GREEN POLICY CENTER

Carbon neutrality in the Energy Community

DRIVERS AND POLICY PROPOSALS

GREEN POLICY CENTER

This study was financed by the European Climate Foundation

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List of Abbreviations and Acronyms

CBAM - Carbon Border Adjustment Mechanism

CPs – Contracting Parties

CO_2 – Carbon-dioxide

EBRD – European Bank of Reconstruction and Development

EC – European Commission

EGD - European Green Deal

EnC – Energy Community

EP – European Parliament

EU – European Union

EU ETS - EU Emission Trading Scheme

GHG – Greenhouse Gases

GovReg – Governance Regulation

IPCC – Intergovernmental Panel on Climate Change

LTS – Long Term Strategy

MS – Member State

NECP – National Energy and Climate Plan

NDC – Nationally Determined Contribution

PA – Paris Agreement

RCP - Representative Concentration Pathway

UN – United Nations

UNDP – United Nations Development Program

UNFCCC – United Nations Framework Convention on Climate Change

WHO – World Health Organisation

This study was funded by the European Climate Foundation

European Climate Foundation

Graphic design: PA GRAPHICS

Photo 1.

Photo 2.

1. Abstract

The Paris Agreement has put forward a climate neutrality target in line with the recommendations of the Intergovernmental Panel on Climate Change. The European Union has also made a commitment towards becoming the first climate neutral continent by 2050. To join these efforts, the Contracting Parties of the Energy Community should also consider adopting and implementing similar commitments to become climate neutral. This paper gives a brief overview on what climate neutrality is and how climate change can affect the Contracting Parties. It also showcases the international commitments related to climate neutrality and provides an overview on the current national climate laws in the European Union. The paper looks into the political, environmental and economic aspects of a possible climate neutrality target in the Energy Community, while providing an overview of already existing long-term strategies submitted to the UNFCCC Secretariat. Based on the above it provides some lessons learned for the Contracting Parties to consider. In the last chapter, the paper summarizes its findings and proposes some possible ways forward for the Energy Community.

2. Introduction

Our planet's climate is changing rapidly. This change is already happening now, it is not a distant threat. 2020 is about to be the hottest year on record and climate change is already having its negative effects on the nine Contracting Parties (CPs) of the Energy Community (EnC)[1]. In the last years there were a number of different extreme weather events, such as the severe droughts in Moldova in 2007 or the major floods of 2014 in the Western Balkans.

The United Nations Framework Convention on Climate Change (UNFCCC) was adopted with the goal to *"protect the climate system for present and future generations"*[i]. The 2015 Paris Agreement (PA) on climate change under the UNFCCC envisages its Parties *"to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century"*[ii], in short: to become climate neutral. While not all CPs of the EnC are also Parties to the Paris Agreement, climate change will and is already affecting all of them.

The European Union (EU) has also initiated its green transition process and adopted a political commitment towards carbon neutrality by 2050 so that Europe can be the first continent to become climate neutral. Furthermore, a part of the CPs in the Western Balkans of the EnC have already accepted a political commitment as well in order to support the achievement of this European target through the Sofia Declaration on the Green Agenda for the Western Balkans[iii]. It is also important to note that Ukraine has also announced a climate neutrality target, however only by 2070[iv]. This date has been updated lately in the Ukraine's Economic Strategy to 2060[v] though.

In line with these developments, the EnC has also discussed policy guidelines on setting a climate neutrality target during its Ministerial Council in mid-December 2020, however no agreement has been made at the time.

In order to live up to their international legal commitments, to support the EU and EnC goals (including the EU accession perspective of several EnC CPs), and to access the international development finance available to support the green and just transition, the EnC and its CPs should discuss how the climate neutrality target will affect them and how it can be achieved.

This vision paper will give an overview of the possibilities and effects on setting a 2050 climate neutrality target for the EnC and its CPs and will provide an overview on already existing strategic documents on the topic while discussing the following issues in more detail.

The paper will explain what climate neutrality is and how climate change can affect the EnC CPs. It will assess the international commitments related to climate neutrality while providing an overview on the current national climate laws in the European Union. The paper will also look into the political, environmental and economic aspects of a climate neutrality target in the EnC. It will also provide an overview of already existing long-term strategies submitted to the UNFCCC Secretariat alongside some lessons learned based on these documents and an overview how this could be done. In the last chapter, the paper will summarize its findings and propose some possible ways forward.

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[1] The Energy Community is an international organization which brings together the European Union and its neighbours to create an integrated pan-European energy market. The organization was founded by the Treaty establishing the Energy Community signed in October 2005 in Athens, Greece, in force since July 2006. The key objective of the Energy Community is to extend the EU internal energy market rules and principles to Contracting Parties in South East Europe, the Black Sea region and beyond on the basis of a legally binding framework. Presently, the Energy Community has nine Contracting Parties - Albania, Bosnia and Herzegovina, Kosovo*, North Macedonia, Georgia, Moldova, Montenegro, Serbia and Ukraine. **This designation is without prejudice to positions on status, and it is in line with UNSCR 1244 and the ICJ Opinion on the Kosovo declaration of independence*

3. Explanation of the effects of climate change on Contracting Parties from a scientific perspective

Chapter written by: Predrag Momčilović[2]

Climate change affects all spheres of life, and in the long run their consequences will be different depending on the mitigation measures taken that CPs implement, but also on the global trend of GHG emissions. In this chapter, we will look at scientific predictions of what can happen in the short, medium, and long term if carbon neutrality measures are not applied. Through the analysis of the impact of climate change on changes in temperature, precipitation regime, impact on forestry and agriculture, water resources, health and social consequences, the results of non-implementation of carbon neutrality measures are presented.

a) Temperature

All CPs will experience an increase in temperature if GHG emissions continue to rise.

The countries of the Western Balkans are heavily influenced by global warming and are significantly vulnerable to climate change. During the near future (2016-2035), which is already underway, with a constant global increase in GHG emissions, the average annual temperature rise is expected to reach 1.5 °C . For the middle of the century (2046-2065) is expected that the average annual temperature rises to 2.0-3.0 °C . While for the time period of the end of the century (2081-2100) in the case of a constant global increase in GHG emissions, the expected temperature rise will reach 4.0-5.0 °C in the whole region in relation to the current climate.[vi] In particular, temperatures will rise during the summer months (June, July, August) which will exceed 5 °C compared to today's climate. A slightly smaller increase in temperature can be expected only in the extreme north of the region (northern Bosnia and Herzegovina and northern Serbia), but compared to the intensity of the change, this difference is not significant.

If GHG emissions do not decrease, it is expected that in the middle of the century, the air temperature in Moldova will increase by 1.7-2 °C compared to the period 1961-1990, and by 4-5 °C by the end of the century.

In Ukraine, due to the large territorial size, the changes will differ in different parts of the country, as well as throughout the year. Scientists predict that the temperature rise will be between 1 and 5 °C in various parts of the country by 2100. Mostly, the winter and spring months will become warmer. Some researchers believe that the tropical climate will reach Moldova and Ukraine and that the subtropical zone already present in both countries will expand further[vii].

Georgia will experience an increase in temperature that will be different in the western and eastern parts of the country. According to projections, by the end of the century, the temperature in western Georgia is expected to increase by 3.5 °C , while in eastern Georgia, temperature changes are expected to increase by 4.1 °C. The largest increase in temperature is expected during the summer months.

[2] Predrag Momčilović is a researcher and journalist from Belgrade. He is a PhD candidate at the Faculty of Geography in Belgrade focusing on degrowth, climate change, food production, and just energy transition. He is also a member and co-founder of Zajedničko, a platform for the theory and practice of commons.

b) Precipitation

For the WB region, the noticeable change in annual precipitation begins in the mid-century, with a gradient of change showing an increase in precipitation in the northern parts of the region and an increasingly intense decrease in precipitation on the south, including coastal areas.

The impact of climate change is visible in the change in the annual distribution of precipitation, which is noticeable from the pronounced dry summer (June-July-August) season. Periods of summer hot and dry climate that have already been observed will continue with an increase in the frequency and duration of heat waves. During the winter season, there will be more extreme precipitation, as well as more total accumulated precipitation, in regions with a temperate continental climate, and an alarming loss of snow cover is expected.

Due to climate change, the area of Moldova and Ukraine will also be affected by changes in the amount of precipitation, these changes will differ in different parts of the region and at different times of the year. Precipitation will increase in winter and decrease in summer and autumn, especially in Moldova and southern Ukraine, thus increasing the risk of drought in these regions.

It is characteristic of the area of Ukraine that droughts have become more frequent and mostly cover larger areas. In the past, they occurred once every two to three years and covered 10 to 30% of the territory, but between 1989 and 2010 their frequency doubled, and droughts began to spread to areas that had previously had sufficient rainfall. With the growth of GHG emissions, this trend will be continued and further accelerated.[viii]

According to projections, the total amount of precipitation in western Georgia is expected to decrease by 6% by the end of the century, in eastern Georgia, precipitation is projected to fall by 14.5%. The process is extremely acute in summer, when the tendency to decrease precipitation is higher than in other seasons.[ix]

c) Water resources

Global warming will lead to changes in the water cycle, which will probably affect the availability of water in different scales and sectors, e.g. energy, agriculture, forestry and more.

For the WB area, water availability is expected to decrease during the summer. The annual river flow could be reduced by more than 45% by 2100 in a world warmer by 4 °C.[x] It is expected that due to the reduction or absence of snow cover in large altitude regions, spring river flow will decrease and regeneration of soil water reservoirs will decrease. It is also planned to reduce the summer level of the river, as well as longer and more frequent hydrological droughts. In contrast, an increased frequency of high-intensity precipitation will lead to an increased risk of flooding. It is expected that the winter and spring risk of flooding along the Danube, Sava and Tisza will increase in particular. Such changed hydrological conditions will very likely lead to seasonal shortage of drinking water and a decrease in the quality of drinking water.

As the temperature rises, water supply requirements will increase, especially during the summer. Long-term projections show that water availability will decrease and water quality will deteriorate, which will worsen sanitary and hygienic conditions, especially in rural communities. This could lead to a growing gap between water needs and water availability.[xi]

According to the RCP 8.5 scenario[3], which does not envisage measures to mitigate climate change for the territory of Ukraine, the water level in most basins is expected to decrease by the end of the century. The biggest decline is predicted for Pripyat, Southern Bug and Dniester and can reach up to -30% by the end of the century. On the other hand, the projections for the Siverskyi Donets and Desna basins show very small positive changes or zero changes.[xii] The largest decrease occurs in the autumn months.

For the area of Moldova, by the end of the century, the annual runoff is expected to decrease by 13%. Annual river flows are expected to become more unstable, where high waters will become more frequent especially spring ones. Moldova is particularly prone to floods and droughts. Droughts are predicted to become longer and more severe. What is now considered a hundred-year drought is projected to return every 50 years.[xiii]

For the area of Georgia in accordance with the estimates conducted by UNDP / ENVSEC based on the increase in temperature and precipitation by the end of the century, a decrease in flow by 26-35% and 45-65% in the basins of 16 transboundary rivers Alazani and Khrami-Debed should be expected.[xiv]

The annual flow of rivers is unevenly distributed throughout the year. The distribution of year-on-year flow generally depends on climatic factors. Due to global warming, changes in the annual river flow schedule are also expected. For example, the average annual flow of the Acharistskali River in the period 2021-2050. In fact, it will not change compared to the average rates of 1961-1990 years, but it is expected that the volume of winter and autumn flow will increase, and in summer and spring the flow will decrease. Such a change can have a positive impact on hydropower production, as electricity generation capacity will increase during winter; however, this will have a negative impact on agriculture, as the amount of irrigation water available during the summer will decrease. Despite the reduced flow in the spring, precipitation in the form of snow during the winter period will cause the risk of flooding in the spring.[xv]

d) Agriculture and forestry

Agricultural production could suffer significant losses by the end of this century if appropriate adjustment measures are not taken.

The WB area will face a decline in the quality and quantity of agricultural yields. Projected climate change could lead to total corn yield losses of approximately 52% by the end of the century, similarly, soybean yields could fall by approximately 20%, while sugar beet production could face serious difficulties even in the next decade.[xvi] An increase in the number of invasive species of plants and animals is expected with the change of climatic conditions. The spread of pests and diseases in some of the most important crops such as maize, sugar beet and orchards can lead to significant economic losses and especially affect small farmers and rural households.

[3] The Representative Concentration Pathways (RCPs) form a set of greenhouse gas concentration and emissions pathways designed to support research on impacts and potential policy responses to climate change. As a set, the RCPs cover the range of forcing levels associated with emission scenarios published in the literature. The Representative Concentration Pathway (RCP) 8.5 corresponds to a high greenhouse gas emissions pathway compared to the scenario literature, and hence also to the upper bound of the RCPs. RCP8.5 is a so-called 'baseline' scenario that does not include any specific climate mitigation target. See more: https://link.springer.com/article/10.1007/s10584-011-0149-y

Agriculture is one of the foundations of the Moldovan economy. Over the last ten years, its contribution to Moldova's GDP has ranged from 11% to 15%. Climate change is predicted to have a negative impact on the production of wheat, a crop that is the basis of the country's food security. Vine production, also an important economic activity, can also experience the negative effects of climate change. By the middle of the century, due to climate change, wheat yields could fall by 41%, corn yields by 52% and sunflower yields by 13%. For the period of 2080, if GHG emissions continue and without adaptation measures, the yield of wheat is expected to fall by up to 71%, the yield of corn by up to 74% and the yield of skunks by 33%.[xvii]

According to the IPCC, productivity growth of agricultural crops is possible in Ukraine, but a higher concentration of carbon dioxide in the air would reduce grain quality (causing a lower content of nitrogenous substances and proteins), thus reducing the nutritional value of the product.

In Georgia, tea and maize production could increase in the short term due to better climatic conditions in western Georgia, with maize up to 30 to 40%.[xviii] Declining rainfall and rising temperatures in eastern Georgia are expected to cause from 10% up to 15% reduction in wine production and 30% to 60% drop in cereals production.[xix]

e) Health and social consequences

Climate change and rising temperatures could create favourable conditions for the outbreak of vector-borne diseases (malaria, dengue, West Nile virus, etc.) that are already appearing in the WB, and a further increase in the number of people suffering from these diseases is expected. The spread of waterborne diseases, such as cholera and diarrhoea, is also predicted.[xx]

Displacement due to climate change and disasters has affected an average of 22.5 million people since 2008.[xxi] Although climate-specific factors are often difficult to isolate from other environmental challenges, evidence suggests that climate change is already driving increasing population movements within and across borders. Displacement due to climate change often occurs as a result of factors such as the increasing intensity of extreme weather events, rising sea levels and accelerating environmental degradation. In 2018 alone, 17.2 million displaced people linked to climate catastrophes were recorded in 148 countries and territories.[xxii]

The WB countries have had and are likely to continue to have frequent consequences of global population displacement. The WB area will be exposed to both domestic migration and even more so transitional population migration from parts of the world that will be further affected by climate change.[xxiii]

4. Assessment of the international legal documents on climate neutrality

The chapter will look into the requirements under the UNFCCC and PA and will also look into the (draft) European Climate Law from a carbon neutrality aspect.

a) Legal requirements on climate neutrality under international law

Mitigation of greenhouse gas emissions must be a central part of any climate policy as well as international and national legal instruments. However, before the adoption of the PA there was no clear signal on the "ultimate" goal of the international efforts. The objective of the UNFCCC was merely the "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system"[xxiv] . However, there was no further indication in the text of how this could be achieved and what it mean for emission levels. In other words, the precise long-term mitigation objective of the UNFCCC remained quite vague. Later the Kyoto Protocol obviously could not envisage long-term mitigation goals as it referred to relatively short-term commitment periods.

However, in line with the above-mentioned general objective of the UNFCCC, from a scientific point of view, anthropogenic interference could be minimised if no additional GHG emission into the atmosphere will be allowed in the future i.e., a balance between human induced emissions and sink capacities will be achieved. This state is commonly referred to as "climate neutrality". It is in line with the no-harm principle and it is the minimum precondition for slowing down the cumulation of the GHGs in the atmosphere to prevent the most negative effects of climate change.

This reasoning led to the formulation of the long-term emission reduction goal of the PA which signals a paradigm shift in international climate policy. Article 4.1 states that Parties must reach peak emissions as soon as possible *"so as to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century."* This, the PA notes, must be done on the basis of equity and in the context of sustainable development and efforts to eradicate poverty. This long-term pathway is framed by the PA's temperature goal contained in Article 2 *"to hold the increase in the global average temperature to well below 2°C and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels."* It follows that all efforts of the Parties to the Agreement should be directed towards, and subsequently measured with reference to these benchmarks.

Since the adoption of the text of the PA there has been an ongoing scientific debate[xxv] on the exact meaning of this "balance" and its implications as well as on the pathways that are in line with this objective.[xxvi] Nevertheless it is certain that this global long-term vision puts short- and medium-term national climate action efforts into perspective. It is because it is almost certain[4]

[4] If we do not take into account that currently some countries are net GHG sinks i.e., they absorb more GHG than they emit, therefore they would be able to compensate others emissions in a global state of climate neutrality. However, from a global perspective this amount seems negligible. The future technological development of artificial removal technologies can also not be taken into account for obvious reasons.

that global climate neutrality would be difficult to achieve without all Parties going climate neutral individually. Therefore, it can be said that *indirectly* national level climate neutrality has also been imposed on the Parties to the Agreement. This means that the concept of *effort sharing* at least on the long term would become inapplicable, and every country will have to figure out its own path towards climate neutrality. This notion also allows as well as motivates countries to undertake the so-called "backwards planning processes" where they identify their short- and medium-term goals by calculating their necessary pathways towards their long-term objectives i.e., climate neutrality.

Whereas Article 4.1 defined the long-term goal in terms of emissions relatively concretely, in case of the timeframe it merely says that the balance needs to be achieved "in the second half of this century" i.e., sometime between 2050 and 2100. To further narrow down the required timeline that is compatible with the temperature goals of the PA and in parallel to unveil the required timeframe in order to achieve climate neutrality, the Intergovernmental Panel on Climate Change's (IPCC) Special Report on Global Warming of 1.5°C[xxvii] provides an important, scientifically proven reference point.

Section C of the Summary for Policymakers of this report states that *"in model pathways with no or limited overshoot of 1.5°C, global net anthropogenic CO_2 emissions decline by about 45% from 2010 levels by 2030 (40–60% interquartile range), reaching net zero around 2050 (2045–2055 interquartile range). For limiting global warming to below 2°C CO_2 emissions are projected to decline by about 25% by 2030 in most pathways (10–30% interquartile range) and reach net zero around 2070 (2065–2080 interquartile range)."*

Taking into account the significant differences between the consequences of a 1.5°C and a 2°C global warming, and in line with the precautionary principle of international environmental law, it can be derived that since the publication of the IPCC Special Report the expectation from the Parties has not only been to reach net zero emissions "in the second half of this century", but there is a more certain path that should be followed concerning the timeframe for reaching net zero emissions.[xxviii]

As a consequence, the cited IPCC report has been inspiring a growing number of Parties to announce their 2050 climate neutrality pledges to end their contribution to global warming. As of January 2021, there are 37 of such commitments,[xxix] including all of the biggest GHG emitters like China[5] , the United States of America[6] and the EU[xxx] and it is expected to increase day by day.

b) The EU climate law

The European Commission's (EC) proposal for the first "European Climate Law"[xxxi] was one of the first initiatives under the comprehensive communication from the EC entitled "European Green Deal" (EGD).[xxxii] The EGD was presented as a new growth strategy for Europe that aims to put the development of the community to the right path in becoming the first climate neutral continent by 2050.

[5] For China the target date announced is 2060. See: https://www.climatechangenews.com/2020/09/22/xi-jinping-china-will-achieve-carbon-neutrality-2060/

[6] Statement of intent from the President elect of the United States.

