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EU4Climate

Armenia, Azerbaijan, Belarus, Georgia, Republic of Moldova, Ukraine



NDC preparation and implementation in EaP countries

Comparative analysis of the first and the updated
NDCs in Armenia, Azerbaijan, Belarus, Georgia,
Republic of Moldova and Ukraine

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List of Abbreviations

BTR	Biennial Transparency Report
BUR	Biennial Update Report
CEPA	Comprehensive and Enhanced Partnership Agreement
CMA	Conference of the Parties serving as the Meeting of the Parties to the Paris Agreement
COP	Conference of the Parties
CPEIR	Climate Policy and Expenditure Review
CRF	Common Reporting Format
CTF	Common Tabular Format
ETF	Enhanced Transparency Framework GHG Greenhouse Gas
IPCC	Intergovernmental Panel on Climate Change
MPGs	Modalities Procedures and Guidelines
MRV	Monitoring, Reporting and Verification
NC	National Communication
NDCs	Nationally Determined Contributions
NIR	National Inventory Report
PA	Paris Agreement
UNFCCC	United Nations Framework Convention on Climate Change

1. EU4Climate Project in Focus

The EU4Climate Project assists governments in the six Eastern Partnership countries—Armenia, Azerbaijan, Belarus, Georgia, the Republic of Moldova and Ukraine—to take action against climate change. It supports countries in implementing the Paris Climate Agreement and in improving climate policies and legislation with an ambition of limiting climate change impact on citizens' lives and making them more resilient to it.

The EU4Climate project has a total budget of €8.8 million and is funded by the European Union (EU) with €8 million. The United Nations Development Programme (UNDP) is the implementing body and supports the project with €0.8 million. In each of the six beneficiary countries national coordinators have been appointed, who coordinate the national activities and ensure the regional cooperation. The project started in December 2018 and lasts until 2022 (47 months duration).

In supporting development and implementation of climate-related policies of the Eastern Partnership countries that contribute to their low emission and climate resilient development and their commitments to the Paris Agreement, the Project identifies key actions and results. These are not only in line with the Paris Agreement, but also support the implementation of the European Green Deal, post 2020 Eastern Partnership priorities¹, Association Agreements and Comprehensive and Enhanced Partnership Agreement (CEPA), as well as the key global policy goals set by the 2030 Agenda for Sustainable Development. The project will also translate into action priorities outlined in the Presidency Conclusions of the June 2021 Eastern Partnership Ministerial Meeting on Environment and Climate Change.

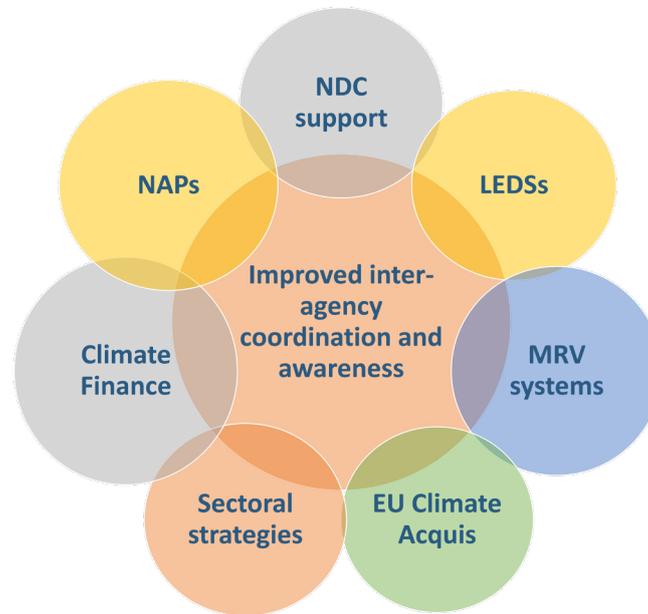
To realize this project goals, the following results should be achieved:

- Finalized or up-dated nationally determined contributions communicated to the UNFCCC;
- Improved inter-institutional awareness and coordination at political and technical level of the Paris Agreement and the corresponding national commitments;
- Development of national mid-century low-emission development strategies (LEDS);
- Established or strengthened MRV systems, with countries getting on track with Paris Agreement transparency requirements;
- Advanced alignment with EU climate acquis as provided by bilateral agreements with EU and in the context of Energy Community Treaty on climate matters that are not covered by the EU4Energy programme;
- Establishment of concrete sectoral guidelines for the implementation of the Paris Agreement in each of the Eastern Partners;

¹ https://eeas.europa.eu/sites/default/files/swd_2021_186_f1_joint_staff_working_paper_en_v2_p1_1356457_0.pdf

- Increased mobilization of climate finance;
- Enhanced adaptation planning.

Figure 1: Expected results of the EU4Climate project



As the results to be achieved are strongly interlinked, work on the different topics is carried out in parallel, whereby the various national circumstances are taken into consideration. Tackling climate change requires robust GHG inventory systems, identification of effective and cost-efficient measures, setting short and long-term goals, taking adaptation actions, mainstreaming of actions into all policy sectors and developing the legislative and institutional framework to implement the targets set. Naturally, the countries have been working on these issues already before the EU4Climate project so the actual needs are at different levels, but this will enable knowledge and best-practices exchange between the countries. This sharing of experience is ensured by regular regional workshops and events, in which experts from other countries and international institutions are also actively participating.

NDC related support from the EU4Climate Project

The EU4Climate project assisted Armenia, Belarus, Moldova and Azerbaijan in preparing their updated NDC, whereby the NDC of Azerbaijan is undergoing further national consultation and has not succeeded in submitting its updated NDC before COP26.

In Georgia and Ukraine, the EU4Climate project assisted with awareness raising and communicating the revised NDC targets. A National Survey on Climate Perception and Behavioral Analysis was conducted through interviewing of 1,100 people in Georgia, showing

substantial level of awareness of Georgians over the consequences of climate change. A number of awareness raising activities on NDC were conducted in Ukraine, including presentation of the NDC objectives for the media community. Further support will be provided for the development of a NDC implementation roadmap in Ukraine and a financial plan in Georgia, Armenia and Moldova. Four country specific case studies are presented in the Annex of this report, presenting mainstreaming activities in Moldova and Ukraine, the climate poll of Georgia and a climate budget review carried out in Armenia.

