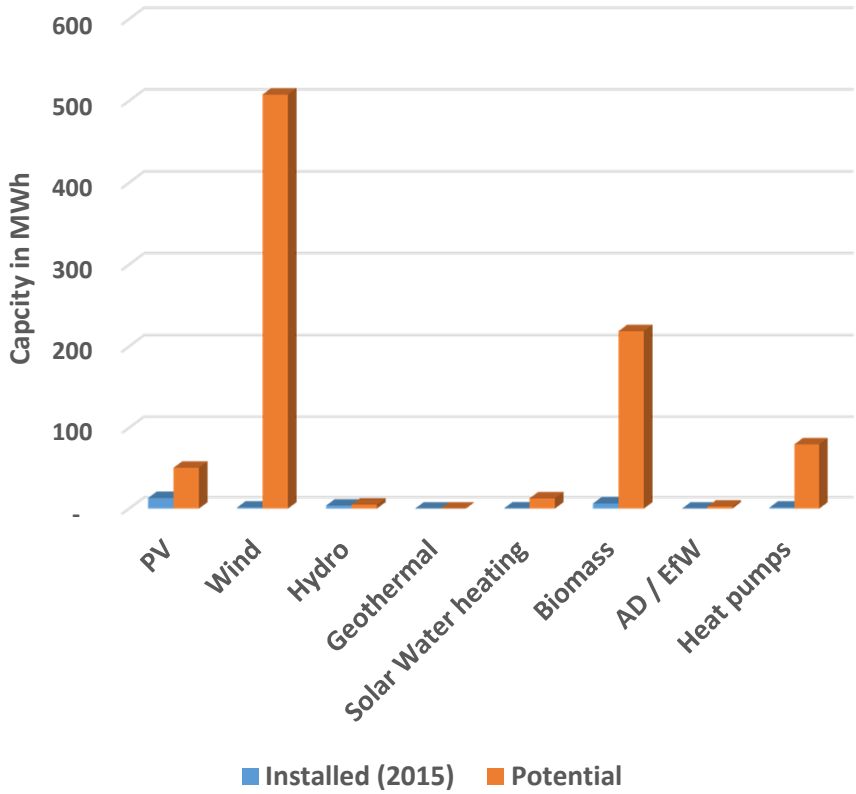
In addition, biomass includes both biomass supply and biomass heating




*Source:* SWD CEP Strategic Energy Study [E7]

# W. Devon potential, challenges and options

- Clearly potential to expand current levels of locally generated heat and power
- Wind and large scale solar currently limited by government policy
- PV on roofs, biomass & heat pumps provide opportunities
- Local hydro power offers promise
- Shortage of grid capacity is a major constraint in the S. West limiting export of power off site
- Alternative options to work around this … which also increase local benefit include co-locating generation where power can be used such as a college, farm, processor, hospital, housing and exploring storage



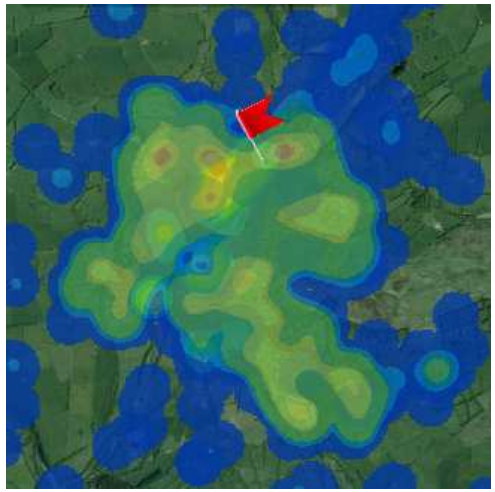

- Opportunity to develop local supply networks and storage is drawing closer with pilot projects across the South West … and an interest to explore potential initiatives in Tavistock and District
- District heating may also be viable and support increase in local biomass market

# The Biomass / Woodfuel Market

- Our local biomass market is operating way below its potential
- Opportunity exists to develop new sources of supply and distribution … generating new jobs and businesses
- A local partnership model operating around one or more wood fuel hubs could be an option
- Local hedgerows and undermanaged woodlands offer a considerable resource
  - **6km of hedgerow** or 2.5 ha woodland can sustain **one** medium **farmhouse**
  - There are approx**. 4800 km of hedges in W. Devon** – equivalent to 800 farmhouses – a capacity of about 40 GwH (approx. 10% of Tavistock & District heat usage) – **equivalent to £1.2m pa if sold as wood chip**
- Forestry and clean wood waste in W. Devon could yield 80 GwH
- Alternative crops for fuel could be grown on land unsuitable for food crops or livestock e.g. willow
- Local examples active in this market include Dartmoor Woodfuel Co-operative and Forest Fuels

