

Regenerative framework for a low-carbon energy Just Transition in coalfield communities, Western Ukraine

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Abstract

Despite the on-going conflict in the Ukraine, the Ukrainian government is still focused on developing plans to transition to a low carbon economy. The UK government has been supporting this with a pilot project to demonstrate how a Just Transition can be achieved through development of a Regeneration Framework for the town of Novovolynsk. This project has developed a post mining vision for two local mines that has been built from the bottom-up through a process of collaboratively engaging with key stakeholders to identify needs and develop a master vision for post mining land use. The master vision is set out in a regenerative framework which provides a clear road map for regeneration which enables social enhancement and promotes continued economic activity at the mine sites. To ensure that structural barriers are removed, the road map has been given clear alignment with Ukrainian regional and national policy, providing links to responsible closure, fairness in transition and equity and growth for the mining regions, thus strengthening the goals set out in the Regenerative Framework. This paper provides an update on the work undertaken over the last year and concluding the foundation element of the pilot project.

Keywords: *coal, just transition, stakeholder engagement, master planning, mining, conflict regeneration*

1 Introduction

Responding to the global climate change challenge, the Ukraine has committed to reduce its greenhouse gas emissions by 65% by 2030 from the levels emitted in 1990. This reduction can only be achieved through a combination of solutions, which includes developing additional renewable energy sources and increasing their contribution to the total energy mix in the Ukraine. This commitment inevitably requires a shift away from coal. Ukraine, as a signatory to the Paris Agreement, has acknowledged that transition to a Low Carbon economy needs to take into account the imperatives of a Just Transition of the workforce and the creation of decent work and quality jobs in accordance with nationally defined development priorities.

The paper here refers to the continuation on the work undertaken in 2021 which had to be paused due to the ongoing conflict started in late February 2021. Previously outlined (Hesketh et al, 2022), two coal mines from the Novovolynsk region have been selected for a Pilot Study that provides a Just Transition, for those affected by the shift away from coal, through regeneration of the mine sites. A replicable approach to Just Transition is conducted by developing a Regeneration Framework for the two sites and their surrounding communities taking into consideration of the change of landscape the conflict has inflicted leading to concluding the foundation element of the pilot study.

The continuation of the project update here sets out, at high level, how a framework could be developed to address issues associated with closure of Ukraine coal mines whilst maximising opportunities for social, economic and environmental progress. The effective implementation of a Just Transition can only be achieved through considering actions that provide a pathway to Net Zero, deliver value creation & regeneration, are fair and inclusive of all in society, provide skills for the future and built through social dialogue, public participation and consultant.

Although primary audience of the pilot project are national government and ministerial departments who are responsible for implementing Just Transition practices at mining sites including local government, mining management operators, environmental officers, mining consultants, investors and regulators. All users are encouraged to come together in partnership and work to embed a Just Transition approach to mine closure.

2 Approach methodology

The approach taken replicated the lessons and challenges faced for the UK, in particular for the site in Ebbw Vale, South Wales (Fletcher 2001; Hesketh et al. 2022). Since completion of the pilot study, the regeneration approach was broken down into a series of steps which embeds the promotion of sustainable development based on partnership between industry, government, civil society and local communities.

These five steps are:

1. Review of Ukraine's socioeconomic factors and impacts on the selected mine sites to understand the importance and appropriate drivers for the transition to occur and the impact of the mine closure on the host communities
2. Review of legislation and policy to draw connections with existing government programmes;
3. Strategic approach to mine transition and implementation plans
4. Produce master vision scenarios; and
5. Plans for transition through stakeholder engagement and establishing a transition baseline of the mine sites;

These steps are further discussed in the sections below.

2.1 Socioeconomic factors and Just Transition objectives and targets

Socioeconomic factors allow for, and requires the understanding of the local context and help with the identification of issues and constraints to livelihoods arising from mining activities that need to be addressed. This includes helping communities to create improved social development and economy opportunities.

- This ensures that society has a greater say in decision-making, capacity for participation in wider development plans of the region.
- It identifies areas of opportunities for development.
- It also ensures an improved understanding of social and environmental factors within the region and associated impacts, such as groundwater, land contamination and other factors that can affect the quality of the land for agriculture or other uses for regeneration.

Identification of the socioeconomic factors involves an assessment relevant socioeconomic data such as employment figures, income levels, education level, demographic information, and infrastructure status. These are gathered from local government portals and departments (Cabinet of Ministers of Ukraine, 2021; IEA, 2020; Volyn Regional Administration, 2020; NES, 2020; Statista, 2021, Mayoral office of Novovolynsk, pers. Comm., August 2022, Territorial Heads of the Litovez'ka and Poromivs'ka communities, pers. Comm., August 2022).

For a 'Just Transition' to be successful for the economy and population in the short and medium term, understanding the impacts of the mine closure and what type of support is required to establish the appropriate objectives and targets is imperative. This will assist with avoiding negative impacts of climate change to local communities, businesses and their supply chain, and look to create shared value.

