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## Project Context

This particular iteration of the course will be geared towards conducting research [in the region \(or comarca\) of El Bierzo](#), España. This is a small region in Northwestern, rural Spain that has a rich history, but is currently facing challenges of outmigration and ageing population. . This trend has been accompanied by vigorous rural social movements, particularly in relation to declining access to amenities and services, (such as healthcare provision) and threats to the local environment and landscape.

Currently, local authorities have been tasked with enacting policies aligned with Agenda 2030, and its 17 Sustainable Development Goals, but are still trying to figure out what this means in practice. There is a window of opportunity for the various social movements in El Bierzo to engage with this process and advocate for the future they envision. However, despite being very vocal, movements are often very localised and limited in reach, lacking a joined-up bottom-up approach. Addressing the challenge of rural sustainability in El Bierzo requires consideration of how social movements influence the socio-economic history of the *comarca*, and how their losses and victories affect the well-being and livelihoods of its communities. All of our work will take place under one project, under the ‘umbrella’ theme of **social movements and rural sustainability**, and the research question:

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*“How have social movements contributed to the development of socio-ecological connections in El Bierzo?”*

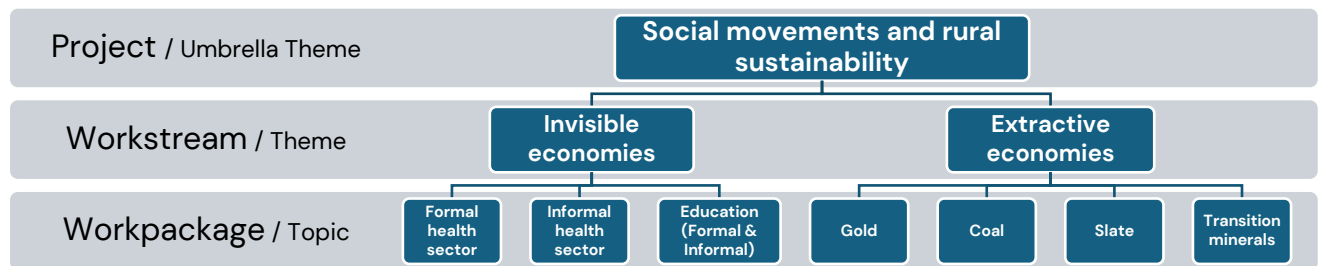
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We are planning on completing this project by splitting the work into two complementary workstreams. These workstreams expand on two themes that we have not yet tackled in previous years, but nonetheless address questions raised by individuals in the community:

- **Invisible economies**, specifically those related to *health, well-being and education*
- **Extractive economies**, specifically those related to *mining of various minerals*

Each of these workstreams has been further divided into sub-themes or topics (Figure 1). **Each team will be assigned to one topic**; this is both to allow each team to be able to dive more deeply into one dimension of the theme, and to have the cohort as a whole benefit from resources being dedicated to exploring each of these dimensions fully in their own right.

Figure 1 Project organisation



The research question is to be answered using a **mixed-method approach of community video and walking interviews**. Regardless of which workstream you end up working on, **you will be doing real work with community members**. We expect, during our time in the field, to complete 40 interviews with community members, split between the two workstreams. The results of your research will effectively inform the collaboration between the programme and local actors in El Bierzo going forwards.

## Course Structure Overview

This project is a big task, but it is one that becomes feasible through **effective collaboration**.

One important part of effective collaboration is ensuring that everyone is putting in the required time into this work. **Per week, each person is expected to work ~20 hours on this course**. If everyone meets this expectation, then *teams* will be putting close to 100 person-hours per week into this challenge. This should yield *rapid* progress when you organise yourselves well.

Staff will also be present in every class, actively mentoring student teams as they progress through each stage of the research.

To help teams keep track of key milestones through the various stages of the field research, we have split the course is split into 3 parts:

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*Part 1 focuses on the development of a workpackage, a research proposal associated with the relevant topic within the project*

*Part 2 focuses on preparing for data collection in the field*

*Part 3 focuses on data collection, analysis, and dissemination to the community*

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In part 1, you will be assigned a team, a workstream and a research question related to one of the sub-themes to focus on during this part of the course. In parts 2 and 3, however, you will have an element of choice in how and where you make your contributions.

## Service-Oriented Research Outputs

In addition to the development of a research workpackage proposal, each team will be asked to produce a dissemination piece targeted at a lay audience of their choosing. This dissemination piece, like the proposal, is assessed, and teams have freedom in deciding what format this dissemination piece can take (more on this on page **¡Error! Marcador no definido.**). Although we encourage teams to consider how these dissemination pieces can best be of service to their chosen audience, this is ultimately an output with learning evaluation in mind, and so it is mainly shaped by our own needs as academics, rather than the needs of the community.

We believe that service-oriented research should aim to go further than that and so, in the spirit of reciprocity, the project includes three unassessed outputs, which fulfil three specific needs expressed by the community in El Bierzo in relation to this year's theme, and are thus firmly service-oriented. Working on these three outputs is inbuilt into the process of collecting and analysing data under your mentors, and is planned to work as synthesis mechanism across the whole project, requiring minimal additional work for their completion and delivery. The three class outputs are:

1. **One (or two, if we split them by workstream theme) film(s)** – this can be shared between members of the community (and between communities), revisited, used in advocacy and in documentation of the community voice;
2. **A mapping of rural social movement groups, their interests and geographic location and influence** – this is for the use of the community, so they can consult it for potential synergies, expand networks of action and share knowledge;
3. **A list of proposed progress indicators for Agenda 2030** – this is a collection of ideas, suggested by the community and/or suggested by the class, on what indicators should be used to monitor socio-ecological progress across the invisible and extractive economies. Again, this is for the use of the community in advocacy work.