Best practise experiences made by countries during the preparation and implementation of the NDC are described in section 4.5. The support provided by national and international experts hired through the EU4Climate project included the following activities.

- Communication with government and other key stakeholders
- Review of the underlying GHG inventory and support for necessary improvements
- Identification and selection of relevant climate policies by reviewing national strategies and legislation
- Guidance to sectoral policy analysis
- Definition and calculation of emission scenarios
- Guidance for methodologies used for emission scenarios
- Recommendations for integration of adaptation issues
- Financial impact analysis
- Selection of indicators
- Sharing of best practice examples
- Review of calculations and of draft NDCs
- Guidance for assessment of aspects related to gender equality and vulnerable groups
- Development of NDC implementation roadmaps
- Consistency check with requirements as set in Decision 4/CMA.1
- Recommendations for further NDC updates and progress tracking
- Country specific support as requested

2. Reporting to the UNFCCC

All beneficiary countries of the EU4Climate project are parties to the UNFCCC. Belarus and Ukraine are Annex I countries, while Armenia, Azerbaijan, Georgia and Moldova are the non-Annex I countries. . According to the Convention and its decisions this results in different reporting obligations, that parties have to fulfill. Table 1 shows the reporting status of National Communications (NC) and Biennial (Update) Reports (BR/BUR) per country.

Table 1: Overview of reporting to the UNFCCC

	Country group	NC		BUR /BR		GHG inventory		GWP used
Armenia	non-Annex I	NC4	17 May 2020	BUR3	17 May 2021	NIR (1990–2017)	17 May 2021	GWP—2nd AR
Azerbaijan	non-Annex I	NC4	23 June 2021	BUR2	26 Sep 2018	Inventory 1990–2017		GWP—2nd AR
Belarus	Annex I	NC7	3 Sep 2019	BR4	27 Jan 2020	NIR+CRF (1990–2019)	14 Apr 2021	GWP—4th AR
Georgia	non-Annex I	NC4	3 Apr 2021	BUR2	13 June 2019	NIR (1990–2017)	3 Apr 2021	GWP—2nd AR
Moldova	non-Annex I	NC4	9 Feb 2018	BUR2	19 Apr 2019	NIR (1990–2016)	24 Jan 2019	GWP—4th AR
Ukraine	Annex I	NC6	28 Oct 2014	BR1	30 Dec 2013	NIR+CRF (1990–2019)	15 Apr 2021	GWP—4th AR

However, this differentiation between the Annex I and non-Annex I countries will no longer apply for reporting under the Paris Agreement. National Determined Contributions (NDCs) have to be prepared every five years by all countries showing a progression in ambition over time. The progress in achieving the targets set in the NDCs is assessed in the Biennial Transparency Report (BTR), which has to be submitted by all countries biennially from 2024 onwards. The information submitted by countries will be used to assess the global progress in tackling climate change through the global stocktaking—which is carried out every five years (first time in 2023).

3. Country characteristics

The Paris Agreement states clearly that the national ambition set in the NDC should present the highest possible ambition with taking into consideration the national circumstances.

Paris Agreement, Art. 4.3: Each Party's successive nationally determined contribution will represent a progression beyond the Party's then current nationally determined contribution and reflect its highest possible ambition, reflecting its common but differentiated responsibilities and respective capabilities, in the light of different national circumstances.

In the following chapters the key characteristics of the countries are presented and compared, which provides a first insight into the different national circumstances.

3.1 Key indicators

Below we look at the key indicators and provide some general comparisons between the countries, based on the data provided in Figure 2. Further bellow, we have prepared some messaging for each of the countries, interpreting the key indicators and signaling where improvements in emission intensity, increase in emissions due to increased industrial activity or emission decrease due to implementation of climate related policies, as well as decoupling, happened.

Messages per indicators

- » **Population:** Ukraine is by far the biggest country both in terms of size and population. Its population decreased since 2010 by 8%, which is also the case for Armenia (-8%) and Georgia (-16%). In Belarus and Moldova population numbers are rather stable, while in Azerbaijan the number of people increased by 8%.
- » **GDP:** All countries increased their economic welfare since 2010, whereby Georgia (+56%), Moldova (+63%) and Armenia (+46%) achieved the highest increases in GDP. Only Azerbaijan experienced an economic downturn in 2016 caused by a crash of the oil prices but has since then economically recovered well.
- » **Greenhouse gas emissions:** GHG emissions are the highest in Ukraine, the biggest country—which also achieved the highest emission reduction (-18%) since 2010. Moldova and Belarus are currently at the level of their 2010 emissions, while Georgia (+30%), Armenia (+25%) and Azerbaijan (+19%) reported substantial emission increases since 2010.

- » **GHG/head:** The GHG emission per head have a rather wide range across countries, ranging from 3,6 t per head (Armenia 2017) to 9.5 t per head (Belarus 2019). Belarus and Ukraine have the highest GHG emission per person, although Ukraine's rate decreased in recent years (by -11% comparing 2010 to 2019). Belarus and Moldova's rates are rather stable, while all other countries saw significant increase in their per capita emissions (Georgia +55%, Armenia +36%, Azerbaijan +19%) since 2010.
- » **GDP/head:** Armenia, Georgia and Ukraine have about the same level of economic intensity (2 100–2 300 €/head) expressed as GDP/head in 2010. The ratios for Azerbaijan and Belarus in 2010 are about twice as high, and Moldova's economic intensity is by far the lowest. This is still true for recent years, but economic growth has been experienced by all countries except Azerbaijan in 2016.
- » **GHG/GDP:** The emission intensity decreased in all countries except for Azerbaijan. The intensity is highest in Ukraine, but has been decreasing between 2010 and 2019 by 37%, which is the same range as for Moldova. The decoupling of economic activity and emission growth has been highest in Moldova and Ukraine.

