University of Exeter,
Camborne School of Mines

WELCOME

Kip Jeffrey (Head of CSM)
University of Exeter, Camborne School of Mines

Introduction to Cornwall

Frances Wall, f.wall@exeter.ac.uk

Kathy Hicks, Nathan Cudmore, Kip Jeffrey
Cornwall – a county in England

Regional authority:
Cornwall Council

Economic strategy driven by:
Cornwall and Isles of Scilly
Local Enterprise Partnership

REMIX partner:
Camborne School of Mines,
University of Exeter

Image of Cornwall?

HISTORY AND HERITAGE ATTRACTIONS

Explore Cornwall’s vibrant past

Cornwall has achieved international recognition from UNESCO that has credited World Heritage Site status to ten industrial landscape areas which best represent our mining past. Cornwall’s vibrant identity has evolved from history going back 3000 years and a rich traditional culture much of which still lives and breathes through the sites and scenery found throughout the region today. Discover this rich history by exploring museums, ancestral houses, castles and the Cornish Mining World Heritage Site.
But Cornwall is a ‘poor’ region in Europe

In 2000, Cornwall and the Isles of Scilly was ranked joint 194 out of 265 NUTS regions; in 2016 it was ranked joint 204 out of 265 NUTS 2 regions.

Cornwall - Post-Mining

Hundreds of tin (and previously copper) mines have reduced to none today. There was little/no investment in alternative industries at the time of the main reduction in mining.
Cornwall today

• Economically, Cornwall is still heavily dependent on agriculture and tourism as the two main sectors.

• 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.

• https://www.cornwall.gov.uk/business/economic-development/economic-intelligence/
Cornwall: A Brief Description (2015)

Cornwall is the second largest local authority area in the South West region, covering an area of 3,559 sq. km, and has the longest coastline of all English counties at 697 km. It is an area of many contrasts; with varied landscapes including remote rural, coastal and environmentally sensitive areas, interspersed with villages and historic market towns; where affluence sits alongside some of the most disadvantaged areas in England.

- Cornwall is the second largest local authority area in the South West region.
- 3,559 km² is the area of Cornwall in square kilometers.
- 697 km is the length of Cornwall’s coastline.
- Over 40% of the population living in settlements of less than 3000 people.
- Over 30% of Cornwall is within an Area of Outstanding Natural Beauty.
- 230,400 households.
- Population density is one of the lowest in England at 1.5 persons per hectare.
- Population is growing but growth isn’t consistent across all areas of Cornwall.
- Over 20% of the population living in settlements of less than 3,000 population.
- In-migration is predominately for economic and lifestyle reasons, not retirement purposes.
- Deprivation is a persistent problem – Cornwall as a whole is not deprived, but there are areas where there are very high levels of deprivation and this has not changed for some years.
- Around 68,600 people (12.7% of the population of Cornwall) live in the 20% most ‘deprived’ communities in England. This equates to approx. 34,400 households.
- 15.9% of children in Cornwall live in low-income families.
- Deprivation is identified by national measures due to the dispersed nature of rural population.

Households and Housing

- Housing need in Cornwall is high with housing unaffordable for many.
- Over 230,400 households with an average household size of 2.27 persons.
- Cornwall has one of the highest rates in the country of rough sleeping per head of population.
- 30% with only one person.
- Over 10x the average (median) income of £18,250: The Cornwall average does however, mask large variations across communities.
- 6% are living in shared accommodation.
- 9% are single parents.
- 55% are couples living together.
- Over 194,000 average house price.
- 8,800 live in communal establishments (1.7%).
- In 2013 approximately 34,998 (14%) of households in Cornwall were calculated to be in fuel poverty.

Population and Settlements

- Population is growing but growth isn’t consistent across all areas of Cornwall.
- Over 40% of the population living in settlements of less than 3,000 population.
- Population density is one of the lowest in England at 1.5 persons per hectare.
- Population likely to increase by 18% over 25 years.
- Population of Outstanding Natural Beauty.
- Deprivation is a persistent problem – Cornwall as a whole is not deprived, but there are areas where there are very high levels of deprivation and this has not changed for some years.
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Health and Wellbeing

- Health inequalities continue in areas of deprivation – higher rates of obesity, teenage pregnancy and levels of sickness and disability benefit claimants are closely linked to areas where there is known inequality.
- Average life expectancy continues to be generally higher than the national average.
- For one in ten residents (53,166 people) say their day to day activities are ‘limited a lot’ due to a long term health problem or being disabled.
- 11.9% (63,192 people) residents provide unpaid care to a family member, friend or neighbour.
- Large number of people with mental health needs, as well as a large number of people at increased risk of mental health problems.
- Cancer, respiratory disease, musculo-skeletal problems and cardiovascular disease, cause the majority of deaths.
Cornwall: a brief description (2015)...