Workpackage proposals should outline the ways in which research into the given topic will contribute to each these three outputs, and plan data collection accordingly.

## Research Questions

This section presents the research questions we will focus on this year. For each of them, we have given you:

- The broad theme for the research question
- An introduction to the problem that motivates the research question
- The research question itself
- Some 'hints' to help you get started and to help you focus your efforts

### Workstream A: Invisible economies

Theme	<b>Rural social movements in the invisible economies</b>	
What seems to be the problem?	<p>Rural social movements in small, remote communities often emerge as a response to decline or lack of essential amenities and services. These movements, often rooted in the need to address local challenges and meet the basic needs of the residing population, are pivotal in sustaining rural life, even as many of these areas face depopulation, aging populations, and limited access to amenities, services and resources.</p> <p>In these communities, the "invisible economies" refer to the grassroots efforts and informal networks that fill the gaps left by absent or inadequate public services. These economies are often driven by local residents, community organizations, and social enterprises that work to ensure basic needs are met, from healthcare and education to transportation and food security. While these efforts may not always be formally recognized, they are essential for the survival and resilience of rural areas. In places like El Bierzo, such initiatives are incredibly important as demographic change (in this case population decline) drives the allocation of resources and funding, usually towards more populated areas—often leaving smaller, rural, remote and sparsely populated areas 'behind'.</p> <p>Social movements in these contexts are diverse and can take many forms in shaping local economies and livelihoods. While in urban contexts the presence of such initiatives might be less important, in rural communities these types of initiatives are often acting as pillars of the community (sometimes also called anchor institutions). These movements are not only a response to the lack of services but also a way for communities to reclaim their autonomy and ensure that their needs are addressed on their own terms.</p>	
Hints	1.	The contribution of social movements is often overlooked or undervalued, as it cannot be easily measured using traditional economic indicators. However, these movements play a crucial role in sustaining the lives and well-being of rural communities. Emerging, more inclusive approaches to local economic development, such as Community Wealth Building, are beginning to recognize

	the value of these "invisible economies" and their significant impact on the resilience and vitality of local communities.
2.	Social movements can play a vital role in improving local communities and their livelihoods. However, the challenge lies in the trends of depopulation and an aging population. As these trends continue, the natural question arises: who should take responsibility for identifying, advancing, and advocating for the needs of rural communities? The remaining population and existing services are increasingly strained by ageing and outmigration, making it even more critical to address these issues effectively.
3.	It is important to keep in mind that the overarching research question of this project also relates to social-ecological connections. As such, work under this theme will need to consider to what degree the invisible economies, and the social movements that drive them, may impact social-ecological connections – <a href="#">and vice-versa</a> .
4.	When seeking grey literature or other materials in Spanish, teams may find it useful to consider keywords like: "movimiento social" (social movement), "protesta" (protest), "marcha" (march), "berciana" or "berciano" (from El Bierzo), "convivencia" (coexistence), "naturaleza" (nature).
5.	When seeking literature that addresses similar kind of questions, teams may find it useful to consider keywords like: "social movements", "rural volunteering", "citizen initiatives in rural", "rural depopulation/outmigration", "community wealth building", "lower amenity areas".

## Workpackage 1: Health and Well-being (Formal Provision)

Theme	Rural social movements in the invisible economies
Sub-theme	<b>Formal health and well-being sector</b>
What seems to be the problem?	Previous research has highlighted that the lack of public services and amenities is a key factor contributing to rural depopulation, particularly as residents enter the later stages of life (70+), which often require greater health support and access to healthcare services. Rural areas are frequently viewed as places of rejuvenation, particularly for the elderly and retired population. Much of the literature on rural living portrays these areas as peaceful, community-oriented environments that offer a higher quality of life and well-being for both residents and newcomers. As a result, lifestyle migration, amenity migration, and counterurbanization towards rural areas are common trends. However, these

	<p>areas face significant challenges, including inadequate healthcare provision, with limited access to general practitioners and other essential services.</p> <p>Depopulation trends exacerbate the difficulties in delivering formal health and well-being services, as the lack of infrastructure suitable for such services, limited transportation, and insufficient supporting facilities make it difficult to attract funding or establish necessary services. Additionally, the broad coverage required to serve multiple communities, along with the integrated nature of rural life, means that health professionals would need to take on multiple roles within the community. These professionals also face limited opportunities for professional development and peer networking, <a href="#">making it challenging to recruit and retain</a> skilled health workers in these areas.</p> <p>It is therefore unsurprising that local communities have mobilised over the years around the topic of the declining public health provision (e.g. <a href="#">[1]</a>, <a href="#">[2]</a>, <a href="#">[3]</a>, <a href="#">[4]</a>, <a href="#">[5]</a>, <a href="#">[6]</a>, <a href="#">[7]</a>, <a href="#">[8]</a>, <a href="#">[9]</a>, <a href="#">[10]</a>, <a href="#">[11]</a>), with slogans such as “<i>Quiero envejecer en mi pueblo!!! #SanidadRural</i>” (I want to grow old in my village!!! #RuralHealth).</p> <p>To add to this, there are the specific ways in which the public health service is organised in Spain: the National Health Service <a href="#">is highly decentralised</a>, supposedly to allow better adaptation to the needs of each of <a href="#">its autonomous regions</a>. However, <a href="#">an analysis of the regional health service polices</a> has shown a high degree of homogenisation, which, while in part guarantees the universal standards of provision, nonetheless does not follow on its promise of fit or regional governance.</p> <p>For a historical perspective on health in El Bierzo, from the plagues to the 19<sup>th</sup> century, there are two podcast episodes in Spanish here <a href="#">[I]</a> and <a href="#">[II]</a>, as well as paper (in English) on the history of healthcare <a href="#">in the region from the 1600s to the 1800s</a>, and a <a href="#">summary poster on the main statistics</a>. You do not need to include such a faraway perspective in your work to answer the research question; but you might find it interesting to consider this historical context as reminder that El Bierzo has come a long way, in the past centuries, in terms of its social organisation of health. <a href="#">All of Europe went back and forth during the 20<sup>th</sup> century</a> in exploring different configurations. But history has a way of sometimes underestimating the role of social movements in this. <a href="#">Here</a> is an example from El Salvador (2009–2018), in Latin America, framed around this perspective.</p>
<p>Research Question</p>	<p>How have the social movements for <b>provision of rural health services</b> contributed to the development of socio-ecological connections in El Bierzo?</p>
<p>Hints</p>	<p>1. This question can be further developed to focus on: a) needs of local population keeping in mind the demographic profile of the El Bierzo; b) exploring the potential solutions that might cater for multiple communities in the region; c) exploring the links in between health and wellbeing outcomes and access to these services (e.g. transportation); d) to explore the relationship of the participants with their healthcare providers in the region and review if there is a</p>