Figure 2: Key indicators per country for 2010, and the latest year

2010						
Country	Population	GDP	GHG	GHG/head	GDP/head	GHG/GDP
	1000s	Mio €	Gg CO2eq	Mg/head	1000€/head	Mg/€
Armenia	3,249	6,976	8,497	2.61	2.15	1.22
Azerbaijan	8,998	39,952	51,375	5.71	4.44	1.29
Belarus	9,480	43,157	90,695	9.57	4.55	2.10
Georgia	4,436	9,229	13,688	3.09	2.08	1.48
Moldova	3,564	5,261	14,526	4.08	1.48	2.76
Ukraine	45,783	106,389	407,124	8.89	2.32	3.83

Latest year						
Country	Population	GDP	GHG	GHG/head	GDP/head	GHG/GDP
	1000s	Mio €	Gg CO2eq	Mg/head	1000€/head	Mg/€
Armenia	2,986	10,205	10,624	3.56	3.42	1.04
Azerbaijan	9,706	34,218	61,257	6.31	3.53	1.79
Belarus	9,475	56,346	90,116	9.51	5.95	1.60
Georgia	3,718	14,392	17,766	4.78	3.87	1.23
Moldova	3,551	8,588	14,578	4.11	2.42	1.70
Ukraine	41,984	137,282	332,114	7.91	3.27	2.42

Data source: population and GDP at market prices (current prices) from Eurostat

Note: The latest year is defined by the last year for which GHG inventory data have been reported by the country to the UNFCCC. The latest year is 2016 for Azerbaijan and Moldova, 2017 for Armenia and Georgia, 2019 for Belarus and Ukraine.

Messages per country:

- » **Armenia:** Armenia's GHG emissions fell by about 70% between 1990 and 1995, and then fluctuated between 7 and 8,5 Mio t CO₂eq until 2010. In the latest available year (2017) GHG are at level of 10,6 Mio t, which is an increase of 25% from 2010. This increase was mainly driven by the increased economic activity (+46%) and counterbalanced by a decrease in population (-8%). Comparison of the latest year shows that emission intensity per GDP is the lowest compared with the other countries.
- » **Azerbaijan:** The GHG emissions of Azerbaijan decreased between 1990 and 1995 by 37% to a level of about 52 Mio t CO₂eq, which is about the same level as in 2010. Since then, GHG emissions increased by 19% to 61 Mio. t CO₂ eq in 2016, while GDP decreased in the same time by 14%. The low GDP in 2016 was caused by a collapse of the oil prices. A decoupling of GHG emissions and GDP is not observed in the period under review, which can be explained by the oil-based economy.
- » **Belarus:** Between 1990 and 1995, GHG emissions fell by 40%, and reached in 2006 a level of 90 Mio. t CO₂eq. Since then, emissions were stabilized with some minor fluctuations and are in 2019 at the same level as in 2006. Belarus has the highest GHG emissions per capita in 2010 and also in 2019. While GHG emissions and population are at about the same level in both years, GDP increased by 31%. This resulted in an improvement of emission intensity (expressed as GHG/GDP) of 24% and a decoupling trend.
- » **Georgia:** Georgia's GHG emissions decreased by 72% (nearly 13 Mio t CO₂eq) between 1990 and 1995. The lowest value has been reported for 2001 with 9,6 Mio t CO₂eq, since then emissions have increased to 17,8 Mio t CO₂eq. in 2017. This is also caused by a strong increase of GDP (+56% between 2010 and 2017), dominated by the service sector. The increased economic activity in connection to a decrease in population by 16%, the GDP per capita shows a remarkable increase of 86%, while GHG per GDP dropped by 39%.
- » **Moldova:** GHG emissions decreased between 1990 and 1995 by 60% and reached their lowest level in 2000 with 11,6 Mio t CO₂eq. Since then, GHG emissions have slowly increased to more than 14 Mio. t CO₂eq and stabilized since then. The substantial increase in GDP (+63% between 2010 and 2016) resulted in further decoupling of GHG emission and economic development which is mainly driven by the agricultural activities and the service sector.
- » **Ukraine:** GHG emissions in Ukraine decreased by 55% between 1990 and 2000 and reached the lowest level of 428 Mio t CO₂eq in the year 2000. After that, further decreases in GHG emissions occurred (-18% between 2010–2019) which can partly be associated with reduced industrial activity caused by the conflict in the country's eastern regions. Nevertheless, Ukraine saw an increase in GDP of 29% between 2010 and 2019. During the same time population decreased by 8%. Emission intensity (GHG/GDP) improved, resulting in further decoupling.

