Climate Basics

The Impact of Climate Change Mitigation Policy on Employment

Context, Possible Future Scenarios and Recommendations

Case of Georgia

Brief Research Paper

January 2021

FRIEDRICH EBERT STIFTUNG

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Design: Sopo Meskhishvili

Linguistic Versions: [ENG] [GEO]

It can be downloaded on the NNLE Climate Basics web-site: www.climatebasics.info

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This paper cannot be considered as exhaustive or complete. It intends to provide the reader with the background material that could underlie the discussion on Georgia's climate change mitigation policy and employment. The authors would like to thank respondents for their valuable comments and contribution.

This document has been produced with the financial assistance of the Friedrich-Ebert-Stiftung (FES).

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Acronyms and Abbreviations

AA	EU-Georgia Association Agreement
COP	Conference of the Parties of the UNFCCC
CAP	Climate Action Plan
CCC	National Climate Change Council of Georgia
CSAP	Climate Strategy and Action Plan
DCFTA	Deep and Comprehensive Free Trade Area
EC	European Commission
EE	Energy Efficiency
EGD	European Green Deal
e.g.	For example
EIT	Economy in Transition
EnC	Energy Community
etc.	Et cetera/ and so forth
ETS	Emissions Trading System
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FES	Friedrich-Ebert-Stiftung
FT	Financial Times
GCF	Green Climate Fund
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GOG	Government of Georgia
GHG	Greenhouse Gas
i.e.	id est – That is
IISD	International Institute for Sustainable Development
INDC	Intended Nationally Determined Contribution
ILO	International Labour Organization
IPCC	Intergovernmental Panel on Climate Change
LTS	Long-Term Strategy
LT-LEDS	Long-Term Low Emission Development Strategy

MEPA	Ministry of Environmental Protection and Agriculture of Georgia
MEPR	Ministry of Environmental Protection and Natural Resources of Ukraine
MESD	Ministry of Economy and Sustainable Development of Georgia
NECP	National Energy and Climate Plan
NDC	Nationally Determined Contribution
OECD	Organization for Economic Co-operation and Development
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PA	Paris Agreement
PIA	Policy Impact Assessment
RE	Renewable Energy
RIA	Regulatory Impact Assessment
SDG	Sustainable Development Goal
UK	United Kingdom
UK-BEIS	Department for Business, Energy & Industrial Strategy of the UK Government
UN	United Nations
UNDP	United Nations Development Program
UNFCCC	United Nations Framework Convention on Climate Change
UNGA	United Nations General Assembly
US	United States
WEF	World Economic Forum
WB	World Bank

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Reader's Guide

The primary objective of the study was (1) to understand the context and to trigger a discussion on the impacts of the climate mitigation policy on employment trends in Georgia, (2) to explore direct and indirect interlinkages between climate mitigation policy and labour markets by providing the qualitative analysis of the current global, as well as national green trends and potential positive impacts of Georgia's climate change mitigation policy on the national labour market in the short, medium and long-term, and (3) to raise awareness on the issue and inspire future research concerning topics of significant importance in this area.

For the purpose of highlighting the underlying foundations from which the study derives, first and foremost, it was necessary to define core concepts, current proclivities, policies and laws in connection with the green employment market trends. Thus the paper is structured accordingly. Chapter 1 introduces the issue and the research design; Chapter 2 provides background information and the main concepts; Chapter 3 briefly states the key climate change mitigation and labour legislation and policy documents that form the national framework, stimulate the development direction, shape change, and drive the trends; Chapter 4 analyses the European Union Climate Policy and aspires to assess the potential impact of the EU Green Deal on Georgia's long term climate goals, considering the further impact on the employment market; Chapter 5 includes findings and the results from the in-depth interviews and the projections of possible positive trends only in climate change mitigation sectors based on Georgia's sectoral climate change mitigation targets and objectives. Chapter 6 is dedicated to short (5-year period) and long (10-year period) term recommended actions. Chapter 7 concludes and outlines the further research opportunities. This paper is intended for the decision-makers, governmental institutions, industries, social partners and civil society organizations in the respective fields in Georgia.

Taking into account the complexity of the topic and limited resources, this paper cannot be considered as a comprehensive ex-ante policy impact assessment (PIA) but rather a start of a conversation on this particular topic.

The study was commissioned by Friedrich-Ebert-Stiftung (FES) in the frame of the Small Grants Program.

Keywords: Climate Change, Mitigation Policy, Paris Agreement, Low-Emissions Transition, Just Transition, Green Economy, Green Jobs, Employment, Labour Market, Policy Impact Assessment, Women Empowerment, EU Green Deal

1 Introduction and Context

Climate change is one of the greatest challenges and defining crisis of our time, and as the United Nations (UN) says, it is profoundly alarming that Greenhouse Gas (GHG) emissions continue to rise globally (UNGA, 2018). As stated by the Intergovernmental Panel on Climate Change (IPCC), "Human influence on the climate system is clear [...] recent anthropogenic [GHGs] are the highest in history," and climate change will amplify the existing risks on natural and human systems (IPCC, 2014). Human activities, including fossil fuel combustion and industrial processes, are estimated to have caused approximately 1.0°C of global warming above pre-industrial levels,[1] and climate change mitigation efforts have become urgent and essential for reducing climate-related risks upon natural and human systems (IPCC, 2018).

Climate change is a well-recognized global **mega-trend**. It is a macroeconomic and geostrategic force impacting the world's present and future, the global economy, businesses, societies, and individuals (PwC, 2016). Furthermore, Climate change has also become an investment megatrend. One US survey showed that 78% of surveyed investors were interested in tackling climate change through their investments (Morgan Stanley, 2019). A new wave of investments, from addressing improving energy efficiency (EE) to renewable storage solutions and alternative meat, is becoming increasingly popular (FT, 2019). Climate Change has been named in the Top 5 Global Threats/Risks consecutively since 2011 and "is striking harder and more rapidly than expected" (WEF, 2020). Direct impacts of climate change, adaptation to its adverse effects, and responsive mitigation measures, present significant implications for economic growth, employment, labour conditions, safety standards, health, and livelihoods and require careful consideration (ILO, 2020).

In 2015, the Conference of the Parties (COP) of the United Nations Convention on Climate Change (UNFCCC) adopted the **Paris Agreement** (PA), the third legally binding treaty of the climate change regime, which applies to all states despite their development level (UNFCCC, 2015). The PA sets an operational goal to hold an average global temperature well below 2 degrees compared to the pre-industrial level and "pursuing efforts" towards an aspirational goal of 1,5 degrees (Bodle, Donat, Duwe, 2016). Even though the goal is non-prescriptive and represents a long-term journey and direction, the message is clear, to reach that goal, the transformation of society and the global economy is unavoidable (Thorgeirsson, 2016). Thereupon, addressing the climate change challenge requires a fundamental restructuring of the significant economic sectors, such as energy, transport, construction, agriculture, waste management, industry, forestry, etc.

1 Pre-industrial level is not defined in the PA. However, the IPCC Special Report on Global Warming of 1.5°C uses the reference period 1850–1900 to represent pre-industrial temperature. This is the earliest period with near-global observations and is the reference period used as an approximation of pre-industrial temperatures in the IPCC Fifth Assessment Report.

In response to the PA and the related-developments, the **European Union** (EU) aims to be climate-neutral by 2050, having an economy with net-zero GHG emissions (EC, 2020), **China** pledges to reach the peak in 2030 and be carbon-neutral by 2060 (BBC, 2020), **Japan** and the **Republic of Korea** have committed to achieve net-zero emissions by 2050 (IISD, 2020), the **United States** (US) has rejoined the PA, and Joe Biden, the 46th president of the United States, is in favour of the US to achieve a 100% clean energy economy and net-zero emissions no later than 2050 (Biden, 2020), the **United Kingdom** (UK) plans to phase-out of coal from its energy system by 2024 (UK-BEIS, 2020). Therefore, considering these circumstances, based on the major economies' pledges, the global trend is towards decarbonization, net-zero or zero-carbon by 2050–2060. It is also noteworthy that it is not just governments that make climate-related pledges. The same trend can be noticed in the **private sector**. Many companies have announced GHG emissions reduction targets or net-zero pledges, joined voluntary certification schemes, pledged on the own operations and supply chain transparency, zero-deforestation standards, etc.

In general, GHGs reduction policies will significantly **impact labour markets** and work (ILO, 2010). On the one hand, transiting to a green and low-carbon economy will substantially create green and low-carbon job opportunities for the skilled workers, but on the other hand, it will cause job losses in "declining" carbon- and resource-intensive industries (ILO, 2018). The Transition to low-carbon, environmentally sustainable economies and societies could become a strong driver of employment creation, skills upgrading, social justice, and poverty eradication, allowing climate-resilient economic growth and sustainable development (ILO, 2020). A substantial degree of labour market flexibility is a precondition for a smooth (green) transition, and country-specific labour market imperfections and flexibility determine the direct and indirect effects of the mitigation policies on the job market (OECD, 2011). In the process of moving away from the world's fossil fuel-based system to one that relies on clean, low-carbon, renewable sources and technologies, it is essential to have just and inclusive approaches with a bold focus on social, economic, health, environmental, gender and ethnic equality. Various cross-sectional and longitudinal studies, as well as the lessons learnt from the already "transitioned" cases and Information and Communications Technology (ICT) revolution (or other previous structural change drivers), indicate that only a well-planned, inclusive, and just transition process will serve and drive positive outcomes (ILO, 2016; OECD 2011).

Georgia accessed the UNFCCC as a non-Annex I country, Kyoto Protocol (KP), Doha Amendment to KP, and approved the PA. Accordingly, all international legally binding climate change treaties are in force for Georgia and present respective obligations upon Georgia. Georgia prepared its Draft Updated Nationally Determined Contribution (NDC) and the Draft Climate 2030 Strategy and 2021–2023 Action Plan (CSAP) as an NDC implementation tool.[2] More precisely, Georgia determined its main and sectoral mitigation targets, directions, and measures by 2030. Worth mentioning that Georgia has no "Green Growth Strategy" even though some developments were done in this direction, and in 2018, Georgia did not join the "Solidarity and Just Transition Silesia Declaration." It should be emphasized that Georgia's climate policy and actions are highly

2 The Draft Updated NDC and Draft CSAP prepared in 2019–2020 and presumabely, will be adopted in February, 2021

influenced by the EU through the conditionality-based Europeanization process, the EU-Georgia Association Agreement (AA), and membership of the Energy Community (EnC). Accordingly, the implications of the European Green Deal (EGD) is also expected. Furthermore, Georgia nationalized Sustainable Development Goals (SDGs), prioritized all 17 goals, and determined country-specific targets and indicators (GOG, 2019).

As mentioned, climate change is caused by human unsustainable economic activities and subsequent GHG emissions. However, those economic activities are also crucial for sustaining human lives. Therefore, there is a **dilemma**: how to sustain human life on the Earth while simultaneously reducing human dependence on natural resources. **Green growth** and **green economy** have been proposed as a solution to this dilemma and therefore entrails in itself an idea of decoupling growth from resource use and carbon emissions. This idea is central for the UN SDGs and any other sustainable development-related agreements since the 1980s.

Lastly, it should be noted that this policy insight was prepared in time of the global pandemic-COVID-19 outbreak. Currently, in many countries, governments have included "green recovery" measures in their crisis recovery packages, allocated and directed finances towards clean transport and energy, circular economy, etc. Leading experts, economists and politicians talk about a "green recovery" that "builds back better" arguing that the coronavirus crisis is not only a public health crisis, and it does not flush away the urgency of tackling the climate crisis (Carbonbrief, 2020). The post-pandemic recovery should put decarbonization progress by cutting the emissions and boosting the economy via low-carbon investment. Furthermore, this global pandemic has shown us clearly how unequal our society is and how vulnerable we are in times of crisis, especially regarding low-paid and less secure jobs in non-essential industries that cannot be performed from home (WB, 2020).

I.I. Methodology and Limitations

The **research aimed** to do a qualitative analysis of the potential impact of Georgia's climate mitigation policy on employment trends in the climate change mitigation sectors. It mainly focused on Georgia's climate mitigation policy analysis, possible implications on the jobs and skills of the climate change mitigation interventions, along with the employment and labour market greening trends and directions.

The **research process included** desk research, two case studies and 11 in-depth interviews with the selected key stakeholders.

The **study does not cover** the direct effects of climate change and adaptation measures on employment, nor the effects of the mitigation measures on other economic sectors (e.g., Tourism, Education, etc.). The research team has not studied the imperfections, specificities, or rigidities of Georgia's labour market and has not conducted any projecting exercise, illustrative simulation, or modelling. In addition to this, the research team has not conducted critical analysis, an economic assessment, comparison, or good practice research of the climate change mitigation interventions and their social-economic benefits. Accordingly, the findings and recommendations determine the trends based on the interviews and analysis of the national climate change mitigation policy documents.

The main **obstacles** during the research process were the complexity of the topic and multitude of cross-cutting issues, the absence of quantitative data, lack of Georgia-specific topical research and studies, pandemic and related uncertainties and restrictions thereof. It should be noted that due to the ongoing global pandemic, the respondents were hesitant and unsure about the forecasts and future.

Another hindrance was the lack of macroeconomic models, frameworks for cost-benefit and cost-effectiveness analysis that link sectors such as climate, energy, health, air quality, transport, land use, and economy. These models and frameworks usually assess impact in quantitative terms and enable informed and evidence-based planning and decision-making.

Desk Study

Georgia's draft CSAP and draft Updated NDC were the **key foundations and sources** for determining Georgia's climate change mitigation targets and the potential job market impacts and trends in the same timeframe. Regarding trends up to 2050, as it is strongly recommended by the PA, Georgia is currently preparing the Long-Term Low Emissions Development Strategy (LT-LEDS) to determine the mitigation targets and directions by 2050. Additionally, as recommended by the EnC, Georgia is currently preparing a National Energy and Climate Action Plan (NECP), which will supposedly include the 2050 perspective. Both documents will be finalized by the end of 2021, and Georgia's speed of the transformation and direction will be apparent only after that. Accordingly, 2050 implications are not included in this study.

Desk research included selected **literature and secondary data sources** review process. The main areas and interests of the desk research were: the PA and related mitigation obligations, the EU climate policy, the EGD and its potential implications on Georgia, Georgia's climate change mitigation and employment policies (key directions, trends, and drivers), Georgia's law and policy framework related to climate change mitigation and employment, Just Transition discourses, studies and researches of think tanks and organizations on the green and low-carbon jobs (including ILO, UNFCCC, OECD, IISD, EU, etc.).

In-depth Interviews

The interviews with the key stakeholders were conducted in accordance with the CSAP sectors. Due to the limited period, the **respondents** were selected carefully, representing national and municipal governments, non-government, academia, and private businesses. Due to the COVID-19 pandemic restrictions, all in-depth interviews were conducted online.