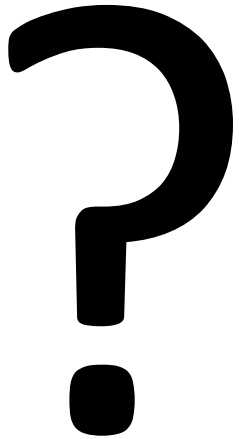
# Developing locally generated heat

- We have a ready local source of generating heat e.g. biomass or the air, ground or water for heatpumps, however current deployment is low compared to the potential
- Demand could be stimulated by identifying local clusters with high heat loads (from UK heat map), and new developments where heat networks could be introduced (shared infrastructure and high efficiency plant).
- District or community heating (heat networks) i.e. heating properties from a single heat source
  - can deliver important benefits e.g. reducing number of individual boilers, simplifying management and maintenance.
  - could be considered for clusters of properties particularly where there may be high heat users, for new developments, campuses such as schools and colleges and hospitals etc.
  - can be owned and operated by the users, or outsourced to a local energy supply company which could be community owned.
- A DECC report [E11] concluded that grant support may be needed to help fund initial feasibility studies and identify financing options.
- Local authorities also have an important role to play in encouraging district heating through planning. The availability of good information, promoting local installations and encouraging more pilots is also important
- The local economy will benefit where locally sourced renewable heat sources (e.g. biomass) displace fossil fuels; and where installation, operation and maintenance work is provided by local businesses.
- Mount Kelly are currently investigating the feasibility of district heating across their two sites.
- Local examples include Dartmoor Holidays (small scale) and Shebear College.



Heat Map of Tavistock [12]

# National and local policy context for local energy generation



There has been a lot of change in energy policy recently!

# Energy

## Local Supply Chains

# Capacity to supply locally

- We have been unable to complete a review of all the local businesses supporting our local market for energy generation and retrofit.
- We have started to compile a directory.
- It is extensive, including architects, builders, electricians, plumbers, heating engineers, renewable energy specialists, roofers and more …
- RegenSW research and local anecdotes suggest a shortage of skilled people able to meet the market potential

# A note about energy recommendations

This report presents recommendations. The agreed actions, with more detail, will be in a separate, dynamic, action plan.

We are grateful to the organisations who have contributed case studies. These are included to illustrate successful initiatives already being taken that are relevant to our headline recommendations. They do not imply that the organisation endorses this report in full. Case studies should not be reproduced in another context without agreement of the organisation featured.

The “Inspiration and Resources” page (not yet complete) that follows lists some of the many resources which can provide guidance, training or case studies from further afield. Those highlighted under each recommendation are just indicative.

# Proposed way forward

- Collaborate for a better local energy economy
- Encourage demand for retrofitting homes
- Support energy efficient new housing development
- Enable an adequate level of home comfort for all
- Develop opportunities for local supply networks
- Grow local energy generation capacity
- Develop the local biomass industry
- Strengthen local skills, businesses and supply chain

# R1: Collaborate for a better local energy economy

## Explanation

This supports the other recommendations, as no stakeholder can achieve them alone. It also enables a more holistic approach, e.g. ensuring that the need for local generation is offset by reductions in demand.

## Potential actions

a) Support development of an area wide network of energy related stakeholders and businesses to enable further research, where necessary, build supply chain capacity, and consider an ambitious programme to encourage local energy use reduction and generation.

b) Ensure that local energy resilience (reduction and generation) is considered within the work of existing partnerships covering Tavistock, e.g. for health, families or heritage.

c) Ensure Tavistock is linked to, and learning from, wider Devon and regional energy networks, keeping in touch with relevant developments.

d) Provide clear, accessible and independent information to local residents and businesses about local energy reduction and generation … including local case studies which can be used as best practice. Support with easy wins such as bulk discount schemes.

e) Identify a lead contact to champion the energy recommendations of this blueprint.

## Inspiration

Wadebridge Renewable Energy Network (WREN), Plymouth City Council and Plymouth Energy Community, Transition Tavistock and Tamar Energy Community

## Case study: SW Devon Community Energy Partnership

The SW Devon CEP is a unique network bringing together community groups (incl. Transition Tavistock and Tamar Energy Community) and local authority representatives from across W. Devon, S. Hams, Teignbridge, Torbay, Plymouth and Dartmoor National Park; and is working towards a sustainable future for the area's energy.