The original proposal was amended later by the EC[xxxiii] in September 2020,with a legally binding net reduction target of 55% for 2030 compared to 1990 levels. The Commission proposed that the EU and MSs collectively achieve the goal of climate neutrality by 2050. After the trialogue between the European Parliament, the Council and the Commission, negotiators reached a provisional political agreement[7] in April 2021 setting into law the objective of a climate-neutral EU by 2050, and a collective, net greenhouse gas emissions reduction target (emissions after deduction of removals) of at least 55% by 2030 compared to 1990. According to the latest available text[xxxiv] by 30 June 2021, the Commission shall review relevant Union legislation in order to enable the achievement of the new targets. The EU climate law contains a commitment to achieve negative emissions after 2050 i.e., it goes beyond climate neutrality.

Due to the ambiguity of the net target the negotiators agreed however to limit the amount of emissions removals that can be counted towards the 2030 target, to 225 million tonnes of CO_2 equivalent. There is also a recognition in the text of the need to enhance the EU's carbon sink through a more ambitious LULUCF regulation, for which the Commission will make proposals in June 2021. Other important elements of the provisional agreement include that the Commission would propose an intermediate climate target for 2040, if appropriate, at the latest within six months after the first global stocktake carried out under the Paris Agreement. It will at the same time publish a projected indicative Union's greenhouse gas budget for the period 2030-2050, together with its underlying methodology. The budget is defined as the indicative total volume of net greenhouse gas emissions (expressed as CO_2 equivalent and providing separate information on emissions and removals) that are expected to be emitted in that period without putting at risk the Union's commitments under the Paris Agreement.

The negotiators agreed that a European Scientific Advisory Board on Climate Change will be established, composed of 15 senior scientific experts of different nationalities with no more than 2 members holding the nationality of the same member state for a mandate of four years. This independent board will be tasked, *inter alia*, with providing scientific advice and reporting on EU measures, climate targets and indicative greenhouse gas budgets and their coherence with the European climate law and the EU's international commitments under the Paris Agreement.

Negotiators also agreed that the Commission would engage with sectors of the economy that choose to prepare indicative voluntary roadmaps towards achieving the Union's climate neutrality objective by 2050. The Commission would monitor the development of such roadmaps, facilitate the dialogue at EU-level, and share best practices among relevant stakeholders.

The EU climate law will also contain provision for the Commission to assess climate performance of the Members States and the EU as a whole. If it becomes apparent that the EU and its member states are not on their way to climate neutrality collectively the EC will assess the performance of each state individually and make will recommendations to the concerned member states. The assessment will take place every 5 years – the same time interval was adopted in the PA. The MSs are not legally required to implement these recommendations; however, they must publicly justify why they are deviating from the EC's recommendations.

Before, regardless of the pending adoption of the climate law the EU already submitted the at least 55% commitment in the EU's updated Nationally Determined Contribution (NDC) under the Paris Agreement[xxxv]. Therefore, it has become the official commitment by the EU until 2030 under the Paris Agreement.

[7] At the time of writing the text is yet to be confirmed formally by the co-legislators.

c) Long-term low greenhouse gas emission development strategies

In order to ensure that Parties policies and measures move in the right direction on the long term, Article 4.19. of the PA created a clear expectation to formulate and communicate long-term low greenhouse gas emission development strategies (LTS). However, it is not a legally binding obligation under international law. With regards to the content, the reference to Article 2 in Article 4.19. implies that the LTS may address mitigation, adaptation as well as financial aspects. However, each country is entitled to fully take into account its own capabilities and national circumstances. There is no other reference on the content of the LTS in the PA.

Decision 1/CP.21.[xxxvi] invited Parties to submit their LTSs by 2020 and introduced the term "mid-century" indicating the timeframe of these documents. This is also in line with the previously presented IPCC recommendations. The main function of the LTSs is to give a long-term perspective to the Nationally Determined Contributions (NDCs) & investment decisions and to link climate and development.[xxxvii] The EU's Governance Regulation[xxxviii] (GovReg) requires developing LTSs with a perspective of at least 30 years. The National Energy and Climate Plans (NECPs) & LTSs of the EU MSs should be consistent with each other. MSs' LTSs should (not legally binding) contain the elements set out in Annex IV of the GovReg however they shall cover (legally binding) aspects listed in Article 15 para. 4.

It is important to note, that the EnC Secretariat has communicated at various events that the GovReg will be transposed in the EnC in 2021 as well, therefore its requirements on setting up LTS will be applicable to the CPs.

Currently there are no ongoing talks on the content of LTSs under the UNFCCC that may influence the preparation of the national documents. In contrast with the invitation of the UNFCCC, as of February 2021, there are only 29 documents uploaded to the UNFCCC Secretariat's website.[xxxix] There was still an expectation that the LTSs should be submitted in 2020, which was reiterated both during the climate conferences in Katowice (2018) and Madrid (2019). However, the Conference of Parties (COP) of 2020 has been postponed.

The EU has already submitted its LTS document in March 2020. This text mainly refers to the decision of the European Council in December 2019 that "endorsed" the EU's climate neutrality target by 2050. However the EU LTS does not specify any detailed proposal or plan, it merely points to the European Green Deal proposal and the Commissions earlier communication on the EU's long term vision (that has no legal status) and the accompanying in-depth analysis as *"of solutions that could be pursued for the transition to a net zero greenhouse gas emissions economy and insights regarding the corresponding strategic priorities and an enabling framework that would allow reaching climate neutrality by 2050."* The submitted EU LTS leaves up to the MSs individually to prepare their national long-term low greenhouse gas emission development strategies and submit them to the UNFCCC.

The experiences learned from the already submitted long term strategies for reaching climate neutrality in the ENC CPs will be discussed in more detail in chapter 8 of this paper.

5. Assessment of European national climate laws

The chapter will assess the current legislative situation of the Member States of the European Union who have adopted national legislation on climate neutrality to date and portray them as good practices[8].

There are more than 30 national framework climate laws[9] adopted across Europe, including around half of the EU Member States and this number is expected to grow in the coming years. They provide a good basis to draw some specific best practices from them for those countries who are yet to adopt such regulations. There are different aspects that could be analyzed from the existing documents. The present paper intends to summarize the essential elements of these legislations by elaborating on the following aspects:

- goals;
- planning and measures;
- monitoring and revision;
- institutional arrangements;
- policy-science cooperation and
- public participation.

However, before we enter the detailed analyses it might be useful to briefly mention the general advantages of the idea to have national climate laws. It is without a doubt that in a modern rule of law-based state a piece of legislation is the most serious sign of commitment towards a particular issue. Strategies, plans or other non-legally binding documents can never provide the same level of certainty and predictability. Laws are the only tool that can be referred to by everyone in front of authorities and they are enforceable in front of the courts. Secondly the transition towards a climate neutral world is a huge challenge for all sectors of the economy in every country. There are many interlinkages between the various policies that need to be carried out. This process should be coordinated and aligned with each other to maximize the benefits and avoid pitfalls. Since the permitted and not permitted activities in the different sectors are regulated by legislation, climate change related measures and goals should also be backed by the same level of legal force in order to be able to influence the processes. Last but not least a climate law which provides clear targets creates clear expectations for businesses and the society as a whole which is important for investment related decision making.

a) Goals

The first essential element of climate laws should be clear target setting. This is predominantly true in the dimension of climate mitigation. As it was analyzed above, based on the Paris Agreement it is not only expected to have medium term mitigation targets, but to have long

[8] Since the literature is very limited in this field, this section mainly builds on the comprehensive study carried out by Ecologic Institute: Duwe, Matthias and Evans, Nicholas (2020): Climate Laws in Europe: Good Practices in Net-Zero Management. Berlin, Den Haag. Hereafter it will be referred to as Climate Laws in Europe Report. Available at: https://www.ecologic.eu/sites/files/publication/2020/climatelawsineurope_fullreport_0.pdf

[9] In the present report climate law is understood as a piece of legislation dedicated specifically to comprehensive climate governance related issues. It means that it is not referring to those pieces of legislation that are only sectoral or not specifically dedicated to climate governance.

term goals as well. Medium term targets or milestones should serve the long-term goal of climate policy, climate neutrality. The most appropriate way of climate policy planning is backward planning. It means that medium terms goals should be determined as a consequence of the long-term vision and mitigation target. To that end the long-term goal should be backed by a credible pathway. Most of the adopted national laws contain both long-term and medium-term quantitative targets. As it was also mentioned earlier more and more countries set climate neutrality targets however not all of them are inscribed into legislation yet. There are different practices for target setting: above all, there are qualitative and quantitative goals. However, the vast majority of targets in European climate laws are quantitative. The only exception was the Irish law[10], that has been amended since then. We can differentiate within quantitative goals between:

- concrete GHG emission value,
- percentage of reduction compare to a base year or
- some countries also set successive carbon budgets in addition to the above goals.

The advantage of determining a specific emission value, especially in the long term, is that climate neutrality becomes more predictable, as it is possible to say exactly how much absorption can offset the specific emission amount.[11] We see an example of this in the Czech Republic's long-term strategy, among other things. In fact, the carbon budget system is based on this logic. The latter is used most famously in the UK. They implement five year "carbon budgets" and the amount of GHG that can be emitted at a certain budget period is decided by the Parliament 12 years before the beginning of the given period. However, percentage emission reduction targets are much more common, especially in the short and medium term. The most commonly used base year is 1990, but there are other base years as well. In many cases the choice of the base year is influenced not only by professional (when reliable values are available) but also by political considerations. Although, in order to make NDCs comparable, it is important that each country tries to use a uniform base year. At the same time, in terms of climate neutrality, percentage targets are more difficult to use because absorbances must also be taken into account. Therefore, as explained above, the most ideal for climate neutrality is to define a concrete value and, using backwards planning, to apply periodic carbon budgets.

In addition to the so-called economy-wide emission reduction target, it should be mentioned that it is particularly important to set sectoral targets for achieving climate neutrality. It must be seen that each emitting sector has very different emission reduction potential. In addition, of course, climate neutrality does not mean absolute zero emissions. At the same time as defining the overall target, it is therefore necessary to look at how each sector can play its part in the necessary reduction, taking into account their specificities, technological constraints or other important aspects (such as food security, energy security etc.). Such sectoral objectives also make it easier for actors in each sector to see which (sub)objectives they should pursue. At the same time, it must also be taken into account that if the reduction of emissions starts too late in some sectors, the necessary reduction could be achieved only at a disproportionately high cost. This is why it is important for LTSs to take all of this into account and to have adequate provision for all sectors.

[10] "transition to a low carbon, climate resilient and environmentally sustainable economy by the end of the year 2050"

[11] Some say that targets should be set for the absorber sector as well. See: Meyer-Ohlendorf, Nils: EU Framework for CO_2 Removals – Targets and Commitments, Ecologic Institute, https://www.ecologic.eu/sites/default/files/publication/2020/60003-removal_ecf_021020_final.pdf

Last but not least, it is also worth mentioning in relation to the goals that the number of court decisions that restrict the freedom of the executive branch to set the climate objectives is increasing worldwide. The first and perhaps best-known case is the Dutch Urgenda case[xi], in which the court imposed a specific percentage target for the Dutch Government. Nevertheless, a recent decision by the German Constitutional Court has already gone further down this path and ordered the German government to change the trajectory of emission reductions leading to long-term goals, saying it would leave too much burden on future generations. This decision is particularly interesting in view of the fact that the German medium-term (2030) and long-term (2050) climate targets were in line with the common EU target, which the court said would leave the majority of the emission reduction too late. This decision could pave the way for governments to be questioned in front of courts not only for the adequacy of their "ultimate goals" but also for the roads that lead to it.

b) Planning and measures

We can talk about the planning process for the long term and for short term measures. Unfortunately, long-term planning is missing from most climate laws adopted so far, however almost all of them include some form of short or medium-term action planning for measures. Target setting and decision on implementing measures in climate policy presupposes a serious and comprehensive and coordinated planning. In the EU this is already a legal requirement under the above mentioned GovReg. In general the planning process of climate policy measures is delicate. There are numerous aspects that need to be taken into account and there are interests represented by influential actors that goes against the climate friendly directions. Within a government a regular horizontal coordination approach is necessary in order to break the "silo approach" of the traditional bureaucratic system. This can be done e.g. through the creation of inter-ministerial coordination bodies that are able to share the most important information and align their policies accordingly. Ideally these should be led by a primus inter pares ministry (e.g. the Prime Minister's office etc.). Some of the adopted climate framework regulation contain concrete measures as well (carbon tax, ban on combustion engine vehicles etc.). What is absolutely essential and often missing from planning processes is to connect the climate policy planning with the country's budget planning processes and in general with financial flows. The importance of this is reaffirmed under Article 2 (1) c) of the PA. No climate policy planning and implementation can be successful without proper financial support and a financial system which is lacking environmentally harmful subsidies.

c) Monitoring and revision

On the one hand, we know more and more about climate change and its effects every day, and this knowledge affects what we think about the measures that have been adopted in the past. On the other hand, the effects of previously adopted measures need to be closely followed, as the realization of previously anticipated effects may differ in reality. The main indicator to be followed is, of course, the evolution of greenhouse gas emissions, but the effects of each measure must be monitored and evaluated in the same way. This type of monitoring and review provides a solid basis for amending adopted strategy papers and legislation. There are debates in the literature about how often regulation should be re-evaluated. The criteria of predictability and continuous recalibration must be met at the same time. Deviations from the targets

must not be allowed to continue for too long. In most observed states, governments submit a report to parliament on emissions trends and the accompanying measures. This must also be done towards the EC. In some cases, an independent body assesses progress, and their findings needs the be addressed by the government. Referring back to subsection 4.2, there are countries (France, Sweden or Germany) where climate policy reports are linked to budget planning and proposal. The possibilities of some legislation need to make sure that if the measures are not enough to move towards the goal, these additional measures need to be adopted.

d) Institutional arrangements

As discussed above, it is crucial that major public institutions coordinate with each other in the design and implementation of climate targets. At the same time, it is at least as important to assign the main responsibility for each task to a single entity and to have an organization that coordinates the entire planning. Main responsibilities should be defined in the framework legislation. In some of the examples examined, a single ministry is responsible for climate policy planning. In other cases, the legislation is also about how several organizations are involved in the processes and who has what responsibilities. There is also a solution that deploys parts of climate planning to the ministry or other public institution responsible for the a given area while forcing them to cooperate. It is also good practice in France to allocate the targets by sector and the ministry responsible for the sector is responsible for their fulfilment of its assigned goal. However, due to the traditional administrative operation mentioned earlier, horizontal coordination is a significant challenge in almost all countries. As also mentioned in some countries (e.g. the UK), independent, previously non-existent institutions have been set up who have the right to make proposals to the government. Finally, the role of national parliaments in climate policy planning and implementation is an interesting issue. In most countries, key strategies also need to be approved by parliament, but there are also cases where implementation is closely monitored by the highest law-making body, as mentioned above.

e) Policy-science cooperation

Climate change is a scientifically researchable phenomenon that is occupying an ever-widening layer of science. The doctrine adopted from the beginning is science-based decision-making in this area as well, which has been more or less realized in the international arena through the cooperation between the UNFCCC and the IPCC. This close collaboration between science and decision-making is also being implemented at national level in more and more countries. There are basically three functions of this approach: support decision-making, monitoring progress and, in some countries, generating public discourse on climate change. In these types of bodies, it is not the main stakeholders who are represented, but specifically the representatives of science, who are invited on the basis of their previous records. Of course, these scientific advisory bodies can only be truly effective if they also receive the appropriate authorization and financial support from the state. Exclusive state aid can also ensure their independence. As mentioned earlier, in some countries (UK, France and Denmark), independent scientific advisory bodies also have the mandate to provide annual reports to the national government, including recommendations, to which the government must respond.

f) Public participation

Climate change affects everyone. It is generally important to involve a wide range of stakeholders in public decision-making in some form, but in this case, it is particularly important. The basic function of the state in this area begins with the widest possible awareness raising. This also points back to the above subchapter: scientific results must be made available to the widest possible public so that they can then have a sufficiently informed say in decision-making. In the examined legislation, public participation basically appears in three different ways: only mentioned in general, or the responsibility to carry out such role is assigned to the external independent body, or it is deeply incorporated into decision-making, thus as an obligation of the competent state body. However, in almost all cases the exact procedure in this regard remains unclear, there are also cases where the general rules of public participation apply. Nonetheless, there are also good practices that have introduced new institutionalized format for stakeholder involvement (e.g. France).

Photo 3.

6. Policy drivers for setting a 2050 climate neutrality target for the Energy Community Contracting Parties

a) Connection to the EU ambition and its positive aspects

This section will discuss the potential opportunities of a climate neutrality target, such as the one the association process or the alignment with EU legislation. In order to showcase the European framework and the positive aspects of aligning the ambition levels of the EnC CPs to it through setting up a 2050 climate neutrality targets, this section will provide a brief overview of the current relevant EU climate regulation.

As mentioned above in details, the EU has made a political commitment to become the first climate neutral continent by 2050. As President von der Leyen has expressed on the EU-Western Balkans Zagreb Summit in 2020[xli], *"The Western Balkans belong in the EU. There is no question for us about this. And this is why I firmly believe that the European Union has a special responsibility in assisting its partners in the region."* In this manner a number of Contracting Parties – not only in the Western Balkans – have started the EU accession process. While there is currently a separate 2030 climate and energy targets setting exercise ongoing for the EnC CPs, when joining the EU, CPs will have to adopt European climate and energy targets. This is also valid for the 2050 climate neutrality target. CPs from the Western Balkans have already made the political commitment to reach climate neutrality in 2050 through the Sofia Declaration, while Ukraine has expressed its intent to join the EGD[xlii]. It is however important that these commitments follow actual implementation as well.

As discussed previously, the EGD was presented in 2019 as a new growth strategy for Europe that aims to put the development of the community to the right path in becoming the first climate neutral continent by 2050. The EGD features a variety of topics for the EU and its MS, such as investing in environmentally-friendly technologies, decarbonising the energy sector, ensuring buildings are more energy efficient or working with international partners to improve global environmental standards. To support this green transition, the Just Transition Mechanism has been called to life, which will help to mobilise up to €150 billion between 2021-2027[xliii].

However, the EU has also started rolling out similar support mechanisms for its neighbourhood, such as the Economic and Investment Plan for the Western Balkans[xliv]. The Plan will mobilise up to €9 billion of funding investments in the areas such as transport, energy and green transition in order to close the gap between the EU and the region. As mentioned above, Ukraine has also made announcements that it intends to join the EGD and to synchronize national legislation with the EU acquis. It is also important to note that CPs have great renewable energy (and in case of Ukraine hydrogen production) capacity, which is still underdeveloped and would be very much welcomed from the EU side. These resources however require significant financing.

The EU has also started to green its own finances through the 2018 Action Plan on Financing Sustainable Growth[xlv]. A key objective of the Action Plan is to reorient capital flows towards sustainable investment in order to achieve sustainable and inclusive growth. The most important and urgent action envisaged by the Action Plan is the establishment of a classification system on activities qualifying as contributing to environmentally sustainable objectives. Standardising the concept of environmentally sustainable investment across the EU should facilitate investment in environmentally sustainable economic activities. On 22nd June 2020, the EU Regulation on the Establishment of a Framework to Facilitate Sustainable Investment[xlvi]

(Green Taxonomy Regulation) was published to support this goal. The Green Taxonomy Regulation is a classification tool to help governments, bank, financial institutions, investors, companies and project promoters navigate the transition to a low-carbon, resilient and resource-efficient economy. It is expected to contribute to the European Green Deal by boosting private sector investment in green and sustainable projects. While the Green Taxonomy Regulation has no intended extraterritorial effects, all EU based institutions will have to apply its provisions during their operations, therefore it will have significant international effects. To be able to further receive EU funds (being public or private), EnC CPs have to also green their economies and align their climate ambitions to those of the EU.

A highly efficient regulatory tool to cut emissions is to set up emission trading systems. According to the 2020 World Bank report on carbon pricing[xlvii], there are currently 31 such systems globally, of which the largest one is the EU Emission Trading Scheme (EU ETS). The EU ETS includes around 11,000 power stations and manufacturing plants, which cover 45% of total EU greenhouse gas emissions.[xlviii] After the adoption of new 2030 targets for the EU, the EU ETS will have to be updated yet again. There are already discussions on including new sectors, such as transport or agriculture. However, the EnC CPs however are not yet part of the EU ETS, even though several of them already have commitments to introduce ETS systems eventually. This current situation means however, that energy generation in the CPs have a competitive advantage over the EU producers, which can lead to carbon leakage.

