



South Devon Bioregion

Learning Journey for Climate Resilience

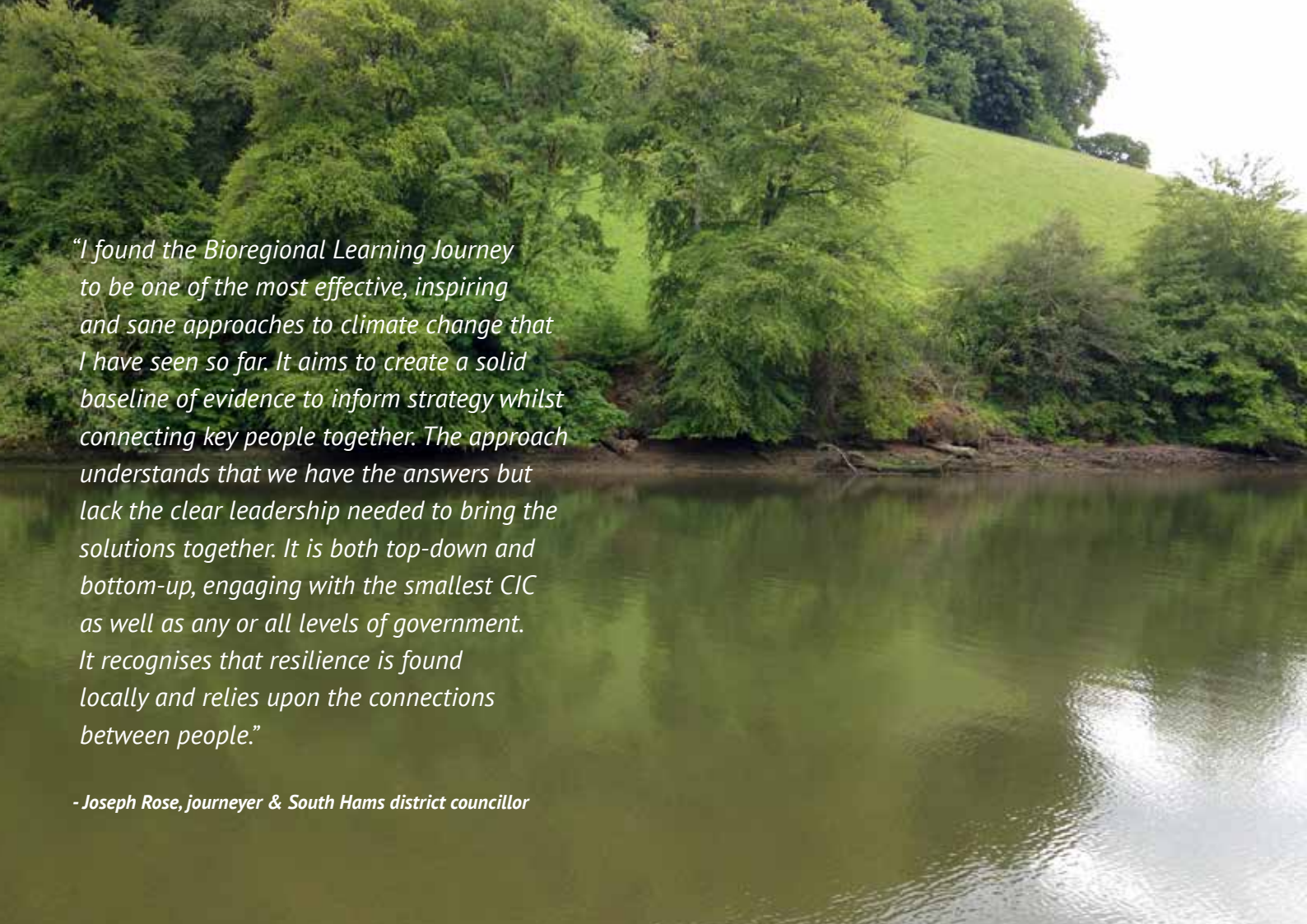
9th-14th September 2019



REPORT

This report was prepared by
Isabel Carlisle and Jane Brady
with thanks to fellow journeyer
Nick Paling and Glenn Page for
his insightful photography.

December 2019



"I found the Bioregional Learning Journey to be one of the most effective, inspiring and sane approaches to climate change that I have seen so far. It aims to create a solid baseline of evidence to inform strategy whilst connecting key people together. The approach understands that we have the answers but lack the clear leadership needed to bring the solutions together. It is both top-down and bottom-up, engaging with the smallest CIC as well as any or all levels of government. It recognises that resilience is found locally and relies upon the connections between people."

- Joseph Rose, journeyer & South Hams district councillor



The distinctive smell of healthy soil.

Finding Resilience

A resilient person is able to take a blow, a loss, a shock, or a challenge and muster internal and external resources so that they can build muscle to rise to a new level of potential. Nobody can do this on their own. Relationships are as important as access to internal and external resources.

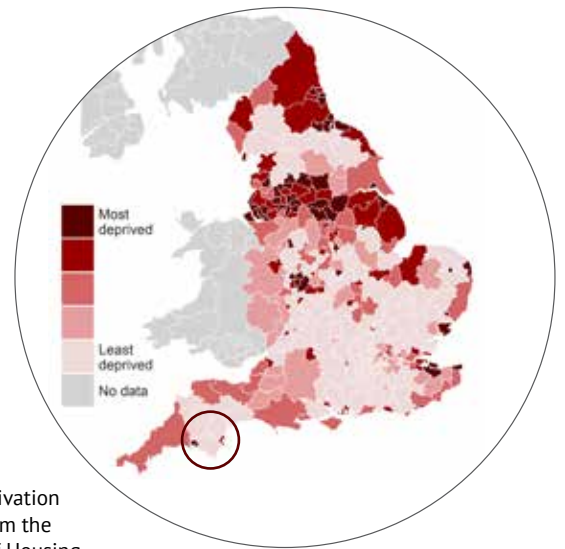
It is the same for a place, or region. The more connections exist between people and between organisations, the more access there is to help and resources... the more conversations take place... the more challenges are shared... the greater the diversity of solutions... the more a collective will emerge. Then a 'can do' culture threads through everything.

All good journeys have a beginning and an end, but this journey was somewhat different. The human impact on the earth's climate began somewhere back in the Neolithic practice of slash and burn agriculture and our climate future, for all that we know about the likely causes of global heating, is deeply uncertain. For a week in September our Learning Journey stepped into this long timeline and through the lens of four different places: river, city, moor and coast, asked questions about how people managed uncertainty in the past, what they are experiencing right now and what kind of future we need to prepare for.

This report offers facts, insights and examples as they have emerged as well as conclusions, all of them gathered from the people who went on the journey and the people who we met.