The Partnership's purpose includes:

- develop an energy plan for the region.
- facilitating implementation of sustainability measures and inform local authority development plans
- providing a supportive and learning network between partnership members
- developing the capacity and capability of the individual groups and the local authority in energy reduction and generation

## Achievements and benefits

Since its formation in 2012 the SWD CEP has commissioned a strategic energy study for the area; and developed initiatives including tools to provide impartial advice on energy efficiency and renewable energy. These are being used within the Communities on a day to day basis.

The success of the Partnership encouraged Devon County Council, the Energy Saving Trust and others to make funding available to support the groups activities.

The peer to peer support and funding has so far led to the creation of three Community Benefit Societies – community enterprises who plan to return benefit back to their communities from local energy generation and reduction.

SOUTH WEST DEVON COMMUNITY ENERGY PARTNERSHIP

**More detail** www.swdcep.org.uk

# R2: Encourage demand for retrofitting homes

## Explanation

Much of our housing stock is energy inefficient and requires a range of measures to reduce power requirements and heat loads. Our area also has a lot of properties which are off gas and/or have a poor Energy Performance Rating (F/G) and are likely to have higher than average energy costs. Householders tend to be reluctant to retrofit for a number of reasons including affordability, uncertainty about what to do, mistrust of tradespeople etc.

## Potential actions

a) Improve householder knowledge, confidence and trust through providing good quality independent advice and tools on options and how to implement them.

b) Develop pilots around different options to help demonstrate feasibility e.g. Bedford Cottage solutions

c) Identify householder barriers e.g. need to clear loft and develop mitigating options e.g. a volunteer loft clearing team

d) Identify financing options e.g. Building Society, Credit Unions, Wessex Loans, other community solutions

e) Investigate, and raise awareness of solutions to incentivise landlords and tenants, and provide support to these groups

f) Support local social housing landlords and encourage local investment in improvements through local supply chains … and exchange of knowledge between them and others sectors

g) Identify ways in which the worst performing properties can be prioritised

h) Develop volunteer programmes such as 'draught busting' which build skills for employment (e.g to local handypeople)

## Inspiration

Transition Streets; Totnes Draughtbusters; Green Open Homes and Energy Fairs; Making Ashburton-style homes Fit For the Future ; Plymouth university eViz project; Plymouth Energy Community; Wadebridge Renewable Energy Network; Tamar Valley Volunteers (Helping Hands programme); Green Doctor programme from Groundwork

## Case study: Plymouth Energy Community – External Wall Insulation

Plymouth Energy Community successfully bid for Green Communities funding from DECC. This has enabled a scheme to be put in place to help private properties in Plymouth receive grants of £4200 towards installing external solid wall insulation.

The scheme has involved working in partnership with Plymouth City Council, British Gas and local installers; and has been supported by an extensive social media campaign.

## Achievements and benefits

The initiative had a slow start, with householders initially reluctant to participate.

Householder satisfaction with installations has been high and this has encouraged participants through 'word of mouth'.

More local and trusted installers have been involved in the project recently and have invested in community engagement. This has led to a steady stream of enquiries and the scheme is now fully subscribed.

A householder: *"For the first time in years my daughter and I have been able to turn the heating down and switch off our small heaters. Before we got the insulation I was constantly painting over black mould and now we don't have any damp or mould issues, even when it rains! Our home is quieter and we've noticed a good improvement on our bills …"*

**More detail:** http://www.plymouthenergycommunity.com/saving/get-external-wall-insulation

# R3: Support energy efficient new housing development

## Explanation

With domestic heat requirements forming a major part of our national emissions, and with rising fuel costs, it is essential that any new developments invest in design and build to minimise or eliminate the need for supplementary heating.

## Potential actions

a) Support neighbourhood planning, parish councils and other related groups with good quality information wrt. importance and value of good quality energy efficient design

b) Encourage development of Community Land Trusts (CLTs)

c) Encourage self build, passive design, co-operative housing and other alternative housing options.

d) Work with developers at an early stage to encourage more energy efficient design

e) Work with local stakeholders to recommend to WDBC that a local design panel to support developments is established

f) Where developers are required to make local community investments, provide local energy-related options

## Inspiration

Atmos development in Totnes; Totnes Community Homes; Broadhempston Community Land Trust;

## Case study: Broadhempston Community Land Trust

A self-build, affordable and ecological Community Land Trust project. The six houses are timber frame, use straw bales as insulation and are heated naturally by the sun throughout most of the year.

