

**UNECE**

**JUST TRANSITION ASSESSMENT OF ALBANIA**  
**Sector Decarbonization**  
**and the Just Transition Framework**  
**Applied to Coal Mining**



UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE

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## Acronyms

ALPEX	Albanian Power Exchange
CCA	Climate Change Agreement
DCM	Decision of the Council of Ministers
ETS	Emissions Trading System
FMF sh.a.	Last Resort Supplier part of holding OSHEE sh.a.
FSHU sh.a.	Universal Service Supplier
FTL sh.a.	Free Market Supplier
FX Reserves	Foreign Exchange Reserves
GDP	Gross Domestic Product
IMWGCC	Inter-Ministerial Working Group on Climate Change
KOSTT	Kosovo Transmission System and Market Operator
MSET	Multi-level socio economic transitions
MTRS	Medium-Term Revenue Strategy
NAP	National Adaptation Plan
NSDI	National Strategy for Development and Integration
OSSH sh.a.	Distribution System Operator
OST	Albanian Transmission System Operator
SDG	Sustainable Development Goals
TAP	Trans Adriatic Pipeline
TPP	Thermal Power Plant
UNFCCC	United Nations Framework Convention on Climate Change



## Executive Summary

UNECE is working on greening the energy sector in accordance with principles of carbon neutrality and just transition. In its efforts to support its member states UNECE intends to strengthen with its competence and resources the adaptive capabilities of impacted member states. Within this cooperative effort, Albania requested UNECE to develop a study analyzing the country's readiness for green and just transition in post-coal mining areas.

This report develops the Just Transition concept with its conceptual foundations and employs it to characterize the current state of the coal mining sector and post-mining communities in Albania. The presented material is based on two field missions each featuring a series of interviews and stakeholder workshops, as well as on desk research. Especially for the turbulent years 1990 – 2011, the data and information base show considerable discontinuities and gaps. This report, together with the technical report “UNECE Technical, principle-based guidelines for designing and implementing a programme for efficient, safe and environmentally conscious mine closure in Albania and Serbia” (UNECE Report Albania and Serbia, Geneva 2022) provides a consistent picture of the status quo with its challenges and opportunities. The report closes with a few recommendations and practical considerations on how to complete the unfinished coal mine closure process in accordance with the proposed Just Transition Approach for the post-mining communities in Albania.

Key findings of this report are:

- Coal Mining has been a core industry of Albania until 1990 with some 22 mines operated in the four coal basins of Albania. Besides the largest Valias mine at the outskirts of the capital Tirana, the centrally planned mining sector relied on a workforce management of internal migrant workers dispatched to the mining communities.
- In the wake of the collapse of the socialistic states in Europe and the Soviet Union in 1989/1990 and subsequent economic liberalization the sector went through a disruptive shut down within less than five years.
- Up to half of the mining workforce emigrated (mostly to Italy and Greece), a restraint social program for elder workers was put in place, and a rapid mining closure program led to a minimal and only partially executed securing of mining shafts, leaving many issues related to environmental safety and land reclamation unaddressed.
- In 2023, a number of strategic opportunities open up for Albania:
  - hydro-power has been strongly developed and still has some potential;
  - in an integrated regional electricity market of the “West Balkan Six” Albania can play a significant role due to its hydro assets and central geographic position;
  - Photovoltaic and wind energy are still underdeveloped compared to some neighboring countries, and represent a catch-up potential;
  - The access negotiation with the European Union brings about a wave of institutional reforms and modernization impulses, the momentum of which could be leveraged to complete the coal mining exit of the 1990's and turn it into a successful Just Transition story.
- The specific situation of the eight mining communities screened in this report varies strongly – those in the capital region as well as the regional centers of Kora and Progradeci appear to have passed beyond coal exit, whereas some remote locations seem to carry a double burden of de-industrialization and peripheral disadvantage.

- We assessed Just Transition Readiness of Albania with an expert-based maturity model with the following five level score (neutral, basic, managed, defined, established) in four dimensions (governance, people, transition, digitalization): “neutral” in Governance, “basic” with respect to People, “basic” with respect to Transition and “basic” with respect to Digitalization.

This report concludes with the following recommendations:

- Vision: Complete the unfinished coal exit of the 1990’s by a limited Just Transition Initiative focusing on ensuring post-mining safety and revitalization of the mining communities.
- Mission: a core group of stakeholders of post-mining communities and the energy sector in Albania could form a small national work group “Just Transition Initiative Albania”.
- Next step work program: the work group could use this report and the UNECE report on mining closure as a basis for identifying a portfolio of pilot projects suitable to show case how a Just Transition Approach could serve local post-mining communities as a tool for completing the process of securing the abandoned mines and give an impulse for the growth of new business paths.
- At the stakeholder workshop held in Tirana in December 2023 a first set of project ideas was identified. The study suggests the following project focus:
  - Support the government of Albania to create a favorable and attractive regulatory and policy framework for a competitive green economy.
  - Design and deliver a set of strategy workshops with Institutions of Higher Education impacted by coal exit, with the objective to modernize and re-orient the degrees and curricula towards the possible growth paths of Albania (like resource management, regional cooperation in mining education, etc.)
  - Develop an interactive program format for post-mining communities, allowing the latter to set up local public-private business growth initiatives adapted to the local assets, existing infrastructure, and human resources.

This report intends to foster open access to information and data. In their work on this document, the authors favored open access sources of information and encourage the reader to visit the UNECE webpages dedicated to the workshops delivered within the framework of the project of which the presented study is the final report (<https://unece.org/sustainable-energy/events/workshop-mapping-albanias-readiness-green-and-just-transition-post-coal> and <https://unece.org/info/Sustainable-Energy/Coal-Mine-Methane/events/389509>) to find out more information on the undertaken work and its results.

## 1. Introduction

UNECE is working on greening the energy sector in accordance with principles of carbon neutrality and just transition. To conform to the climate policy objectives, countries have to undergo through a process of decarbonization of their economies, which will create new opportunities, but also entail certain disruptive effects, which are likely to fall disproportionately on the shoulders of the localities that are economically reliant on energy-intensive industries. In its efforts to support its member States in this transition, UNECE recognizes that the scope and pace of the transformation process has to be aligned with the capabilities and needs of individual member states, taking into account their endowment of natural resources, technological base, cultural heritage, national aspirations, environment and social aspects, as well as the legal and regulatory structure. UNECE intends to strengthen with its competence and resources the adaptive capabilities of impacted member States.

In this context, Albania requested UNECE to develop a study analyzing the country's readiness for green and just transition in post-coal mining areas. A "just transition" is an emerging policy framework, which promotes an integrated approach to sustainable development by combining social progress, environmental protection, and economic success into a framework of democratic governance and institutional resilience.

In order to best serve Albania's request, this study takes a practitioner's approach in order to provide the stakeholders of the transition process in Albania with a sound understanding of the socio-economic transition under way, with an assessment of the readiness of Just Transition Status of the post-coal mining communities in Albania and a set of recommendations for possible next steps in the process.

Section 1 reviews the emerging practice of "Just Transitions" in a combination of selected conceptual foundations based in scientific research and insights arising from practice of socio-economic transitions. Section 2 gives an overview of the coal mining sector Albania and its current status based on two short field study missions in Albania conducted in the second half of 2023. Section 3 assesses the readiness of the coal exit in terms of "UNECE Just Transition Framework". Section 4 offers a set of recommendations for next steps, which derive from the authors' analysis of the current situation in Albania, and reflect an outcome of an open dialog with stakeholders and international experts engaged in a participatory workshop held in Tirana in December 2023.

The authors of the study have both: practical experience in (in Lusatia, Germany and in Kucks, Albania) and academic perspective on the subject of coal exit and decarbonization (holding the Chair of Identity-Entrepreneurship-Transformation at Brandenburgische Technische Universität Cottbus, and the Professorship at the Energy Resources Department, Faculty of Geology and Mining, Polytechnic University of Tirana). Recognizing the importance of accessibility of information for the communities undergoing the transition, the report intends to provide its readers a broad learning architecture: mini-case studies, links to websites, data access, and possibility to add information and shape the transition process through engagement with the UNECE Group of Experts on Coal Mine Methane and Just Transition (comments and contributions are welcomed and can be provided to: [michal.drabik@un.org](mailto:michal.drabik@un.org)).

## 2. Statement of the problem

A massively expanding global population and continuously increasing per capita consumption have led to overconsumption and partial exhaustion of the planetary resources. The single most evident threat associated with that trend is the global warming: manmade greenhouse gas emissions drive up temperatures and sea levels on a global scale. Humanity is challenged to achieve in a concerted international and local effort the transition from carbon intensive supply chains and their related socio-economic ecosystems towards local sustainable green economies.

Each of these transitions requires in itself a complex change management process. The complexity gives rise to many obstacles and risks, which might make such a socio-economic transition socially, economically, and/or ecologically more costly, or even halt the transformation process. Oftentimes, in an initial phase, transitions affect local communities in a disruptive way characterized by surprise and uncertainty. Communities that are unprepared for the systemic change tend to defend their outdated economic models and industries on which they depend. A lack of data, understanding of the process, and capabilities to shift focus from preservation of the traditional industry to exploration of new business opportunities is a significant challenge.

At the same time, this transition from carbon intensive towards sustainable green economies is a mankind endeavor and a truly global operation. The complex interplay of the realms of ecology, economy and local society has been studied from multiple perspectives and in many locations on Earth. The global community of experts and an accumulated knowledge offers powerful resources and rich heuristic capital, which allows affected regions to better manage and master their own transition and its specific challenges.

The *Just Transition Framework of Sector Decarbonization* proposed in this study is intended to enable impacted communities to develop an understanding of the socio-economic transition's needs and objectives, its constituent processes, and system elements. It shares experiences of regions going through the same transition and offers a practitioner's approach to create transparency of the transition under way, set up a procedural and organizational framework in order to embark on the journey from a coal mining community towards a green economy.

### **Definition: Framework for Just Transition from carbon intensive towards green economies**

A *Just Transition Framework for Sector Decarbonization* provides an understanding of the fundamentals of decarbonization driven socio-economic transitions and outlines how an impacted community may assess and visualize its economic ecosystem and how it may negotiate the change process, create and develop projects towards an emerging green economy, while adjusting and balancing ecological, economic, social and participatory concerns. As a starting point, it provides the current case of post-mining Communities in Albania with an initial information base and assessment of the country's readiness for Just Transition.

### 3. Framework for a continued transformation of post-coal mining areas

How to tap into the global knowledge capital on socio-economic transitions for the practice in Albania? This section starts with looking at practice of socio-economic transitions via two mini-case studies of Malmö (Sweden) and Buffalo (United States). It then provides an overview of the fundamental conceptual building blocks of the Just Transition Framework. In order to best serve the target group of stakeholders engaged in real Just Transitions, it presents the practical cases, concepts, and insights in a very succinct manner. References to research are indicative and non-exhaustive.

Let us develop our pragmatic understanding of socio-economic transitions by looking at two mini case studies of socio-economic transitions: in Malmö, Sweden and in Buffalo, the United States, which will provide us with a good understanding of richness and complexity of real-life change situation.\* How does a socio-economic transition of an industrial region look like? What are its key features and success factors?

In both transitions, we recognize a community with an initial industrial specialization. In the case of Malmö, this was shipbuilding (see page 14), and steel and tire production in the case of Buffalo (see page 15), and in the case of. In our Just Transition Framework, we will refer to these specialized communities as “entrepreneurial ecosystems” – that is a complex interplay between technology, markets, local society, and politics.

During the evolution of the transition, each case is characterized by a disruptive shock affecting the above-mentioned initial industrial specialization. As a reaction of the impacted communities to these crises, we see a structured public-private, long-term effort to reinvent the wider economic specialization of those localities. Typical projects concern urban infrastructure investments, modernization of research and educational institutions, and, what is of great importance, a deliberate and centrally coordinated integration of private business projects into a long-term vision and strategy. Along this path of adaptation, a new economic profile built around a certain anchor expertise, science and education poles, or key private investors emerges.

This new “smart specialization” allows focusing activities of a wide range of stakeholders within the community. At the same time, it improves communication of the community towards the outside. Interested parties begin to recognize the emerging specialization and might be attracted to become a part of the project.

At the end of the transition stories of Malmö and Buffalo, both affected communities reconfigured their knowledge and capability profiles into new regional specializations. In the case of the former, this is live science and medical technology, and in the case of the latter, it is renewable energy, with a focus on solar technologies.

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\* The two case studies are part of a series developed by one of the authors (Innovationsregion Lausitz GmbH, 2017). They have been selected deliberately from the industrial socio-economic transitions outside the coal and mining sector to allow readers from mining communities to look at them without any bias.

### 3.1 Case Study: Malmö (Sweden)

#### Case Study: Malmö, Sweden – from a central location for shipbuilding ... to an environmental and life science city



- Original focus of the industry on shipbuilding and construction
- Decline of shipbuilding from the 1970's
- 27,000 jobs lost through 1990 - 1995
- Emigration of 41,000 inhabitants between 1970 and 1990
- Sweden's highest unemployment rate of 15% in 1995



- Young city compared to average, proportion of under-25's at 30%
- Transition to a knowledge economy by diversification of the economy:
- Ecological sustainability, e.g., through Local Investment Program
- Life science, pharmaceutical industry by Medeon Life Science Park
- Education, through the founding of Malmö University in 1998



- Medeon Industrial Park, > 50 research-oriented companies in life science and medical technology
- Support for companies by networks, links to universities and services
- Incubator for start-ups, including coaching, consulting, and training
- Founded 1985, as a part of Ideon Science Park in Lund, independent since 1998
- Operated by Medeon AB (real estate company 40% and city of Malmö 60%)



- Malmö University of Applied Science
- University founded in 1998, focus on social science and medical research
- Special distinction in the field of medical research
- 24,000 students, 220 doctoral students, 80 professors, 5 faculties
- University status from 2018 (currently the Swedish equivalent of a university of applied sciences)

#### Selected insights into socio-economic transitions:

- Link of educational, urban and economic development
- "Green Transformation" of Malmö into an attractive city
- Investments into infrastructure increases mobility of employees
- Professional, dedicated organization for business development

### 3.2 Case Study: Buffalo (United States)

#### Case Study: Buffalo, New York – from grain, steel and car production ... to a location for solar energy and finance



- 1970s "death" of the steel industry, loss of ~78,000 jobs
- Loss of the logistical advantage of the waterfront location (construction of the St. Lawrence Seaway, cut off from the canal)
- Delays in public investments to increase attractiveness as a tourism location
- Population decline from 580,000 (1950) to 290,000 (2006)

- 1 bn € investment from NY State
- 812 new and added companies, 11,000 jobs 2013-15
- University of Buffalo ( 29k students), focus bioinformatics and life sciences
- Investment in Buff. Medical Innovation and Commercialization Hub and Buff Niagara (\$50M, 250FTE) and the Buff Institute for Genomics (\$50M, 500FTE)
- Focus on solar technology: production facility of SolarCity (~\$750M)



- Training center for requalification, Industry 4.0 and industrialization of RE
- Joint investment by NY State (~\$29 million Buffalo Billion) and the NY Power Authority (~\$15 million)
- Training concepts developed with the State University of New York
- Model "clean energy" factory and another for Industry 4.0 applications
- Operated by the Economic Development Group initiative

- Production and innovation center on former steel production site
- SolarCity (Tesla, Panasonic) solar panel production; creation of 5k jobs (3k in Buffalo, 2k in the surrounding area)
- Technology startup hub with New York State University
- Investment by NY State (~\$350 million from BB, US\$150 million through tax abatement, US\$250 million from other New York funding) and SolarCity (~\$5 billion) in infrastructure

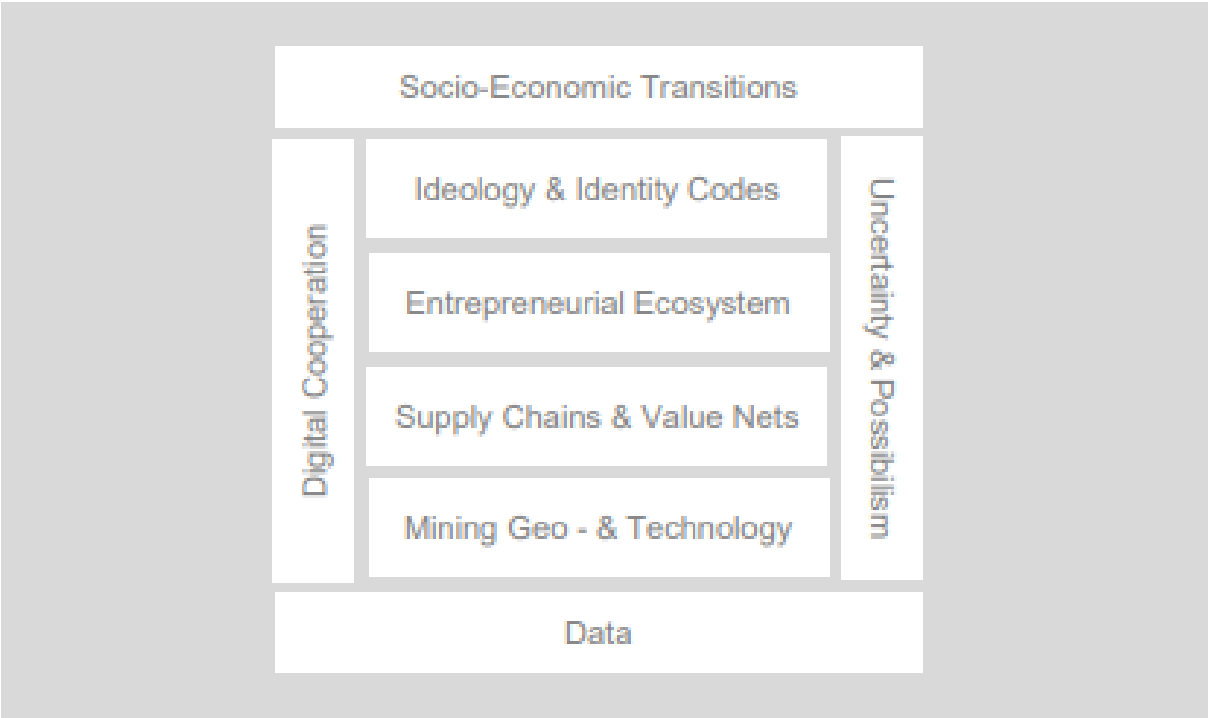
#### Selected insights into socio-economic transitions:

- Massive investment (1 billion dollars) State of NY, particularly in infrastructure
- Efficient use of funding and cooperation with local companies
- Strengthening of local ecosystems through investment in education and research
- Focus and commitment towards a new industrial specialization

A key insight from the two case studies is: successful transitions are characterized by a combination of both; (1) central supportive measures, and (2) local ownership, agency, and emergence of self-organizing ecosystem. The locally specific evolution and dynamic of such transitions varies strongly from one case to another. However, in all socio-economic transitions, social, economic, as well as ecological balance and justice are achieved and maintained in the long term only if there is strong local owner- and entrepreneurship. This is a key condition of local sustainability and resilience: societal ecosystems have to be empowered to balance their distribution of economic, ecological, and social resources in a sustainable manner. It is this self-regulating capability, which creates the aspired resilience for the disrupted communities. The “Framework for Just Transition in Sector Decarbonization” should help you and your community to build this capability.

Starting from that first sketchy understanding of socio-economic transitions, we would like to deepen our understanding of the complexity of socio-economic transitions in general, and Just Transition approaches in particular. The case studies of Malmö and Buffalo exposed the interdependencies between technology, infrastructure, human capital, and public-private partnerships. We would like to frame the heuristics of Just Transition as a social technology in the conceptual building blocks forming an architecture as illustrated below.

Figure 3.1 - Technology Architecture of Just Transition Method



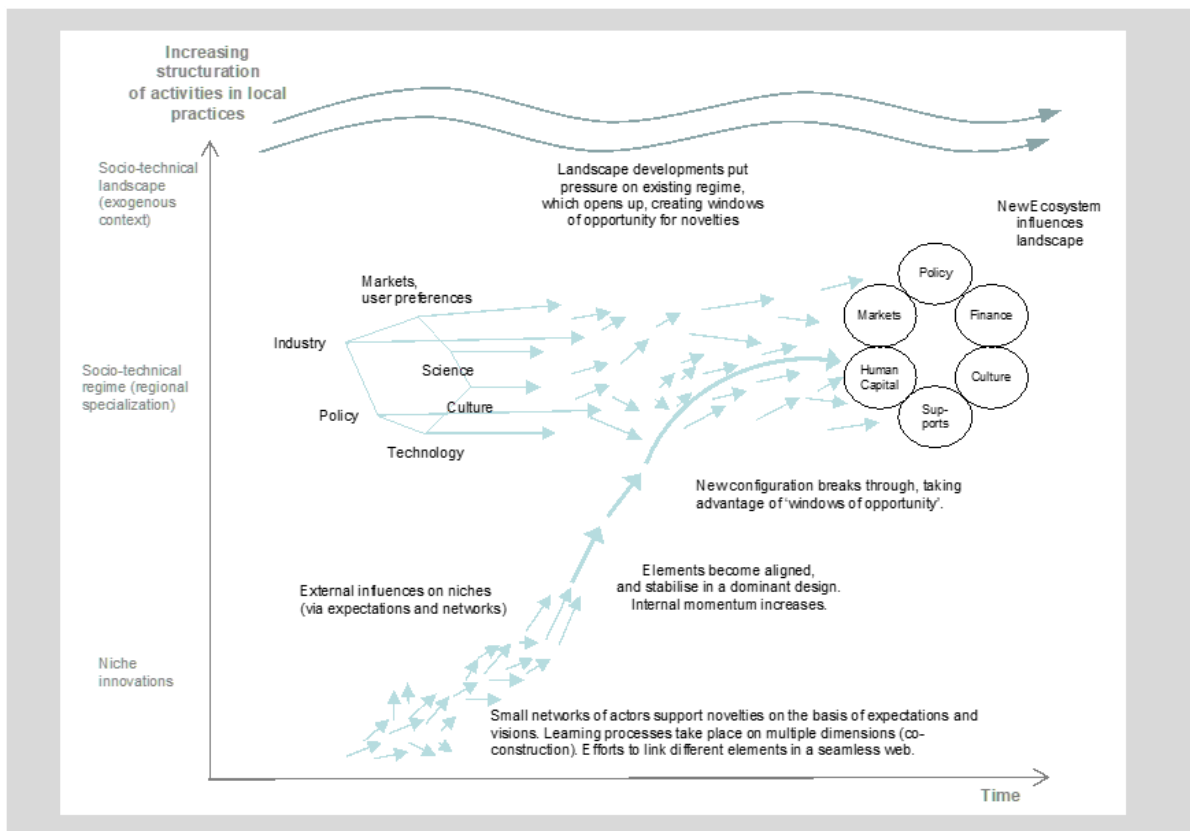
The following sections provide insights into the multi-level-character of socio-economic transitions, exploring aspects of mining geology and technology, the role of supply chains and value nets, as well as entrepreneurial ecosystems and normative policies, such as market liberalization or the SDG’s. Other significant shaping factors of socio-economic transformations are the degree and nature of uncertainties, and the availability and the extent of digital cooperation.



### 3.3. Insights: multilevel character of socio-economic transformation

The concept of "Multilevel Socio-Economic Transitions" (MSET) is a framework for understanding the complex and interconnected processes of societal and economic change, in particular in the context of transitioning away from fossil fuels, such as coal. This concept has been developed and discussed by scholars like Frank Geels, who have applied it to the study of coal exit and other sustainability transitions (Geels 2004). Figure 3.2 illustrates schematically the structural elements of a MSET with niches, regime and landscape as vertical, partially independent levels of activities.

