

Developing Community Resilience to Climate Change

Executive Summary:

Extreme weather events are threatening the resilience of communities throughout Pembrokeshire.

- ▲ The winter of 2013-14 was the wettest in Wales since records began in 1766 (Met Office data)
- ▲ December 2013 was the stormiest in records dating back to 1969 (Met Office data)

The resultant storm damage and flooding has presented significant and direct social and economic challenges.

Climate projections suggest that we can expect an increase in the frequency and intensity of extreme weather events and that we should prepare for further winter storms as well as summer heat-waves and drought.

Such weather events expose clear infrastructural vulnerabilities in housing, transportation and service delivery, however we must also consider that global impacts may threaten supply chains of numerous services and products that are currently commonplace and expected by communities throughout the UK.

These challenges have arisen in a time of national economic insecurity and reduced public spending.

The public sector does not currently have the capacity to integrate mainstream delivery of climate adaptation to the communities of Pembrokeshire.

This project has sought to establish the collective development of resilience activity and to result in a series of pragmatic and appropriate joint-sector actions.

Delegates from the third and public sectors were consulted through surveys and workshop events, culminating in a joint-sector action-planning workshop to develop

actions requiring immediate delivery, those with a 5-year time-frame and to establish a future vision for Pembrokeshire.

The clear need for community-level emergency action-planning, domestic-level resilience guidance and improved communication between and within sectors were noted throughout this study and actions that seek to address these issues may be seen as good starting points from which to address community resilience in Pembrokeshire.

Having experienced the recent winter storms, community groups are keen to prepare for future events and are likely to welcome further information and guidance regarding Pembrokeshire County Council's recently launched community action-planning tool-kit.

Within 5 years delegates would like to see changes in infrastructure and policy alongside cross-sector projects addressing local-scale flood defence, water and energy supply.

There is significant third-sector support for community food and energy projects. Delegates would like to see climate resilience incorporated into both regional and local authority plans.

The future vision is for a cultural shift towards localisation and resilience at a community level throughout Pembrokeshire.



Illustration 1 - Little Haven, Pembrokeshire during the winter storms 2013/14
photo: Ade Owen

Recommended Actions:

We have identified three areas of action with a convincing level of cross sector support.

- 1. Community Action Planning**
- 2. Community Energy Framework**
- 3. Personal Resilience Project**

We have also identified a key action that should be completed without delay by all community groups and Local Service Board organisations:

4. Resilience Audit

Community Action Planning

The recent launch of Pembrokeshire County Council's community action planning tool-kit will assist community groups to develop local responses to climate-related emergencies to co-ordinate with public sector and local service board responsibilities. We recommend that sufficient resources are allocated to ensure community groups receive appropriate face-to-face guidance to help facilitate their action plans.

Benefits include:

- ⤴ Community – Better preparedness for future extreme weather events and enhanced community ownership of developmental plans
- ⤴ Strategic – Build the adaptive capacity of communities
- ⤴ Economic - Co-ordinated action to maximise resources and efficiencies and minimise costs
- ⤴ Partnership - Co-direction of local resilience will strengthen links between the County Council and community groups and boost the social capital between sectors

Time-frame:

Within 6 months to enable communities to prepare for the possibilities of further extreme weather events during winter 2014-15.

Responsibilities:

Delivery of tool-kit guidance/training – Pembrokeshire County Council.

Development of action-plans – Community groups.

Community Energy Framework

Community energy projects that address heat generation, such as the development of local anaerobic digester plants may become increasingly important when considering resilient sources of heating fuel.

However current financial incentives that promote electrical generation are key to

enabling both the supply of low carbon power and the financing of local resilience.

Feed-in tariff profits from community projects can help to build adaptive capacity through re-investment in community-level staffing, capital costs for equipment or to help fund further resilience activity such as community land trusts.

Links developed with existing community energy groups in Pembrokeshire should improve communication on regulatory issues and ensure that considerable amounts of existing community energy project work and skills are utilised.

Innovative community energy projects such as Cornwall Council's revolving loan fund could be replicated in Pembrokeshire within 5 years. This fund loans capital costs to community groups at rates that benefit all.