According to the EU, carbon leakage refers to the situation that may occur if, for reasons of costs related to climate policies, businesses were to transfer production to other countries with laxer emission constraints. This could lead to an increase in their total emissions[xlix]. The report by Ember and Sandbag[l] has concluded that coal-fired power plants in the EnC CPs are supplying energy to the EU MS, while they are not paying a price for their emissions. According to the report, around 26 million tonnes of CO_2 was emitted when generating imported energy in 2019 and around €630 million worth of carbon price was avoided. To counter this, the report and also the Commission recommends to set up a Carbon Border Adjustment Mechanism (CBAM).

CBAM was announced as a tool to prevent carbon leakage and provide an equal playing field for EU industry. This would mean that the competitive advantage of the EnC CPs would disappear if they do not introduce similarly ambitious climate policies, set climate neutrality targets and adopt carbon pricing. However, if they would do so, that would mean a competitive advantage of third countries when trading with the EU. The detailed effects on the trade relations of a climate neutrality target between the EU and the CPs will be discussed in more detail in Chapter 7 of this paper.

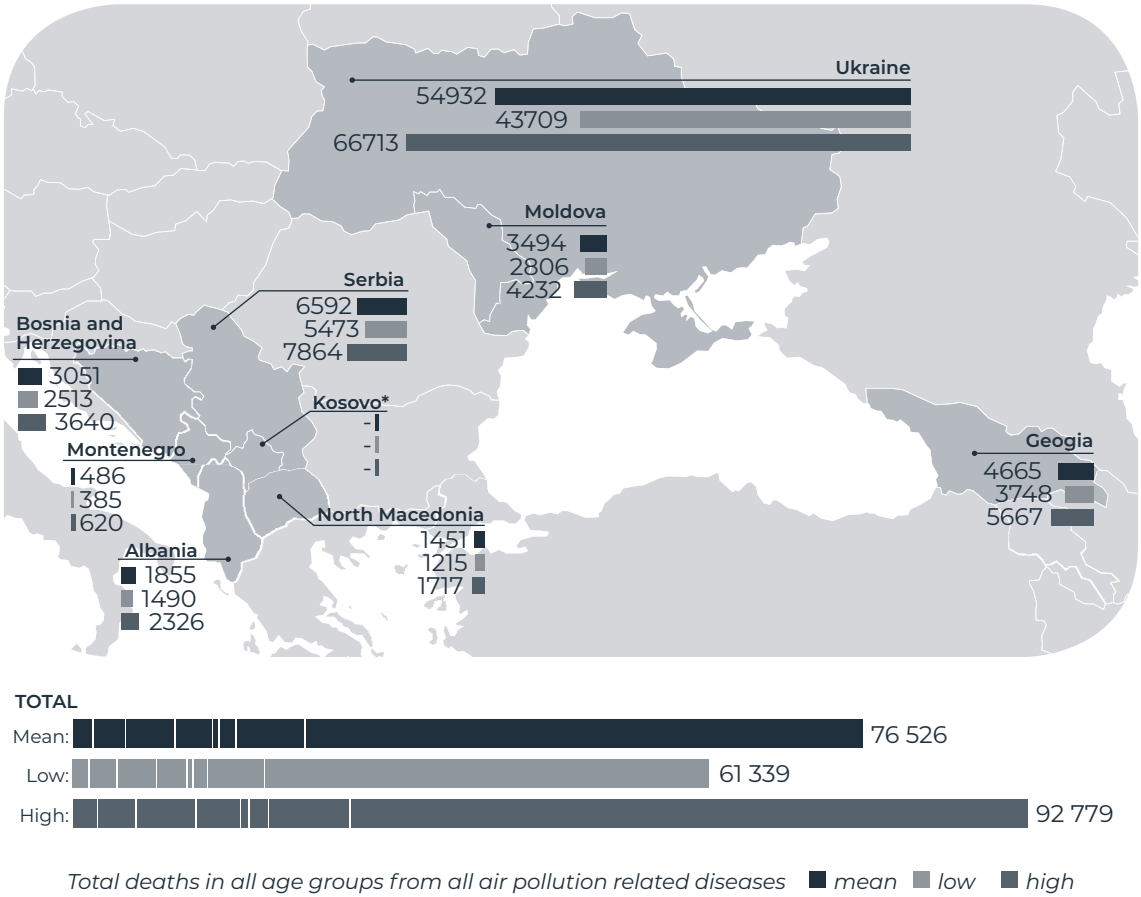
b) Externalities and co-benefits of climate neutrality

Reaching carbon neutrality by or even earlier then 2050 would have several additional or co-benefits to the CPs. In this section, the paper will discuss the environmental, human health and social aspects.

Bad air quality is a major issue in almost all of the CPs and have the most direct effect on their citizens' quality of life. According to the World Health Organisation (WHO), air pollution has caused an estimated 4,2 million premature deaths globally only in 2016. According to its estimates, 58% of these premature deaths were due to ischaemic heart disease and strokes, 18-18% to chronic obstructive pulmonary disease and acute lower respiratory infections while 6%

of deaths to lung cancer. While the greatest challenges can be found according to the WHO in South-East Asia and the Western Pacific[li], the ENC CPs are heavily affected as well. According to the Global Health Observatory data repository of the WHO[lii] , only in 2016 an estimated of 61 to 92 thousand citizens of the ENC CPs have lost their lives to various diseases related to ambient air pollution.

Table 1.: Estimates of burden of disease from ambient air pollution for 2016 in the ENC CPs



Source: World Health Organisation: Country estimates of burden of disease from ambient air pollution for 2016 (2018)

Furthermore, air pollution is also responsible for high costs both for the health systems and economies as a whole; only in the Western Balkans this is around €6,1-11,5 billion each year[liii]. The majority of air pollution is stemming from power generation, transport and domestic heating. The recent study of the EnC Secretariat has concluded that in the years 2015-2019, total subsidies to coal mines and coal fired power plants exceeded €2 billion[liv] . Phasing out fossil fuel subsidies would also have benefits besides the closure of inefficient coal mines and power plants; the money spent on these subsidies could be used to finance adaptation measures and just transition. Therefore, adopting a climate neutrality target and making the most polluting above-mentioned sectors clean would save a great number of lives and plentiful of resources, which could be allocated for other uses in the EnC CPs.

* Throughout this report, this designation is without prejudice to positions on status and in line with the United Nations Security Council Resolution 1244 (1999).

[12] For Kosovo* no WHO data is available

The following co-benefits of setting a 2050 climate neutrality target and transitioning to a low-carbon economy and society are not EnC specific, but are relevant to the CPs and can be important policy drivers.

Transitioning to a carbon-neutral economy would also require the decarbonisation of the currently used energy systems. After analysing 11 different decarbonisation scenarios, a 2015 study has found a tendency to lower the import dependency on fossil fuel resources by up to 54% of the EU between 2010 and 2050. The study notes however that results are mixed regarding the flexibility in the electricity sector[lv]. With the introduction of renewable energy sources, import dependency on fossil fuels can be lowered which can have a positive effect on energy security.

A carbon-neutral economy and society will also require the rethinking how we produce and consume our food. A shift to a plant-based diet could lead to the reduction of global mortality by 6-10% by 2050 compared to a reference scenario and lower the GHG emissions of the food production by 29-70% in the same time horizon. This would translate to health co-benefits around 0,4-13% of the global GDP[lvi]. More sustainable agricultural practices have also important co-benefits on soil quality besides GHG emission reductions. For example, an on-farm trial conducted on 403 farms has concluded, that more sustainable farming and soil management practices have positive effects both on yield and GHG emissions. According to the study yields could be increased by 18%, while nitrogen consumption could be decreased by 22% which would lead to a decrease of GHG emission by 7% compared to the current practices[lvii]. Furthermore, sustainable forest management practices are also reported to reduce species extinctions and therefore contribute to biodiversity conservation besides climate change mitigation[lviii].

Furthermore, the transition to a low-carbon economy could also have positive effects on employment. A study reviewed the previous set of 2030 EU energy and climate policies (at least 40% GHG reduction compared to 1990 levels) and their effects on employment. It has concluded that they could increase the number of jobs in Europe by 0,7-1,2 million by 2030. The study notes that this is also a consequence of the large investment stimulus needed to reach the targets[lix]. One should be mindful that the increased 2030 targets and the new 2050 climate neutrality target could have even larger positive effects.

Further to employment, ambitious climate policies also have positive effects on poverty alleviation and inequality. A 2018 study[lx] has reviewed the benefits on these aspects of climate action in the building, transport and waste sectors in cities. Regarding the building sector it has found that low-carbon investments have a strong likelihood of benefiting vulnerable populations and they are even more likely to positively impact woman and children, while investment in urban transport networks can even disproportionately benefit poor and vulnerable populations, however only if done properly. Similar results were found in the waste sector, namely *"sustainable solid waste management services can lead to significant improvements in living conditions for poor and marginalised groups"*. Here again, it is important to note that in order to materialise these benefits, low-carbon waste management strategies have to be designed in a focused manner.

All of these are important policy drivers for the EnC CPs to align their energy and climate policies with the EU acquis and set a climate neutrality target in the process. The next chapter however will discuss the economic drivers of such an ambitious climate neutrality target.

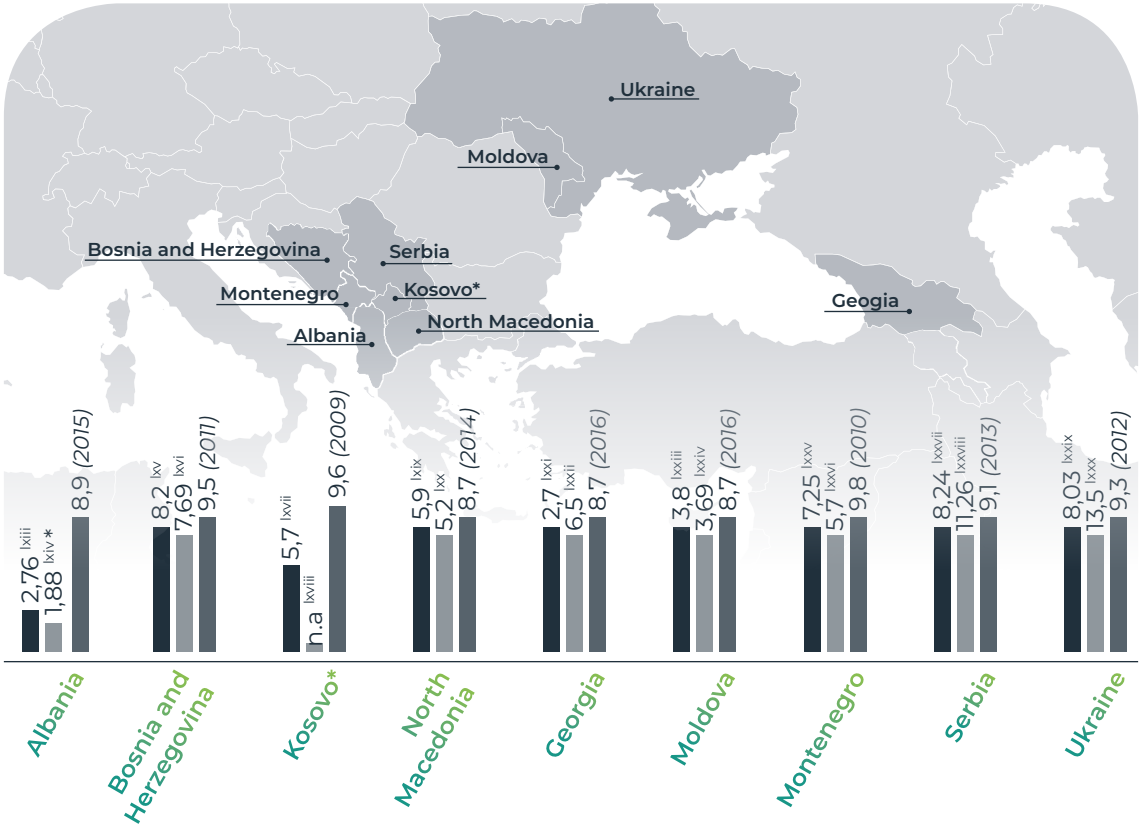
7. Economic aspects of setting ambitious climate targets

To support the decision-making process in setting a climate neutrality target in the ENC CPs, this chapter also provides an overview of the positive economic effects of such a climate neutrality target after assessing the current situation of the CPs briefly.

a) Current and projected emission levels per capita and comparison to EU levels

If we analyse the CPs, we can see that while Albania, Georgia and Moldova have a relatively low emission level per capita, with only 2,7 to 3,8 tons of CO_2e, Bosnia and Herzegovina, Serbia and Ukraine have more than three times higher data (7,2 to 8,2 tons of CO_2e. Nevertheless, even these high levels did not reach the EU average, which was about 1-1,5 tons of CO_2e higher (8,7 to 9,8 tons of CO_2e) in all years examined. Based on the CP's INDCs, it seems clear that the projected emission trajectories are quite diverse. While Albania, Bosnia and Herzegovina, North Macedonia, Moldova and Montenegro are planning to decrease their CO_2 emission levels, Georgia, Serbia and Ukraine decided to take a path on which their emissions would increase. Among all the CPs, it seems like Albania, Montenegro and North Macedonia would realize the most significant decrease by 2030 compared to the current data, while Georgia would have a 2,5 times higher data than its current one. Meanwhile, according to the current projections, Serbia would surpass the 11 and Ukraine would surpass the 13 tons of CO_2e in 2030, but it is crucial to highlight that these levels would still be significantly lower compared to the data of these CPs in 1990.

Table 2.: Current and projects GHG emissions of the EnC CPs



Current emission level per capita in tonnes of CO_2 equivalent (based on INDC, if possible)
Projected emission level per capita in tonnes of CO_2 equivalent in 2030 (based on INDC, if possible)[lxi]
EU emission level per capita in tonnes of CO2 equivalent in the comparable year as of the CP[lxii]

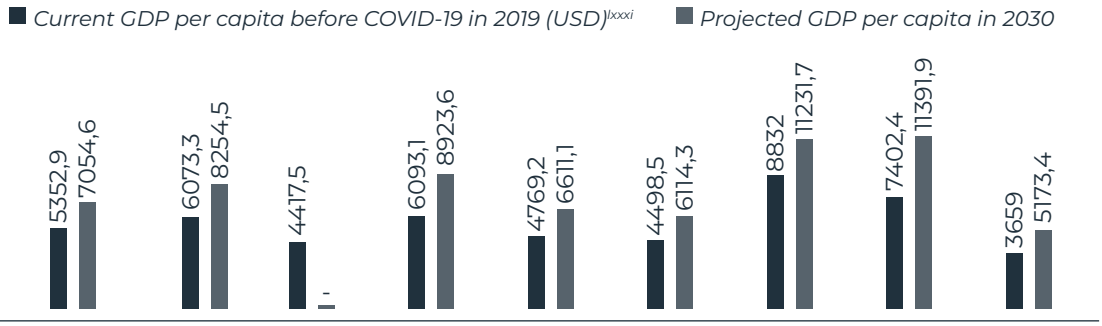
** (according to NDC, it would be 2 in 2050)*

Source: UNFCCC, World Bank, Eurostat

b) Economic situation and short- and mid-term projections

Among all CPs, Ukraine was in the worst economic situation before the COVID-19 pandemic with a 3.659 USD GDP per capita, Georgia, Moldova and Kosovo were in a better status with approximately 4.500 USD GDP per capita and Montenegro had the highest GDP per capita value (8.832 USD). Due to the pandemic, all of the CPs needed to a face an economic downturn, but the levels showed substantial differences. According to the projections of the EBRD, the majority of the CPs had to realize at least approximately 5% decrease in their GDP per capita value, but Serbia was in a bit better situation with a projected 3,5% decline, while the GDP value of Albania and Montenegro decreased by 9%. Although there is high hope that thanks to proper policy responses, the vaccination and international cooperation, the economies would increase again in 2021. In a positive scenario, their level would reach 3 to 4,5%, which would still be lower than the decrease suffered in 2020. It is expected that Serbia would be in the best situation as after an expected 3,5% decline, thanks to a 3% increase it might reach its pre-pandemic GDP per capita level, while Albania and Montenegro would only realize a 4,5% increase after the mentioned economic downturn of 9%. Nonetheless, according to IMF projections, the GDP per capita will increase by 31-38% by 2025 compared to 2019 in all CPs. Based on these data, Montenegro would face the lowest GDP per capita increase of about 27%, while Ukraine and North Macedonia might reach a 41% and 46% growth and Serbia can even realize a 53% increase in their GDP per capita data.

Table 3.: Economic situation and short- and mid-term projections



Projected GDP trend due to COVID-19 (2020-2021)	Albania	Bosnia and Herzegovina	Kosovo*	North Macedonia	Georgia	Moldova	Montenegro	Serbia	Ukraine
for 2020	**-9%**	**-5%**	**-5%**	**-5%**	**-5%**	**-5,5%**	**-9%**	**-3,5%**	**-5,5%**
for 2021	**4,5%**[lxxxii]	**3%**[lxxxiii]	**4%**[lxxxiv]	**3%**[lxxxv]	**3,5%**[lxxxvi]	**3,5%**[lxxxvii]	**5%**[lxxxviii]	**3%**[lxxxix]	**3%**[xc]

Source: *World Bank, EBRD*

c) Largest emitting sectors and their share in the economy

The largest emitting sector is the energy in all of the CPs, but substantial differences can be detected in its share in the CPs' total GHG emissions: while in Kosovo, it constitutes more than 82% of the total emissions and is more than 72% in Montenegro and Serbia, its share is only about 50% in Albania and Bosnia and Herzegovina. The industrial emissions constitute the second largest share (with about 17-19%) in Albania and Ukraine and have about 10-11% share in Montenegro and Georgia. In the rest of the CPs they account for only about 5-7% share and agriculture is the 2nd largest emitting sector instead. Agriculture has probably the lowest share

in North Macedonia with 8% of total GHG emissions, while the average share is about 12-14%, Georgia possessing the largest figure of more than 18%. It is crucial to mention that the waste sector is among the top 3 sectors concerning its size of pollution in North Macedonia, where its share (19%) is more than the sum of the shares of the next two - agriculture (8,2%) and industrial processes (7,6%). It is especially interesting to compare these data to their shares in the GDP. In Bosnia and Herzegovina, Georgia and Ukraine, the agriculture sector has a much lower share in the GDP than the sector's share in total GHG emissions: 6,1% vs. 14% in Bosnia and Herzegovina, 10% vs. 18,6% in Georgia and 5,8% vs. 13% in Ukraine. Meanwhile, the reverse is true for Albania and North Macedonia, where the sector's share in GDP is much higher than its share in total emissions: 20% vs. 12,5% in Albania and 16,2% vs. 8,2% in North Macedonia. Basically, in all CPs, the services have the largest share in the GDP (between 49-76%), but while agriculture is the second in Albania, Kosovo and Moldova, industry is the second in Bosnia and Herzegovina, North Macedonia, Montenegro, Serbia and Ukraine. While the industry sector has about 29% share in the GDP of North Macedonia, its emissions only account for 7,6% of total GHG emissions and the difference is even more substantial in Serbia with 41,1% economic share compared to the 5,83% emissions. Nevertheless, it is important to highlight that industrial share in GDP contains energy sector as well, whose GHG emissions are separated in international methodologies.