The **questionnaire** for the in-depth interviews had the following structure:

a. **Assessing a baseline** – respondents were asked to assess existing trends in the mitigation relevant sectors and voice their expectations of the future development of the respective sector, in short-, medium-, and long-term (up to 2025, 2030, 2050 respectively);

b **Assessing awareness level** – respondents were asked about Georgia's climate change mitigation policy and measures assessing stakeholders' awareness level regarding countries climate mitigation policies and future directions;

c **Assessing and identifying the potential impact of the climate mitigation policies on the Georgian labour market** – respondents were asked how already planned mitigation interventions and countries' responsibilities towards a greener economy would affect labour markets in the respective fields, impact on employment, education, skills, etc. These impacts were asked again for the three-time periods short-, medium-, and long-term;

d **Assessing threats and opportunities concerning climate change mitigation policy impact on employment situation** – respondents were asked to list the perceived threats and opportunities in the respective sector and how to overcome the challenges;

e **Assessing the status quo and opportunities for women empowerment and gender equality** – respondents were asked to identify employment opportunities for women empowerment in the process of the Transition in the male-dominated sectors.

Interviews were focused on the **seven climate mitigation sectors** (sectors were selected according to the CSAP):

- Energy Generation and Transmission
- Transport
- Buildings
- Waste Management
- Agriculture
- Forestry
- Industry[3]

Case Study

Two cases were selected to showcase the following: 1. The jobs that will disappear, and 2. Women empowerment and gender equality opportunities on the labour market in the upcoming Transition process. The first is the **Tkibuli case**, which may be negatively impacted by the global climate change responsive measures and mitigation trends. The second is the opportunities that the Transition in the male-dominated sectors and industries can bring for **women empowerment** and ensure equality in the world of work.

3 According to the Georgia's Draft CSAP, Georgia committed mitigating 5% of greenhouse gas emissions in the Industry sector below "without measures scenario" by 2030, focusing on supporting the low carbon development of the industry sector by encouraging reduction of emissions from production processes and energy consumption by industries through climate-friendly technologies. Therefore, the energy consumption part of the industry is in line with the EE and energy saving trends introduced in the Buildings and Energy Generation and Transmission sub-chapters below. In terms of industrial processes, only one measure is included in the CAP focusing on the particular plant filters change with no major impact on the labour. Additionally, climate-friendly industrial technological development was not primary interest of this study. For these reasons, no interview was conducted for the industry sector and hence this sector is not addressed in a separate chapter.

2 Understanding Transition Process and Challenges

In this chapter, the **main concepts** and corresponding information will be briefly introduced for a better understanding of the issues discussed in this paper. Due to the lack of awareness on climate change policy directions and green economy among a broad number of stakeholders and Georgia-specific studies in the referred fields, the authors perceived a need to define the core concepts and provide the related information which **form a backbone** of this research. It should be underlined that the notions of green growth and green economy currently are seen as a dominant policy response to climate change. Accordingly, this chapter provides informative pieces for the understanding of the PA, Transition process, Low-carbon Transition, green economy, low-carbon economy, green jobs, decent jobs, climate change mitigation, and the Just Transition.

2.1. Understanding the Paris Agreement

The PA, a **historic turning point** for climate action, sets three main goals: holding an average global temperature well below 2 degrees compared to the pre-industrial level and "pursuing efforts" towards an aspirational goal 1,5 degrees; increasing the ability to adapt to adverse impacts of climate change and foster climate resilience; and making the finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development. The PA covers (to different extents) all essential elements, including mitigation, adaptation, loss and damage, finance, technology transfer, capacity building, education, Transparency, compliance, procedural issues, institutional arrangements. Its transparency requirements, review processes, global stocktake, and compliance and implementation mechanisms are crucial rationale and spirit of the PA.

First and foremost, the PA represents a paradigm shift in the efforts of the international community to regulate climate change, and **the main elements** of the PA are as follows: 1. It has the NDCs of the Parties to reduce their GHGs emissions, "which Parties are not legally binding to achieve"; 2. It sets internationally negotiated, binding, procedural obligations to ensure that all Parties contribute to emissions mitigation in a transparent and accountable manner; 3. It stands on an ambition cycle to promote stronger action over time; 4. It sets a nuanced approach to differentiation tailored to each issue area, which in the context of mitigation is based on self-differentiation on NDCs and flexibility based on circumstances and needs (Bodansky, Rajamani, 2019).

The **PA** has 189 Parties, including the EU.[4] Seven countries signed but not yet ratified the PA. Accordingly, the Agreement is not in force for these countries; Among them are Georgia's close economic partners Turkey and Iran. In addition to this, the same COP-21 that adopted the PA took 11/CP.21 decision on the continuation and improvement of the "Forum and work programme on the impact of the implementation of response measures," and adopted it comprising two areas: (1) economic diversification and transformation; (2) Just Transition of the workforce, and the creation of decent work and quality jobs.

Box I: Informative Pieces on the PA:

- It is a mix of hard-, soft, and non-law provisions; more precisely, it is a mix of obligations, strong recommendations, and expectations from the system;
- In the preamble, amongst others, "just transition of the workforce," "the creation of decent work and quality jobs," "human rights," "right to development" are mentioned;
- It aims to reach global peaking of greenhouse gas emissions as soon as possible, recognizing that peaking will take longer for developing country Parties;
- It aims to undertake rapid reductions after the peaking in accordance with best available science to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century;
- It gives freedom to the Parties to self-differentiate (developed or developing) and presents flexibility to the developing countries with regard to emissions peaking, ambition, mitigation efforts, implementation, needs and support, etc.;
- It requires each Party to "prepare, communicate and maintain successive nationally determined contributions that it intends to achieve." It is expected Parties to achieve and progressively increase the ambition in their NDCs;
- It expects Parties to formulate and communicate long-term low Emissions development strategies (LTS);
- It does not give the blueprint for decarbonization. The Parties are free to choose their pathways;

4 From the 4th November 2020, the US was withdrawn from the PA. However, the new President, Mr. Biden has already re-joined the US in the PA

- It opens the opportunities for establishing internationally transferred mitigation outcomes towards nationally determined contributions, promoting sustainable development and ensuring environmental integrity and transparency through the development of robust accounting;
- It keeps non-market approaches (mitigation, adaptation, finance, technology transfer and capacity-building) as an important integrated, holistic and balanced means of implementation;
- It is implemented to reflect equity and the principle of common but differentiated responsibilities and respective capabilities in the light of different national circumstances.

2.2. Understanding Transition to Low-Carbon Economy

Transition of the economy primarily means changes in the planning, production, distribution, consumption, and trade of the goods and services, as well as changes in how the growth is ensured, business is organized and public and private investments are directed. As mentioned above, it is estimated that the realization of a green growth/ low-carbon transition agenda translates into deep changes in the labour market that extend far beyond the creation of so labelled "green jobs." A number of opportunities associated with green growth are accompanied by several costs associated with the low-carbon Transition. Opportunities imply job creation, but the costs imply job elimination in the "brown sectors"[5] and possible hardship for the local economies and communities heavily dependent on these industries.

It is estimated that many mitigation measures will have net costs at least in the short to medium term, including transition or adjustment costs. Furthermore, these costs are the expenses for avoiding future damages that could be severe (WB, 2013). Considering this, it gains even more importance to design climate policies that keep these costs as low as possible, including taking advantage of the economic opportunities that a low-carbon transition brings (WB, 2013). The idea of green growth affirms that economic expansion can be made sustainable and compatible with environmental protection. Therefore, climate change mitigation policies should not be seen as a burden on economic development, rather as mutually compatible.

5 The sectors largely dependent (incl. production) on the fossil fuels like coal, oil and gas.

In its study, the Organisation for Economic Co-operation and Development (OECD) provided **four expected labour market adjustment patterns** associated with the globalization and/or ICT revolution that are likely to characterize the Transition to greener labour markets:

1. Workers in particular sectors will be most strongly and directly affected;[6]
2. The labour reallocation is almost certain to play the central role in the Transition to green growth;[7]
3. Green technology is likely to affect workers and jobs;[8]
4. Indirect effects are operating through changes in product prices and real wages associated with the industries whose relative product prices rise.

Additionally, OECD underlined that labour market flexibility is a precondition for a smooth transition to a green economy (OECD, 2011). It should be noted that a country's climate change mitigation policy is part of its Green Economy/Low-carbon Economy policy framework (OECD, 2011), and **mitigation policies will affect the jobs in three ways**, jobs "created," "eliminated," or "transformed," but quality-wise in four ways: job creation, job substitution, job elimination, and job transformation-redefinition (UNFCCC, 2018) (See Diagram 2: Impacts of the Mitigation Policies on Jobs Explained)

Box 2: Key Transition-related Definitions

Climate Change Mitigation is a human intervention to reduce the sources or enhance the sinks of GHGs. (IPCC, 2006).

Mitigation Sectors is where GHG emissions and removals estimates are divided into main sectors, which are groupings of related processes, sources, and sinks: Energy, Industrial Processes and Product Use (IPPU), Agriculture, Forestry and Other Land Use (AFOLU), Waste (IPCC, 2006).

6 Presuming that the green workers are in a similar position to direct beneficiaries of the ICT revolution, e.g., ICT/globalization workers such as software engineers and workers in successful export industries, while the workers in the most polluting industries are in a similar position to workers specialized in the use of technologies replaced by ICT e.g. typists

7 Implying the expecting the changes in the sectoral mix of the employment

8 Implying that the development and application of new green technologies will require a simultaneous development of a cadre of specialized and often highly skilled green researchers and production workers employed in firms specializing in eco-innovation and the production of advanced environmental goods and services

A Green Economy is defined as a low carbon, resource-efficient, and socially inclusive economy. In a green economy, growth in employment and income is driven by public and private investment into economic activities, infrastructure and assets that allow reduced carbon emissions and pollution, enhanced energy and resource efficiency, and prevention of the loss of biodiversity and ecosystem services (UNEP, 2019). The Green Economy is primarily an approach to policy formulation, assessment and implementation that more effectively leads to sustainable development (GIZ, 2016).

Green Growth is economic growth in a Green Economy, or in other words, the result of implementing the Green Economy approach (GIZ, 2016).

A Low-Carbon Economy means that power needs are derived not primarily from carbon-intensive sources such as fossil fuels (including coal, oil, and gas) but from 'cleaner' or less carbon-intensive energy sources, such as wind, solar, hydroelectric, geothermal, and wave power (Linnenlueck et al., 2018). This fundamental restructuring of the energy sector, including resource-intensive manufacturing and Transition from fossil fuel to cleaner sources, is causing "greening" in the job market, changing and reshaping certain jobs and skill requirements. Moreover, other sectors such as agriculture, forestry, fishing, production, consumption, waste management, services, construction, transport, etc., will undergo significant transformations too.

Green Jobs are decent quality jobs that contribute to preserve or restore the environment, be they in traditional sectors, such as manufacturing and construction, or in new, emerging green sectors with green outputs, products, or services, such as renewable energy (RE) and EE (ILO) (See Diagram 1: Benefits of the Green Jobs)

Low-Carbon Jobs are jobs in sectors that frame the clean energy economy, including EE, renewables, alternative transport, and fuels.

Decent Work is employment that "respects the human person's fundamental rights as well as the rights of workers in terms of conditions of work safety and remuneration, [...] respect for the physical and mental integrity of the worker in the exercise of his/her employment" (CESCR, 2005).

Diagram I: Benefits of the Green Jobs

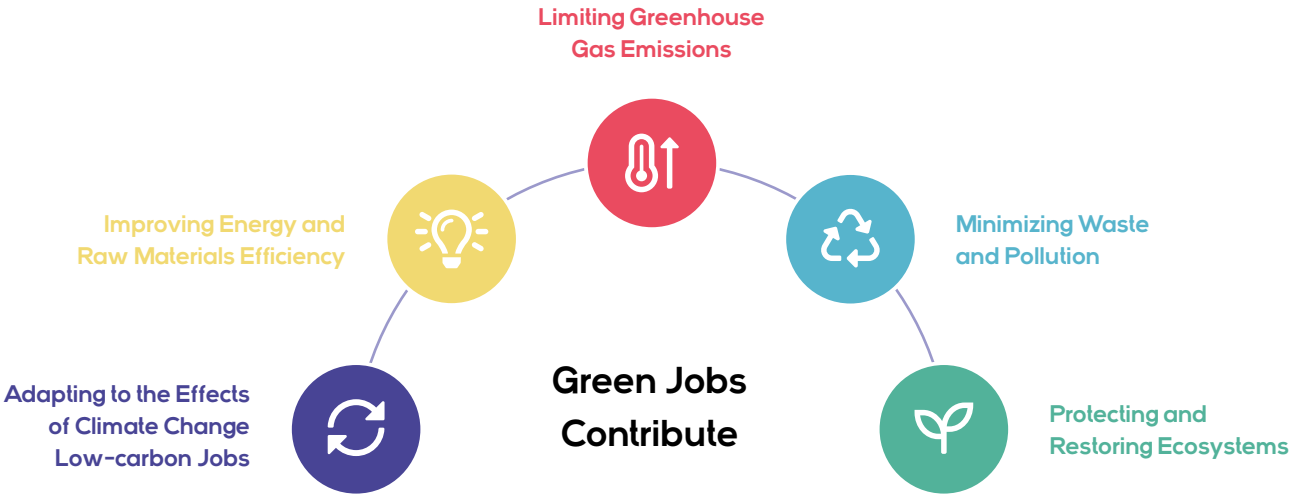

Diagram 2: Impacts of the Mitigation Policies on Jobs Explained

Job Creation

The expansion of low carbon intensive products, services and infrastructure will translate to higher labour demand across many sectors of the economy. Examples include jobs in: RE, EE, organic agriculture, etc.

Job Substitution

Due to the shifts in the economy from less to more efficient, from high carbon to low carbon, and from more to less polluting technologies, processes and products. Examples include shifts from truck-based transportation to rail, from internal combustion engine manufacturing to electric vehicle production, and from landfilling to recycling/ refurbishing...

Job Elimination

As a result of phased out or massively reduced in numbers without direct replacement. This may happen where polluting and energy- and materials-intensive economic activities are reduced or phased out entirely. Examples include large-scale mining and burning of coal.

Job Transformation-Redefinition

Many, and perhaps most, existing workers (such as plumbers, electricians, metal workers and construction workers) will simply have their jobs transformed and redefined as day-to-day workplace practices, skill sets, work methods and job profiles are greened.

2.3. Understanding Just Transition

The "**Just Transition**" concept is not new, it originated in the labour movement. However, it regained importance in climate change mitigation-induced transition discussions. As mentioned above, the "Just Transition" is introduced but not defined in the preamble of the PA. Nevertheless, it still signals the importance of minimizing negative repercussions from climate policies and maximizing positive social impacts for workers and communities (Grantham, 2019). "Just Transition" aims to reduce the inequality that is increasing worldwide and provide the remedy to the inequality correcting policy failures (Heffron, McCauley, 2017). On the one hand, "Just Transition" means considering concrete development needs of certain vulnerable communities that are dependent on unsustainable and carbon-intensive practices and/or are employed in unsustainable and carbon-intensive industries. On the other hand, it also refers to the idea that environmental policies are implemented in a way that they do not compromise livelihoods and increase poverty levels. Furthermore, it should be highlighted that it is not just another transition, instead the primary Transition to a green economy/ low-carbon economy to be just.

ILO and international trade unions lobby actively "Just Transition" and encourage the states where economies are dominated by the "declining industries" to plan and start the transition process in a just manner as soon as possible because it takes time and resources. The just transition approach involves stakeholders of all types in the transition process (Heffron, McCauley, 2017). In 2013, ILO adopted the Just Transition Framework. In 2015, **ILO's** Governing Body endorsed non-binding "**Guidelines for a Just Transition towards Environmentally Sustainable Economies and Societies for All.**" It is a practical orientation to governments and social partners on how to formulate, implement and monitor the policy framework in accordance with just transition principles and national circumstances and priorities (ILO, 2015).