Previous partnership work between Pembrokeshire and Cornwall Councils could be developed to help establish such projects.

Benefits include:

- ⤴ Social – Increased local energy security and supply
- ⤴ Environmental – Reduced carbon emissions
- ⤴ Economic – Direct benefits to communities, local authority and local business
- ⤴ Partnership – Utilises existing project work and skills, improved communications on regulatory issues resulting in stronger links between sectors

Time-frame:

Work to establish suitable frameworks should begin immediately.

Responsibilities:

Pembrokeshire County Council to develop links with existing community energy groups to deliver joint-sector projects to Pembrokeshire communities.

Personal Resilience Project

To reflect a considerable interest in personal resilience a series of events, courses and/or training that address resilience in the home should be organised.

Benefits include:

- ⤴ Community - Better preparedness for future extreme weather events at a household level
- ⤴ Strategic - Building the adaptive capacity of households in Pembrokeshire
- ⤴ Educational – This is an opportunity to boost information delivery on all aspects of resilience to climate impacts and to increase engagement on community-based solutions and the implications for future generations.

Time-frame:

Personal resilience tool-kit to be developed immediately to ensure full delivery at events in Pembrokeshire during the summer of 2015.

Responsibilities:

Pembrokeshire County Council and third sector partnership work for development and delivery.

Resilience Audit

Third sector organisations and Local Service Board membership should carry out a resilience audit to ensure that community resilience is being planned-for appropriately and in accordance with Welsh Government guidance.

Benefit:

To ensure collective and co-ordinated development of resilience planning.

Time-frame:

Immediate.

Responsibilities:

Local Service Board membership and relevant community groups.



Illustration 2 - Newgale, Pembrokeshire 2014
photo: Pembrokeshire Coast National Park

What is Community Resilience?

Having considered several interpretations we decided to adopt the definition from the UK Strategic National Framework on Community Resilience (SNFCR), this being the most appropriate for the purposes of our study:

The capacity of an individual, community or society to adapt in order to sustain an acceptable level of function, structure and identity.

Why is this important?

Impacts from recent climate-related extremes such as heat waves, droughts, floods, cyclones and wildfires reveal significant vulnerability and exposure of some ecosystems and many human systems to current climate variability (very high confidence).

Impacts of such climate-related extremes include alteration of ecosystems, disruption of food production and water supply, damage to infrastructure and settlements, morbidity and mortality, and consequences for mental health and human well-being. For countries at all levels of development, these impacts are consistent with a significant lack of preparedness for current climate variability in some sectors.

IPCC WG2 Report, March 31st 2014

The Welsh Assembly Government has produced the document **Climate Change: Its impacts for Wales - November 2009** using the central estimate of the medium emission scenario from the UK Climate Projections.

The key findings are:

- ⤴ Annual average temperatures will become consistently warmer
- ⤴ Significant reduction in summer rainfall totals
- ⤴ Significant increase in winter rainfall totals
- ⤴ Sea level rise around Wales of 36cm by the 2080s
- ⤴ Increasing variability and an increase in the frequency and/or intensity of extreme weather events

The Welsh Assembly Government has also produced the document **Adapting to Climate Change Module for Welsh Local Authorities - August 2009**. This offers guidance to local authorities and includes the following major environmental, social and economic risks for Wales, which government, agencies, local government, businesses and communities will need to prepare for:

- ⤴ Increased flood risk to our rivers and coasts
- ⤴ Land erosion
- ⤴ Inadequate drainage and sewerage systems
- ⤴ Drier soils and subsidence

- ⤴ Significant habitat and species changes

- ⤴ Water quality issues in rivers and lakes
- ⤴ Greater incidence of drought and problems with water supply
- ⤴ Lower air quality
- ⤴ Acidification in our seas
- ⤴ Higher incidence of mortality from storm events, heat-waves, skin cancer
- ⤴ Reduced energy demand in winter, but increased demand in summer
- ⤴ An increased prevalence of insect and water-borne disease
- ⤴ Vulnerability of transport, waste and energy infrastructure
- ⤴ Increases in demand for depleted water supplies
- ⤴ Increased costs for irrigation and the crops it supports
- ⤴ Increased costs for insurance and decreased property values
- ⤴ Increased risk of forest and heathland fires
- ⤴ Changed agricultural practices for food and biomass crops
- ⤴ Increased renewable energy generation infrastructure (wind, tidal and solar)
- ⤴ Increased climate-related migration

We must also consider our interdependence upon others for the delivery of a wide range of services and supplies (e.g. food, water, shelter, energy, communications, information technology). When product and service supply chains are factored-in, the vast and fragile web of local and global dependencies that will be threatened by climate impacts becomes clear.