Table 4.: Largest emitting sectors and their share in the economy

	Largest emitting sectors (share in total GHG emissions)				*Share of sectors in the GDP*				
Albania	49,42%	18,82%	12,51%	xci	61%	20%	12%		xcii
Bosnia and Herzegovina	53%	14%	6%	xciii	55,5%	23,7%	6,1%		xciv
Kosovo*	82%	13%	3%	xcv	70,4%	11,9%	11,7%		xcvi
North Macedonia	65,2%	19%	8,2%	7,6% xcvii	54,5%	29,2%	16,2%		xcviii
Georgia	62%	18,6%	11,7%	xcix	17%	17%	10%	10%	c
Moldova	68,1%	16,7%	5,2%	ci	14,4%	12,2%	11,8%		cii
Montenegro	72,37%	20%	10%	ciii	76,6% 22% tourism[civ]	15,9%	7,5%		cv
Serbia	78,7%	10,97%	5,83%	cvi	49,1%	41,1%	9,8%		cvii
Ukraine	66%	17%	13%	cviii	67,8%	26,5%	5,8%		cvix

Energy and transport, Industry, Agriculture, Energy sector, Industrial processes, Services, Waste, Trade, Building, Transport, Industrial processes and Product Use, Wholesale and Retail Trade

Source: *UNFCCC*

d) Trade relations with the EU and possible effects on that

It seems clear that the different CPs have different starting points on the path to climate neutrality and just transition is the cornerstone for a resilient economy. Ecological transition would have a negative shock to the competitiveness of European industry and trade relations between the EU and the CPs, if they do not comply with same environmental standards.[cx] Thus, the carbon neutrality represents an opportunity for clean transition with an eye on that it is the basis for boosting trade relations with EU counterparts. The EU is the no. 1 export partner for all CPs, but their rank as EU partner largely differs: while Ukraine is the 18th and Serbia is the 30th largest trading partner, Kosovo is the 96th and Montenegro is the 100th. The import from the EU is higher than the export in all CPs, but North Macedonia, where the export to the EU is about 5,16 billion EUR compared to the import value of about 4,7 billion EUR. The relatively largest difference between export and import can be seen in Kosovo and Montenegro, while in volume the largest differences can be detected in Ukraine (5 bn EUR) and Serbia (3,9 bn EUR). If all of the CPs decided on carbon neutrality targets and after Montenegro, all other countries elaborated carbon-pricing mechanisms compatible with the EU ETS, the Carbon Border Adjustment Mechanism (CBAM) would not be applied on them. It would mean that the EnC CPs would be able to maintain their competitive advantage compared to other third parties and the trade relations with the EU can be developed in the future as well. According to a BCG analysis, if the CBAM is applied and there is a levy on EU imports of 30 USD per metric ton of CO_2 emissions and the price for crude oil is between 30-40 USD, it could reduce the profit pool for foreign producers by about 20%.[cxi] Thus, the CBAM urges the companies in CPs to reduce their carbon footprints in order to avoid losing market opportunities: e.g. at the moment the carbon intensity of commodity steel makers in Ukraine emit about 2 metric tons of CO_2e for every metric ton of steel produced, while e.g. Turkish counterparts emit only 1 metric ton of CO_2e.[cxii] Meanwhile, as the CPs are also crucial export markets, it is also in the interest of the EU to encourage greener economic reform programmes in the CPs[cxiii], e.g. catalysing 9 billion EUR for the Western Balkans for transport, energy, and the green and digital transition.[cxiv] This idea is supported by the European Commission's Trade Policy Review published in February, 2021 that reasserts the EU's plan to encourage digital and green transitions and considers to take additional steps to facilitate trade through conformity assessments.[cxv]

Table 5.: Trade relations of the EnC CPs with the EU

	Albania	Bosnia and Herzegovina	Kosovo*	North Macedonia	Georgia	Moldova	Montenegro	Serbia	Ukraine
Export to EU (2019)	1,8 bn EUR	4.4 bn EUR	0,13 bn EUR	5,16 bn EUR	0,59 bn EUR	1,78 bn EUR	0,16 bn EUR	11,28 bn EUR	19,12 bn EUR
Import from EU (2019)	3,1 bn EUR	6,3 bn EUR	1,2 bn EUR	4,7 bn EUR	2 bn EUR	2,9 bn EUR	1,2 bn EUR	15,19 bn EUR	24,2 bn EUR
Rank as EU partner (2019)	58	45	96	47	78	59	100	30	18
EU's rank (2019)	1	1	1	1	1	1	1	1	1

Source: *European Commission*[cxvi]

e) Opportunities and externalities coming from carbon neutrality targets setting

Carbon neutrality offers a wide range of opportunities as well as externalities for the CPs. Some of them was already mentioned in previous sub-chapter. Before going into some sectoral details, it is worth stating that a successful implementation of the EGD should build on the assets offered by the CPs, i.e., large coal mining areas with potential for use for e.g., industrial solar, engineering skills and geographical proximity to more developed industrial economies with high energy demand . In 2019, the European Investment Bank decided to change its lending policy and will end financing fossil fuel energy projects from the end of 2021[cxviii]. Therefore, there is a growing opportunit[cxvii] for receiving support for clean energy innovation and energy efficiency upon deciding on carbon neutrality targets.

At sectoral level, we would define the following focus areas: energy, transport and waste/material use, bearing in mind that of course there might be overlaps between them and the effects are cross-sectoral ones. Energy sector is the largest emitting sector in terms of GHGs. Thus, its GHG-free transition seems to be the most significant challenge and the most resource-intensive process. It includes both energy production and energy use. As the „greenest" energy is the unused and non-produced one, carbon neutrality targets offer an opportunity for a higher level of energy efficiency, which is a cross-sectoral aspect that can be interpreted in all product groups that require energy use. An important emphasis should also be placed on the building and construction sector that accounts for over 40% of total energy consumption in the Western Balkans[cxix], as one of the main causes of air pollution is outdated residential heating methods (not only coal and biomass combustion, but also tires)[cxx], which could also be replaced by more environmentally friendly technologies through renovations. This would result in significant health benefits as mentioned earlier. Building renovations supported not only by the EnC, but also by the Western Balkans Investment Framework (WBIF) would improve living standards. Since before the COVID-19 pandemic, the construction market had a large double-digit growth in 2019 in Ukraine[cxxi] and it was the most rapidly growing sector in Georgia[cxxii] too, nearly-zero energy and emission standards for the new buildings would largely support the climate neutrality target.

Meanwhile, the renewable energy potential is huge in all CPs, the rivers provide hydroelectric power, the mountains and plains enable wind power. Though the situation is getting better in some CPs (e.g., in 2020, Albania held its second solar PV auction[cxxiii]), the solar energy system is still relatively underdeveloped[cxxiv]. The carbon neutrality target would offer an opportunity to utilise the potential. Investments in renewable energy would create future-proof jobs: according to the International Renewable Energy Agency (IRENA), a successful clean energy transition in South-Eastern Europe could lead to increased cumulative economic output of around €430 billion by 2050[cxxv]. Meanwhile, though decentralised power generation from renewable energy sources can be more resilient to external shocks, an energy transition supported by interconnected energy networks can guarantee a balanced availability of renewable energy too[cxxvi]. The carbon neutrality target would mean a significant opportunity for renewable energy whose technology costs are decreasing and it could be even more cost-competitive if capital costs could be reduced[cxxvii].

Halting and reversing the dynamic growth of GHG emissions from the transport sector is also one of the most significant challenges of our time. This is not only a domestic phenomenon, but it is also to be expected that high-emission vehicles, which are increasingly being

pushed out of Western Europe might "land" in some CPs through imports and not only GHG emissions may increase, but air pollution indicators may deteriorate. In order to prevent this, a favourable, stimulating environment for the spread of low or zero emission vehicles would be ideal to be implemented. In addition, the carbon neutrality target would be an opportunity to further develop public transport and make it more attractive for more and more people instead of using their own car for individual mobility. At the same time, it is extremely important to emphasize that the construction and maintenance of the transport infrastructure to be built should also bear the carbon neutrality in mind.

The development of waste management is also of paramount importance for the transition to a circular economy that would be a cornerstone to reach carbon neutrality. As an overarching principle, this is an extremely important objective, and there are many opportunities to promote it. The adoption of this approach requires a change in the perception of waste: waste should be considered as a raw material as far as possible. The correct approach would be the reduction of the waste generation, followed by the greatest possible re-use and only then recycling (which is an energy-intensive process in itself). Meanwhile, landfills should be pushed back. For example, the total amount of collected municipal waste in North Macedonia increased by 1,1% in 2019, but 99,7% of the collected municipal waste was dumped on 55 municipal landfills[cxxviii].

f) Economic costs of no action

For half a century, scientists have warned that the burning of fossil fuels is causing changes to the Earth's climate, and that failure to take action on climate change will have devastating consequences. Despite this alarm, CO_2 emissions and with that the global temperatures continue to climb. According to an insurance company's report global losses from natural disasters just in 2020 reached $210 billion (€177 billion) which was a significant increase from the previous year of $166 billion (€140 billion).[cxxix] The World Bank estimates, that natural disasters cost about €15 billion annually in low- and middle-income countries just through damages to power generation and transport infrastructure. The wider disruptions they trigger for households and firms cost at least €326 billion a year.[cxxx] The Organisation for Economic Co-operation and Development (OECD) argues[cxxxi] that tackling climate change as part of a transition that also involves structural reform and fiscal initiatives could add 1% to the GDP in G20 countries by 2021, and 2.8% by 2050.

When considering the costs of inaction, the following categories should be taken into account:

1) Direct costs: the physical losses associated with more extreme weather events and natural disasters;
2) Indirect cost: the future weaker growth and lower asset values created by a damaged planet; and
3) Cost of uncertainty: Investors place a value on risk and volatility (or lack thereof), and climate change has a powerful destabilising effect on our natural and economic systems.[cxxxii]

Estimates however should be accepted with some caution as certain climate impacts, such as loss of human lives, biodiversity loss, or loss of culture or identity[cxxxiii], are difficult to value in monetary terms, and are often omitted from projections, therefore, estimates are usually overly conservative.

Due to our slow response to the climate change problem, the economic cost of inaction is increasing as the window to reaching the Paris Agreement temperature goal is narrowing. In the European Union, economic losses caused by weather in 1980–2016 amounted to over €436 billion. The costs of the more frequent climate-related extreme events in the EU now average over €12 billion per year while conservative, lower bound estimates show that exposing today's EU economy to a global warming of 3°C above pre-industrial levels would result in an annual loss of at least €170 billion.

Sectors that are essential for the CPs are especially vulnerable to the adverse effects of climate change. The EU's data shows that due to climate change alone, annual damages to Europe's critical infrastructure could increase ten-fold by the end of the century under business-as-usual scenarios (from the current €3.4 billion to €34 billion)[cxxxv]. Losses would be the highest for the industry, transport and energy sectors. The agriculture sector is no different. Drought losses in the EU could rise from €9 billion to €40 billion by the end of the century.[cxxxvi]

A similar trend can be observed in the Balkans: The historic floods in 2014 caused over €2 billion in damage and loss in Bosnia and Herzegovina (nearly 15 percent of the CP's gross domestic product) and over €1.5 billion in damage in loss in Serbia (nearly 5 percent of Serbia's GDP) with recovery needs straining government resources.[cxxxvii] In the summer of 2017, the record temperatures fuelled dozens of fires across the Balkans, caused a drought in Serbia which led to a nearly 10 percent drop in agricultural output, and forced Albania to spend €200 million on energy imports amid a devastating drought.[cxxxviii] The lack of reliable rainfall could also reduce hydropower production – a major renewable energy staple for the Balkans – by 20 percent or more.[cxxxix] Economic losses are greater as temperatures rise, with middle income countries projected to be affected the most. If warming is limited to 1.5°C, global GDP losses will be 0.3 percent by 2100. With 2°C of warming, losses would be 0.5 percent.[cxl] Flooding poses a major threat to Ukraine as well in case the implementation of the Paris Agreement fails. By the end of the twenty-first century, more than one million hectares of southern Ukraine may be lost to floods. This includes two hundred thousand hectares of agricultural lands as well as the partial flooding of major cities such as Odesa and Mariupol.[cxli] Economic losses from river flooding, flash floods, rockslides, landslides and mudslides that are the chief source of natural disaster in Georgia, have been totalling more than $1,2 billion over the past two decades.[cxlii] Scientists now estimate that if preventive measures are not taken, climate-driven disasters could cost Georgia as much as $12 billion over the next ten years. That's 80 percent of its current annual GDP.[cxliii]

Naturally, measures that help people adapt to these impacts also incur costs, however just as every €1 spent on road maintenance helps to avoid between €4 and €10 dollars on repairs, investments in climate action are dwarfed by the cost of neglect or inaction[cxliv]. Evidence shows that the future benefits of action overwhelmingly outweigh the future costs of inaction.[cxlv]

The World Bank estimates the costs of adapting to 2°C of warming by 2050 might be $75–100 billion a year for developing countries.[cxlvi] However, these figures are almost certainly too low.[cxlvii] The UN Environment Programme (UNEP) suggests that the cost of adapting to climate change in developing countries is now about €60 billion which could reach €250 billion by 2030 and €420 by 2050.[cxlviii] If warming increases beyond this level, the costs of adaptation would increase significantly as well.

The benefits of taking proper action now are clear. The Global Commission on the Economy and Climate states that transitioning to a low-carbon, sustainable growth path could deliver a

direct economic windfall gain of $26 trillion and create over 65 million new jobs by 2030 compared with business-as-usual.[cxlix] The International Renewable Energy Agency developed a Renewable Energy Roadmap which assesses the potential for renewable energy deployment in the South-Eastern Europe region by 2030, beyond existing plans.[cl] According to the document, investment in renewables could save an estimated €3,4 billion on energy costs yearly by 2030 and would deliver between EUR 11 billion and EUR 35 billion per year by 2030 in savings and avoided health and environmental damages.[cli] The benefits of an ambitious climate action far outweigh the costs of inaction, moreover it will lead to a larger growth than in the business-as-usual scenario, while ensuring sustainability, and a healthier and better future for people.

g) Assessing the relations between the "right to develop" and a possible climate neutrality target

According to the UN, „the right to development is a right of every human being to participate in, to contribute to, and to benefit from economic, social, cultural and political development" that was underpinned by Resolution 41/128.[clii] In 2015, a number of international commitments, including the 2030 Sustainable Development Agenda, the Addis Ababa Action Agenda, the Sendai Framework for Disaster Risk Reduction 2015-2030 and the Paris Agreement confirmed its importance. In relation to climate change, it means that as developed states contributed disproportionately more to climate change based on their increasing CO_2 emissions during and after the industrial revolutions, they should take the lead in combating climate change and based on the principle of Common But Differentiated Responsibilities (CBDR), the developed countries have a moral and legal obligation to have higher financial responsibility. It also means that the nations from the "global south" prioritize human development over low-cost climate change mitigation technologies while proportionately higher costs should be borne by the developed countries.[cliii] Meanwhile, the right to development does and should not mean the right to pollute, instead it should mean more innovative, novel technologies applied in developing states to decrease possible side effects of industrialization.

The definition of the right to development principle refers not only to individuals but also the collectives including the future generations.[cliv] The definition was further elaborated by the Human Rights Council in 2010 to highlight the right of people to 'constant improvement of their wellbeing'.[clv] The impacts of climate change on peoples' lives through natural disasters, air pollution, health issues, income losses and the economic losses of the country harm both the individual and the collective entitlement to economic, social, cultural and political development. Therefore, as the European Commission's Guidelines for the Implementation of the Green Agenda for the Western Balkans states, „the transition to climate-neutrality must be socially just and inclusive" It also recognizes "that not all countries or regions start the transition from the same point or have the same capacity to respond."[clvi] It means that their green development is continued to be supported, mobilizing public and private funding at regional, national and international levels too. Thus, there is no discrepancy between the right to development and climate neutrality in the Energy Community either. On the contrary, green transition can be a more efficient and sustainable solution to development bearing in mind the negative economic, social and environmental externalities originating from a fossil fuel-based development trajectory.

The devastating effects of the Covid-19 pandemic provides an opportunity to speed up the process of transitioning to a low-carbon economy and boost the sustainable development

of developing countries. As this study shows, climate change has adverse effects on people's health, life, and on the economy. As countries are mobilising trillions of dollars worldwide, it would be a mistake to build back carbon intensive industries and practises that are responsible for the climate crisis and unable to provide prosperity for all. Moving towards climate neutrality which ensures cleaner air quality, healthier water, effective waste management, and enhanced biodiversity protection not only reduces the vulnerability of communities to pandemics and improve resilience, but has the potential to boost economic activity, to generate income, to create jobs, and to reduce inequalities.[clvii] Through investments into renewable energy and energy efficiency measures deep emission cuts are expected to lead to 100 million energy sector jobs by 2050, nearly doubling from the 58 million in 2017, according to the International Renewable Energy Agency (IRENA).[clviii] While the New Climate Economy predicts 65 million new low-carbon jobs as early as 2030 if ambitious decarbonisation is pursued.[clix]

This trend can be seen in the CPs as well. In Southeast Europe, the energy transition can stimulate substantial economic activity and benefit society at large, in terms of GDP and job creation. IRENA estimates that the adoption of an energy mix based on renewable energy and energy efficiency would provide, a cumulative GDP gain in the region, amounting to $485 billion over the business-as-usual case, between 2019 and 2050.[clx] The CESEC region has a vast potential for renewable energy deployment. The current share of renewable energy of gross final energy consumption in the Western Balkans Six is 28%.[clxi] The renewable energy mix almost exclusively consists of biomass and hydropower. Besides further increased use of biomass, significant growth is also expected in wind and solar power. Bosnia and Herzegovina is expected to have both the highest growth rate and the highest relative growth by 2030, with Serbia going through a similarly high growth, and Kosovo a similarly high relative growth.[clxii]

To ensure the low-carbon transition in emerging economies, developed countries have the moral obligation to provide them with financial and technical support. As part of the Paris Agreement the developed countries were urged to scale-up support to developing countries.[clxiii] Beyond the framework of UNFCCC, the European Union and the European Investment Bank provides hands-on support to the CPs. In 2020 alone, the EIB mobilized over €1 billion to help the region's economies tackle the negative consequences of the pandemic. This support is part of a €1.7 billion financial package announced in 2020 to foster the recovery from COVID-19.[clxiv] Furthermore, the Initiative for coal regions in transition in the Western Balkans and Ukraine was launched in December 2020 and aims to help CPs and regions to move away from coal towards a carbon-neutral economy, while ensuring that this transition is just. It will deliver support to coal regions in EU neighbouring CPs, namely in Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia, Serbia, and Ukraine. These and similar financial mechanisms not only support mitigation and adaptation efforts, but ensure a resilient economy and a clean, healthy and sustainable development for the CPs to provide a better life for individuals and the collectives now and in the future.

h) The issue of green recovery vs stranded assets.

As we see, electricity production in the majority of the CPs is CO_2 intensive as they use lignite and coal to generate electricity: according to IEA, 6 Western Balkan CPs use lignite as a source for about 60% of their electricity generation.[clxvi] Meanwhile, due their aging nature, 95% of the current generation capacity of power plants in South East Europe will need to be replaced by 2050[clxvii]. Although as it was described earlier, there are significant economic risks, there are 16

power plants operating in the Western Balkans and there are 12 projects planned. The challenge is not only its harm to health and well-being, but it also means a tremendous risk to become stranded assets („assets [that] suffer from unanticipated or premature write-offs, downward revaluations or are converted to liabilities"[clxviii]) According to a report of five environmentalist groups, West Balkan power plants caused pollution leading to healthcare costs of up to EUR 11.5 billion a year.[clxix]

Meanwhile, CPs gave a total of EUR 2.4 billion in direct and certain types of indirect subsidies to coal-sourced electricity in 2017[clxx]. In 2019, Ukraine still paid EUR 476 million, Serbia paid EUR 41 million and North Macedonia EUR 1,6 million to support coal-sourced electricity[clxxi]. Although there are encouraging signs, such as North Macedonia's announcement on coal phase-out programme and Montenegro's cap and trade system, the CPs are still far from meeting the criteria, including stricter emission standards expected from them internationally. A key actor in the fossil fuel investments is China: when the Asian country began putting significant efforts in decarbonization and cancelled local coal projects, its coal sector state-owned enterprises decided to invest in other countries around the world where governments were open for this. For example, in case of the Tuzla 7 power plant in Bosnia and Herzegovina the state provided an extra 5-year asset-backed guarantee on top of the 15-year insurance policy by Sinosure[clxxii]. Besides this, Chinese companies finance e.g., Serbia's Kostolac B3 coal project, bought the Bor copper mine, and it is planned to build a tyre factory in Zrenjanin, while the coal industry's profitability is seemingly downwards. As it can be seen in an analysis of the CEPS[clxxiii], Maritsa East 2 coal power plant, which is the largest in the Balkans in 2019 reported a loss of EUR 100 million and more than 60% of the EU's coal fleet capacity is cash-flow negative. Even an only EUR 5 per tonne of CO_2, Montenegro's Pljevlja II project, which is the smallest in the Western Balkans would have to face an additional EUR 8 million bill each year because of its emissions, while at a price of EUR 35 per tonne it can reach EUR 55.6 million[clxxiv]. (On March 6th, 2021, the EUA price is more than 37 EUR.[clxxv])Meanwhile, further investments can be found in natural gas in Western Balkans via the construction of the Trans-Adriatic as well as the Ionian Adriatic Pipelines.