Box 3: Informative Pieces from the ILO's "Guidelines for a Just Transition towards Environmentally Sustainable Economies and Societies for All"

Principles:

Strong Social Consensus on the Goals and Pathways	Social Dialogue as an Integral Part for Policy Making	Sustainability is Fundamental	Respect, Promotion and Realization of Fundamental Principles and Rights at Work	Strong Gender Dimension in the Policies and Programmes	Specific Gender Policies to Promote Equitable Outcomes	Coherent Policies Across the Economic, Environmental, Social, Education/Training and Labour Portfolios	Coherent Policies to Provide a Just Transition Framework for All	There Is No "One Size Fits All" and Policy Design in Line With the Specific Conditions of Countries"

Key policy areas to address environmental, economic and social sustainability simultaneously include:

Macroeconomic and growth policies	Industrial and sectoral policies	Enterprise policies	Skills development	Occupational safety and health	Social protection	Active labour market policies	Rights	Social dialogue and tripartism

Key selected guidelines for the governments and social partners:

Governments should:

- integrate provisions for a just transition into national plans and policies for the achievement of the SDGs and national environmental and climate change action plans, as well as integrate provisions for a just transition into the agendas of line ministries, rather than assigning them to only one ministry;
- establish or strengthen the availability of and access to basic labour market data, where needed, and carry out ex-ante assessments of the employment and socio-economic impacts of environmental policies to inform policy choices;
- actively promote and engage in social dialogue at all stages from policy design to implementation and evaluation and promote the creation, development and formalization of dialogue mechanisms and structures at all levels to discuss the best means to implement national social, economic and environmental goals.

Governments, in consultation with social partners and other stakeholders, should:

- integrate sustainable development and a just transition into macroeconomic and growth policies, align economic growth with social and environmental objectives, adopt appropriate regulations and instruments to encourage a transition towards economically sustainable activities, invest public funds in greening the economy, develop trade and investment policies to facilitate access to green technologies and green innovation and jobs;
- establish incentives, mandates and, where necessary, regulations to stimulate demand, investment and development of markets for goods and services in sectors and subsectors that are relevant for the greening of economies. Also to pay special attention to the industries, regions, communities and workers whose livelihoods might experience the hardest impacts of the Transition;

- adapt and strengthen public employment services to further develop their role as transition agents. They should provide information, guidance, matching services and training. These services can be improved by expanding innovative ways of reaching out to job seekers;
- formulate accompanying policies through social protection, including unemployment insurance and benefits, skills training and upgrading, workforce redeployment and other appropriate measures to support enterprises and workers in sectors negatively impacted by the Transition to sustainable development;
- promote cooperation at the national, local, enterprise and industry level. Especially at the industry level, where social partners can have a key role through all forms of social dialogue, including collective bargaining, in ensuring decent work and in forecasting skills needs and employment challenges, and in designing adequate and continuous training, among others;
- undertake steps and design measures to facilitate formalization and promote decent work, particularly in, but not limited to, the waste management and recycling sectors;
- provide assistance and support measures to management and workers in transitioning business operations away from high-carbon, high-polluting and resource-intensive operations. Such support should include technology transfer mechanisms on favourable terms, as mutually agreed, as well as support for innovation and sharing of good practices to facilitate the just Transition to environmentally sustainable economies;
- formulate a holistic skills development policy to promote skills for green jobs and coordinate skills development policies and technical and vocational education and training systems with environmental policies and the greening of the economy and consider concluding bipartite or tripartite agreements on skills' development. Additionally, match supply and demand for skills through skills needs assessments, labour market information and core skills development, in collaboration with industry and training institutions;
- give particular attention to unemployed workers and workers at risk of unemployment in communities and industries affected by climate change, resource degradation, or structural change, including those in the informal economy.

Social partners should:

- raise awareness and provide guidance among their members about developments relevant to the just transition framework, and promote the active participation of their members in social dialogue at the enterprise, sectoral and national levels to assess opportunities and resolve challenges posed by the Transition.

3 Georgia's Policy and Legal Framework

In this chapter, **Georgia's country profile** and **key labour and climate mitigation relevant laws** and policies will be briefly introduced in order to draw the policy/regulation-induced development trends and outline the action framework. It is noteworthy that constitutional provisions, as well as international human rights obligations, are not reflected below.

In general, **climate law** implies any primary or secondary legislation that directly or indirectly relates to efforts to address climate change (Manguiat, Raine, 2018). Due to the multisectoral and multidimensional nature of climate change, sectoral laws that directly address or indirectly incorporate climate change elements are also considered as climate law (energy, agriculture, forestry, etc.) (Grantham, 2018). Consequently, since Georgia has no specific climate law,[9] climate change mitigation relevant information is fragmented in the different sectoral laws (Energy Generation and Transmission, Buildings, Transport, Forestry, Agriculture, Waste Management, Industry), that will be introduced in the following sub-chapters.

3.I. Country Profile

Georgia got independence from the Soviet Union in 1991, and since that is a democratic country with a de-industrialization trend. Georgia's current population is 3 720 161, out of which 48% is male and 52% female (Geostat, 2019). The country is characterized by slowly increasing urbanization (59%), high unemployment rate (with some positive dynamics during the last decade, however still two-digit), speedy migration flow from the country, aging population, decreasing working-age workforce, and slow population reduction (Geostat, 2020). Despite the high unemployment rate, the lack of a qualified workforce has been a severe problem during the past years (MESD, 2019). The country's economy grew robustly at 5.3 percent per annum between 2005 and 2019, despite major shocks. Presently, Georgia is classified by the WB as the upper-middle-income economy (WB, 2019). Additionally, the UN has classified Georgia as a country with an Economy in Transition (EIT) (UN, 2020). In 2019, 19,5% lived below the national poverty line (WB, 2020). Georgia's Human Development Index (HDI)[10] value for 2019 is 0.812, which puts the country in the very high human development category, ranking it 61 out of 189 countries and territories, and

9 However, there are two general provisions on climate change in the Georgian legislation. Article 51 "Protection of climate from global changes" of Georgia's Law on Environmental Protection, and Article 53 "Protection of climate from global changes" of the Law on Ambient Air Protection.

10 Definition: HDI is a summary measure of average achievement in key dimensions of human development: a long and healthy life, being knowledgeable and have a decent standard of living. Human Development Report 2020 "The next frontier Human development and the Anthropocene" entirely concerns climate change and crisis

Georgia's Gender Inequality Index (GII)[11] value for 2019 is 0.331, ranking it 76 out of 162 countries (UNDP, 2020). In 2015, Georgia presented its INDC and prepared Draft Updated NDC in 2020, where it updated its unconditional and conditional targets. Accordingly, it self-differentiates as a developing country. In 2020, the Government of Georgia (GOG) established a high-level consultative body National Climate Change Council (CCC), mandated to coordinate the implementation of the international commitments and pledges as well as the national mitigation and adaptation efforts (GOG, 2020).

Importantly, Georgia adopted the cascade of the new[12] (climate mitigation relevant) sectoral laws and policy documents recently, which will have impacts on the labour market because they regulate the spheres that were not regulated before, they require management of the spheres that were not managed before, they lead to the formalization of the informal workers, they already have led to the creation of some mandatory positions (e.g., increased forest management personnel for the sustainable forest management, environmental manager for particular companies for the sustainable waste management, energy auditors and certified specialists in the energy sector, etc.).

3.2. Georgia's Climate Change Mitigation Obligations and Policy

Georgia's primary climate change mitigation obligations and strategic directions can be found in the national general and sectoral laws and policies and international agreements and treaties that have entered into force in accordance with the national requirements.

The primary climate change mitigation policy documents are Georgia's Updated NDC and CSAP. The Draft Updated NDC and Draft CSAP[13] state the following targets:

a. unconditional mitigation target of "reducing domestic GHG emissions by 35% by 2030 compared to 1990 level";[14]

b. conditional mitigation target of "reducing 50-57% of its total greenhouse gas emissions by 2030 compared to 1990 level, in case the global greenhouse gas emissions follow the 2 degrees or 1.5 degrees scenarios respectively, with the international support."

Both documents indicate sectoral mitigations targets and directions by 2030. Additionally, the Draft Updated NDC has a chapter on Gender and Climate Action. There is no specific gender-related target. Nevertheless, it signals the importance of gender dimension and responsiveness in climate change policies. The CSAP indicates the sectoral objectives by 2030. These sectoral targets and objectives will be marked in Chapter 5 in the respective sub-chapters.

11 Definition: A composite measure reflecting inequality in achievement between women and men in three dimensions: reproductive health, empowerment and the labour market

12 EU-Georgia AA requires extensive approximation and reforms agenda. Accordingly, in the frame of the legal approximation, Georgia has amended existing laws, adopted new laws, subordinate normative laws and standards, espetially in energy sector and labour.

13 Presumably, the Draft Updated NDC and Draft Climate Strategy and Action Plan will be adopted in February, 2021.

14 GHG levels (excluding LULUCF): 1990 – 45,606 Gg CO_2e, 2015 – 17,591 Gg CO_2e, 2030 target – 29,644 Gg CO_2e

Law of Georgia "on Energy and Water Supply" (2019) creates a general legal framework for the generation, transmission, distribution, supply of and trade in electricity, and for the transmission, distribution, supply, storage of and trade in natural gas sector with a view to the facilitated emergence, opening, development and integration of well-functioning, transparent and competitive electricity and natural gas markets. It also lays down the rules relating to the governing, organization, regulation, monitoring, and supervision of electricity and natural gas sectors, open access to electricity and natural gas markets, cross-border exchanges in electricity and natural gas, the criteria and procedures applicable to calls for tenders and the granting of authorizations for energy activities, operation of and access to electricity and natural gas systems, public service obligations in electricity and natural gas sectors, and the rights of customers and their protection. It aims to create competitive and transparent energy markets.

Law of Georgia "on Promoting the Generation and Consumption of Energy from Renewable Sources" (2019) creates legal grounds for the encouragement, promotion, and consumption of energy received from renewable sources and determines the mandatory national common target indicators of the total share of energy received from renewable sources in the total final consumption of energy and in the consumption of energy by transport. It also introduces the target increasing of the share of RE up to 35% in the gross final energy consumption for 2030. Aiming to provide clean energy to society and tackling energy poverty, it potentially drives the Transition to cleaner energy sources, RE market development, creation of new jobs and business opportunities.

Law of Georgia "on EE" (2020) creates legal grounds to determine the general legal basis for the measures required to promote and implement EE in the country in order to ensure the achievement of the goals set out in the Protocol on the Accession of Georgia to the Treaty Establishing the Energy Community, and to increase energy savings, energy supply security and energy independence, as well as to maximally eliminate barriers to improving EE in the energy market. Additionally, it establishes a procedure for developing a national EE target. Aiming for energy saving and energy poverty eradication, it potentially drives changes in construction, energy-related service providing, formalization and job/skills requirements.

Law of Georgia "on EE of Buildings" (2020) creates legal grounds to promote the rational use of energy resources and to improve the EE of buildings, taking into account the external climate and local conditions of buildings, the demand for indoor climate conditions and cost-effectiveness. Aiming for energy saving, it potentially drives changes in construction and job/skills requirements.

Law of Georgia "on Energy Labeling" (2018) creates legal grounds to ensure standard and additional information on the energy and other resources consumption of the product placed on the Georgian market allowing the consumers to select more efficient products and reduce consumption of energy and other resources. Aiming for informed choices by the consumers and energy saving, it enables an environment for sustainable consumption and Transition to cleaner energy sources.

Law of Georgia New "Forest Code" (2020) creates legal grounds to protect the biodiversity, quantitative and qualitative features of the forest of Georgia in order to deliver the forest's ecological, social and economic functions and to define the main principles and approaches of forest management that should serve as the basis for sustainable forest management. It potentially drives the creation of new jobs and business opportunities.

Law of Georgia "Waste Management Code" (2015) creates a legal framework in the field of waste management to implement measures that will facilitate waste prevention and its increased re-use as well as environmentally safe treatment of waste (which includes recycling and separation of secondary raw materials, energy recovery from waste and safe disposal of waste). It potentially drives the formalization and creation of new jobs and business opportunities.

Climate change mitigation-relevant prime policy documents are the following: Georgia's 2019–2020 EE Action Plan, Georgia's 2020 RE Action Plan, Georgia's 2016–2030 Waste Management Strategy and 2016–2020 Action Plan, Georgia's 2021–2027 Agriculture and Rural Development Strategy and Action Plan 2021–2023, Tbilisi Green City Action Plan, Current Sustainable Energy Action Plans (SEAP)s and future Sustainable Energy and Climate Action Plans (SECAP) of the Covenant of Mayors (CoM) Signatory municipalities. They all contain the signs of Transition to a green economy, and accordingly, the need for green jobs. However, there is no holistic and systematic approach to that Transition, and accordingly, to green jobs.

3.3. Georgia's Labour Legislation and Policy

Georgia's Labour Legislation and Policy went through some changes and additions recently. The package of the recently adopted laws (29.09.2020) improves the labour regulatory framework, creates legal grounds for the work to be decent and of better quality. It is noteworthy that re-established labour inspection and new mandatory labour safety standards are suitable for the green job's definition and standards.

Organic Law of Georgia "Labour Code of Georgia" (2010) creates a general legal framework for labour and its concomitant relations in the territory of Georgia. In 2020, the Parliament adopted the amendments to the Labour Code. The regulatory framework regulated a relatively deregulated labour market and became more inclusive with a solid guarantee for the labour rights protection. The key pillars are the prohibition of discrimination, increased protection and guarantees of the employees, the enhanced observance of working conditions, and mandatory steps in case of mass dismissal, including to start consultations with the trade union/the employees' representatives within a reasonable time with the intention of reaching a possible agreement focusing on preventive and reducing laid off and a possibility for further training. Labour Code provides an opportunity to increase efficiency and equality in the Georgian labour market, with long-run benefits to companies and the society.

Organic Law of Georgia "on Occupational Safety" (2019) creates legal grounds for the general principles of basic requirements and preventive measures that are related to occupational safety and health (OSH) at the workplace, for the prevention of the existing and anticipated and accidents, and occupational diseases, training, informing and consulting of the employees, their equal engagement in the occupational health and safety protection issues. It potentially leads to phasing out the jobs with heavy working conditions.

Law of Georgia on Labour Inspection (2020) creates legal grounds for the basic principles and directions of the activity of the Labour Inspection, the mandate and powers of the Labour Inspection Service, the implementation of these powers, and the issues related to the effective use of labour norms. It potentially leads to decent jobs.

National Strategy 2019-2023 for Labour and Employment Policy of Georgia (2019) represents the vision of the Government of Georgia on systemic and strategic reforms and measures to be implemented in the field of labour and employment. The purpose of this strategy is for the State to play a more active role in ensuring high-quality jobs in the labour market and increasing the number of employees aiming at reducing the discrepancy between demand and supply. The focus is on promoting innovation, women's participation in the labour market, strengthening the training-retraining program for job-seekers, promoting job creation, including in the high productivity sectors, and developing the competencies of low skilled workforce. Low-carbon Transition, Just Transition, Green jobs (except the general reference to increase in the energy sector and related skills requirements) are not reflected in the strategy.