	potential to develop recommendations for recruitment and retention strategies of the locally based healthcare services.
2.	Given that this specific work package is focused on formal health and well-being services, it is crucial to maintain a clear focus on exploring the availability and connections of these services within the region. The research should centre on understanding how formal healthcare systems are integrated into the rural context, their accessibility, health outcomes and the challenges faced in maintaining or expanding these services in areas affected by depopulation and aging populations.
3.	The team working on this topic could also consider potential linkages with the 'Education' workpackage, particularly as it pertains to the education of health professionals, which necessitates attending universities outside the region (one of the factors driving outmigration in El Bierzo).
4.	When seeking grey literature or other materials in Spanish, teams may find it useful to consider keywords like: "Sistema Nacional de Salud" or "SNS" (National Health Service), "servicios regionales de salud" (regional health services), "salud rural" (rural health), "VISERU project" (Healthy Life in the Rural Environment), "bienestar" (well-being).
5.	When seeking literature on this topic, teams might find it useful to focus on the keywords such as: 'recruitment and retention', 'rural health', 'healthcare access in rural', 'escalator migration'; as well as work by <a href="#">Prof. Narelle Campbell</a> .

## Workpackage 2: Health and Well-being (Informal Provision)

Theme	Rural social movements in the invisible economies
Sub-theme	<b>Informal health and well-being sector</b>
What seems to be the problem?	<p>Informal health systems play a significant role in rural communities, especially in areas where formal healthcare services are limited or difficult to access. These informal health networks are often community-driven and involve non-professional caregivers, volunteers, and local residents who provide essential care and support. While not officially recognized or measured by traditional healthcare frameworks, informal health practices are crucial in filling the gaps left by formal health services, particularly in remote and depopulating areas. These types of support include caregiving family and friend networks, peer support networks, community initiatives and traditional and alternative approaches to health and wellbeing.</p> <p>While these informal health practices are crucial for rural communities, they are often overlooked and unrecognized in formal evaluations and strategies,</p>

	<p>including those focused on repopulation and revitalization. These approaches face several operational challenges, such as lack of recognition, limited training, the loss of traditional practices, and the strain placed on existing networks due to a declining number of community members able to actively participate or contribute to daily activities. Despite these challenges, informal health systems remain an essential part of rural healthcare, complementing and supporting formal health services in areas where access to professional care is limited.</p> <p>They energise health awareness movements (e.g. <a href="#">[1]</a>, <a href="#">[2]</a>), they self-organise in volunteering organisations (e.g. <a href="#">[3]</a>, <a href="#">[4]</a>, <a href="#">[5]</a>, <a href="#">[6]</a>), they find personal fulfilment in this work (e.g. <a href="#">[7]</a>), they provide services where gaps exist (e.g. <a href="#">[8]</a>).</p>
<p>Research Question</p>	<p>How do informal health systems in rural communities contribute to the overall well-being of residents in El Bierzo?</p>
<p>Hints</p>	<p>1. The informal health systems support rural communities, but they are still dealing with a number of challenges, that impact their ability to operate, but also community's sustainability and ability for residents to stay and live in their communities. This topic can be explored in different ways: a) by capturing the existing informal health systems and practices in El Bierzo, and inquiring about the challenges these networks encounter and impacts on community; b) the relationship in between the informal and formal health systems, and which ones are recognised and utilised by the local communities (and for what reasons); c) by exploring the potential for strengthening these networks through the lens of participants and their suggestions and developing a set of recommendations for interested stakeholders.</p>
	<p>2. The informal health systems often offer a more holistic and inclusive experience for rural communities, as they are deeply rooted in personal connections to the place or region, as well as individual relationships with those in need of support. These systems are built on trust and familiarity, which can enhance the quality of care and support provided. There is an opportunity to capture the significance of these intangible relationships, and the rapport developed within and between these networks. This work package can contextualize the importance of these informal connections and explore how (theoretically) they could be recognised in supporting formal health systems to create more collaborative, comprehensive approaches to healthcare delivery. By recognizing and leveraging the strengths of both informal and formal systems, rural communities can benefit from more resilient, person-centred healthcare solutions.</p>
	<p>3. The team working on this topic could also consider potential linkages with the 'Education' workpackage, particularly as it pertains to informal education, as its linkage to <a href="#">traditional medical knowledge, particularly of plants</a>, but also of <a href="#">traditional arts and crafts</a>.</p>