Ukraine currently has a long-term strategy to decarbonise their energy infrastructure towards a more sustainable energy and economic future. The identified challenges of decarbonising Ukraine energy infrastructure include:

- Out of date coal mines;
- High distribution losses; and
- Lack of investment in the gas network due to low pricing.

The UN sustainability Development Goals (SDG's) are used as a framework for mine site assessment due to their holistic range of factors and outcomes therefore providing a robust guideline to assess the mine's current state and future purpose.

2.2 Legislation and policy

Through review and assessment of existing legislation and policy for Ukraine at a national level, regional level and international treaties, and bringing these threads together, the legislation and policy instruments provide a number of influencing factors that support and provide focus for the Just Transition aims being developed for the two mine sites. International and national legislation and policy documents provide clear drivers and enablers for Just Transition in relation to the closure of Mine No.9 and Buzhanska.

2.3 Strategic approach to mine transition and implementation plans

It is important to consider decisions which may result in material impacts (risks and opportunities) to the future success of pilot sites and the greater potential portfolio.

Through examples such as the Ebbw Vale, Wales, UK, former Steel works, Coed Darcy, UK, a former oil refinery and many others, traditional stage gate delivery is frequently observed to be applied to projects and portfolios associated with the closure and regeneration of mining operations, globally. The gates (or phases) as defined early in the lifecycle, allow the client and/or governance mechanism to review progress, risks/opportunities, and make a decision on whether the endeavour should proceed. Despite the linear nature of delivery and the associated limitations, the application of this approach benefits from:

- Engineering and environmental constraints;
- Increased scope, budget and schedule control;
- Improved governance; and
- Development of an iterative and considered delivery.

2.4 Master vision scenarios

To understand the potential futures of the two mine sites, it is important to have a basis of the economy strength of the mine region as well as building on the policies outlined for the national and regional economy information. The development of these provide focus for action and guide a regeneration programme which provides a pathway for Just Transition.

By conducting a comprehensive assessment of socioeconomic factors and relevant policy and regulations, and incorporating UN Sustainable Development Goals as a framework, a SWOT analysis was carried out. This approach generated four initial alternative economic scenarios, each focused on separate and distinctive industry sectors that are fit for purpose for the region including energy, health tourism, leisure, agriculture and innovative manufacturing.

2.5 Stakeholder engagement

The engagement process is required to build a basis from which stakeholder can engage effectively with the Just Transition framework. In addition to this, it also forms the basis of future collaboration and partnerships.

The main important aspect of conducting the consultation was to provide the Miners and the local communities a platform to be heard, ensure fairness and sustainability are embedded in the right way into the transition process. This is important as it helps to identify and assess the potential issues that stakeholders may raise with regards to the project. Additionally, this will allow for an understanding of more targeted socio-economic and environmental content. The engagement will ensure there is a Social License to close the mines and ensure the transition is just for the communities involved. The consultation process is iterative as the scenarios and plans for the mine sites develops at each stage.

The reason to create a 'Just Transition' for the communities is to help facilitate understanding of the change that is required on the mine sites and the requirements to ensure buy in to the shift to an alternative scenario for the mine sites.

This is to be achieved by understanding the impacts of the mines closure on local communities and other stakeholders and what structures of support needs to be put in place to make the transition a success for the economy and population. A key part of this processes is to understand the impact of the changes on the local community, as individuals, and also the supply chains that support the mines.

Therefore, a Risk Assessment was carried out as well as stakeholder engagement to ensure the Just Transition Process Protocol is properly developed and can be used as a "template" for other mines in the area. Consultations were held both virtually and delivered in person when it was possible between July to December 2022 which included several levels of government departments: Ministries of Energy, Ministry of Communities and territories, the Mayor and Deputy Mayor of Novovolynsk and Territorial Community Heads of Litovez'ka and Poromiv'ska communities. In person focus groups were convened in December 2022 for four key sections of society including a) Legislative and Administrative bodies, b) Business and Employers, c) Trade Unions, and d) Sociocultural organisations.

2.6 Vision scenario development

The steps explained above although may give the impression of discrete pieces of work are in fact can be iterative and cyclical in nature. The following sections lays out the process by which the pilot was carried out for two mine sites in Western Ukraine using the above steps.

In order to show initial thinking around possible new economic future scenarios for the mines, the initial understanding of the current economy was required. The available information which the economic scenarios were based on include:

- Volyn Region Passport;
- National Economic Strategy 2030;
- Action Plan 2021-2023 Implementation of the Development Strategy for the Volyn Region; and
- Opportunities for growth identified in national and international economic research

The stakeholder engagement process in section 2.5 is intended to 'test' these initial economic scenarios and gather local information and feedback to inform the production of a more detailed development strategy.

The aim is to create a 'Just Transition' for the communities by understanding the impacts of the mines repurposing and what structures of support need to be put in place to make the transition a success for the economy and people. This includes undertaking visits to the two mines and reviewing the constraints and opportunities presented at the sites. This technical information will be integrated into an emerging masterplan base that can be used to inform further design, funding and delivery testing shown in Figure 1.