SDG 8 Decent Work and Economic Growth is nationalized as "Promote Sustained, Inclusive and Sustainable Economic Growth, Full and Productive Employment and Decent Work for All" and two important country-specific targets are the following: 8.3 Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, and 8.5 By 2030, implement effective state policy in order to achieve productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value. The creation of green jobs is in line with the requirements and targets of SDG 8.

4 Potential Implications of EU Climate Policy and EU Green Deal

In this chapter, the **EU's Climate Policy and EGD's potential implications on Georgia's** future climate change mitigation policy will be concisely explored to determine the drivers for the speed of Georgia's decarbonization and, accordingly, green jobs creation. The EU Climate-neutrality target for 2050 is an unprecedented ambition for the entire European continent and beyond. While the EU itself will face significant challenges in delivering its EGD commitment, it will undoubtedly impact its relationship with its neighbors, including Georgia. The EU climate and energy policies always have had an external dimension. Recent studies suggest that the EGD will be no exception, that the EU will try to avoid "carbon walls"[15] (Eyl-Mazzega, 2020) and meet targets by lowering non-EU neighbour emissions too (Eyl-Mazzega, 2020a). The bilateral and multilateral political and legal formats will continue to be a crucial component of cooperating with the EU and ideally endorsing its increased climate and energy parameters. Apart from achieving decarbonization objectives, enhancing the strategic partnership and cherishing the dialogue remains an important driver of the common **EU-Georgia climate agenda**. Considering this, it is interesting to assess to what extent and through which channels the EU will try to influence its neighbours and partners, in this case, Georgia, with its "carbon-neutrality" agenda.

4.I. EU Climate Action and Green Deal

The EGD is the EU's latest climate action blueprint and Europe's much-awaited decarbonization pathway by 2050 has been presented by the European Commission (EC) at the end of 2019. EGD envisages a profound transformation of the economy and achieving climate neutrality on the European continent, which will require a sensible balance between risks and opportunities across member states and regions (Catuti, Kustova, Egenhofer, 2020). Quoting the Communication, "it is a new growth strategy that aims to transform the EU into a fair and prosperous society, with a modern, resource-efficient, and competitive economy where there are no net emissions of greenhouse gases in 2050 and where economic growth is decoupled from resource use."[16]

15 "Carbon walls" is a metaphoric explanation by the author to demonstrate the EU surrounded by the carbon in case its neighbours continue carbon-intensive practices.

16 Communication from The Commission to the European Parliament, the European Council, The Council, the European Economic and Social Committee and The Committee of the Regions the European Green Deal COM/2019/640 final.

In terms of the **Green Deal's ideology**, it is to emphasize that the Green Deal does not create any different political or legal process but represents the EU's revitalized approach to implement the **UN 2030 Agenda and SDGs** (UNGA, 2015). EGD, as a mechanism to transform the EU's economy for a sustainable future, puts forward the long term vision in the areas which are deeply embedded into the solid financial scheme and the EU's key climate action parameters:


Biodiversity


Sustainable food systems


Sustainable agriculture


Clean energy


Sustainable industry


Sustainable mobility


Elimination of pollution

The Green Deal is not a law itself but a strong political movement – the biggest decarbonization pledge of Europe ever since. Turning this commitment into a legal obligation, one might need to look at already enacted laws as well as possible scenarios that may inspire a new legislative firestorm in Europe, i.e., a flurry of new regulations and changes to EU law. The existing legislative framework, *inter alia,* includes the EU's **Emissions Trading System** (EU ETS) (EC), **protection of the ozone layer** (ECa), and **fluorinated greenhouse gases** legislation (ECb).

Nevertheless, the backbone of the Green Deal is the **European Climate Law** (ECd), which is in the final phase of negotiation among EU institutions to be finalized in 2021. That will enshrine the goal to reach net-zero emissions in 2050 into Law, and put forward the measures to achieve it. As proposed by the Commission in March 2020, the purpose of the European Climate Law is to set in legislation the decarbonization vision of the Green Deal and the objective of a climate-neutral EU by 2050 in line with scientific findings from IPCC.[17]

It aims to provide a direction by setting a pathway to climate neutrality and enhancing certainty and confidence in the EU's commitment for businesses, workers, investors, consumers and transparency and accountability, thus **sustaining prosperity and job creation**. This latter attracts particular interest in this context as it is expected that the 2050 objective will have a substantial **impact on the labour market** during the next couple of decades, ensuring that effective policy measures and tools are formulated to respond to this shift to a circular economy, significantly greener the labour market.

17 Article 2 of the proposed European Climate Law.

The principle of Solidarity, as a fundamental principle of the EU, is often used in the context of EU climate and energy policy. Under Solidarity, the fight against climate change is based on mutual commitments for the completion of a common goal, but at the same time on a fair burden-sharing between nations (Andoura 2013). **Climate and energy solidarity** do not end the EU member states borders, and this is most visible with its latest Green deal commitment. **The Green Deal is not a European vision only**. It is also a cooperation project between the EU and its near neighbourhood, as the drivers of climate change are global with no national borders and cannot thus be mitigated in a standalone manner. As indicated in the Communication, the EU can use its influence, expertise, and financial resources to mobilize its neighbors and partners to join a sustainable path. This ties back with **the positive conditionality notion**[18] and projects the EU's possible leverage on building alliances among like-minded third parties through the network of legal, political, and administrative obligations and procedures with partner countries.

4.2. EGD Implication on Georgian Climate Law and Policy

The EGD will have a substantial **impact on the climate policy development in Georgia**. However, it will influence only in an indirect manner via using the EU's **soft power** elements and the **conditionality** policy in meeting Georgia's EU association goals. As an EC Communication, the EGD can only have a strong ideological impact on a local norm making without a direct and immediate applicability to the country. The latest Association Implementation Report on Georgia[19] stresses on joint energy and climate action, explicitly mentioning the series of legislative actions that have been carried within the AA and EnC commitments. Therefore, the specific **climate and energy Europeanization pathways** should still be traced under the AA and EnC framework, with the EGD adding additional political pressure on existing formats.

Georgia is a non-EU member state, and the EU regulations do not apply automatically in its domestic legal system. Therefore, in order to approximate the national legislation to the negotiated provisions of the EU regulations enshrined in the AA, the formal adoption of EU standards in the form of updating the existing legislation or adopting new ones (primary or secondary by-laws) is necessary. As for the **Energy** Community framework, Georgia is in the process of implementing the so-called **Third Energy Package** (EC, 2019) as well as the 2009 renewable energy directive (EU, 2009) and the 2012 energy directive (EU, 2012).

18 Positive conditionality must be differentiated with negative conditionality. While former has an 'ax ante' nature and is known as the 'method of the carrot' promising to provide certain incentives for the recipient country in meeting the conditions, the latter aims at influencing an already existing situation and also implies to impose sanctions. Its detailed analysis falls beyond the scope of the paper. With regard to this see V. Veebel, European Union's Positive Conditionality Model in Pre-accession Process, TRAMES, No. 13 2009.

19 Joint Staff Working Document Association Implementation Report on Georgia, Brussels, 5.2.2021.

The mechanism that may have the most significant impact on the implementation of the EGD is called **Clean Energy Package** – i.e., clean energy for all Europeans package – published in 2015, marking a significant step towards implementing the energy union strategy (EC, 2017). Clean energy for all Europeans packages consists of eight legislative acts that establish an important contribution to the EU's long-term strategy of achieving carbon neutrality by 2050. Therefore, the Clean Energy Package provides the specific legal actions on the political pledge of the EGD (highest impact). These legislative actions include: **uptaking RE share, EE and energy performance buildings, the above-mentioned revitalized climate and energy governance system, and new electricity market design.**

Although Georgia is not formally bound to **Clean Energy Package** and its Governance Regulation, the country is preparing the submit is the **NECP**, as requested by the EnC Ministerial Council recommendation.[20] NECP must play a crucial role in providing predictability and perspectives until 2050 in order to ensure consistency with long-term relevant policy objectives and certainty for investment.[21]

20 Recommendation on preparing for the development of integrated national energy and climate plans by the Contracting Parties of the Energy Community.

21 Nonetheless, this development has a non-legally binding nature on Georgia, and the country is not yet subject to updated targets of the EU. There are only two possible ways of how and when the new European legislation (e.g., Clean Energy Package) might have a mandatory legal force on Georgia: 1) European Commission makes a formal proposal in the Energy Community Ministerial Council on legislation 2030 targets to be adopted in 2021. Energy Community Ministerial Council Adopts legislation and targets in 2021. Contracting Parties incl. Georgia transpose and implement the legislation. 2) EU and Georgia revise the AA. Updating the AA is a formal process provided for preventing the negative development of the AAs and approximation of EU laws in the annexes from becoming obsolete, whereas new EU laws replace old ones. Thus, it should be recommended that the EU-Georgia AA is revised accordingly with respect to new or updated EU climate acquis, including the commitments under the Paris Agreement. According to Article 406 of the AA, Association Council has the power to update or amend the Annexes to this Agreement. Unless there is no binding decision by the Association Council, there is no legal obligation. Thus, the revision of the Annex XXVII of the AA, including its implementation timeline, is a subject of the decision of the Association Council to follow the dynamic approximation principle of EU law.

5 The General Trends and Potential Impacts of Georgia's Climate Change Mitigation Policy on Labour Market by 2030

In this chapter, the findings of **the in-depth interviews are summarized**. The mitigation targets, objectives and measures listed below are from the Draft CSAP (CSAP, 2021).

The **Climate Change Division**, under the Ministry of Environmental Protection and Agriculture, adopted a multi-stakeholder collaborative approach for the CSAP elaboration process by involving sectoral representatives and decision-makers from the government and non-government organizations, as well as independent expert, and by establishing sectoral technical working groups during the preparation of the draft CSAP chapters. Additionally, the policy document mirrors and reinforces sectoral strategic planning, and it is entirely in line with the policies and laws in the respective sectors introduced in Chapter 3. Consequently, by investigating sectoral green and low carbon employment market trends and opportunities and considering the cross-sectoral nature of the climate change mitigation, we can directly link the findings from the investigation to Georgia's current climate mitigation policy.

Due to the given and intentional compounds, almost all **interviewed key sectoral stakeholders** were well aware of and familiar with the measures and overall targets stated in the CSAP. Their attitude toward climate mitigation policy in Georgia was predominantly positive and supportive. They perceive the CSAP as an additional framework that strengthens green and sustainable sectoral policies. They also acknowledged that Georgian climate change policy has a low impact on the national and sectoral policies. However, the respondents affirmed the influential role and driver for the structural changes of the EU, AA, EnC membership, and international climate change agreements on Georgia's national and sectoral policies (especially the energy sector).

It should be noted that the respondents did not see significant impacts of the climate change mitigation interventions on the Labour market in the short-term. However, they expect significant impacts in the medium-term. Additionally, the respondents did not see a sharp difference between 2025 and 2030 mitigation directions. Accordingly, in this chapter, the in-depth interview outcomes are summarised in the medium-term only.

At the outset, the most common and prevailing challenges and opportunities highlighted during the in-depth interviews by the sectoral experts when asked about the clear trends of the growing demand for the green jobs market and skilled workers will be pointed out.

All respondents highlighted the following major ***CHALLENGES:***

- ***Lack of employment market data, in particular, Georgia-specific studies, forecasts and estimations regarding green jobs***
  - In Georgia, detailed sectoral job market data is still not available, nor analysis, studies, or estimations of green skills required in the medium or long term. As an example, among other things, one respondent said that jobs are still not classified in Georgia. In many EU countries, when a person is employed in a paper factory, the person is considered to be employed in the forestry sector.

- ***Lack of higher, technical and vocational education and training adapted to the low-carbon development needs and demands***
  - Education and skills development systems can accelerate the Transition in a fair and inclusive manner and reduce carbon footprint. Almost all the respondents underlined that in Georgia, there is a significant lack of programs, modules, and curricula offered by universities, vocational, research and training centers to prepare technicians, experts and professionals for the current national and international green jobs markets. There is already a shortage of qualified workers in the mitigation relevant sectors. Accordingly, the expected increase in demand will cause further shortages if the educational system will not adapt and respond to the green trends.

- ***Lack of inclusion of the regional and global political and economic trends in the policies, including labour market policies***
  - Policymakers need to take into consideration regional and global political and economic trends. There is a need to analyze not only how introducing green growth in Georgia can affect the Georgian job market but, at the same time, how the European and global green growth trends may affect the Georgian job market. As an example, one respondent underlined that Georgia still sees itself as a "transit country" for oil and gas. However, in the long term, the effects of the global decarbonization trends on Georgia's political–economic stability are not clear. Moreover, in the EU, there is already a growing opposition that sees the investment in gas pipelines as ultimately unsustainable. It is expected that the EU might turn its back on fossil fuel use within the next 20 years.

- ***The digital skill gap in the current active workforce***
  - Whereas the role of digital technologies in greener and low carbon economic sectors is growing exponentially, the Georgian government is still not focusing enough on digital upskilling and reskilling of the workforce in the mitigation relevant sectors to close the digital skills gap and enable effective operating in an increasingly digitized and automated world. As an example, one respondent from the Agriculture sector outlined that local rural farmers are often uninformed about the current low-emissions farming trends in the sector due to the digital divide. Thus, they miss the opportunity to shift to climate-smart agriculture, as well as plan, manage and market their production accordingly.

- ***Absence of women in decision-making processes and barriers for women to enter male-dominated fields and sectors***
  - Mostly men are the decision-makers not only in the male-dominated but in women-dominated fields too. It is fundamentally unfair because, in most cases, women's needs and interests are excluded and ignored. In addition to this, women still have obstacles to find or access employment due to various social and economic reasons and barriers to enter and sustain in the male-dominated fields.

- ***COVID-19 pandemic and related uncertainties***
  - The current global pandemic is seen as a hindering factor for low-carbon development, at least in the short-term. As mentioned by the respondents, the future is uncertain because, presumably, the recovery process will need relocation of the budget and re-prioritize the topics on the national level. As a result, sectoral green job market development is expected to be affected.

- ***Lack of participation and dialogue opportunities along with insufficient cross-sectoral coordination in policy planning, implementation, and monitoring processes***
  - There are several sectoral platforms. However, there are no established cross-sectoral platforms, coordination mechanisms, or dialogue opportunities where climate change and employment interlinkages and issues are addressed.

Furthermore, the vast majority of the respondents highlighted the following noteworthy ***OPPORTUNITIES:***

- ***Development and production of green technologies***
  - As explained, or the green/clean infrastructure and technologies, it is better not to depend entirely on other countries. Since this segment has been developing, Georgia can use this opportunity and become one of the pioneers and start producing climate-friendly clean technologies, e.g., technologies applied for clean energy generation.

- ***Accumulated knowledge, best practices and international experience***
  - Georgia can look into and learn from accumulated experience and best practices of other countries, ideally identify specific areas through close communication with the private sector and experts, and plan Transition process, including relevant programs for low-carbon jobs, high- and low-skilled workers.