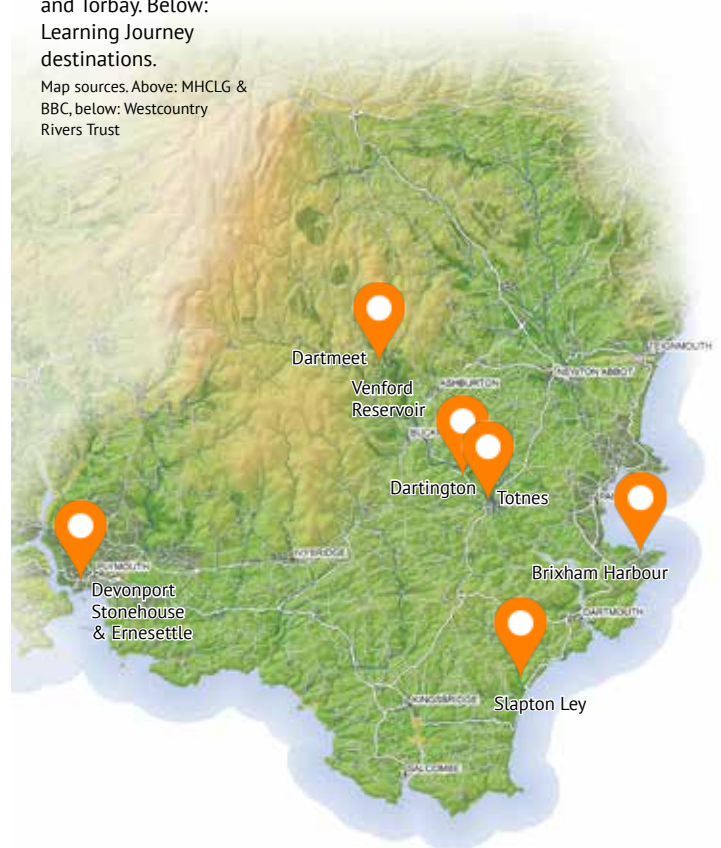
The work of the Bioregional Learning Centre is to lead a systemic response to climate change that is grounded in the place of South Devon. That means that we work with all sectors as well as at the intersections of economy, ecology, learning, arts and culture and the gaps in between. In designing the Learning Journey we wanted to understand and respond to the local community, valuing local people as the experts; to lead an action enquiry about human responses to change that would then keep running; to be open and frank about climate change and its likely impacts; and to value wisdom alongside knowledge.

Bounded by the River Tamar to the west and the River Teign to the east, by the sea to the south and the sources of our rivers on Dartmoor in the north, our bioregion is around 40 miles across in any direction. Its distinct character invites us to belong to this place and the scale is large enough for a regional economy and small enough to cross in a car in two hours.



2019 deprivation indices from the Ministry of Housing, Communities & Local Government highlighting Plymouth and Torbay. Below: Learning Journey destinations.

Map sources. Above: MHCLG & BBC, below: Westcountry Rivers Trust



The map above shows the Learning Journey destinations where we spent time between the 9th and 15th September 2019. The Water Resilience Summit in the middle of the journey invited the public into the conversation.

The Learning Journey leaders were Isabel Carlisle (regenerative designer), Glenn Page (restoration ecologist based in Portland, Maine) and Jane Brady (experience designer).

How we Learned

We ran the week as an immersion in place-based action learning from which everyone involved would learn something for their own life, for their community and for the wider context or 'systems' in which we live. Action learning is another way of saying that each person's experience and engagement in the activities they were invited to be a part of was going to be the main way in which they learned. The people who we met each day, and who showed us their work, were the experts. As journey leaders we were definitely not the experts! Instead we facilitated the conversations as peer to peer exchanges, encouraging dialogue even when it got difficult and encouraging questions. Finding a good question is frequently more powerful than coming up with a definitive answer.

By calling what we were doing a Learning Journey, by saying 'we are here to learn', by asking questions and then listening, through group witnessing of honest speaking and then reflecting back what we had heard, we aimed to soften prejudices and open up trust. Informal friendships and connections are powerful in creating spaces where conversations about the future can happen. Honesty about shadow and light, failure and success, fear and hope encourages an authentic response. Clearly, informal friendships and connections are powerful in creating spaces where conversations about the future can gather energy and camaraderie and exchange of knowledge can happen. We were constantly astonished and delighted by the qualities of openness and honesty that emerged in these conversations. Debate and questions encouraged a far richer learning experience than sitting in front of a power-point presentation.

Our way of working

On the previous page is our definition of resilience. Our approach to resilience is relational: our experience is that connectedness and good will build resilience and we put our energy into that often disregarded task of weaving many sectors, organisations and people together around a shared vision and with a 'can-do' attitude. In order to do that work we act as a 'backbone organisation': a trusted neutral player that is gathering collective will around climate resilience.

The Learning Journey was a first step in reaching out to many sectors (food, water, energy, health, ecology etc) as well as the societal range from civil society to governance, academia and business. While looking for people who are already taking action for climate resilience we also wanted to know what the challenges are in each sector and consider how they could be addressed through co-design. What we witnessed on the Learning Journey is that many of the green shoots of a climate resilient future are coming from civil society and that communities need to be part of the co-design process.

Seeing systems

We talk about issues like climate change or biodiversity loss as being 'systemic' because they are made up of many interlinked parts. Flows of dynamic exchange link those parts in ways both positive and negative. We also talk about water systems, food systems, transport systems and so on while knowing that in reality they don't sit in siloes but are themselves all joined up. Joined-up thinking about systems is demanding, it is much easier to put problems into boxes and solve them as if they are isolated units. However, we live in an age of 'out of the box' problems and are being challenged to meet those problems with 'out of the box' solutions.

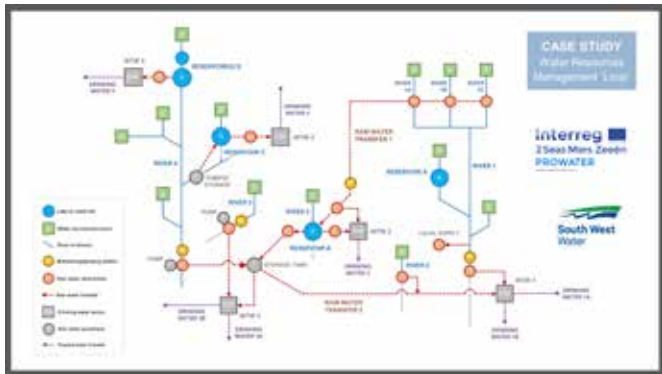
As the focus of the Learning Journey was on climate resilience we were interested in how climate change would compromise the systems we were seeing and how to prepare for that. The challenge of moving towards climate resilience is to engage a range of people in an exploration of the kind of future that is possible, and that we want. From that process comes the possibility of finding shared values, roles and collaborative action. The experiences we had as a team began to show us what is happening on the ground and what is needed. Patterns became visible and processes began to unfold; patterns that are often complex because they are a weave of political, societal, economic, ecological and natural processes. Pausing each day to make sense and meaning of what we heard and experienced opened up a deeper level of understanding and potential. We began to see the possibilities in mapping for vitality: not just identifying the green shoots of climate resilience but joining them up.