Figure 3.2 - Multi-level socio-economic transformations



Source: Tomenendal (2018)

Niches are small scale, decentral activities from individuals, project team organizational units. Niches open space for experimentation and if there is a widespread niche activity with a large number of players, it gives rise to a portfolio of opportunities and a swarm-based exploration of possible futures.

At the *mezzo* level, the MSET collocates the regime, where we observe more structure and indeed specialized cooperation patterns that are characteristic for the community at hand. In the MSET a given regime or entrepreneurial ecosystem evolves from identification of a starting point, for instance a smart specialization as a “mining region”, to focusing on the exploitation of its geological assets. In the transition process, the initial regime undergoes a shock - like mine closure. Following the shock, the regime runs through a reconfiguration of its entrepreneurial ecosystem.

On the *macro* level, the landscape is a source of threats and opportunities to the regime and niches. The landscape is beyond the direct control of the regime or niches, but at the same time, it is typically the origin of the disruption (like, for instance, coal exit instigated by economic liberalization or introduction of climate mitigation measures). Landscape comprises drivers from policy, technology, market, and environmental realms. The socio-economic transition plays out as a complex, and context-specific dynamic interaction of niches, regime, and a landscape level. A given community might successfully achieve the creation of a new smart specialization at the end of the just transition process.

### **Practical recommendations drawn from MSET approaches**

**Socio-Technical Systems.** MSET helps communities and their stakeholders to recognize that societal transitions involve more than just technological changes. They also entail shifts in social practices, institutions, policies, and cultural norms. This allows rethinking the socio-technical systems in which initial technologies are embedded – like the miner recruitment and commuter pattern in Albania until 1990 – and adopt a holistic change management approach.

**Regime Shifts.** Transitioning involves moving from an initial regime (e.g., a coal-based national economic system) to a new regime (e.g., coal import, renewable energy). These shifts are driven by changes in technologies, markets, political systems, policies, or social values. Stakeholders benefit from defining their tasks as means of development of a new regime or entrepreneurial ecosystem (see below).

**Path Dependency and Lock-In.** MSET acknowledges that existing systems can be "locked-in" due to historical and structural factors, such as, for instance, existing transport patterns, administrative structures, or beliefs. Transitioning away from coal mining or other established systems often requires overcoming path dependency to enable change.

**Multilevel.** Transitions occur at multiple levels of society, from local and regional to national and global. This framework helps affected communities to discern the complexity of interactions across different levels and the need for coordinated efforts. This is of particular importance in sustainability transitions, as the driving force for change arises in most cases from higher landscape levels – national or even supranational agents. These changes are particularly vulnerable to just transition risks, and they benefit from a careful management of initiatives across the multi-level system into the regime and niche levels.

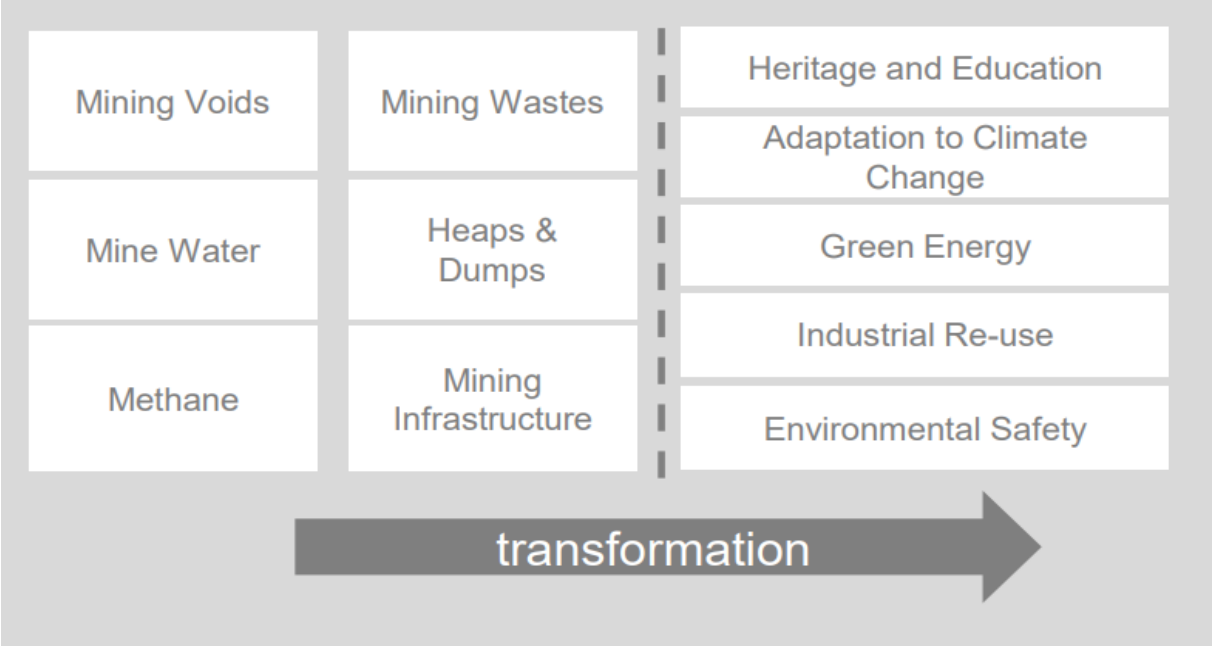
### *3.4 Insights: technology architecture, mine closure and ecological healing*

Just Transition in the context of mining and coal exit has some technical and processes-specific aspects related to the geology, technology, and administration of mining operations. While UNECE provides ample expertise in this field, it seems adequate to give a short overview of the aspects that need to be addressed in a framework for post-mining land recovery, to ensure the effective restoration of ecosystems, mitigation of environmental impact, and promotion of responsible land use.

Transformation from an operating mine into a post-mining reusage has been studied intensively in different countries. UNECE has provided some groundwork of this task and applied it to Albania and Serbia (UNECE 2022). Within this study we limit ourselves to elicit the

procedural aspects and provide a generic overview of the asset transformation as illustrated schematically in Figure 3.3 (adapted from Jan Bondaruk 2023). Primary assets like shafts, voids, mine water, and methane, as well as the secondary assets like wastes, dumps, and mining infrastructure go through a screening and reconfiguration process, which transfers them into one of five principal fields of reuse. The specific transformation of a given mine is extremely context specific.

Figure 3.3 - Primary, Secondary Mining Assets and Categories of Post-Mining Usage



**Practical recommendations drawn from Mining Closures**

**Foster favorable conditions for technologically sound post-mining usage from the very beginning.** We encourage stakeholders and the affected communities to promote a consistent national setting oriented at international standards. A crucial step is to create a centralized authority and information source responsible for overseeing and coordinating post-mining land recovery efforts. It can then develop and make available industry standards and best practices for land recovery, ensuring consistency across mining operations. We advocate for multi-party collaboration between government agencies, mining companies, environmental experts, and local communities to foster a collective approach.

**Set up and maintain consistent monitoring and evaluation.** As mining intervention are – by their geological nature – build to last a long time, it is highly recommended to implement a robust monitoring and evaluation system to track the progress of land recovery initiatives. This enables successive generations to have a good database, to regularly review and update policies based on technological advancements and evolving environmental standards.

**Make use of international expert networks and institutions.** Mining is a global practice, while local deposits often have particular characteristics distinct from all other locations in a given country. However, globally, it is likely that similar conditions occur also elsewhere. Therefore, it is useful to tap into available international resources and expertise in order to draw from the documented experiences of others.

**Table 3.1 - Procedural aspects of mine closure**

No.	Procedural Aspects	Activities to be undertaken
1	Location Data Base and Assessment	<ul style="list-style-type: none"> <li>• Thorough geological surveys to identify suitable sites for mining activities, considering environmental sensitivity and biodiversity.</li> <li>• Prioritization of rehabilitation efforts for high-priority ecological zones.</li> </ul>
2	Geotechnical Risks and Legacies	<ul style="list-style-type: none"> <li>• Post-mining geotechnical assessments to identify risks and establish mitigation measures.</li> <li>• Assessment of regulatory framework for the responsible closure of mining operations, including proper handling of waste and hazardous materials.</li> </ul>
3	Topographical and Hydrological Conditions	<ul style="list-style-type: none"> <li>• Topographical and hydrological assessments to minimize disruption to natural watercourses and terrain.</li> <li>• Assessment of deployed and available reclamation techniques that account for the existing topography and hydrological conditions.</li> </ul>
4	Other Environmental Conditions	<ul style="list-style-type: none"> <li>• Screen and conduct environmental impact assessments (EIAs).</li> <li>• Check and where necessary establish protocols for ongoing monitoring and adaptive management to address unforeseen environmental challenges.</li> </ul>
5	Permitting, Land Ownership, Reclamation Status	<ul style="list-style-type: none"> <li>• Assess status and streamline permitting processes in order to remove obstacles to environmental protection and post-mining reuse.</li> <li>• Facilitate transparent land ownership and reclamation status databases accessible to relevant authorities and potential future users.</li> </ul>
6	Development Opportunities	<ul style="list-style-type: none"> <li>• Collaborate with local communities to identify suitable and socially acceptable development opportunities – for instance through a Just Transition program on national level.</li> <li>• Encourage diversified land use post-recovery, supporting sustainable agriculture, forestry, or renewable energy projects amongst others.</li> </ul>
7	Funding	<ul style="list-style-type: none"> <li>• Establish a dedicated fund for post-mining land recovery, sourced from mining companies, government contributions, and potentially from environmental impact bonds.</li> <li>• Incentivize private-sector investment through tax breaks or other financial mechanisms.</li> </ul>

### 3.5 Insights: supply chain decarbonization and value net reconfiguration

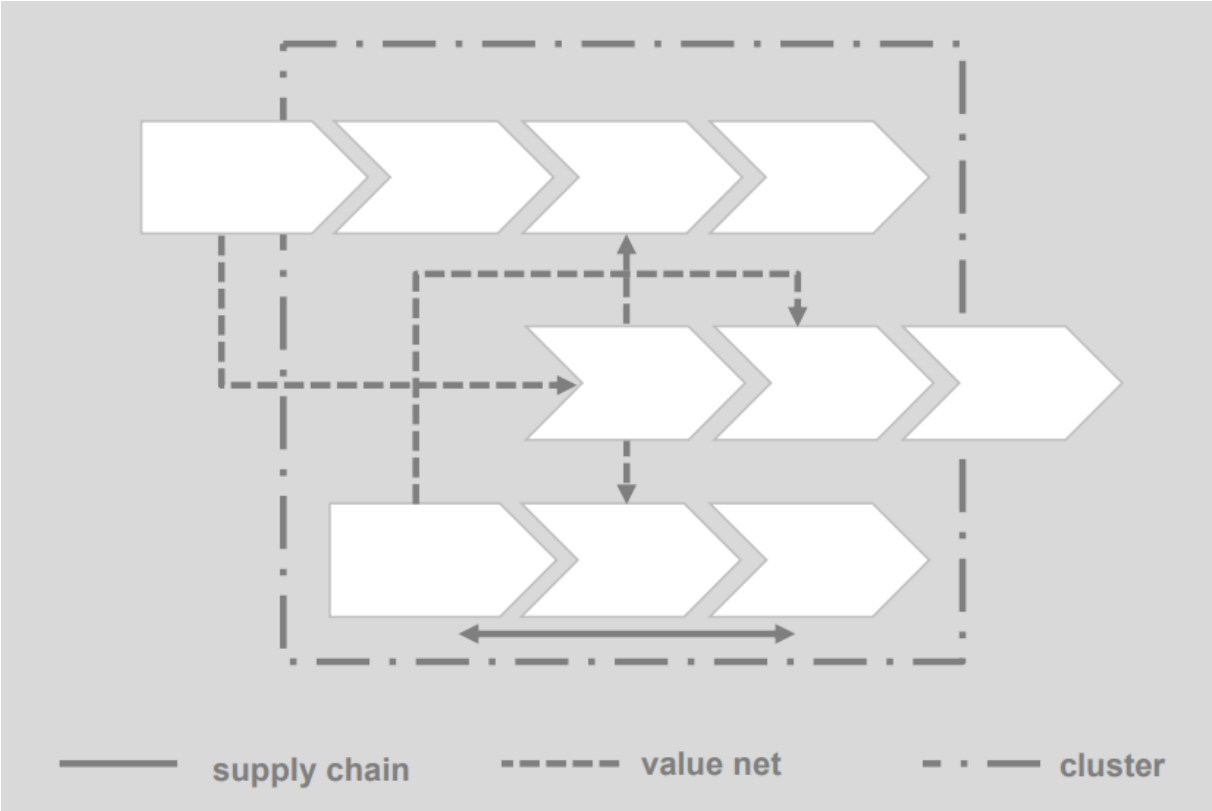
Coal extraction and utilization is typically a technologically- and cooperation-intensive industrial process. This has a number of causes. On the one hand, coal has been the fuel for major industrial processes, like electricity and heat generation, or steel and cement production

and therefore, has to be extracted in large, cost-efficient quantities to meet the demand of those energy-intensive sectors. On the other hand, many coal reserves are located at significant depth from the surface requiring heavy technology to operate either profound open pits or deep mining shafts. Related technologies require significant financial investments, safety measures, and intense cooperation of specialized experts. Each of these features – long chains of value creation, technology intensity, and complexity of cooperation – lead to significant economic costs.

In a process of Just Transition of coal exit, the entire underlying economic fabric with its interdependencies is impacted. In order to manage such a transition and to capture opportunities for reconfiguration of capabilities and infrastructure assets, we have to understand well these interdependencies. Supply chains and value nets are tools to uncover the economic fabric and analyze the sector under transition.

A supply chain is a network of organizations, individuals, activities, and resources involved in creating and delivering a product or a service to the end consumer. It encompasses everything from raw material extraction to delivering the final product to the customer. Key components include suppliers, manufacturers, distributors, retailers, and consumers. The efficiency of a supply chain is crucial for minimizing costs, optimizing processes, and ensuring timely delivery. A mapping of the supply chain provides transparency over the stakeholders and dependencies of the mining sector being affected by the Just Transition.

Figure 3.4 – Supply chain, value net and cluster as fabrics of value creation (schematic)



While supply chains focus on the linear flow of goods and services, value nets take a broader approach, emphasizing the interconnected relationships between more than one supply

chains. In the context of coal mining in Albania, for instance, the full value net includes coal, copper, chrome, iron, energy, as well as steel and cement industries with their respective webs of interconnections. Consequently, adopting a value net perspective allows for a more holistic understanding of the value creation and cooperation of partners. Value nets include not only suppliers and customers but also competitors, partners, regulatory bodies, and other entities that contribute to or impact the value creation.

### **Practical recommendations drawn from supply chain and value net approaches**

How can supply chain and value net concepts help to increase the odds for a successful and just transition? Besides helping to identify the economic stakeholders of the transition, the mapping of value creation ensures a broad perspective and screens a wide scope of opportunities.

One inroad to decarbonization is a **systematic supply chain optimization**. Companies need to identify and adopt sustainable practices, such as using renewable energy sources at all levels of the supply chain, improving energy efficiency, and implementing cleaner technologies in mining and transportation processes. More radically, decarbonization also requires rethinking material inputs, reducing waste, and adopting circular economy principles. Collaboration across the supply chain is essential to ensure that sustainable practices are adopted uniformly, from mining operations to the end product.

**Value net analysis** can help identify opportunities for collaboration and innovation in the broader ecosystem of the Just Transition. In the context of coal mining, stakeholders may explore partnerships with renewable energy providers, engage in responsible resource extraction practices, and work with governments to navigate regulatory challenges. Transitioning away from coal can also open new business opportunities in renewable energy, sustainable materials, mining asset upcycling, and green technologies. Another opportunity is to explore value nets of regional cooperation. Companies and entrepreneurial ecosystems that understand and leverage their position within the value net can gain a competitive edge by aligning their strategies with the broader trend of decarbonization.

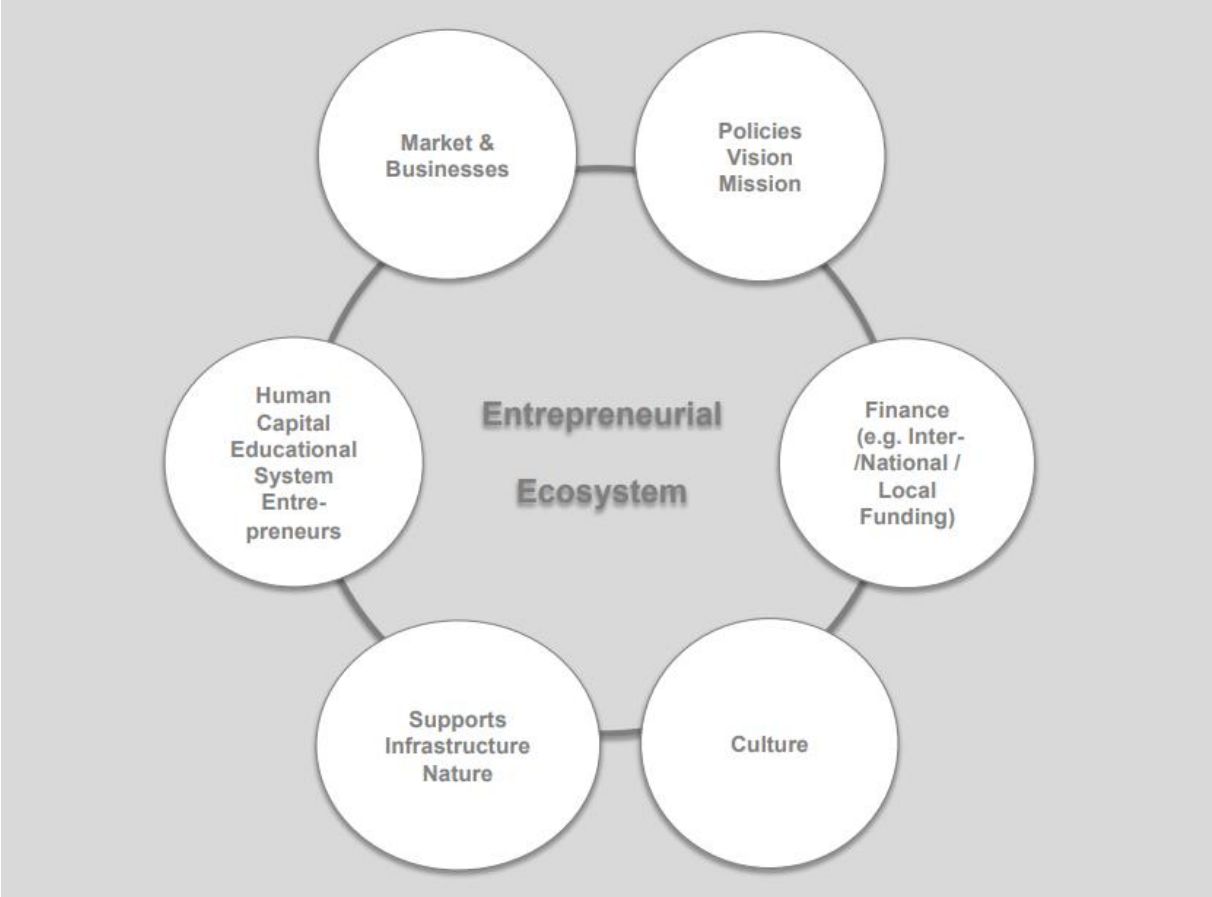
### **3.6 Insights: Entrepreneurial Ecosystems, Smart Specialization and Regional Identity**

Policy documents as well as actual research acknowledges the importance of the local cultural and socio-economic fabric of a community or a region. When Porter (1990) summarizes his key insight in the analysis of sources of competitiveness in an increasingly globalized world, he highlights the local origin of competitive advantage: "... Competitive advantage is created and sustained through a highly localized process. Differences in national economic structures, values, cultures, institutions, and histories contribute profoundly to competitive success. ...".

Isenberg (2011), in turn, analyzed the regional, socio-economic fabric from the perspective of entrepreneurial ecosystems. His concept of entrepreneurial ecosystems refers to the interconnected and interdependent dimensions that influence the creation and growth of entrepreneurial ventures within a region. In the context of coal exit, a key challenge of the affected mining communities lies in the task to create ventures that could substitute for economic income from mining. These regions and the stakeholders of the Just Transition process face the task to reimagine and reinvent the local ecosystem of the mining community

at hand. Isenberg argues that entrepreneurial success in such an endeavor is not so much about individual agents, like the state, entrepreneurs, or startups, but rather about the broader environment in which they operate. A schematic presentation of such an entrepreneurial ecosystem shows Figure 3.5.

Figure 3.5 - Schematic Presentation of Entrepreneurial Ecosystems



Source: adapted from Isenberg 2011

Insights from research and practice show that particular attention should be given to the interconnectivity of the elements, the ecosystems’ dynamics, and the self-reinforcing nature as well as the significance of the local context. As shown in Figure 3.5, entrepreneurial ecosystems encompass various elements, including entrepreneurs, investors, mentors, educational institutions, government policies, and support organizations. These elements are required to work together to create a conducive environment for entrepreneurship and economic development.

The interaction typically leads to dynamic and self-reinforcing effects. However, in the coal exit situations, oftentimes a negative self-reinforcing can be seen as well. Communities enter into a downward spiral of closed mines, deterioration of towns and real estate, negative reputation of the region that is economically doomed and thus affected by emigration. In contrast, a thriving ecosystem attracts more resources, talent, and investment, which, in turn, foster a conducive climate for entrepreneurship. Due to this multi-facet character of a given entrepreneurial ecosystem, the transitions are highly context specific. What works in one region may not work in another due to differences in culture, regulatory frameworks, and

available resources. As a result, strategies and policies, in order to be effective and lead to the desired outcomes have to involve the local stakeholders and develop community specific responses.

Starting from the concept of local ecosystems, smart specialization has been coined as an approach in the policy realm, encouraging communities to view their own entrepreneurial ecosystem in a perspective of global specialization, collaboration, and competitive positioning (The European Commission 2015). Smart specialization also highlights the importance of communication for the purpose of identification and gaining recognition: only by being visible and adequately promoting its successes, can a region benefit from a clear-cut profile and appreciation of its capabilities and specialization, whether internally or by the outside world. This is a particular challenge in the situation of a disruptive socio-economic transition like a coal exit, in which the image of the region in question is typically still connected with the old industrial specialization. The emerging new specialization is initially not yet, and in a later stage, tends to remain widely unknown to the outsiders. Communication and marketing play therefore a crucial role. On a deeper level, along with these strategic considerations go also shifts in the identities of the involved persons, families, and the entire communities. These changes of identity and the associated narratives can be both: sources of conflicts and/or a unifying force fostering change.

### **Practical recommendations drawn from entrepreneurial ecosystems approaches**

When transitioning away from coal-based economies, regions can employ the entrepreneurial ecosystem framework and smart specialization perspective in order to take all relevant structural elements of the ecosystem into consideration. What adaptations are implied by the transformation in each dimension? What are the challenges and risks, and where lie opportunities and strengths? The following key points are of primary importance in practice.

**Diversification.** Regions can use smart specialization to identify new industries or sectors in which they have a competitive advantage. The awareness of the different building blocks of entrepreneurial ecosystems is a key success factors for growth of new businesses.

**Innovation and Skills.** Entrepreneurial ecosystems can be harnessed to encourage innovation, and redeployment of the existing as well as acquisition of new skills, thus ensuring that the workforce can adapt to the changing economic landscape after coalmine closure.

**Investment and Infrastructure.** Regions can leverage concepts that lie in smart specialization to more efficiently attract investments, develop and adapt infrastructure, and create a supportive environment for emerging industries, thereby mitigating the economic impact of the coal exit.