- ***Formalization of informal workers***
  - As a result of good policy planning and implementation, there is a given opportunity of formalizing a large number of workers from the informal economy employed in mitigation relevant sectors. The sector-based formalization process includes bringing informal workers under the coverage of formal arrangements while ensuring opportunities for income security, livelihoods, and entrepreneurship, as well as addressing the specific needs and circumstances of the various groups of workers. As an example, the so-called informal "craftsmen of everything" on Eliava "Birzha" (Market), where one can find, e.g., heating and cooling system installers, builders etc. While mainstreaming low-carbon EE standards in the Georgian residential area, Eliava market informal workers can be trained, certified, registered and transferred to a legal and formal space. Likewise, formalizing marginalized representatives of the waste sector (including scavengers, waste pickers, etc.) will be a challenge, but approached with suitable policies, it is also an opportunity.

- ***Managed and facilitated circular labour migration opportunities for (green) skilled professionals[22]***
  - Both seasonal migrations (between 3 and 9 or 12 months) and temporary movement (from 9 or 12 months to 5 years) are forms of circular migration (Kazmierkiewicz, 2013). Since low carbon jobs are mainly new and the demand is growing rapidly, Georgians could use the opportunity, master new low carbon jobs and work not only in Georgia but also in the countries Georgia has an agreement on the labour migration, e.g., European countries. New competencies and skills acquired while working abroad could help workers to find better-paid jobs in Georgia after returning from the host country.

- ***New jobs creation as an opportunity to achieve gender equality and reduce women unemployment***
  - Transition of the male-dominated sectors can create opportunities to develop a new world of work with a more balanced sectoral gender-mix, break employment-related gender stereotypes, and create jobs and financial stability for unemployed or underemployed women.

22 Georgia has several agreements with the countries about labour migration. Additionally, many studies also indicate that, in terms of circular labour migration, there is a need to ensure a balance between the needs of the host country and the needs of the country of origin, as well as to implement safeguards into their programmes and policies (i.e., Goos, 2016).

- ***Considering the introduction of the carbon pricing and trading mechanisms***
  - Carbon tax and ETS are not implemented in Georgia yet. However, the country should start considering carbon pricing mechanisms and joint emissions trading schemes with the EU and/or other Contracting Parties of the EnC. The cooperation with the EnC Secretariat will be crucial. The latter recently published the study on "A carbon pricing design for the Energy Community," assessing and proposing an effective carbon pricing mechanism conducive to decarbonizing the EnC Contracting Parties, including Georgia (EnC, 2021).[23] It should be noted that the effects of carbon pricing on the labour market are very complex. It is estimated that jobs tend to be reallocated rather than lost entirely, and most job losses in affected industries are offset by job gains in other industries (Hafstead, Lauren, Dunlap, 2020).

Before addressing selected sectoral Climate Action Plan (CAP) objectives and measures with the potential of playing an important role in shaping future labour market and creation of green jobs, the objective – **"Reinforcement of Institutional and Policy-making Capacities"** can be outlined as a general objective for all CAP sectors listed below and which is already contributing to creating of a certain amount of jobs in Georgia.

Table I: "Reinforcement of Institutional and Policy-Making Capacities" Potential Positive Impacts by 2030

Selected Interventions from the CSAP	Potential Positive Impacts of Mitigation Policy on the Employment Market (mostly job creation/enhancement) by 2030 and beyond. Selected examples:
Reinforcement of Institutional and Policy-Making Capacities	Climate mitigation policy and strategy planners, mitigation project managers and administrative staff, professional civil servants, GHG inventory and modelling experts, climate governance experts, climate data specialists, sectoral experts, carbon market analysts, verifiers, non-government organizations staff, international donor project coordinators, sectoral researchers, and more, staff in the relevant sectors for planning and implementing mitigation measures.

23 As it is mentioned in the study, the carbon pricing drives the adoption of power generation technologies that are characterized by different labour intensities in their construction and operation phases. In Georgia, the impact on employment is small. The only driver of additional jobs is the installation of solar PV, projected to generate 20 short-term jobs and 8 permanent ones.

5.I. Energy Generation and Transmission Sector

CSAP Sectoral Goal and Objectives

Georgia plans to mitigate 15% of GHG emissions below "without measures scenario"[24] in the energy generation and transmission sector by 2030. The sectoral mitigation goal is expected to be achieved mainly through the following objectives:

- Supporting the RE (wind, solar, hydro, biomass) generation
- Improving average efficiency of thermal power plants
- Reinforcing the RE integration capacity in the national transmission system

Sector Baseline and Development Trends

Official data (GeoStat) shows one clear trend in the energy sector of Georgia that the gap between electricity consumption and generation is continuously increasing. Especially in recent years, there has been a significant increase in electricity consumption. Since 2017 Georgia has experienced a generation deficit. Along with the growing negative gap between electricity generation and consumption, Georgia's current power transmission systems are not prepared to withstand a major increase in imports. Besides, external energy dependence creates high energy security risks in Georgia. Hence, urgent action is needed.

As of today, the electricity generated in Georgia comes from hydropower plants (about 80%), a couple of thermal and one wind power plant. It is expected that electricity generation in Georgia will become more diverse and greener in the medium and long-term. We see a global energy industry under transformation, and Georgia's energy industry will be no exception, especially if we consider Georgia's accession to the EnC and towards the EU, which includes energy sector reforms and approximation processes.

As one respondent stated, it can be assumed that large enterprises and large facilities will either gradually start building their own power generation facilities or procuring energy from independent energy producers in the near future. The business sector now has the opportunity to start building from small to large size power plants for enterprises or build and sell the power plants to investors. This process can be accelerated after launching the Energy Market in Spring 2021, introducing Day-Ahead, hourly markets and balancing mechanisms.[25]

24 According to IPCC, "Without measures scenario" or "Baseline/Reference Scenario" refers to scenarios that are based on the assumption that no mitigation policies or measures will be implemented beyond those that are already in force and/or are legislated or planned to be adopted. Baseline scenarios are not intended to be predictions of the future, but rather counterfactual constructions that can serve to highlight the level of emissions that would occur without further policy effort.

25 Georgian Energy Exchange

Labour Market Implications

Significant changes are expected to happen in the short and medium-term in the energy sector, for which Georgia's labour market is not prepared. For example, there is already a small demand on the Georgian employment market in the solar and wind energy generation sector. However, business representatives of those sectors have emphasized that currently, even the small demand cannot be met. At present, there is almost no one who could plan and implement wind and solar energy projects. As a result, there are lots of examples when the private sector arranges itself practical and theoretical training series, also re-trains employees in other countries (mostly in the EU countries), where trainees learn in practice, e.g., how to install solar panels and how the preparatory work before installation should be planned (e.g., grid and transformer preparation/installation, solar project planning, etc.). Conditionally, if Georgia will decide to generate megawatts with renewables like wind and solar, it might be impossible due to the lack of skilled technicians and professionals.

Worth mentioning, if green hydrogen enters the market, the introduction of green hydrogen technology will be required, which is still very complicated, and at this stage, the production of green hydrogen requires quite high costs, thus the risks of losses are high. Therefore state support and subsidies will be needed.

Climate mitigation policies in the energy generation and transmission sector could potentially, directly and indirectly, impact the Georgian labour market in the following areas:

Table 2: Potential Medium and Long-Term Positive Impacts of Mitigation Policy on Employment Market in the Energy Generation and Transmission Sector

Selected Mitigation Interventions and Directions from the CSAP	Potential Medium and Long-Term Positive Impacts of Mitigation Policy on Employment Market in the Energy Generation and Transmission Sector (jobs creation/jobs redefinition/changes in skills requirements). Selected Examples:
Supporting for RE (Solar and Wind)	The RE industry can be described as a "job-rich" industry. It includes a wide range of occupations, starting from research and development to manufacturing materials, construction and operation of power plants, and installation and maintenance. Sales occupations are also integral to the solar and wind power products industry.
Reinforcing the RE Integration Capacity in the National Transmission System	Developing a green and smart electricity transmission system is a key element of using renewables, EE and minimizing energy losses. Setting up or improving such a system will require fundamental re-engineering of the energy service industry and infrastructure, typical jobs related to (green) transmission systems will require smart grid engineers, power system software engineers, developers, data scientists, managers and coordinators, as well as (re-)trained constructors, electricians, etc.

5.2. Transport

CSAP Sectoral Goal and Objectives

Georgia plans to mitigate 15% of greenhouse gas emissions below "without measures scenario" in the transport sector by 2030. The sectoral mitigation goal is expected to be achieved mainly through the following objectives:

- Increasing share of low and zero emissions and technically well operated private vehicles in the fleet (tech-inspection, tax privileges, increase of import tax)
- Decreasing demand for fossil fuels and encouraging usage of biofuel
- Encouraging using public and non-motorized transport

Although the above-mentioned mitigation target implies total domestic transport activities, in the narrow frames of our study, it was only possible to look into green transition trends regarding **urban transport** in the capital city of Georgia, Tbilisi.

Sector Baseline and Development Trends

Tbilisi, the capital and the largest city of Georgia, considered as Georgia's most developed and sophisticated in terms of urban transport systems, has not yet had a strategic urban transport policy document. The first steps towards paradigm shift were taken just recently. It is evident that the city needs a strategic transport document and a legal framework to improve mobility conditions successfully. A Sustainable Urban Mobility Plan is being developed currently, and the first draft might be available in a couple of months. It will be a kind of transport master plan that is extensive, includes general mobility and all traffic participants. The document will define "traffic hierarchy" and set priorities as follows: pedestrians, non-motorized transport, public transport, commercial transport (distribution and logistics), motorized vehicles and parked old cars.

Labour Market Implications

Shifting to green sustainable urban mobility mode is, of course, not only a planning, policy, or investment challenge, but it also requires behavioural change through awareness-raising, changing mentality, and mobility culture in general. In this regard, Georgian urban transport policy is still at the initial stage of development. However, we can observe an attempt to create a unified, sustainable urban transport policy with the main directions such as public transport reform incl. framework reform and content reform, e.g., planning of lines, creating a new network and updating the Tbilisi bus park, renewal of the metro, minimization of waiting time, and parking by the introduction of zonal parking and many more. Lowering CO_2 emissions from cars through the expansion of public transport, its efficiency improvements or large scale hybridization and electrification of automotive transport, unlike many other developed countries, will not have any major

negative impact on employment in Georgia, this is first of all due to the fact that traditionally Georgia was never involved in vehicle manufacturing.

Regarding gender aspects, it has to be noted that in 2019, 21 women were trained and received category D driver's licenses that allowed them to operate public transport vehicles. Some of them work at Tbilisi Transport Company. The women were trained as part of a training program that was supported by the European Bank for Reconstruction and Development.

It is expected that new green and low carbon transport policy will substantially change the transport-related labour market in the following areas:

Table 3: Potential Medium and Long-Term Positive Impacts of Mitigation Policy on Employment Market in the Transport Sector

Selected Mitigation Interventions and Directions from the CSAP	Potential Medium and Long-Term Positive Impacts of Mitigation Policy on Employment Market in the Transport Sector (jobs creation/jobs redefinition/ changes in skills requirements). Selected Examples:
Increasing Share of Low and Zero Emissions and Technically Well Operated Private Vehicles in the Fleet	Due to this objective, mostly jobs related to vehicle maintenance, operation, and control/classification (tech inspection jobs) will be affected. Besides, the electrification of private passenger vehicles will increase the demand for jobs related to the maintenance and operation of electric vehicles. In general, an auto mechanic is a traditional occupation, but it becomes "greened" when those skills are applied to hybrid or electric cars rather than to the standard combustion engine.
Decreasing Demand for Fossil Fuels and Encouraging Usage of Biofuel	High demand for biofuels can promote the biofuel industry in Georgia. It is worth mentioning that biofuels are used not only for transportation fuels but also for heat and power generation. If produced in Georgia, it will require setting up an integrated, continuous, and uninterrupted supply chains, which could employ a wide range of workers in a variety of occupations, such as science and research, construction, agriculture and sales (e.g., chemical, environmental and electrical engineers and technicians, construction managers, operators and laborers for building and operating the plants and infrastructure, farmers and other agricultural growers, laborers, etc.).

Encouraging Using Public and Non-Motorized Transport

On the one hand, the expansion of public transport increases employment in the public transport sector (e.g., drivers, operators, supervision, route design, etc.), as well as in related industries. On the other hand, it might reduce employment in sectors related to private motorized car use (e.g., the retail sale of fuel and the production, sale, and maintenance of motor vehicles). The maintenance and operation of public transport systems can be significant sources of employment. In addition, constructing new public transport infrastructure and managing fleets by applying intelligent transport systems (ITS) will require trained professionals (data collection, analysis, processing, etc.).

Noteworthy to mention that many studies show, an accessible and well-connected public transport system usually improves employment accessibility and labour supply.

Besides, if we shift to cycling (non-motorized transport), this sub-sector also might increase jobs such as bicycle mechanics, technician, assembler, people who work in Bike stores and retail business, etc.

5.3. Buildings

CSAP Sectoral Goal and Objectives

There is no quantitative target for the Buildings sector in the CSAP. However, since the building sector is one of the largest energy-consuming sectors in Georgia, supporting the development of low-emission approaches will be highly prioritized in the forthcoming years' in the climate mitigation agenda.

Sector Baseline and Development Drivers

In Georgia, starting from 2021, significant qualitative changes in the construction of new buildings are expected, warranted with the two new laws – *The Law on EE and The Law on Energy Performance of Buildings*. With this framework and by implementing important milestones in meeting the DCFTA requirements, as well as considering its membership of the EnC, Georgia is now given the opportunity to receive significant investments in old building renovation programs. Experts stress the opportunities this change brings, due to the new framework, households will be better supplied with efficient energy services, and building stocks will be better insulated, it will also promote the usage of greener energy sources for heating, cooling and lighting (EnC, 2020).

In the best-case scenario, it is expected that by 2030 Georgia will not only meet the international standards and start building so-called low carbon/ carbon neutral "passive houses" but also step by step start retrofitting existing old buildings stock

according to energy-efficient renovation standards. It will require structural and technical system measures, aimed primarily at heating energy savings, from thermal insulation to the building envelope (windows, floors, external walls, roofs, etc.).

Labour Market Implications

Over the past few years, green construction and retrofitting trends are growing dramatically in many countries, and as the size of this industry grows, so is its skilled workforce.

Improving the EE of the existing buildings might be considered as the main challenge in this sector. On the other hand, overcoming this rather difficult administrative, technical, and also a financial challenge might create a good deal of new jobs, specialists who can design, plan and implement green retrofitting and build new energy-efficient, passive houses will be needed.

Table 4: Potential Medium and Long-Term Positive Impacts of Mitigation Policy on Employment Market in the Buildings Sector

Selected Interventions and Directions from the CSAP	Potential Medium and Long-Term Positive Impacts of Mitigation Policy on Employment Market in the Buildings Sector (jobs creation/jobs redefinition/changes in skills requirements). Selected examples:
Developing Buildings Certification Schemes	Due to the Energy Performance Certification of buildings, two major new professions are emerging: heating and cooling system certified inspectors and energy auditors. These are certified formal professions for inspecting RE, heating, and cooling systems installations, as well as checking the compliance with regulations, standards, and codes.
Increasing Awareness of Consumers on EE	High awareness of consumers on EE and, in general, on sustainable housing increases demand on services provided in this area. Hence it indirectly accelerates demand on the workforce working to provide those services.
Installation of Energy-Efficient Lighting and Energy-Efficient Approaches in Residential, Commercial, and Public Buildings, as well as Supporting Solar Water Heater Systems in Buildings	Installation and maintenance of energy-efficient, green technologies will create job opportunities for construction workers and engineers who can design and install advanced materials and insulation on buildings, certified solar hot water system producers, technicians/plumbers, installers, etc. weatherization experts, engineers, technicians, and installation experts working with smart and green lighting. Briefly, jobs related to ensuring maintenance of new energy-efficient technologies and effectively managing complex facilities and related infrastructure.