By asking thoughtful questions throughout each day, questions that probed the nature of the systems we were interacting with, we surfaced some deeply held assumptions. The possibility of flipping some of these assumptions emerged as a leverage point for a shift towards climate resilience. Our group of learners contained a mix of interested participants and thoughtful leaders within our community who were up for discussing our past, present and future. One of our questions was 'how have people in South Devon responded to eco-system change down the centuries?'. We began to make a timeline that showed how resilient our communities have been from the Bronze Age onwards. That resilience is still alive today.

The people who we met while out in the field responded to the rigour of our inquiry and we enabled some new connections and insights that will shape how they act in the future. Seeing them as climate resilience champions and showing them that they are not alone brought new energy into the meetings. Together, as a group of learners, we worked effectively to gather, interpret and report data within a confined budget and time period. This report illustrates our desire to document the findings, and insights as they have emerged, using the words of the participants as well as our own reflections.

Working with Systems

The Drinking Water System



This hyper-local drinking water diagram for South Devon was made by South West Water and Westcountry Rivers Trust. In its first public airing, they shared it with us on the Moor Day while standing by Venford Reservoir.

Climate change challenges

The infrastructure for capturing and then moving water through the landscape for human use was designed for 'trickle rainfall'. Not for intense bursts of rain and then drought. Our water system is already under stress to meet rising water needs with a growing population. At the same time there is lack of public awareness for how precious drinking water is.



Green shoot of resilience

An animated drinking water diagram that demonstrates the effects of climate change on the system (water storage, capture and distribution) enables us, as citizens, to begin to understand the challenges and shift our role towards being stewards of water rather than consumers or customers.

The Coastline Protection System



Work on the damaged sea wall in Torquay after a storm in April, 2013 when raw sewage was pumped into the sea. Post-storm aftermath can range from not being able to flush a toilet to roads and rail lines being washed away. In this case, there was a knock-on effect—school closure meant that hospital staff had to pick up their children early, resulting in crippled hospital services. Photo: ITV News West Country.

Climate change challenges

The force of the sea is increasing, sea level is set to rise, and our coasts are taking the impact. Reinforcing sea defences to protect our railway line and the fishing fleet in Brixham harbour are priority infrastructure investments. When it comes to protecting houses and homes there will not be enough money in the system to hold back the sea everywhere. Planned retreat may be the only option.



Green shoot of resilience

The multi-year educational process by the Slapton Line Partnership to prepare a coastal community for significant change led to a decision not to repair the road at Slapton next time a storm hits. Consulting with those who are impacted, and co-designing future solutions takes time but pays off in the long run. We noted that small coastal communities in South Devon have always been resilient.

Local Government and Community as a System



Dave Vear of Four Greens Community Trust explains, "our community tells us what to invest in". The Ernesettle solar array has proved to be a win-win-win for Plymouth City Council (who gave the land), Four Greens Community Trust (who got creative with it) and Plymouth Energy Community (who bankrolled the array).

Climate change challenges

Reducing CO₂ emissions to net zero will require profound lifestyle changes from us all. Significant wins come from many small local actions that aggregate, with councils taking on the role of enablers rather than micro-managers. Yet innovative ways to tackle climate change in the community are too often abandoned due to government red tape and lack of imagination, capacity to engage or resource.



Green shoot of resilience

In setting aside land and property for the community, Plymouth City Council has opened the door for regeneration. With rental income from the solar array, Four Greens is transforming other community assets: a nursing home/wellbeing hub, an allotment, an indoor football facility, tractor shed and land for grazing horses. These projects bring underutilised public assets into positive economic use, directly benefiting the surrounding community.

River Dart Valley



The journeyers

Tony Hopkins (Sustainable South Brent), **Simon Miller** (Ashburton resident), **Rebecca Sandover** (Exeter University, Food Systems), **Kim Howard** (Rattery Parish Council), **Mike Pearey** (Chair, Dart Estuary Forum/Farmer), **Martin Stanley**, **Sue Misselbrook** (Berry Pomeroy Parish Council), **Jane Nichols** (South Brent), **Annabelle Martin**, **Nick Paling**, **Simon Browning** (Westcountry Rivers Trust), **Daverick Leggett** (Sustainable Huxhams Cross).

Who did we meet?

Morrisons, Totnes A tour and round table with Jason Lloyd (People Manager)

Dartington Hall Trust A walk and talk with Harriet Bell (Food and Farming Manager), Nick Paling (Westcountry Rivers Trust) and Ed Parr-Ferris (Devon Wildlife Trust, Conservation Manager).

Huxhams Cross Biodynamic Farm A tour and round table with Marina O'Connell (Director) and a presentation by Mike Pearey (Tuckenhay farmer and Chair of the Dart Estuary Forum)

Riverford Farm and box scheme. A conversation with Guy Singh-Watson (Founder).

"Once initiatives and interventions are described at a wider level than local there is a disengagement, issues can become 'other peoples problems to solve.' By keeping the content to local, tangible places and efforts there is a greater accessibility and motivation to get involved."

- Freya Stacey, Westcountry Rivers Trust

RIVER

Eating in the Anthropocene

Growing, distributing and consuming food

Given our global need to take carbon out of the atmosphere, the future of food may well be more plant-based, organic and local. At the same time, organic farming needs animals to produce manure for the soil. How we shift from dependence on intensive farming, requiring chemicals that increase yield but deplete soil health, to food systems that are more local and support healthy, nutrient rich and varied diets was one question that we explored.

Another question was around reducing the carbon emissions in food distribution. Supermarkets with their global supply chains, refrigeration and packaging are the number one destination for most food shoppers in the UK. We import 40% of our food, but a 2019 government report found about a fifth of that comes from areas threatened with climate chaos, putting people's health and diets at risk. We need to invest in local food production and distribution as well as reducing food waste on people's plates – the number one issue in addressing food security and carbon reduction.

What did we learn?

- In 2018/19 Morrisons reduced operational carbon emissions by 45% (from a 2005 baseline).
- Morrisons Totnes carries around 240,000 SKUs (Shop Keeping Units) and overall the Morrisons group in the UK has 362,000 product lines.
- Morrisons Totnes sells lamb from Dartmoor. This is described on the label but not clearly identifiable as local food.
- With current farming techniques, there are only 40 harvests left in UK soils.
- One third to one half of energy

consumed in agriculture is devoted to making fertilisers from ammonium nitrate.

