



REMIX

Interreg Europe



European Union
European Regional
Development Fund

Smart and Green
Mining Regions of EU



Action Plan Cornwall, UK



Research &
innovation

Leading the European policies
towards more sustainable mining

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1. The REMIX Project

The REMIX project, Smart and Green Mining Regions of the EU, encourages resource efficient and environmentally and socially acceptable production of raw materials. There are nine regions involved:

- 1. Lapland, Finland**
- 2. Northern Karelia, Finland**
- 3. Castilla y Leon, Spain**
- 4. Lower Silesia, Poland**
- 5. Styria, Austria**
- 6. Sterea Ellada, Greece**
- 7. Centro, Portugal**
- 8. Czech Republic**
- 9. Cornwall, United Kingdom**

Each region learns from the experiences and good practice examples of others with the aim of influencing the regions own policy instrument.

In Cornwall the Project Partner is Camborne School of Mines, University of Exeter. Cornwall's policy instrument that REMIX aims to influence is the Cornwall and Isles of Scilly Integrated Territorial Investment Strategy.

2. Regional Context

Cornwall is located in the southwest of England. It had a population of 549,400 in 2015. It is world famous as a centre of mining and was at the forefront of the industrial revolution in the nineteenth century. In the 18th and 19th centuries, the metalliferous mining region in Cornwall of Camborne-Pool and Redruth, had one of the highest land prices in the UK. Mining was a precarious business though and each time that copper or tin prices dropped and mines closed, miners and their families emigrated abroad – to North and South America, Australia and Africa as well as European countries such as Ireland. Today, only major china clay mining remains but there are several exploration projects and a vibrant cluster of mining-related businesses who work worldwide.

The population of Cornwall is slowly increasing and is changing demographically, with a growing elderly population. The largest residential area is the Camborne, Pool and Redruth Community Network Area, with around 59,400, although technically Truro is Cornwall's only city with a population of 21,000 in 2013. The trend of outward migration is reversing, with people perceiving that living in Cornwall provides a high quality of life. The expansion of higher education provision in Cornwall facilitated a 'Combined Universities of Cornwall' new university campus for the Universities of Falmouth and Exeter at Penryn near Falmouth in 2004. Together with other improving employment prospects, this is benefitting Cornwall and altering migration patterns. A study by independent economic analysts, Oxford Economics, indicated that the Universities contributed £491 million to the economy of Cornwall and the Isles of Scilly between 2002 and 2012.

Despite all the changes, Cornwall remains one of the poorest regions in the UK and Europe, with the Gross Value Added (GVA) per head of population being around 25 % below the European average.

China clay (kaolin) extraction in Cornwall currently employs around 900 people working for Imerys, with around 1 million tonnes of kaolin produced every year. They currently have over 20 active sites in Cornwall. The UK is the third largest producer of china clay in the world after Brazil and the USA. China clay is used to make ceramics, in paints, plastic, rubbers, cosmetics, pharmaceuticals and in the production of paper and cardboard (<http://www.imerys.com/scopi/group/imeryscom/imeryscom.nsf>).

Exploration projects for tin, tungsten, copper and lithium and are underway, including:

- Strongbow Exploration – South Crofty site (the last metalliferous mine to close in 1998)
- Cornwall Resources plc (Strategic Minerals PLC) - Redmoor tin/copper/tungsten project with a 23km² exploration licence
- Cornish Lithium – exploration work to look at the commercial viability of extracting lithium from 'brines' carrying lithium-enriched hot water.
- MétAmpère Ltd – exploring extracting lithium from micas.
- Marine Minerals Ltd – tin recovery from the sea bed off the coastline of Cornwall.

Mining research and education is centred on Camborne School of Mines, established in 1888 and now part of the University of Exeter. CSM continues to be integral to the training of mining industry professionals at a global level and has about 300 students in geosciences and mining-related subjects at any one time. It takes part in many national and international research projects including H2020, European Fund for Coal and Steel and Interreg.