5.4. Industry

CSAP Sectoral Goal and Objectives

Georgia plans to mitigate 5% of GHG emissions below "without measures scenario" in the industry sector by 2030. The sectoral mitigation goal is expected to be achieved mainly through the following objective:

- Reducing GHG emissions from industrial processes and energy consumption (changing cement production method, capture emissions from Nitric Acid production plants)

As mentioned above, the industry was not included in this study due to weak representation of the industry sector CAP interventions and no expected impact of the existing CAP measure on employment. Worth noting that since Georgia started the transition from a command economy to a market economy, most industrial plants were privatized. Accordingly, all the interventions in the industry sector go through regulating the private sector and may be considered as sensitive areas for the regulations for the government.

5.5. Agriculture

CSAP Sectoral Goal and Objectives

Georgia plans to support the low carbon development of the agriculture sector by encouraging climate-smart agriculture technologies and services through the following objectives:

- Sustainably managing soil and pasture and promoting the cattle food sustainable practices

Sector Baseline and Development Drivers

In Georgia, agricultural tradition is an integral part of the country's history and mentality. Georgian politicians, and not only politicians, often name agriculture as the main source of growth of the country's economy, but the reality and facts show the opposite trends. Nowadays, agricultural productivity and its share in the country's GDP is quite low. According to the official data in 1998, the share of agriculture in the Georgian economy was 28%, in 2008 – 9.4%, and in 2018 – 8% (Goestat). In addition, the average yield in Georgia is in some cases 2–3 times lower than in the same crops in Europe. According to 2019 figures, 15.7% of the total labour force work in agriculture (Geostat)[26]. Almost half of the people who live in the rural areas are self-employed, their earnings are relatively low and insecure, the vulnerability, poverty and low productivity are above average.

26 It was 40% of the active workforce works in agriculture and are categorized as "self-employed". Geostat has recently changed the methodology

It should be highlighted that agriculture and forestry differ from all other sectors in terms that these two are organic, i.e., carbon can never be eliminated. Therefore sectoral experts rather talk about advancing climate-smart practices by improving productivity and resource use efficiency (FAO, 2019). Georgia follows that path too.

Labour Market Implications

It is a general trend around the world that the speed of urbanization is increasing gradually. Fewer people remain in the rural areas and due to the technological transformation of agriculture, e.g., by utilizing advanced technologies, fewer people produce more agricultural products. As mentioned above, there is a slowly increasing trend of urbanization in Georgia too.

As stated by a respondent, the introduction of sustainable and green agricultural practices could be profitable in the long run. Especially if certification schemes (bio / organic food) will be in place. Georgia has a great potential to move and develop climate-friendly bio, organic farms, as it still has lands and natural pastures, where neither pesticides nor fertilizers have been applied for decades. Thus, the development of sustainable and climate-smart agriculture has enormous potential, it could improve rural livelihoods and create decent rural jobs. However, as briefly mentioned in the challenges above, unfortunately, the large majority of farmers have scarce information about climate change and available innovative green technologies, funding and business development opportunities. They do not see clear benefits of climate-smart agriculture (FAO), have no capacities to use the climate-smart and innovative approaches and are not aware of the good practices of the world.

Table 5: Potential Medium and Long-Term Positive Impacts of Mitigation Policy on Employment Market in the Agriculture Sector

Selected Interventions and Directions from the CSAP	Potential Medium and Long-Term Positive Impacts of Mitigation Policy on Employment Market in the Agriculture Sector. Selected Examples:
Sustainably Managing Soil and Pasture and Promoting the Cattle Food Sustainable Practices	Reducing GHG emissions through improved land, water, crop, livestock, manure and pasture management will create green jobs related to areas such as conservation agriculture, integrated pest management and sustainable mechanization, climate-smart livestock management, sustainable post-harvest storage and handling practices, as well as retail jobs for smallholder bio-organic product farmers. It is noteworthy that high quality of organic products can be marketed and sold, not only on local, urban, regional, but also international markets. Besides, organic products produced with climate-smart technologies could promote job creation related to certification and branding, which includes the labelling of sustainably and organically produced foods and beverages.

5.6. Waste Management

CSAP Sectoral Goal and Objectives

Georgia plans to support the low emissions development of the waste sector by improving solid municipal waste management and wastewater treatment systems through reducing emissions from landfills (closure of old landfills and construction of new landfills) and supporting waste recycling.

Sector Baseline and Development Trends

At the outset, it should be noted that Georgia has not a large amount of waste, and as mentioned above, unlike some other mitigation sectors, a waste management strategy and action plan, as well as a waste management law, are already in place. Any time soon, with the support of donors, a total of 8–9 regional landfills are planned to be constructed, which will close the existing old landfills in the respective regions. A certain part of the private sector is already obliged to have a sustainable waste management plan and to manage waste according to its plan.

Despite these positive changes, waste management in Georgia still remains as a significant challenge. Sustainable waste management is a systemic issue and covers the entire life cycle of a product, from the release to its disposal in the landfill. Thus, setting up a waste system will require the involvement of people with technical education and training.

Labour Market Implications

There is already a serious shortage of qualified personnel with the needed education and professional training in the waste management sector in Georgia. So far, mainly foreign experts are involved in all stages of planning and implementation of modern waste standards in Georgia, which has a positive side but also often creates problems because experts and technicians need to adjust their experience to the specific local circumstances of Georgia.

The establishment of a technology-based, sustainable and low carbon waste system can potentially create lots of new jobs and business opportunities. During the transfer to sustainable waste management, close and effective cooperation between the private sector and the public sector will be the crucial point and will generate even more waste management-related jobs. It has to be noted that many studies show that, in general, recycling creates far more jobs than disposal.

Table 6: **Potential Medium and Long-Term Positive Impacts of Mitigation Policy on Employment Market in the Waste Management Sector**

Selected Interventions and Directions from the CSAP	Potential Medium and Long-Term Positive Impacts of Mitigation Policy on Employment Market in the Waste Management Sector (jobs creation/jobs redefinition/changes in skills requirements). Selected Examples:
Reducing Emissions from Landfills (Closure of Old Landfills and Construction of New Landfills)	Sustainable waste management and reducing emissions from landfills require sustainable waste management specialists, sectoral technicians, experts, engineers, scientists, landfill operations/district managers, retrained landfill laborers, equipment operators, sorters, wastewater treatment plant operators, etc.
Supporting Waste Recycling	Greening the waste sector primarily involves the three 3Rs Hierarchy–Reduce, Reuse and Recycle. The recycling industry creates jobs related to collecting, transporting, processing, sorting and preparing materials for sales, the staff for managing and coordinating the material flows and lots of jobs related to manufacturing/making, marketing and selling new products from recycled materials.

5.7. Forestry

CSAP Sectoral Goal and Objectives

Georgia plans to reduce emissions by increasing the carbon capture capacity of forests by 10% compared to the 2015 level by 2030. The sectoral mitigation goal is expected to be achieved mainly through the following objectives:

- Restoring the degraded forests
- Supporting Sustainable Forest Management

Sector Baseline and Development Trends

It is estimated that almost 43.5% of the territory of Georgia is covered by forest, of which 95–98% is a natural forest. As mentioned above, the present laws, policies and action plans strictly regulate forest functions, maintenance, and restoration measures. They outline the vision for the development of the sector in general and address the key aspects of ecosystem services.

Natural forests usually provide a wide range of products, ecosystem services and social and economic opportunities and can be sustainably managed to meet multiple objectives. In Georgia, at this stage, active work is being done to raise awareness of both decision-makers and the general public about sustainable forestry use, aiming to see the benefits, diversity, and multifunctionality of ecosystems. If the current trends in the country are maintained. As a result, the forest area in Georgia will not be reduced, and the quality and sanitary conditions of forests will be improved.

Labour Market Implications

In Georgia, there is an opportunity to create decent, sustainable forestry jobs by fulfilling consumer needs (economic, social aspects) and preserving the natural forest (ecological aspect).

Table 7: Potential Medium and Long-Term Positive Impacts of Mitigation Policy on Employment Market in the Forestry Sector

Selected Interventions and Directions from the CSAP	Potential Medium and Long-Term Positive Impacts of Mitigation Policy on Employment Market in the Forestry Sector. Selected Examples:
Restoring the Degraded Forest and Supporting Sustainable Forest Management	Preserving and maintaining healthy forests might redefine and involve different types of workers such as conservation scientists and foresters, environmental scientists and specialists, sectoral technicians and protection scientists, professionals who monitor and collect forest data (Forest taximeters are being trained to carry out forest inventory), credentials, fire protection and prevention workers who manage forest fires. Forest conservation and logging occupations, logging equipment operators, fallers – cultivate and harvest trees for wood and paper products and more. These interventions also promote development for agroforestry, urban forestry and eco forestry, and related sustainable business opportunities, including job opportunities.

5.8. Cases

In this subchapter, two cases are explored and concisely introduced. The rationale behind the first case is to showcase the unavoidable future of the Coal Mine in the west – Georgian town of Tkibuli due to global climate change mitigation action, more precisely, decarbonization trends and the need for just transition planning. The rationale behind the second case is to showcase the labour-related opportunity for achieving gender equality and women empowerment that the unavoidable transition of the male-dominated sectors can bring.

5.8.1. Tkibuli Coal Mine

Mines in Tkibuli (Imereti) and Tkvarcheli (Abkhazia) were the centre of Georgia's coal mining industry during Soviet times. Tkibuli-Shaori Coal deposit has been in exploitation since 1846. Today, mining is still the backbone of the local economy and the primary source of employment in Tkibuli Municipality. A heavy human toll, series of accidents and explosions, inhuman and incompatible safety and working conditions, old-equipment, and mining methods are the main characteristics of Tkibuli Mines. In addition to this, the production decreased in the past years due to decreased demand, concurring to a major drop in recent years in global coal demand. Furthermore, "Miner Identity," "Miner as Heritage," as in other industrial cities, still play a role in Tkibuli. The income of the Tkibuli municipality and the city population entirely depends on the mines. The city still remembers the 1990s, when the collapse of the Soviet Union resulted in the decline of industry, and Tkibuli, like other (mono) industrial cities in Georgia, was socially and economically paralyzed. Accordingly, the mines' closure is no solution for the workers and their families because they have no other option to survive economically.

Tkibuli mines have two primary challenges: one, safety standards, and another, global decarbonization trend and decline in coal. Even if the operator ensures the required safety standards and satisfies labour inspection demands, the global decarbonization trend and coal mining as a "declining industry" should be taken seriously by the State. "Steel International Trade Company" is a new owner of the Tkibuli mines, and plans to increase production, export in Ukraine and Turkey (BM, 2019). As it was mentioned above, Turkey has not ratified the PA but signed, and Ukraine is currently starting a discussion about its own coal phase-out (MEPR, 2020). It is only a matter of time for Tkibuli mines to phase out due to climate change reasons. Accordingly, it is critically important for Georgia to start planning for the just Transition, to involve the relevant stakeholders, including the workers' unions, to select development alternatives for Tkibuli, and to facilitate the planned processes. The workers' unions should be the key actor in the process to represent the workers' interests and needs. In the planning process, good practice analysis, lessons learned from the "transitioned" cases, guidelines from the ILO and International Trade Union Confederation should be taken into account.

There is no "one size fits all." However, there are successful cases that can lead to mostly positive outcomes. The Ruhr Region in Germany went through one of the most successful (just) transitions "from Europe's largest industrial (coal and steel) site" in the late 1980s to Europe's cultural capital in 2010. By the mid-1980s, it became clear that the region had severe environmental issues and could no longer be sustained by coal and steel production. Additionally, due to the history of coal and steel production dominance, like in most (mono) industrial cities, there was little economic diversity. The State began a series of investment in three areas that were important to the region's future success and development: (1) investments in infrastructure, particularly intra- and inter-regional public transportation and roads; (2) investment in new universities and technical institutes; and (3) investment in environmental protection (Taylor, 2015). The region further transformed in the late 1980s through the 1990s in a period of innovative and technological investment (Taylor, 2015). Gelsenkirchen, a town that used to be dominated by the coal industry, into a "solar city" that is the largest supplier of solar energy in Europe (Peterson, 2015). In the case of the Ruhr region, just transition policies can be categorized into : (a) short-term policies that focus on the needs of displaced workers and (b) long-term actions to diversify the region's economy and employment base. It was also clear that the new jobs often required new skills. Accordingly, it was accompanied by substantial training and educational programs. Noteworthy that the strong trade unions played a crucial role in negotiations. In short, success factors were decision on transition, clear goals, precise and participative planning, time, active involvement of the key stakeholders, the involvement of the unions as central players.

5.8.2. Women Role and Empowerment in the Mitigation Measures

Achieving gender equality still remains a challenge worldwide. As mentioned above, the transition of the mitigation sectors that are mostly male-dominated is unavoidable. Hence, the transition to a green/low-carbon economy can be seen as a challenge that might further enhance the gender inequality gap, burden already vulnerable women workers, and exclude women from participating in discussions, decision-making, and educational programs (IISD, 2015). In contrast, if needed, gender-specific policies will be in place, just transition to a green/low-carbon economy can be seen as an opportunity to achieve gender equality of opportunities and treatment in the world of work, provide decent work for women, and transform gender norms (ILO, 2017). As mentioned above, ILO precisely and strongly recommended the governments in the transition process to consider the strong gender dimension of many environmental challenges and to take into account specific gender policies to promote equitable outcomes.

In 2012, European Parliament adopted a resolution (2012/2035(INI)) on the role of women in the green economy where precisely highlighted that the transition to a low-carbon economy will create a huge demand for skilled workers and will create green jobs in areas such as agriculture, energy, transport, utilities, research, science, technology, IT, construction and waste. Considering this, the EU called on the Member States to ensure that in this transition, women are not left behind, sectoral and occupational segregation is not perpetuated, wage and skills gaps are eradicated, inclusive social dialogue is established, representation of women in these sectors is encouraged, an overrepresentation of women in unpaid household and care work is

corrected, working conditions are improved, social protection is enhanced, access to decent work and educational/training programs is ensured (EU, 2012).

Women and green economy, women and low-carbon economy, women and sectoral compositions have been the research topics for quite some time. The vast majority of the organizations and research institutes specifically recommend to the government to develop gender-sensitive policies and programmes by understanding social and cultural norms that underpin gender relations and consider gender dimensions, and in parallel, to mainstream gender as a widespread approach to seeking to achieve gender equality by targeted programs and interventions (iied, 2015; UNFCC). These are complex topics that require separate and country-specific study.