	<p>Craftmaking has been shown to have <a href="#">positive impacts on emotional regulation, subjective wellbeing, sense of achievement and connection, care for others</a>, but also on <a href="#">prevention of ill health, promotion of health, and management and treatment of illness through all stages of life</a>.</p> <p>Similarly, traditional food and foodmaking knowledge brings <a href="#">personal and community benefits to those gaining or relearning it</a>. This can be particularly poignant <a href="#">in migrant communities</a>, but the same effects can be experienced by local rural communities (<a href="#">see</a> the example of <a href="#">community ovens</a> in El Bierzo). In addition to its <a href="#">contributions to well-being</a>, there is also <a href="#">a sustainability argument</a> to be made in reconnecting with traditional food knowledge (i.e. helping to increase the capacity of the social-ecological systems to cope with shocks and maintain long-term resilience).</p> <p>Even traditional <a href="#">dancing can have a role in improving health and well-being</a> for the members of the community.</p>
	<p>4. When seeking grey literature or other materials in Spanish, teams may find it useful to consider keywords like: “salud rural” (rural health), “movimiento social” (social movement), “cuidado de la salud informal en zonas rurales” (informal healthcare in rural areas), “bienestar” (well-being), “voluntariado” (volunteer work).</p>
	<p>5. When seeking literature on this topic, teams might find it useful to focus on the keywords such as: ‘informal rural healthcare’, ‘informal caregiving in rural’, ‘healthcare access in rural’.</p>

### Workpackage 3: Education (Formal and Informal Provision)

Theme	Rural social movements in the invisible economies
Sub-theme	<b>Formal and informal education provision</b>
What seems to be the problem?	<p>Formal education in rural areas faces significant challenges, including school closures, teacher shortages, and limited access to educational resources. The decline of education services in rural areas has been a persistent issue for decades, further exacerbating depopulation trends as younger populations seek educational (and then employment) opportunities elsewhere, leaving behind aging populations and placing strain on remaining local resources.</p> <p>In contrast, informal education is often more visible and present in rural communities, particularly where formal education services are lacking. This includes mentorships, community-based learning, word-of-mouth knowledge exchange and workshops, all of which can fill gaps in formal education, empower local communities, and strengthen community bonds. However, as rural</p>

	<p>populations age and key demographic groups, such as young families, are missing, it is increasingly difficult to sustain these informal educational initiatives.</p> <p>Both formal and informal education systems are interconnected and essential for the resilience of rural communities. Strengthening both systems could help mitigate the challenges of depopulation, create opportunities for youth retention, and improve the overall well-being of residents. By integrating informal education with formal systems, a more holistic, community-based approach to learning and development could be fostered.</p>
Research Question	How do the informal education practices complement the formal education systems in El Bierzo?
Hints	<p>1. Informal education practices are often <a href="#">closely tied to the identity of a place</a>, emphasizing the specific skills, knowledge, and experiences that hold significance <a href="#">within that particular context</a>. These practices <a href="#">reflect the unique cultural, historical, and social fabric of the community</a>, shaping how individuals learn and interact with one another. By focusing on what is meaningful locally, informal education helps <a href="#">preserve traditions</a>, fosters a sense of belonging, and contributes to the community's resilience, self-sufficiency and cohesion.</p>
	<p>2. It is important to contextualize this sub-theme, as informal education systems <a href="#">vary greatly depending on the culture, values, traditions, and norms of each rural community</a>. This topic provides an opportunity to explore the often invisible aspects of local culture and how these elements of informal education, <a href="#">along with their providers</a>, complement and support the formal education systems in the area. Understanding the unique cultural context of informal education can highlight its significance in rural communities, and understanding the unique environmental context of this education can demonstrate how it can enhance the broader educational landscape, connection to the land and <a href="#">sustainability</a>.</p>
	<p>3. The team working on this topic could also consider potential linkages with the 'Informal health provision' workpackage, particularly as it pertains to traditional knowledge transfer and place-based practices promoting community well-being and increasing community resilience. See relevant hint (3.) in <a href="#">WP2</a>.</p>
	<p>4. When seeking grey literature or other materials in Spanish, teams may find it useful to consider keywords like: "educación informal" (informal education), "<a href="#">tertulia</a>" (coffeehouse-style social gathering), "sabiduría popular" (tradicional wisdom), "<a href="#">bienes inmateriales</a>" (non-material wealth), "artesanías tradicionales" (tradicional crafts).</p>
	<p>5. When seeking literature on this topic, teams might find it useful to focus on the keywords such as: 'outmigration', 'rural education', 'informal education in rural areas' and 'escalator migration'..</p>

## Workstream B: Extractive economies

Theme	<b>Rural social movements in the extractive economies</b>	
What seems to be the problem?	<p>El Bierzo communities, and the landscape in which they live, have been shaped by <a href="#">the extraction of minerals for many centuries</a>: from gold during the Roman Empire, to coal in the 19<sup>th</sup> and 20<sup>th</sup> centuries, to slate in the present day, and to the potential expansion of the exploration of minerals relevant to the transition to renewable energies, such as zinc and wolfram. Mining has played a central role in the socio-economic development of the region, impacting housing, transportation and social mobility. Hard work in the mines and associated industries is not only seen as a source of pride, but an important part of El Bierzo identity; it has fuelled a myriad of social movements: from the vanguard of the Spanish labour movements <a href="#">to the conservation of closed facilities as part of the region's cultural heritage</a>.</p> <p>However, mining is a singularly impactful human activity, impacting the landscape, using up water resources, releasing pollutants to the air, soil and water, and directly harming the health of those that work in the sector. The industry is subject to various legal social and environmental frameworks, <a href="#">even if there have been examples in the region operating outside these</a>. El Bierzo communities are also very aware of this, and their mobilisation has included tackling these issues at various levels of governance.</p>	
Hints	1.	<p>In contrast to the invisible economies, extractive economies present a different challenge for the future, from an EE perspective: if the extractive economies of the past were important in raising communities closer and closer to a fulfilled social foundation (for example, in terms of income and work, food, housing, energy, education, political voice), can they still continue to play this role in a future where we are closer to further exceeding planetary boundaries? Although we are not looking to answer this question within our project, teams working in this workstream should keep this in the back of their minds: this is, after all, the challenge for the future that we are seeking some insights on! It could be that current social movements have some ideas on what this looks like, but likewise, it could be that just by exploring the ways in which mining has already become a less perilous, less polluting, less exploitative industry and how social movements have contributed to this, valuable lessons can be learnt.</p>
	2.	<p>Recall that the research question is about social and ecological connections: this is both in regards to people's connections to each other within their local community and to communities within the El Bierzo region, and in regards to people's connections to the land and the more than human world. Following a socio-ecological systems framework, it is important to not lose sight that these connections occur in feedback loops with each other, but that to tease these out we need to be deliberate in including them in the way we approach this theme.</p>