The houses are allocated to local people who could not afford a house on the open market in Broadhempston and an ownership arrangement is in place to retain the homes for local people.

## Achievements and benefits

The self builders are a mutually supportive network of people committed to remaining in the local community.

Their young children will enjoy growing up together on a child friendly site and contribute to keeping the local school open.

The group will have acquired useful sustainable building skills which can be used for community benefit or their own business.

Wherever possible local materials and tradespeople have been used, supporting the local economy.

More detail: http://broadhempstonclt.com/

# R4: Enable an adequate level of home comfort for all

## Explanation

There are many members of our community who are not in a position to enjoy adequate levels of home comfort including heat and power. This is detrimental to the health and wellbeing of the entire area. In particular attention is needed to help alleviate fuel poverty, address damp in homes and support the elderly, vulnerable and children.

## Potential actions

a) Provide a local home visit programme

b) Provide local support and advice on how to reduce energy bills and improve home comfort; and signpost to supporting services including the Fuel Debt Service.

c) Drive up participation in Warm Front and other support schemes and work with local agencies, social housing providers and others to ensure information is made available and referrals made for support

d) Promote options for natural materials in homes particularly where problems exist around intolerances and allergies

e) Develop easy wins such as bulk discount e.g. oil clubs

## Inspiration

Plymouth Energy Community, Citizens Advice Service, Advantage SW, Devon and Cornwall Housing, Totnes Caring

## Case study: PEC Energy Team

In Plymouth fuel poverty is rising. An estimated 15,400 households are classed as fuel poor, a percentage markedly higher than the national average. Plymouth City Council has supported Plymouth Energy Community (PEC) to set up the PEC Energy Team to help tackle this.

It aims to:

- Increase community action to tackle cold, damp homes
- Provide one to one support to the vulnerable through home visits
- Sustainably lower ongoing fuel costs and energy use (switching and efficiency)
- Reduce fuel debt

## Achievements and benefits

Since the project's launch:

- 44 local volunteers have been trained in fuel poverty and energy awareness to the point that they are able to change their own circumstances for the better as well as those of friends and family
- 30 local agencies have been introduced to our services, refer clients and accept referrals back – ensuring that the most vulnerable are reached
- Over 2300 residents have been given bespoke energy advice this year
- As a result, an estimated £140k will go back into the local economy through savings made
- 100 households have been helped through ongoing casework and advocacy
- Residents that once reported feeling helpless and anxious at the start of our services are now reporting overall improvement in financial, physical and mental wellbeing

## More detail

http://www.plymouthenergycommunity.com/saving/the-energy-team

# R5: Develop options to distribute and manage our energy locally and smartly!

## Explanation

Local energy generation will be constrained by limited grid capacity unless alternative arrangements can be found. This is an opportunity for local innovation.

With the rollout of smart metering, storage, continuous development of community energy and other innovations there are growing opportunities to develop local supply networks connecting local people direct to local generators.

This will enable the local community to retain growing amounts of the £30m energy spend across the area.

## Potential actions

a) Research opportunities in storage, local grid management and local decentralised [supply] networks with organisations such as Western Power Distribution, Anahat Energy and RegenSW.

b) Develop local pilots and partnerships to enable the local area to take advantage of the early innovation and investment opportunities

c) Develop case studies of off grid households and businesses and learn lessons

d) Provide clear and accessible information to the community to improve knowledge and understanding of the options.

## Inspiration

Wadebridge Sunshine Tariff, Anahat Energy, Western Power Distribution, Smart Cornwall

## Case study: Smart Cornwall

In order to ensure a successful transition to alternative energy sources, local electricity delivery systems need to be radically modernised. Cornwall is aiming to achieve this through the large scale delivery of a Smart Grid infrastructure.

A smart grid network will enable a two way flow of energy and information, which will expose and eliminate waste and inefficiencies from the system – empowering consumers to interact directly with the grid and increase capacity through more efficient power production and delivery.

The SMART Cornwall programme has the potential to drive green growth in the region. Providing opportunities for local and international businesses to develop innovative new products and services, it will support the creation of approximately 3000 new green jobs by 2020.