Considering the complexity of the topic, the necessity of further research, and the absence of bold gender dimension in the CSAP, this sub-chapter aims to demonstrate one example from the Green Climate Fund (GCF) project "Enabling implementation of forest sector reform in Georgia to reduce GHG emissions from forest degradation"(GCF, 2020). The project aims at reducing emissions from forest degradation through sustainable management of forests as well as promoting EE and alternative fuels to reduce fuelwood consumption as the main driver of forest degradation. It must be pointed out that the project activities form the CSAP Forestry sector objectives and measures. As it is required by the GCF rules, Georgia submitted the Gender Analysis and Gender Action Plan together with the project proposal. This project may not be the best case to demonstrate employment-related opportunities for women. However, this is one of the few cases where gender assessment and action plan were prepared for the climate change mitigation interventions in the male-dominated sector in Georgia. Five intervention areas were identified based on the aforementioned gender assessment: 1) Strengthening of gender competencies in partner structures; 2) Gender-responsive framework conditions; 3) Women as key actors and target group; 4) Access of women to resources and benefits of the project; 5) Gender mainstreaming and data collection. The respective Gender Action Plan was designed to ensure that the project avoids any risks of adverse gender impacts and exclusion of women from decision-making and their leadership qualities, and contributes to lowering gender inequality, addressing the needs and constraints of women and girls, affirming women as change agents, accepting women in non-traditional jobs and reducing the gender gap of climate change-exacerbated social, economic and environmental vulnerabilities.

Actions Areas for the Government and Other Stakeholders

In this chapter, the recommendations are summarised that were derived from the interviews and the desk research. The **general recommendations** are grouped into short (5-year period) and medium (10-year period) term action areas, followed by a few **women empowerment-related recommendations.** Some of the short-term actions are supposed to start in the short-term period. However, the implementation will continue in the second half of the decade. The short-term action areas are meant to create the foundation for informed and evidence-based decision-making in the medium-term. These recommendations are intended primarily for the governmental decision-makers as well as for the respective industries, social partners and civil society organizations to trigger dialogue, research and planning processes. (See also Box 3: Informative Pieces from the ILO's "Guidelines for a Just Transition towards Environmentally Sustainable Economies and Societies for All").

6.I. General Action Areas

Short-term Action Areas:

- ***To identify the responsible government entities for the green jobs and just transition policy planning and to establish working group(s)***
  - The key responsible government entities should be the Ministry of Economy and Sustainable Development, the Ministry of Environmental Protection and Agriculture, the Ministry of the Internally Displaced Persons from the Occupied Territories, Health, Labour and Social Affairs, and the Ministry of Finance. However, the process should be mandated and directed by the head of the government.
  - A working group should be established in the frame of the **Climate Change Council** and the members should be carefully selected. The members should be not only from the mentioned state institutions but from the workers' unions, private sector and civil society organizations too. The mandate and tasks should be clearly composed.
- ***To incorporate employment-related (including gender) considerations/aspects in the climate change-related long-term policy documents, likewise mitigation priorities in the labour policy documents***

- As mentioned above, NECP elaboration should be harmonized with ongoing development processes of LTS (requested by EnC Governance Regulation and PA), CSAP, and NDC update. In general, multiple climate and energy policy strategy clarifications should be streamlined together with the UNFCCC and EU commitments and incorporate the labour market impact-related considerations to the extent possible. In terms of gender, policy-makers should pay attention to the causes of the gender-related employment challenges and then integrate solutions in the respective policies.

- ***To define the country-specific core concepts for further policy planning***
  - Prior to policy planning, it is essential to kick off the process by conceptualizing the core definitions, officially categorizing the jobs and mainstreaming these standpoints and concepts as necessary. First and foremost, country-specific "low carbon jobs" and "green skills" concepts should be defined and the methodology for the job categorization elaborated. Additionally, characteristics and specific features of declining industries should be well-identified and defined, including categorisation of affected groups such as dependent workers, vulnerable local communities, local businesses and enterprises.

- ***To encourage country-specific studies, data collection and analysis***
  - It is essential for the decision-making process to be informed and evidence-based. The study revealed that labour market-related challenges and opportunities brought by the low carbon transition trends significantly differ from one country to another. Thus, national data collection, analysis, and data-driven policy planning are highly recommended. Accordingly, the necessary data and methodology should be determined and data collection operationalized.
  - Regarding the modelling, the suggested model for the quantitative analysis of the impact of the mitigation measures on the labour market is the Computable General Equilibrium (CGE) Model. It is a standard empirical economic analysis tool that captures both direct and indirect inter-sectoral, inter-regional, and inter-temporal effects induced by policy changes. The ISET Policy Institute is currently working on the model and it will be available shortly. It is recommended to do the modelling of the future climate policies (especially in some of the sectors such as energy) to see the potential scenario and design a policy in an inclusive and just manner. Additionally, it is also recommended to do the simulative exercises of the different mitigation scenarios on the labour market in LT-LEDS and NECP preparation processes.

- ***To make employment projections***
  - No study concerns Georgia's job market potential development, main drivers for the labour market development, and projections for future jobs to determine and prepare for the labour demand. The focus of the existing studies is always on the status quo or previous periods. It is recommended to study Georgia's job market development and forecasts considering the megatrends (climate change, sustainable development, resource scarcity, digitalization, rise of technologies and technological development, population dynamics, rapid urbanization, consumerism, etc.), and national priorities and plans. More country-specific data and studies will enable evidence-based projections and informed decision-making, thus will help to design the educational and employment support policies in an inclusive and just manner.

- ***To start a participative and inclusive dialogue on green economy trends, allocate funding for the dialogue and raise awareness among the stakeholders***
  - If the transition process to a low carbon economy is not well-planned and facilitated, it may increase inequalities. Accordingly, it is important to design a transformation process considering needs and demand in close cooperation with the institutions responsible for the education, labour market, and economic development. On the contrary, if the process is well-planned and informed, it can lower poverty and inequality through integrated nature-climate solutions (e.g., sustainable forest management), green job creation (e.g., waste management), digital inclusion (e.g., data for better policy-planning), clean energy access, and strengthening social protection measures.
  - It is crutial to plan and raise awareness on the low-carbon transition and related processes among stakeholders and society, including public agencies, private sector representatives, educational and vocational institutions and the wider public.

- ***To anticipate labour (green skills) requirements, address the skills gap, adjust and align skills acquisition and enhancement strategies***
  - As mentioned in the above chapters, green and low-carbon jobs could increase decent employment opportunities in Georgia in all climate change mitigation sectors by 2030 and beyond. Transition to a low-carbon economy also includes several certification processes and formalization of the informal workforce. Accordingly, more decent and quality jobs will be created. In some cases, it can be easily shifted, and there is no need for special preparation. Nevertheless, some of the new green jobs require special preparation for the demand. Even though there is a high unemployment rate in Georgia, at the same time, there is a skills mismatch and labour shortage due to the lack of required skills and experience. Hence, there is a need to define country-specific green skills, assess and analyse the current situation and plan the next action steps, including the educational system changes (educational, vocational, training-retraining programs).
  - It is estimated that mainstreaming the sustainable development, circular and green economy will also influence the workforce demand, including the required skills and qualifications. Therefore, it is important to focus during the skills assessment studies on the circular economy and green economy essence and demands.

- ***To adapt educational programs to low-carbon transition needs (primarily vocational and higher education and training programs)***
  - Since education plays a pivotal role in responding to the job market demands, it is recommended to green educational programs too. More precisely, in higher education, to review the programs and curriculums and include carefully selected modern and sustainable approaches (e.g., existing energy faculties to focus on renewables, architecture faculties to focus on EE constructions and/or integrated sustainable urban planning, agriculture faculties to focus on climate-smart agriculture, etc.) and offer new programs (e.g., on waste management, sustainable urban mobility, sustainable land use, sustainable food system, sustainable energy, natural resources for sustainable development, sustainable architecture, etc.).

- Vocational education programs and institutions should reflect the low-carbon transition trends and incorporate skills to facilitate the greening of various occupations.

- ***To internalize the Regulatory Impact Assessment (RIA) and Policy Impact Assessment (PIA) practices in the climate mitigation and employment-related decision-making process***
  - **RIA** and **PIA** are a systemic approach for elaborating an evidence-based policy. A key mechanism for ensuring regulatory quality, which facilitates the determination of policy issues in a structured manner, usually analyses cost-benefit/cost-effectiveness and assesses expected positive and negative outcomes of regulatory or non-regulatory actions. From 2020, the GOG by Ordinance No 35 "On the Approval of Regulatory Impact Assessment (RIA) Methodology," made it mandatory for several legislative acts listed in Annex I of the Ordinance. The importance of RIA/PIA practices is crucial on sectoral mitigation interventions where there is a case of regulating the previously non-regulated area and having a high risk of socio-economic impacts.

Medium-term Action Areas:

- ***To make a decision on the Just Transition and integrate low carbon development and a just transition into macroeconomic and growth policies***
  - Government should make a clear decision and plan for the Just Transition based on the studies, projections and analysis recommended in the short-term actions section. Government should be the key facilitator of the process.
  - It is also vital to integrate sustainable development and a just transition into macroeconomic and growth policies, align economic growth with social and environmental objectives, adopt appropriate regulations and instruments to encourage a transition towards economically sustainable activities, invest public funds in greening the economy, develop trade and investment policies to facilitate access to green technologies, innovations and jobs.

- ***To implement support programs and intensive retraining for the workers, businesses, and enterprises in the declining industries***
  - Government should implement support programs and intensive training/retraining programs for the workers, businesses and enterprises in the declining industries/depending on the declining industries. It is necessary to implement, periodically monitor and assess the implementation of the support and retraining/up-skilling programs for the workers, local communities, local businesses and enterprises in the declining industries.

- ***To formulate support programs for the workers and consult the enterprises and businesses in the declining industries***
  - The governmental support programs should be formulated, including social protection and access to training/retraining, to enable workers, local businesses and enterprises to move from declining to growing green sectors.

- ***To establish incentives to stimulate green (decent) job creation***
  - Government should ensure the smooth and successful transition process, establish incentives, mandates, and regulations to stimulate demand, investment, and development of markets for goods and services in sectors and sub-sectors relevant to the greening of economies.

- ***To incorporate in the long-term policy (climate and labour) planning bold social-economic context in case of following the EGD path***
  - EGD will definitely have an impact on Georgia's decarbonization pathway. However, the extent and speed is the question for now. This development is also important for the labour market context because it will affect the labour market demand and possible supply shortage. It is recommended that Georgia apply a regional cross-border approach in translating EGD into the national context and include the labor-market dimension. Georgia should also seek the opportunity to have access to the financial instruments for the EGD.

- ***To allocate funding for the transition and seek the additional funding***
  - Just transition requires resources and investments in the short-term. However, it is profitable in the long run. Accordingly, it is important to allocate the resources from the national budget for the just transition and, in parallel, seek financial support from different international funds, including country-donors.

6.2. Women's Empowerment Action Areas

- ***To ensure women participation in decision-making and just transition dialogues***
  - Women are usually excluded from the most major decision-making processes. As a result, their visions, needs and interests are excluded too. As mentioned above, mostly, male-dominated sectors will undergo the transition. Accordingly, it raises the risks of women being excluded from the transition planning processes. It is essential, women to play a central role in the decision-making and dialogues related to just transition, low-carbon transition and green jobs. Moreover, gender focal points in the municipalities and public institutions should be involved in the processes as well.

- ***To ensure the gender dimension in the sectors and skills assessment and studies***
  - Gender inequality is a systemic issue, and it is revealed in various forms and fields with general and specific characteristics and expressions. Therefore, it is essential to work on systemic as well as expression levels and to include gender dimension in the mitigation sectors, green jobs, green skills assessments, projections and studies.

- ***To ensure access of women to education programs and the green jobs***
  - Women should have access to green jobs. Thus, they should have access to the respective educational programs to gain the required knowledge and skills. Special programs should seek to eliminate Job–related gender stereotypes.

- ***To discuss the possible affirmative actions in the job market and education access***
  - Gender sectoral mix should be relocated, and the government, in consultation with the relevant stakeholders, should discuss the possible affirmative actions to improve access to green jobs and gender mix in the sectors mentioned above (and others too). It is also essential to consider intersectional perspectives in every stage, from the assessment to the accessibility to education programs and green jobs.

- ***To internalize gender assessment and action plan in the climate change mitigation interventions to ensure women dimension and gender equality are addressed***
  - It is recommended to prepare a gender assessment for the potential impact of green economy transition on women and an action plan to improve inequality, including participation in the decision–making, educational programs, and employment.

7 Conclusion

In conclusion, the paper looked at the national climate change mitigation and employment interlinkages and the potential implications of Georgia's climate change mitigation interventions on the national labour market via analysing the national policy frameworks and international instruments in the respective fields, summarizing and applying the outcomes of the in-depth interviews and investigating potential drivers for the decarbonization pathway and just transition processes.

This qualitative analysis suggests that climate change mitigation interventions have a predominantly positive impact on Georgia's labour market. However, there is an urgent need to adapt, plan and implement policies (including educational, employment, skills, support) to prepare the workforce for green jobs and avoid labour market shortage for skilled and qualified workers. Additionally, the opportunity of women empowerment and sectoral gender mix relocation in the process of male-dominated sectors transition to the low carbon economy should be used and addressed. The analysis also suggests that even though, for now, Georgia has no rapid shift planned in the energy sector, international climate change mitigation trends will have a high impact on the coal production and demand in Tkibuli, Georgia. Accordingly, it is urgent to start planning the just transition process and seeking alternatives for Tkibuli workers, the local community and the municipality in general. Furthermore, the study indicates there is no doubt that the EU will proceed with expanding its legal space, and the growing prominence of EU climate policy and the EGD will have its unavoidable impact on Georgian climate policy now closely interlinked with the energy sector. However, access to financial instruments, technical assistance and capacity-building activities should be undertaken in the country, supporting the enforcement of the novel climate policies and legislation and fostering Georgia's ability to implement ambitious national decarbonization plans.

The further research areas could be the following:

- to explore **direct impacts** of climate change on employment, impacts of **adaptation** measures on the Georgian labour market and impacts of responsive **mitigation** measures to the remaining sectors;
- to conduct **quantitative analysis and forecasts** on the potential impacts of climate policies and actions on employment;
- to explore the **European and global green growth trends** and how they may affect the Georgian job market;
- to explore the climate action-induced **jobs and skills greening potentials** in Georgia;
- to conduct a study related to **gender impacts**, including identifying Georgia specific male- and female-dominated sectors, causes of the gender-equality challenges within the Georgian labour market and potential affirmative actions in the process of male-dominated sectors;
- to conduct a **good practice analysis** and develop **just transition plan** for Georgia;
- to study additional potential climate change mitigation measures for enhanced climate action with significant **social-economical benefits**;
- to explore **human rights dimensions** of the transition processes addressed in this paper, including the right to work.