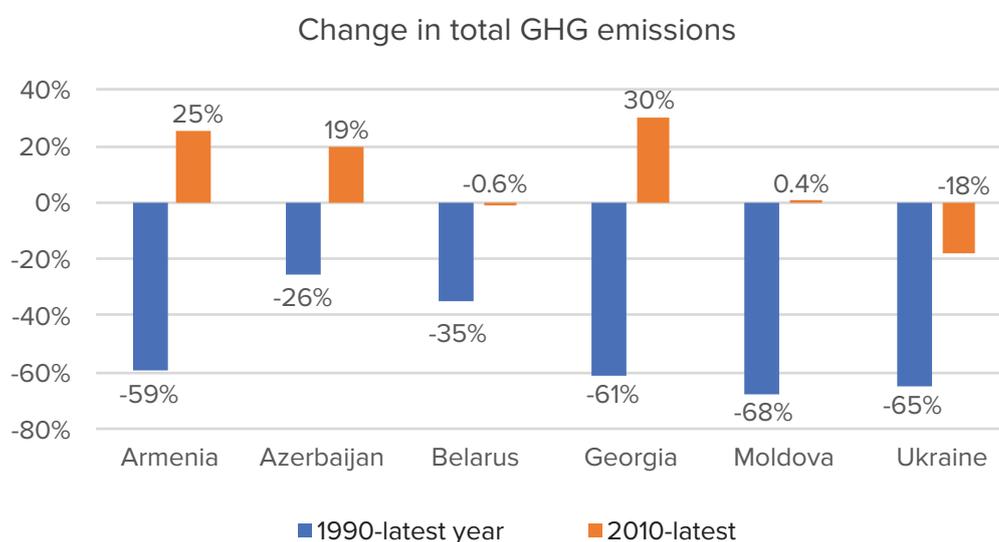
3.2 Historic GHG Emission Trends

The economies of all six countries suffered in the early 1990s due to the collapse of the Soviet Union. The resulting independent States succeeded in the following years to establish stable conditions allowing for economic growth. This is also the reason why the GHG reductions reported by the countries since 1990 are substantial (see blue columns in Figure 3). Therefore, these early GHG emission reductions are not linked to climate policies. Looking at the GHG emission trends since 2010 (see orange columns in Figure 3), it can be seen that a significant increase in emissions in Armenia, Azerbaijan and Georgia have been mainly driven by growing economies and industrial activities.

The GHG emissions of Belarus and Moldova, in 2017 and 2016 respectively are at about the same level as in 2010. One of the reasons in Belarus, is that the policies to increase energy efficiency in industries showed effect. In Moldova, the economy is characterized by small agricultural activities, which did not change much over the last years.

Ukraine is the only country for which a GHG emission decrease can be observed between 2010 and 2019 which is caused by the economic crisis in 2014/2015 but also by improvements in energy efficiency (-29% in final energy consumption during 2010-2018) and increased use of renewables.

Figure 3: Relative change in total GHG emissions excl. LULUCF



Note: The latest year is defined by the last year for which GHG inventory data have been reported by the country to the UNFCCC. The latest year is 2016 for Azerbaijan and Moldova, 2017 for Armenia and Georgia, 2019 for Belarus and Ukraine.

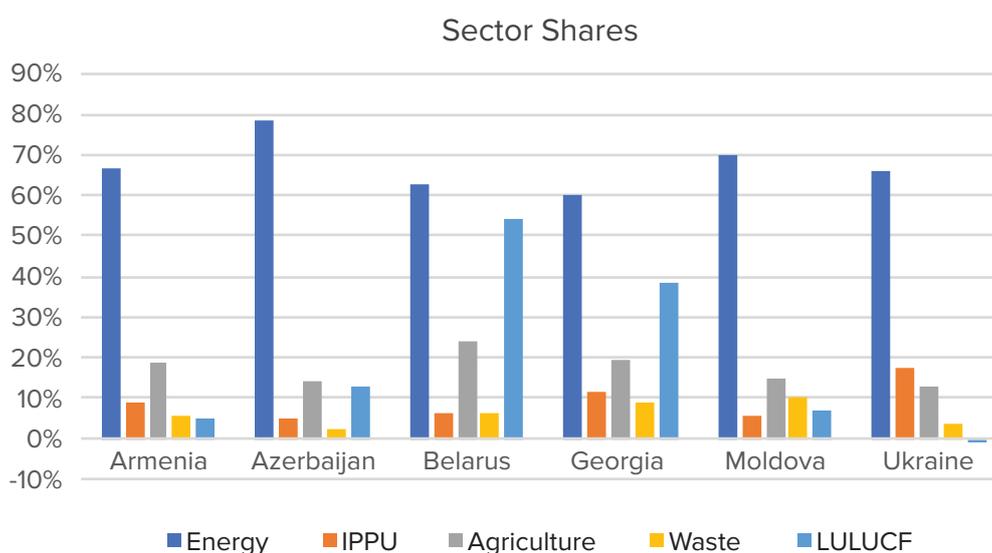
The energy sector, including the transport covering the emissions caused by the incineration of fossil fuels and any fugitive emissions during mining, handling and transportation represents the largest sector in all countries. Azerbaijan has the highest share with 79% and Georgia the lowest with 60%. Georgia's covers about 75% of its electricity needs with hydropower. Fossil energy—mostly natural gas and oil is being imported. On the other hand, Azerbaijan is an oil-based economy, where oil and gas production and export dominate GDP development.

Industrial emissions have the highest share in Ukraine, where iron and steel production cause the high CO2 emissions. Azerbaijan and Moldova have the lowest share in industrial emissions, because the industrial activity in Azerbaijan is related to primary energy production (covered in the energy sector) and in Moldova's economy is shaped by agricultural activities and less by industrial installations.

The GHG emissions, nitrous oxide (N2O) and methane (CH4) resulting from agricultural activities such as manure management, fertiliser use and enteric fermentation are highest in Belarus and Georgia. Methane emissions from waste resulting mainly from the anaerobic decomposition of landfilled waste are below 10% of total emissions in all countries.

The sector Land-Use, Land-use change and Forestry (LULUCF) can be an emission source but also a carbon sink. In all countries except Ukraine removals are higher than emissions in the sector, which makes the sector a carbon sink. In Belarus and Georgia, where about 40% of the land area is forest land, the removals are the highest.

Figure 4: Share of sectoral emissions per country in latest available GHG inventory year



Note: The latest year is defined by the last year for which GHG inventory data have been reported by the country to the UNFCCC. The latest year is 2016 for Azerbaijan and Moldova, 2017 for Armenia and Georgia, 2019 for Belarus and Ukraine.

4. Nationally Determined Contributions

This chapter provides key information from the NDCs submitted by the countries, including information from Armenia, Belarus, Georgia, Moldova and Ukraine. An overview of the information and the targets provided in the Intended National Determined Contribution (INDC) submitted to the Paris Agreement and the recently submitted Updated National Determined Contributions is given.

The chapter also looks at the process of preparation and implementation of NDCs in the countries and provides both information made available in the NDCs and obtained through direct consultation. A summary of lessons learned, and best practice examples is provided at the end.

4.1 Key information from INDCs and updated NDCs

As can be seen from Table 2, all countries increased their ambition in reducing GHG emissions by 2030. The **increase in ambition** varies from 0% to 25%. The increase in the ambition of Armenia cannot be quantified as Armenia used different target types for their INDC and NDC. The INDC defined a maximum annual intensity indicator (GHG/capita) for the time period, while the updated NDC presents an absolute reduction target for 2030.