**Collaboration.** A clear awareness of stakeholders within a given entrepreneurial ecosystem fosters collaboration between local businesses, research institutions, and government agencies, which is crucial for the success of the transition. Both: entrepreneurial ecosystems and smart specialization promote such collaboration.



### 3.7 Insights: JUST Transition – normative context of sustainability policies, goals and KPI's

The concept Just Transition not only describes a transformation process. It also claims a qualitative property, i.e., that the transition ought to be *just*. In order to understand this normative aspect, it is useful to look at the history of Just Transition concepts and the recent trend of applying Just Transition concepts to climate protection policies.

The term "Just Transition" is often attributed to the labor movement, and it gained recognition during the 1990s in the United States and Great Britain. The principles it represents have historical roots in earlier labor and social justice movements that advocated for fair treatment and protection of workers and communities affected by economic and industrial changes. The main concern was that any abrupt shift away from coal mining and other heavy industries could lead to job losses and economic hardships for workers and communities that rely on them. While in the 70-90's of the 20<sup>th</sup> century, disruptions of industrial regions in the United Kingdom and the United States were driven by a loss of competitiveness of these sectors vis-a-vis quickly developing nations, such as South Korea, Japan, or China, in the wake of the collapse of the former Soviet bloc in 1989, the main culprits of the demise of the coal mining regions and heavy industries in Central and Eastern Europe were economic liberalization and rapid adaptation to the rules of the market-economy. It is only since approx. 2005 that climate concerns become to be a significant driver of socio-economical sector transformations. The presented below 2021 quote from the International Labor Organization clearly links the social concerns with the broader shift towards the green economy.

*„A Just Transition means greening the economy in a way that is as fair and inclusive as possible to everyone concerned, creating decent work opportunities and leaving no one behind.“*  
International Labor Organization (2021)

Over time, the concept has evolved and expanded to encompass a broader range of normative “justices”. Two major drivers influence the current ever more prominent role of the Just Transition concept and the policies: (1) the increasing physical deterioration of global natural resources and the global warming, and (2) the political activities in a form of multilateral negotiations intending to establish a consensus about values, goals, and targets in order to formalize these goals in form of international treaties (in other words, policy domains emphasizing multiple justices in terms of social equity, worker rights, and community well-being in the transition to a more sustainable and inclusive economy).

*“A just transition, broadly defined as ensuring that no one is left behind or pushed behind in the transition to low-carbon and environmentally sustainable economies and societies, can enable more ambitious climate action and provide an impetus to attaining the Sustainable Development Goals. Countries need to develop, through inclusive dialogue, approaches to a just transition that reflect the needs, priorities and realities of their societies and their historical responsibilities for climate change and environmental degradation.”* United Nations Committee for Policy Development (2023)

As a result of this international policy making process, a generalized normative framework of justices – the Sustainable Development Goals (SDGs) – have emerged and were adopted by the UN General Assembly in September 2015. SDGs consist of 17 parallel policy goals and 169 related targets, some of them being underpinned with measurable key performance indicators

(KPI's). The relevance of a particular goal, target, or indicator has to be determined by each region or entity depending on the application case and situational context. At the same time, the portfolio of goals and indicators may serve as a publicly accessible, standardized data source. It provides a basic diagnostic instrument allowing to discern aspects of sustainability and resilience of a given community, as well as the challenges and risks that it needs to address. It helps to characterize the context of a given Just Transition.

### **Practical recommendations drawn from entrepreneurial ecosystems approaches**

Discern carefully the **normative elements of the disruptive force and its policy dimension**. The pre-1990 regime in Albania had developed some clear-cut ideologically motivated policies – goals of autarky (local sourcing of coal and steel, widespread development of hydropower, weak road infrastructure aiming to increase defense capabilities of the population). Yet, the 1990s brought a deep change of the political system – the core change drivers were the concepts of a liberal market economy and subsequent privatizations. Nowadays, climate mitigation policies appear to be a driving force of coal exits amongst broader efforts of Albania to introduce international standards in national governance and adhere to SDGs.

Identify and thoroughly understand the **long-term policies and market trends**, which drive the transition. In the situation of Albania, the European accession process and investment funds from development agencies, such as e.g., the World Bank, are setting criteria for continuing support and therefore represent quite a stable value and normative framework for the Just Transition process of the post-mining communities in Albania.

### 3.8 Insights: Uncertainty, Governmental Programs and Possibilism

Despite all the theory and multiplicity of concepts, there is no “recipe” or a “fast track” towards a successful Just Transition. Any Just Transition has to be created by people on the ground and involve real life experimentation. It requires a lot of hard entrepreneurial work entails trial and failure practices. Transition is not a platitude of theory-practice differences. We know by sociological theory that in each socio-economic transition, there is a lot of unknown at the outset. One notable theoretical but practice-inspired perspective prominent in this field is "possibilism," which was introduced and elaborated upon by Albert O. Hirschman, an influential scholar in economics and social sciences (Hirschman, 1970). Possibilism offers a lens through which transition is perceived as a socio-economic process that hinges on exploration of possibilities, rather than as a deterministic path, and therefore it emphasizes such factors as uncertainty, agency, and adaptation. Such perspective seems particularly important in the context of predominantly top-down coal exit programs. Just by the nature of their agenda and target setting, as well as the built-in governance rules and structures, UN-, EU- and central government-driven exit transitions run the risk of a programmatic and thus deterministic mind set. Hirschman analyzed this type of bias in the World Bank's programs at the time, making it particularly pertinent in the context of socio-economic transitions.

At its core, possibilism is built on the premise that, even within challenging conditions, there are always opportunities for transformation and development. It encourages regions and communities facing socio-economic transitions, such as coal exit, to view constraints not as insurmountable barriers, but as potential triggers for innovation and reconfiguration. This outlook places considerable weight on the creative problem-solving capacity of societies,

underlining the need for adaptable and resilient approaches to address the unique challenges posed by socio-economic transitions.

In the context of coal exit, possibilism becomes a valuable perspective. Coal-dependent regions, often confronting a decline in the coal industry, may perceive their situation as a daunting limitation. Possibilism fosters a spirit of optimism and empowerment, enabling regions to actively shape their developmental trajectories. By fostering a proactive approach and engaging in creative problem solving, such regions can potentially discover innovative solutions, harness underutilized resources, and stimulate new economic activities (Hirschman, 2013).

### **Practical recommendations drawn from a possibilism approach**

The concept of possibilism, combined with the principles of subsidiarity and entrepreneurial agency, creates a framework for addressing the development challenges on a regional level. It encourages regions to see the potential for growth within their unique circumstances, to leverage the agency of local entrepreneurs, and to make decisions at the most appropriate level of governance. This holistic approach can contribute to more resilient and prosperous regional development, fostering a sense of hope and empowerment in the face of obstacles.

#### ***Subsidiarity in Regional Development***

**Decentralized Decision-Making.** Subsidiarity is a principle in regional development that promotes decision-making at the most local level possible. It suggests that regional issues should be addressed by regional actors who have the best knowledge of the specific context. This aligns with Hirschman's view of self-help and with the principle that communities should be in charge of their own development.

**Tailored Approaches.** Subsidiarity recognizes the diversity of regions and encourages tailored approaches to development. Instead of one-size-fits-all policies, it promotes policies and strategies that fit the unique needs and circumstances of each region.

**Community Empowerment.** Subsidiarity empowers local communities to be actively engaged in the decision-making process. When communities have a say in matters that concern them, they develop a sense of ownership and commitment, which can be a powerful driver of change.

**Collaboration and Networking.** While subsidiarity emphasizes local decision-making, it does not preclude collaboration and networking among regions. In fact, it encourages regions to learn from one another's experiences and best practices, thus creating a potential for more effective regional development strategies.

### [3.9 Insights: Examples of Just Transitions Frameworks – World Bank and European Union](#)

Over the last decade the concept of Just Transition has become an established field of research and has been adopted by key institutions, be it the United Nations, the International Labor Organizations, the World Bank, or national institutions, as a policy reference. Starting from the perspectives of socio-economic-technical systems outlined above, heuristic suggestions for the process of how to design and govern a Just Transition process have emerged. In this

section, we refer to two recent and comprehensive examples for institutional approaches: one developed by the World Bank (2020), and the second one adopted by the Wuppertal Institute as a part of a research project funded by the European Union (Wuppertal Institute, 2023). We with a reference to a recent publication on open issues of research in the field of sustainability transitions, intending to provide the reader with an understanding of open questions and debates that are present in the literature (Zhang, 2024).

The “World Bank Coal Sector Transition Assessment Framework” has been initiated and developed by the World Bank and the European Commission on behalf of the European Union via a €500,000 technical assistance project in Western Macedonia, Greece by an international team of two team leaders and 9 experts. The elaboration of the transition road map started in 2019 and the final road map for the project was presented at the end of 2020. That document offers a detailed view on one specific mine closure and a transition road map using the World Bank’s methodology for coal transition based on a 3x3 Matrix (World Bank, 2022) that consists of three pillars running through three phases of mine closure. The three continuous pillars forming the Just Transition are: (1) institutional governance, (2) people and communities, and (3) environmental reclamation, and re-purposing of land and assets. The three phases are, in turn: (1) 10-18 months of pre-closure planning, (2) two plus years for closure, and (3) 5-10 years for regional transition. The detailed project report on Western Macedonia provides a valuable overview of research and development issues to be addressed in the road map development process and offers an example of setting up the transition project governance. In the case of Western Macedonia, four transition pathways were identified: alternative energy, green region, start-up economy, and digital region.

Within a research project funded by the European Union’s Horizon 2020 research and innovation program, a research consortium led by the Wuppertal Institut prepared a study “Evaluation of design and implementation of decarbonization policy-mixes” in 2023. The resulting publicly available report “A Just Transition Readiness Evaluation Tool for coal and carbon-intensive regions” intends to offer a whole-system approach combining distributional, procedural, and recognitional justices. Its methodology is built on three principles (environmental, transition, and good governance and justice) that are applied to goals, definitions, and transition levers across 34 policy fields. For each of those field, “why”, “what”, and “how” considerations are explained in a one-page format. The study also provides a synopsis of Just Transition goals, i.e., “International reference documents for synthesizing just transition goals” including the United Nations Sustainable Development Goals. The report is insightful, contains valuable references to research in the related fields, and is rich in practical examples from recent projects (delivered in the last five to ten years) addressing just transition-related matters in the context of coal exits.

We do not want to conclude this section without addressing some of the open issues and ongoing research in the field of sustainability transitions. As the concept of Just Transitions in the context of coal exits driven by climate policies emerged around 2005 and the life cycle of a complete socio-economic transition from mining towards a new industrial specialization of the affected region amounts to 30 – 50 years, we simply do not yet have the data and experience base to validate these concepts. The two studies mentioned above stem mostly from projects in the preparation stage of coal exit and are clearly policy driven. In order to allow the reader and stakeholders of the affected regions an independent view of state of Just Transition Concept, we refer to a recent publication by Zhang on Strategic Management and

Sustainability Transitions Theory and Practice (Zhang, 2024). Open theoretical questions concern the interaction and integration of ecological systems and human systems, the role of multi-national companies in the emergence of local circular economies, and the challenge of multi-stakeholder coordination in sustainability transformations. Practical examples from the food sector, SME sustainability transitions in emerging economies, or stakeholder coordination in the energy sector provide an appreciation of the diversity and space for creativity in managing sustainability transitions.

### **Practical recommendations drawn from Just Transition Methodologies**

**Each Just Transition has to be created locally.** The two presented frameworks show that any Just Transition is a highly localized, creative process. The fact that the development of the road map for a Just Transition in Western Macedonia takes a 10-person expert team supported by local stakeholders more than two years illustrates well the complexity of the challenge. Therefore, a community facing such challenge requires support; it needs change-makers, entrepreneurs, and a strong support from the government in order to set up a Just Transition process that has a chance to achieve the set goals.

**Develop your own, unique Just Transition approach taking as much inspiration and lessons learned from experiences of others.** There is much more knowledge and innovative ideas outside of any core team for the Just Transition than within such a team. Therefore, look elsewhere – learn from a wide variety of internet accessible sources like the earlier discussed the World Bank report and the Wuppertal Institute Tool Box, and adapt their findings to your needs and circumstances on the ground. Get inspired, copy what worked elsewhere, but select well and adapt so that the replicated solutions are closely tailored to your particular needs and aspirations. They have to integrate and reflect the local conditions. From our experience, selection of examples that are to be followed requires a profound, community-wide debate; a constructive conflict is necessary to identify the best way forward for the entire community. Collective bargaining of all parties involved is a key success factor of empowerment and mobilization of the local community.

**Start thinking about governance after the key players are identified and have committed themselves to the Just Transition.** There are many possible governance structures for a Just Transition process. The most critical initial task is to identify the key players who have the will and capability to set up the process and drive it over several years. Once they are identified and have committed themselves, one can proceed to the next stage of designing a suitable, efficient governance structure, which allows to integrate key stakeholders into the process. It should be noted here that proper preparation and development of such a transition takes time for exploration, learning and adaptation. It cannot be rushed despite calls for "immediate solutions".

## 4. Description of Albanian coal sector and post-coal mining communities

### 4.1 Case Study: A miner's biography

#### A miner's biography



Growing up in the communist Albania meant to be a part of the centrally-planned economy. It was the state who determined each individual's career path, starting from choosing a vocation, a place of work, family life patterns, and a subsequent worklife evolution.

Born in Vlora, I was at the mining school in Tirana from 1967 until 1972. At the time, there was a need for mining engineers who could deliver the industrialization programs designed for Albania. Salaries in the mining sector were therefore better than in the state-owned agriculture: while a wage for an engineer was about 800 Leki, best wage in farming amounted to no more than 500, with an average of about 250. Five fellow mining engineers who graduated with me were all sent to different mining towns across the country. Myself, although I initially managed to be formally affiliated with the central mining institute, I was assigned to go to Pucka, which was one of the biggest mining regions, but at the same time a very unattractive mining town. It had approx. 7.000 inhabitants and workers employed in the mining supply chain represented approx. 10% of the local workforce. I asked to be placed closer to Tirana. However, since my uncle was in jail for political reason, I was not only placed in Pucka mine as a form of a "punishment", but also removed from the central mining institute.

I lived in Pucka for 13 years. It was the worst mining town where people from many parts of Albania were all mixed together. In the city there were very few social activities - there were only a canteen and a miners' house. Consequently, it was impossible to find a wife in Pucka. It was cold, public transport accessibility was very limited (since the road infrastructure was very bad and there was virtually no public transport available, it often took me several attempts and more than one day to get back home), and it was one of the poorest regions of Albania.

On the top of it I could see my family not more than three times a year. Out of about 220 employees in my mine, only 10 to 15 were living with their families in nearby villages. All the others could go back to their hometowns and see families only every couple of months. It was a work migration model of the time. In Tucs, my hometown, many men experienced the same faith as me. They were allocated to more than 10 different mining sites all over the country.

I participated in the protests of 1989. Once the system changed I was finally able to move back to Tirana, to work in Valias mine and later in the central mining institute.

#### 4.2 Case Study: Mining Community Krrabë and Mushqeta

##### **Case Study: Mining Communities Krrabë and Mushqeta**

The Krrabë mine operated from 1900 until 2001 with two shafts, of which the deeper one reached the depth of 322 m in 1978. At the time before closure production amounted to 40 kt/y (120 t/day) with a mass loss of 20% after sorting, which was dumped directly at the riverbank about 50 m from the main shaft. The coal was transported by trucks to the cities of Tirana and Elbasan: 20% of the output was used for heating supply in Tirana, 30% for electricity generation in Tirana, and 70% for cement production at the plant in Elbasan. Technical mining equipment originated from Poland and China (also the trucks). The 700 staff was composed of 100 miners (working in 3 shifts), 10 engineers, 30 technicians, and 530 supporting staff. Out of 700 employees, 100 were women, 50 of which worked in sorting and 50 in administration. 70% of workers were local, and 30% came to work from Elbasan and Tirana. The latter were accommodated in the miners' hostel containing 80 beds, in 10 rooms. For a typical 48 hours working week they resided typically 3 days at the miners' residence and 2 days at home. Wages at the mine ranged between 200 and 1100 Leks, where the miners earned up to 1100. There was no ventilation in the mine, which led to a number of CO<sub>2</sub>-related accidents including some lethal ones. In 1968 four fatalities occurred due to a methane explosion. In 1980 four fatalities were caused by a geological shift. In 1990 the mine was closed in an abrupt manner. However, the mining staff of 700 (in 1988) was formally maintained until 1995. According to the adopted scheme, workers not going into retirement were entitled to receive a social compensation package for roughly two years. At the beginning, such offer seemed very attractive, as it included also a salary increase as compared to a formal wage level from the communist times. The compensatory salary scheme did not require any work, therefore some workers, who were able to find another occupation, were making a double salary at that time. By 2001 staff was reduced to 70. Nowadays (in 2024), there is officially 1 employee left to oversee the closed mine. In 1995, an Italian company opened a shoe factory in the upper village of Krrabë. Most of women previously employed at the mine found work there. In the transition process it was easier for women to find work than it was for the men. About 150 men emigrated, mostly to Greece, and found employment predominantly in agriculture. A few of engineers emigrated to USA and Canada. Mine closure was technically limited to placing a concrete plate to seal the shaft and to flooding the mine with water. The equipment was left in the mine, which explains oil and iron spill visibly streaming out of the sealed shaft. At the same time, most of electrical infrastructure and distribution grid was taken out. Buildings were abandoned, and have been falling into ruin ever since. The machine house is currently used by the local population as a sheep shelter. Vegetables are grown on the mining site for subsistence agriculture.

Mushqeta mine that is located approx. 3 km from Krrabë was operating on the mountain slope. It had 1,200 employees and produced 20 kt of coal per year. Recently a highway was constructed over a part of the former mine area (second shaft). There are few remaining surface structures, such as some residential buildings up on the hill, concrete structure from auxiliary buildings near the highway, and pilings from useless material dumped to the hill slope.

## Case Study: Mining Communities Krrabë and Mushqeta



- (a) Krrabë-mine with concrete seal of shaft and polluted water outflow,
- (b) deposits of mine on riverbank,
- (c) vegetable garden and
- (d) sheep shed in machine house,
- (e) school and
- (f) former miners' residences in upper Krrabë,
- (g) former miners' residence in Mushqeta,
- (h) hang slide (inclined power line pole) and highway built over Mushqeta mine.



### *4.3 National context and coal mining sector in Albania*

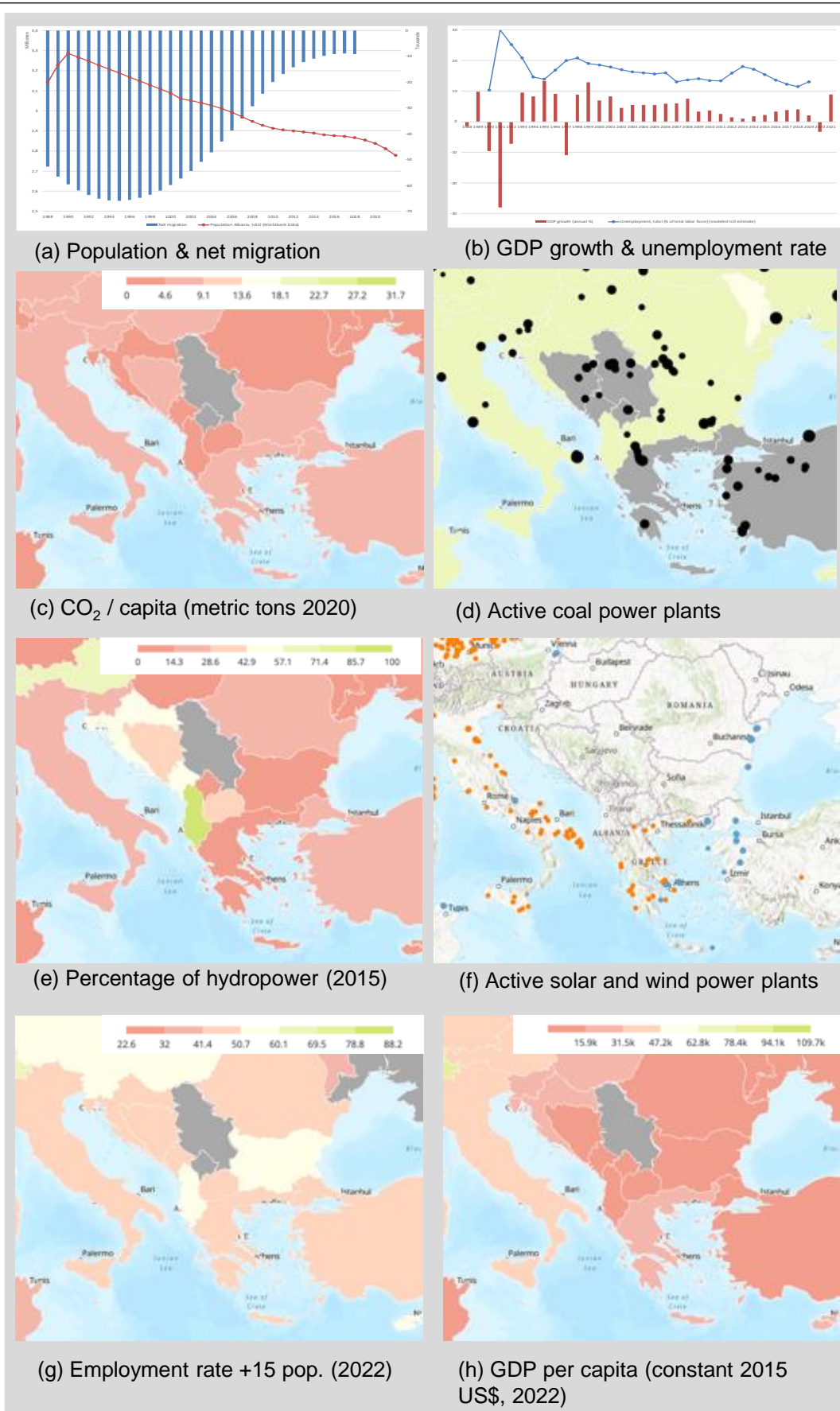
Albania is a small mountainous country on the western side of the Balkan peninsula in Southeastern Europe, with a land area of 28,748 square kilometers (km<sup>2</sup>). Albania shares borders with Montenegro to the northwest, Kosovo to the northeast, North Macedonia to the east, and Greece to the south. The country has a long coastline along the Adriatic and Ionian Seas which forms the majority of its western border. About 70% of Albania's territory is mountainous with an average altitude of 700 meters (m) above sea level; in the east, Mount Korab is the highest peak of 2,753 m. Mountainous and hilly areas are located in three regions: Northern, Central, and Southern, while the plains occur to the West along the Adriatic coast, between Hani Hoti in the North and Vlora in the South. The high variability in terrain relief creates high rates of soil degradation and highly erosive river flows (National Adaptation Plan Albania, 2020).

Albania is a highly biodiverse country. Its territory is comprised of maritime ecosystems, coastal zones, lakes, rivers, evergreen and broadleaf bushes, broadleaf forests, pine forests, alpine and subalpine pastures and meadows, and high mountain ecosystems. The narrow coastal belt (along the Adriatic and Ionian Seas), which represents less than 12% of the overall land surface, is globally significant from a biodiversity perspective (National Adaptation Plan Albania, 2020). Albania's flora constitutes 29% of flora in Europe and 47% of flora in the Balkans. Its fauna includes a variety of mammals, birds, and reptiles, as well as sea, lake, and river fishes. Protected areas occupied a total area of 523,831 ha in 2020, representing 30.0% of the forest fund area and about 18.0% of the total country area.