TENP Project Outline

Pembrokeshire Environment Forum (PEF) assigned The Environmental Network of Pembrokeshire (TENP) with taking forward work on one of the key environment actions within Pembrokeshire's Single Integrated Plan; to develop community resilience to cope with climate change.

TENP has been working on this since July 2013 and drafted the project proposal, the tender brief, timetable and survey questionnaires in consultation with Pembrokeshire County Council (PCC).

This project seeks to increase engagement and co-working between third sector organisations and Pembrokeshire's Local Service Board (LSB) and to result in the production of a joint action plan, identifying actions and activities to support increased community resilience to climate change.

The project has included:

- ⤴ Surveys with public and third sector organisations and community councils
- ⤴ Two consultation events, with public and third sector participants

- ⤴ A joint action planning event

✧ Extensive review of current literature

This project has been funded by Natural Resources Wales (NRW).

Survey process

There were 30 respondents to the third sector group surveys. Five of these of these were Community Councils with the other respondents being groups that are involved in community development, environmental issues, sustainable building/housing and Transition Towns.

There were notable third sector bodies that did not complete the survey: organisations involved in social care (Food banks, Age Concern, MIND, Red Cross), organisations providing emergency and health services (RNLI, Air Ambulance, St John's Ambulance) and groups which can provide organised support to communities (Round Table, Scouts/Guides, Young farmers, Sea Cadets, faith groups).

26 Public Sector responses were gathered and these included input from the following departments: emergency planning, flood incident, sustainable schools, community cohesion, farm conservation, conservation, planning, housing, procurement, energy, highways, woodlands and the National Park.

There were no public sector responses from blue-light services nor from public health.

The agricultural and business sectors were beyond the scope of this current study but we would recommend their inclusion in further work of this nature.

Third sector survey:

When considering the main threats posed by a changing climate, recent flooding and storms featured in a significant number of responses.

The high levels of response that mentioned these impacts suggests that community groups regard storm-impact as a significant issue. There could be benefit in engaging the wider community around short-term definite threats such as this rather than with broader issues such as peak oil or climate change which may be seen as being long-term or distant.

Notable was the fact that extreme heat was only referred to in a single response and drought was not mentioned at all.

Concerns about travel links to the communities (public transport/increasing fuel costs) were the most mentioned non-climate factors impacting the resilience of communities in Pembrokeshire.

In addition to concerns about long-term cuts in public transport there was also wide concern about spending cuts generally and the potential loss of other services; medical, social and educational.

Vulnerability to current and future economic factors followed in terms of frequency.

These responses suggest a broad concern about aspects related to the longer-term

development of resilient communities.

Respondents expected the public services to assist with infrastructure maintenance and mitigation activity and also perceived a clear need for appropriate advice and support regarding community planning and development to boost resilience.

Many responses about communication issues with the local authority and a need for clear guidance regarding planning permission suggest a requirement for better public engagement from the public sector.

Public sector survey:

When considering the main challenges that climate change will bring to the people of Pembrokeshire, flooding was the most stated concern from the respondents. Specific challenges in terms of sea defences for particular communities were mentioned as well as surface water flooding.

Structural damage and loss of services linked to the impact of intense rainfall and high winds were seen as another key challenge.

Clearly the recent storms will have had some impact on the strength of this response, however this is not without good basis - much of our population, industrial development and tourism are concentrated in coastal areas.

Milford Haven, for example, is the third largest port by volume in the UK and the largest in Wales.

The Milford haven Port Authority have conducted an independent assessment to determine how climate change may affect key functions, activities and services (**Adapting to Climate Change, MHPA, March 2011**).