- Dartington has shifted from mainly dairy farming to a hybrid organic model with dairy, 50 acres of agroforestry and 24 land-based projects like beekeeping.
- The position of the Lengthsman, employed by parish councils to dig out ditches and clear drains, dates back to the Middle Ages.
- Big machines chop up insects. Globally, the total mass of insects is falling by a precipitous 2.5% a year, according to the best data available.¹

Reflections

Small infrastructure interventions (such as the new Almond Thief mill for grains and pulses that Huxhams Cross has invested in at Dartington) are enablers. Now the mill is on its way, local farmers are talking about growing more grains and pulses.

Morrisons offers **freedom of choice** and that is a powerful and attractive thing. There is no one right way to tackle climate resilience: we will need many and diverse approaches if we are to succeed in bringing resilience into our systems. People fear loss of freedom.

Increasing biodiversity pays off: the hedgerow windbreaks at Huxhams Cross farm and the variety of flowers and grasses on the land boosted the wasp population this summer and that in turn kept the caterpillars on the vegetables under natural pest control.

Paying attention to human potential was one reason why Guy Watson decided to hand the Riverford business over to worker ownership. His instinct was that by feeling more engaged the workers would give more of themselves and create a virtuous circle.

Climate change makes it clear that as a society 'we are in it together'. **Releasing vitality** from people and the land is the best way to regenerate in the face of change.

What people said:

Guy Watson: "The biggest threats to our food supply are soil loss and unpredictability. Riverford is now retreating from extended growing periods 'on the shoulder of the season'. We are investing in more irrigation to counter unpredictable rainfall and looking at technology like nimble robots... GPS radically changed the way we farm in France."

Marina O'Connell: "It felt like going into the unknown when we took on the land... bio-dynamic farming is a mixture of consensus reality and dreaming. We regenerated the soil in 3 years... there's an opportunity to scale up what we have done."

Ed Parr-Ferris: "We have created a system where we are now having to choose between food or wildlife. Species in the UK have a particular challenge – it's harder to adapt on an island when squeezed by human development. We need to look for ways to enable dynamism in the landscape."

Nick Paling: "We experienced a drought last year but it was disguised as 'a prolonged period of no rainfall.' We should trust that people will use accurate information wisely."

Simon Browning: "There's room for lots of different groups to be part of the solution (e.g. Morrisons). There are some truly remarkable people leading the way and we need to pay more attention to what they do and how they do it and try and do the same – I'm thinking mainly of Marina at Huxhams Cross Farm."

¹ Plummeting insect numbers 'threaten collapse of nature' <https://www.theguardian.com/environment/2019/feb/10/plummeting-insect-numbers-threaten-collapse-of-nature>

The question we are carrying forward:

How can we encourage efficient and sustainable food systems in South Devon that link local farmers to local shops; make regional wholesale distribution viable, and grow a market for local processors?



The journeyers

Tony Hopkins (Sustainable South Brent), **Joseph Rose** (South Hams District Council), **Dr Gina Kallis** (Research Fellow, School of Geography, Earth and Environmental Sciences, Plymouth University) **Freya Stacey** (Westcountry Rivers Trust/Plymouth Riverkeepers) **Kim Howard** (Rattery Parish Council), **Mike Pearey** (Chair, Dart Estuary Forum/Farmer), **Martin Stanley, Sue Misselbrook** (Berry Pomeroy Parish Council), **Jane Nichols** (South Brent), **Shona McCombie, Andy Rogers and Nick Paling** (Westcountry Rivers Trust).

Who did we meet?

Food Plymouth and Dig for Devonport (a walk and talk with Tess Willmott) **Grow Stonehouse/Millfields Trust** (Tif Dickinson). Lunch presentations from: **Nudge Community Builders** (Wendy Hart) **PCC Public Health/Thrive Plymouth** (Claire Turbutt) **School for Social Entrepreneurs and Plymouth Social Enterprise Network** (Michelle Virgo) **Provide Devon** (Ayesha Cross) **Cornwall Food Foundation** (Emma Pate) **Food Plymouth** (Andrew Shadrake) **Real Ideas Organisation** (Ed Whitelaw). Tour of Ernesettle Solar Farm with **Plymouth Energy Community** (Dan Turner) and chat with **Four Greens Community Trust** (Dave Vear).

"Even though we learned about the complexities surrounding every issue, the overriding feeling was still 'we can do this!' The best aspects were being outside and learning on the hoof."

- Jane Nichols

CITY

Wellbeing in the City

Urban Landscapes

More than half the world's population now live in cities, and while the density of living and working in cities offers an environmentally efficient way to live it is also true that many of the current challenges of city life will be amplified by climate change. Air quality, access to fresh and affordable food, clean energy and transport, mental and physical health and low-carbon housing are all key aspects of wellbeing that climate change is directing us to address now.

Plymouth is a resilient and self-contained city that over the centuries has withstood marauders, received immigrants from around the world and sent world-famous ships like the Mayflower and the Beagle (and most recently Greta Thunberg's yacht) on their way. The Devonport naval base (with its decommissioned nuclear submarines awaiting dismantling), the university, and manufacturing are big players in the local economy. But Plymouth is also a Social Enterprise City with around 150 social enterprises in a wide range of sectors including in education, health, arts, environment, food, finance, housing, business support, sport, social care and many more. Collectively these businesses employ around 7,000 people and bring in an income of over £500 million p.a.

What did we learn?

- Stonehouse is in the 1% most deprived places in the country in the national index of multiple deprivation, ranking 154 out of 32,844 (therefore the most deprived residential area in Devon). Overall Plymouth ranks 69th out of 326 local authorities, which puts it in the 30% most deprived nationally.
- Numbers of individuals and families accessing the local Food Bank are increasing.

- Over the past 8 months Provide Devon, a crisis food charity, have provided emergency food in Plymouth for 1,100 people, two thirds of whom were children.
- The roll out of Universal Credit in Plymouth is predicted to affect approximately 32,000 people (out of a population of 263,100) in relation to what they can afford to buy.
- 10 years ago, Tess Wilmott began planting trees, engaging with councils, housing associations, locals and other organisations. Now there are 40 community orchards across Plymouth as well as many herb/veg gardens and wild flower planters.
- Ernesettle Community Solar will generate surpluses estimated at £2,900,000 over the next 25 years which will be transferred to Plymouth Energy Community for projects addressing fuel poverty and carbon emissions.

Reflections

The pockets of growing that we visited in Devonport and Stonehouse have not just changed the attitude of Plymouth City Council towards releasing plots of unused land for growing, they have improved the sense of wellbeing and possibility among the residents that live by them.

Growing food also grows biodiversity and that grows vitality in people.

Food is a key entry point for so many issues, it **acts as a glue for shared conversations**.

We talked about 'navigating the muddy middle' when we found ourselves hearing about the complexity of addressing problems like food deserts, poverty and ill health in Plymouth. We suggested we might find our way through by paying attention to places of vitality, windows of opportunity, evaluating together and seeing patterns.