Albania is also well known for its rich and complex hydrographic network of rivers, lakes, wetlands, groundwater, and seas. Wetland ecosystems are important migration routes for migratory species of wild fauna (3 Ramsar sites of international importance have been designated, i.e., Karavasta Lagoon, Butrinti Lake, and Shkodra Lake). Albanian lakes and rivers are also important in terms of their contribution to the biological and landscape diversity of the country. About 247 natural lakes of different types and dimensions, and a considerable number of artificial lakes, are located in the country. The alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands is recognized as a major factor contributing to the loss of biological diversity and ecological function in aquatic ecosystems, including floodplains. Albania is a rich country in water resources. The total annual rate of flow is 39.22 billion m<sup>3</sup>/year, where 95 % is discharged into the Adriatic Sea and only 5% into the Ionian Sea. Water resources are an important source of hydropower, producing around 90% of the country's energy and providing irrigation for agriculture. However, water resources have been polluted in populated areas. (Albania's Fourth National Communication, 2022).

The geographical position of Albania determines its Mediterranean climate, characterized by mild and humid winters followed by hot and dry summers (Albania's Third National Communication, 2016). The mean annual temperature (1901-2016) is 11.5°C, and mean precipitation is 1019.8 mm (Albania Revised NDC, 2021). It is characterized by mild winters with abundant precipitation and hot, dry summers. Based upon the relief of its territories and distance from the sea, Albania's territory is divided in four climatic zones: Mediterranean Plain Zone, Mediterranean Hilly Zone, Mediterranean Pre-Mountain Zone, and Mediterranean Mountain Zone.

Figure 4.1 – Various data about Albania



Source: data from the World Bank

All existing studies reveal that Albania is likely to become warmer under IPCC scenarios. The projected future trends define continuously increasing temperatures. The changes in annual temperatures in the Albanian Coastal Area are likely to reach values of 1.7°C (1.3 to 2.2), 2.8°C (2.0 to 3.5) and 3.2°C (2.4 to 4.1) respectively by 2030, 2050, and 2100 compared to the reference period 1961-1990. For summer projections, the annual temperature change is likely to reach up to 5.3°C (4.6 - 6.0°C) by 2100. The coastal zone is unlikely to experience average temperatures less than 25°C by the summer of 2050; average temperatures up to 30°C will dominate in all the parts of this zone by 2100. The IPCC scenarios project the lowest increase for temperature in winter and higher increases in spring. All scenarios project a likely decrease in seasonal precipitation related to 1990 for all time horizons. Projected sea level rise will result in higher inundation risks for most urban areas along the coast and in increasing threats of coastal erosion (National Adaptation Plan of Albania, 2021).

Albania has a fragile economy reliant on the service, industrial and agriculture sectors that faces a range of challenges in addressing climate change risks. Large part of the country's terrain is conducive to seasonal flooding. Other challenges include both man-made and natural soil erosion, under regulated coastal development, tenure insecurity and contamination of the water supply, compounded by low public awareness of climate change. The vulnerability of Albania's energy supply and agriculture sector to climatic changes, combined with a series of recent heavy floods and landslides, are elevating climate change preparedness as a priority within Albania's development planning (Monitoring of the Climate Change Strategy in Albania, 2020-2030, 2021).

Albania is at risk of various natural disasters. Earthquakes and large-scale river flooding pose the biggest danger. In addition to these, Albania is exposed to small-scale disasters related to floods, landslides, and extreme weather events. Vulnerability of the Albanian population to natural disasters of various scale is accompanied by poverty, poor quality infrastructure, and a variety of human-influenced environmental factors, from rapid deforestation and poor management of watersheds to environmental pollution (National Strategy for Disaster Risk Reduction and action plan 2023–2030, 2023).

#### *4.3.1 Political and institutional context*

The Republic of Albania is a constitutional republic with a democratically elected parliament. The president is the Head of State and has general powers as Commander-in-Chief of the army and Chair of the national Security Council. He is also the head of the High Council of Justice. Legislative power is concentrated in the Albanian Parliament.

The system of government is based on the separation and balance of legislative, executive, and judicial powers. Since the early 1990's, the legislative power belongs to a single organ, the Assembly of Albania. The Assembly consists of 140 deputies. The Council of Ministers is selected at the beginning of each term of the parliament, as well as following a resignation or a removal of the Prime Minister. The latter is the main figure of the executive power. The Council of Ministers carries out foreign and domestic policies and directs and controls the activities of the ministries and other organs of state. The parliament must approve legislation proposed by the cabinet or it will not come into force.

The Judiciary of Albania interprets and applies the law of Albania. Albania's judicial system is a civil law system divided between courts with a regular civil and criminal jurisdiction, and administrative courts. It is governed by the High Council of Justice (Këshilli i Lartë i Drejtësisë), and its management is aided by the office of the President of Albania, the Ministry of Justice, and the various courts chairpersons (Albania's Fourth National Communication, 2022).

In 2015, Albania completed a restructuring of subnational governments ("territorial reform"), consolidating local government jurisdictions and decreasing the number of administrative units from 373 to 61 municipalities. This change was intended to give local governments more leverage to act on behalf of their constituents and to highlight the importance of involving subnational entities in any Climate Change Agreement (CCA) plan. In addition to the 61 municipalities, the country has 12 regions. While regions have a limited role, the municipalities have significant autonomy under the new structure. Social sector responsibilities are still largely centralized. However, for infrastructure, water supply and wastewater, and waste removal the municipalities have complete authority over their own processes (Advancing Albania's planning for medium and long-term adaptation through the development of a National Adaptation Plan Process, 2020).

In May 2016, the Government of Albania adopted the National Strategy for Development and Integration 2015-2020 (NSDI-II). This strategic document reflected the vision, priorities, objectives and means for social and economic development of the country up to 2020. Around 37 sectoral strategies adopted by the Albanian Government (and in three cases, by the Parliament) complemented the NSDI-II. The NSDI-II was organized around 13 cross-cutting foundations on good governance, democracy and rule of law, and four main sectoral pillars: i) growth through macroeconomic and fiscal stability ii) economic growth through enhanced competitiveness and innovation iii) investing in social capital and social cohesion iv) growth through sustainable use of natural resources and territorial development.

The overarching goal of NSDI-II was the accession to the EU. After the EU's decision in March 2014 to open accession talks with the country, Albania has been advancing the EU integration agenda. As part of the process, the country is transposing and implementing parts of the EU legislation - most national plans or actions, including in the environmental domain, have been designed since to consider policies and directives of the EU. Albania is also considering the EU's strategies and plans for the Western Balkans of which Albania is part, such as the EU Economic and Investment Plan for the Western Balkans, adopted in October 2020, and the EU Green Deal for the Western Balkans, adopted in November 2020, among others.

Besides the EU, Albania is an active participant in multilateral organizations and agreements. Albania is a signatory Party of the United Nations Framework Convention on Climate Change (UNFCCC), which was ratified by the Albanian Parliament in 1994. In April 2016, Albania signed the Paris Agreement. In December 2017, the Albanian Parliament unanimously approved a resolution confirming the country's commitment to the 2030 Agenda and achievement of the Sustainable Development Goals.

In line with global and regional commitments and national priorities, Albania has made progress on climate change mitigation and adaptation. In 2014, the Albanian government established the Inter-Ministerial Working Group on Climate Change (IMWGCC), which coordinates all institutions involved in climate change processes and facilitates the integration

of climate change into relevant new and existing policies, programs, and activities. In July 2019, Albania approved a National Climate Change Strategy and corresponding national mitigation and adaptation plans. The country has implemented several mitigation and adaptation projects and studies. There is currently a law “on climate change” which acts as the UNFCCC implementation law in Albania and covers requirements under the EU Emissions Trading System (ETS) Directive. This law requires all relevant ministries to mainstream climate change mitigation and adaptation issues into their legislation. The draft Decision of the Council of Ministers (DCM) “On monitoring and reporting GHG emissions and other information relevant to climate change at the national level” establishes a mechanism for monitoring and reporting of GHGs and other climate change information at the national level, as appropriate for a Non-Annex I party.

There are still areas of national environmental policy that are yet to be implemented effectively. Albania does not have an umbrella policy framework for environmental protection; the recent Environmental Impact Assessment Directive is not always fully enforced, and the national strategy for air quality is yet to be adopted. There is also a need to adopt a climate policy consistent with the EU 2030 framework (Albania’s First Biennial Update Report, 2021).

#### *4.3.2 Demographic context*

Albania’s demographic profile has undergone significant changes since the 1960s and particularly during the years following the end of the Communist Regime, which involved profound social and economic reforms (Third National Communication of the Republic of Albania under the UNFCCC, 2016).

Recent demographic developments show that Albania's population is shrinking. This is due to negative natural growth and most importantly negative net migration. Data from 2011 Census show that on 1 October 2011, the population of Albania was 2 821 977. It declined by around 8.0 percent, as compared to the 2001 census, where the enumerated population was 3 069 275. Most studies project that the demographic decline will continue (Albania Revised NDC, 2021). Figure 4.1a shows data of population evolution and a simulation for emigration (World Bank data 2024).

Population dynamics are determined by four factors: births, deaths, immigration, and emigration. During the inter-cense period 2001-2011 the number of births per year has decreased significantly, from about 53 thousand in 2001 to about 34 thousand in 2011, while the number of deaths per year has remained stable at around 20 thousand. However, the population of Albania started to decline from 1990, as a consequence of a massive emigration. During the inter-cense period 2001-2011 is estimated that around 500 thousand persons emigrated. That fact is also supported by available migration data obtained from some of the main destination countries for Albanian emigrants, in terms of both stock and flow data. The population pyramid of 2011 as compared to that of 2001 shifted 10 years upward showing that a significant part of the 2001 population that is now in the age range of 20-45 is no longer living in the country. The difference is largely due to emigration, which typically occurs in this age bracket. It also shows that the number of children aged 0-9 that has been added to the population in the ten years before the 2011 census is much smaller than the corresponding number that was born in the ten years before the 2001 census (Census, 2011).

Albania is fairly densely populated. In 2018, the average population density was 99.7 inhabitants/km<sup>2</sup>. Recently Albania has experienced a strong urbanization process: urban population increased from one-third in the early 1990s to almost two-thirds (62%) in 2020 (Albania's First Biennial Update Report, 2021), and is expected to increase to 78.2% by 2050 (Albania Country Risk Profile). The population density in the prefectures of Tirana and Durrës indicates higher values compared to other prefectures, respectively of 454 and 343 persons/km<sup>2</sup>, resulting from the continuous high flow internal movements towards these localities. (Census, 2011). In 2022, the largest city, the country's capital Tirana, had an estimated population of 919,511. The second-largest metropolitan area of Durrës, only 30 km from Tirana, has an estimated population of 201,519 (2020). Other major cities include Vlorë, Elbasan, and Shkodër (Albania's First Biennial Update Report, 2021). A third of the population (36%) lives in these coastal areas.

The demographic changes that Albania is expected to go through until 2031 will have an impact on population's distribution among the regions of the country. By 2031, only the population of the district of Tirana is expected to be higher than that of 2019, reaching about 954 thousand inhabitants. In other words, in 2031, about 35% of Albania's population is expected to live in or around the capital. Gjirokastrë and Kukës, in turn, will continue to be the districts with the lowest population inhabiting, respectively, approx. 53 and 60 thousand people (INSTAT, 2023).

Domestic migration to the coastal zones places more people at risk of coastal flooding, as the areas of their destination are highly susceptible to such phenomena. In addition, due to migration towards the coast, the remaining rural population becomes more vulnerable, as its large proportion is of higher age, poor, and dependent on small-scale agriculture (average farm size is 1.2 ha). During the period 2011 – 2018, the emigration rate of men turned out to be higher than the estimated numbers. These changes in migratory behavior have also entailed a change in the gender structure of the population (INSTAT, 2023).

In 2011, Albania was a country where there were more men than women. That has changed in 2019, when the gender ratio in Albania indicated 99.8 men for every 100 women. According to updated projections, the gender ratio is expected to deepen in favor of women, reaching up to 89.1 men for every 100 women.

The population of Albania ages and will continue to do so. It is expected that the median age will reach 42.1 years in 2031. That process is accompanied by a rapid increase in the elderly dependency ratio from about 20.5 elderly persons per 100 people of working age in 2019, to about 35.0 of the former for every 100 of the latter. During this period, the youth dependency ratio will remain at constant levels of around 25.0 young people for every 100 people of working age (INSTAT, 2023).

Over the last three decades, social indicators have improved in Albania. In 2019 Albania's Human Development Index (HDI) value, which considers life expectancy at birth, education, and gross national income per capita, was 0.795— which put the country in the high human development category— positioning it at 69 out of 189 countries and territories. In 2012, the most recent year with official poverty figures, 14.3% of Albanians lived below the national poverty line, while 1.1% lived below the international extreme poverty line, and 39.1% lived below the upper middle-income poverty line. Unemployment rate reached a historically low

of 11.4 % in Q3 of 2019. The latest Gini index was estimated at 33.2 in 2017 (0 representing equality and 100 inequality) (Albania's Fourth National Communication, 2022).

#### *4.3.3 Economic context*

After 50 years of the communist rule, Albania has transformed from one of the poorest countries in Europe in the early 1990s to an upper-middle-income country in 2020. Following the dissolution of the Socialist Republic in the early 1990s, free market reforms began to open Albania to foreign investment (Climate Risk Country Profile, Albania 2021). Before the 1997 financial crisis, Albania was one of the fastest-growing economies in Europe (Third National Communication of the Republic of Albania under the UNFCCC, 2016). The country was also relatively less affected by the 2008 financial crisis than the rest of Europe. Its relative insulation from the global crisis is explained in a large part by (1) the low degree of integration of its financial sector with the rest of the world; (2) the presence of sufficient buffers of capital, liquidity, and accommodating monetary policy; and (3) the government's counter-cyclical fiscal policy that focused on increasing internal demand through increased public investments. All those helped the country avoid the deep contractions experienced by the majority of the EU economies. Nonetheless, national economic growth rates have been falling since 2008, from 7.5% in 2008 to 1.1% in 2013, likely reflective of a delayed negative impact of the global economic downturn (National Strategy for Development and Integration 2015-2020). As a result of three decades of remarkable economic growth Albania's gross domestic product (GDP) reached in 2020 US\$ 14.89 billion in total, and US\$ 5,246.1 per capita. Only 2 years later, in 2022, the GDP was 17.2 billion US\$ and GDP/capita US\$ 6089.5 (Albania's Fourth National Communication, 2022; see Figure 4.1b).

At the same time, the public debt has increased to over 65% in 2019 and reached 78.1% in 2021. This economic growth has been associated with structural economic changes, entailing a transition from an economy based on raw materials, agriculture, and industry, towards a more diverse economy where the services sector plays a leading role. In 2019, the services sector (represented by the subsectors of trade, transport, commercial activities, and telecommunication services) constituted about 50% of the GDP of the country. Industry and construction made up about 20% of the GDP and the agriculture sector contributed about 19% of the GDP (Albania's Fourth National Communication, 2022).

The socio-economic progress of Albania has been recently hampered by two shocks: the country was hit by a devastating earthquake in November 2019 and - in the midst of the reconstruction efforts - by the COVID-19 pandemic (Albania's First Biennial Update Report, 2021). The earthquake, measuring 6.3 on the Richter scale, the strongest in 30 years, caused 51 fatalities, injured at least 913 people and affected over 200,000 people (17,000 people were displaced). It caused extensive damage to physical assets in 11 municipalities, including the two most populous and developed ones (Tirana and Durrës). Tourism assets and housing were hit the hardest. The earthquake led to losses equivalent to an estimated 7.5% of GDP.

In the midst of the reconstruction efforts, the COVID-19 pandemic put significant pressure on the Government's budget and response, strongly affecting the country's socio-economic progress. Albania, as other virtually all European countries, was forced to resort to lockdown. As a result, the tourism sector, a key driver of the growth, was hit especially hard because of

containment measures and travel restrictions. In the second quarter of 2020, employment declined by 3.6% year-on-year.

The earthquake and the pandemic significantly increased poverty, bringing its rates back to 2005 levels (Albania Revised NDC, 2021). The economy rebounded in 2021, driven by a strong recovery in tourism, a construction boom partly supported by post-earthquake reconstruction, and a record year for electricity production. Real GDP grew by 8.5%. Both employment and labor force participation recovered to pre-pandemic levels. The fiscal position saw significant consolidation. Public debt declined to 74% of GDP. Thanks to the €650 million Eurobond (4% of GDP), the government accumulated a liquidity buffer of almost 5% of GDP at the end of 2021 (IMF Country Report No. 22/362, 2022).

The Albanian economy is facing many risks and uncertainties. Further increases in food and energy prices are a key risk, especially if they trigger larger second-round effects and social unrest. Higher and more persistent inflation could further weigh on real income and weaken growth prospects. A more significant tightening in global financial conditions could hamper Albania's access to external market financing. Risks are mitigated to some degree by the high level of FX reserves. The economy is also vulnerable to unfavorable weather conditions and a reversal in the rise of the real estate prices, given the sector's growing contribution to the economy and banks' rising exposure to the sector (IMF Country Report No. 22/362, 2022).

Many vulnerabilities of climate change have to be related to sectors of socio-economic activities, namely: Hydrological systems, agriculture, energy, health, forestry, climate related hazards and disasters, ecosystems, species, tourism. In addition, inequalities and social vulnerabilities produced by uneven development processes can aggravate risks from climate change. Marginalized people are especially vulnerable to climate change as exemplified by illegal settlements along riverbanks and marginalized communities in areas like suburbs of Tirana, Këneta in Durrës, Mifol and the surroundings in Vlora, Shkodra and Lezha plain (National Adaptation Plan of Albania, 2021).

The Albanian economy has maintained a positive growth rate in the last decade due to the untapped economic potential and the implementation of active economic reforms. The expectations of the country's economic development, based on the performance of the private sector as the essential part of the country's economy, coupled with the trends of exports, public investments in infrastructure and business support, testify to the continuation of a stable growth at around 3.4 % on the annual basis that is projected to continue throughout the period 2023-2025. Such growth is also supported by the expectations of the economic growth (2.7% in 2022) in the European Union, which is Albania's main trading partner, amounting to about 2/3 of the country's trade and being a destination of about 80 % of Albanian exports (National Strategy for Development and European Integration 2022-2030, 2023).

The International Monetary fund assessed that given Albania's high government debt, large gross financing needs, and tighter financial conditions; the authorities should take advantage of the still positive growth momentum and make efforts for faster debt reduction. This would reduce pressure on monetary policy to further raise interest rates to bring down inflation and facilitate external adjustment. The budget deficit target in 2023 is in line with IMF recommendation. However, given the prospect of elevated inflation the government should



raise more tax revenue through coherent measures and reprioritize spending to create room for higher targeted and temporary support for the most vulnerable without increasing the deficit goal. The government should also aim for a primary surplus of 1.5% of GDP in 2024, mainly through tax policy measures based on a sound Medium-Term Revenue Strategy (MTRS). The size of fiscal adjustment needed to achieve this goal would be comparable to that already envisaged for 2023 under the baseline. If downside risks were to materialize, automatic stabilizers should be allowed to operate and further temporary, targeted support to the vulnerable should be deployed. After the efficiency and transparency of public spending improve, a lower primary surplus of about 1 % of GDP could be considered starting in 2026, provided that fiscal risks are in check. This should serve, first and foremost, to support spending on human development needs and a green transition, and secondly, to address large infrastructure needs (IMF Country Report No. 22/362, 2022).

Good progress was done in Albania regarding the wages increase. After a stop in the period of 2014-2021, in the last two years there have been significant increase of wages in the public sector, aiming to achieve US\$ 950/month, as the average salary in 2024. Unfortunately, the picture is not the same in the private sector, therefore the Albanian authorities should find the real instruments to “push” the private sector toward a significant increase of their employees’ wages.

#### *4.3.4 Coal deposits and mining activities*

Albania is considered a country rich in minerals and therefore surveying, exploration, exploitation, and processing of various minerals represent an important economic activity for the country. The history of coal production in Albania includes mines and processing plants. Coal has been traditionally a major source of energy for the industrial sector, and – to much lesser extent – of heating, for the households, as well as public and commercial services. Coal production decreased in period of 1986-1992 from 2.16 million to 0.367 million tons. This industry is mainly located in the central, southeastern, and southern part of Albania (Figure 4.2: Coal mine basins and coalmines in Albania map, see the map on the next page).

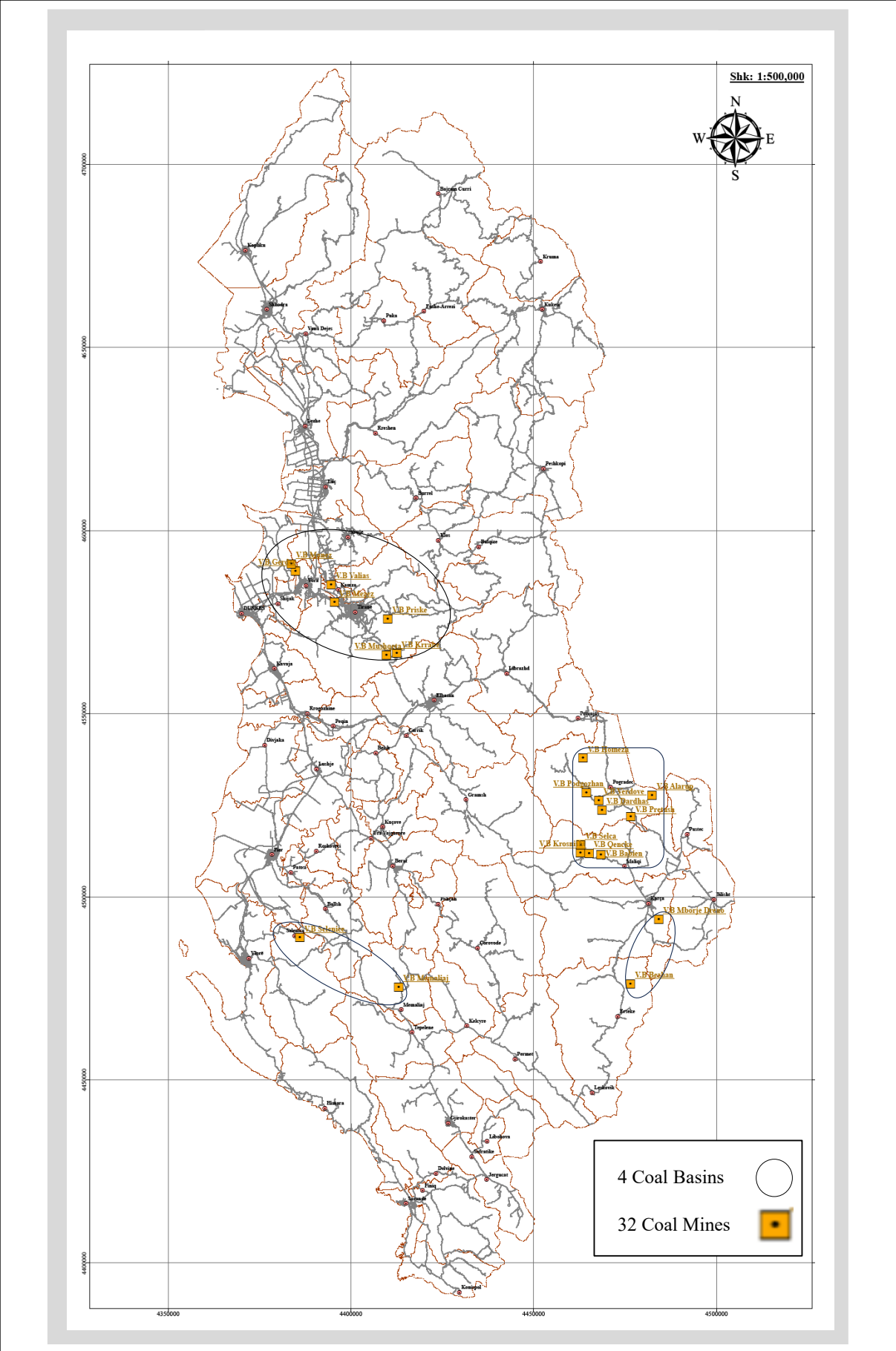
In Albania, according to the mine closure projects, the coal reserves amount to about 130 million tons, and they are located in the following three main areas: about 86% in the Tirana area, about 10% in the Korça-Pogradeci area and about 4.4% in the area of Memaliaj.