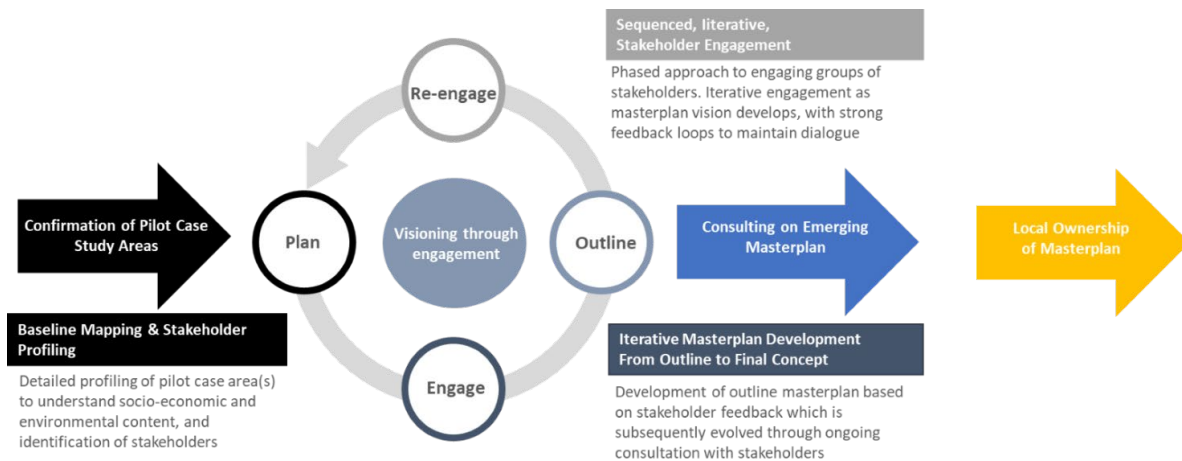


Figure 1 The master planning process

After the sites were identified, a hazard identification and assessment was carried out, Figure 2, which was structured as follows:

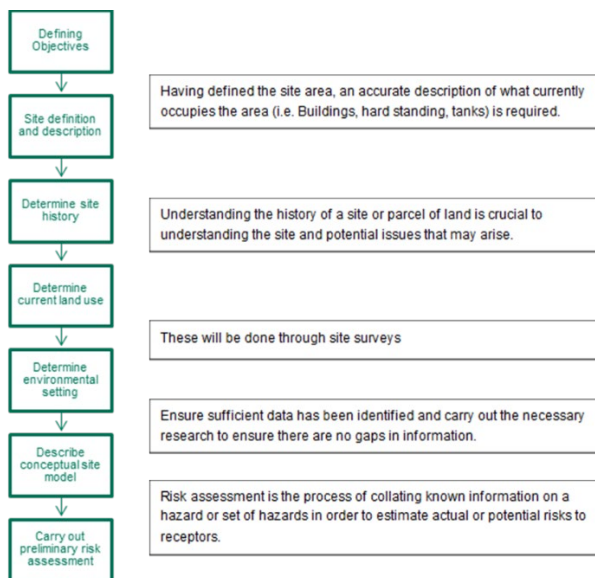


Figure 2 Hazard identification and assessment

If no further risks were identified in the risk assessment, the final report can then be created; if not, a second risk estimation and evaluation process will need to be carried out. Additionally, a socioeconomic study of the area has been developed in order to ensure the local context aspects are considered when looking at implementing the Masterplans.

3 Findings for the regeneration framework

Whilst undoubtedly current circumstances have overtaken its findings, the United Nations Development Programme (UNDP) undertook a survey in 2018-2020 of public perception and government priorities in relation to the environment and climate change. The survey shows clear public engagement around the seriousness of climate change, and a need for the allocation of public funds to deal with environmental issues such as deforestation and pollution of water bodies.

Existing Ukrainian policy drivers supports this through three core components where the Regeneration Framework emphasises actions around each of these components. These are further detailed in Figure 3.

The three core components are a) Fairness in Transition, b) Responsible Closure, and c) Equity & growth for mining regions.