Environment

Cornwall’s environmental assets are extremely valuable - and are a key contributor to the economy and quality of life.

- 60% of CO₂ emissions
- Emissions from housing and transport account for over 60% of CO₂ emissions.
- Cornwall’s environmental assets are extremely valuable in which to live and work – a measure of this is a decline in the carbon footprint combined with an increase in the quality of life.

- 30% of Cornwall is within an Area of Outstanding Natural Beauty
- Cornwall has a diverse marine environment and has a number of nature and landscape conservation area designations.

Crime and Disorder

Crime in Cornwall is generally low and is a safe place in which to live and work – despite rises in some areas, crime in Cornwall continues to be low, although fear of crime remains an issue.

- Cornwall experiences seasonal fluctuations in crime; with more offences in the summer months and fewer in winter.
- Overall 16% of crime is recorded as alcohol related.
- Each year the fire and rescue service respond to more than 5,600 emergency calls.
- In 2014 there were 1,309 road traffic injury collisions in Cornwall.

Transport

- Cornwall’s geographical shape and position make infrastructure delivery challenging – Dispersed and sparsely populated settlement pattern combined with Cornwall’s coastline present issues of accessibility and challenges for equal provision of services.

- Over 80% of cars in Cornwall are over 6 years old, reflecting the fact that for many the car is an expensive necessity rather than a luxury.

- 64% of people in employment travel to work by car.

Labour Market and Economy

- Cornwall has low numbers of people with NVQ4 and above.
- Businesses in Cornwall are, on average, smaller in terms of employee numbers than the national average.
- 97% of our businesses were small or micro level, employing less than ten people in 2015.
- 23% in employment: self-employed; above the national average (14%) in 2015.

- 33% with NVQ4 and above.
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2014-2020 Less Developed region

- 64% EU average (2011)
- C.€590m ERDF & ESF
- Peripheral location
- Sparsely populated
- Declining heavy industry
- Ageing population
How much investment has Cornwall & the Isles of Scilly received?

**Objective One 2000-2006**
- Objective One value without match = £350m
- Objective One value with UK public sector match = £700m
- Objective One + public sector match + private sector match = £900m

**Convergence 2007-2014**
- ERDF Convergence value without match = €458m
- ERDF Convergence + match = £950m approx. (from ERDF legacy calculations)
- ESF Convergence value = £164m
- ESF Convergence + match = £222.4m (from ESF evaluation)

**Growth Programme 2014 - 2020**
- Cornwall & Isles of Scilly Growth Programme value ERDF = £340m
- Cornwall & Isles of Scilly Growth Programme value ESF = £130m

**Total = £2.5 BILLION**
Our REMIX Policy Instrument: Cornwall and Isles of Scilly Local Enterprise Partnership
European Structural and Investment Fund Strategy

The SIF strategy contains three main areas of activity:
‘Future Economy’ which concerns investment to capitalise on regional strengths and characteristics to exploit new and emerging markets, including smart specialisations;

‘Growth for Business’ to accelerate business productivity and competitiveness and

‘Conditions for Growth’ to overcome blocks to growth, improve infrastructure and increase human potential. Future economy includes

(1) smart specialisations of Agritech, Digital Economy, EHealth, Marine technology, and Space and aerospace assets and

(2) Activities with growth potential that develop Cornwall and the Isles of Scilly as a ‘green and marine’ region.

The policy recognises that almost all businesses in the region (99.8%) are micro, small and medium sized enterprises and therefore this sector is the key driver of growth and employment. The proportion of micro enterprises is high (87.7%). Also recognised is the challenge of how much lower research and innovation investment in Cornwall and Isles of Scilly than the average elsewhere in the UK.
In REMIX, University of Exeter aims to:

- 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’.