There are four Coal Basins of Albania:

- Korçë – Erseka – Coal Basin
- Memaliaj – Selenicë – Coal Basin
- Pogradec – Maliq – Coal Basin
- Tiranë – Kamëz – Vorë – Coal Basin

A total of 22 mines with a capacity from 50,000 to 500,000 tons per year each have been exploited over the years. Opening of these mines has been made through horizontal (drifts), incline (slopes) and vertical (shafts) workings. In general, the mining depth is small and varies from the only open - pit mine (Korça - Erseka Coal Basin-Bezhan Mine) to 400 meters (Memaliaj Coal Basin). Albanian’s coals are generally of the lignite type with a calorific value of 2000–5400 kcal/kg (3200–3300 on average). Some of the coal can be enriched after mining, producing concentrates with a calorific value up to 4500–5500 kcal/kg.

Figure 4.2 - Coal mine basins and coalmines in Albania map



The main lignite fields of Albania are located in different regions: Tirana-Durrës (including Kamëz and Vorë Municipalities), Memaliaj, Pogradec, Maliq and Korça. Lignite is extracted from six mines in Tirana, three mines in Pogradec, and two mines in Korça. Peats are another source of energy and are located in the Maliq reservoir. They amount to about 156 million m<sup>3</sup> (characteristics of those peats are an average calorific value of 2200 kcal/kg, humidity 11%, volatile matter 39%, and sulfur presence 1.1%).

The development of mining activity in Albania can be divided into three main historical stages. First stage before 1944: in 1922, the geological map of Albania was drafted. It was the first of its kind in the Balkans. In 1929, the mining law of the Kingdom of Albania was adopted, paving the way for the process of surveying, exploration, and exploitation of minerals in the country. The first activities were done by foreign companies, mainly Italian and Austrian.

The second stage from 1944 - 1994: The mining industry was a state monopoly, organized on the basis of regional enterprises. The products were mainly intended for the domestic market to meet the needs of the domestic economy (except for chrome ore which was mainly sent for export). The coal production was used only for domestic purposes, such as heating, energy generation, and steel production. The geological report on the detailed exploration of the Valias coal deposit (the largest in Albania) was prepared in 1969 by a group of authors of the Tirana geological enterprise. One year later (in 1970), on the basis of the geological report and with the support of the Chinese experts, the project for the opening and exploitation of the Valias mine was finalized. The marking of the industrial square of the mine began in September 1971, while the preparatory works for the drilling of the first shaft began in 1972. The first level in the first south-west panel of this site was cut with horizontal works in the absolute quota at -113.00 or at a depth of 157.6m from the surface. The opening of the horizontal works from the ventilation shaft started in May 1974, while from the main shaft in August of that year. Coal production began on 25.07.1978 and continued until 31.10.1994.

Third stage from 1994 until today: After the political changes in 1990 the privatization process began (1994-ongoing). For facilitating that transition, a new legal and administrative framework based on free market rules was developed resulting, among others, in adoption of the Albanian Mine Law (approved by the Albanian parliament in 1994). Afterwards the sectors entered in the new phase of the liberalization of exploitation licenses. The public institutions (such as e.g., the Mining Institute), as well as private actors had performed an evaluation of all mines' assets, which led to closure of non-effective mines and to establishing procedures for monitoring them.

The following section provides more detailed data on total production per mine and proven reserves, whilst Figure 4.2 above shows the location of coal basins and mines in Albania.

The closing mines had a dramatic social impact, as it entails loss of many jobs. From 15.000 people employed in the coal industry before 1991, there is only about 50 still working in the sector today. This process first started in 1991 by the implementation of the "shock therapy" and continued progressively. Between 1995-1996, when the closure of the first coalmines was implemented, around 40% of the miners lost their jobs, and the gradual decrease continued ever since. The last "hit" took place in 2000-2001 when the number was reduced to less than 200 miners. As indicated above, the current number is approximately 50. With an exception of a limited number of miners who resigned and decided to emigrate from the country, the laid

off workers were usually entitled to receive a financial support in accordance with the applied social scheme offering a very low payment (around 80-90 US\$/month) for a maximum period of three years. Nowadays, most of the former miners are retired. At the time of shut down, majority of them emigrated and the remaining ones found a new job on their own, without any State support. There is no data on the number of former miners who continue to work in the sector in the countries of their current residence.

### **Discussion: problematics related to the coal and lignite mining activities in Albania**

The use of coal has caused difficulties to the consumers because its net calorific value sometimes went under the design value for the equipment. The equipment was also subject to increased mechanical impact due to the high ash content and frequent slag formation, which led to frequent shut down of the boilers. However, the main factor explaining the sharp reduction of coal production in mid-1990s is a widespread partial or complete shutdown of industrial state-owned enterprises utilizing it as a fuel. The present structure of coal utilization is very different from the past. The main share of the current very small production is exported, and the remaining tiny portion is used by the industry for boilers and by the households for cooking and heating.

The domestic technology of coal utilization is very old and not compatible with the nature of Albania coals, which are characterized by a high moisture, high ash and high Sulphur content, as well as low net calorific value. Therefore, impact of the use of coal is twofold, affecting the equipment and the environment. The former is often subject to extraordinary wear and tear leading to temporary stops or a complete halt of the operation. With regard to the latter, coal exploitation and use are associated with environmental pollution from ash and dangerous gases.

#### *4.3.5 Energy market and power supply*

Albania is a net importer of energy, particularly of electricity, and is intensively promoting the development of RES (Renewable Energy Sources), which are associated with an increasing level of imbalances in the electricity system. To ensure security of supply additional generation capacities should be built and diversified. The 2022 power generation status is provided in Table 4.1.

In 2020, Albania achieved a basic level of implementation of the EU regulatory model in the electricity sector. However, the country still has a long way to go to fully implement the EU market model in the field of the electricity wholesale and regional market integration. This means that in the near and medium future (up to 10 years), further electricity market development and better integration with the regional market should put pressure to get the wholesale electricity prices down.

The number of market participants has been increasing each year. Almost all (20) suppliers serve also as traders. Albania has the universal service supplier (FSHU sh.a.) and only one distribution system operator (OSSH sh.a.).

Table 4.1 - Power generation capacities by technology

	Geothermal		Fossil Fuels		Hydro		Nuclear		Other Renewables (specify)		Total	
	Capacity MWe	Gross Prod. GWh/yr.	Capacity MWe	Gross Prod. GWh/yr.	Capacity MWe	Gross Prod. GWh/yr.	Capacity MWe	Gross Prod. GWh/yr.	Capacity MWe	Gross Prod. GWh/yr.	Capacity MWe	Gross Prod. GWh/yr.
In operation	0	0	97	0	2,283	7,629	0	0	0	0	2,380	7,629
Under construction	0	0	0	0	557.8	2,435	0	0	0	0	557.8	2,435
Funds committed, but not yet under construction	0	0	0	0	1,204	5,391	0	0	50	50	1,254	5,391
Estimated total projected use	0	0	97	0	4,045	15,455	0	0	250	438	4,392	15,893

Table 4.2 - Electricity consumption in Albania 2018 – 2020 by consumer category

Items		Unit	2018	2019	2020
Clusters of Consumers	Regulated market	GWh	6424	6535	6538
	Unregulated market	GWh	1215	1077	1051
	Qualified costumers in HV	GWh	957	867	811
	Qualified costumers at 35 kV	GWh	-	41	61
	TSO – coverage of costs and own needs	GWh	243	169	172
	Transmitted energy at OSHEE network	GWh	15	-	-
	FTL costumers in free market	GWh	-	-	6
<b>TOTAL</b>		<b>GWh</b>	<b>7639</b>	<b>7612</b>	<b>7589</b>

The establishment of the Albanian Power Exchange (ALPEX) is foreseen by the Law of the electricity sector of 2015. The “Electricity Market Model” that was approved in 2016 pursuant to adoption of the said law, decided that all preparations for establishing the Albanian Power Exchange should be completed by 2017. The Albanian Power Exchange is at the heart of the Albanian Market Model. As this was not achieved on time, the sector law was amended in 2018 and extended the deadlines. In 2019, the Council of Ministers approved the "Creation and definition of the legal form and the ownership structure of the capital of the market operator". In October 2020, the Albanian Power Exchange consisting of the following shareholders: KOSTT (Kosovo Transmission System and Market Operator) 42.75% and OST (Albanian Transmission System Operator 57.25%, was finally registered in the National Business Center.

The Albanian Power Exchange started operations at the beginning of 2022. Selling electricity on the free market within the country is to be an increasingly present alternative as there are legally binding programs requiring that consumers connected to medium voltage (35/20/10/6 kV) are supplied only on the free market. Currently, besides customers connected to the high voltage, only customers connected to 35 kV are supplied on the free market, while those

connected to 20/10/6 kV are supplied on the regulated market at prices set by ERE (Free Market Supplier – FTL sh.a., and Last Resort Supplier – FMF sh.a., part of holding OSHEE sh.a.).

Table 4.3 - Electricity wholesale market prices 2019 – 2020

Years	Delivery interval	Quantity (MWh)	Price (€/MWh)	Value (€) (VAT excluded)
2019	Baseload	490	41.4	20,271
	Hourly <sup>1</sup>	100,223	55.1	525,983
	Peak	44,021	56.7	2,496,965
	<b>TOTAL</b>	<b>144,734</b>	<b>55.6</b>	<b>8,043,218</b>
2020	Baseload	78,261	46.0	2,596,656
	Hourly <sup>1</sup>	43,408	46.8	2,031,241
	Peak	2,880	55.6	159,984
	<b>TOTAL</b>	<b>124,549</b>	<b>46.5</b>	<b>5,787,881</b>
<b>TOTAL</b>	Baseload	78,751	45.9	3,616,927
	Hourly <sup>1</sup>	143,631	52.6	7,557,223
	Peak	46,901	56.7	2,656,949
	<b>TOTAL</b>	<b>269,283</b>	<b>51.4</b>	<b>13,831,099</b>

#### 4.4 Current situation in each of the post mining communities in Albania

In accordance with the proposed holistic approach to mines as entrepreneurial ecosystems, the state of Just Transition in the post-mining communities of Albania is presented in this section by grouping the closed mines in clusters determined by their perceived communal centers. This seems to be crucial for a sound understanding of the transition process, as Albania exhibits a number of quite different post-coal mining situations. We discern (a) post-mining areas in the metropolitan area of Tirana, (b) medium centers (Korça, Pogradeci, Telepania) and (c) remote post-mining communities.

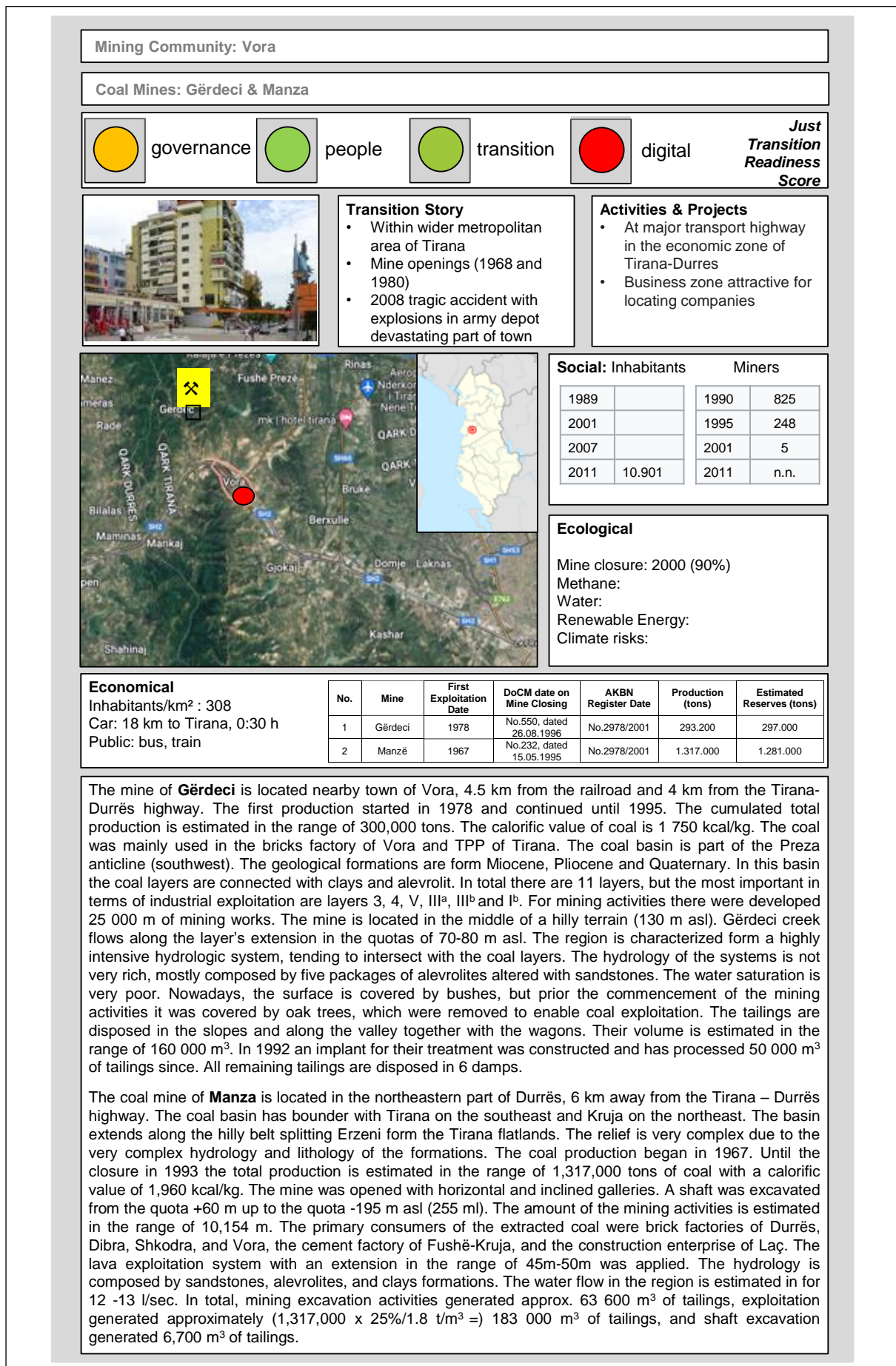
For each community, a “Just Transition ID-Card” is completed to the authors’ best knowledge. The information basis has been scarce. And most of the information has been obtained through interviews and desk research. Due to the fact that 30 years have passed since 1990, including quite rough and disorganized liberalization period, official information sources are extremely weak and often contradict one another in terms of numbers and data. Therefore, in order to create an overview of the current situation, also non-scientific sources such as e.g., Google maps and Wikipedia have been used. In situation of disruptive socio-economic transitions, incomplete information is a typical phenomenon. As a result, it is crucial, to use any available data sources to provide transparency and visualize the ongoing dynamic processes at the earliest opportunity.

In order to provide some contextual depth, two case studies – one containing the results of a field mission to the post-coal mining community of Krabbë and the second showing the reality of the Albanian coal mining over the last 40 years in a form of a miner’s biography – have been placed at the opening of this section (p. 30-32).

#### 4.4.1 Mining Community Kamza

<b>Mining Community: Kamza</b>																										
<b>Coal Mines: Valias</b>																										
<b>governance</b>	<b>people</b>	<b>transition</b>	<b>digital</b>	<b>Just Transition Readiness Score</b>																						
	<b>Transition Story</b> <ul style="list-style-type: none"> <li>Historically small town of 6.000 inhabitants (1975)</li> <li>Urbanization and industrialization (mine) during socialism</li> <li>Wild urbanization in vicinity of Tirana in the 1990s</li> </ul>		<b>Activities &amp; Projects</b> <ul style="list-style-type: none"> <li>Agricultural University of Albania</li> <li>Since 1997 international projects for urban infrastructure</li> <li>City Train Project</li> </ul>																							
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<b>Economical</b> Inhabitants/km <sup>2</sup> : 2802 Car: 11 km to Tirana, 0:20 h Public: bus			<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>No.</th> <th>Mine</th> <th>First Exploitation Date</th> <th>DoCM date on Mine Closing</th> <th>AKBN Register Date</th> <th>Production (tons)</th> <th>Estimated Reserves (tons)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Valias</td> <td>1978</td> <td>No.139, dated 20.03.1995</td> <td>No.2978/2001</td> <td>3.515.178</td> <td>49.186.000</td> </tr> </tbody> </table>				No.	Mine	First Exploitation Date	DoCM date on Mine Closing	AKBN Register Date	Production (tons)	Estimated Reserves (tons)	1	Valias	1978	No.139, dated 20.03.1995	No.2978/2001	3.515.178	49.186.000						
No.	Mine	First Exploitation Date	DoCM date on Mine Closing	AKBN Register Date	Production (tons)	Estimated Reserves (tons)																				
1	Valias	1978	No.139, dated 20.03.1995	No.2978/2001	3.515.178	49.186.000																				
<p>Coal mine of <b>Valias</b> is located in the north-west of Tirana, approx. 10 km away from the city. The general area of the mining field is 14 km<sup>2</sup>, while the area of the mining activities is 4.2 km<sup>2</sup> or 420 ha. The region is characterized by a dense network of regional and national highways. The exploitation of the Valias coal mine was carried out through vertical mining works (shafts), such as: Main shaft; Auxiliary shaft No.1; Auxiliary shaft No. 2; Ventilation shaft A1; Ventilation shaft A2 (North); Ventilation shaft A3 (Laknas-South). From 1973 to June 1978 by N.N. Miniera. A total of 10,582 m of works were opened, of which: 6924 m of horizontal works, 1873 m of inclined works, 1785 m of vertical works. After deepening of the wells up to the first level -113.00 in 1974 the opening of horizontal works began. Coal production started in 1978 and continued until 1994. In total 3,642,178 tons of coal with an energetic value of 2,190 kcal/kg and a 47% impoverishment coefficient were produced. By the decision No. 139 of the Council of Ministers, dated 20.03.1995, the mine was put in liquidation (closure). The former ITNPM (Institute of Mineral Extraction and Processing Technology) was tasked with drawing up the Technical Project for its closure with implementing the decision of the Council of Ministers. The study envisaged: flooding horizontal and steep works with water and filling all columns of vertical shafts with material (fractionated limestone gravel), building (in certain cases) ambushes at their bottoms. That study has never been implemented. The closing of the Valias mine was done according to project No. 2916 prepared by the former ITNPM in 2004, with a budget of about 10,000,000 ALL (at that time approx. 84,000 US\$) The scenario of closing the mine was applied by plugging the mouths of the shafts on the surface with metal pipes and concrete and surrounding them (in the perimeter calculated according to the technical requirements) with walls. In addition, metal profiles were placed on them at a certain distance, connected with wire networks.</p>																										

#### 4.4.2 Mining Community Vora






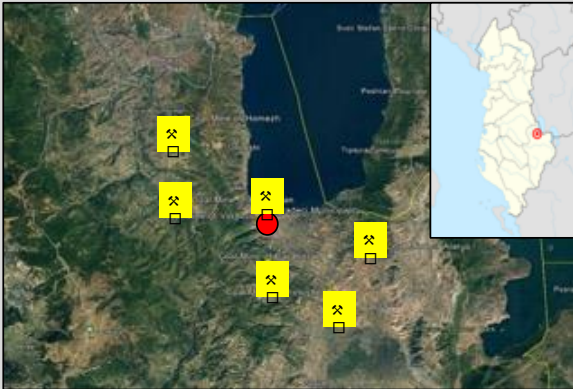




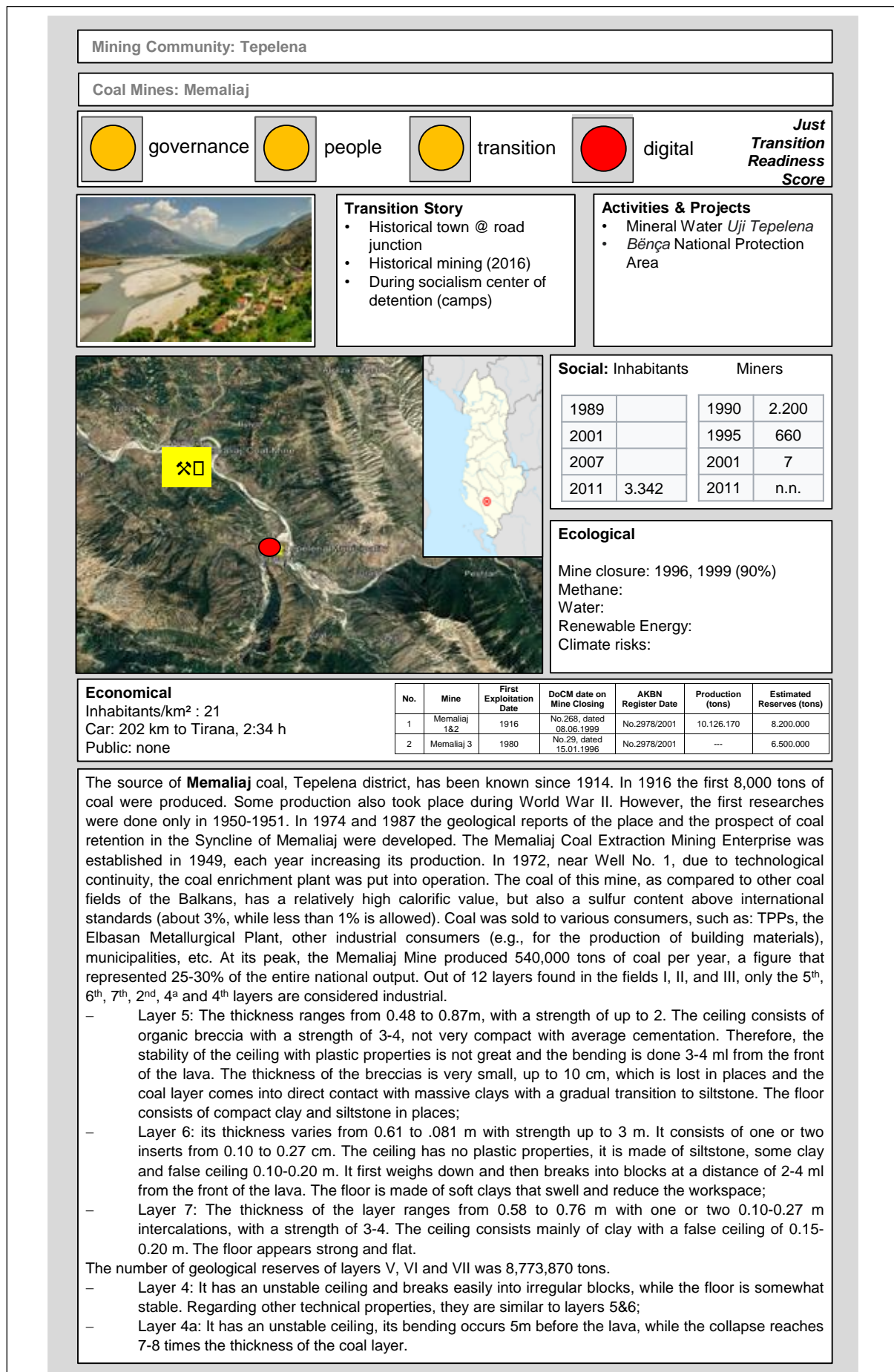
#### 4.4.3 Mining Community Kora

Mining Community: Kora																											
Coal Mines: Mborje-Drenovë																											
governance	people	transition	digital	<b>Just Transition Readiness Score</b>																							
		<b>Transition Story</b> <ul style="list-style-type: none"> <li>Historically important city</li> <li>Industrialization during socialism</li> <li>Loss of inhabitants after 1990</li> <li>Recently increase in population</li> </ul>		<b>Activities &amp; Projects</b> <ul style="list-style-type: none"> <li>University (7.000 students)</li> <li>Tourism</li> <li>Brewery</li> </ul>																							
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<b>Economical</b> Inhabitants/km <sup>2</sup> : Car: 163 km to Tirana, 2:52 h Public: Bus, Train to Guri i Kuq, Pogradec				<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>No.</th> <th>Mine</th> <th>First Exploitation Date</th> <th>DoCM date on Mine Closing</th> <th>AKBN Register Date</th> <th>Production (tons)</th> <th>Estimated Reserves (tons)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Mborje-Drenovë</td> <td>1930</td> <td>No.349, dated 07.07.2000</td> <td>No.2978/2001</td> <td>1.100.000</td> <td>3.698.000</td> </tr> </tbody> </table>				No.	Mine	First Exploitation Date	DoCM date on Mine Closing	AKBN Register Date	Production (tons)	Estimated Reserves (tons)	1	Mborje-Drenovë	1930	No.349, dated 07.07.2000	No.2978/2001	1.100.000	3.698.000						
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1	Mborje-Drenovë	1930	No.349, dated 07.07.2000	No.2978/2001	1.100.000	3.698.000																					
<p>The coal mine of <b>Mborje – Drenovë</b> is located in the southeast of Albania, in Korçë region. The basin is located at around 1000-1400 m asl. It is divided in three geological formations. Geology, relief, hydrology and infrastructures constitute a basis for such division. Geologically, the basin belongs to the monocline structure dipping east, which represent the coal bearing structure of Oligocene, placed transgressively over the serpentines ultrabasic. The formations are mainly sandstone and mergerless intersected by granular dolomites bearing the coal reserves. Within the formation it is possible to differentiate 4 layers: A, B, D &amp; D<sub>k</sub>. Among those only A &amp; B are fully explored, while D &amp; D<sub>k</sub> are partially explored, especially in their southern dipping. The hydrology is related to the Oligocene aquifers and is composed of conglomerates, sandstone, mergerless, and limestones. The tailings volumes in mine 2 are as follows: production tailings - 21,500 x 0.25 = 5,400-ton x 0.6 m<sup>3</sup>/t = 3,300 m<sup>3</sup>; mining works - 500 m (backfilling) x 5m<sup>2</sup> =2,500 m<sup>3</sup> x1.5 = 3,800 m<sup>3</sup>; the total volume of tailings is therefore 7,100 m<sup>3</sup>. The mining works of mine 2 are 2,440 x 5.2 x 0.6 = 7 600 m<sup>3</sup>.</p>																											