Systems are bounded and they are human concepts. They contain many perspectives as well as interrelationships. Dealing with systems change means **holding all those threads lightly** so as not to get overwhelmed.

The Four Greens Community Trust in Ernesettle was given waste land by Plymouth City Council that had been a former dump. They teamed up with Plymouth Energy Community to put solar panels on the land and now get annual revenue from the rental of the land. With that, they have created allotments nearby and built a community wellbeing centre to tackle issues such as diabetes and loneliness. Just **doing the right thing** can be a way to tackle climate change.

What people said:

Tony Hopkins: "I never thought, at my age, that I would hear these kinds of numbers of starving people."

Joseph Rose: "A key insight was the plethora of great schemes underway in Plymouth, and how there should be a lot of synergies to improve and update what is offered to residents. The issues are all part of the same story; a deeper, harder-to-see problem. It's inspiring to see all these projects—so little attention is given to this work, no one is hearing about it."

Dr Gina Kallis: "As the day went on I understood more and more about the work co-participants were doing—when some of them had first introduced themselves I hadn't thought we would have much to discuss, but by the end of the day I realised that even though we were from quite vast backgrounds, the mission for climate resilience brought us all together in our thinking."

The question we are carrying forward:

When it comes to climate change that impacts on every corner of our lives, how can we hold parallel lines of work that address the Social, Health, Economic, Environment, and Political spheres all at the same time?



The journeyers

Kim Howard (Rattery Parish Council), **Martin Stanley**, **Joseph Rose** (South Hams District Council), **Gary Joliffe** (Til the Coast is Clear), **Alan Endicott** (Dartmoor Society), **Jenny Andersson** (Sussex bioregion) **Antony Melville** (Thames Headwaters bioregion), **Dawn Williamson** (guide on the Moor), **Paul Rendell** (Dartmoor Magazine), **Deborah Elton** (Ashburton Climate Emergency), **Ian Townsend**, **Nick Paling & Simon Browning** (Westcountry Rivers Trust), **Daverick Leggett** (Sustainable Huxhams Cross).

Who did we meet?

Venford Reservoir (David Smith, Upstream Thinking and Biodiversity Team Leader at South West Water and Neil Reeves, Head of Countryside and Recreation at South West Lakes Trust) **Brimpts Farm** (Andy Bradford and Norman Cowling of Dartmoor Farmers Association; Naomi Oakley from Natural England and Emma Cunis from Visit Dartmoor).

"I'm used to learning in an abstract way, on a computer or in a room. The Learning Journey was a journey of discovery where the answers and possible next steps emerged from seeing/hearing about what is really happening on the ground level. This felt extremely exciting as I could imagine this method of learning leading to focused, unified and effective action."

- **Joseph Rose** (South Hams District Councillor)

MOOR

The Abundance of the Moors

Where our water comes from

Dartmoor, the mass of granite that sits in the middle of Devon, acts as our water tower and is the source of all our South Devon rivers. A complex network of reservoirs, pipes, pumps and treatment stations collects rainwater, surface water and river water and ensures our drinking water supply. Part of this network goes back to the 1790s when the Devonport Leat was constructed to take water from the moor to the growing dockyards of Devonport. Recent summer droughts (such as 2018) have signalled the challenge that climate change brings in the shape of extreme downpours of rain followed by long dry spells. Natural ways to retain and slow the flow of water in landscape, such as restoring peat beds, are one way of coping. Another is encouraging people to simply use less water.

Dartmoor is also our wilderness, with patches of biodiversity, and the maintainer of traditional hill culture and hill farming. The pattern of communal grazing of cattle, sheep and ponies with territories marked by field boundaries has persisted since the Bronze Age, 4000 or so years ago. Hill farming is no longer economic but our traditional local breeds will continue to be an important source of protein, even if there is a general shift in diet from meat to plants. Raising meat on otherwise unproductive land contributes to our food security. Sowing wild flowers and grasses to create moor meadows (or simply taking grazing animals off and allowing regeneration) increases both soil health and biodiversity.

The National Park is also a tourist attraction and tourism is one of the pillars of Devon's economy. But it is not sustainable to assume that this sector will continue to grow, or that all the returns on tourism are positive. Given that travel is integral to tourism, and most

travel at the moment is polluting, how could tourists shift to more low carbon means of getting around? Could Dartmoor encourage more conscious travel that does not harm the environment? Some places in the UK are running consultations with local communities that host tourists in order to co-design visitor hosting that gives back to local place and people. Could that work here?

What did we learn?

- On Dartmoor, the Duchy of Cornwall has been managing Crown land since 1337. The longest-running tenancy on the moor has been there since 1515, for 20 generations.
- Morrisons have bought over 10,000 lambs from Dartmoor Farmers this year to sell in their supermarkets.
- W.G. Hoskins: Commoning is the oldest institution we have in England, older than Parliament or the Manorial system.
- A storm can remove 1/5th of topsoil depth. Slowing the flow of water in the landscape delivers a whole range of benefits. (Tom Dauben, EA)
- South West Water loses 22% of the water they take off the moor.
- The average Dartmoor farmer loses £14K per annum. Around 60% of residents on Dartmoor are claiming Universal Credit. You don't see the poverty, but it is there.
- Over 40% of soils in the West Country are degraded; South West Water spends £46 million each year on removing nitrates, derived mainly from farming.

Reflections

Often, **the solutions that work are the natural ones**. Whether it is flood management and slowing the flow of

water through peatland restoration, or creating new links between different groups of people such as Dartmoor Farmers and Food Plymouth.

The Moor Meadows project is demonstrating that **rewilding can create a win-win** between cattle, sheep, biodiversity and soil. They are inspiring people on and around Dartmoor to either scatter seeds for a wide variety of grasses and flowers or simply restrict grazing until the eco-system reverts to its natural diverse state. Those grasses and their long roots penetrate the soil and hold it together, creating habitat for micro-organisms and worms. Their flowers are food for insects and the leaves offer minerals, nutrition and medicine to grazing animals. A great example of how **an intelligent intervention creates a virtuous cycle**.

When you turn to the land you realise we are working along **very long time-lines**, much longer than a single human life. Climate change also asks us to think of actions beyond our lifetimes.

What people said:

Norman Cowling: *"It is hard to maintain hill farming without a subsidy, the average Dartmoor farmer loses £14,000 each year. But farmers are quite resilient and are coping with change."*

Andy Bradford: *"The Duchy owns 22 of the bigger and higher farms on Dartmoor and because they see themselves as guardians, this has been a force for stability."*

Freya Stacey: *"I gained more understanding of the challenges of farming on Dartmoor, a more detailed understanding regarding peatland restoration and its economics and the complexities of water supply in Devon."*

The question we are carrying forward:

Dartmoor residents are seeing a rise in people thinking about local things, that is the most important change. How do we encourage more conversations about the things we really care about?