Although it seems clear that natural gas seems difficult to dismiss in heavy industry, it would be necessary to do so in order to avoid having the pipelines as stranded assets: a typical lifetime of a gas pipeline is between 30 to 50 years,[clxxvi] while the changing climate together with the EU legislative expectations, growing price of CO_2 emissions and pressure from societies wishing to have better health standards would need immediate action in much shorter term. The reason is that it would lead to unused assets, bankruptcies of companies owning them with potential high economic and social costs.[clxxvii]

Stranded assets can also risk security and stability, while clean energy programs can help in alleviating poverty and provide new opportunities brining benefits. An important factor to be born in mind when analysing this issue is that coal, gas as well as nuclear power plants must be kept cool to function properly that is getting more and more difficult to guarantee in a climate when there are growing fluctuations in heatwaves and droughts as well as precipitation, while a tremendous share (about 50-70% of the energy stored in coal, gas and nuclear fuel) of waste heat is generated.[clxxviii] During warmer days, they should be shut down that might lead to power outages in economies with growing energy demand. According to an analysis on Carbon Brief, in a scenario where thermal power generation is mostly phased out and replaced with renewables by the end of the century, the global restrictions on hot days could be cut by more than 50% from today's level, while if thermal power generation increases in the future, restrictions could more than triple from today's level by the end of the century.

In their analysis, Dawud Ansari and Franziska Holz, based on case studies in 3 regions of the world reached the clear conclusion that „greening the economy and phasing-out fossil resource sectors in a structured (planned) way has advantages for resource owners (and) would considerably reduce the uncertainty of future capacity utilisation and future revenues"[clxxix]. Meanwhile, when talking about green transition, it should be just and there is a need for fair distribution of the costs and benefits, including effects on labour. According to an EBRD estimation, even within the EU 90,000 jobs could be lost due to decrease of coal-related employment[clxxx]. While by 2030, renewable electricity could cover even 55% of power demand in Western Balkans, the cost-competitiveness depends on a number of preconditions: e.g. lowering relevant risks through the use of financial de-risking instruments and thus, reducing the costs of capital for investment in renewables.[clxxxi] As a result of the COVID-19 pandemic it seems a high time to decide on green recovery and move towards renewable energy sources. A seemingly high hydropower potential (approximately 1000 MW)[clxxii] can be detected in the Western Balkans, but it would be risky to overestimate it, bearing in mind that hydroelectric power plants can have negative effects on natural areas and as a result of the changing climate there might be larger fluctuations in water flows. More potential can be found in wind, solar and biomass, such as the Cibuk wind farm in Serbia financed by the EBRD.

Photo 4.

8. Best practices to reach a 2050 climate neutrality target

As discussed earlier, at the international level Article 4.19. of the PA creates a clear expectation to formulate and communicate long-term low greenhouse gas emission development strategies (LTS), just as the GovReg requires developing LTSs with a perspective of at least 30 years. There are already 17 such documents sent to the UNFCCC and the EU has also submitted its LTS document in March 2020. This text mainly refers to the decision of the European Council in December 2019 that "endorsed" the EU's climate neutrality target by 2050. With such number of LTSs already available, this Chapter is looking towards best practices applied in these documents and provides lessons learned which can be used to achieve climate neutrality in the EnC CPs.

a) Lessons learned from submitted long term strategies

i. Key elements during the formulation and implementation

There is a crucial need for **political and legal commitment** not only in terms of the completion and submission of the document, but also to implement and to revise it in order to achieve the ultimate goals. Therefore, several countries have sought high-level political support to strengthen their LTS process. E.g., Fiji's LTS[clxxxiii] is supported directly by the Prime Minister whereas the UK's LTS[clxxxiv] is introduced by a foreword from the then-incumbent Prime Minister. Having additional legal backing can enhance cooperation between ministries and potentially ease agreement on (sectoral) targets and measures among ministries. It can also add legitimacy to the entity in charge of the creation of the LTS when requiring input from other entities.

Good **policy-coordination** is also necessary. Undertaking a "whole-of-government approach" and therefore engaging ministries with portfolios traditionally considered unrelated to the climate agenda will reduce potential duplications, making the process more effective. It also ensures the incorporation of technical knowledge of sectoral experts, adding to the credibility of the LTS.

It also helps identify potential trade-offs and synergies between the LTS and other sectoral strategies. There is a need for proper **stakeholder engagement**, and subnational and local involvement. Stakeholder consultations can be carried out e.g., through the organization of workshops, where different stakeholders can engage as part of smaller working groups. Engaging key stakeholders outside of the government, including youth, will facilitate the development of a shared vision towards low-emission development across the whole of society.

Starting points should be clearly defined, considering other existing national long-term strategies, policies and plans already in place that can constitute a basis for developing the LTS. It can be done thorough assessing current development trends, areas of vulnerability and national priorities. Identifying the key areas that drive emissions is also an important step. For instance, in its long-term strategy, Mexico[clxxxv] identified society and population, ecosystems, energy, emissions, productive systems, the private sector, and mobility as the key areas that drive emissions and therefore need urgent attention.

The LTS process can guide countries to integrate climate action with **development goals and well-being priorities**. LTS' goal may be that of looking at climate change mitigation and adaptation with a more holistic lens, highlighting linkages with economic development and other well-being goals. Well-being and sustainable development must be at the core of LTS. In particular, in order to be successful in accelerating climate action, a larger focus on well-being is key. On the one hand, the well-being approach systematically takes into account climate considerations when developing strategies and policies across the economy, thus ensuring that non-climate actions do not compromise climate change mitigation goals. In addition to that, analysing climate policies through the lens of wider well-being makes synergies and trade-offs between climate and other well-being goals more visible, thus facilitating their management and the achievement of a two-way alignment. Embedding the LTS into existing climate-related strategies also enhances credibility by referring to pre-existing action and laws and it is a great opportunity for defining a country's long-term vision that does not only focus on climate change, but also on other policy objectives. It also enhances credibility, promotes time consistency, and ensures that priorities set by the LTS are consistent with sector specific conditions.

It is also necessary to define an effective **governance** system for the LTS implementation process. This includes securing a high-level leadership from ministries and the necessary institutional arrangements by specification of responsibilities across ministries and between levels of government where relevant. The roles and responsibilities during implementation for sub-national and local entities, as well as for non-state actors should also be elaborated.

The effectiveness of the LTS requires **monitoring** of GHG emissions, mitigation actions and support. Institutional arrangements for monitoring should be clearly outlined in the document and based on a selection of relevant indicators that are specific to the strategy and measurable. Monitoring progress towards the goals set in the LTS is also important to determine if and where the strategy can be improved, while providing transparency for stakeholders. Therefore, effective systems for Monitoring and Evaluation (M&E) and for Measuring, Reporting and Verification (MRV) should be in place. Specific, Measurable, Achievable, Relevant and Timebound (SMART) indicators are key to measure overall progress of the strategy, as well as to track progress towards individual targets and actual transformation achieved. The process of developing SMART indicators needs to be, to some extent, linked to the process of setting targets, so to ensure the feasibility of monitoring progress. Tracking trade-offs associated with the low-carbon transition at an early stage highlights potential tensions with other policy priorities, enabling the Government to adjust the LTS or to enact specific measures targeting these trade-offs.

Programmes, that support implementation by providing technical capacity building as well as **financing and investment strategies** can also accelerate and facilitate implementation and help foster technological innovation. Fostering domestic climate finance and green budgets, aligning incentives to match climate change and other sustainable development objectives, and making core climate policies like carbon pricing central to the strategy is also key to enhancing climate action across the economy.

LTS can help countries to plan national action for a **just transition** for workers and communities. In some sectors, the structural transformations needed for the transition to a low emission economy may result in job losses. Because of their long-term and cross-sectoral character, LTS may help countries identify policy opportunities to minimize disparities among winners and losers, mitigating these negative impacts.

Finally, an LTS is a living document and **regular updating** is required as new insights, research, data, and analyses become available. A clear plan for preparing the next iteration or revision of the strategy informed by the outcomes of the M&E and MRV processes, new stakeholder consultations and the latest science is advised. Convening regular national and subnational knowledge-sharing meetings and collaborative online mechanisms to sustain the conversation on how to achieve a low-carbon economy and meet the goals of the 2050 vision can be coordinated by a central climate change unit within the government. It is a preferred solution to co-ordinate the periodic revision of the strategy with the NDC cycles, so that feedback from the former can inform the latter, and vice versa. The LTS implementation strategy may also be aligned with other types of national processes, such as review and approval of national budget or approval of new development programmes.

ii. Content related key elements

It is important to set the context of the document and outline a clear long-term **vision**, broader than the pure long-term target. In most cases analysed, the overview of historical emissions by sectors, background information on the Paris Agreement, long-term 2050 target and intermediate targets, as well as key objectives and action items in each sector have been identified. Setting out the major changes needed to reach climate neutrality is key. It can present the LTS as an economic opportunity for the country to modernize, innovate and maintain competitiveness in a future sustainable world. There should also be an emphasis of the necessary multilateral approach to effectively tackle climate change. The better alignment of financial and fiscal policies with long-term climate risks and opportunities should be mentioned. A clear and forward-looking vision of the transformation that is needed in order to meet the Paris Agreement's goals can reduce the risk of stranded assets or disadvantageous lock-ins of high emitting infrastructure. By setting long-term priorities, LTS can enhance policy and regulatory certainty for investors, encouraging investment from the private sector to finance the transition. Although elements contained in the strategy and its scope vary considerably across different countries, the underlying visions and key mitigation targets often build on shared principles, namely achieving low emission development by mid-century while ensuring societal well-being.

Obviously, **emission reductions and enhancements of removals in individual sectors** should be elaborated. Emission reduction targets of non-CO_2 GHGs is a key, and even targets outside emission reductions (e.g., share of renewables or number of zero energy buildings) could be formulated. However, it is important that sector-specific policies and actions are adaptable, to a certain extent, to provide flexibility to adapt to changing conditions.

Setting of **interim, milestone targets** and to elaborate on **linkages with NDCs, SDGs and other (societal) national goals** are crucial as well as elaboration on **synergies and potential co-benefits**. The GovReg demands to identify to the extent feasible, expected socio-economic effect of the decarbonization measures, including, inter alia, aspects related to macro-economic and social development, health risks and benefits and environmental protection, links to other national long-term objectives, planning and other policies and measures, and investment. Nevertheless, in the submitted LTSs there are weak linkages with NDCs, Sustainable Development Goals (SDGs) and other societal goals. Less than half of them refer to the GHG or CO_2 emission reduction targets expressed in their NDCs. Development and well-being targets beyond climate change mitigation or adaptation are often missing. Short-term targets need to be linked to

these long-term pathways to ensure alignment between the short-term and long-term goals. LTS may help countries to identify the long-term mitigation opportunities for transformation in all sectors of society and the areas where near-term action is needed to support such transformation. Guided by a long-term vision, NDCs can put in place measures, projects and programmes which do not create a lock-in, i.e., deliver emissions reductions only in the short-term but not the transformation needed in the long-run. For instance, while substituting coal with natural gas could be an effective emission reduction measure in the short- and mid-term, coal-to-gas switching without implementation of further efforts and deployment of carbon capture, utilization and storage (CCUS) technologies may be insufficient to meet the transformation needed in the long run. Working back from long-term targets in the LTS may be the way to amend near-term policies and investments over time to reach the needed emissions reductions. Climate change mitigation can have significant positive impacts on public health through improved air quality, improved mobility through integrated public transport and expansion of energy access through deployment of distributed renewable energy. Identifying these kinds of co-benefits can help to better align the incentives for early and ambitious mitigation action that also delivers wider well-being benefits for both current and future generations. Therefore, the question of early or delayed ambition should be examined from a wholistic point of view rather than only based on direct costs, taking into account short term co-benefits and the associated positive economic and social consequences. The LTS also serves as an opportunity for linking the temperature goal set by the Paris Agreement with the Sustainable Development Goals (SDGs) defined in the Agenda 2030. Important synergies link climate change mitigation and adaptation with the SDGs. Analysing SDG indicators through a climate mitigation lens can guide countries in the process of identifying policies and measures capable of achieving multiple well-being goals. Nevertheless, only a few countries have highlighted synergies between the two in their LTS. The LTS should communicate on benefits other than climate change mitigation, such as clean air, health, biodiversity and jobs. Moreover, considering political economy factors such as redistribution or social compensatory measures for those adversely affected by the transition provides credibility and enhances political acceptance. Last but not least it should also be noted that if NDCs are off track and unambitious, it will be harder to reach the goals and the scenario outlined in the LTS in the future. Therefore, the development of LT-LEDS is also an opportunity to revise the NDC.

Ambitious and sustained global action on climate change is not just an environmental priority, it is also a **pro-growth economic strategy**. The cleaner way of GDP growth, raising employment, creating a predictable business environment, the possibility of poverty reduction should all be addressed. The expected progress on transition to a low greenhouse gas emission economy, including greenhouse gas intensity, CO_2 intensity of gross domestic product, related estimates of long-term investment, and strategies for related research, development and innovation should be included on the basis of the GovReg. Effective action to limit climate damages and risks requires all countries to pursue an economic transformation, which will have far reaching implications on employment, local and regional development, fiscal and budgetary issues. LTS could help anticipating impacts on employment and planning for adequate socio-economic protection for job losses. The LTS may therefore consider the areas where programmes for the re-skilling of workers or social subsidy schemes would be needed in the long-term. LTS, in this context, can also be useful to promote the public acceptability of ambitious climate action, demonstrating that compensation systems can offset the regressive impacts of mitigation measures. For businesses and entrepreneurs, LTS could serve as an indication of regulatory certainty and identification of national fiscal and financial priorities, as they could

provide information regarding the trajectory of national policies and development. It could also be a useful tool to send out signals of investment needs, thereby encouraging international inflows of finance. Communication of a long-term vision, clear and defined mitigation targets, predictability of climate-related support policies as well as increased level of ambition, would positively influence the ability to mobilize private climate finance. Estimating the effects of the LTS on socioeconomic and environmental priorities helps identify and pre-emptively address impacts. To do so, it requires a thoughtful selection of indicators. This, in turn, enhances the political acceptability and credibility of the LTS by demonstrating that climate change mitigation will not come at the expense of other socioeconomic and environmental objectives.

Pathways will help to envision the transition to low carbon economic development integrating the needed institutional, economic, technological and social changes, and the phases to achieve them. It seems useful to develop different scenarios leading to the same target or level of emissions reductions, varying in e.g., transformation opportunities, technology options and costs of overall mitigation. Modelling and scenario development exercises can help to identify different potential pathways and trajectories with different policy options and economic and carbon budget implications that countries can implement to achieve one final, long-term target. Feasible pathways in the LTS illustrates aspirations on how to reach national long-term mitigation targets and helps ensure credibility and transparency. However, these pathways should be linked to existing national strategies to enhance coherence with other national priorities and pre-existing measures. On the one hand including multiple pathways in the strategy could create confusion in terms of the allocation of responsibility and capacity to reach ambition but on the other hand it allows for more flexibility to reach the economy-wide reduction target in light of currently uncertain developments (e.g., in technologies). Therefore, it is beneficial setting out alternative pathways to 2050 and subsequent revisions of LTS will clarify the desired one beyond 2030.

The inclusion of a long-term **financial and investment vision** in the country's LTS can significantly facilitate the implementation. The development of a long-term financial and investment vision can include the identification of national resources or funds that are readily available in the short-term for the implementation of the strategy, the identification of areas of actions where further investments may be needed in the long run, as well as potential policies and instruments that may be useful to promote such investments. It is also useful to include preliminary estimates of the overall implementation cost of the strategy, including assessments of what can be covered by national budget and identify areas that may benefit from e.g., EU support and private investments. In addition, assessing potential financing gaps can facilitate the identification of suitable policies aimed at enhancing investments in specific areas and leveraging additional resources. According to the OECD potential investment gaps worldwide may not be the result of a lack of capital but are rather linked to the lack of easily identifiable and bankable projects. A vision for resourcing the strategy could foster dialogues between the ministries of finance and alignment of fiscal and financial policies with a low-emission pathway, helping to reduce risk of misaligned fiscal incentives. It could also help to re-consider budgeting processes and fiscal incentives in a more strategic and climate-oriented manner. Including considerations on how to resource the LTS can also facilitate the identification of synergies between mitigation measures and fiscal revenues. Some policy tools relevant for climate change mitigation - notably carbon pricing - can generate significant revenues that can thereafter be used to support investments aimed at reinforcing sustainable infrastructure and at achieving other national objectives.

Because of its focus on development, LTS may also include strategies for **adaptation** – which may be a precondition to the achievement of other societal goals. Planning long-term adaptation strategies in combination with long-term climate mitigation strategies can help to better identify and to take advantage of the strong synergies existing between the two. For example, in its LTS Fiji usefully highlights and reinforces linkages between adaptation and mitigation measures in the electricity sector: the strategy envisages a review of design and construction standards for renewable energy facilities with the aim to improve climate resilience, as changed weather conditions as a consequence of climate change may put facilities and infrastructure at risk.

Finally, scientifically sound **modelling** demonstrates the feasibility of the targets and, in turn, enhances the credibility of the whole LTS. Modelling the impact of the targets in the LTS on other policy dimensions, including employment, competitiveness, distributional consequences, and air pollution, it helps to demonstrate synergies between climate mitigation and other policy priorities. It is important to set targets and design policies based on robust data, modelling and realistic projections. However, modelling and scenario building cannot alone identify achievable targets. Because of their implicit level of uncertainty, it is important to complement modelling outcomes with other types of socio-economic considerations. The use of qualitative narratives or storylines can help link quantitative assessments with policy narratives. Moreover, "foresight units" can add to the strategic value to scenarios and projections, by tracking and analysing emerging trends ("weak signals") and produce predictions about how these trends could impact scenarios and projections obtained from models. Modelling also creates technical know-how for future iterations of the LTS or for the creation of other long-term strategies.

b) Lessons learned from country level case studies

To carry out **policy-coordination process in** SK[clxxxvi] an "ad hoc working group on the preparation of a low-carbon strategy" was established, composed of representatives of the state administration as well as representatives of academia and employers' associations. The basis of the working group was the already existing working group for the preparation of the Low-Carbon Strategy, which had been set up under the Commission for the Coordination of Climate Change Policy at the level of State Secretaries. In addition to this working group, six working groups were set up by individual sectors. Fiji e.g., held three national **stakeholder consultation** workshops, during which participants could provide feedback on proposed plans and actions. Both DE and FR organized several workshops with key stakeholders, including trade unions, business associations, civil society groups and subnational governments. The UK opted for a targeted approach and consulted relevant stakeholders for specific questions related to the LTS as needed. In its **vision** the UK highlights that early action on low-carbon growth is an opportunity for the UK's economy since it may allow UK firms to benefit from first-mover advantages in the development and manufacturing of high-tech low carbon technologies. In parallel, the UK's Industrial Strategy includes four action points for the upcoming decades, one of which is clean growth. UK's LTS is at the heart of the government's National Industrial Strategy, a national plan to boost overall productivity and increase earning power throughout the UK. The LTS aims to transform the whole economy and modernize all sectors while ensuring climate neutrality and economic growth. Large green finance investments are expected to support technological innovation, modernization of buildings, transport and power sectors, while protecting households and businesses from energy costs. FR LTS states that alongside reducing GHG emissions, the strategy is meant to create better jobs and improve the quality of lives, while restoring as

well as protecting biodiversity. The DE LTS provides a framework for all stakeholders, including investors and firms. According to the document, acting quickly on climate change will also enhance the competitiveness of German firms in a low-carbon world. Moreover, the transformation is seen as an opportunity for economic growth that will position German firms to export high-quality environmental goods. The document highlights that the process needs to be smooth and avoid structural breaks, in particular, for the coal-dependent regions.