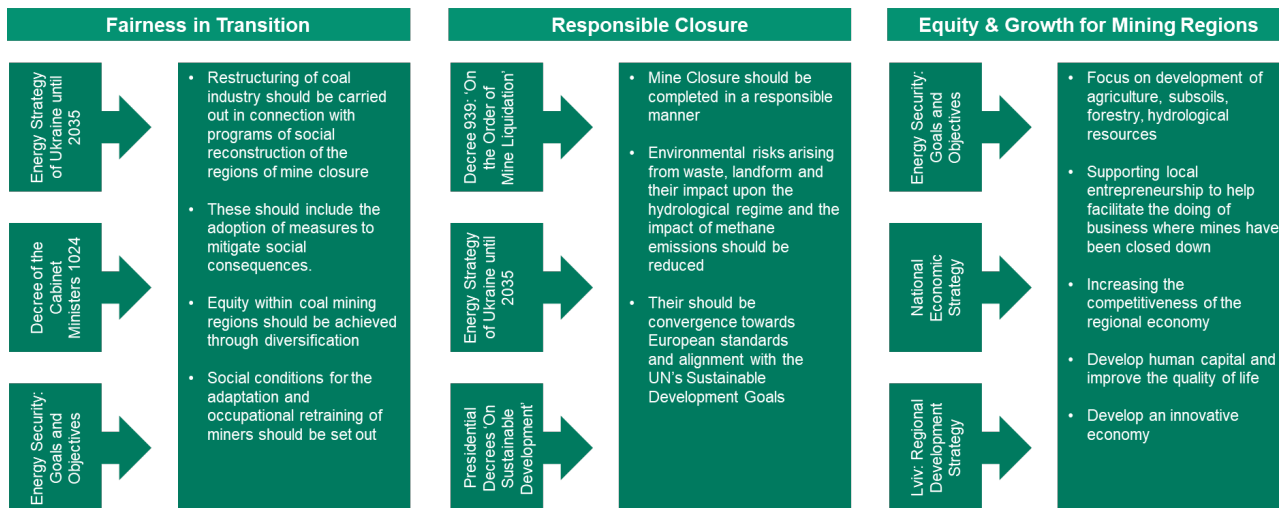


Figure 3 The three core components of existing policies

Taking into consideration of public perception and existing policies relating to transitioning to a new future, repurposing of the mine sites would allow diversification and growth, providing future opportunities within mining regions that can be accessed in a fair way by miners, their families and the host communities.

It means a transition that builds capability and capacity, allowing workers to be engaged and develop entrepreneurial skills that take advantage of the opportunities in transitioning from the mine to a repurposed site. This includes life-cycle opportunities such as demolition, construction and waste management that facilitate the repurposing. Not only does it provide modern connected facilities that build on local resources and markets, it is equally about creating a workforce equipped with skills for the future. This in-turn provides an attractive investment environment and safeguards long-term prosperity.

3.1 Master vision concepts

Initial concepts for future repurposing of the sites were based on four broad scenarios for both Buzhanska and Mine No. 9. These scenarios aim to provide equity and growth for the immediate environs of the two sites. Each scenario contains a number of themes and further sub-sets, providing a wide range of optionality. The four broad scenarios were:

- Renewable Energy;
- Agricultural Development;
- Tourism, leisure, recreation (health / nature); and
- Smart Campus / AMP-Innovation, R&D, Training.

These concepts were tested with a number of Focus Group discussions that took place in Novovolyn'sk in December 2022 involving legal and administrative bodies, businesses and employers, trade unions and socio-cultural organisations.

Each of the four economic scenarios, illustrated in Figure 4, have been designed to build on the strengths exhibited by the Volyn region and align with identified policy commitments. They provide more than a means towards regeneration and the consequent employment opportunities, by including linkages to health, well-being, education, local biodiversity enhancements and sustainable transport the impact extends outside of

the immediate mine site boundary and into local communities. All of which support the development of a vibrant business ecosystem which presents an attractive proposition for investment.