SMART Cornwall will also support communities by allowing them to retain much of the estimated £1.2bn annual energy spend within the region.

## More detail:

www.smartcornwall.org

# R6: Grow local energy generation capacity

## Explanation

There is significant potential to expand local generation of power (electricity) and heat, utilising local resources, in a sympathetic way. Local generation significantly improves the area's resilience to energy shocks and retains energy spend within the local community.

Local generation also has a positive impact on energy reduction

## Potential actions

a) Put in place a map / database of what's installed already. Understand our current 'network' of heat and power generation across the area and look at opportunities for further appropriate growth to build upon this.

b) Undertake a Tavistock & District wide study of generation potential based on what could be achievable; and identify the significant energy users and generators across the area who could act as anchors

c) Work with stakeholders to undertake an ambitious programme to encourage micro-renewables and storage for heat and power supported by clear and accessible information and advice

d) Prioritise / target off grid and difficult to heat properties plus new developments properties

e) Develop and support community scale and owned generation schemes across the area including solar roofs and hydro.

f) Support development of district heating and development of 1 or 2 district heating pilots.

g) Work with W. Devon BC, DNPA, TV AONB, SW Devon Community Energy Partnership and others to ensure complementary planning and other enabling factors are in place

h) Support through comprehensive community engagement and local case studies

## Inspiration

South Brent Community Energy Society, Plymouth Energy Community, RegenSW and Communities for Renewables, Devon County Council, Tamar Energy Community

## Case study: South Brent Community Energy Society

The Community of S. Brent embarked on an initiative to install a community owned wind turbine to provide locally generated electricity, and return benefit to support community buildings and local fuel poverty.

Led by a small, dedicated, volunteer team, the journey took 10 years from conception to installation working closely with a local landowner. The initiative was supported by extensive consultation and the proposal was able to go through planning with no objections.

South Brent is proud of its achievement. The V27 turbine was funded through a community share offer that raised £430,000 from community investors, from small to large, and the operation and management of the turbine is supported locally. The V27 offsets the electricity consumption of around 80 homes.

The society also installed a 9.88kWp solar array on the South Brent Recreation Association's pavilion building which, together with other energy saving measures, has halved the association's electricity bills.

## Achievements and Benefits:

To 31st October 2015 the wind turbine has generated 655MWh providing a return to local investors and setting aside almost £12,000 for the community benefit fund, which initially will be used to improve the energy efficiency of South Brent's community buildings.

South Brent Community Energy Society is now supporting other community energy groups who have similar ambitions.

## More detail:

http://www.sbces.org.uk/

1st South Brent Cub Scouts learning about renewable energy and recycling as part of their Global Challenge Award, July 2015, one of a number of visits to the wind turbine hosted by the society

# R7: Develop the local biomass industry

## Explanation

We have a wealth of natural resources across our area which could be developed to support a vibrant local biomass industry; this could also support improvement in local biodiversity as well as enable new jobs and economic benefit back into the community

## Potential actions

a) Develop local partnership to revisit business case for woodfuel hub(s) and facilitate a oal woodfuel network

b) Facilitate the return of hedges and small woodlands back into management to supply local biomass and market for other wood products.

c) Provide good quality information to consumers (householders, businesses, farmers etc.) about biomass heating and biomass feedstocks (wood and other energy crops)

d) Encourage, where appropriate, biomass for district / community heating for new and existing developments

## Inspiration

Wood for Good, Dartmoor Wood Fuel Co-operative, Liz's Logs, TV AONB and Cordiale

## Case study: Dartmoor Wood Fuel Co-operative

Dartmoor Woodfuel co-operative was set up in 2009 by a group of like minded Dartmoor residents. It's based at Brimpts Farm, near Dartmeet, in the heart of the Dartmoor National Park

Our intention is to unlock the potential of the small woodland resource available locally, reducing the transportation of bio-energy within the region and improving the bio-diversity of these woods.

Our aims:

- To encourage local boiler installations and woodland owners to collaborate which will enable us to take the co-operative forward in promoting bio-mass and the environmental benefit.
- Reduce carbon emissions by using sustainably managed woodlands and improving their bio-diversity
- Develop public awareness of renewable energy and encourage eco-tourism around Dartmoor

Andy Bradfod "The original idea was to meet the needs of the farm but by forming the Cooperative it has been possible to develop the means to develop a more secure fuel supply at stable prices. This has been achieved by forward buying local timber and acquiring a range of equipment to enable the timber to processed and delivered as chip. "

"Prime wood is processed at a local sawmill providing high quality building products whilst the lower value timber is chipped. This realises the 'whole value' - a key part of the co-operative's ethos."