	<p>And example where this was done, is the paper by <b>Eakin et al. (2019)</b>. <a href="#">Loss and social-ecological transformation: pathways of change in Xochimilco, Mexico</a></p> <p>Although, from an environmental perspective, mining might be seen as an inherently damaging activity to the environment and to human well-being, potentially incompatible with nurturing love for the land and its stewardship (such as is usually <a href="#">described for farmers and other rural landowners</a>), it would be incorrect to assume that this is the case, particularly as most of the research done on mining communities and social-nature connections are in the contexts of occupation (of indigenous lands), economic exploitation of poor countries by richer nations, and narratives of loss of naturalness and of community. There is not a lot of research on developed countries, nor in contexts where mining artifacts are embraced as part of the socio-ecological landscape and mining itself an important element of social cohesiveness. There is therefore a gap that our research into this theme could inform.</p>
	<p>3. <a href="#">Identity</a> is likely to be a key part of the narratives of social movements in the extractive economies, and teams working within this workstream should dedicate some time to thinking whether to or how to incorporate this aspect in their research. As an additional hint, the chosen methodologies of community voice and walking interviews are usually well-suited to exploring these themes.</p>
	<p>4. When seeking grey literature or other materials in Spanish, teams may find it useful to consider keywords like: “mina” (mine), “minería” (mining), “movimiento obrero” (labour movement), “bienestar laboral” (well-being at work), “movimiento social” (social movement), “protesta” (protest), “marcha” (march), “berciana” or “berciano” (from El Bierzo).</p> <p>Official mining statistics, such as those that inform <a href="#">this blogpost</a> (which contains helpful tips on how to navigate them), can be accessed using the <a href="#">Estadística Minera de España (EME) database</a>.</p>
	<p>5. When seeking literature that addresses similar kind of questions, teams may find it useful to consider keywords like: “mining communit*”, “rural social movement*”, “social connection”, “human-nature connectedness”</p>

## Workpackage 4: Gold Mining

Theme	Rural social movements within the extractive economies of El Bierzo
Topic	<b>Gold Mining</b>

<p>What seems to be the problem?</p>	<p>One of the most iconic landscapes of El Bierzo, <a href="#">Las Medulas</a>, is the result of what was probably the most destructive method for gold extraction that existed in the Ancient World: hydraulic mining or “<i>ruina montium</i>” (“wrecking of mountains”). Pliny the Elder, procurator in the region about 74 AD, <a href="#">described it thus</a>:</p> <p><i>“What happens is far beyond the work of giants. The mountains are bored with corridors and galleries made by lamplight with a duration that is used to measure the shifts. For months, the miners cannot see the sunlight and many of them die inside the tunnels. [...] The cracks made in the entrails of the stone are so dangerous that it would be easier to find purpurine or pearls at the bottom of the sea than make scars in the rock. How dangerous we have made the Earth!”</i></p> <p>Roman mining, which significantly altered the orography and the hydrology of the region, was paired with Roman metallurgy, <a href="#">which led to levels of heavy pollution from 300 BC to AD 120 that are superior to those of the present day</a>. It was also an exploitation that was made on the back of the Augustan conquest of northern peoples of Hispania, in the extremely violent campaigns of the <a href="#">Cantabrian and Asturian Wars</a>, driven in part with the need to maintain a <a href="#">new monetary policy</a> established by Augustus related to the <a href="#">aureus</a>. The exploitation of these gold resources implied the relocation of the population in <a href="#">new military-style settlements</a>, and the number of workers in the mines <a href="#">probably fluctuated between 10,000 and 20,000</a>. It is one of the challenges of modern archaeology to not only ascertain, not only how conquest occurred (what battles occurred where, or how long did exploitation last), but to <a href="#">reclaim the stories of those who were conquered</a> and who continued to fight for self-determination well after the fall of the Roman Empire.</p> <p>Even today, for all that Las Medulas may be a <a href="#">UNESCO World Heritage site</a> today, its presence in the landscape, like gold once upon a time, continues to impact the life and livelihoods of local <a href="#">communities, who often feel sidelined from its management</a> as a <a href="#">cultural</a> and touristic site. There are a number of restrictions that impact traditional activities, such as harvesting of forest products and cattle grazing, but also the management of biomass for fire risk reduction. Although the <a href="#">55,000 to 100,000 visitors each year</a> to the site are a welcome <a href="#">source of revenue for the local area, and potential diversification of local businesses</a>, it can also be a source of disruption to the tranquillity that communities value as part of the ‘good life’, and <a href="#">potentially a threat to the conservation of the site itself, if not managed carefully</a>.</p>
<p>Research Question</p>	<p>How have social movements related to <b>gold mining</b> in El Bierzo contributed to the development of socio-ecological connections in the region?</p>
<p>Hints</p>	<p>1. This topic can be explored in three ways: (a) by focusing on what is known or could be inferred to be the social movements at the time of gold exploitation in the Ancient World, as a way of ‘setting the scene’ for the modern history of</p>