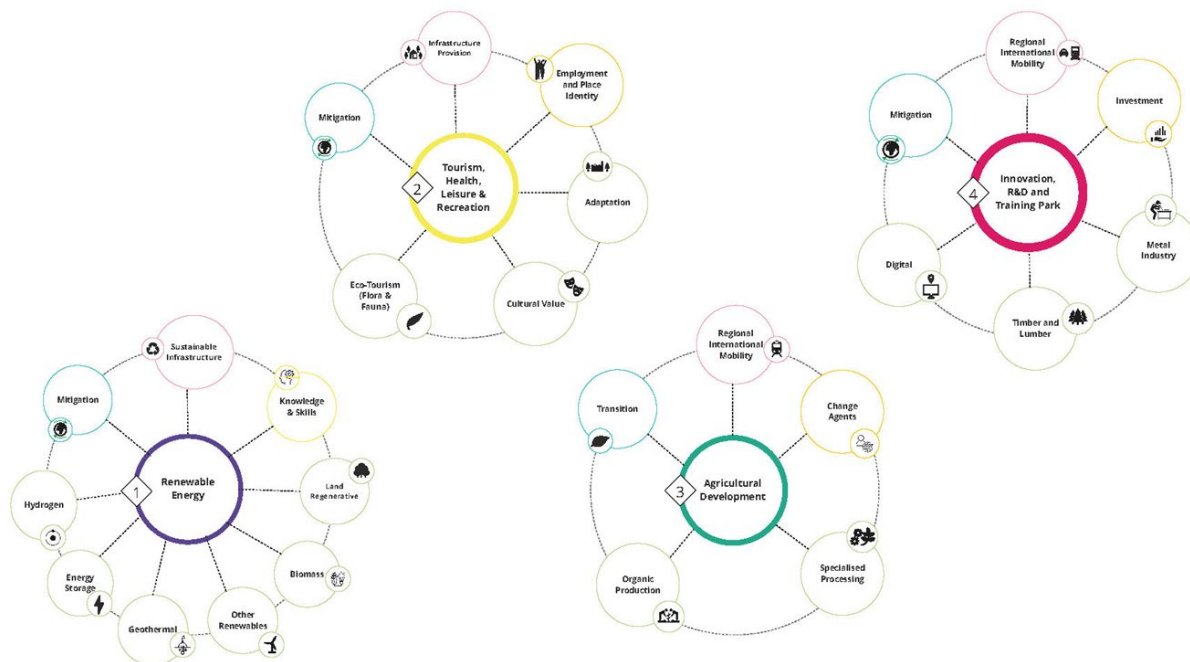


Figure 4 Four economic scenarios

3.2 Consultation with key stakeholders

Consultation exercises with the key stakeholders and the local and regional governing bodies were conducted as focus group exercises, this identified that stakeholders were mostly keen to see a viable scenario being one that will provide immediate opportunities and quick income right from the start. Implementing robust engagement strategies provides an efficient way to encourage expectations and leverage local knowledge and needs around what a Just transition should look like. The outcomes of these consultations hugely benefit and help direct the work required around the mine transition scenarios, financial mechanisms, implementation strategies and future growth to ensure effective, sustainable and aligned with the needs and aspirations of the communities and other stakeholders involved.

Through the completion of the consultation of key stakeholder, the preferred scenario was confirmed as being agricultural development plus renewable energy elements and /or Innovation, research and development and training park plus renewable energy elements.

3.3 Engineering and environmental challenges at Buzhanska and Mine No. 9.

Identifying and assessing engineering and environmental challenges are important to ensure a feasible and viable scenario development. Mine No. 9 was put into operation in 1963 and mining started at the Buzhanska site in the early 1980’s. Inevitably, as a result of these long-standing operations, a number of challenges need to be addressed as a part of this regenerative plan.

Both sites are fairly similar in the scope of operations carried out and the way that they are organised. With both being engaged in primary mining operations raising coal from seams at depths of between 350m and 390m and are not engaged in any secondary activities such as coal washing or coking. The sites each contain an administration building, and various production buildings (shaft house, engineering workshops, etc.), along with coal storage and waste rock dumps.

Through site investigations, there were a total of eight types of engineering and environmental challenges faced.

1. **Liquidation Planning needs to be progressed by management at both mines.** This needs to include development (and protection) of a knowledge base, clear definition of an approach to making the site safe and extent of works to be undertaken with regards to site depollution, dismantling and demolition in order to hand over the sites for site preparation phase. Resource planning and staff reduction forecasts should be included in this planning.
2. **Building Condition is generally poor at both sites.** The buildings are predominantly constructed from brick infilling a concrete frame. Others utilise cement cladding (potentially containing asbestos).
3. **Infrastructure will need to be upgraded** significantly to support any development, access roads from the main highways at both locations are in a poor condition.

Both sites are connected to the Ukrainian grid, although to optimise development, space relocation of the sub-stations should be considered.

Buzhanska obtains all of its water supply from a deep well. Mine No. 9 also utilises a well, but also has a centralised water supply pipe taking water from the Pivdenniy water intake.

4. **Rock Waste Dumps (Terricones)** have been tipped at angles close to the angle of repose, and potential long-term stability issues may arise as the materials are likely to be prone to localised erosion and slides. If the residual coal content of these tips is high, potential exists for spontaneous combustion.

The full content of the tips is not known, and other waste materials could have been deposited alongside the rock waste. The rock waste dumps have naturally revegetated directly into the waste rock with weakly rooted trees providing sparse cover.

5. **Soil and Groundwater Contamination** is likely given the observations made during the site inspections of spills, soil staining and presence of informal waste areas. Investigations will be required to further develop an understanding of the extent of any impact and associated remediation requirements.

Contaminants that could be identified include heavy metals, sulphide and Poly-aromatic Hydrocarbons associated with the coal and hydrocarbons associated with fuels and operation of any equipment on-site, along with asbestos.

6. **Groundwater Rebound** both mines pump groundwater to control inflows from the coal bearing units. The impact of ceasing this pumping needs to be understood as diffuse pollution from high sulphate coals can occur as groundwater levels return to their hydrostatic norm. Impacts of the rebound can be prolonged and take many years to materialise at the surface.

Water treatment systems currently present are designed primarily for silt management and are non-functioning. Additional surface water drainage systems will need to be developed and these may include a need for separated systems to control run-off from rock dumps which could be prone to oxidation and precipitation of metals.

7. **Ground Surface Subsidence Impacts** need to be considered in relation to the protection of a future development at the sites.
8. **Ecological Value** that the sites provide needs to be understood both in the case of preventing damage, such as the destruction of bat roosts through redevelopment, and the potential for habitat creation and net positive biodiversity gain.

For the master vision plan to be developed and realised, the mine sites must move forward from working mines, through a process of liquidation to site preparation. A number of separate routes exist for the development and final occupation / use of the plots within each site. These include:

- Ukrainian government to look to the possibility of funding the development (potentially in partnership with other bodies), and then market the plots
- Look towards an entrepreneurial organisation to take on the development and delivery of the individual plots
- Market the site as a platform, that then allows an inward investor to develop the site in-line with the concept but to suit their specific needs.