All countries have in common that their **base year is 1990** and their target is expressed for the **single year 2030**. The timeframe for implementation is also the same for all countries, namely **2021–2030**. All countries state that their NDC presents an **economy wide reduction target**, which was also the case in the INDCs.

Three countries—Moldova, Georgia and Belarus—decided to provide an **unconditional target and a conditional target** relying on additional international financial and technological support. Countries providing only one type of target will also need access to international finance to achieve progress and meet targets.

Three countries (Armenia, Georgia and Ukraine) also set **additional other targets**, whereas this was only the case for two countries in the INDCs. Armenia set as an additional target to double the share of renewables, Georgia also set sectoral goals and Ukraine stated to be carbon neutral by 2060.

Ukraine had in its INDC an emission target excluding LULUCF and now has a **net reduction target**, i.e., removals from the LULUCF sector are included. Moldova kept its approach from the INDC to present a net reduction target. Armenia states that its target refers to both—total including and total excluding LULUCF while the target of Georgia refers to reduction achieved of total GHG emissions excluding LULUCF.

Also, the consideration of **gender equality** in the NDCs has improved. In the INDC gender aspects were not addressed by the countries, whereas in the updated NDC gender issues have been addressed by Georgia, Moldova and Ukraine.

The countries included all **greenhouse gases** (CO₂, CH₄, N₂O, HFCs, PFCs and NF₃) in their NDCs, except for Armenia which did not include PFCs and NF₃. It might be that these gases do not occur in Armenia, but this has not been specified. Although all six countries proclaim that they have covered all **sectors**, Georgia and Armenia have excluded LULUCF from their target set.

Regarding the **adaptation component**, only Moldova provided a full adaptation chapter in its updated NDC. Georgia included some adaptation measures, and Armenia and Ukraine addressed some adaptation elements. Further improvements to the adaptation component are expected in the next NDC cycle.

Table 2: Overview of information submitted by countries in INDC and updated NDC

		Sub- mission date	Time frame	Coverage	Type	Objective	Mitigation target (base year)	Other targets	Adaptation
Armenia	INDC	23 Mar 2017	2015– 2030	- CO ₂ , CH ₄ , N ₂ O, HFC - all sectors except agri- culture	uncondi- tional	annual average of 5,4 t CO ₂ eq per capita	NA	ecosystem neutral GHG emissions in 2050 (2,07 t CO ₂ eq/capita)	addressed
	Updated NDC	5 May 2021	2021– 2030	- all gases except NF ₃ - all sectors - economy wide	uncondi- tional	40% reduction compared to 1990 level with and without LULUCF	-40% (1990)	- double share of renewables - develop adaptation actions	addressed
Azer- bajan	INDC	9 Jan 2017	2021– 2030	- CO ₂ , CH ₄ , N ₂ O, HFC, CF ₄ - all sectors excl. indus- try	uncondi- tional	35% reduction compared to 1990 level	-35% (1990)	- sectoral measures described	addressed
	Updated NDC	draft	2021– 2030						
Belarus	INDC	21 Sep 2016	2021– 2030	- all gases - excl. LU- LUCF - economy wide	uncondi- tional	at least 28% reduction com- pared to 1990 level	-28% (1990)	- increase of forested area - restore peat- lands - conservation of habitats	addressed
	Updated NDC	draft	2021– 2030	- all gases - all sectors - economy wide	condi- tional	40% reduction compared to 1990 level with LULUCF	-40% net (1990)		mentioned
					uncondi- tional	35% reduction compared to 1990 level with LULUCF	-35% net (1990)		

		Sub- mission date	Time frame	Coverage	Type	Objective	Mitigation target (base year)	Other targets	Adaptation
Georgia	INDC	8 May 2017	2021– 2030	- all gases - excl. LU- LUCF - economy wide	condi- tional	25% reduction below BAU scenario = -40% compared to 1990 levels	-40% (1990)	conditional and uncondi- tional target for forests	information included
					uncondi- tional	15% reduction below BAU scenario	-32% (1990)⁽¹⁾		
	Updated NDC	5 May 2021	2021– 2030	- all gases - excl LU- LUCF - economy wide	condi- tional	-50–57% of its total green- house gas emissions by 2030 compared to 1990	-53% (1990)⁽²⁾	sectoral goals	adaptation measures included
					uncondi- tional	35 % below 1990 level of its domestic total greenhouse gas emissions by 2030	-35% (1990)		
Moldova	INDC	25 Sep 2015	2021– 2030	- all gases - all sectors - economy wide	condi- tional	up to -78% com- pared to 1990 by 2030	-78% net (1990)	—	Adaptation Communi- cation
					uncondi- tional	-64–67% com- pared to 1990 by 2030	-65% net (1990)⁽³⁾		
	Updated NDC	4 March 2020	2021– 2030	- all gases - all sectors - economy wide	condi- tional	up to -88% com- pared to 1990 by 2030	-88% net (1990)	—	Adaptation Communi- cation
					uncondi- tional	-70% compared to 1990 by 2030	-70% net (1990)		
Ukraine	INDC	19 Sep 2016	2021– 2030	- all gases - excl LU- LUCF - economy wide	uncondi- tional	It will not exceed 60% of 1990 GHG emissions level in 2030	-40% (1990)	—	Mentioned
	Updated NDC	31 Jul 2021	2021– 2030	- all gases - all sectors - economy wide	uncondi- tional	Economy-wide net domestic reduction of 65 % in GHG emissions by 2030 compared to 1990.	-65% net (1990)	Carbon neutrality by 2060	Mentioned

(1) This value has as such not been presented in the NDC, but has been calculated based on the information provided in the NDC.

(2) The INDC presents the targets as a range from -50 to -57%.

(3) The INDC presents the targets as a range from -64 to -67%.