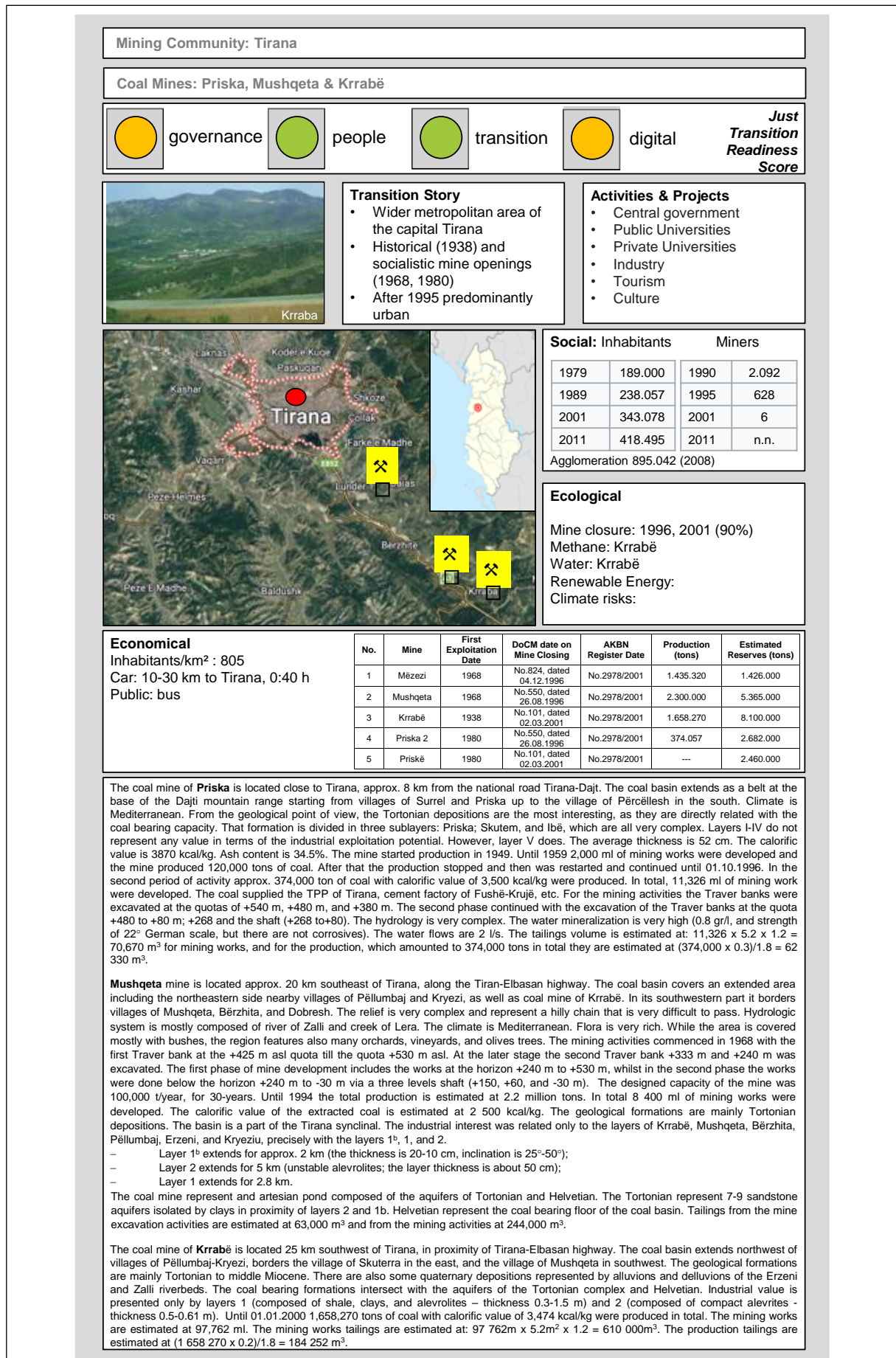
#### 4.4.4 Mining Community Pogradeci

<b>Mining Community: Pogradeci</b>																																																						
<b>Coal Mines: Alarup, Pretrushë, Dardhas, Vërdovë, Potgozhan, Homezhë</b>																																																						
 governance	 people	 transition	 digital	<b>Just Transition Readiness Score</b>																																																		
	<b>Transition Story</b> <ul style="list-style-type: none"> <li>Historically important city</li> <li>Mining town during socialism</li> <li>Two mines opened in 1985 and 1987, respectively</li> <li>Loss of inhabitants after 1990</li> <li>Closure of a train line</li> </ul>		<b>Activities &amp; Projects</b> <ul style="list-style-type: none"> <li>UNESCO-Heritage Ohrid-Region.</li> <li>Tourism</li> <li>Wood industry</li> <li>Wastewater treatment 2015</li> <li>National road connection 2022</li> </ul>																																																			
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<p>The coal mine of <b>Alarup</b> is located in the southeast of Pogradeci. Coal depositions of this basin are divided into three groups: Lower facia; Middle facia; Upper facia; Lower facia depositions. All these depositions are represented by sandstones, shale sandstones, alevrolites, and conglomerates. The area was tectonically very active in the post mineralization period. Alarup basin is divided in two main tectonic zones, which are closing to the north and opening to the south. Alarup structure is a monocline, but it is very complex due to the late tectonic activity. Ashes content for the first formation ranges between: 10.7-40%, with an average of 23.5%; and for the second formation between 7-15%, with an average of 14%. Moisture for the first formation ranges between 10-34%. The calorific value is 4,070 kcal/kg and 4,750 kcal/kg is for the first and the second formation respectively. The mine started operations in 1959 and until 1994 produced 1.22 million ton of coal. The coal was used in Elbasani steel factory, as well as by the local community, Maliqi TPP, etc. Sulphur content is below 1%. Tailings volume from the mining works is 630 000 m<sup>3</sup>. They are covered by the local vegetation and most of them are biodegraded. The coal basin of <b>Pretush</b> extends in southeast of Pogradeci, nearby the national road Pogradec – Korçë, 500 m from the village of Pretush. The climate is Mediterranean &amp; continental. The basin is in the Mokra synclinal, whereas the Eocen deposition lays over the Upper Creta limestones. The tectonic of the basin is very complex. In the coal bearing formation there are 30 layers dipping 8-13. 4 layers are exploited: I, I<sup>1</sup>, II<sup>a</sup> and II<sup>a1</sup>, each being 0.7-0.85 m thick. The calorific value is about 2,000 kcal/kg. About 70% of the formations are sandstones, and the remaining ones are alevrolites and sandy alevrolites. The total production of the mine is estimated at 1 million tons. The total volume of tailings is estimated at 169,200 m<sup>3</sup>. The coal mine of <b>Dardhas</b> is located in the municipality of Pogradec, south-west of Pogradeci town, 14 km west to the national road Pogradec – Korçë. The creeks of Krushë - Vërdovës, Rëmenjit, and of Dardhasit belong to its hydrological system. These creeks flow into the lake of Ohrid. The coal bearing formation is composed by the Oligocene (Dardhas) and Guri i Kamjes conglomerates. Conglomerates are also found over the coal bearing structure. The coal layers intersect with sandstone and alevrolites. This formation is located in the eastern side of the Mokra synclinal, extended southeast-northwest dipping 32° -100. The geological works have a very complex tectonic system. The coal production started in 1972, at the quota +1 124 m. The mine works are mostly characterized by Traver banks and field galleries and the quota +1 112 m and +1 030 m. In total 8,770 ml of mining works have been excavated. The mine was closed in 1995 having produced in total 939,000 ton of coal with calorific value of 3,054 kcal/kg. All tailings are biodegraded, thus do not represent any environmental concern. The coal mine of <b>Vërdovë</b> is located 5 km southwest of Pogradeci. The coal layers are located at the quotes 1000-1170 m asl. Climate is mediterranean continental. Geologically the formations are Aquitanian, matching with the Oligocene conglomerates. The coal basin is located at the clay sandstone formations. The coal content is not uniform and extends to the entire area of the structure. The coal basin has 5 industrial layers: II, V, VII, VIII, XI. The average thickness is 05-0.9 m. The calorific value of coal is 3150 kcal/kg; ashes content amounts to 50% and sulphur to 4%. The sealing is stable, as is also the floor of the layers. Traver banks are excavated at the quotas +955 m and +1025 m. The total production is estimated at 900,000 tons. Nowadays it is one of the 2 active coal mines in Albania, although its production volumes are very low. The total area of the coal basin is 7-8 km<sup>2</sup>. The total volume of the tailings is at 36,100 m<sup>3</sup> (17,000 m<sup>3</sup> for Gallery 7/1, 4,100 m<sup>3</sup> for Gallery, and 15,000 m<sup>3</sup> for Traver bank. The <b>Potgozhan</b> coal mine is located 6 km from Pogradec in between the villages of Podgozhan-Kalivaç-Malinjë. Climate is Mediterranean continental. The geological formations represent mixing of sandstone and alevrolit packages, as well as a large number of coal shales. The coal bearing capacity is related to the alevrolites packages. The coal basin of Podgozhan is located in the eastern side of the centroclinal of the Mokra synclinal. The depositions extend southeast-northwest dipping in the west by 22°-8°. In the centroclinal the depositions dip south up to 10°. In total the coal bearing formation is composed by 40 layers. For the industrial purposes the most interesting layers are: I, IV, VIII<sup>a</sup> and IX. The coal layers sealing is stable, except for the layer 6. Along the opening of the mining works horizontal excavations were implemented. The total production of coal is estimated at 300 000 tons, whilst the total volume of tailings is estimated at 130,000 m<sup>3</sup> from the production and at 80 000 m<sup>3</sup> from the 27,000 ml of the mining works.</p>																																																						

#### 4.4.5 Mining Community Tepelena




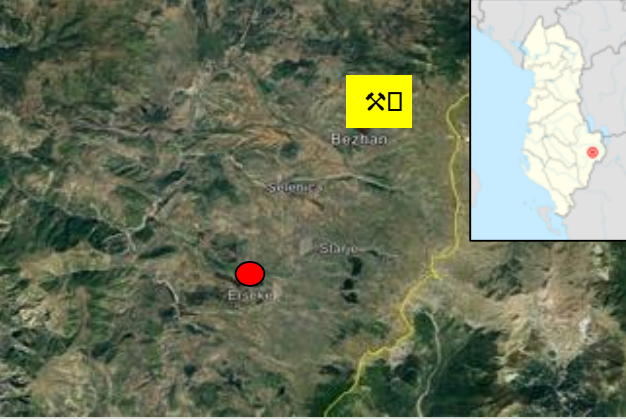
#### 4.4.6 Mining Community Tirana Agglomeration



#### 4.4.7 Mining Community Maliq

<b>Mining Community: Maliq</b>																																										
<b>Coal Mines: Krosnisht, Selcë, Qenck &amp; Babien</b>																																										
<b>governance</b>	<b>people</b>	<b>transition</b>	<b>digital</b>	<b>Just Transition Readiness Score</b>																																						
		<b>Transition Story</b> <ul style="list-style-type: none"> <li>Traditional agricultural town</li> <li>Agriculture (lake transformed into pastries) &amp; mining industry during socialism</li> <li>Mining activities until 2000</li> <li>Administrative reform 2015 bashkia Maliq</li> </ul>			<b>Activities &amp; Projects</b> <ul style="list-style-type: none"> <li>Agriculture</li> <li>Food industry</li> <li>Tourism</li> </ul>																																					
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<p>The coal basin of <b>Selcë</b> belongs to the coal basin of Gorë, one of the largest basins of Korçë. The mine started operations in 1984. Galleries have been excavated at the quotas +805 m and 840 m asl, and the Traver bank at the quota +780 m. Until 1991, 500 ml of mining works were developed and total of 253,563 tons of coal with calorific value of 1,965 kcal/kg were produced. The coal was used in Maliqi TPP and in the steel factory of Elbasani. The Babien sector is located on the other side of Devolli river. This sector was exploited via horizontal and oriented galleries. In the period of 1986-1992 75,236 ton of coal with calorific value of 1,971 kcal/kg were produced. The geology of Selcë represent Gora depositions. These depositions are placed over the coral's limestones of midmountain, sometimes over the ultrabasic rocks. The formation is divided into 2 coal bearing structures: the lower one contains 8 coal bearing layers, and the upper one contains additional 2. The most interesting is layer 3. The formation of Babien is a part of the west toward southwest syncline of Gorë-Mokër. Besides the coal bearing formations of Gorë, there are also the ultrabasic layers, base conglomerates of Verbës, coral's limestones of midmountain and alevrolit structure of Qenckë. From the 8 layers only layer 5/1 has an industrial value. The tailings are fully biodegraded therefore they do not represent any environmental concern anymore.</p>																																										

#### 4.4.8 Mining Community Kolonja

<b>Mining Community: Kolonja (Ersekë)</b>																										
<b>Coal Mines: Bezhan</b>																										
governance	people	transition	digital	<b>Just Transition Readiness Score</b>																						
	<b>Transition Story</b> <ul style="list-style-type: none"> <li>Historically important city</li> <li>Industrialization during socialism</li> <li>Loss of inhabitants after 1990</li> <li>Recently rapid decrease in population</li> </ul>		<b>Activities &amp; Projects</b> <ul style="list-style-type: none"> <li>Agriculture</li> <li>Brewery</li> <li>Tourism (potential for mountaineering)</li> </ul>																							
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<p><b>Bezhani</b> coal basin is located at the Kolonja flats. The geological formations are Molasses – fourth cycle of Molasses – Miocene. The formation area is 0.8 km<sup>2</sup>. The geometry of the basin represents a syncline extending for 1.5 km toward northwest-southeast dipping toward south-southwest by 15°. The clay depositions constitute 75% of 200 m of total thickness. Layer 1 represent the primary coal bearing layer and lays above the coal sealings. Thickness at the surface is 6 m. The production started in 1972. At first coal was extracted from an open pit at the quota +1060 m asl. Underground exploitation started in 1979. The total production is estimated at 1.1 million ton, out of which 750,000 ton was extracted from an open pit. In total 12,838 ml of mining works were developed. The calorific value of the coal is 2,100 kcal/kg. Tow aquifers are located at the coal basin: Gramoz aquifer, yielding 0.02-0.2 l/s; Quaternary aquifer, yielding 0.1-1.5 l/s. Volume of tailings for the mining works is estimated at 12,838 x 5.2 x 1.2 = 80,110 m<sup>3</sup>. The production tailings are estimated at 1.07 x 10<sup>6</sup> x 0.25/1.8 = 148 600 m<sup>3</sup>.</p>																										

## 5. Assessment of Just Transition Readiness of the Coal Sector in Albania

The assessment of the Just Transition Readiness of the coal mining sector in Albania proceeds in three steps. In a **quantitative analysis** a set of KPI's ideally available for the Just Transition are defined for four pillars and six dimensions of the Just Transition. For reasons of limited data availability, we develop a small model as a digital twin of the socio-economic transformation based on assumptions from the fact-finding missions conducted for the purpose of developing this study in September and December 2023. The digital twin provides a quantitative appreciation of the dynamic evolution of the socio-economic transition as well as some of its key features. In the second step we proceed to a **qualitative analysis**. We employ the concepts of multi-level-transition, supply chain, and value nets, as well as entrepreneurial ecosystems to map the socio-economic transition of coal exit in Albania and develop a deeper understanding of its features, challenges, and opportunities. Finally, we proceed to an **expert-based assessment of the Just Transition readiness** of the coal mining sector in the country utilizing a maturity model for Just Transitions based on the three pillars and six dimensions used for the set of KPI and the digital twin.

### *5.1 Digital Twin and quantitative analysis of the coal mining exit in Albania*

In order to assess Albania's readiness for Just Transition we propose a data model with 8 dimensions and 5 levels. The dimensions are an extension of the three pillars approach adopted by the World Bank (see p. 28), but they have two instead of one dimension for each pillar. In the "Governance" pillar, we distinguish "State Level Governance" and "Regional Agency". In the "People" pillar, we distinguish "People Care", which assesses supportive measures to compensate for hardships, and "People Growth". The latter helps to track the measures put in place to foster capabilities for adaptation. The pillar of "Transformation" distinguishes the ecological aspects with "Ecological Healing" and the creation of substitute employment in the dimension of "New Economy". The fourth pillar of "Digitalization" is introduced with the two dimensions of "Data Transparency" and "Digital Cooperation". For each of the dimensions, we suggest criteria, as a guidance to rate the Just Transition Readiness at each level and dimension.

**Governance.** In most of the fundamental concepts, governance is a key dimension. In the MLST-model, it is typically associated with the landscape level. In Isenberg's entrepreneurial ecosystem it appears directly in the aspects of policy, finance, and infrastructures.

**Regional Agency.** According to possibilism and entrepreneurial ecosystem concepts, decentralized agency and individual ownership is key to a successful development of communities affected by disruptions such as coal exit. Without it, governance in a top-down manner will have considerable difficulties – especially in an open market economy – to develop a new regional specialization.

**People Care.** Shut down of businesses which until now have been sources of income for dedicated workforce, breaks the bond between the two, leaving the latter in a position of a "lost investment" of time (career-wise) and commitment (in monetary terms, resulting from the loss of income and a great deal of social security). Depending on their age and alternatives at hand, employees of the closing businesses bear therefore the brunt of the disruption. These individuals and communities need support in order to adapt to the new, challenging situation.

Especially, if the disruption comes on a short notice. Typically, the capability to adapt depends on a number of factors, such as: worker's age and qualifications, as well as the speed of the disruption (how many years remain before complete shutdown).

**People Growth.** As a result of a change, people always need to start doing things differently than before. The change is driven by entrepreneurs and people who react to the new situation by learning and employing new skills. The latter are the result of formal education and vocational training undertaken in response to the disturbance, as well as the regional culture. In a coal exit, the established institutions, social roles, communities, and networks are challenged and have to reinvent themselves to serve the new economy. A newly, inspiring and innovative educational and vocational system has to be built. The reorientation leads towards creation of a new economic model that provides the youth with new educational and career opportunities, which they need to adapt to in terms of capabilities and the mindset.

**Ecological Healing.** In general, carbon intensive industries of scale consume various types of resources – water, air, land, minerals, flora, fauna, etc. Ideally, following the closure the initial state of natural environment is reestablished. Sometimes, however, that is not possible. In such case, the objective is to establish a new well-balanced natural ecosystem that does not pose any risks to the adjacent ecosystems. This requires undertaking multiple carefully identified targeted measures to stabilize the land, seal mine entries, address water- and methane-related issues, recultivate and develop the areas and assets, etc.

**New Economy.** As we have seen in the research insight sections about socio-economic transitions, these changes occur everywhere. The Just Transition becomes relevant, when regions, as well as individuals become economically redundant because their traditional industrial activities cease to be competitive and therefore are no more sought for. Individuals and regions are stripped of their occupational basis to earn their living. In such case, the most urgent and indeed existential need is to develop a new sustainable economic model providing those individuals and the region with a solid, well defined, and widely acceptable foundation for profitable business activities. In order to be economically sustainable, the latter cannot be subsidized or offered any preferential treatment not aligned with the principles of the market economy. As it takes between 5 to 40 years or more to establish new and resilient business, this is probably the most challenging task in a just transition. Therefore, in many cases of transition, particularly those when the proposed change needs to be implemented on a fast pace, its success depends on attracting existing business from elsewhere to invest into the region. The will, knowhow, and capability for regional business development is a crucial dimension to assess the readiness of a given area for Just Transitions.

**Data Transparency.** Coordination is key, both in socio-economic transitions – for example between the different levels niche-regime-landscape – as well as in entrepreneurial ecosystems between the six dimensions – e.g., between markets, human resources, and policies. A precondition for effective coordination is data and information. Therefore, it is critical to get, as quickly as possible, a good understanding of the multifaceted, multi-level socio economic situation and the state of the entrepreneurial ecosystem. It will help with identifying the relevant players and the measures that need to be introduced to have the transition take off.



**Digital Cooperation.** Climate Change as well as Just Transitions are a race against time. Rapid communication and spontaneous initiative are key to succeed. Therefore, the degree of accessibility and ease of coordination is a critical success factor.