4 Regeneration framework considerations

What do the findings mean to the development of the regeneration framework from this pilot work? The development of the Just Transition process is structured into seven focus areas, aiming to foster shared values, achieve nature-positive outcomes and leave a lasting positive legacy through sustainable mine closure planning and regeneration.

These are:

1. **Creation of a Partnership Body for Regeneration** to provide co-ordination of the different actors and accountability with regards to the delivery plan.
2. **Focusing on a single site** to provide impact and gain momentum for the development proposals.
3. **Capacity Building** needs to be provided to build capability providing a sustainable workforce that can engage with the transitional and regeneration opportunities.
4. **Ensuring actions are sustainable** providing long lasting economic transition with an enabling culture. Provide an effective monitoring programme to retain alignment of sustainable ideals.
5. **Continuing a dialogue** with communities and other stakeholders to build acceptance of closure and the pathway to a new future. Build partnerships with local businesses and international organisations.
6. **Funding** is required for the Pilot to provide a concrete example of a Just Transition Process.
7. **Delivery of Regeneration for Just Transition** that reduces environmental risk and develops social value.

4.1 Creation of a Partnership Body for Regeneration

Through the study, co-ordination with the Ministry of Energy and local authorities it was clear that the creation of a Partnership Body to enhance delivery and ensure goals met local aims should be a prime initial focus to drive forward future actions. This body would need to be responsible for planning and delivery, and is envisaged to be comprised of representatives from Novovolynsk, Litovez'ka and Poromivs'ka communities, the Ministry of Energy and the Mining Company responsible for the two mines. The composition of the Partnership Body may change over time. It would function with its own budget and defined responsibilities. Being based locally would have strong connection and understanding of local needs.

The main role of this organisation would be to deliver the Just Transition plan through a number of pillars, in-line with its charter. In order to deliver the Just Transition, it would function as a project management office developing the business case, setting actions, goals and driving forward progress. Co-ordination of the various stakeholders is an important role, and the Partnership Body will need to be able to manage external relations, maintaining a local office to provide a visible presence for ongoing community liaison matters. It

would also have overall responsibility for health and safety related to the delivery of projects that build towards the Just Transition.

Further breakdown of the relevant pillars and key activities contained within each pillar is provided on the following figure 5 below which draws upon the findings of this pilot work and previous work on regeneration examples such as Ebbw Vale, Wales. This structure is intended to engage each of the relevant stakeholders (with relevance to delivery of a future project), and provide some clarity on roles and expectations, and providing a continuation of the work undertaken to date.

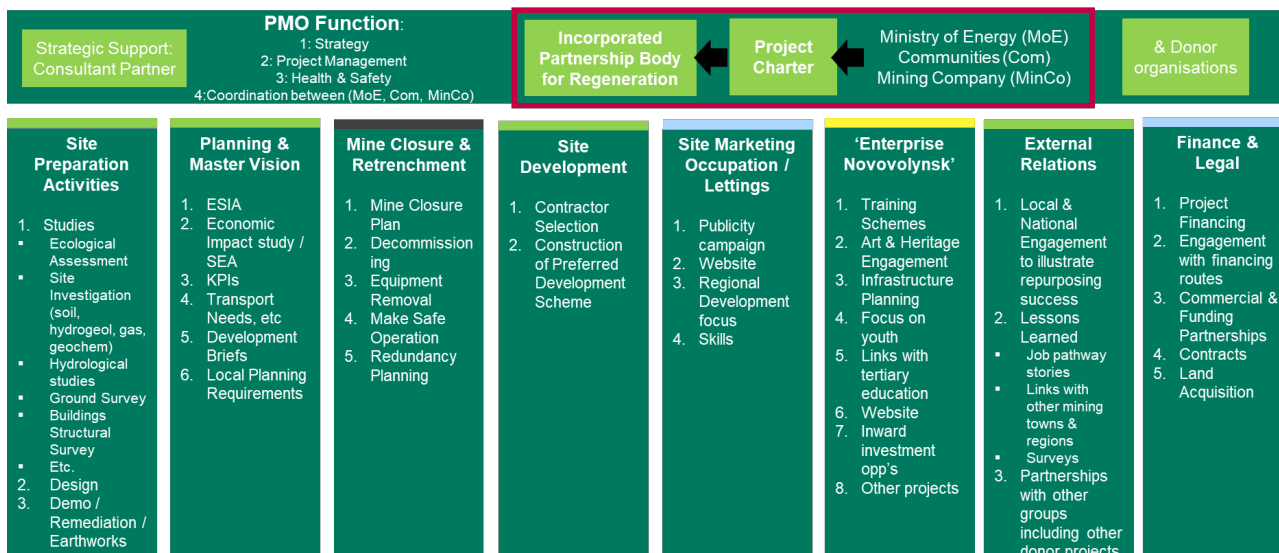


Figure 5 Pillars for the Partnership Body for Regeneration

4.2 Focus on a site

Given the scale and nature of the opportunities that can be generated evidently gathered from the local framework assessment, master vision scenario, engineering and site constraints investigation, stakeholder engagements, concentrating effort on Mine No. 9 is proposed. This one site can provide sufficient high-quality jobs to replace the jobs lost through the closure of the two coal mines. This will allow progressive build out of the development which will gain momentum as the site develops.