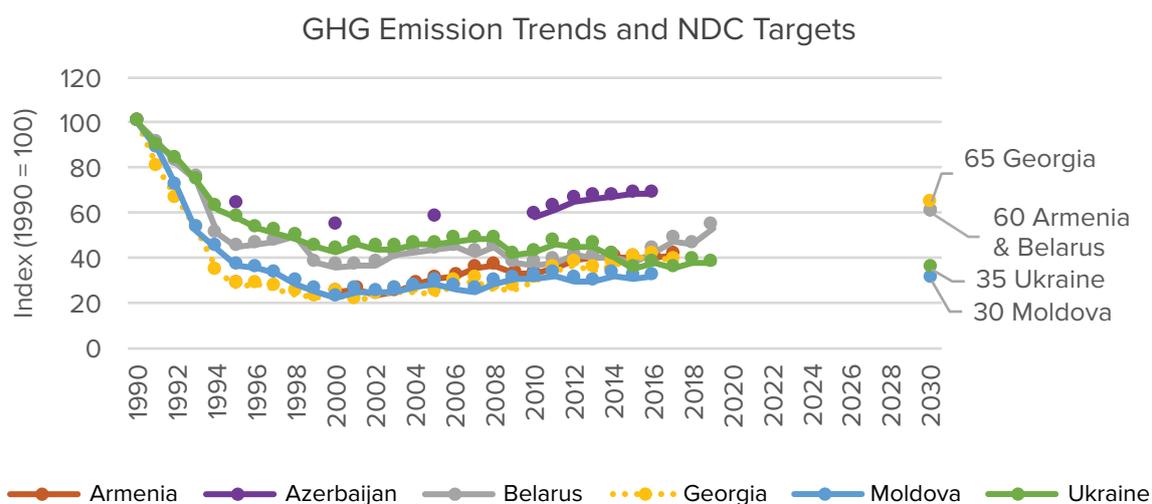
4.2 Country targets in the updated NDCs

In order to compare the ambition of the updated NDCs, the GHG emission trend is presented as an index, where the base year (1990 for all countries) is equivalent to 100 (see Figure 5) and compared with the updated unconditional NDC target for each country.

This shows that Georgia can increase its GHG emissions excluding LULUCF by up to 26% compared to the level in 2017 to reach its target in 2030. Also, Armenia and Belarus can increase their net GHG emissions by 19%, and 13% respectively until 2030 to still meet their target. Moldova needs to achieve a reduction of 1% compared to 2016 level by 2030 and Ukraine needs to achieve a reduction of 3% until 2030.

This shows clearly that ambitions vary widely, and since none of the countries mentioned peaking of emissions in their updated NDC, emission increase can be expected from at least three countries compared to the current level.

Figure 5: GHG Emissions per country and updated unconditional 2030 NDC targets



Note: Georgia' GHG emissions are presented as totals excluding LULUCF, whereas other countries are presented as total including LULUCF. This is consistent with the scope of the NDC targets presented.

4.3 Preparation of NDCs

In the following sub-chapter, we present a summary of the planning and the preparation process of the updated NDC for each country. The information provided is based on the submitted NDC documents and information received directly from the countries.

4.3.1 Armenia

In its initial NDC, Armenia presented an intensity target of 5,4 t CO₂ eq per person annually until 2030, and a long-term target for 2050 of 2,07 t CO₂eq per head. For the update of the NDC, Armenia decided on a different type of mitigation target for 2030, namely a relative reduction target. This 2030 target was decided upon by preparing emission scenarios. The base year (1990) and the historic emissions (1990–2017) are based on the latest GHG inventory submitted as part of the Third Biennial Update Report (BUR3) in 2021. Projections for the sectors IPPU, Agriculture and Waste are also the ones presented in the 4th National Communication (4NC). Only for the energy sector, which covers 67% of total emission in 2017 new projections have been calculated, as a new Energy strategy—‘*Strategic Program for the development of the Energy Sector of the Republic of Armenia (until 2040)*’ has been adopted by governmental decision in 2021. The main provisions of the new Energy strategy are the increased use of renewable energy (doubling the current share by 2030) and a further lifetime extension of the Armenian nuclear power plant. Key priorities for the country’s energy security and main drivers of low carbon development are an increase in energy efficiency, energy conservation and use of renewable energy resources. Further, it is noteworthy that the government of Armenia does not subsidize the use of fossil fuels. The main considerations taken into account by the government when updating the NDC were to maintain the growth of national economy, poverty reduction, environment protection, achievement of sustainable development goals, while increasing national energy security and ensuring affordable and clean energy supply.

Public consultation process of the NDC update has been carried out in line with the government procedures, including involvement of the civil society, in a gender-responsive manner, and followed by a parliamentary debate.

Armenia also considered adaptation in its NDC planning and included information on its approaches to adaptation. It follows the objective to constrain climate change within timeframe sufficient to allow ecosystems to adapt naturally to climate change. This is the basis for the development of a National Adaptation Plan and a List of Measures for 2021–2025, which was approved by the Government in May 2021.

The updated NDC was approved by governmental decision (N610-L. 22 April 2021) of the Republic of Armenia foreseeing a ten-year NDC implementation period (2021–2030) and maintaining the 2050 mitigation goal of achieving per capita emissions of 2,07 t CO₂eq.

4.3.2 Belarus

In 2016 and driven by the ratification of the Paris Agreement, the government of Belarus made the Ministry of Natural Resources and Environmental Protection the designated body to fulfill the commitments of Belarus under the Paris Agreement. In the following years, Belar-

us began shaping a legal framework for a new national climate policy which also aims for a sustainable development of the country, and the reduction of energy use and carbon intense economic activities.

To update its initial NDC, Belarus developed new emission scenarios based on the latest GHG inventory using 2006 IPCC Guidelines. To determine the possible targets for 2030 two scenarios have been developed, with each one factoring in a moderate and an optimistic economic forecast. The main economic parameter was the production function, describing how much goods and services can be produced by the economy, taking into account the amount of existing human and physical capital and available technologies, as prerequisites of resource use efficiency.