A number of responses mentioned extreme weather which can cover a broader range of incidents such as extreme heat, drought or prolonged periods of ice or snow.

However the respondents then went on to clarify this statement in terms of storms. One respondent mentioned the impact of snow on transport but no mention was made directly of drought or heat.

UK Climate Projections (**UKCP09 - central estimate**) envision significant increases in winter rainfall (up to 30% higher in South West Wales by the 2080s) alongside equally significant reductions in summer rainfall (up to 40% lower in South West Wales by the 2080s).

Summer temperatures are also expected to rise and we may expect a range of different climate challenges for communities.

The availability and local production of food was a key issue from the point of view of the community groups however this was only mentioned in terms of reduction in farm incomes in public sector response.

The responses collected suggest that current public sector communication activities are weighted towards distributing information.

Effective two-way engagement will be essential when supporting individuals and

communities to build adaptive capacity.

The need for effective public engagement in Wales has been acknowledged and it is hoped that widespread adoption of the National Principles for Public Engagement (**Participation Cymru**) will lead to higher quality two-way engagement.

Workshop process

At the first two events delegates discussed key themes and proposed resilience action points. 22 delegates attended the third sector event and 15 attended the public sector event.

At the action-planning event delegates were asked to propose a set of achievable actions with appropriate time-scales and to establish a future vision for Pembrokeshire. 21 delegates attended.

Certain groups were under-represented at the events; notable was the low proportion of representatives from urban communities and the low number of community councillors.

Neither consultation event was publicized to the potentially crucial sectors of business and agriculture. We would recommend their inclusion in further work of this nature.

Third Sector Workshop

Key Themes

1. Community Resilience – What is it?
2. How do we maintain Social Cohesion?
3. How do we approach Issues of: transport, energy, food security?

Key Outputs

Numbers in brackets refer to the number of times each issue appeared as a group Action Point.

Community Resilience Action Points:

- ⤴ Community-level emergency planning (x2)
- ⤴ Equip community buildings as community resource centres (x2)
- ⤴ Template for personal resilience – emergency check-list
- ⤴ Improve communication – within community and to the highest level
- ⤴ Community transport projects
- ⤴ Natural and community resource mapping (digital and county-wide)
- ⤴ Natural and community resource mapping (community-level)

Social Cohesion Action Points:

- ⤴ Better engagement with young people (x2)
- ⤴ Measures that mitigate against second-home ownership (x2)

- ⤴ Resilient infrastructure planning at County level to ensure that broad

- community needs re. services, health, employment etc. are met
- ⤴ Wide-scale allocation of allotment land
- ⤴ Increased social housing

Specific Issue (transport, energy, food security, planning etc.) Action Points:

- ⤴ Promotion and support of community energy projects (x4)
- ⤴ Promotion and support of community food production (x3)
- ⤴ Planning reform – Increased local input into decision-making process and permitted development for community energy and local housing needs (x2)
- ⤴ Improved communication between public and third sectors (x2)
- ⤴ Promotion and support of community woodland projects
- ⤴ Grant-funding enabling communities to trial resilience solutions
- ⤴ Increased allocation of allotment land

Additional action comments of note:

- ⤴ Promotion of local credit unions - cited as more resilient alternative to traditional banking sector and potential funding route for community projects. For example, Robert Owen Community Bank has established a community energy scheme in Mid-Wales (<http://www.ror.coop/ror/>).
- ⤴ County-wide community engagement using digital forum
- ⤴ New housing to incorporate land allocation for community food and fuel
- ⤴ Identify and support community champions. Capable individuals embedded within communities may have key roles to play with regard to engaging, enabling and decision-making on local resilience projects.
- ⤴ The need to deal with waste locally was mentioned without specifics
- ⤴ Joined-up thinking – for example, a reservoir may have the potential to resolve winter flooding, summer water shortage and energy generation issues

Public Sector Workshop

Key Themes

1. Community Resilience – What is it?
2. How do we maintain Social Cohesion?
3. How do we approach Issues of: transport, energy, food security?