Mine No. 9 can support a mixed-use development providing employment space for around 1100 to 1300 jobs (depending upon scenario and density of development). It could also include a lakeside community within walkable distance, providing enhanced sustainability credentials for the development.

The master plan developed by Arup for Mine No. 9 (Figure 6) provides an ecosystem of uses centred on a civic hub space (orange).



Figure 6 Mine No. 9 master plan

Key development features for mine no. 9 (see figure 6) include:

- Training skills and education form a key part of this with onsite facilities and opportunity for the inclusion of research and development buildings.
- A series of employment sites (aqua) are created to the north and east of the civic square.
- A residential neighbourhood (purple) complements this civic core with a lakeside green park (dark green) occupies the former wastewater treatment area.
- The hill park (light green) to the south could become a mix of grassland and woodland to create a varied and dynamic landscape with a viewing point at the top.

The Buzhanska site can be held in reserve to capitalise on future opportunities with the site potentially being repurposed for tourism and leisure uses such as a leisure park with a health spa and other hospitality features.

Additional work is required to develop market assessments which will inform an assessment of site capacity, optimum mix of uses and business ecosystem and phasing strategy, as well as the cost of necessary infrastructure to unlock development.

A shutdown that provides an immediate cessation of activities and consequent loss of jobs is not a desirable outcome. Instead, transitional arrangements to retain and build employment should be provided. Workers at both mines should be reskilled to manage the initial aspects of the liquidation plan for both sites which should be developed in parallel. The liquidation plan should provide a responsible closure that makes the site safe and protects the environment. Many of these skills are transferrable through future development phases. It is important to build jobs as the closure progresses and at early stages through the site regeneration process. Alignment of skills to match future needs is an important aspect as this will support transitional arrangements in the short term, and mid-long terms.

Focusing development at Mine No. 9 has many advantages, providing and maintaining momentum and quickly providing a core of quality development that can be built upon. However, impact on Poromivska needs to be considered and mitigated as 60% of its current budget makeup is related to mining activity.

4.3 Capacity building

Although at the stage skills development initiatives have not been assessed, it should be acknowledged that there is a need that goes beyond the tenure of those employed in mining. Community engagement and long-term programmes are required to engage youth within each of the local communities, providing a resource base for sustainable operations. Whilst miners approaching retirement age have needs that will see them to retirement and have existing skills suitable to work across clean-up and development phases.

Such instances of employment opportunities exist at all phases within the development lifecycle. Examples are provided within the figure 7. Further work is required to assess and develop programmes that can be implemented.

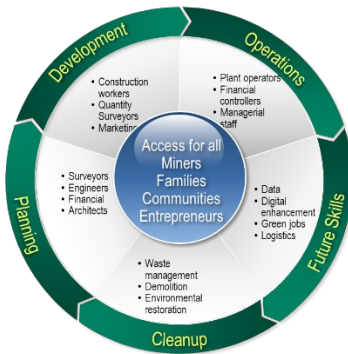


Figure 7 Lifecycle phases of employment opportunities

Opportunities need to be equitable, open to all and sustaining for the business they are intended to support. Procurement process should look to ensure the opportunity is provided at a local level utilising local products.

4.4 Ensuring actions are sustainable and monitoring is effective

The transition from an economy with a coal mining foundation towards a new future should be a sustainable transition. The United Nations Sustainable Development Goals have been adopted within Ukrainian legislation. Actions falling out of this regeneration framework need to support sustainability and ensure that mine workers and the communities surrounding the mine sites have the opportunity for futures that provide valued employment opportunities within a landscape that is not blighted by the past.

- Development of SMART goals and the alignment of these across the whole programme is an essential element in ensuring that regeneration targets can be met
- These goals, and the steps within them, need to be managed not just from a programme and financial point of view but also based on achieving sustainability targets
- Monitoring to evaluate progress towards implementation, and pursuit of an enabling culture, needs to be effective with transparent accountability
- Initial alignment with the UN's Sustainable Development Goals is illustrated in figure 8.

The development of this monitoring programme is a task yet to be developed and would be seen as responsibility that the co-ordination body should take early to ensure that the right goals are in place and the monitoring objectives have been set.












Sustainable Development Goals		Impact of the master plan and road map
	13. Climate action	Overarching aim of the coal mine closure programme is to reduce carbon emissions increasing share of renewable energy within the Ukrainian energy mix. Decarbonisation is maximised through inclusion of renewables within the repurposed development.
  	1. No poverty 8. Decent work & economic growth 9. Industry, innovation & infrastructure 10. Reduced inequalities 11. Sustainable cities and communities	Development of a Just Transition from coal mining by providing new modern work-spaces (with improved infrastructure) that allow business to invest in the region. Reducing inequalities with non-mining regions and providing an escape from potential poverty traps that could exist if the programme is not initiated.
 		Green corridors and sustainable travel plans support sustainable living and community engagement within these workspaces.
  	4. Quality education 5. Gender equality 17. Partnerships for the goals	Supporting training schemes, access and initiatives targeted across the community, with partnerships being built between all key actors.
 	14. Life below water 15. Life on land	Site remediation and habitat creation with green margins and clean water provide an enhancement of the locale.