	<p>social struggle around mining in the region; (b) by focusing on the current social movements around Las Medulas and other historic sites of Roman gold mining; (c) by exploring a mix of both, with care to connect them within a single framework of enquiry.</p> <p>Note that any inclusion of aspects of (a) will require engagement with historians and/or archaeologists, as well as with events that are quite remote in time. Although this is not, in itself, a reason to exclude this line of enquiry (see example <a href="#">here</a> of an interview where these topics are delved into), there should be careful deliberation on how the historical perspective would fit into, and contribute to, the wider project and on how development of this avenue should be managed (e.g. would there be specific experts we would need to reach out quite early to access viability of this approach?).</p>
2.	<p>In regards to current social movements, one of the main sources of conflict in Las Medulas is the different legal frameworks of protection that have, over the years, been attributed to the site. The overlap can not only be confusing, but frustrating to navigate and difficult to oversee. Working on this topic, you should seek to familiarise yourself with these frameworks, and make a glossary of the technical terms in Spanish for your own reference during interviews.</p> <p>Here is a good place to start: <b>Abella (2019)</b>. <a href="#">Espacios patrimoniales de intervención múltiple. Conflictos territoriales en torno al Plan de Dinamización Turística de las Médulas</a></p>
3.	<p>Although certainly the most renown, Las Medulas is not the only site of hydraulic mining, which was extensive in the El Bierzo region. Other sites, however, have failed to gather as much attention or are under different use regimens by local communities. It might be interesting to explore how and why other sites are managed (or not managed) the way they are, and its intersections with social movements.</p> <p>Although this video is not of El Bierzo (but rather of the neighbouring comarca of Quiroga, in Galicia), you can see how human-nature connectedness can be shaped by the presence of the remnants of gold mining activity in the region, in this case, in <a href="#">Montefurado</a> (literally means 'drilled hill').</p>

## Workpackage 5: Coal Mining

Theme	Rural social movements within the extractive economies of El Bierzo
Sub-theme	<b>Coal Mining</b>
What seems to be the problem?	The closure of what was once the economic engine of the El Bierzo region – coal mining – <a href="#">was only a little over 6 years, despite the protests of its mining communities</a> , 80% of which were entered into pre-retirement on a basis of Just

	<p>Transition agreement with the Government. The closures were covered extensively, not only in the local press (for e.g. <a href="#">here</a> and <a href="#">here</a>), but also in foreign outlets (e.g. <a href="#">here</a> and <a href="#">here</a>). It was a closure that did not only affect this comarca, but <a href="#">also other neighbouring northern coal regions</a>, following a decarbonisation strategy by the National Government. It is, still, years on, the topic of local articles on <a href="#">the scars it left on the landscape</a>, <a href="#">the workers whose lives it changed</a>, <a href="#">the just transition that it was supposed to bring</a>.</p> <p>An 'industry without future' needs now to be managed in terms of all of its <a href="#">abandoned infrastructure</a>, whether through <a href="#">demolition</a>, <a href="#">conservation</a> or <a href="#">conversion</a>. This has been an understandably fraught process, given the <a href="#">importance of mining to community</a>, to <a href="#">individual identity</a> and <a href="#">social connection</a>:</p> <p><i>"So logically, when I look at the remnants of the mining industry under my feet, I am flooded by feelings of sadness. Here I have rendered my services as a miner for almost a decade. And on returning to the site, questions bubble inside me: Mr. Politicians, how in hell could you have let mining collapse?"</i> <a href="#">Miguel Perez   El triste final de las minas de carbón en El Bierzo</a></p> <p>Coal mining in El Bierzo played a central role <a href="#">in labour and industrial transformations in the region</a>. Labour movements in El Bierzo have a long history, <a href="#">from worker protests in the second half of the 19<sup>th</sup> century</a>, to the <a href="#">strikes in the 60s, under the repressive violence of the Franco dictatorship, the protests of the 80s and beyond</a>, including <a href="#">in the years leading to the closure of the mines</a>. Some of these latter actions included <a href="#">protest against coal imports</a> into a region that could be producing it instead.</p> <p>Local charitable organisations, such as the <a href="#">Fundación Cultura Minera</a>, seek to ensure that the mining cultural heritage is preserved, and studies make cases for this valorisation to be planned <a href="#">in such a way as to be a mechanism to develop local economies</a>.</p> <p>It is important to remember that other sectors of the economy have developed around and because of coal mining; a Just Transition focused on the workers within the energy sectors <a href="#">runs the risk of leaving cross-sectorial workers behind</a>, by ignoring that the phase-out of mining will have indirect effects on local economies, and <a href="#">implications for the Welfare State</a>.</p>
<p>Research Question</p>	<p>How have social movements related to <b>coal mining</b> in El Bierzo contributed to the development of socio-ecological connections in the region?</p>
<p>Hints</p>	<p>1. Coal mining, out of all the extractive economies topics, is the one most well-supplied with material, due to the sheer magnitude of the industry at its peak, its role in shaping the modern economic history of the region, and its recency (well documented in both living memory and in various digital media). Adding to this is the vast academic research on coal mining deindustrialisation, not only in Spain, but also in Britain. Due the large quantity of material on this topic, the team developing this workpackage needs to define the scope of their enquiry as</p>