Key Outputs

Community Resilience Action Points:

- ⤴ Improve communication on resilience issues within County Council
- ⤴ Improve issue engagement with schools
- ⤴ Improve issue engagement with community councils
- ⤴ Establish dialogue with small and medium business community re. resilience and continuity planning

- ⤴ Establish Community Voice framework - to develop Resilient Community Action Plans to identify local needs/opportunities and enable resilience dialogue and support between different sectors
- ⤴ Emergency Scenario Simulation – Programme to encourage communities to explore simulated loss of services over 24 hour period

Social Cohesion Action Points:

- ⤴ Address issues of equality and inclusion

Specific Issue (transport, energy, food security, planning etc.) Action Points:

- ⤴ Marine renewable energy projects
- ⤴ Support community development of resilience skills
- ⤴ Support innovation and diversity – skills, production and energy

Additional action comments of note:

- ⤴ Engage with sports clubs and other non-environmental groups
- ⤴ Support for local food projects
- ⤴ Support for local leadership on resilience
- ⤴ Community resource mapping

Joint sector Action-planning Workshop

Key Themes

Community resilience to climate change -

1. What can your organisation/department do now?
2. What would you like to achieve within 5 years?
3. What needs to change for us to be resilient in 15 years time?

Delegates were asked to consider resources, partners and obstacles when addressing the 5 and 15-year time-scales.

Key Actions

Immediate:

1. Publication and promotion of community action-planning tool-kit with the allocation of sufficient resources to ensure successful delivery to community groups
2. Identify appropriate funding and training for Community Councils - with specific regard to the provision of information technology and the training to use it effectively
3. Delivery of a structured, planned and managed cross-sector awareness-raising programme regarding community resilience to climate change
4. Dissemination of information regarding personal resilience to households across Pembrokeshire - addressing resilience in the home

Within 5 years:

1. Remove barriers to community energy projects
2. Create joint-sector projects addressing both adaptation and mitigation to include flood protection, energy generation and energy efficiency
3. A rolling programme of works to establish a locally-resilient supply of essential services such as water and electricity
4. Establish an integrated local plan that accurately reflects the shared vision of the people of Pembrokeshire, with implementation over the next 15 years

Community energy projects will need to address heat generation in addition to electricity and the development of local anaerobic digester plants may be considered to provide a resilient source of heating fuel.

However electrical generation will be key in enabling both the financing of local resilience and the supply of low carbon power.

Future vision:

- ⤴ To fully embed a culture of sustainability
- ⤴ Cultural change
- ⤴ Creative planning control
- ⤴ Increased community renewable energy projects
- ⤴ Increased localisation
- ⤴ Community resilience as a way of life

Supplementary Action Points:

Immediate:

- ⤴ Identify barriers to engagement
- ⤴ Switch to green tariffs on public buildings
- ⤴ Appoint a lead officer for renewable energy schemes – community and public sector buildings
- ⤴ Ensure that community resilience is embedded in all aspects of Pembrokeshire's Single Integrated Plan
- ⤴ Organise a high-profile resilience fair
- ⤴ Utilise PLANED's sustainable agriculture network (PSAN) to build links with agricultural sector
- ⤴ Build links with business sector
- ⤴ Utilise One Voice Wales/Pembrokeshire Association of Local Councils to disseminate resilience information to community councils
- ⤴ Support the Future Generations Bill via the 'National Conversation'
- ⤴ Scheme to encourage rainwater harvesting
- ⤴ Share best practice case studies
- ⤴ Local resource-mapping leading to creation of public sector resource map

Within 5 years:

- ⤴ Develop projects that address local provision of food and health
- ⤴ Local authority to generate its own energy
- ⤴ Provision of more allotment land to communities
- ⤴ Combine the local authority and National Park planning departments into single body with sustainability and resilience as key planning criteria
- ⤴ Permitted development status for community renewable projects
- ⤴ Food self-sufficiency plan for Pembrokeshire in case of emergency
- ⤴ Support for innovative local currency initiatives
- ⤴ Identify community champions as leaders in local resilience efforts

How do the workshop findings tie-in with the previous project analysis?