In setting their **targets**, most countries envisage a reduction expressed in terms of percentage compared to a base year, whereas e.g., CZ[clxxxix] set absolute targets expressed in terms of Mt CO_2-eq. Some countries set also milestone targets, either quantitative or qualitative, or both. FR added other non-GHG emission targets, such as the number of energy efficient homes built each year, or the number of electric cars deployed. These targets were introduced to provide guidance rather than to set binding targets. In DE the LTS's total reduction of greenhouse gas emissions is broken down by economic sectors. In the case of the UK, the Clean Growth Strategy does not include binding sectoral targets but provides indicative ones. Additional policies for each sector are based on a marginal abatement cost curve, which aims at developing a cost-efficient pathway to meet the carbon budgets (assuming current market, technological and structural conditions). This analysis is complemented with information on existing barriers to different actions, and considerations on the rate at which low carbon options could be adopted, as well as on the time that making key decisions could take.

Regarding necessary **cross-cutting and overarching policies** FR listed among others to reduce carbon footprints and placing this objective at the heart of decision-making (e.g. integrating life-cycle analysis in public projects, notably in transport and buildings), reorienting investments (by raising awareness among institutional stakeholders on the impact of their investment choices, e.g. through life-cycle analysis as a selection criteria for projects, and gradually increasing the price of carbon); managing land sustainably (e.g. by enhancing urban planning and in this way bringing residential developments closer to jobs and leisure facilities), promoting and providing incentives for climate-friendly investments, or putting in place efficient financial markets to encourage climate-conscious investment decisions. The UK Clean Growth Strategy presents "action items". However, details on the implementation of each action item are open for interpretation. For example, developing green finance is one of the key drivers for green growth in the UK. Therefore, one action item aims to accelerate Clean Growth by setting up a Green Finance Taskforce, which will provide recommendations for public and private investment to meet carbon budgets. The Green Finance Taskforce is responsible for disbursing funds in the most adequate way and on a case-by-case basis, which is why the description on how this disbursement is to be made is intentionally left general. The Green Finance Taskforce also work with the British Standards Institution (technical standards for products and services) to develop a set of voluntary green and sustainable finance management standards. Further, it will work with mortgage lenders to develop green mortgage products that take account for the lower lending risk and enhanced repayment associated with more energy efficient properties. Both DE, FR and UK highlight the importance of carbon pricing for the transformative shift needed to tackle climate change and move towards a sustainable economy. Other policies are also recognized as necessary for reaching the set level of ambition, including fostering research, development and innovation.

Nearly half of the LTSs do not contain any specific **reference to NDCs**. When the reference is made, the documents simply mention the NDC targets without exploring the potential linkages between that target and the LTS in terms of e.g., scope, gas and coverage, policies or insti-

tutional arrangements. Only Fiji and the Marshall Islands[cxc] contain deeper linkages with their respective NDCs, and the latter in particular states that the strategy is intended to inform and provide recommendations for targets to be included in future NDCs.

Only six out of the 17 LTS highlight **linkages with SDGs**. When mentioned, linkages with SDGs and some of the potential co-benefits are simply listed and not explored in detail. Nonetheless DE's LTS makes a clear reference to the SDGs. The document explicitly mentions that Germany's energy transition must be in line with the strategy for sustainable development set out by the government. It specifically mentions potential synergies with the SDGs e.g., having a climate-neutral building sector would reinforce SDG 11 ("make cities and human settlements inclusive, safe, resilient and sustainable"). Moreover, the LTS also refers to potential trade-offs between climate mitigation and other SDGs. It refers to the competition of land-use between food production (SDG 2), biodiversity (SDG 15) and the production of agricultural biofuels, concluding that bioenergy from waste and residues rather than cropland will be the predominant source of biofuels in the future. In total, the German LTS explicitly mentions SDGs 2, 5, 9, 10, 12, 13, 14, 15, and 16. The German impact assessment of the sectoral targets by 2030 shows that achieving the 2030 targets brings gross employment benefits (SDG 8) and substantially reduces the levels of local air pollution thereby improving health outcomes (SDG 3). Moreover, the report of the Commission for growth, structural change, and employment highlights that financing projects in the coal regions must be in line with the SDGs, emphasizing the promotion of a carbon-neutral economy (SDG 13).

Only few LTS have a clear and concrete focus on **economic and societal development** and only Indonesia[cxci] presents a quantitative economy-related goal (GDP growth of 6% per year between 2019 and 2045). SK built its LTS on a Low-Carbon Growth Study[cxcii], that is only available in Slovakian. FR quantifies the impact of the LTS on other policy objectives in an ex-ante assessment. The French estimate predicts that the LTS will have a positive impact on economic growth while reducing household energy bills through improvements in energy efficiency. However, in FR and UK, the LTS mentions – but does not provide significant detail on - a wide range of other benefits that go beyond a positive effect on economic growth: a more inclusive society, less pollution, better indoor and outdoor air quality, less noise, better health, less operational risks resulting from fossil fuel extraction, and more biodiversity. DE's assessment quantified the impact of the sectoral goals by 2030 on other policy priorities, including competitiveness, employment, cost of housing, and local air pollution. E.g., it says that employment gains in some sectors outweigh employment losses in others, which need to be carefully addressed with. Most if not all countries face trade-offs between the mitigation goals set out in the LTS and other policy priorities, including competitiveness, employment, alleviating fuel poverty and conflicts of land-use. Measures on how to attenuate these effects needs to be addressed.

Hardly any of the strategies include **investment plans** for resourcing the LTS, but a couple of them provide cost estimates for some of the measures and visions outlined, with variable levels of detail. PT[cxciii] and UK provide detailed and sector-specific information on investment needs and to identify national, European and private sector financing instruments that can be used to resource the strategy. In the remaining strategies, the level of detail and the scope of information on financial resources and investment needs vary considerably. For example, Mexico highlights that the country's General Climate Change Law creates the Climate Change Fund, which will help financing relevant projects in the country and underlying the need to "promote investment" in some areas. DE identifies macro-areas for intervention, such as the need to incentivize climate-friendly investments and enhancing transparency on climate risks to which investors

are exposed. Costing exercises along with an analysis of current public expenditures and existing national funds can help a country to gain a clearer understanding of the financial resources that could be available to finance the low-emission transition. For example, in estimating the aggregate amount of investments needed by 2050 to implement its strategy, PT has identified what share of these investments is already covered by planned and ongoing measures for the modernization of the economy.

Only the long-term strategies that Mexico and Benin[cxciv] submitted to the UNFCCC Secretariat give equal prominence to **adaptation** and mitigation, however they do not integrate adaptation aspects into mitigation they talk about adaptation under stand-alone sections, as well as others (e.g., Slovakia) who mainly lists their respective adaptation strategies contained in other documents but do not link them in a detailed manner.

After setting the targets, DE, FR, UK verified the feasibility of emission reduction targets using bottom-up sectoral models. These **models** typically incorporate assumptions about aggregate socioeconomic variables (population, GDP growth, etc.) as well as sector-specific variables (e.g., energy intensity, carbon intensity, demand) to project emissions paths. These assumptions are based on a critical review of current and expected technological options for the sectors. UK and FR predominantly used existing in-house sectoral models developed in co-operation with external research institutes. Most LTS include GHG projections for different mitigation scenarios. Most countries include at least a Business-as-usual (BAU) and a "with additional measures" scenario. However, there is one selected to reduce GHG until 2050 for DE as well as FR, and to 2032 in UK linked to the carbon budgets already approved and subject to forthcoming recommendations. FR and UK included details on the modelling of the pathway unlike DE. UK added 3 "extreme" pathways until 2050. An electrification pathway, where electricity is the main source of energy in 2050. Gas boilers are replaced with electric heating, industry moves to cleaner fuels, and cars become electric. Altogether this means, the UK uses around 80 percent more electricity than today, and virtually all of it comes from clean sources (renewables and nuclear). In this pathway, Carbon Capture, Utilization and Storage (CCUS) is not used. A hydrogen pathway, where hydrogen is used to heat homes as well as to fuel many vehicles. Existing gas infrastructure is adapted to suit hydrogen purposes and add hydrogen fuelling stations to the existing network. A large new industry of hydrogen production is built using natural gas and CCUS. And an emission removal pathway, where sustainable biomass power stations are used in tandem with CCUS technology. Carbon is removed from the atmosphere by plants (biomass) as they grow and, when the biomass is used to generate electricity, emissions are captured and stored instead of returning to the atmosphere. There is still a significant clean transition in other sectors but successful innovation in emissions removal allows more time for some of these changes. This approach allowed the UK to identify the type of technologies needed in the future regardless of which scenario is actually realized or dominates in future. The exercise also identified decisions that can be taken now, which would be valid in any of the extreme scenarios so-called "no regrets" options. The reductions across sectors corresponding to each extreme scenario are included in the Annex of the UK LTS. FR developed a central reference scenario based on sector-specific models used by other ministries and provided by external modelling firms, to ensure consistency of the results across ministries and sectors. FR used two models (NEMESIS and THREEME) to assess macroeconomic impacts (e.g., number of jobs created) of the LTS compared to a trend-based scenario based on existing measures. According to the two models, GDP is expected to be boosted by EUR 25 billion per year over the period 2014 to 2035. Over this period, 108,000 additional jobs per year will be created according to NEMESIS, while THREEME estimates this number to be around 350,000 jobs per year. Other positive effects

were detected: lower production costs due to energy savings for first movers in the low-carbon technology. However, there will be expected job losses in the sectors dependent on fossil fuel. In order to ensure that no one is left behind, the FR LTS set measures to facilitate a professional transition for employees in the sectors towards the emerging green economy. It also quantifies positive social impacts. Equitable distribution is at the heart of the social impacts looked at by the government. For example, for housing, in the long term, investments by the homeowner for renovation will be compensated by future savings on households' energy bills. Furthermore, an average assessment of citizens' savings over time across levels of income has been conducted. Additionally, in the transport sector, the impact of the modal shift was estimated for each type of household and analysed by income level. These distributional impacts assessments could be done in a more regular way to ensure in a timely manner that most vulnerable people are not impacted by the energy transition and climate policies. Furthermore, other environmental challenges and public health issues were quantified in the document such as the decrease of environmental damages due to extraction, more sustainable transport and better distribution of the infrastructure, also, improvements in air and water pollution, indoor air quality, or noise pollution. DE assessed its aggregate and sectoral targets based on existing scenarios from the scientific literature and commissioned one study from a research institute, which included modelling exercises. DE's impact assessment showed two different pathways for achieving the sectoral targets by 2030. In the high energy efficiency pathway, all sectors experience higher efficiency improvements relative to a business-as-usual scenario to reach the 2030 targets. For example, in the buildings sector, most of the emission reductions result from efficiency improvements instead of using renewable energy for space heating. The transport sector is assumed to witness large efficiency improvements of cars' internal combustion engines whereas the industry sector benefits from improvements in material efficiency as well as fuel switching (biomass and power to heat). In the high renewable pathway, all sectors are exploiting their potential for the use of renewable energy. For example, there is an increasing electrification of the car fleet which is fuelled by electricity from renewable energies. Similarly, the industry sector uses more electricity requiring a more stringent deployment of renewable energy sources, notably solar PV and wind.

FR has the most elaborated **indicator** system, and the strategy outlines a dashboard composed of 184 indicators, categorized into "results", "context", and "policy recommendation follow-up" indicators, published by the government biannually. Results indicators include direct results regarding national targets, carbon footprint, sectoral and national emissions, level of investments, etc. Context indicators comprise socio-economic, climate, environmental and technology indicators that describe both conditions relevant for result indicators (e.g., the harshness of winter) as well as effects on other policy priorities (e.g., supply and demand for green jobs, population exposed to energetic vulnerability, etc.). The indicators related to the monitoring of policy recommendations estimate the level of integration in public policies of each recommendation of the LTS. DE does not explicitly mention any indicators, but it refers to the annual Climate Action reports as the main monitoring tool. In these reports started in 2014, the German government uses indicators to track GHG emissions by economic sector and to inform the government on progress made towards the interim target. Moreover, the reports attempt to quantify the impact of the Climate Action Programme 2020 by using an ex-ante estimate of policy effects and by ex-post evaluation. The ex-ante estimate of policy effects is based on economic modelling, i.e., how future emissions will evolve after enacting specific climate policies. Enacted policies are also evaluated ex-post by measuring their impact on actual emission reductions. The results of both the ex-ante estimate and the ex-post evaluation will feed into the

next update of the LTS. The UK illustrates a set of indicators, on an overall basis but also across sectors, that could illustrate how the 2032 pathway is performing. Besides overall GHG emission and GHG emissions by sector, there is one key indicator, which is the Emissions Intensity Ratio. This equals the amount of GHG per unit of GDP. Other indicators including emissions per capita, final energy consumption intensity of GDP, or energy use per households complement the key indicators.

In terms of **funding implementation**, the UK has set up the Green Finance Taskforce to decide how to best allocate and mobilize funds outlined in the LTS. Since then, for instance the Green Finance Taskforce has recommended that the Government and the City of London has established a new Green Finance Institute under the Green Finance Initiative, which could host a Green Fintech Hub. Additionally, the Government and the new Institute should deliver a joint strategy on green finance. Companies and investors should use the framework from the Taskforce on Climate-related Financial Disclosures to develop their financial, corporate governance and stewardship disclosures, and the UK Government should conduct a review of disclosure in 2020 to monitor and encourage market adoption amongst both issuers and users. FR delivers on its commitment to financing the LTS via its initiative on green budgeting. They released a report showing an assessments of tax revenues and expenditures, by type of tax, programme, and beneficiary. This included information on revenues from energy and environmental taxes from relevant national programmes, and on fossil fuel subsidies for some sectors. In addition, as part of the National Budget law, a "Transversal Policy Document" that called for climate action was released, summarizing the climate expenditures across all sectors (e.g., aviation, research, forestry, etc.). DE explicitly states that the LTS is a strategic document that outlines the vision and strategies for Germany in the short, medium and long term without predetermining public budgets. Instead, the measures will be funded from the individual budgets of the respective ministries in the respective years.

c) Addressing the recent experience of COVID-19

The COVID-19 pandemic is the first "prototype crisis" in the Anthropocene era, and it is feared that many similar or even more severe ones will follow. It has struck in times when our major sub-systems have already been put to their edges by our unsustainable development, therefore it has easily triggered a domino effect: it has started as mainly sanitary related but very quickly turned into an economic depression that has not been seen for 100 years, which resulted in the collapse of job markets. So now we are facing with multiple crisis at the same time. The IMF[cxcv] predicts that the global economy would sharply contract by 3% with all advanced economies expected to fall into recession and contract by 6.1% in 2020. In order to overcome these difficulties many countries are going to ask for loans therefore their national debt will increase which will eat up their future elbow room. And after all it is our children who will have to pay the debt both financially and by other means. Even the EU Commission has[cxcvi] to borrowed €750 billion on the financial markets. Moreover, behind all of these processes there are other worrying drivers such as climate change and the critical condition of the natural resources. It follows that first this whole phenomenon should be seen as one systematic problem, and subsequently it should be managed *inter alia* by learning from the current prototype crisis for the future. It is advised that the final 2050 plans should include this very fresh experience of the COVID-19 pandemic and should utilize the opportunity to identify assessments and possible way of solutions that are relevant for the societies of the CPs. Moreover, thes should take into account the short- and long-term goals and challenges at the same time and provides for ideas that are

sustainable in the long term but are able to trigger short term solutions leading to quick results. What we have witnessed first and foremost was that during the time of crisis everything that is more environmentally sustainable generally reacts better to an economic crisis. That was evidenced when long supply chains collapsed compared to e.g., local food production, or when long haul flights have been cancelled and people reduced their unnecessary mobility demands changing to a more digital therefore less pollutive way of operation. It is also true that when a crisis occurs energy or food independence could be more vital than ever. For instance, in CPs like some in the Western Balkans, who are lacking major fossil fuel resources the installation of renewable energy capacity could not only provide jobs in the short-term, but energy independence in the medium-term and sustainable economic structure in the long-term. The build-up of these capacities could also result in the possibility to export more. We need to adapt not just our natural environment and infrastructure but also our economy for the future. In parallel with job creation, we need to ensure economic growth in a sustainable manner i.e., we need to boost an adaptive clean growth as soon as possible. All the measure we take now needs to be able to be inserted into the long-term ambitions.

All in all, the proposals in this paper should also be presented as options that could facilitate the speed recovery after COVID-19 and ensure medium to long term sustainable economic growth which will be more resilient towards future COVID-19 type crisis. This could be done by e.g., making the short and medium term economic and employment impacts of some of the proposed mitigation measures as evaluation criteria in the document. So, after we beat COVID-19 the new catchword should be to “flatten the GHG emission curve” and build back a much more resilient i.e., more sustainable economies.

Photo 5.

9. Summary

This chapter will aim to give a summary of the possible aspects of achieving the climate neutrality target in the Energy Community and to provide some proposals for further consideration.

This **paper has concluded that climate change is already having its negative effects on the CPs** of the EnC today and inaction will even have further even harsher consequences on them. Such as changes in precipitation and the loss of water resources, which can have negative effects on agriculture and forestry or the access to quality drinking water and even negatively affect power generation. Furthermore, climate change and rising temperatures could create favourable conditions for the outbreak of vector-borne diseases and transitional population migration from parts of the world that will be further negatively affected by the changing climate. Climate neutrality does not mean that CPs will have to cut their emissions to zero, through the use of sinks, they will only have to cut their emissions to a lower level.

Furthermore, this paper has also examined the **international requirements** towards CPs, such as the climate neutrality target of the PA in line with the recommendations of the IPCC and the political commitment of the EU to be the first climate neutral continent by 2050. The latter will be underlined through the European Climate Law to be adopted later this year. As of January 2021, there are 37 climate neutrality commitments and some CPs have made this political declaration as well through the Sofia Declaration on the Green Agenda for the Western Balkans or we can also mention the announcement of Ukraine. Furthermore, the European Green Deal and the Economic and Investment Plan for the Western Balkans are there to support the CPs in a just transition towards a climate neutral economy. This shows the global and European trends towards climate neutrality, that the CPs should follow.

This paper has **also assessed the positive effects and co-benefits of setting up and implementing climate neutrality targets.** By setting up such targets, CPs can access development finance supporting their just transition towards a climate neutral economy and can potentially also mitigate the effects of the proposed Carbon Border Adjustment Mechanism by setting up EU ETS compatible carbon pricing systems. Furthermore, by becoming climate neutral the serious air quality problem of the CPs can be mitigated which in the end could save the lives of tens of thousands of their citizens and save cost on their health systems and economies. Climate neutrality was assessed to have positive effects also on food systems and the environment. Also, by phasing out fossil fuels and their subsidies, financial resources can be used to develop the economies and raise employment of CPs.

Economic aspects of climate neutrality were also assessed to be on the positive side. By avoiding the effects of CBAM, CPs would have a competitive advantage to other competitors. The EC has reviewed its trade policies and reasserts the EU's plan to encourage digital and green transitions. By embarking on a green and just transition, the CPs could exploit the positive effects of EU trade even further. However, it is visible that the financial sector is also changing its policies and greening its portfolios, therefore financial flows will go more and more towards sustainable investments. With these new green financial means and the huge energy efficiency and renewables potential of the CPs could support the creation of green high-quality jobs and support the reaching of the climate neutrality target. Further sectors to be well managed are waste management and transport.

The paper also assessed the economic costs of no actions, e.g. not setting and implementing carbon neutrality goals. It was noted that there are direct costs, indirect costs and the costs of uncertainty which should be kept in mind by CPs. Some assessments predict that if the EU economy would be exposed to a global warming of 3°C above pre-industrial levels, it would result in an annual loss of at least €170 billion. The floods in the Western Balkans have caused also damages in the range of € billions, while the lack of reliable rainfall could also reduce hydropower production in the future. Such dire forecasts can be true for other CPs as well, for example climate-driven disasters could cost Georgia as much as $12 billion over the next ten years. The World Bank has estimated that costs of adapting to even a 2°C of warming by 2050 might be $75–100 billion a year for developing countries. The paper also assessed further cost implications to CPs of stranded assets, if they continue to invest in fossil fuels and unsustainable infrastructure in the future.