- Engage with innovation and best practice in environmental protection and resource efficiency (thematic objective 6) - a topic directly relevant not only to mining companies but to a significant international consultancy sector in Cornwall. Relevant topics include state of the art environmental and social impact assessment, environmental remediation and protection, mining with no surface footprint, improvements and innovation in minerals processing and how best to integrate renewable energy sources into mining operations.

- Enhance the SME sector, e.g. via the Cornwall Mining Alliance, through a better understanding of how the sector can collaborate to boost individual businesses, using examples of good practice.

- Make policy proposals for consideration in post 2020 regional policy instruments.

**Proposed self-defined performance indicator:**

- Engagement of 30 local companies with activities
- Policy and best practice recommendations Cornwall Council for current policy instrument to prepare post 2020 regional policy
Provisional questions for the Cornwall peer review

• Enhance implementation of the Digital Economy smart specialisation
  Question - How can mining-related businesses benefit from the digital economy?

• Engage with innovation and best practice in environmental protection and resource efficiency (thematic objective 6)
  Question - What are the next innovations for environmental and social mining-related businesses?

• Enhance the SME sector, e.g. via the Cornwall Mining Alliance, through a better understanding of how the sector can collaborate to boost individual businesses, using examples of good practice
  Question - How can SMEs collaborate to tackle large contracts?

• Make policy proposals for consideration in post 2020 regional policy instruments.
  Question - What are the big initiatives that Cornwall should take to expand mining related businesses?
Other (newer) policy documents:-
Local enterprise partnership vision 2030


By 2030 Cornwall and Isles of Scilly will be the place where business thrives and people enjoy an outstanding quality of life."

To achieve this, the plan outlines three objectives:

Business: achieve thriving businesses which excel at what they do

People: achieve inclusive growth and improve the skills of our workforce

Place: improve infrastructure and economic distinctiveness

Strategic drivers:
Innovation and creativity
Productivity led growth

(No mention of mining)
Cornwall Council Economy and Culture strategy 2012 - 2020

Slightly older overview document – and here we are:

**
New Local Enterprise Partnership document, 2018 – 10 opportunities

https://www.cioslep.com/vision/10-opportunities

1. Creative
2. Space
3. Energy
4. Food
5. Agri-tech
6. Tourism
7. Marine
8. MINING
9. Aerospace
10. eHealth

***Mining is on the agenda***
Future funding for Cornwall post Brexit

- **UK Shared Prosperity Fund** (scheme to replace EU support)

- **UK industrial strategy challenge fund**

- *Potential/probable* participation in future EU R&I and C&S actions, and others?
UK - national mining

• There is no national ‘mining ministry’ in the UK. Mining is related to the Department for Business, Energy and Industrial Strategy, Department for Environment, Food and Rural Affairs, including for permitting. Ministry of Housing, Communities and local Government. Local planning authorities, such as Cornwall Council are important.

• A UK minerals strategy will be launched on 10 July 2018 – by the Mineral Products Association and CBI (Confederation of British Industry) Minerals Group. This is an industry-led initiative, mainly by the aggregates industry.

• There are other new mines in development, including Sirius Minerals Woodsmith potash Mine that has planning permission to operate in a national park.

• Drakelands tungsten mine (World’s 4th largest deposit) operated by Wolf Minerals was the first new metals mine in the UK for over 40 years when it opened in September 2015 just over the border from Cornwall in west Devon.
Current mining in Cornwall

- World class china clay mines operated by Imerys in the St Austell area, 900 employees, 100 in R&I
  > 20 active sites across Cornwall
- Million tonnes of china clay (kaolin) per year
- Top ten global producer of china clay
  [https://cornwallminingalliance.org/imerys-minerals-ltd/](https://cornwallminingalliance.org/imerys-minerals-ltd/)
Exploration/development projects

• Re-opening South Crofty tin mine (Strongbow)

• Redmoor tin-tungsten exploration (New Age Resources)

• Lithium in brines in granite (Cornish Lithium)

• Reprocessing of waste on mica dams associated with China clay mines to recover lithium (Imerys)

• Tellus South West geophysical and geochemical survey.
Cornwall Mining Alliance

Global Mining Services

Cornish mining expertise has been famous throughout the world. Today, we have over 200 companies based in this part of the UK that are involved in all aspects of mining services. This site will help you find the service or solution you need.

Find Out More

Discover innovative services & expertise for global mining industries
Cornwall has a unique concentration of innovative businesses, organisations & experienced professionals providing services to mining & related industries in the UK & around the world.