Bibliography*

1. Andoura, 2013: Andoura Sami, Energy Solidarity in Europe: From Independence to Interdependence, Jacques Delors Institute, available: https://www.institutdelors.eu/wp-content/uploads/2020/08/energysolidarity-andoura-ne-ijd-july13.pdf

2. BBC, 2020: McGrath Matt "Climate change: China aims for 'carbon neutrality by 2060'", available: https://www.bbc.com/news/science-environment-54256826

3. Biden, 2020: Joe Biden's official website, "The Biden Plan for a clean energy revolution and environmental justice," available: https://joebiden.com/climate-plan/

4. BM, 2019: Business Media Georgia, "Who Became the New Owner OF Saknakhshiri - Interview with the Manager of Steel Internationa Trading Company," available: https://bm.ge/ka/article/vin-gaxda-saqnaxshiris-axali-mflobeli---interviu-steel-international-trading-company-s-menejertan/41011

5. Bodle, Donat, Duwe, 2016: Bodle Ralph, Donat Lena, Duwe Matthias, "The Paris Agreement: Analysis, Assessment and Outlook" Carbon & Climate Law Review (CCLR) 2016, no. 1: 5-22, available: https://www.jstor.org/stable/43860128?seq=1

6. Carbonbrief, 2020: O'Callaghan Brian and Hepburn Cameron," Leading economists: Green coronavirus recovery also better for economy" available: https://www.carbonbrief.org/leading-economists-green-coronavirus-recovery-also-better-for-economy

7. Catuti, Kustova, Egenhofer, 2020: Catuti Mihnea, Kustova Irina, Egenhofer Christian, "Delivering the European Green Deal for southeast Europe, "CEPS, available: https://www.ceps.eu/ceps-publications/delivering-the-european-green-deal-for-southeast-europe/

8. CESCR, 2005: Committee of Economic, Social and Cultural Rights, "General comment No. 18 - The Right to Work, Article 6 of the International Covenant on Economic, Social and Cultural Rights", available: https://www.refworld.org/docid/4415453b4.html

9. EC, 2017: European Commission website, "Energy union" available: https://ec.europa.eu/energy/topics/energy-strategy/energy-union_en

10. EC, 2019: European Commission website, "Clean energy for all Europeans package," available: https://ec.europa.eu/energy/topics/markets-and-consumers/market-legislation/third-energy-package_en

11. EC, 2020: European Commission web-site "2050 long-term strategy", available: https://ec.europa.eu/clima/policies/strategies/2050_en

12. EC: European Commission website, "EU Emissions Trading System (EU ETS)," available: https://ec.europa.eu/clima/policies/ets_en#tab-0-1

13. ECa: European Commission website, "Protection of the ozone layer," available: https://ec.europa.eu/clima/policies/ozone_en#tab-0-1

14. ECb: European Commission website, "Fluorinated greenhouse gases, "available: https://ec.europa.eu/clima/policies/f-gas_en#tab-0-1

15. ECd: European Commission website, "European Climate Law," available: https://ec.europa.eu/clima/policies/eu-climate-action/law_en#:~:text=With%20the%20European%20%20Climate%20%20Law,greenhouse%20gas%20emissions%20by%202050.&text=By%20September%202023%2C%20and%20every,and%20the%202030%2D2050%20trajectory

16. EnC, 2021: Energy Community, "A carbon pricing design for the Energy Community Final Report," available: https://energy-community.org/news/Energy-Community-News/2021/01/20.html

17. EU, 2009: Directive 2009/28/EC of The European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC.

* General remarks: The bibliography or the references don't follow any citation style. However, the authors think that the sources are sufficiently indicated. All the links were accessed on 30 January 2021.

18. EU, 2012: Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC Text with EEA relevance.

19. EU, 2012: European Parliament Resolution on the role of women in the green economy (2012/2035(INI)), available: https://www.europarl.europa.eu/doceo/document/TA-7-2012-0321_EN.html

20. Eyl-Mazzega, 2020: EYL-MAZZEGA Marc-Antoine, "The Green Deal's External Dimension. Re-Engaging with Neighbors to Avoid Carbon Walls", ifri website, available: https://www.ifri.org/en/publications/editoriaux-de-li-fri/edito-energie/green-deals-external-dimension-re-engaging-neighbors

21. Eyl-Mazzega, 2020a: EYL-MAZZEGA Marc-Antoine, "EU Green Deal: meeting targets by lowering non-EU neighbour emissions too," energypost website, available: https://energypost.eu/eu-green-deal-meeting-targets-by-lowering-non-eu-neighbour-emissions-too/

22. FAO, 2019: Food and Agriculture Organization of the United Nations, "Five practical actions towards low-carbon livestock," available: http://www.fao.org/3/ca7089en/ca7089en.pdf

23. FT, 2019: Ross Alice, "Tackling climate change — an investor's guide," Financial Times website available: https://www.ft.com/content/fa7a4400-d940-11e9-8f9b-77216ebe1f17

24. GCF, 2020: Gender action plan for GCF funded project "Enabling Implementation of Forest Sector Reform in Georgia to Reduce GHG Emissions from Forest Degradation," available: https://www.greenclimate.fund/document/gender-action-plan-fp132-enabling-implementation-forest-sector-reform-georgia-reduce-ghg

25. Geostat, 2019: Population related data, available: https://www.geostat.ge/ka/modules/categories/316/mosakhleoba-da-demografia

26. Geostat, 2020: Employment-related data, available: https://www.geostat.ge/ka/modules/categories/37/dasakmeba-khelfasebi

27. Geostat: GDP-related data, available: https://www.geostat.ge/ka/modules/categories/23/mtliani-shida-produkti-mshp

28. GIZ, 2016: GIZ, "Green Growth Policy Paper for Georgia"

29. GOG, 2019: Government of Georgia, "Adoption of the SDGs' National Document "available: https://www.matsne.gov.ge/document/view/4732470?publication=0

30. GOG, 2020: Government of Georgia "Establishment of the Climate Change Council," available: https://www.matsne.gov.ge/document/view/4780380?publication=0

31. Goos, 2016: Goos Anna, "Manual on Circular Migration Scheme," GIZ, available: http://migration.commission.ge/files/pcms_en_final.pdf

32. Grantham, 2018: Nachmany Michal and Setzer Joana, "Policy brief Global trends in climate change legislation and litigation: 2018 snapshot", Grantham Research Institute on Climate Change and Environment, available: http://www.lse.ac.uk/GranthamInstitute/wp-content/uploads/2018/04/Global-trends-in-climate-change-legislation-and-litigation-2018-snapshot-3.pdf

33. Grantham, 2019: Robins Nick, Rydge James, "Why a just transition is crucial for effective climate action," available: https://www.unpri.org/download?ac=7092

34. Hafstead, Lauren Dunlap, 2020: Hafstead Marc, Dunlap Lauren, "Carbon Pricing 106: Effects on Employment", https://www.rff.org/publications/explainers/carbon-pricing-106-effects-employment/

35. Heffron, McCauley, 2017: J.Heffrona Raphael, McCauleyc Darren," What is the 'Just Transition'?", Geoforum Volume 88, January 2018, Pages 74-77, available: https://www.sciencedirect.com/science/article/abs/pii/S0016718517303287?via%3Dihub

36. IISD, 2015: Fisher Susannah, Mohun Rachel, "Low carbon resilient development and gender equality in the least developed countries," available: https://pubs.iied.org/sites/default/files/pdfs/migrate/10117IIED.pdf

37. IISD, 2020: IISD website, "Japan, Republic of Korea Pledge to Go Carbon-neutral by 2050", available: https://sdg.iisd.org/news/japan-republic-of-korea-pledge-to-go-carbon-neutral-by-2050/

38. ILO, 2010: "Climate change and labour: The need for a "just transition," International Journal of Labour Research 2010 Vol. 2 Issue 2, available: https://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---actrav/documents/publication/wcms_153352.pdf

39. ILO, 2015: ILO, "Guidelines for a just transition towards environmentally sustainable economies and societies for all," available: https://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/documents/publication/wcms_432859.pdf

40. ILO, 2015a: ILO Governing Body, "Formalization of the informal economy: Area of critical importance," GB.325/POL/1/1, available: https://www.ilo.org/wcmsp5/groups/public/---ed_norm/---relconf/documents/meetingdocument/wcms_412833.pdf

41. ILO, 2016: "Just transition, decent work and climate resilience in Asia ", available: https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/documents/publication/wcms_589098.pdf

42. ILO, 2017: ILO Governing Body, "Addressing the impact of climate change on labour," GB.329/POL/3, available: https://www.ilo.org/wcmsp5/groups/public/---ed_norm/---relconf/documents/meetingdocument/wcms_543701.pdf

43. ILO, 2017: Kumar Dhir Rishabh, "Gender, labour and a just transition towards environmentally sustainable economies and societies for all", available: https://www.ilo.org/global/topics/equality-and-discrimination/publications/WCMS_592348/lang--en/index.htm

44. ILO, 2018: "World Employment Social Outlook 2018 Greening with jobs", available: https://www.ilo.org/global/publications/books/WCMS_628654/lang--en/index.htm

45. ILO, 2020, ILO Governing Body, "The role of the ILO in addressing climate change and a just transition for all," GB.340/POL/1, available: https://www.ilo.org/wcmsp5/groups/public/---ed_norm/---relconf/documents/meetingdocument/wcms_756858.pdf

46. ILO: ILO website, "Green Jobs," available: https://www.ilo.org/global/topics/green-jobs/lang--en/index.htm

47. IPCC, 2006: 2006 IPCC Guidelines for National Greenhouse Gas Inventories, available: https://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html

48. IPCC, 2014: Climate Change 2014 Synthesis Report Summary for Policymakers, available: https://www.ipcc.ch/site/assets/uploads/2018/02/AR5_SYR_FINAL_SPM.pdf

49. IPCC, 2018: IPCC "Summary for Policymakers — Global Warming of 1.5 ºC - IPCC", available: https://www.ipcc.ch/sr15/chapter/spm/

50. Kazmierkiewicz, 2013: Kazmierkiewicz Piotr, "Opportunities for Developing Circular Migration Schemes between Georgia and the EU," available: http://migration.commission.ge/files/cipdd-gyla-circular_migration-en.pdf

51. Linnenlueck et al., 2018: K.Linnenlueck Martina, Han Jianlei, Pan Zheyao, Smith Tom, "How markets will drive the transition to a low carbon economy, "Economic Modelling Volume 77, March 2019, Pages 42-54, available: https://www.sciencedirect.com/science/article/abs/pii/S0264999318304619?via%3Dihub

52. Manguiat, Raine, 2018: Manguiat Maria Socorro, Raine Andy, "Strengthening National Legal Frameworks to Implement the Paris Agreement." Carbon & Climate Law Review (CCLR), no. 1 (2018): 15-22

53. MEPR, 2020: Ministry of Environmental Protection and Natural Resources of Ukraine, "Ukraine 2050 Green Energy Transition Concept", available: https://mepr.gov.ua/files/images/news_2020/14022020/eng_pdf_%D0%B7%D0%B5%D0%BB%D0%B5%D0%BD%D0%B0%2%D0%BA%D0%BE%D0%B-D%D1%86%D0%B5%D0%B-F%D1%86%D1%96%D1%8F%20(1).pdf

54. MESD, 2019: Ministry of Economy and Sustainable Development, "Labour Market Analysis 2019", available: http://www.lmis.gov.ge/Lmis/Lmis.Portal.Web/Handlers/GetFile.ashx?Type=UserReport&ID=30ad-9f6d-7c9e-48f2-b90c-d56bc719d0bd

55. Morgan Stanley, 2019: Morgan Stanley's Institute for Sustainable Investing Climate Change as an Investment Megatrend", available: https://www.morganstanley.com/ideas/climate-change-investment-megatrend

56. OECD, 2011: Château Jean, Saint-Martin Anne, Manfredi Thomas, "Employment Impacts of Climate Change Mitigation Policies in OECD A General-Equilibrium Perspective," available: https://www.oecd-ilibrary.org/docserver/5kg0ps847h8q-en.pdf?-expires=1614020645&id=id&accname=guest&checksum=2C5DB259E899FDF8E5DE85533387A975

57. Peterson, 2015: Peterson Erica, "In Germany, A City Moves Away From Coal," available: http://energyfuture.wfpl.org/in-germany-a-city-moves-away-from-coal/

58. PwC, 2016: PwC, "Five Megatrends And Their Implications for Global Defense & Security," available: https://www.pwc.com/gx/en/government-public-services/assets/five-megatrends-implications.pdf

59. Rajmani, Bodansky, 2019: Rajamani Lavanya, and Bodansky Daniel. "The Paris Rulebook: Balancing International Prescriptiveness With National Discretion." International and Comparative Law Quarterly 68, no. 04 (2019): 1023–40. Available: https://www.cambridge.org/core/journals/international-and-comparative-law-quarterly/article/abs/paris-rulebook-balancing-international-prescriptiveness-with-national-discretion/673318361F0CFCCE4D41FE3DC46C72BF

60. Taylor, 2015: Taylor Robert, "Case Study: A Review of Industrial Restructuring in the Ruhr Valley and Relevant Points for China', Institute for Industrial Productivity," available: http://www.cleanairchina.org/file/loadFile/160.html

61. Thorgeirsson, 2017: Thorgeirsson Halldór in Klein Daniel R., Carazo María Pía, Meinhard Doelle, Bulmer Jane, and Higham Andrew. "The Paris Agreement on Climate Change: Analysis and Commentary." Oxford: Oxford University Press

62. UK-BEIS, 2020: UK Government's web-site, "End of coal power to be brought forward in drive towards net zero", available: https://www.gov.uk/government/news/end-of-coal-power-to-be-brought-forward-in-drive-towards-net-zero#:~:text=Britain's%20reliance%20on%20coal%20for,to%20less%20than%203%25%20today.&text=The%20deadline%20for%20the%20phase,a%20speech%20to%20launch%20COP26%20

63. UN, 2020: United Nations, "World Economic Situation and Prospects 2020", available: https://www.un.org/development/desa/dpad/publication/world-economic-situation-and-prospects-2020/

64. UNDP, 2020: Human Development Report 2020, "The next frontier Human development and the Anthropocene," available: http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/GEO.pdf

65. UNFCCC, 2015: The Paris Agreement, UN Doc FCCC/CP/2015/L.9, available: https://unfccc.int/sites/default/files/english_paris_agreement.pdf

66. UNFCCC, 2018: UNFCCC, "Just Transition of the Workforce, and the Creation of Decent Work and Quality Jobs," available: https://unfccc.int/sites/default/files/resource/Just%20transition.pdf

67. UNGA, 2015: UN General Assembly, "Transforming our world: the 2030 Agenda for Sustainable Development", A/RES/70/1, available: https://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E

68. UNGA, 2018: UN General Assembly, "Protection of Global Climate for Present and Future Generations of Humankind," Res 73/232, UN Doc A/RES/73/232, available: https://undocs.org/en/A/RES/73/232

69. WB, 2013: Deichmann Uwe, Zhang Fan, "Growing Green - The Economic Benefits of Climate Action" available: http://documents1.worldbank.org/curated/en/501061468283462662/pdf/Growing-green-the-economic-benefits-of-climate-action.pdf

70. WB, 2019: WB database, available: https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups

71. WB, 2020: Garrote Sanchez Daniel, Gomez Parra Nicolas, Ozden Caglar, and Rijkers Bob, "Which Jobs Are Most Vulnerable to COVID-19? What an Analysis of the European Union Reveals", available: http://documents1.worldbank.org/curated/en/820351589209840894/pdf/Which-Jobs-Are-Most-Vulnerable-to-COVID-19-What-an-Analysis-of-the-European-Union-Reveals.pdf

72. WEF, 2020: World Economic Forum, "The Global Risks Report 2020, available: https://www.weforum.org/reports/the-global-risks-report-2020