Slapton & Brixham



The journeyers

Kim Howard (Rattery Parish Council), **Joseph Rose** (South Hams District Council), **Gary Joliffe** (Til the Coast is Clear), **Murial Soriano** (artist), **Jenny Andersson** (Sussex bioregion), **Lee Eyre** (Doctoral Student), **Ian Townsend**, **Nick Paling & Simon Browning** (Westcountry Rivers Trust), **Daverick Leggett** (Sustainable Huxhams Cross).

Who did we meet?

The Slapton coast (Alan Denbigh, chair of the **Slapton Line Partnership**; Dave Stewart, Service Manager Engineering, **Torbay Council**; Val Mercer **Slapton Parish Council**) **Brixham Harbour** (Adam Parnell, Brixham Harbour Master; Mitch Tonks, owner of **Rockfish** restaurants)



*'As the World's human population has increased from 2.5 billion in 1951 (when Rachel Carson wrote Silent Spring) to more than 7.6 billion today, the range and intensity of threats to human health and wellbeing arising in the seas and oceans have grown. This is documented in a myriad of studies identifying marine pollution, overfishing, hypoxic dead areas, coastal zone destruction and more recently, ocean acidification, sea level rise, coastal flooding and an increased frequency and intensity of extreme storms, all posing serious dangers to the "health" of both humans and the Global Ocean.'*²

² Fostering human health through Ocean Sustainability in the 21st Century, Lora E. Fleming, Bruce Maycock, Mathew P. White, Michael H. Depledge, first published People and Nature, 07 June 2019).

COAST

Rising to the Challenges of the Sea

Managing loss and repair in infrastructure as well as communities

The increasing power and intensity of big storms and the damage to coastal infrastructure may be as much to do with the North Atlantic Oscillation as climate change. However, there is no doubt about the impact on peoples' lives, most recently during Storm Emma in 2018.

'At Slapton it's largely about damage to the road network and the resulting impact on people's lives, livelihoods and social relationships. If there was more infrastructure at risk there would also be more money to throw at the problem and also the fact that we are in an environmentally sensitive area is another factor for us. Our ability to be resilient is more about trying to persuade people to plan for the future, change their behaviour (e.g. where they work and live) and accept that things will be different, rather than hoping that 'the authorities' can or will solve the problem. Further down the coast at South Hallsands where on a stormy night in January 1917 the fishing village collapsed into the sea, a group of home owners have had to club together to build their own sea defence which they wouldn't have expected to do.' (Alan Denbigh)

What did we learn?

- People never used to build houses by the beach: they were afraid of the pirates.
- The Slapton-Torcross road (partly washed away by Storm Emma in 2018) has been moved inland but it will not be repaired again: it would cost hundreds of millions of pounds to build a seawall 12 feet down to the bedrock along the 2 ½ miles of Slapton shingle beach.

- Every trawler dumps two tons of dolly rope into the sea every year. It used to be leather thongs that protected the nets from snagging on the sea bottom and tearing. Now it is plastic.
- There are plans to build a new pier in Brixham Harbour for shellfish landing, in anticipation of a big increase in shellfish catch that will be sent to China.
- Before 1999 90% of Torbay's sewage went out into the sea untreated. It was EU legislation that forced a change to cleaner practices. Brixham is now in a Marine Conservation Zone (specialising in sea grass).
- Between 600 and 700 local people are employed in fishing from Brixham. Last year (2018) the total value of the catch was over £40 million.

Reflections

It is better to talk about **generative action** rather than change, or loss.

In 2001, when the Slapton-Torcross road was washed away, resident meetings to discuss the future became violent and the police had to be called. The Slapton Line partnership emerged from that. Local people had public breakdowns due to the animosity caused by the loss of the road and subsequent dilemmas. **Including people, consulting them, providing good communications** has really helped the community come to terms with managed retreat.

'Coming to an agreement about the future has happened by osmosis. **Nature has prepared Slapton for change** over the years.' (Val Mercer, Slapton Parish Council).

'There is a big danger from storm surges that weaken the coastal infrastructure. The Brixham harbour wall is vulnerable and there is a need for funding to reinforce sea defences ahead of storms rather than

waiting for the damage to occur and then repairing it. However, government funds are only available for repairs and not for **pro-active protection** against future events.' (Adam Parnell, Brixham Harbour Master).

'Four of the landfill sites in Torbay are in flood zones, that means liable to flash floods, and one is in a coastal erosion zone. 'It is very rare that we only get one type of flooding: It will be a combination of high tide, torrential rainfall and then there is limited drainage capacity as sewage backs up in combined sewers. Most floodwater is contaminated. However, it is **very difficult to get people to imagine** that low-lying areas of housing may need to be abandoned.' (Dave Stewart)

What people said:

Joseph Rose: "There is so much more happening on the ground than we realise. When we join the dots and create connections between the different projects and organisations we are able to achieve more and hold a wider perspective and more insight into the bigger picture. Most of the issues we face are the result of us getting in the way of or degrading natural systems so the answers are to either help to restore the natural systems or at least replicate them (eg. rain gardens in cities). I also learnt some useful language such as social capital."

Jenny Andersson: "Seeing how different stakeholders could come together behind a risk-climate-which could unite them. Experiencing the co-creative community of the South Hams and wishing there was a similar esprit de corps where I live!!"

The question we are carrying forward:

Government funds are only available for repairs and not for pro-active protection against future events. (Adam Parnell, Brixham Harbour Master). What does it take to invest now both in future-proofing our coastal infrastructure and preparing communities for a managed retreat?

WATER RESILIENCE SUMMIT

What's happening in our watershed right now?

Broadening the learning to include a range of current water-based initiatives

The aim of the Water Resilience Summit was to expand the Learning Journey over the course of one day on 12 September as a free, open-to-all event built around a particular theme—water and water resilience in the South West. 120 people attended the event in Totnes Civic Hall. It was designed to be a day of action-orientated discussion, learning and planning; an opportunity for people to listen, reflect & question. Our partner Westcountry Rivers Trust (WRT) organized and hosted the event.

Twenty-seven speakers from a range of organisations each gave 10 minute presentations on the work that they or their organizations are currently doing, summarized here. 160 questions about water from the participants were submitted and WRT has committed to answering them. This commitment is noteworthy because responsibility and response are key to building trust in a process.



What does the community want to know? 160 questions from the Water Resilience Summit were submitted by attendees.