**Aim:** to enable specialist mining related SMEs to collaborate on and access large domestic projects & global export opportunities

Created by the Cornish Chamber of Mines & Minerals in response to UK Government initiative

DIT identified High Value Opportunities in global mining sector

Initial funding from the Chamber & CSM, University of Exeter

Directory of professionals in Mining & Minerals Sector in South West

Organisations categorised by service sector (12)

Preferred communication channel for DIT

Run & managed by volunteer steering committee

89 members…..and growing!
Cornwall Mining Alliance

Companies operate in the following areas within the CMA:

- Geological
- Mineral processing
- Mining engineering and surveying
- Environmental and social
- Energy
- Software and digital
- Analysis and testing
- Research and training
- Contractors and supply chain
- Professional support services
- Mines and quarries
- Mining heritage
Deep Geothermal Energy
Eden Project

“Eden’s mission is to explore our dependence on the natural world, to use that understanding to excite people into delivering transformation where they live and to ask really serious questions about what a great future might look like for all of us.”

Tim Smit
Higher Education

• Universities Exeter (full service uni.) & Falmouth (arts and media) on Penryn Campus contributed £491 million to economy of Cornwall and IoS between 2002 & 2012. (Penryn Campus is an EU investment)

• University of Plymouth also in Cornwall. Cornwall College, Truro College offer further and higher education

• Camborne School of Mines is one of the University of Exeter departments on the Penryn Campus. 33 academic staff, 15 research staff, ca. 400 UG, PGT, PGR students, Started 1888 alongside the mines, now UK’s multidisciplinary mining school – mining, processing, geology, environmental, social.

• Also Business, Biosciences, Renewable Energy, Maths, Geography, English, History, Politics on Penryn Campus
CSM Association alumni network

www.csmassociation.com
Camborne School of Mines degree programmes

Post graduate research
PhD/ MSc by Research

Post graduate taught
- MSc Mining Engineering, MSc Minerals Processing
- MSc Applied Geotechnics, MSc Tunneling
- MSc Mining Geology, MSc Exploration Geology
- MSc Surveying and Land/Environmental Management
- MSc Mining Professional (blended learning)

Mining Engineering (accredited by IOM³)
- BEng/MEng Mining Engineering

Geology (accredited by The Geological Society)
- BSc/MGeol Applied Geology
- BSc/MGeol Engineering Geology and Geotechnics
- BSc/MGeol Geology

BEng and BSc are full-time three-year programmes of study;
Four year MEng Mining Engineering and MGeol integrated masters programmes introduced from 2014
MSc – one year intensive
CSM Research groups

Active earth

Deep time global change

Minerals engineering

Mining education

Mining, environment and society

Mining, geotechnical and safety engineering

Ore deposits and critical metals

FP7, H2020 projects:
- FAME
- OPTIMORE
- STOICISM
- HITECH
- ALKCARB
- IMP@CT
- INTRAW
- MIREU

+ Multiple European Research Fund for Coal and Steel Projects
+ UK research council funding
Cornwall Mining World Heritage site

https://www.cornish-mining.org.uk/

Well worth watching videos  
https://youtu.be/uYREWz_qccs  
https://www.youtube.com/watch?v=_qydn7Zq5EU

Examples of places in the Mining World Heritage sites:

- Geevor Mine Museum
- Heartlands
- Eden Project
Deep Geothermal Energy

- The deep geothermal resource in Cornwall is an opportunity for renewable heat & power generation and collaboration with mining-related activities.

- The ‘Hot Dry Rocks’ study led by CSM in the 1970-80s confirmed high temperatures in granite.

- Potential for significant economic & community benefits.

- Expense & uncertainty has prevented further exploration…until now.

- ERDF funding (Cornwall and Isles of Scilly growth programme), Cornwall Council & private funds have enabled a project at United Downs near Redruth, led by Geothermal Engineering Ltd.

- **Two wells will be drilled in Q2 2018 to depths of 2.5km & 4.5km**

- Local residents have been proactively engaged and PhDs funded on public perception, as well as technical aspects.

- Another scheme at Eden Project, led by EGS Energy Ltd, is awaiting the outcome of funding.

- Meanwhile, there is excitement about Jubilee Pool, Penzance – a geothermal well is being drilled to heat a seaside swimming pool to 35C!
Thank you!