All the above aspects underline the need of CPs to set an ambitious climate neutrality target and to embark on the road towards implementation as soon as possible. How this pathway can be managed, was discussed in chapter 8 of this paper, where the best practices of already available long-term low greenhouse gas emission development strategies were assessed. The paper provided its recommendations on key elements during the formulation and implementation of long-term targets and also on content related key elements. In the paper some specific lessons learned were also portrayed with the help of country level case studies while it has addressed the recent experiences of the COVID-19 pandemic as well. Through the lessons learned from the existing long-term strategies, CPs can **not only set political commitments towards climate neutrality but can also have a toolset to draw pathways to implement this ambitious target.**

Photo 6.

List of References

[i] United Nations: United Nations Framework Convention on Climate Change (1992). Available at: https://unfccc.int/resource/docs/convkp/conveng.pdf

[ii] United Nations Framework Convention on Climate Change: Paris Agreement (2015). Available at: https://unfccc.int/sites/default/files/english_paris_agreement.pdf

[iv] Regional Cooperation Council: Sofia Declaration on the Green Agenda for the Western Balkans (2020). Available at: https://www.rcc.int/download/docs/Leaders%20Declaration%20on%20the%20Green%20Agenda%20for%20the%20WB.pdf/196c-92cf0534f629d43c460079809b20.pdf

[iv] Ministry of Energy and Environmental Protection of Ukraine: The Concept of the Green Energy Transition of Ukraine until 2050 (2020). Available at: https://mepr.gov.ua/files/images/news_2020/21012020/pdf_%d0%b7%d0%b5%d0%b-b%d0%b5%d0%bd%d0%b0%20%d0%ba%d0%be%d0%bd%d1%86%d0%b5%d0%bf%d1%86%d1%96%d1%8f.pdf

[v] Cabinet of Ministers of Ukraine: National Economic Strategy for the period up to 2030 (2021). Available at: https://www.kmu.gov.ua/npas/pro-zatverdzhennya-nacionalnoyi-eko-a179

[vi] Regional Cooperation Council Secretariat: Study on climate change in the Western Balkans region (2018). Available at: https://www.rcc.int/pubs/62/study-on-climate-change-in-the-western-balkans-region

[vii] Zoï environment network: CLIMATE CHANGE IN EASTERN EUROPE Belarus, Moldova, Ukraine (2012). Available at: https://zoinet.org/product/climate-change-in-eastern-europe/

[viii] Anatoly Shvidenko, Igor Buksha,Svitlana Krakovska and Petro Lakyda:Vulnerability of Ukrainian Forests to Climate Change Available at: https://www.mdpi.com/2071-1050/9/7/1152/htm

[ix] Climate Forum East (CFE) and Georgia National Network on Climate Change: NATIONAL CLIMATE VULNERABILITY ASSESSMENT: GEORGIA (2014). Available at: http://drr-southcaucasus.org/uploads/files/CVA_Georgia_Eng_-_II.pdf

[x] World Bank Group: Turn down the heat: confronting the new climate normal – the climate challenge for the Western Balkans. (2015). Available at: http://documents.worldbank.org/curated/en/494741468189532505/Turn-down-the-heat-confronting-the-new-climate-normal-the-climate-challenge-for-the-Western-Balkan

[xi] Ministry of Environmental Protection, "Serbia's Second National Communication to the UNFCCC". Klimatske promene website. (2017). Available at: http://www.klimatskepromene.rs/wp-content/uploads/2017/12/SNC-Eng_Serbia.pdf

[xii] Journal of Hydrology: Regional Studies: Climate change impact on water availability of main river basins in Ukraine (2020). Available at: https://www.researchgate.net/publication/346672501_Climate_change_impact_on_water_availability_of_main_river_basins_in_Ukraine

[xiii] European Commission: Assessing the impact of climate change on water supply sources and WSS systems in Moldova and inventory possible adaptation measures. (2013). Available at: https://ec.europa.eu/environment/marine/international-cooperation/pdf/Moldova_Task%201_Final_EN_26%20Feb.pdf.pdf

[xiv] UNDP/ENVSEC: Regional Climate Change Impacts Study for the South Caucasus Region. (2011). Available at: https://www.ge.undp.org/content/dam/georgia/docs/publications/GE_SC-CC-2011.pdf

[xv] UNDP Georgia: Achara Climate Change Strategy, (2013). Available at: https://www.ge.undp.org/content/georgia/en/home/library/environment_energy/climate-change-strategy-of-ajara-.html

[xvi] Ministry of Agriculture and Environmental Protection: "Serbia's First National Adaptation Plan". Klimatske promene website (2015). Available at: http://www.klimatskepromene.rs/wp-content/uploads/2017/04/NAP-UNDP-2015.pdf

[xvii] Taranu L.: An Assessment of Climate Change Impact on the Republic of Moldova's Agriculture Sector. A Research Study Complementing the Vulnerability and Adaptation (2014). Available at: http://www.clima.md/public/files/AssessmentClimateChangeImpactAgricultureSectorRM.pdf

[xviii] "World Bank: Climate Change and Agriculture Country Note. Climate change and agriculture country note;. (2012) . Available at: https://openknowledge.worldbank.org/handle/10986/21837

[xix] WWF Norway, WWF Caucasus Programme. Sylven, M., Reinvang, R., and AndersoneLilley, Z.: Climate Change in Southern Caucasus: Impacts on Nature, People and Society. (2008). Available at: https://www.caucasus-mt.net/Organizations/People/climate-change-in-southern-caucasus-impacts-on-nature.html

[xx] Ministry of Environmental Protection: "Serbia's Second National Communication to the UNFCCC", Klimatske promene website. (2017). Available at: http://www.klimatskepromene.rs/wp-content/uploads/2017/12/SNC-Eng_Serbia.pdf

[xxi] United Nations Development Programme: Migration and Displacement, https://www.unhcr.org/540854f49

[xxii] International Displacement Monitoring Center: Global Report on Internal Displacement 2019. (2019).Available at: https://www.internal-displacement.org/global-report/grid2019/

[xxiii] United Nations Development Programme Serbia: Climate Change as a Human Security Issue in the Western Balkan. (2019). Available at: https://www.belgradeforum.org/climate-change-as-a-human-security-issue-in-the-western-balkans/

[xxiv] UNFCCC Art. 2

[xxv] Cain, M. et al (eds.): Exploring Carbon Neutrality and the Paris Agreement Balance of Greenhouse Gas Emissions and Removals - Report on the 2018 Workshop Series by JPI Climate and European Commission - Directorate-General for Research and Innovation

[xxvi] Walsh, B., Ciais, P., Janssens, I. et al. Pathways for balancing CO_2 emissions and sinks. Nat Commun 8, 14856 (2017). Available at: https://doi.org/10.1038/ncomms14856

[xxvii] IPCC: Summary for Policymakers. In: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening

the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty (2018). Available at: https://www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15_SPM_version_report_LR.pdf

[xxviii] András Huszár: Urgenda to Be Followed - Will the Courts Be the Last Resort to Prevent Dangerous Climate Change? in: Hungarian Yearbook of International Law and European Law 2020 (8) 1 doi: 10.5553/HYIEL/266627012020008001013

[xxix] Climate Home News: Which countries have a net zero carbon goal? (2019). Available at: https://www.climatechangenews.com/2019/06/14/countries-net-zero-climate-goal/

[xxx] European Council meeting (12 December 2019) – Conclusions. Brussels, 12 December 2019 (OR. en) EUCO 29/19 CO EUR 31 CONCL 9. Available at: https://www.consilium.europa.eu/media/41768/12-euco-final-conclusions-en.pdf

[xxxi] Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL establishing the framework for achieving climate neutrality and amending Regulation (EU) 2018/1999 (European Climate Law). Brussels, 4.3.2020 COM(2020) 80 final 2020/0036 (COD). Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020PC0080&from=EN

[xxxii] 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. Brussels, 11.12.2019 COM(2019) 640 final. Available at: https://eur-lex.europa.eu/resource.html?uri=cellar:b828d165-1c22-11ea-8c1f-01aa75ed71a1.0002.02/DOC_1&format=PDF

[xxxiii] Amended proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on establishing the framework for achieving climate neutrality and amending Regulation (EU) 2018/1999 (European Climate Law). Brussels, 17.9.2020 COM(2020) 563 final 2020/0036 (COD). Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020PC0563&from=EN

[xxxiv] Council of the European Union: Proposal for a Regulation of the European Parliament and of the Council establishing the framework for achieving climate neutrality and amending Regulation (EU) 2018/1999 (European Climate Law). (2021). Available at: https://www.consilium.europa.eu//media/49461/st08440-en21.pdf

[xxxv] European Union: Submission by Germany and the European Commission on behalf of the European Union and its Member States – The update of the nationally determined contribution of the European Union and its Member States (2020). Available at: https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/European%20Union%20First/EU_NDC_Submission_December%202020.pdf

[xxxvi] United Nations Framework Convention on Climate Change: Decision 1/CP.21. (2015). Available at: https://unfccc.int/resource/docs/2015/cop21/eng/10a01.pdf

[xxxvii] Ed. by Daniel Klein et al.: The Paris Agreement on Climate Change: Analysis and Commentary (2017). OUP.

[xxxviii] REGULATION (EU) 2018/1999 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 December 2018. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018R1999&from=EN

[xxxix] UNFCCC: Communication of long-term strategies. Available at: https://unfccc.int/process/the-paris-agreement/long-term-strategies

[xl] Urgenda: The Urgenda climate case against the Dutch Government. (2019). Available at: https://www.urgenda.nl/en/themas/climate-case/

[xli] Ursula von der Leyen: Statement on the EU-Western Balkans Zagreb Summit (2020). Available at: https://ec.europa.eu/commission/presscorner/detail/en/statement_20_825

[xlii] Government of Ukraine: Ukraine intends to join the formation of European Green Deal policies, says Olha Stefanyshina (2020). Available at: https://www.kmu.gov.ua/en/news/ukrayina-maye-namir-doluchatis-do-formuvannya-politik-yevropejskogo-zelenogo-kursu-olga-stefanishina

[xliii] European Commission: The Just Transition Mechanism: making sure no one is left behind (2020) Available at: https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal/actions-being-taken-eu/just-transition-mechanism_en

[xliv] European Commission: An Economic and Investment Plan for the Western Balkans (2020). Available at: https://ec.europa.eu/neighbourhood-enlargement/sites/near/files/communication_on_wb_economic_and_investment_plan_october_2020_en.pdf

[xlv] European Commission: Renewed sustainable finance strategy and implementation of the action plan on financing sustainable growth (2018). Available at: https://ec.europa.eu/info/publications/sustainable-finance-renewed-strategy_en

[xlvi] European Commission: Regulation (EU) 2020/852 on the Establishment of a framework to facilitate sustainable investment (2020). Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32020R0852&from=EN

[xlvii] World Bank: State and Trends of Carbon Pricing 2020 (2020). Available at: https://openknowledge.worldbank.org/bitstream/handle/10986/33809/9781464815867.pdf?sequence=4&isAllowed=y

[xlviii] European Commission: The EU Emissions Trading System (EU ETS) (2016). Available at: https://ec.europa.eu/clima/sites/clima/files/factsheet_ets_en.pdf

[xlix] European Commission: Carbon leakage. Available at: https://ec.europa.eu/clima/policies/ets/allowances/leakage_en

[l] Dr Chris Rosslowe, Charles Moore, Dave Jones, Phil MacDonald: The path of least resistance (2020). Available at: https://ember-climate.org/wp-content/uploads/2020/10/Ember-Path-of-least-resistance-2020.pdf

[li] World Health Organisation: Fact Sheets: Ambient (outdoor) air pollution (2018). Available at: https://www.who.int/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health

[lii] World Health Organisation: Country estimates of burden of disease from ambient air pollution for 2016 (2018). Available at: https://www.who.int/airpollution/data/aap_bod_may2018_v0.xlsx?ua=1

[liii] Health and Environment Alliance: Chronic coal pollution (2019). Available at: https://www.env-health.org/wp-content/uploads/2019/02/Chronic-Coal-Pollution-report.pdf

[liv] Damir Miljevic, Energy Community Secretariat: Investments into the past (2020). Available at: https://www.energy-community.org/dam/jcr:482f1098-0853-422b-be93-2ba7cf222453/Miljevi%C4%87_Coal_Report_122020.pdf

[lv] Valeria Jana Schwanitz, Thomas Longden, Brigitte Knopf, Pantelis Capros: The implications of initiating immediate climate change mitigation — A potential for co-benefits? (2015). Available at: https://www.sciencedirect.com/science/article/pii/S0040162514000146

[lvi] Marco Springmann, H. Charles J. Godfray, Mike Rayner, Peter Scarborough: Cobenefits of global dietary change (2016). Available at: https://www.pnas.org/content/113/15/4146

[lvii] An N, Fan M, Zhang F, Christie P, Yang J, Huang J, et al.: Exploiting Co-Benefits of Increased Rice Production and Reduced Greenhouse Gas Emission through Optimized Crop and Soil Management. (2015). Available at: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0140023

[lviii] Bernardo B. N. Strassburg, Ana S. L. Rodrigues, Mykola Gusti, Andrew Balmford, Steffen Fritz, Michael Obersteiner, R. Kerry Turner and Thomas M. Brooks: Impacts of incentives to reduce emissions from deforestation on global species extinctions. (2012). Available at: https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.699.9570&rep=rep1&type=pdf

[lix] H. Pollitt, E. Alexandri, U. Chewpreecha & G. Klaassen: Macroeconomic analysis of the employment impacts of future EU climate policies (2015). Available at: https://www.tandfonline.com/doi/10.1080/14693062.2014.953907

[lx] Andy Gouldson, Andrew Sudmant, Haneen Khreis, and Effie Papargyropoulou: The Economic and Social Benefits of Low-Carbon Cities: A Systematic Review of the Evidence (2018). Available at: https://newclimateeconomy.report/workingpapers/wp-content/uploads/sites/5/2018/06/CUT2018_CCCEP_final_rev060718.pdf

[lxi] Live Population of World 2030 and World population statistics, used for all CPs, except Albania and Serbia (2021). Available at: https://www.livepopulation.com/population-projections/world-2030.html

[lxii] Eurostat - Greenhouse gas emissions per capita. (2021) Available at: https://ec.europa.eu/eurostat/databrowser/view/t2020_rd300/default/table?lang=en

[lxiii] Albania's INDC (2016). Available at: https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Albania%20First/Albania%20First.pdf

[lxiv] Ibid, 11,5% decrease between 2016 and 2030: 5,4 Mt CO_2e in 2030 and Countrymeters, 2,9 million people projected for 2030 (2021). Available at: https://countrymeters.info/en/Albania

[lxv] Bosnia and Herzegovina's INDC (2017). Available at: _https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Bosnia-Herzegovina%20First/NDC%20BiH_November%202020%20FINAL%20DRAFT%2005%20Nov%20ENG%20LR.pdf

[lxvi] Ibid, 3% decrease compared to 1990

[lxvii] Kosovo Agency of Statistics: Greenhouse Gas Emissions in Kosovo 2014-2015. (2016) Available at: https://ask.rks-gov.net/media/2471/ghg-emissions-in-kosovo-2014-2015.pdf

[lxviii] Energy Community: Annual Implementation Report 2020: Energy reforms move ahead despite Covid-19. No target set for 2030. (2020) Available at: https://www.energy-community.org/news/Energy-Community-News/2020/11/23.html

[lxix] North Macedonia's INDC. (2018). Available at: https://unfccc.int/sites/default/files/resource/Macedonian%20SBUR%20ENG%20%5B%20Preview%20%5D.pdf

[lxx] Ibid, with WAM scenario

[lxxi] World Bank: CO_2 emissions (metric tons per capita) – Georgia. (2021) Available at: https://data.worldbank.org/indicator/EN.ATM.CO2E.PC?locations=GE

[lxxii] Georgia's INDC. 15% reduction compared to the BAU scenario (2017). Available at: https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Georgia%20First/INDC_of_Georgia.pdf

[lxxiii] Second Biennial Update Report of the Republic of Moldova under the UNFCCC (2019). Available at: https://unfccc.int/sites/default/files/resource/Moldova_BUR2_EN_web_19.04.2019.pdf

[lxxiv] Moldova's updated NDC. Unconditional 70% reduction compared to 1990. (2020) Available at: https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Republic%20of%20Moldova%20First/MD_Updated_NDC_final_version_EN.pdf

[lxxv] Montenegro's INDC (2017). Available at: https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Montenegro%20First/INDCSubmission_%20Montenegro.pdf

[lxxvi] Ibid, 30% reduction compared to 1990

[lxxvii] USAID: Greenhouse Gas Emissions Factsheet: Serbia. (2017). Available at: https://www.climatelinks.org/file/3154/download?token=vsF7fdPp

[lxxviii] Serbia's INDC, 9,8% reduction compared to 1990. (2017). Available at: https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Serbia%20First/Republic_of_Serbia.pdf and Statistical Office of the Republic of Serbia - 6,47 million people estimated, (2021) available at: https://data.stat.gov.rs/Home/Result/180203?languageCode=en-US and Initial National Communication of the Republic of Serbia - total CO_2e emissions in 1990: 80,803 Gg, (2010). Available at: https://unfccc.int/resource/docs/natc/srbnc1.pdf

[lxxix] USAID: Greenhouse Gas Emissions Factsheet: Ukraine (2016). Available at: https://www.climatelinks.org/resources/greenhouse-gas-emissions-factsheet-ukraine

[lxxx] Ukraine's INDC, GHG emissions level in 2030 will not exceed 60% of 1990: 566,64 Mt CO_2e in 2030 (2016). Available at: https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Ukraine%20First/Ukraine%20First%20NDC.pdf

[lxxxi] World Bank: GDP per capita (current USD) (2021). Available at: https://data.worldbank.org/indicator/NY.GDP.PCAP.CD

[lxxxii] EBRD: Albania overview (2021). Available at: https://www.ebrd.com/where-we-are/albania/overview.html

[lxxxiii] EBRD: Bosnia and Herzegovina overview (2021). Available at: https://www.ebrd.com/where-we-are/bosnia-and-herzego-

vina/overview.html

[lxxxiv] EBRD: Kosovo overview. Available at: https://www.ebrd.com/where-we-are/kosovo/overview.html

[lxxxv] EBRD: North Macedonia overview (2021). Available at: https://www.ebrd.com/where-we-are/north-macedonia/overview.html

[lxxxvi] EBRD: Georgia overview (2021). Available at: https://www.ebrd.com/where-we-are/georgia/overview.html

[lxxxvii] EBRD: Moldova overview (2021). Available at: https://www.ebrd.com/where-we-are/moldova/overview.html

[lxxxviii] EBRD: Montenegro overview (2021). Available at: https://www.ebrd.com/where-we-are/montenegro/overview.html

[lxxxix] EBRD: Serbia overview (2021). Available at: https://www.ebrd.com/where-we-are/serbia/overview.html

[xc] EBRD: Ukraine overview (2021). Available at: https://www.ebrd.com/where-we-are/ukraine/overview.html

[xci] Third National Communication of the Republic of Albania under the UNFCCC (2016). Available at: https://unfccc.int/sites/default/files/resource/Albania%20NC3_13%20October%202016_0.pdf

[xcii] Ibid

[xciii] Balkan Green Energy News: Bosnia and Herzegovina submits its third national report on climate change (2017). Available at: https://balkangreenenergynews.com/bosnia-and-herzegovina-submits-its-third-national-report-on-climate-change/

[xciv] Statista: Distribution of GDP across economic sectors Bosnia-Herzegovina 2019 (2020). Available at: https://www.statista.com/statistics/453901/bosnia-herzegovina-gdp-distribution-across-economic-sectors/

[xcv] Kosovo Agency of Statistics: Greenhouse Gas Emissions in Kosovo 2014-2015 (2016). Available at: https://ask.rks-gov.net/media/2471/ghg-emissions-in-kosovo-2014-2015.pdf