The long history of mining in Cornwall and presence of Camborne School of Mines, has encouraged the development of SME's, including many microbusinesses, in the region. Many of the businesses are consultancies serving the international mining industry (see detail of the Cornwall Mining Alliance below).

Since 2006, Cornwall and West Devon has had UNESCO World Heritage Status for its unique mining heritage and landscape (Fig. 1). Mining heritage tourism is important in Cornwall. The World Heritage site incorporates 19,710 hectares over ten areas, crossing from Cornwall into Devon. By size, this makes it the largest World Heritage Site in the UK, balancing the needs of multiple land owners and management interests.



Figure 1: Wheal Coates engine house located near St Agnes in Cornwall's World Heritage Site.

Cornwall and the Isles of Scilly are uniquely positioned to develop uses of renewable energy, and the growth of the renewables sector in the UK has led to the development of renewable energy businesses based in Cornwall. Besides wind and solar farms, there is research on marine renewable energy (www.fabtest.com, www.wavehub.co.uk) and a deep geothermal power generation project (<https://www.uniteddownsgeothermal.co.uk/>) at United Downs (Fig. 2).



Figure 2: Deep geothermal project at United Downs, October 2018

Economically, Cornwall is still heavily dependent on agriculture and tourism. Tourism reportedly contributes about 24 % of Cornwall's Gross Domestic Product (GDP), supporting around one in five jobs. Connectivity and the installation of superfast broadband has helped Cornwall develop over the past five years. Cornwall has a growing number of digital technology businesses, with growth in this area being one of the highest rates in the country.

3. Policy Instrument in Cornwall

Summary of relevant policy instruments

At the time of the proposal the relevant policy instrument was the Cornwall and Isles of Scilly Structural and Investment Fund Strategy (2014). This was subsequently replaced by the Cornwall & Isles of Scilly Integrated Territorial Investment Strategy (2016). The smart specialisations remained the same. The policy instrument used at the start of the project no longer exists and has been directly replaced by this new policy instrument, which is therefore now addressed in this action plan. During 2020, this new policy instrument is likely to be replaced again by a Local Industrial Strategy, and our work has been mindful of this forthcoming change.

| Policy Instrument | | |
|---|---|---|
| Cornwall and Isles of Scilly Structural and Investment Fund Strategy | 2014 | Superseded |
| Cornwall & Isles of Scilly Integrated Territorial Investment Strategy | 2016 | Remains controlling document for ERDF funding in the region Mining is not a smart specialisation |
| 10 Opportunities | 2018 | Sets out topics likely to be in future local strategy. Mining highlighted as one of the 10 opportunities. |
| CloS Local Industrial Strategy | Prepared in latter part of 2019. In draft form now, to be finalised later in 2020 | Mining is highlighted as 'Georesources' – one of the distinctive key opportunities in the region. |

The original Cornwall and Isles of Scilly Structural and Investment Fund Strategy had an emphasis on the following:

- 1.** Research Development and Innovation into the Smart specialisations areas
- 2.** Superfast broadband
- 3.** Low Carbon Economy
- 4.** Promoting Sustainable Transport and Removing Bottlenecks in Key Network Infrastructures
- 5.** Climate Change
- 6.** Protecting the Environment and Promoting Resource Efficiency
- 7.** Institutional Capacity
- 8.** Competitiveness

The newer [Cornwall and Isles of Scilly Integrated Territorial Investment Strategy](#) is based on ‘Future Economy’, ‘Growth for Business’ and ‘Conditions for Growth’, with nine priority axes that are similar to the previous list of topics in the document it replaces (Table 1).

| ERDF Priorities | | Euros |
|-----------------|-------------------------------------|--------------------------------|
| PA1 | Research and Innovation | 91,100,210 |
| PA2 | ICT | 19,037,608 |
| PA3 | SME Competitiveness | 172,145,709 |
| PA4 | Low Carbon | 57,898,855 |
| PA5 | Climate change adaptation | 11,679,514 |
| PA6 | Environment and resource efficiency | 12,847,466 |
| PA7 | Sustainable transport | 57,925,547 |
| PA8 | Community Led Local Development | 14,837,826 |
| PA9 | Technical Assistance | No specific C & IoS allocation |
| TOTAL | | 437,472,735 |

Table 1: Priority axes for ERDF funding.