For the sector Energy, IPPU, Agriculture and Waste a bottom-up approach was chosen using the main driving factors and determining their development based on economic parameters and policies and measures. A major improvement was the consideration of the LULUCF sector, which was not included in the INDC. LULUCF sink capacity was estimated based on the national state forest cadaster and the data of forest resource accounting.

There were two types of consultations: direct and written consultations, including representatives from state bodies, academia, public organisations, civil societies, NGOs, and international organizations. Several offline meetings were held in October 2020 and in February 2021 to negotiate on the policy analysis, the chosen methodology used and built mitigation scenarios for each of the sectors (energy, IPPU, waste, agriculture, LULUCF) and cumulative scenarios made for the mitigation target identification of the updated NDC. In total, 100 people were involved in the direct consultations (76 % female participation).

In addition to direct consultations, additional written consultations have taken place on the aggregated report with the analysis for the second NDC. Stakeholders provided comments and suggested improvements, which were included in the final version.

An adaptation component has not yet been included in the NDC, as the National Action Plan for Adaptation is under preparation and is expected in 2022.

4.3.3 Georgia

In Georgia climate change policies are coordinated by the Ministry of Environmental Protection and Agriculture, which also led the preparation of the NDC. The Government of Georgia has established a governmental advisory body—the Climate Change Council—in 2020 for implementing and tracking the updated Nationally Determined Contribution. The Council represents an instrument for ensuring transparency in climate policy implementation in order to achieve the emission targets set out in this document.

The preparation of the NDC is strongly linked to the 2030 Climate Change Strategy and Action Plan, which is the implementation plan for the NDC mitigation part. Based on the GHG inventory (1990–2015), a set of measures has been identified for each sector to assess the feasible target for mitigation in each sector. A reference and a policy scenario have been calculated for seven economic sectors—transport, buildings, energy generation and transmission, agriculture, industry, waste, and forestry. The sectoral targets for mitigation stated in the updated NDC follow the assumptions and methodologies used by the Climate Strategy and Action Plan. The EX-Ante Carbon-balance Tool version 7 has been applied for mitigation targets setting in the Forest sector. The LEAP has been applied for estimation of the greenhouse gas (CO₂, CH₄, and N₂O) emission limitations in energy related sectors.

The stakeholder consultation was led by the Ministry of Environment Protection and Agriculture, and stakeholders included not only government agencies but also academia, civil society, UN institutions, international financial institutions and donors. Georgia has created seven sectoral working groups, which systematically gathered to discuss sectoral targets and implementation measures.

Georgia also included an adaptation objective, which confirms the commitment to continue studying its adaptation capacity for different economic sectors, as well as to plan and implement the respective adaptation measures by mobilizing domestic and international resources for those sectors particularly vulnerable to climate change. The NDC includes several adaptation measures to be adopted as part of the National Adaptation Plan in order to achieve the above-mentioned target. These measures refer mainly to assessments to develop the adaptive capacities for a range of sectors, e.g., agricultural production, coastal and mountainous ecosystems, human health, etc.

Gender and climate change have also been addressed in the NDC, referring to the national Gender Equality Law and informing on the ways and means how the involvement of women will be further increased.

4.3.4 Moldova

Moldova was among the first countries to submit its updated NDC. The NDC preparation was led by the Air Protection and Climate Change section of the Ministry of Agriculture, Regional Development and Environment and prepared by external national consultants consisting of a team of seven experts.

The analytical basis for the updated NDC was the same as used for 2nd Biennial Update Report (BUR) submitted in 2019, which is the GHG inventory covering the years 1990–2016 and the herein included emission scenarios. The ‘with measures’ (WM) emission scenario resulted in the unconditional NDC target, and the ‘with additional measures’ (WAM) scenario in the conditional NDC target for 2030. The policies and measures presented in the 2nd BUR

have been widely discussed with all national stakeholders (central and local authorities, academic institutions, NGOs, private sector, etc.) during the 2017–2018 period. The draft NDC2 was posted for comments on <www.clima.md> and it was discussed and validated during the national consultation workshop organized on 28 January 2020, with the participation of all relevant stakeholders, including representatives of the central and local public authorities, academia, civil society organizations, private entities, business associations. It was accepted in the version which incorporated suggestions received from the central and local governmental authorities and the civil society in a gender-responsive manner.

Moldova has also submitted a detailed adaptation component as part of its updated NDC communicating the country's strategic vision on climate change adaptation. The component is built upon the experience gained from the implementation of the first cycle of the National Adaptation Plan (NAP-1) (2014–2017) that is presented in the document, and from the planning perspectives of the NAP-2 that is being implemented. In support to climate action, the adaptation component incorporates cross-sectorial and sector-specific adaptation actions and measures to be implemented, along with identified adaptation investment priorities based on the review of national and sectorial development policies and plans, and the outcomes of an extensive consultation process, including stakeholders from all sectors and levels of governance, in particular, Central Public Authorities and Local Public Authorities, climate-related institutions and agencies, along with private sector, civil society, academia and women associations and youth NGOs representatives.

4.3.5 Ukraine

The NDC review process started in 2018 under the leadership of the National Government of Ukraine and in cooperation with a team of national and international experts, provided through the technical support of the European Bank for Reconstruction and Development project “Support to the Government of Ukraine on Updating its Nationally Determined Contribution (NDC)”, which was funded by the Government of Sweden.

Public participation and transparency of the process was assured through setting up a large Working Group under the Ministry of Environmental Protection and Natural Resources of Ukraine, which included representatives from all relevant ministries, Parliament Committees, scientific institutions, business associations and non-governmental organizations.

The Working Group has gathered five times (February 2019, July 2019, February 2020, May 2020, November 2020) at every stage of the process to present and collect comments on the input data, methodologies selected, preliminary modelling results and final documents. All the reports were also published at the website of the Ministry with open public access.

In the frame of the UNDP Climate Promise and the NDC preparation, a gender analysis was also conducted and recommendations were made to analyse the status of different groups

of women and men in the areas involved in climate change mitigation, analysis of women's access to climate policy decision-making, as well as the impact of gender on readiness to accept and promote change in various sectors of economy, impact of climate change on gender and analysis for gender equality in Ukraine.