Key Immediate Action points concerning community action-planning, training and communication issues have been noted throughout this study and such actions may be seen as a good starting point from which to address community resilience in Pembrokeshire.

Having experienced the recent winter storms, community groups are keen to prepare for future events and are likely to welcome further information and guidance regarding the council's community action-planning tool-kit.

There is a clear need for further information at community and household level regarding the issue of resilience to climate change.

Dissemination of resilience information is a challenge that would be best met at a local level.

Issue engagement with particular reference to recent and local impacts may prove effective as the recent storms have clearly galvanised people.

Within 5 years the delegates would like to see big changes in infrastructure and policy. Cross-sector projects addressing local-scale flood defence, water and energy supply are seen as priorities.

There is significant support for community food and energy projects from the third sector survey responses and workshop Action Points.

Delegates would like to see climate resilience incorporated into regional and local authority plans.

The future vision is for a cultural shift towards localisation and resilience at a community level throughout Pembrokeshire.

Recommended Actions

We have identified three areas of action with a convincing level of cross sector support.

- **Community Action Planning**
- **Community Energy Projects**
- **Personal Resilience Awareness**

We have also identified a clear need that all relevant organisations and groups, including Local Service Board members, should complete a resilience audit and, where this exists already, should conduct a strategic review to ensure that resilience is embedded in policy and practice.

Community Action Planning

The recent launch of Pembrokeshire County Council's community action planning tool-kit will assist community groups to develop local responses to climate-related emergencies that dovetail with public sector and local service board responsibilities. A co-ordinated approach with appropriate community engagement will ensure the best possible outcomes.

It will not be sufficient to simply leave the tool-kit as an online resource and to boost uptake and minimise confusion we suggest that sufficient resources are identified to ensure that community groups receive appropriate face-to-face guidance and/or training to help facilitate their action plans.

Such guidance may be delivered individually to different groups or as a series of regional workshops that could be organised to cover the different areas within Pembrokeshire.

Community Energy

Electrical generation through community energy projects is key to enabling both the financing of local resilience and the supply of low carbon power.

Innovative community energy projects from the geographically and demographically similar region of Cornwall should be replicated in Pembrokeshire in order to address the energy generation aspects of the first three 'Actions within 5 years'.

Revolving Loan Fund - Cornwall Council is the first local authority in the UK to establish a revolving loan fund for community renewable projects.

Interest on the loan is repaid to the council (typically 6.5 - 8.5% APR, depending on the nature and risk of the project).

Revolving loan funds, once repaid, can be reinvested in future projects – hence the term 'revolving'. These funds are attractive to local authorities and community groups alike as they give excellent value for money to the taxpayer and provide community groups with capital funds that would otherwise be difficult to obtain.

Solar Communities - Solar photovoltaic panels are installed onto suitable community buildings by trusted and approved local installers at zero/low-cost to community groups (dependent upon size and type of installation).

Installers get a return on their investment through retention of the Feed-in Tariff payments. Community groups benefit from zero/low-cost electricity.

After 20 years, ownership of the PV installation transfers to the building, by which time they are still expected to be generating at 80% or more of their original efficiency.

Previous partnership work between Pembrokeshire and Cornwall Councils could be developed to help establish such projects.

Personal Resilience

To reflect the considerable interest in personal resilience a series of events, courses and/or training that address resilience in the home should be organised.

To maximise efficiency we envisage that workshops could be arranged as part of the County Show or at other fairs and events with sufficient attendees.

Existing support for households such as the Green Deal do not necessarily address resilience. For example, all heating systems approved under this scheme depend upon electricity for control. We would expect that specific funding to support domestic resilience (e.g. energy efficiency measures, wood-burning stove installations) would have high uptake.

Resilience Audit

The survey and workshop response from public sector delegates did not reflect the recommendations and obligations contained in Welsh Government documents such as **Adapting to Climate Change Module for Welsh Local Authorities – August 2009**.

This suggests that there may be an immediate need to carry out resilience audits among both Local Service Board membership and community groups to ensure the collective and co-ordinated development of resilience planning.

Since our vulnerabilities and understanding of resilience may alter under a changing climate we must ensure that such planning is flexible and adaptive.

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