The smart specialisation areas for investment have been linked to the UK Industrial Strategy to demonstrate how ‘local priorities will help to deliver national ambitions’ (Table 2).

| | |
|-----------------------------------|--|
| Smart Specialisation | Links to UK industrial strategy |
| Agri-tech | Animal health and welfare in dairy cattle, Resource use efficiency in the production process, Plant health, Agri-science, Agri-technology, Big Data, Robotics and autonomous systems |
| Digital Economy | Digital media / gaming, Software development, Pervasive media (content application services), Information economy, Big Data |
| E-health and E-wellbeing | Using digital technologies to improve health outcomes, End to end skills programme, Information economy, Big Data, Education (exporting) |
| MarineTechnology | Offshore renewables (wave and floating wind), Advanced marine paint technologies, Green ship technologies, Offshore Wind Energy, Advanced materials and nanotechnology, Energy and its storage |
| Space and Aerospace Assets | Goonhilly – satellite management and applications, Newquay Cornwall Airport – long runway; free airspace; unmanned vehicles, Aerospace, Space, Robotics and autonomous systems, Big Data |
| Enablers: | These include digital, big data, skills and a Smart Energy Programme. |

Table 2: Cornwall and Isles of Scilly Smart Specialisations.

4. Actions

4.1. Action 1 – Reinforcing the mining sector as one of the pillars of the Local Industrial Strategy



Georesources

Cornwall version 10 O

Relevance to the project

One of the actions proposed for phase one of the REMIX project was that: Policy proposals for consideration in post 2020 regional policy instruments will be made. This was a specific request for the REMIX project from the regional authority, Cornwall Council. This was done by preparation of a working paper called Georesources Cornwall containing ideas on the main opportunities and challenges, together with various appendices containing detailed consideration of some of the main issues (main Georesources Cornwall document is attached). The report includes all of the Georesources-related opportunities for Cornwall, such as mining, geothermal, supply chain businesses, and consultancy. As well as listing the opportunities, we describe the barriers and suggest what actions Cornwall Council can take to help businesses overcome these barriers.

Most of the topics included in the Georesources Cornwall document came from the Cornwall Peer Review Meeting (May 2018), with further work done on the topics at the six monthly stake holder meetings. The topics covered include:

- The need for a unified approach to Georesources because of the synergies between mining and geothermal energy, and the need for new developments to fit into the UNESCO World Heritage site and the region's natural landscapes.
- Mineral rights in the UK, which are often cited as one of the biggest barriers to investment.
- Heat rights, currently there is no way for a geothermal company to safeguard their resource.
- The underutilisation of low temperature geothermal energy from mine water.

The document used relevant good practice examples. For example the 'Remediation of abandoned mines in the Centro region of Portugal' refers to environmental remediation to high standards, standards which have not yet been achieved in many places in Cornwall. This provided an example of best practice when substantial funds are allocated to remediation tasks and contributed to the environmental section of the Georesources Cornwall working paper.

Good practice noted at partner peer review meetings that was directly useful to the working paper included the combination of circular economy with mining observed at the LP kick off meeting in Kemi, Finland and the consideration of downstream value chain opportunities in Lower Silesia.

Probably the most important lesson is that it was not a specific action but the ability to fund stakeholder travel in REMIX that allowed CloS stakeholders to visit active mining regions and gain confidence about CloS as an active European mining region and the role mining can play in sustainable economic development of the region.

Nature of the Action

Helping Cornwall Council and Cornwall and Isles of Scilly Local Enterprise Partnership to incorporate recommendations from a REMIX output called Georesources Cornwall into the new Local Industrial Strategy policy instrument.