Making our gardens more water sustainable and climate change resilient *Sally Morgan, writer, ecologist and farmer from Somerset*

Building resilience in the Tamar's protected landscape *Tim Dart, manager of the Tamar Valley AONB*

Working 'upstream' with farmers to secure a resilient water supply-chain *David Smith, South West Water's Upstream Thinking Project Manager*

Taking a whole-system regenerative approach to estate management in the future *Harriet Bell, Dartington Hall Estate*

Developing a Climate & Ecological Emergency Action Plan since the declaration of a climate emergency *Jacqi Hodgson, councillor and Mayor of Totnes*

Co-creating community rain-gardens and climate adaptation measures in Taunton for the Sponge 2020 Project. *Andy Rogers, Westcountry Rivers Trust*

Engaging collaboratively with local communities about flood risk awareness and helping parish councils develop Flood Emergency Plans *Martin Rich, Devon Community Resilience Forum, and Kate Pearson from the Environment Agency*

Transforming Plymouth into an 'Ocean City' and the UK's first City Marine Park *Simon Pittman, researcher from Plymouth University and the newly established Seascape Research CIC*

Managing flood risk in a small coastal village (Mousehole) using natural flood management in the catchment upstream. *Mark Summers, Cornwall Wildlife Trust and the Cornwall Catchment Partnership*

Implementing an 'asset-based approach' to building community cohesion and reducing social isolation *Jane Acton, Torbay Community Development Trust*

Accepting and personally adapting to a changing climate and the role of Extinction Rebellion *Sara Hudson, writer from Dorset*

"With so many challenges facing different sectors it is difficult to "see" all the efforts being taken to address them. The learning journey was a brilliant opportunity to provide a stage to those already actively working towards a resilient future, that unfortunately often go unseen by the majority."

- Freya Stacey, Westcountry Rivers Trust

Managing soil in a sustainable way

Sarah Colquhoun, farm advisor with WRT

Explaining the vital importance of healthy peatlands; protecting and restoring them across the South West

David Smith, key member of the South West Water Mires Project

Empowering citizens to become 'river keepers' by joining the Westcountry Citizen Science Investigations programme.

Simon Browning, water monitoring lead at WRT

Assessing drought risk and resilience using the IPCC climate projections released in 2018

Nevil Quinn and Michael Horswell, researchers from the University of the West of England

Maintaining the unique character and value of the Exmoor landscape; managing it sustainably

Alex Farris, Exmoor National Park

Educating about the vital importance of healthy estuaries; protecting and restoring them

Nigel Mortimer, Estuaries Officer for South Devon AONB

Proactively building the flood resilience of Torbay communities and infrastructure to coastal flooding

Dave Stewart, flood engineer from Torbay Council

Building resilience and climate adaptation into the business model

Rob Scarrott, South West Water's Water Resources Management Team

Understanding public perceptions of water supply failure and how we make the system more resilient

Sarah Bunney, researcher University of Exeter

Researching water resilience in the water industry

Elizabeth Lawson, PhD researcher at the University of Exeter's Centre for Water Systems

Forecasting coastal flooding risk around the South West peninsula

The Plymouth University Coastal Marine Applied Research Centre

Developing a climate resilience strategy for South Devon

Isabel Carlisle, The Bioregional Learning Centre

Forming a resilient catchment landscape via the co-creation of 'nature-based solutions'

Steven Johnson, project manager of the Connecting the Culm Project

'Working with natural processes' as an innovative method for building water resilience and supporting flood risk management

Tom Dauben, Flood & Coastal Risk Management Advisor for the Environment Agency

Researching surface water flood risk assessment and sustainable urban water management

James Webber, researcher in University of Exeter's SWEEP Project

Regionally Relevant

Bioregioning

Moving to act on a bioregional level is a healthy human response because it makes the scale at which we act manageable, enables a network of real-time and real-place relationships to form, encourages systemic thinking and interventions and has the potential to engender a rapid joined-up mobilisation at many levels of society and across many sectors. The Learning Journey was a first step in bringing the bioregion of South Devon into being and exploring the kinds of ongoing actions needed for regeneration. At the Bioregional Learning Centre we call this *Bioregioning*. Here are some examples of what Bioregioning means to us and the people we met who are embodying those principles.

Making a region distinct and visible through a coherent narrative of geography, geology, land use, history, culture. *Example: Dartmoor's Daughter, Emma Cunis, creates walks and nature connection experiences that are rooted in place.*

Raising the potential of a bioregion to operate at its best: telling a can-do story of resilience and possibility. *Example: The Biodynamic Farm at Huxham's Cross have transformed the quality of their soil in just 3 years.*

Paying attention to life systems and the impact of human activity on them: finding ways to measure the wellbeing of those systems from a human and environmental health angle. *Example: Citizen Science trainings by Westcountry Rivers Trust.*

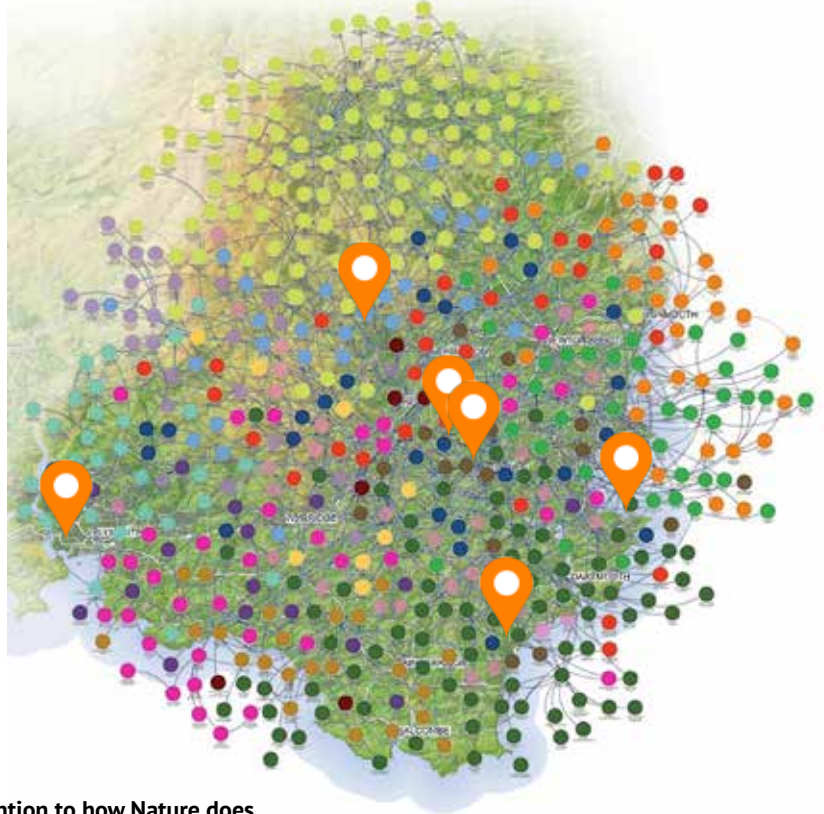
Sourcing solutions from the place itself: valuing local examples and local knowledge. *Example: Four Greens Community Trust transforming buildings and land into community assets—"our community tells us what to invest in".*

Amplifying existing system-to-system links and overlaps, and making new ones. *Example: Morrisons working with the Dartmoor Farmers Association to sell lamb in their Totnes store.*