From growth to processing some of our wood has travelled less than 1 mile!

**More detail** http://www.dartmoorwoodfuel.co.uk/

# R8: Strengthen local skills, businesses and supply chain

## Explanation

The last 5 to 10 years in particular have seen significant improvements in understanding how properties should be improved for breathability and air tightness; and use of locally generated energy. However, the building trade is not subject to continual professional development (CPD) in the UK and are not always up to date.

There is a need to strengthen the skills and experience of our existing base of businesses with these new techniques and technologies; and there may be opportunities for new entrants to the local market.

This could be facilitated by a local energy and building related business network, providing opportunities for exchanging best practice and developing local supply chain links. There may also be opportunities to develop the market for locally supplied materials etc.

## Potential actions

a) Develop a directory of local tradespeople and signpost support to assist them in meeting local consumer need; and work with FSB and Chamber to facilitate a network supporting business development, upskilling, cross selling and bidding for bigger work e.g. local public contracts.

b) Assess and understand local skills base and capabilities and how these could be developed and improved e.g. through builders breakfasts.

c) Undertake a gap analysis and identify where there is a need for particular expertise e.g. cavity wall insulation to support local supply for each required technology as appropriate.

d) Look at feasibility of stimulating new social enterprises in DIY, building etc. to help fill gaps

e) Work with RegenSW, SW Energy Centre and others to highlight training available and look at options for local provision and funding for this

f) Develop local supply chains for building materials, services etc. and look at opportunities for local building materials.

g) Help spark innovation e.g. in locally produced products – collaborate with others across Devon and Cornwall

## Inspiration

Ready for Retrofit, RegenSW, SW Energy Centre

## Case study: Ready for Retrofit

Together with the Energy Saving Trust and other key regional partners, Regen SW took the lead in providing intensive business support to over 600 south west based businesses in the construction, energy efficiency and micro-renewable sectors via the European funded programme, "Ready for Retrofit."

The vision was to create a sustainable domestic energy efficiency and microgeneration sector in the south west, capable of delivering a massive refurbishment of south west housing stock, and benefiting in full from national finance mechanisms to 2020, such as Feed in Tariffs, Renewable Heat Incentive, Green Deal and the new Energy Company Obligation.

The £10m Ready for Retrofit programme helped local businesses prepare for the refurbishment of tens of thousands of homes by 2020.

**ready for retrofit**
warmer greener homes

- 1400 measures installed
- 177 jobs created (76 safeguarded)
- 25 open homes/energy fairs funded
- Industry turnover of £1.1bn p.a.

energy saving trust regensw delivering sustainable energy

EUROPEAN UNION
Investing in Your Future
European Regional Development Fund 2007-13

More detail: http://www.regensw.co.uk/our-work/micro-renewables-and-energy-efficiency-in-buildings/ready-for-retrofit/

# References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[E6] Local Supply: Options for selling your energy locally, Stephens Scown & RegenSW, June 2015

[E7] South West Devon Strategic Energy Study, Centre for Energy and the Environment, University of Exeter, May 2013

[E8] RegenSW Progress Report 2015, RegenSW, 2015

[E9] Community Energy, Devon County Council, 2015

[E10] Community

[E11] Community

[E12] Private sector House Condition Survey, West Devon Borough council, February 2011, Devon County Council, 2015


To be completed

# Inspiration and Resources

Wadebridge Renewable Energy Network (WREN)

Plymouth City Council and Plymouth Energy Community

Transition Tavistock and Tamar Energy Community

Transition Streets and Totnes Draughtbusters

Green Open Homes and Energy Fairs

Making Ashburton-style homes Fit For the Future

Plymouth university eViz project

Tamar Valley Volunteers (Helping Hands programme)

Green Doctor programme from Groundwork

Atmos development in Totnes

Totnes Community Homes;

Broadhempston Community Land Trust;

Citizens Advice Service

Advantage SW

Devon and Cornwall Housing

Totnes Caring

Wadebridge Sunshine Tariff

Anahat Energy,

Western Power Distribution

Smart Cornwall

South Brent Community Energy Society

RegenSW and Communities for Renewables

Devon County Council,

Wood for Good

Dartmoor Wood Fuel Co-operative

,Liz's Logs

TV AONB and Cordiale

Ready for Retrofit

SW Energy Centre