**Why do we extend the basic three-pillar model?** Judging from our own experience in just transitions, as well as from the theoretical foundations of possibilism, institutional governance has to be complemented with agency and ownership in the region. Consequently, we differentiate the first two dimensions. In both the “People” and the “Reuse” pillars we take care of what exists and of what is new. This reflects the principle of “learning”, that means that a transition requires, on the one hand, detachment from the existing, no more competitive reality, and on the other hand, embracing new concepts and modes of operation. We cannot seek change and at the same time try to keep everything from the past. Transitions needs rupture, and that is why we split each of the first two pillars into two. Finally, socio-economic transitions in a digital world offer different options than the transitions form the pre-digital times. We embrace and encourage data and the “digital first” approaches for data-based learning and extended multi-stakeholder digital cooperation.

**Table 5.1 - Just Transition maturity model of four pillar and eight dimensions (a)**

Dimension	Institutional Governance	S
Neutral	No activity on government level	
Basic	Use of Term Just Transition in programs	
Managed	Use as a program in one government agency	
Defined	Responsibility attributed to a governmental. agency and integration in power sharing	
Established	Defined program with operations over more than 5 years	
Dimension	Regional Agency and Entrepreneurship	S
Neutral	No regional players involved	
Basic	Regional players are part of project or governance structures	
Managed	Established local organization. Participates in development process.	
Defined	Established local organization has an assigned role of certain independence.	
Established	Local organization manages the transformation process in coordination with central governance.	
Dimension	People and Community Care	S
Neutral	No support scheme	
Basic	General unemployment scheme	
Managed	Information and support campaigns / services to cope with increased information and care need.	
Defined	Prevision, negotiation or announcement of a specific support scheme (money allocation, training) for the affected workers.	
Established	Program effectively running. A significant proportion of the vulnerable are effectively receiving financial support for a period > 2 years.	
Dimension	People and Community Growth	S
Neutral	No adaption of existing educational programs. No dedicated training programs for affected workers.	
Basic	Resources available for requalification and training for affected workers.	
Managed	New educational programs for new vocations complement existing ones.	
Defined	A defined adaptation strategy of relevant educational institutions of the affected community.	
Established	New educational programs in public-private partnership matched with a new smart specialization strategy of the community. First cohort of students completed the program.	

**Table 5.1 - Just Transition maturity model of four pillar and eight dimensions (b)**

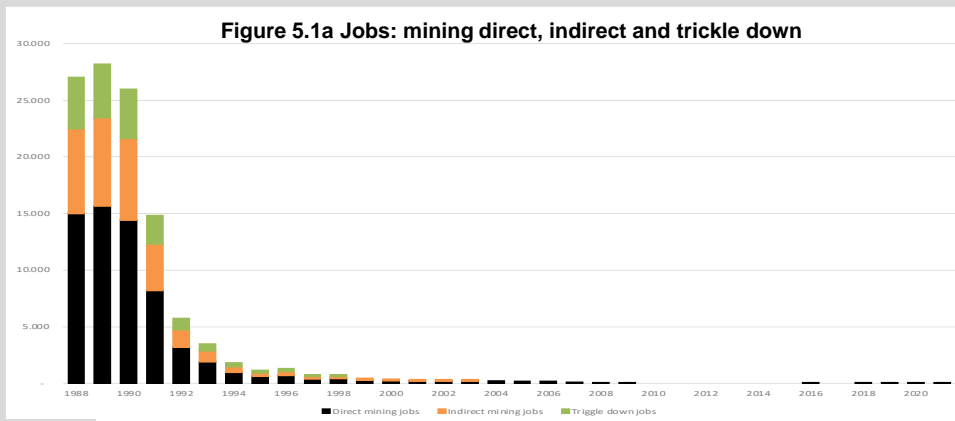
Dimension	Ecological Healing	S
Neutral	No analysis or measures taken.	
Basic	Analysis of ecological impact and risks has been undertaken.	
Managed	A government agency is in charge of surveying environmental harm.	
Defined	A government agency is assigned, a reclamation program decided and resources allocated.	
Established	A reclamation has been conducted covering all locations, including projects, budgets and monitoring for measures. Measures running since more than 2 years.	
Dimension	New Economy	S
Neutral	No new business.	
Basic	Spontaneous, new businesses without a focus.	
Managed	An agency is assigned or a local initiative active in the support of developing new local business.	
Defined	An agency / initiative is officially in charge of new business promotion and attraction. Services, Program and dedicated staff exists. A strategy for a new economic specialization exists.	
Established	Agency/ initiative exist since several years including dedicated staff. First companies emerged, possibly already a new anchor business, which could serve as a basis for a new smart specialization of the community.	
Dimension	Data Transparency	S
Neutral	No social, economic, or ecological data available.	
Basic	Some of the data available, but fragmented and inconsistent.	
Managed	Some of the data available in a structured form, collected by civil, scientific agents.	
Defined	Government organizes in a systematic way social, economic, or ecological data relevant for the transition.	
Established	Government sources provide ample transparency in systematic way on social, economic, or ecological data as well as the KPI's of the transition.	
Dimension	Digital Cooperation	S
Neutral	No trace on the internet.	
Basic	1-3 actors identifiable in the internet as contact points.	
Managed	1 or more initiatives or organizations invite to be contacted on the matter and present their role in the Just Transition.	
Defined	Defined roles for initiatives and government agencies on a central and community level. Different players in the ecosystem.	
Established	Transparent coordination for defined players on central and decentral level. Events and processes of coordination transparent and open for access.	

As a starting point, a minimum set of KPI's for the quantitative analysis of the Just Transition is listed in Table 5.2. It includes an assessment of the data readiness of statistical information in Albania. At a later stage of the Just Transition process, this set can be expanded, so that it provides for a more detailed monitoring and understanding. At the moment, the data availability about Albania for the time span of 1988 – 2023 is very fragmented. Especially the period of adaptation from 1990 to 2015 lacks statistical information and is characterized by administrative reforms which brought a change in statistical categories. In the last decade, the official statistical office of Albania has been gradually adopting the internationally standardized categories and methodology. As a result, the data situation improves rapidly. In light of the above, in the process of developing this study we could not rely on the detailed databases, especially for the period of the widespread mine closures in 1990 – 2011. We also did not have access to any sub-national level statistics for the affected communities and their entrepreneurial ecosystems.

**Table 5.2 - Set of KPI's for Just Transition four pillars and eight dimensions model**

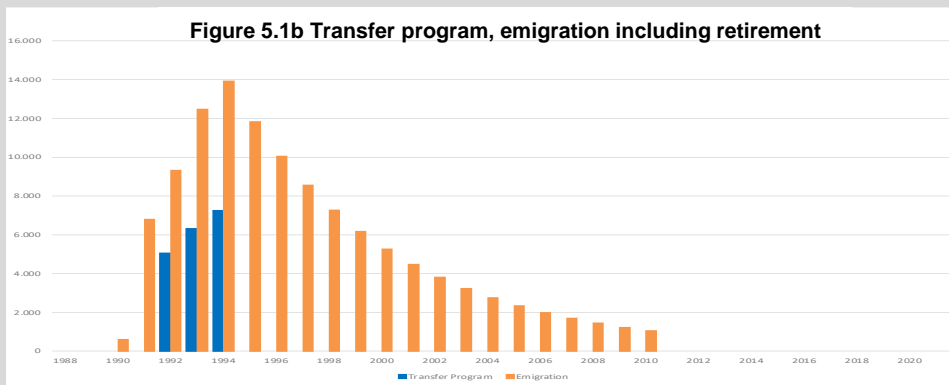
Just Transition Maturity Albania	Useful KPIs for Tracking	Data Availability (in this study)
Governance	\$ allocated to support programs, FTE dedicated	Not available
Regional Agency	FTE dedicated to Just Transition New enterprise creation on the community level New Jobs creation on the community level	Not available
People Care	Employees Coal sector FTE in transition schemes (pension -> vanish if national pension scheme exists)	Selected numbers, estimates
People Develop	Training and Requalification programs Students and vocational training in Mining New study programs created at traditional faculties	Not available
Ecological Healing	Coal production (MWh/a) CO <sub>2</sub> emissions	Available
New Economy	Electrical production (MWh/a) Renewable Energy (MWh/a)	Available
Data Transparency	Statistics KPI Mining communities	Measured for this study
Digital Cooperation	International State Mining communities	to be measured (expert based)

people care



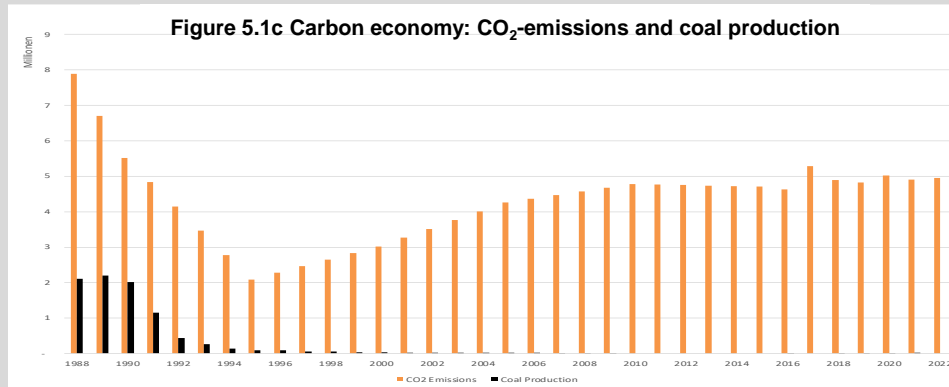
data quality

people care



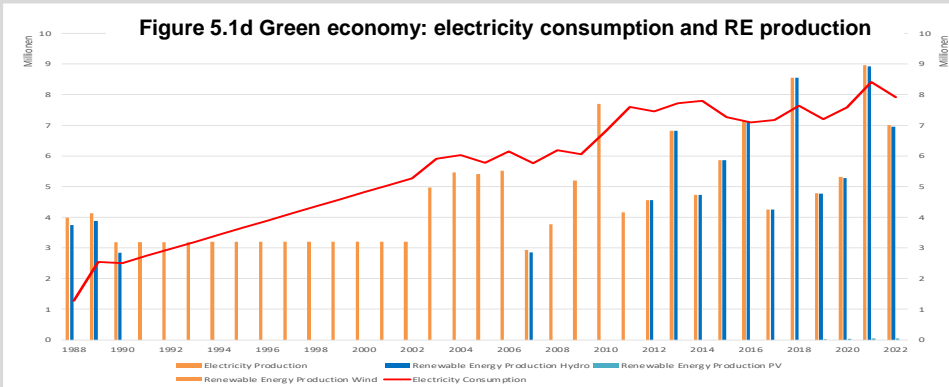
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data quality

In order to overcome the limits of a fragmented statistical database, we proceeded by estimating lacking data for indicators relevant for the four dimensions of the *Just Transition Sector Decarbonization Framework*. We based our synthetic data on information systematically collected during the series of interviews conducted during the fact-finding missions that took place in 2023. The resulting – reduced – quantitative image of socio-economic transition KPI’s of the coal mining sector on a national level is depicted in the diagrams of the digital twin in Figure 5.1a-d on page 61. In the pillar “People” we simulated employment in coal mining (KPIs: direct, indirect, and trickledown employment – as a function of coal production) and “People Care” by the KPIs of “Emigration” (indications from interviews: 40-60% of workforce per mine emigrated from the community until retirement) and “Provision of the compensation packet” (3-year package especially for older members of the workforce). The dimension “Ecological Healing” is monitored by two KPIs of the carbon economy: “CO<sub>2</sub>-emissions of Albania” and “Coal production in million tons per year”. The new economy is limited to KPIs of the energy transition, i.e., “Electricity consumption”, “Total energy production” and “Energy production from the renewable sources” (hydro, photovoltaic, wind) in million MWh/a. The dimension of data readiness is indicated under each diagram with a color code (red: no data, yellow: some reference data; green: available data).

As complementary data source and information we used also to the SDG monitoring platform (SDG KPI’s by country, 2024). Albania evolved from an SDG Score of 65,85 (2000) to an SDG Score of 73,5 (2022) and holds the 166<sup>th</sup> position in the country ranking. Amongst the specific headline indicators, which are highlighted on the monitoring platform for Albania are the following:

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>• Relative low CO<sub>2</sub> emissions,</li> <li>• Access to electricity,</li> <li>• Rural population with all season access to roads.</li> </ul>	<ul style="list-style-type: none"> <li>• Limited government spending on health and education,</li> <li>• Mean protected areas for biodiversity,</li> <li>• Mean area in maritime protected sites.</li> </ul>

The strengths that corroborate the advanced position in the energy transition can be seen also in the digital twin indicating the strong base in renewable hydropower production. In terms of weaknesses, they are in the “Ecological healing” dimension. Due to lack of data on mine closures, the poor environmental results of the latter are not recorded in the digital twin, but they emerged strongly in the interviews and in the case study of Krrabë (p. 31-32).

The digital twin and quantitative analysis visualize the story of the socio-economic transition of coal exit in Albania. They present a pretty clearcut picture that shows that:

1. Coal mining employment collapsed within less than five years after 1990 in a very rapid way. With it, a major part of the dependent service jobs evaporated as well (though possibly shifted into the emerging post-socialistic service sector – to be investigated).
2. There was a short, age-specific support program from government agencies with a duration from 2 to 3 years per person. At that time, it was deemed attractive. Very few workers outside the mining sector were offered comparable and equally attractive

conditions in the aftermath of liberalization (Interviews UNECE FFM [Fact Finding Mission], 2023).

3. Most of the workforce adjustment occurred through emigration. Large numbers of workers left for Greece and Italy (an estimated 40% of workforce of Valias mine is said to have emigrated within two years from its closures; UNECE FFM, 2023).
4. The government engaged with a London-based consulting firm to assess needs in the process of mine closure proceeding towards a rapid closure of mines (UNECE FFM, 2023).
5. Carbon economy collapsed in parallel with the collapse and restructuring of the major industrial users of coal (UNECE FFM, 2023: historically a significant share of the coal production went to industrial users, which themselves were shut down in the period of economic liberalization).
6. Power demand: Initial depression reflects restructuring years, followed by growth and stagnation of electricity consumption as a rough indicator of economic development.
7. Green transition in the energy sector – As compared to many other countries Albania is very advanced in that process: as a part of the national autarky strategy of the socialist system the country has become self-sufficient in terms of energy supply through widespread use of hydro power. This indeed facilitated the coal exit, as the low-quality coal was not a critical resource for electricity production. At some point, however, consumption growth outpaced augmentation of hydropower production. In response the latter was significantly increased, what helped the country to close the gap that started to open in the intermediate years of the transition (UNECE FFM, 2023).
8. Renewable energy production: domination of large hydropower. Despite geographical potential, wind and solar power are barely developed (see maps p. 34). This indicates that key elements of the green economy ecosystem and supply chain structure are not fully developed.

## *5.2 Qualitative mapping and assessment of the Just Transition*

The mapping of the specific coal exit transition in Albania draws on the information collected in two field trips in the second half of 2023 and a series of interviews and group discussions with stakeholders from the coal mining sector conducted throughout the duration of the project. Figure 5.2 to Figure 5.4 show how we use multi-level socio-economic transition scheme introduced above (p. 17), the supply chain analysis (p. 21) and the entrepreneurial ecosystem (p. 23) to provide a pragmatic description of the key characteristics of the Albanian situation.

The MSET mapping in Figure 5.2 illustrates the temporal evolution of the transition with major activities on landscape, regime, and entrepreneurial ecosystem level, as well as a few niche activities. So far, the significant turning points in this transformation have been the breakdown of the initial communist political regime, and the following (within the first years if not months), collapse of the industrial entrepreneurial ecosystem.

The initial ecosystem existing before 1990 with its different facets is characterized by the ecosystem-mapping in Figure 5.4 (a). It brought about the shutdown of coal mining activities as coal with relatively low calorific value and comparatively small mines with low productivity were uncompetitive both: in the emerging liberalized market and international. This shut down is perfectly visible in the data of the digital twin of coal production presented above (p. 61). A social transition package accompanied this rapid closure, with significant portion of the mining workforce immigrating to neighboring countries (predominantly Greece and Italy).

A structuring next step was the mining law of 1994 introducing various measures especially in terms of property rights and licensing. Rapid and not always consistent measures gave rise to considerable uncertainty about legal status of properties, as well as a fragmented ownership.

The next milestone is the start of the EU accession process in 2014. In parallel to this national-level step, integration in the European regional energy market has been advanced through the initiative of the West Balkan Six States. In addition, also in 2014 Albania joined the Paris Climate convention. These two steps shifted the center of gravity of agency within the Albanian Just Transition and decarbonization of the coal mining sector. The UN and EU policy frameworks became integral, and to a large extent dominant parts of Albanian policy. As it has been evident in the interviews with representatives of various Ministries, modernization and adaptation to European legal and governance standards – whether in the field of education, environment, or national statistics – ranks on top of the country's political agenda. This leads to a multi-dimensional modernization of the entrepreneurial ecosystem on a national level, as outlined in Figure 5.4 (b). The superposition of the initial regime and target regime of the socio-economic transition and their respective entrepreneurial ecosystems is depicted in Figure 5.4 (c). This superposition allows tracing several vectors of modernization, as well as growth opportunities for a Just Transition approach.

Reform of the educational sector (UNECE FFM, 2023) may increase the cooperation with international institutions of higher education and allow modernizing curricula, so that they correspond to growth pathways identified in the Just Transition scenarios.

Another crucial vector of modernization is administrative and legal reform. If synchronized with the growth pathway of energy transition, it could reduce barriers in land ownership registries and open growth opportunities for mining communities all over Albania. As several dimensions of the entrepreneurial ecosystem undergo consistent modernization, this might considerably increase the attractiveness of Albania for foreign investments and thus provide the country with capital resources necessary for the Just Transition.

With respect to the economic situation, the simple, linear industrial supply chain of the period before 1990 has nowadays, to a large extent, ceded to exist on the national level (Figure 5.3 (a)). Large steel mills were closed down, as were also many other energy intensive industrial users. The only exception is the cement industry that still continues to operate. International markets provide fossil fuels (national gas etc.).

The energy and especially electricity market liberalization and regional integration has advanced considerably, as outlined in the emerging energy supply chain and value net depicted in Figure 5.3 (b). A national and regionally interconnected power market is emerging. The diversity of market players has increased (e.g., a new category of prosumers emerged, as



some of them (PV up to 200 kW) have now an opportunity to feed electricity into the public grid). Regional integration is established, and international players are active in the power market. Market maturity, in terms of the range of power contracts offered, is gradually expanding. This liberalization and modernization of the power market is an important and promising trend of modernization in Albania. Such a market infrastructure is a pre-condition for a possible expansion of the green economy based on a decentralized market model in the energy sector. It is also an opportunity for future Just Transition projects in Albania, as it allows matching the geographic advantages of the country (sun exposure, wind exposure, river systems) with a global trend of increasing renewable energy uptake.

A challenge that is persistently evident in all interviews, as well as in available statistics is demography and availability of a qualified work force. This has been raised by equally be representatives of the educational system, and the private sector. With regard the mining industry (chrome, nickel), a strategic reinvention of curricula and cooperation with regional and/or international partner institutions could help, at least partially, to address this deficit.

There are also related needs for adaptation of the entrepreneurial ecosystem (Figure 5.4 (c)) and transformation of the supply chain (Figure 5.3). Before 1990, coal mining was a strategic part of energy autarky and of the national heavy industry program. The educational system was aligned. With the collapse of the socialistic system in 1989, its industrial fabric including the coal mining sector imploded under rapid liberalization and internationalization. Today, the size of the national job market for miners appears to be sub-critical due to the limited demand for coalmine experts and only residual mining activities in chrome and nickel. Nevertheless, even such situation holds a number of opportunities. What could be done is a development of regional cooperation allowing to pool capacities for mining education and/or for a strategical realignment of the mining curriculum with one of the potential growth markets of Albania, such as e.g., natural resource management, renewable energy, and nature conservation.

The interviews highlighted also the need for greater efforts to open more opportunities in the market of decentral power generation. As mentioned earlier, the transparency and administrative processes related to property rights are respectively low and slow, thus constituting a barrier to project development. It is a considerable obstacle, particularly at times when growth of electricity consumption is expected to continue in parallel with constantly improving material situation of the population. Albania has an opportunity, which at the same time is a challenge, to shift to a growth model not fueled by the fossil-based but rather renewable energy. In order to achieve that, however, the ecosystem has to be prepared for renewable energy expansion, i.e., an effective integrating policy, as well as appropriate legislative, administrative, infrastructural, and educational measures need to be put in place.