	<p>a matter of priority, and monitor that their scoping tasks are keeping within that scope, in order not to get lost in the available material.</p> <p>One way to do this is to keep firmly in mind the wider class project and research question and think on how coal could best (a) contribute to answering that research question in the context of El Bierzo; (b) link to the other topic areas in the workstream and in the project. This should help short-list potential avenues to explore in the workpackage.</p>
2.	<p>There are a number of documentaries (in Spanish) available online that can provide some inspiration for how to plan and execute walking interviews, as well as the topics and/or sites that these could cover (see examples here: <a href="#">[1]</a>, <a href="#">[2]</a>, <a href="#">[3]</a>, <a href="#">[4]</a>, <a href="#">[5]</a>, <a href="#">[6]</a>, <a href="#">[7]</a>). However, note that some of these sites may pose challenges in terms of both logistics and health and safety, requiring more attention to the risk assessment portion of the proposal, as well as a careful examination of feasibility.</p>

## Workpackage 5: Slate Mining

Theme	Rural social movements within the extractive economies of El Bierzo
Sub-theme	<b>Slate Mining</b>
What seems to be the problem?	<p>Slate is <a href="#">an important export</a> in the El Bierzo region, with local papers avidly following the ups and downs of its market value (e.g. <a href="#">[1]</a>, <a href="#">[2]</a>, <a href="#">[3]</a>, <a href="#">[4]</a>, <a href="#">[5]</a>, <a href="#">[6]</a>, <a href="#">[7]</a>, <a href="#">[8]</a>). In El Bierzo, slate is valued for its traditional <a href="#">use in roofing</a>, from <a href="#">churches, old water mills, traditional houses and modern ones</a>. Spain is the <a href="#">biggest producer of roofing slate in the world</a>, and the industry as a long history, going back to the 1500s. In fact, its importance to cultural heritage has resulted in <a href="#">calls for its mines to be considered World Heritage</a>, following the example of the <a href="#">slate mines in Wales</a>, and the regional example of the gold mines of Las Medulas. The presence of slate in the region is also recognised as important <a href="#">component of the distinctive terroir</a> that characterises local wines.</p> <p>Slate mining <a href="#">expanded rapidly after the 70s</a>, <a href="#">creating jobs</a> and bringing in revenue to the region. Nonetheless, despite slate roofing being such a recognisable architectural feature of the human landscapes of the region, current production is mostly destined to export; this is <a href="#">partially attributed to a growing lack in expertise, domestically, in the installation of slate roofs</a>.</p> <p><a href="#">Slate roof tiles are seen as a durable, 100% natural construction material</a>, with potentially increasing appeal for architects concerned with sustainability.</p> <p>Slate mining is usually done through <a href="#">open-cast exploitation</a>, with underground exploitation done in <a href="#">only a few locations</a>. In El Bierro, <a href="#">traditional mines</a>, which had a high degree of manual labour, have been replaced by <a href="#">mechanisation and industrial processing technologies</a>. Slate mining and cutting, exposes workers</p>

	<p>respirable crystalline silicas, which are known to <a href="#">contribute to the incidence of respiratory health issues</a>.</p> <p>Curiously, and in contrast with coal mining, <a href="#">the labour movement in slate mining</a> seems to be a lot more subdued, which could be reflective of the fact that slate, as a mining industry, expanded much later than coal, at a time where there was a general decline in the power of labour movements compared to its heyday in the 19<sup>th</sup> and 20<sup>th</sup> centuries – compare, for example with the <a href="#">quarrymen labour movement in Wales at those times</a>). But if we look at <a href="#">Neighbouring Galizia</a>, there have been 21<sup>st</sup> century movements of resistance against pro-extractivist economic models (though not specifically targeting slate) that seem to be missing in El Bierzo.</p> <p><a href="#">Slate mining also impacts land use in León</a> to a greater degree than coal mines, due to its open-cast exploitation, displacing farmland; it also produces a significant amount of waste material (more so than coal or gravel). Slag heaps can even <a href="#">constitute a geological flood risk</a> that might require corrective action, while abandoned quarry <a href="#">pit lakes</a> constitute another way in which this exploration shapes the landscape. Critically, while slate mine might have fewer environmental impacts than gold or coal, the location of these mines sometimes means that these are more significant, given that some are located within natural protected areas and areas of valuable geological heritage, threatening some of these values.</p>
<p>Research Question</p>	<p>How have social movements related to <b>slate mining</b> in El Bierzo contributed to the development of socio-ecological connections in the region?</p>
<p>Hints</p>	<p>1. Given the significance of slate to the El Bierzo region both culturally and economically, as one of the last remaining mining industries, there is surprisingly little information on this topic, both in terms of its environmental impacts and its socio-economic ones. The team working on this topic is likely to need to broaden their search to the better documented slate mining industry of Wales, and the use of slate in recuperation of listed buildings in the UK. For a parallel closer to El Bierzo, neighbouring Galicia seems to have more research and documentation (two of the videos linked above are from Galician mines rather than from Bercian ones).</p> <p>To search for material on this topic you should consider using both the <a href="#">Bercian</a> word for slate, “pizarra”, and the <a href="#">Galician</a> one, “<a href="#">lousa</a>”; the autonomous community itself can also be written as “Galicia” or “Galiza”.</p>
	<p>2. Although there may be fewer resources on this topic, the team developing this package should look forward to filling in the gap with the contribution of their workpackage. Our partners in the El Bierzo community feel that this is a relevant topic, and previous years’ interviews have demonstrated that the community views slate as synonymous with mining in the region, particularly now that coal mines are closed. Specifically, within the work we’ve done on desirable</p>