Figure 8 UN's Sustainable Development Goals and the impact of the master vision plan

4.5 Continue a dialogue with communities and other stakeholders

Any closure process has a wider impact than just the workers employed at the site. News of the closure and the associated worries of how that affects lives and livelihoods can have a destabilising impact. It is therefore essential that the regeneration process continues to be engaged with communities and other stakeholders.

This should not be seen as a one-way process but should be a dialogue between equals (inclusivity such as gender). A number of different platforms should be used to access all members of society. This is intended to build acceptance of the closure, and bring people into a process of change where they are actively engaged in providing solutions to the challenges of the project. The aim is to avoid some of the many potential problems of social deprivation that have been seen elsewhere in the world where large scale closures have occurred.

This includes the development of schools, art and cultural heritage programmes that engage with the site and bridge communities into the development - building excitement for a redefined future. Care is also required to ensure this pilot delivers as an exemplar for other mines in the Novovolynsk area, otherwise social tensions could be exacerbated.

In addition to community engagement, wider dialogue with other stakeholder should also be included. Building links with local schools, colleges and universities can help with the development of supporting skills and deliver innovation that can provide a specialism and a distinction from other competing locations. Nurturing the commercial environment and build relationships with entrepreneurs are also important as they could be potential investors in the development process or are end-users who could provide employment opportunities.

4.6 Funding

In terms of financing strategy, funding does not need to extend to full development of the sites, as it is envisaged that these could be developed by third parties over time. It is, however, essential to ensure sufficient funding is in place for preparatory activities. These can include identification and prioritisation of potential local and international funding options, assessment of commercial and ESG criteria of prioritised financing providers (including DFIs) or recommendation to Master vision to ensure bankable projects are included (see figure 9).

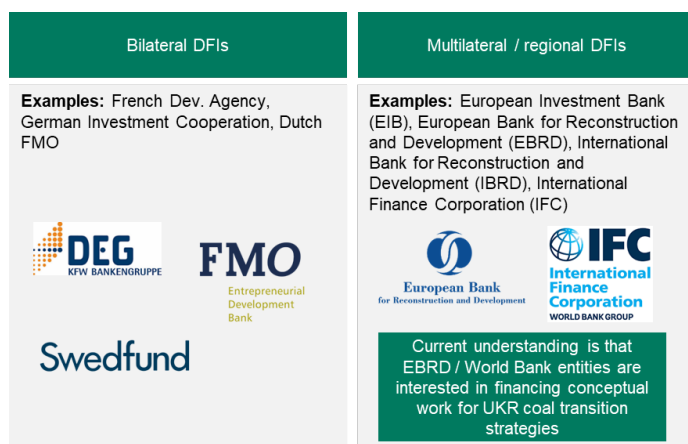


Figure 9 International Development Finance Institutions (DFIs) and (Climate) Funds

4.7 Deliver regeneration for just transition

In order to achieve regeneration of the site, a number of different actions are required. As described for the first focus area of the importance of the creation of a Partnership Body that would be responsible for the delivery of actions that build towards regeneration of the site.

Some of the key tasks required are detailed under the pillars for the Partnership Body for regeneration. These pillars provide a full business approach to regeneration including finance & legal, and site marketing. We have provided further detail of the early stages, such as:

- Preparation for the cessation of mining; and
- Studies for Regeneration Design and Environmental Protection.

Development of plans to provide training programmes for miners and for the wider community also need to be considered so that skills can be developed ahead of the transition and the right social packages are put in place.

Preparation for cessation of mining (liquidation planning), this needs to provide a clear plan of works that will make the mine sites safe and be fully integrated with the regeneration planning process. The boundary between each phase should be well defined and tasks within each should be cognisant of potential delays and the impact upon the condition of the site.

In addition, studies for regeneration design and environmental protection are required to inform the closure and regeneration process. Specific scope will need to be developed for each study to ensure responsible closure and convergence with European standards. The studies programme needs to be fully integrated such that the results from aspect inform and shape considerations arising from other studies.

5 Concluding remarks

The seven focus areas described above present a broad picture of short-, medium- and long-term actions and goals for the regeneration led development of the sites. In relation to these, a set of priority actions are included a) Set up the Partnership Body, b) Develop liquidation planning for the two mine sites, c) carry out relevant studies that support the site development process and d) As a part of the employment retrenchment commission ‘Skills for the Future’.

These elements provide a functional way of progressing the project and creating shared value, delivering nature positive outcomes and leaving a positive lasting legacy can only be delivered through sustainable mine closure planning and regeneration. A new future is envisaged that builds on the heritage of mining, delivering

opportunities within a compact sustainable cluster centred around people and connections to the local economy.

Acknowledgement

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