Mapping for vitality. *Example: The Water Resilience Summit brought many inspiring people and projects into the same room.*

Working at the interface between the urban and the rural: combining the two so it is not either/or but both together. *Examples: Bringing the green in and taking the skills out; Tess Willmott's orchards in Plymouth and the Totnes REconomy Project's support of rural social enterprises.*

Valuing natural assets as the building blocks of life: talking about sea, air, soil and water as 'common pool resources' that we all need to steward. *Example: BLC's River Charter for the Dart at Dartington.*



Paying attention to how Nature does things: taking Nature as a mentor and model, emulating how Nature solves problems using the resource of Biomimicry. *Example: Peatland restoration on Dartmoor.*

Including end-user groups (civil society being one among many stakeholders) in decision-making. *Example: The Slapton Line Partnership's multi-year process to prepare a coastal community for significant change.*

Seeing your region as a Learning Region: confidently working without a masterplan and at different scales in response to what arises, adapting your actions in response to learning what does and does not work. *Example: Dartington's 'Grand Experiment'; from dairy farming to 24 land-based projects... and a failed crop of Szechuan peppers.*

Right: Top and bottom: sections from the paintings of Fabrice Hyber from 'Nous Les Arbres' exhibition at the Fondation Cartier, Paris. Middle: 'The Expanded Studio' from the studio of Olafur Eliasson. Photos: J. Brady. Photos on the following page: Lines (57° 59'N, 7° 16'W) is an interactive light installation on Scotland's Outer Hebrides that makes sea level rise visible (photo: Pekka Niittyvirta, Timo Aho). Reconnecting the internet (photo c/o John Thackara). Morrisons Dartmoor Lamb Chops (photo: J.Brady). River Dart Charter stakeholder workshop (Photo: J.Brady). River mud, school programme (photo: J.Brady). An elevated house in New Orleans by Kieran Timberlake for the Make it Right Foundation (photo: flickr user werdsnave). Atelier Luma, algae platform (photo c/o John Thackara). Kelp farming from a guide to the processes, techniques, and equipment for farming kelp in New England Waters by Katie Flavin, Nick Flavin and Bill Flahive PhD. David McCloskey's Cascadia Bioregion map (photo: Alex Philip @BigDataAlex).



What's Next?

The sense of urgency around climate change has been mounting over the past year in Devon and beyond. It began with the publication of the October 2018 IPCC report that measured the window of opportunity for action to avoid the worst of global heating as only ten years long. This galvanised the Extinction Rebellion and Fridays for the Future social movements and in turn prompted councils to declare Climate Emergencies. Devon County Council, South Hams District Council, West Devon District Council, the Dartmoor National Park Authority and many parish and town councils in South Devon have declared emergencies. Local action groups on climate have either been revived or have come into being and are starting to join up. At all levels the questions “what’s next, where are the road maps, what can we do?” are being asked.

The Learning Journey revealed just how much innovation is already happening on the ground and how aware communities and sectors are of the challenges ahead.

Our perception is that there is a considerable degree of forward thinking and willingness to take action but that it is not joined up and that top-level leadership is lacking. By top level we mean both government and sector leaders like the NFU. We also witnessed how crucial forward investment in infrastructure is going to be, whether it is storm-proofing harbour walls (as at Brixham), securing our railway line on the Dawlish stretch or retrofitting small-scale rainwater harvesting on domestic and business properties. We see a need to collect case studies and evidence of what kind of investment is needed and to collaborate with organisations that have the ear of Westminster so that we can lobby for central funding.

Infrastructure upgrade or replacement is expensive but relatively simple. Where it gets complex is when we look at whole systems like food to determine how food secure our region is, how we can reduce food miles by promoting local food, how we can aggregate small scale production and distribution to make it more economically viable, how we can reduce food waste and how we can make it financially possible for more farmers to move into organic production. Farmers stuck in debt, who are using industrially-produced fertilisers to extract the maximum yield from their land, will need help if they are to move across to traditional/organic farming methods that return fertility to the soil. With a limited number of harvests left in UK soils there is an urgent need to both halt topsoil loss and increase natural fertility. We are not short of successful farming ventures in South Devon that can teach and inspire.

Our journey around South Devon brought home to us the need to get the conversations around climate change resilience out of sector silos. Sticking with food as a system: clearly it intersects with other systems such as water, energy, transport and health

as well as eco-systems. While each sector will define resilience differently, we are keen to start linking sectors in order to have joined-up conversations about a shared vision and strategy across the bioregion. Similarly, when it comes to generative action around landscape scale ecological restoration (the peat on Dartmoor for example) we experienced the value in disagreements being resolved through friendly and facilitated group conversation. Later on our Moor day we were able to report to the Dartmoor Farmers Association about food poverty in Plymouth which resulted in an offer from them to get their meat into Plymouth to help those most in need. Another linking conversation with a positive outcome.

Thanks to a private donation we were able to offer fourteen bursary places on the Learning Journey to community groups and parish and town councillors. They told us that they want help in measuring and mapping: creating baselines for carbon emissions, setting up key performance indicators for the health of water, air and soil, mapping who is doing what and where so they can play a role in bringing a low carbon future into being. Our ambition is to change the expert/citizen relationship such that communities who want to track and improve the health of their bioregions can determine, shape and use the data, mapping and other tools that they need to address small-scale variability (conditions/weather).

We also see value in re-thinking the community engagement/consultation model. Devon County Council are currently holding stakeholder consultations in order to draft a Devon Carbon Plan. The first line of the news release states: “A top team of environmental experts, charged with ensuring that Devon reduces carbon emissions as quickly as possible, is calling on residents to submit their ideas on how to do it.” We would propose a different approach. One that gives citizens as much responsibility for planning ahead and problem solving as the Council. We do not want to end up in a situation where citizens offer many ideas and demands to the Council that the Council is not in a position to fulfil. Instead, we take the view in all our work that we need to design plans with the end-users of the system and that means getting a range of stakeholders to plan and work together long-term.

Climate change has been called ‘the long emergency’. Resistant as humans are to change, and often fearful of the unknown, we now have a tremendous opportunity to demonstrate what humanity can be at its best, if we are able to find agency. By agency we mean ability to take action in a generative way to problem-solve and experience the encouragement that comes from acting together. How we do the ‘all together’ bit is becoming clearer and at the Bioregional Learning Centre we are using our design and facilitation expertise to plot out the next steps that can take South Devon onto an unfolding path of climate resilience.

Understand
the future



Repair
and connect
DIY style



Design solutions
together



Educate
for local
know-how



Connect
local people
to local food



Make realistic
infrastructure decisions



Prototype
alternatives



Plan for food
futures



See the
whole





Front cover: 'The perfect meadow—springy underfoot with mole hills' by J.Brady.
Back cover: Metropolis by Martin Adlam, The Observatory Photography Gallery, London, Photo: J.Brady.

Network
for Social
Change



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