	<p>continued land uses in El Bierzo, slate mining seemed to be a fairly widely accepted component of a landscape that (a) reverses depopulations, (b) preserves cultural heritage and is a (c) component of the good life. Not necessarily needing expansion, just continuation. On this basis alone, it is a worthwhile subject to explore, but the team should also consider how slate fits into and contributes the workstream on extractive economies: gold might be the ancient past, coal the more recent past, but slate <i>is</i> the present. Also, unlike coal, which is reluctantly agreed to <i>not</i> be a resource for the future, slate is seen as something to be continued, both in terms of its market value as an export (some community members have called it “the other ‘black gold’”) and its role in preserving cultural heritage and a sense of connection, distinctiveness and identity of the local human landscape.</p>
3.	<p>It is also probably in slate that we will see some of the dynamics of the modern neoliberal economic model, as it pertains to the extraction of natural resources in the context of a developed county, play out. The team should consider how to approach this from an EE perspective. This is how a young slate miner put it in one of our interviews, “it’s long hours, hard work, and the pay is not nearly high enough”, to which another member of the community quipped “that’s right, it’s even worse than in your days, isn’t it?” [asking it of an elderly miner, long retired], to which the old miner replied “yes; it was not like we were paid well, but because we had so little, it was something we did because we saw it as improving our lives. And the fact that it hard work was recognised: we had a good early retirement; young people nowadays don’t have that.”</p> <p>This is to say that slate mining, and the way in which it is embedded in El Bierzo (socially, environmentally), could perhaps benefit from being <a href="#">examined under a more holistic social-ecological lens</a>, in the <a href="#">tradition of Ostrom’s work</a>. Slate mining has undergone changes through the centuries of its presence in El Bierzo: part of the work of this package is to try and understand how have social movements played a role in this, but also where do they want to take it next.</p>
4.	<p>There are potential connections between this topic and that of ‘formal and informal education’ in the invisible economies workstream, particularly in relation to the domestic loss of skills in slate roofing, which the team working on this topic could consider in the development of their workpackage.</p>

## Workpackage 7: Mining Transition Minerals

Theme	Rural social movements within the extractive economies of El Bierzo
Sub-theme	<b>Mining Transition Minerals</b>
Hints	As a part of fighting climate change, Spain is expanding its production of renewable energy. Thus far, however, the approach to developing renewable

energy in and around El Bierzo has created [significant conflict and perceptions of injustice](#) stemming from vastly different visions of a desirable future for the region. While [wind and solar parks](#) have been the target of most protest in El Bierzo, with [projects falling](#) due to the strength of these social movements, there is another way in which [El Bierzo is seen of potentially strategic importance](#) to the transition: through the [mining of minerals such as zinc and wolfram](#).

In a region that has been [deeply affected by the closure of coal mining](#), would mining of metals strategic to the transition be a way of the area reinventing itself in a way that aligns with an existing identity? All over Spain, including in [neighbouring Galicia](#), there have been [protests against new strategic metals mining concessions](#). In El Bierzo, the announcement of this strategic ambition for the region is recent, and so no formal movements have yet surfaced. That being said, there are [many reasons why communities may accept or reject a mining project](#), and certainly those may play a role in the context of El Bierzo.

The extraction of wolfram is [not new in El Bierzo](#), and [played a part during both the First and Second World Wars](#) in the economic development of Spain.

The [ecotoxicology](#) of zinc has been researched since the 60s, and is described in the vast [heavy metal pollution literature; the effects of wolfram, or tungsten, are less well known](#). Research indicates that tungsten may be introduced into the food chain through the [uptake by plants and worms from soil contamination](#), but [regulation of tungsten in both environmental and work contexts is limited by the lack of research](#) in this area; recent reviews indicate there may be [reasons for concern. Bioremediation is possible](#), but ultimately will only be enacted if tungsten is being monitored and is part of remediation and reclamation plans during mine operation and after its closure. It is important to remember that tungsten metallurgy, like that of other metals, [has evolved in the past decades](#), and although there has been much progress, challenges remain regarding its sustainability.

So while there is a need to rapidly scale up mining and processing of critical minerals for the transition to renewable energy, it is important to evaluate the [serious environmental, social, and governance \(ESG\) risks](#) that such a transition entails. There have even been calls to adopt a [frameworks inspired by Ostrom's socioecological systems approach to the assessment of mining](#). Such approaches may [highlight where impact assessments may neglect key aspects of social-ecological-technological systems](#), such as the impacts of climate change, and treat many social aspects of sustainable development in a cursory manner.

El Bierzo community members are understandably concerned that their best long term interests may not be taken into account in these new concession discussions, and would seek that any new mining follow the strictest environmental and social monitoring and operation standards.

<p>Research Question</p>	<p>How are social movements related to <b>mining transition metals</b> in El Bierzo contributing to the development of socio-ecological connections in the region?</p>	
<p>Hints</p>	<p>1.</p>	<p>This question is being posed in the context of El Bierzo and the surrounding area historically having been a major fossil energy provider for the northern half of Spain, through mining. This means that there is know-how in the region new mining projects can benefit from. There is also a sizeable opposition to the developments of large-scale renewable energy projects in El Bierzo, which may mean that local communities might see this a preferable contribution to the energy transition. Teams working on this question will need to research this context as best they can to engage with the concerns, the beliefs, the values that may be driving social movements around these new mining projects, while also considering the question of how this could best be an <i>embed</i> (in the Ecological Economics sense) extractive economy.</p>
	<p>2.</p>	<p>The team that works on this question will need to consider the connection between the local/micro context and the macro transition picture. They will also need to consider that ‘sustainable’ and ‘just’ apply not only to the types of technologies used and how the associated benefits/costs are distributed, but also to the procedural arrangements surrounding renewable energy development.</p> <p>The academic literature on transition minerals is mostly focused on the pressures richer economies are exerting on poorer economies, and the resulting shifting burden of the social and environmental costs of mining. There could therefore be moral and ethical drivers to choosing to do it in a developed country rather than a developing one. That being said, even within a developed country context there may be other economic and power asymmetries at play, such as between the centre of power in the EU and one of its member states, the centre of national power and one of its autonomous regions, and between urban centres of power and rural communities. Knowledge of the particular hierarchy and remit of Spanish institutions involved in such decisions will be needed to understand such context.</p>