[xcvi] CIA World Factbook – Kosovo (2021). Available at: https://www.cia.gov/the-world-factbook/countries/kosovo/

[xcvii] Macedonian Second Biennial Update Report on Climate Change (2017). Available at: https://unfccc.int/sites/default/files/resource/Macedonian%20SBUR%20ENG%20%5B%20Preview%20%5D.pdf

[xcviii] CIA World Factbook – North Macedonia (2021). Available at: https://www.cia.gov/the-world-factbook/countries/north-macedonia/

[xcix] Georgia's Second Biennial Update Report (2019). Available at: https://unfccc.int/sites/default/files/resource/2019.06.13_BUR2_2019_Eng.pdf

[c] Ibid

[ci] Second Biennial Update Report of the Republic of Moldova (2018). Available at: https://unfccc.int/sites/default/files/resource/Moldova_BUR2_EN_web_19.04.2019.pdf

[cii] Ibid

[ciii] Second Biennial Update Report of the Republic of Montenegro (2019). Available at: https://unfccc.int/sites/default/files/resource/SECOND%20BIENNIAL%20UPDATE%20REPORT%20ON%20CLIMATE%20CHANGE_Montenegro.pdf

[civ] Ibid

[cv] CIA World Factbook – Montenegro (2021). Available at: https://www.cia.gov/the-world-factbook/countries/montenegro/

[cvi] First Biennial Update Report of the Republic of Serbia under the UNFCCC (2016). Available at: https://unfccc.int/sites/default/files/resource/SERBUR1e.pdf

[cvii] CIA World Factbook – Serbia (2021). Available at: https://www.cia.gov/the-world-factbook/countries/serbia/

[cviii] Ukraine. 2020 National Inventory Report (2020). Available at: https://unfccc.int/documents/228016

[cix] CIA World Factbook – Ukraine (2021). Available at: https://www.cia.gov/the-world-factbook/countries/ukraine/

[cx] Emmanuel Tuchscherer: Carbon neutrality in Europe: how can it be achieved? (2019). Available at: https://www.robert-schuman.eu/en/european-issues/0519-carbon-neutrality-in-europe-how-can-it-be-achieved

[cxi] Ben Aylor et al.: How an EU Carbon Border Tax Could Jolt World Trade (2020). Available at: https://www.bcg.com/publications/2020/how-an-eu-carbon-border-tax-could-jolt-world-trade

[cxii] Ibid

[cxiii] European Commission: Guidelines for the Implementation of the Green Agenda for the Western Balkans (2020). Available at: https://ec.europa.eu/neighbourhood-enlargement/sites/near/files/green_agenda_for_the_western_balkans_en.pdf

[cxiv] European Committee of the Regions: EU regions and cities could help decarbonisation in the Western Balkans (2020). Available at: https://cor.europa.eu/de/news/Pages/decarbonisation-western-balkans.aspx

[cxv] European Commission: Trade Policy Review - An Open, Sustainable and Assertive Trade Policy. (2020). Available at: https://eur-lex.europa.eu/resource.html?uri=cellar:5bf4e9d0-71d2-11eb-9ac9-01aa75ed71a1.0001.02/DOC_1&format=PDF

[cxvi] European Commission: Country factsheets (2021). Available at: https://webgate.ec.europa.eu/isdb_results/factsheets/country/

[cxvii] Julian Popov: European Green Deal: Bring in the Western Balkans (2019). Available at: https://ecfr.eu/article/commentary_european_green_deal_bring_in_the_western_balkans/

[cxviii] European Investment Bank: EU Bank launches ambitious new climate strategy and Energy Lending Policy (2019). Available at: https://www.eib.org/en/press/all/2019-313-eu-bank-launches-ambitious-new-climate-strategy-and-energy-lending-policy

[cxix] European Commission: Questions and Answers: Economic and Investment Plan for the Western Balkans (2020). Available

at: https://ec.europa.eu/commission/presscorner/detail/en/qanda_20_1819

[cxx] James M Gomez – Jan Bratanic: Pollution Is Choking Europe's Poorest Region (2019). Available at: https://www.bloomberg.com/news/features/2019-06-21/pollution-is-choking-europe-s-poorest-region

[cxxi] US International Trade Administration: Ukraine - Country Commercial Guide (2020). Available at: https://www.trade.gov/knowledge-product/ukraine-infrastructure

[cxxii] Bela Gelashvili: Georgia's construction sector has about 240,000 employees (2020). Available at: https://report.ge/en/economics/georgia-s-construction-sector-has-about-240-000-employees/

[cxxiii] Energy Community: Annual Implementation Report 2020: Energy reforms move ahead despite Covid-19 (2020). Available at: https://www.energy-community.org/news/Energy-Community-News/2020/11/23.html

[cxxiv] Maria Rozanova: Greening the Western Balkans region (2020). Available at: https://www.ebrd.com/news/2020/greening-the-western-balkans-region.html

[cxxv] IRENA: Renewable Energy Market Analysis: Southeast Europe (2019). Available at: https://www.irena.org/publications/2019/Dec/RE-Market-Analysis-Southeast-Europe

[cxxvi] Martin Voß et al.: Supporting the Western Balkans' Energy Transition: An Imperative Task for the German EU Council Presidency (2020). Available at: https://germanwatch.org/sites/germanwatch.org/files/Supporting%20the%20Western%20Balkans'%20Energy%20Transition_0.pdf

[cxxvii] IRENA: Cost-competitive renewable power generation: Potential across South East Europe (2017). Available at: https://www.irena.org/publications/2017/Jan/Cost-competitive-renewable-power-generation-Potential-across-South-East-Europe

[cxxviii] Ibid

[cxxix] Munich Re: Record hurricane season and major wildfires – The natural disaster figures for (2020). Available at: https://www.munichre.com/en/company/media-relations/media-information-and-corporate-news/media-information/2021/2020-natural-disasters-balance.html

[cxxx] The World Bank: Climate change Covi-19 (2021). https://www.worldbank.org/en/topic/climatechange/overview

[cxxxi] Organisation for Economic Co-operation and Development: Investing in Climate, Investing in Growth (2017). Available at: https://www.oecd.org/environment/investing-in-climate-investing-in-growth-9789264273528-en.htm

[cxxxii] Oriana Tannenbaum, Rushad Nanavatty: The cost of climate inaction: putting a $ price on 4.5°C warming (2020). Available at: https://energypost.eu/the-cost-of-climate-inaction-putting-a-price-on-4-5c-warming/

[cxxxiii] Olivia Serdeczny, Eleanor Waters,Sander Chan: Non-Economic Loss and Damage in the Context of Climate Change (2016). Available at: https://www.die-gdi.de/uploads/media/DP_3.2016.pdf

[cxxxiv] European Commission: Forging a climate-resilient Europe - the new EU Strategy on Adaptation to Climate Change (2021). Available at: https://ec.europa.eu/clima/sites/clima/files/adaptation/what/docs/eu_strategy_2021.pdf

[cxxxv] Giovanni Forzieri et al: Escalating impacts of climate extremes on critical infrastructures in Europe (2018). Available at: https://www.sciencedirect.com/science/article/pii/S0959378017304077

[cxxxvi] European Commission: Forging a climate-resilient Europe - the new EU Strategy on Adaptation to Climate Change (2021). Available at: https://ec.europa.eu/clima/sites/clima/files/adaptation/what/docs/eu_strategy_2021.pdf

[cxxxvii] Linda Van Gelder: It is Time for Action on Climate Risk in the Balkans (2018). Available at: https://www.worldbank.org/en/news/opinion/2018/09/17/it-is-time-for-action-on-climate-risk-in-the-balkans

[cxxxviii] Ibid

[cxxxix] World Bank: Tackling Climate Extremes with Technology in the Balkans (2018). Available at: https://www.worldbank.org/en/news/feature/2018/09/06/tackling-climate-extremes-with-technology-in-the-balkans

[cxl] IPCC: Special Report: Global Warming Of 1.5 °c (2018). Available at: https://www.ipcc.ch/sr15/

[cxli] Anna Ackermann: Climate change threatens the Ukrainian breadbasket (2020). Available at: https://www.atlanticcouncil.org/blogs/ukrainealert/climate-change-threatens-the-ukrainian-breadbasket/

[cxlii] Louisa Vinton: Building a climate-resilient Georgia (2019). Available at: https://www.eurasia.undp.org/content/rbec/en/home/blog/2019/building-a-climate-resilient-georgia.html

[cxliii] Ibid

[cxliv] Matthew E. Kahn and David M. Levinson: Fix It First, Expand It Second, Reward It Third: A New Strategy for America's Highways (2011). Available at: https://www.brookings.edu/wp-content/uploads/2016/07/02_highway_infrastructure_kahn_levinson_paper.pdf

[cxlv] IPCC: Special Report: Global Warming Of 1.5 °c (2018). Available at: https://www.ipcc.ch/sr15/chapter/chapter-3/

[cxlvi] World Bank: Economics of Adaptation to Climate Change: Synthesis Report (2010). Available at: https://openknowledge.worldbank.org/handle/10986/12750

[cxlvii] Fankhauser, S.: The costs of adaptation, Wiley Interdisciplinary Review Climate Change (2010). Available at: https://onlinelibrary.wiley.com/doi/full/10.1002/wcc.14

[cxlviii] United Nations Environment Programme et al: Adaptation Gap Report 2020 (2020). Available at: https://www.unep.org/resources/adaptation-gap-report-2020

[cxlix] The New Climate Economy: The 2018 Report of the Global Commission on the Economy and Climate (2018). Available at: https://newclimateeconomy.report/2018/

[cl] IRENA: Renewable Energy Prospects for Central and South-Eastern Europe Energy Connectivity (CESEC) (2020). Available at: https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2020/Oct/IRENA_REmap_CESEC_2020.pdf

[cli] Ibid

[clii] OHCHR: About the right to development, Available at: https://www.ohchr.org/EN/Issues/Development/SRDevelopment/Pages/About.aspx

[cliii] Mukherjee V, Mustafa F: Climate Change and Right to Development, (2019). Available at: https://www.researchgate.net/publication/331757991_Climate_Change_and_Right_to_Development

[cliv] OHCHR: About the right to development, Available at: https://www.ohchr.org/EN/Issues/Development/SRDevelopment/Pages/About.aspx

[clv] Vandenbogaerde, A: The Right to Development in International Human Rights Law: A Call for its Dissolution (2017). Available at: https://journals.sagepub.com/doi/abs/10.1177/016934411303100204

[clvi] European Commission: Guidelines for the Implementation of the Green Agenda for the Western Balkans (2020). Available at: https://ec.europa.eu/neighbourhood-enlargement/sites/near/files/green_agenda_for_the_western_balkans_en.pdf

[clvii] OECD: Focus on green recovery, Available at: https://www.oecd.org/coronavirus/en/themes/green-recovery

[clviii] IRENA: Measuring the socio-economics of transition: Focus on jobs (2020). Available at: https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2020/Feb/IRENA_Transition_jobs_2020.pdf

[clix] The New Climate Economy: The 2018 report of the Global Commission on the economy and climate (2018). Available at: https://newclimateeconomy.report/2018/executive-summary/

[clx] IRENA: Renewable energy market analysis (2019). Available at: https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2019/Dec/IRENA_Market_Analysis_SEE_2019.pdf

[clxi] We Think, Focus Topic: Energy in sustainable and circular economy in Southeast Europe (Working draft) (2020). Available at: http://info.wethink.eu/focus-topic-energy/

[clxii] Ibid

[clxiii] UNFCCC: Climate Finance int he negotiations, Available at: https://unfccc.int/topics/climate-finance/the-big-picture/climate-finance-in-the-negotiations

[clxiv] Pavlova Lilyana: COMMENT: The EIB supports the long-term recovery of the Western Balkans (2021). Available at: https://www.intellinews.com/comment-the-eib-supports-the-long-term-recovery-of-the-western-balkans-205153/?source=albania

[clxv] European Commission: Initiative for coal regions in transition in the Western Balkans and Ukraine (2021). Available at: https://ec.europa.eu/energy/topics/oil-gas-and-coal/coal-regions-in-the-western-balkans-and-ukraine/initiative-coal-regions-transition-western-balkans-and-ukraine_en

[clxvi] IEA: Explore energy data by category, indicator, country or region (2021). Available at: https://www.iea.org/data-and-statistics?country=WORLD&fuel=Energy%20supply&indicator=TPESbySource

[clxvii] Mathias Buck et al.: A Clean-Energy Transition in Southeast Europe: Challenges, Options and Policy Priorities (2018). Available at: https://www.se3t.net/pdf/Agora-Energiewende_Impulse_SEE_energy_transition_priorities.pdf

[clxviii] Ben Caldecott et al.: Stranded assets in agriculture: Protecting value from environment-related risks (2013). Available at: https://www.smithschool.ox.ac.uk/publications/reports/stranded-assets-agriculture-report-final.pdf

[clxix] Maja Zuvela: Environmentalists seek tougher EU curbs on Balkan coal power plants (2019). Available at: https://www.reuters.com/article/us-health-pollution-balkans/environmentalists-seek-tougher-eu-curbs-on-balkan-coal-power-plants-idINKCN1Q80PR

[clxx] Amanda Lee: Western Balkans pump subsidies worth €1.2 billion into coal (2019). Available at: https://www.euractiv.com/section/energy/news/western-balkans-pump-subsidies-worth-e1-2-billion-into-coal/

[clxxi] Energy Community Secretariat: Annual Implementation Report (2020). Available at: https://www.energy-community.org/dam/jcr:0af3b17a-3759-4a23-a2ef-3134784e217c/EnC_IR2020.pdf

[clxxii] Igor Rogelja: Why the Balkans is struggling to kick coal (2020). Available at: https://chinadialogue.net/en/energy/11969-why-the-balkans-is-struggling-to-kick-coal/

[clxxiii] Christian Egenhofer et al.: The time for rapid redevelopment of coal regions is now (2020). Available at: https://www.ceps.eu/wp-content/uploads/2020/05/PI2020_13_Coal-regions-redevelopment.pdf

[clxxiv] CEE Bankwatch: Carbon costs for planned coal power plants in the Western Balkans and the risk of stranded assets (2017). Available at: http://bankwatch.org/sites/default/files/briefing-Balkans-CO2-29Mar2017.pdf

[clxxv] EEX Spot market data (2021). Available at: https://www.eex.com/en/market-data/environmental-markets/spot-market

[clxxvi] IEA: Oil and Natural Gas Logistics (2011). Available at: https://iea-etsap.org/E-TechDS/PDF/P03_oilgaslogistics_PS_revised_GSOK2.pdf

[clxxvii] Szabó John: Fosszilis csapda vagy áthidaló technológia? A földgáz szerepe az energetikában és a klímaváltozásban (2020). Available at: https://masfelfok.hu/2020/09/14/fosszilis-csapda-vagy-athidalo-technologia-foldgaz-szerepe-energetika-klimavaltozas/

[clxxviii] Dr Ethan Coffel and Dr Justin Mankin: Guest post: How global warming is making power plants produce less electricity (2021). Available at: https://www.carbonbrief.org/guest-post-how-global-warming-is-making-power-plants-produce-less-electricity

[clxxix] Dawud Ansari – Franziska Holz: Between stranded assets and green transformation: Fossil-fuel-producing developing countries towards 2055. Available at: https://www.sciencedirect.com/science/article/pii/S0305750X20300735#b0555

[clxxx] EBRD: The EBRD's just transition initiative. Available at: https://www.ebrd.com/what-we-do/just-transition-initiative

[clxxxi] Mathias Buck et al.: A Clean-Energy Transition in Southeast Europe: Challenges, Options and Policy Priorities (2018). Available at: https://www.se3t.net/pdf/Agora-Energiewende_Impulse_SEE_energy_transition_priorities.pdf

[clxxxii] Western Balkans Investment Framework: Regional Strategy for Sustainable Hydropower in the Western Balkans (2018). Available at: https://wbif.eu/storage/app/media/Library/10.Projects/1.Hydropower/7%20WBEC-REG-ENE-01-Final-Report.pdf

[clxxxiii] Ministry of Economy, Government of the Republic of Fiji: Fiji Low Emission Development Strategy 2018-2050 (2018). Available at: https://unfccc.int/sites/default/files/resource/Fiji_Low%20Emission%20Development%20%20Strategy%202018%20-%202050.pdf

[clxxxiv] Department for Business, Energy and Industrial Strategy: The Clean Growth Strategy (2017). Available at: https://unfccc.int/sites/default/files/resource/clean-growth-strategy-amended-april-2018.pdf

[clxxxv] SEMARNAT-INECC: Mexico's Climate Change Mid-Century Strategy (2016). Available at: https://unfccc.int/files/focus/long-term_strategies/application/pdf/mexico_mcs_final_cop22nov16_red.pdf

[clxxxvi] Government of the Slovak Republic: Low-Carbon Development Strategy of the Slovak Republic until 2030 with a View to 2050. Available at: https://unfccc.int/sites/default/files/resource/LTS%20SK%20eng.pdf

[clxxxvii] Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety: Climate Action Plan 2050 (2016). Available at: https://unfccc.int/sites/default/files/resource/Klimaschutzplan_2050_eng_bf.pdf

[clxxxviii] Ministére de L'Écologie, du Développement Durable et de L'Énergie: Stratégie Nationale Bas-Carbone. Available at: https://unfccc.int/sites/default/files/resource/National_Low_Carbon_Strategy_v2_EN.pdf

[clxxxix] Ministry of the Environment of the Czech Republic: The Climate Protection Policy of the Czech Republic (2017). Available at: https://unfccc.int/files/na/application/pdf/cze_climate_protection_policy_summary.pdf

[cxc] The Republic of the Marshall Islands: Tile Til Eo 2050 CLIMATE STRATEGY "Lighting the way" (2018). Available at: https://unfccc.int/sites/default/files/resource/180924%20rmi%202050%20climate%20strategy%20final_0.pdf

[cxci] Ministry of National Development Planning: The Low Carbon Development Report: A Paradigm Shift Towards a Green Economy in Indonesia (2019). Available at: https://drive.bappenas.go.id/owncloud/index.php/s/ZgL7fHeVguMi8rG#pdfviewer

[cxcii] Institut environmentálnej politiky: Štúdia nízkouhlíkového rastu pre Slovensko: Implementácia Rámca politík EÚ v oblasti klímy a energetiky do roku 2030 (2019). Available at: https://www.minzp.sk/files/oblasti/politika-zmeny-klimy/2019_01_low-carbon-study_sk.pdf

[cxciii] Ministry of the Environment and Energy Transition: Roadmap for Carbon Neutrality 2050. (2019). Available at: https://unfccc.int/sites/default/files/resource/RNC2050_EN_PT%20Long%20Term%20Strategy.pdf

[cxciv] MINISTERE DU CADRE DE VIE ET DU DEVELOPPEMENT DURABLE: Stratégie de développement à faible intensité de carbone et résilient aux changements climatiques 2016 – 2025. Available at: https://unfccc.int/files/focus/long-term_strategies/application/pdf/benin_long-term_strategy.pdf

[cxcv] International Monetary Fund: World economic outlook (2020). Available at: https://www.imf.org/en/Publications/WEO/Issues/2020/04/14/weo-april-2020

[cxcvi] European Commission: Europe's moment: Repair and Prepare for the Next Generation (2020). Available at: https://ec.europa.eu/info/sites/info/files/communication-europe-moment-repair-prepare-next-generation.pdf

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ABOUT THE GREEN POLICY CENTER

The Green Policy Center, established on the occasion of the 50th Earth Day in April 2020, aims to promote a meaningful dialogue on sustainability, climate policy and other environmental issues, in order to achieve the 2050 climate neutrality goal.

POLICY AND RESEARCH

During the work of the Green Policy Center, we continue to produce innovative ideas, policy proposals and research with the involvement of our own staff, experts and recognized professionals in their field. Our goal is to examine the issues of the ecological crisis and climate-neutral, sustainable social transition and to develop proposals in these fields.

CONCRETE ACTION

We need concrete solutions and practical steps so that by 2050 Europe can become climate-neutral and sustainable and we can preserve the beautiful natural values. Along this line, the Green Policy Center supports the elaboration and implementation of the identification of specific project ideas for the public, private and civil sectors too.

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