Figure 5.2 - Mapping of socio-economic transition related to coal exit in Albania

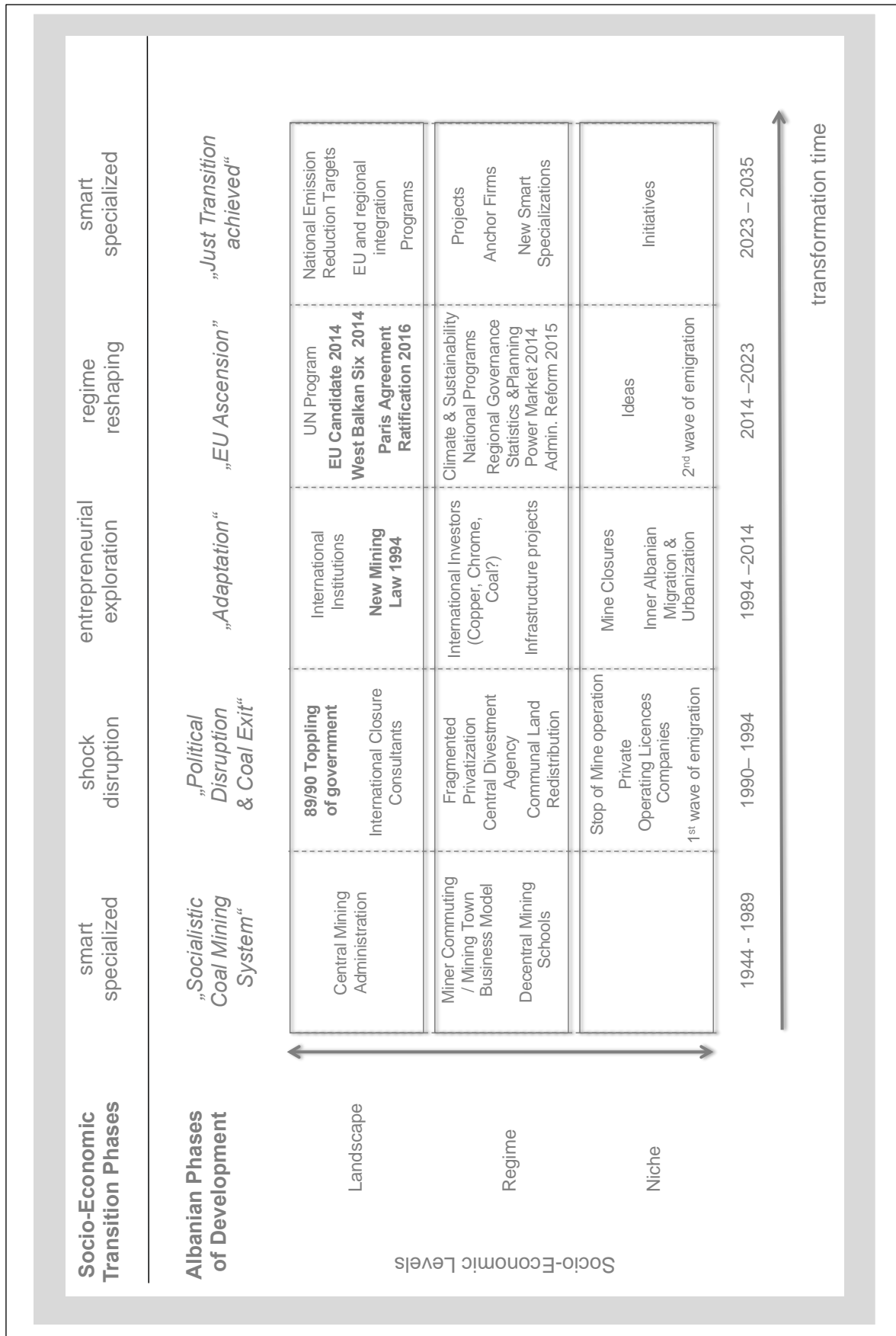
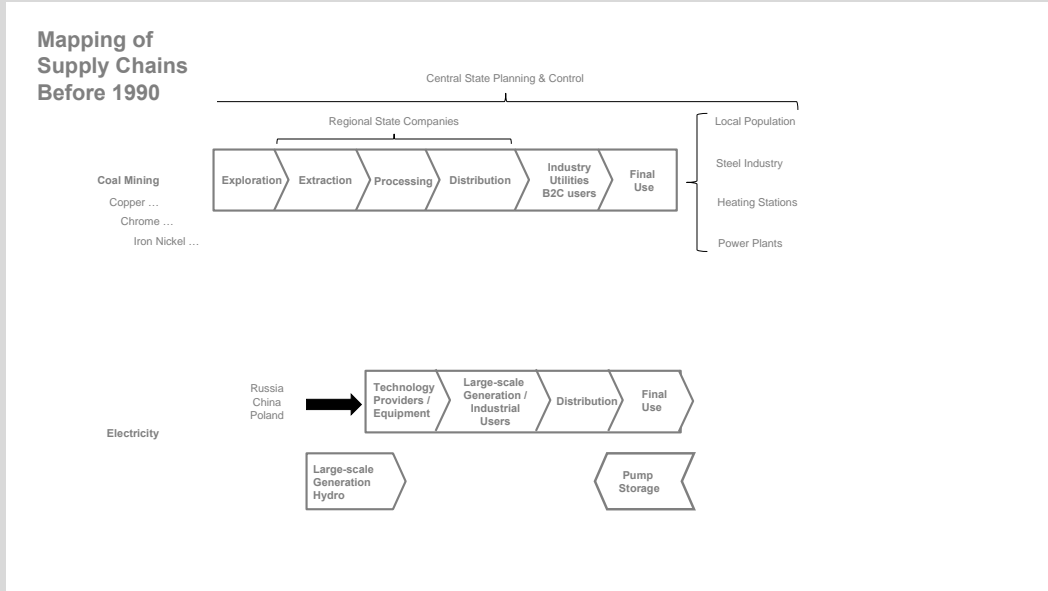
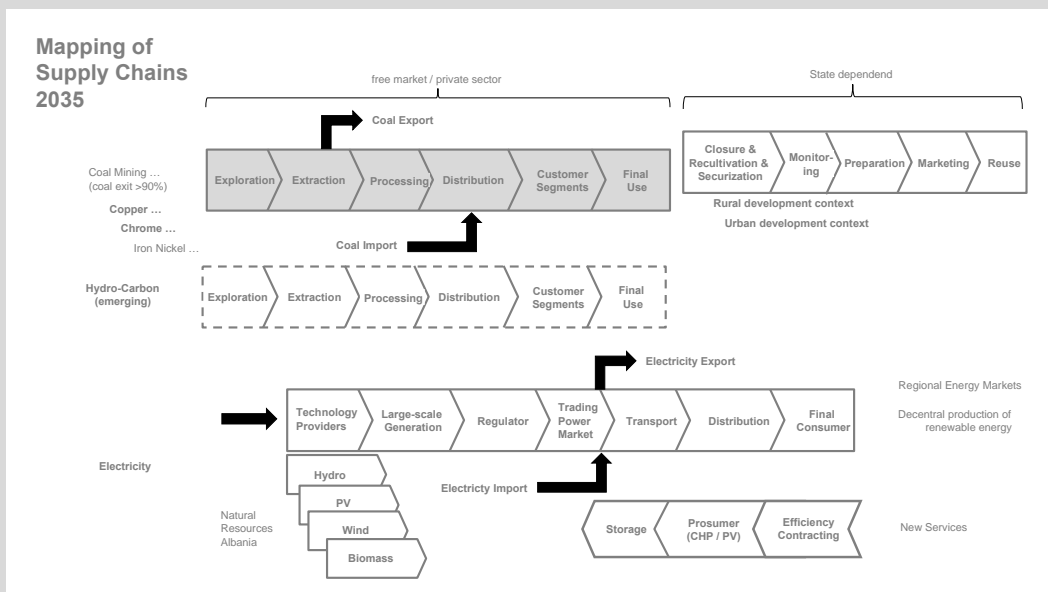


Figure 5.3 - Mapping of coal and energy supply chain in Albania

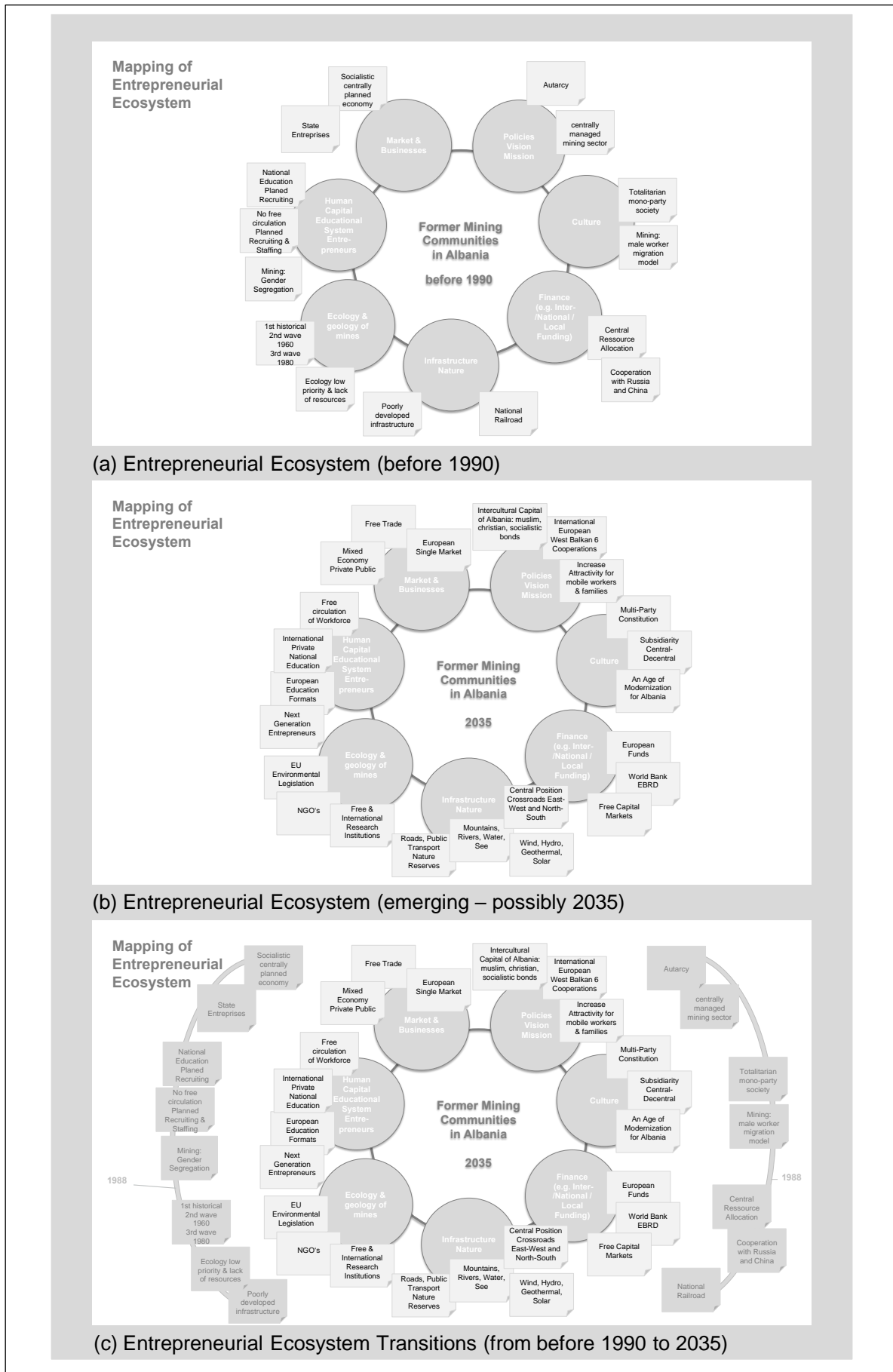


(a) Industrial Coal Mining and Energy Supply Chain (before 1990)



(b) Emerging Energy Supply Chain (Horizon 2035)

Figure 5.4 - Mapping of entrepreneurial ecosystems of Albania before 1990 vs. 2035



### 5.3 Expert Assessment of maturity of Just Transition with respect to Coal Exit in Albania

The assessment of the readiness of a country or entrepreneurial ecosystem for a transformational evolution like Just Transition requires an evaluation grid based on a sound methodological approach. As discussed in the introduction, the Just Transition concept reflects simultaneously aspects of observation, practice, and policy.

Turning to observation, we would like to increase transparency and understanding of the state of a given Just Transition by developing a simple assessment scheme – a maturity model for Just Transition. Such model allows a stakeholder community not only to evaluate the status, but also monitor the progress of a transformational process, thus providing for its better management.

The concept of maturity models has long been used in a widespread range of evolutionary phenomena (biological maturation, maturity of business processes, or information systems - Berghaus, 2016). A maturity model consists typically of a selection of dimensions characterizing the evolutionary process under study. In our case, we use the dimensions of Just Transition developed earlier (p. 55-56) and we combine them with 5 levels of maturity (neutral, basic, managed, defined, established), the criteria for each have been described before (pp. 56). The maturity is then assessed for each dimension and aggregated with proportional weights as an overall maturity for the entire Just Transition Readiness. The maturity value obtained is an indicator of to what extent the process of Just Transition under investigation is already implemented. At the same time, it is not a measure of the degree of completion of the Just Transition indicating which goals of the process in terms of new employment, percentage of land-reuse, or degree of renewable electricity production, have already been achieved.

Table 5.3 summarizes the expert-based assessment of Just Transition Readiness of the Coal Mining Sector in Albania. A small group of four experts in Just Transitions who were engaged in the project from its very beginning and participated in all field missions conducted within this study provided their individual assessments based on their own understanding of the situation on the ground. This expert assessment was validated in a group discussion.

**Table 5.3 - Maturity Assessment (Expert 1: x; Expert 2: o; Expert 3: +; Expert 4: -)**

Just Transition Maturity Albania	Neutral	Basic	Managed	Defined	Established
Governance	x	O+			
Regional Agency	Xo+				
People Care		O+	X		
People Develop	Xo+				
Ecological Healing	o	X+			
New Economy		Xo+			
Data Transparency		Xo+			
Digital Cooperation	X+	o			

As a part of a structured group discussion Just Transition Readiness of each of the eight mining communities of Albania was subject to analysis and evaluation. An overview of that exercise is provided in Table 5.4.

*Note of caution: As this project did not include a field visit to all mining communities, this assessment is only an estimate and reflects essentially only publicly available information on the post-mining situation in each community.*

**Table 5.4 - Just transition indicators summary from mining community ID-Cards**

Mining community	governance	People	Transition	Digitalization
Kamza p. 47	Yellow	Green	Green	Red
Vora p. 48	Yellow	Green	Green	Red
Kora p. 49	Yellow	Green	Green	Red
Pogradeci p. 50	Yellow	Yellow	Yellow	Red
Tepelena p. 51	Yellow	Yellow	Yellow	Red
Tirana Agglomeration p. 52	Yellow	Green	Green	Yellow
Maliq p. 53	Yellow	Yellow	Yellow	Red
Kolonja p. 54	Yellow	Yellow	Yellow	Red

## 6. Stakeholder dialogue and practical recommendations

### 6.1 Stakeholder dialogues 2023

During the stakeholder dialogue workshops held in Tirana on 11 – 13 December 2023 and on 4<sup>th</sup> of April 2024, the team of UNECE consultants presented the preliminary findings of the fact-finding mission. Findings were reviewed and discussed with participants and amended accordingly afterwards.

International experts presented Just Transition cases from various European countries, such as Northern Macedonia, Serbia, Bosnia-Herzegovina, Poland, and Germany.

Building on the fruitful exchange the workshop focused then on ideas for actions to be included into the pool of ideas for a Just Transition initiative for Albania. The suggestions are listed below – and cover mine closure (1. – 5.), new business areas (6., 10. and 15.), infrastructure investments (7. and 8.) and change management activities (12.-15.):

Table 6.1 - **Ideas invoked in the stakeholder dialogue**

No	Ideas evoked in the stakeholder dialogue
1	It is necessary to have a post-closure business model to support maintenance of the mines.
2	Need for proper closure of abandoned mines (proper closure of Valias mine).
3	Data on potential risks related to closed mines (methane, water, pollution, etc.) is needed.
4	Mines /shafts /mining land repurposing-plans are needed in advance (interdisciplinary pre-closure screening).
5	Pilot project on proper mine closure should be designed and executed.
6	Critical material and rare earth market analysis needs to progress rapidly as an opportunity to maintain mining competency for the regions. Screen mines for methane and hydrogen.
7	Infrastructure needs to be improved and could be developed in remote areas.
8	Usage of closed mines for power storage could be investigated.
9	Adventure tourism (mountain biking, rafting, etc.) as well as land use for renewable production offers a potential and should be explored.
10	Agro-business /agro-tourism offers a potential that should be explored.
11	Special industrial /economic zones offer a potential that should be explored.
12	“Albania Core”: a dedicated initiative for young people to go live in the post-mining areas and reinvent them could be proposed as an idea for reinvigorating those localities.
13	Organize a regional hackathon.
14	Transfer ideas into projects (effective project management).
15	Learn from success cases.

## 6.2 Recommendations

In the sections “Recommendations” and “Practical Considerations”, we share what the project and analysis conducted for its purpose taught us and what conclusions we drew from them, based on our own experience and practice, acknowledging that there are many aspects of the whole transition process in Albania that we were not able to examine and analyze. The following are the key points, which we find to be of importance for the post-mining communities of Albania:

1. **A first part of this socio-economic transition of coal mining in Albania is already completed:** the exit of coal mining as a business was done in the wake of market liberalization within less than 5 years after the regime change in 1990. The challenging task of finding an alternative employment for the workers laid off by the closing mines has been by now “naturally” solved by the interested parties themselves.
2. **A window of opportunity opens to finish the unfinished mine closure of the 1990’s:** The matters of ensuring safety of the closed mines, land-reuse, and new business development have still not been properly addressed in Albania. Focus of international institutions like UN and EU on a decarbonization in the Western Balkan could provide the Albanian government with the needed attention and financial resources to support a Just Transition program centered around ensuring safety and revitalization of the post-mining areas in the country.
3. **Albania has a unique opportunity to position itself as an ambitious European first mover towards a net zero economy.** Blessed with a considerable geographical potential for renewable energy and having a significant installed hydropower capacity, the country is in a pole position amongst European nations to become a green economy leader. An ambitious program of solar and wind power farms could fill the widening gap between power production and the constantly increasing power consumption. Such program would not only boost local business and energy production, but it could also serve as a modernization drive for higher education institutions and start-up communities, as well as a magnet for targeted foreign investments.

Three major points of action may play a central role for a Just Transition Initiative in Albania and have therefore been selected as recommendations.

1. **Create participatory process and governance for “Just Transition & Coal Exit in Albania”**

Since the economic coal exit lays some thirty years in the past, the intensity of and collective energy for Just Transition of coal mining areas has by now faded away (if there ever has been any). At the same time a number of issues still remain unresolved. Therefore, a very first task is to identify a core group of players who are committed to execute the (belated) transition and capable to lead such endeavor. The subsequent steps are:



- Win stakeholders on a national level and build a shared and methodological sound perspective on the “Just Transition & Coal Exit”.
- Set up a robust multi-layer process based on the centrally coordinated governance supporting the identified areas of action on the local level. Ensure safety of closed mines (protect the environment, explore methane and rare earth spill over) and local business diversification.
- Leverage institutional renewal driven by the EU accession process: Invest in governance, policy frameworks and local entrepreneurship for the mining sector, former mining communities and related education.

## **2. Modernize into a Competitive Green Economy**

Looking at the current position of Albania, the country’s outstanding strength is the high degree of electricity generation from renewable resources – with photovoltaic and wind potential being barely exploited. This opens the opportunity for Albania to become a leader in Green Economy in the European Union, in a way in which some of the Baltic States positioned themselves as leaders in the digitalization, for instance. The particular chance lays in the fact that Albania has been over the last years going through a deep, EU-driven modernization of many aspects of its legal and administrative system. Such situation gives it an opportunity to develop a consistent and holistic legal framework for a low carbon economy. Actions taken towards that goal could help Albania build a smart specialization in this area, developing in the long run a number of competitive advantages. As we have seen in the theory about entrepreneurial ecosystems, a particular focus should be on creating a favorable legal and market frameworks for decentralized electricity generation and related business models. With a wise regulatory framework, this can become a growth market for the former mining communities and other remote areas, providing them with income for medium sized farms operating in a double income model and offering interesting land reuse options for the post mining territories. Adjustments in the educational landscape (modernization of curricula) and lowering barriers to electricity feed-ins into the power grid are the steps with particular potential for facilitating such developments. Other actions could include:

- Careful phase out of fossil fuels (smart end of use strategy, CO<sub>2</sub> risk management);
- Building and investing in competitive infrastructure (grid, regional integration, power exchange) for a green, sustainable economic development of Albania;
- Building markets for expanding usage of renewable energy and local resources.

## **3. Reinvent local business models and foster smart specialization of communities**

Based on our own experience in regional modernization in coal mining and former socialist regions, the re-vitalization of local entrepreneurship appears to be a strategic long-term task. Taking initiative and ownership of the challenges ahead, but also developing the capability in the post-mining regions to search for solutions with a business developer mindset should be a top priority. Based on our experience, this is very beneficiary and needed not only for Just Transition but also for the purpose of developing healthy and pro-active communities. The Just Transition Initiative can serve as a catalyzer of entrepreneurship and learning by the

communities. The authors have an experience of working at a learning center for entrepreneurship and innovation designed to train young talents through interactive workshops offering an ample space for the acquisition of entrepreneurial skills and for networking between regional entrepreneurs. Therefore, drawing from that example, it is recommended to develop a key partnership for a possible Just Transition initiative with a qualified higher education institution with a subject matter focus on innovation and entrepreneurship.

Such approach proved to be very fruitful in.

- Fostering and accelerating adaptation via modernization of higher education institutions and research, as well as developing international learning networks and practical cooperation on local, national, and regional level;
- Mobilizing private sector and local initiatives;
- Providing a private sector and local initiative support framework on a central level.

### *6.3 Practical Considerations*

Due to the very particular Albanian situation, where the coal exit has already occurred (30 years ago), but ecological healing and new business development is still an open issue, the key focus should be on the initiation and set up of a Just Transition working group. The purpose of such working group is to become a seed for developing a concrete, local pilot project serving as a proof of a concept and showing how to complete the coal exit initiated in the 1990's by a proper Just Transition.

By using the Just Transition framework as a guiding methodology, such a pilot project could easily connect with Just Transition Programs on the UN and EU level and increase the probability of obtaining a financial support for the development of a more systematic program for the post-mining communities in Albania.

If there is no local pilot group with a small group of committed stakeholders, the currently interested international institutions will lack a counter part for the development of an internationally funded Just Transition program in Albania and therefore will be likely to turn their attention elsewhere.

Therefore, our practical recommendations focus entirely on the next step in the life cycle of a Just Transition program. All required steps can be set up based on information provided in this report and the indicated references. The subsequent steps, such as consultation with stakeholders and development of a Just Transition Road Map will follow only if additional resources are committed by the stakeholders of the pilot Just Transition Action group and, as the process progresses, if they are gradually complemented by financial resources of government agencies and/or international institutions.

## Possible timeline for the next 12 months after kick-off

**6 – 8 weeks.** Following the exchanges with UNECE and international experts it is important to set up a local Just Transition initiative of 3 to 10 players, including players from higher education institutions, 2 to 5 businesses interested in green economy, representatives of some of the post-mining communities (mayors, municipality representatives) and a relevant governmental actor (at a ministry level).

**3 – 6 months.** During an upcoming workshop under the auspices of UNECE, this group could prioritize one out of three “speed boat” projects<sup>†</sup>. “Speed boat projects” are small projects offering rapid outcome but requiring limited resource needs. Their purpose is to provide a showcase helping to attract local stakeholders, international partners, and financial resources needed for upscaling the scope and impact of activities.

**1 – 3 years.** This project group could become the counter part for a dialog in a continued Just Transition path with UNECE and other international development partners.

Since Just Transition is fundamentally about developing a viable and resilient alternative local economy, it is of crucial importance to equip the local project group with a **public-private cooperation** component. Possible business partners could include international companies active in the energy market, or anchor companies from one of the post-mining communities that have an interest to increase attractiveness of the localities in transition for their future employees.

Another promising partner would be an active **participant (on a professorship level) from a faculty of entrepreneurship**, sustainable development, or innovation at one of the leading higher education institutions in Albania. For the faculty and students, the “Just Transition Initiative Albania” provides a rich field of applied learning in entrepreneurship and a set of interesting research topics for bachelor, master, and PhD theses.

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<sup>†</sup> During the UNECE Workshop on 4<sup>th</sup> of April in Tirana, the call for the *Just Transition Innovation Project Award 2025*, donated by Jürgen Lange & Son, was announced. Speed Boat Projects can be handed in until 31.1.2025. For information see <https://unece.org/info/Sustainable-Energy/Coal-Mine-Methane/events/389509>.

Table 6.2 - **Practical recommendation: focus and key activities**

Albania Just Transition	Practical recommendation: focus and key activities which allow to start a cooperation process of stakeholders following a Just Transition methodology
Governance	Identify sponsor for Just Transition on government level (ministry). Suggest <a href="#">a</a> program. Create a small public/private central working group, which meets regularly (2 weeks, for an initial phase between 6 and 24 months).
Regional Agency	Identify 2 to 5 highly motivated key players in one of the mining communities. Start a pilot Just Transition local community action group.
People Care	30 years after closure, this seems not to be a critical issue any-more.
People Develop	Find 2 to 5 key players amongst stakeholders of higher education and vocational training institutions (committed persons). Link institutional modernization and innovation with the Just Transition agenda (central, local). Establish a link between educational modernization and new growth areas in the green economy – both in terms of curricula and local public-private cooperation.
Ecological Healing	Screen the post-mining areas for risks and opportunities. Identify 3 possible “environmental security projects”. Go through a selection process for the best 3 proposals, and link them, if possible, with the Just Transition local pilot group.
New Economy	Identify entrepreneurs and companies willing to invest in green economy business, ideally in a field, which could scale up to include several Albanian post-mining communities. Besides a conceptual understanding of the growth potential, the identification and attraction of key business players to the Just Transition project are also critical success factors.
Data Transparency	Use this report and related internet sites as a starting point to collect and share data on the pillars and dimensions of Just Transition. Create a simple website for the pilot action group on Just Transition and provide relevant data and information.
Digital Cooperation	Create interactive options and network activities through periodic meetings and events to elaborate a Just Transition program for Albania’s post-mining communities. Try to link applied research project(s) with this project, thus providing new content for discussion and offering analytical capabilities to the pilot Just Transition action group. The “Just Transition Innovation Price 2025” is a first tentative step into that direction – injecting energy into project ideas and bringing stakeholders together.

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