When REMIX started the PP8 policy instrument was the Cornwall and Isles of Scilly Local Enterprise Partnership European Structural and Investment Fund Strategy. This was subsequently replaced by the Cornwall and Isles of Scilly Integrated Territorial Investment Strategy and this second policy instrument still controls the allocation of ESIF funding (such as ERDF research and innovation funding for the digital mining bid described below). However, regional thinking has moved on from this policy instrument and UK regions are being asked to formulate Local Industrial Strategies that will be nearest equivalents.

Since REMIX started, mining has become much higher profile in the Cornwall regional priorities. It has been included in a list of the 'ten opportunities for Cornwall' <https://www.cioslep.com/vision/10-opportunities>.

The document was produced to inform the Council's future actions with respect to mining and the upcoming Local Industrial Strategy. Local Industrial Strategies are a new regional initiative from the national UK Industrial Strategy White Paper, November 2017 (<https://www.lepnetwork.net/lep-activities/local-industrial-strategies/>). They are being developed by the regional Local Enterprise Partnerships and will be approved by UK Government. The Cornwall and Isles of Scilly Local Industrial Strategy is likely to be approved and implemented during 2020 and will replace the other regional policy instrument, i.e. the Cornwall & Isles of Scilly Integrated Territorial Investment Strategy. All new initiatives will therefore need to feed into the new Local Industrial Strategy because it is this document that will control regional development initiatives and bids for funding.

Since presenting the Georesources Cornwall document to Cornwall Council, we have been helping with incorporation of some of the recommendations in the Local Industrial Strategy by attending and hosting workshops and coordinating writing of Georesources / Mining sections in the draft documents.

Stakeholders involved

The local authority, Cornwall Council, and Cornwall and Isles of Scilly Local Enterprise Partnership will consider the opportunities and recommendations. University of Exeter (PP8) will continue to be involved to monitor, with advice, expertise and networking leadership of the business community to help implementation.

Timeframes

Consultations and PP8 input on the new Local Industrial Strategy took place during autumn 2019. The new Local Industrial Strategy will be produced in early 2020 and then sent to UK Government for approval later in the year. Once the Local Industrial Strategy is approved, the actions regarding mining will be monitored by continued contact (via emails and occasional meetings) with economic development officers at the Cornwall and Isles of Scilly Local Enterprise Partnership and Cornwall Council and the Minerals planning policy officer at Cornwall Council.

Indicative costs and funding sources

The costing here is for the time taken working on topics in the Georesources Cornwall document in partnership with Cornwall Local Enterprise Partnership during development of the Local Industrial Strategy in 2019 and 2020, including coordinating the Georesources section on the Local Industrial Strategy document involving consultation with local stakeholders. 6 days time of an academic to

work on the local industrial strategy using information from the Georesources Cornwall report (authors of Georesources Cornwall were F. Wall and A. Sweeney) indicative £3400 including on costs but not full economic costing.

4.2. Action 2 – Digital Mining

– improving the regional policy instrument by using the digital smart specialisation in the Cornwall and Isles of Scilly integrated territorial investment strategy to bring new skills and innovations to the mining-related sector in the region

Relevance to the project

One of the original aims of the REMIX project in Cornwall was as follows: The work will enhance implementation of the Digital Economy smart specialisation by recommending how to enable new projects in the mining related sector. New expertise, links to academic research, case studies, and access to high performance computing are required so that the SME sector can take part in using 'Bigdata'. The topic is particularly timely because of the start given by the recent Tellus South West survey. Companies need to understand how best to use these data and how to export their expertise to other regions.

Inspiration for this action was derived from the exchange of experience during phase 1 peer review workshop in Cornwall. During the breakout group session in the afternoon, one group tackled a question on the topic of: Enhancing implementation of the Digital Economy smart specialisation. The group was asked to tackle the question, How can mining-related businesses benefit from the digital economy?

In response to this question, Dr Georgios Drosos, national representative to EC on digitising European industry, Hellenic Ministry of Economy and Development presented a paper on lessons from the Greek regional partner.

The breakout group considered learning points from other regions as well and made the five bullet points below as conclusions. These learning points were used in the formulation of a 'Digital Mining' proposal.

Digital economy

- (Facilitator Tony Hartwell)
1. Exploration – multiple uses of EO data, digitisation of existing data. Good to do at exploration stage – which can be done with public money and made available to all.
 2. Life time monitoring of extractives by EO etc (CMA could do)
 3. Mining legacy management (Cornwall)
 4. Database of mineral rights/mining leases (Cornwall)
 5. Digital hub for mining (CSM and others)

Figure 3: Digital economy. Cornwall peer review workshop results, May 2018

Nature of the Action

Using ideas and input from the peer review and stakeholder REMIX workshops, a bid for a major research and innovation grant on digital mining by University of Exeter together with two regional businesses and SW Centre of Excellence in Satellite Applications was prepared and submitted to an ERDF call on Research and Innovation in October 2018. The bid is currently in a second stage of assessment. It addresses the Digital Economy smart specialization of the Cornwall and Isles of Scilly Integrated Territorial Strategy policy instrument (which still controls allocation of ERDF funding) and will carry out research and innovation on digital topics with 40 local SMEs. The project call Deep Digital Cornwall will give Cornwall and Isles of Scilly SMEs access to skills, knowledge, data and facilities to carry out digital research and development of innovative products and services in cross-cutting sectors connected to the underground, extraction of underground resources and connections to the surface environment. The project will create a new physical ‘Deep Digital Cornwall’ Hub.

All of the research will centre on digital software and hardware. The research and innovation in this area is a natural fit for mining-related businesses but is also applicable to businesses in digital services provision, geothermal energy, civil engineering and construction, oil and gas, environmental consultancy, agriculture, tourism, creative and heritage. The project will thus serve the rapidly growing digital software sector in CloS and expand the CloS digital economy by developing existing, as well as creating new, digital innovations in technical businesses from a wide range of sectors. Digital technologies and techniques such as Internet of Things (IoT), Artificial Intelligence, Automation, Sensors, Machine Learning, Drones and Data Analytics, offer businesses the opportunity to innovate, create new opportunities and overcome challenges.

Accomplishment of the action will show how the digital economy smart specialisation can be used in a research area. Very little funding has been allocated to research and innovation in the digital smart specialisation and this project will be important in showing how digital is embedded in a wide variety of sectors, not just relevant to companies that write and sell software. This understanding will improve the policy instrument by opening up the digital topic to technical sectors other than simply software development.

Stakeholders involved

The University of Exeter is the lead delivery partner. The other delivery partners are the Cornish Lithium, Cornwall Resources Ltd and the South West centre of Excellence in Satellite Applications.

Time frame

If the project passes the second stage assessment, it is due to start on 1 May 2020.

Indicative costs and funding sources

The amount bid for is £3,882,472. The funding is from the European Regional Development Fund (ERDF) with some match contribution from the delivery partners.

Currently our proposal is in the second round of the bid process.



Prof Frances Wall
Camborne School of Mines
University of Exeter

Your ref: REMIX
My ref: EIW/REMIX240619
Date: 24th June 2019

Via email

To Whom it May Concern

REMIX Project

On behalf of Cornwall Council and the Cornwall and Isles of Scilly Local Enterprise Partnership, I confirm involvement with the REMIX project, including attending events and collaborating on the actions, and endorse this action plan.

Since the commencement of the REMIX project, 'mining' has been listed by the Cornwall and Isles of Scilly Local Enterprise Partnership as one of the ten key sectors that can plan a critical role in growing the economy of the region. The actions of REMIX are valuable in promoting work with the regional policy instrument to encourage mining-related activities and will make a timely input into the evidence being collected to inform the development of the Local Industrial Strategy.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'E. Inglis-Woolcock'.

Ellie Inglis-Woolcock on behalf of Economic Growth & Development Directorate

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