In order to analyse modelled scenarios and discuss possibilities to achieve GHG emission reduction targets and attract necessary investments, more than 20 additional meetings were organized with the main sectoral stakeholders.

4.4 Implementation of NDCs

4.4.1 Armenia

Armenia is currently working on a National Implementation Plan to ensure that the NDC target set will be achieved, which includes the assessment of financial needs. It is planned to develop a debt-for-climate swap mechanism, which allows directing finances to domestic climate actions.

The achievement of the NDC target is supported by already existing national strategies and programs supporting energy security, promoting a green economy and achieving long-term sustainable development goals. Sectoral strategies add to this and provide sector specific development goals. These are:

- Strategic Program for the Development of the Energy Sector of the Republic of Armenia (until 2040)
- Strategic Development Program of the Republic of Armenia (2014–2025)
- Energy Efficiency and Renewable Energy Programme 2021–2030 (under development)
- Transport Strategy (under development)
- Agriculture strategy (2020–2030)
- Solid Waste Management System Development Strategy for 2017–2036
- National Forestry Programme (2021) (under development).

The implementation of the NDC will be supported on subnational level by involving local communities and encouraging all stakeholders to take action, including NGOs, taking into account the needs of youth, vulnerable groups, in a gender-responsive manner.

4.4.2 Azerbaijan

The implementation of the NDC in Azerbaijan is supported by the national sustainable development strategy (“Azerbaijan 2030: National Priorities for Socio-Economic Development”) that outlines five national priorities including clean environment and green growth. Furthermore, climate change is also addressed in the sectoral strategic roadmaps with a timeframe for 2016–2020, and long-term target vision for 2025 and beyond. The document objective is to strengthen diversification and competitiveness of Azerbaijani economy, eliminate oil dependence, expand non-oil sector and quality export production, transition to a green economy, further improve employment level and well-being of population. For full implementation of the NDCs, the actions and timeframes of existing sectoral strategies need to be updated and extended.

As energy is the main emitting sector, the Republic of Azerbaijan plans to implement incentive measures to accelerate the use of alternative (renewable) energy sources with flexible regulation of alternative energy tariffs, develop the institutional environment, strengthen scientific and technical capacity, continue training of specialists and raise awareness of energy consumers and involvement of the private sector in the process.

4.4.3 Belarus

The climate policy of the Republic of Belarus is regulated by Decree of the President No 345 issued on September 20, 2016 ‘On the Adoption of the International Treaty, the Action Plan for the Implementation of the Provisions of the Paris Agreement to the United Nations Framework Convention on Climate Change’. The NDC has been adopted by the Council of Ministers and thereby has committed to support international efforts by contributing with a national reduction of 35% (unconditionally) and 40% (conditionally) of net GHG emissions by 2030 compared to 1990.

To achieve this target a roadmap of actions needed has been developed, including planned measures for a five-year period, as well as activities that can be implemented in the long run. The roadmap includes almost all the proposed solutions from the ‘exponential roadmap’ for GHG emissions reduction and elimination, which are implemented currently or which can be implemented in the Republic of Belarus in the future, including those from the NDC. Among the most relevant measures to achieve this goal are the wider use of renewable energy sources, energy-efficient housing construction, electric transport development, introduction of low-carbon and carbon-free technologies etc. It consists of 11 sections, which contain activities structured according to the main components of the Nationally Determined Contribution, including the climate policy development, international cooperation broadening, information and educational events, scientific support, monitoring, as well as targeted practical measures for the areas of agriculture, forestry, waste, construction, transport and energy. The roadmap also prescribes key indicators per sector with regard to global trends and national context to track progress in achieving the goal.

4.4.4 Georgia

The implementation roadmap of the NDC is set by the 2030 Climate Change Strategy and 2021–2023 Action Plan (CSAP), which serves as an underlying strategy and short-term action plan for implementing the updated NDC. The NDC and its implementation documents have been approved by the government in April 2021.

The CSAP defines the following sectoral target, which are also included in the NDC:

- Transport: 15% below reference level by 2030
- Buildings: encourage application of energy efficient technologies and services
- Energy generation and transmission: 15% below reference level by 2030
- Agriculture: encourage climate smart agriculture and agritourism
- Industry: 5% reduction compared to reference scenario
- Waste: encourage climate-friendly innovative technologies and services through effective implementation of separation practice and principles of circular economy
- Forestry: increase the carbon capturing capacity through the forestry sector by 10% compared to 2015 level

Georgia is also strongly supporting climate and sustainable energy-related activities at municipal level. These activities are coordinated by the Ministry of Environmental Protection and Agriculture and the Ministry of Economy and Sustainable Development. Municipalities are encouraged to become a party to the Covenant of Mayors and to develop local Sustainable Energy and Climate Action plans.

4.4.5 Moldova

The implementation of the NDC is regulated through the Low Emission Development Programme until 2030 and the Action Plan, which has been updated to reflect the higher ambition in the revised NDC. The adoption is planned for mid-2022. The main objective of the Programme is to mobilise and enable private and public actors to reduce greenhouse gas emissions from economic activities in line with the targets set out in the NDC. As regards the GHG emission reduction process, this Programme sets quantifiable targets in line with the EU 2030 Climate and Energy Policy Framework and the Sustainable Development Goals (SDGs).

The implementation period of this Programme covers 2021–2030 and it is coordinated by the Ministry of Environment. The latter shall be responsible for monitoring, reporting and verifying actions under the Programme. Other ministries involved in the implementation are Ministry of Economy, Ministry of Infrastructure and Regional Development, Ministry of Finance, Ministry of Agriculture and Food Industry, Ministry of Education and Research. Economic agents, cen-

tral and local authorities, civil society, ordinary citizens will participate in the implementation of the Programme.

The programme presents the current status of each emission sector, highlights the relevant sectoral strategies/programmes, defines general and specific objectives, sets sector specific targets for 2025 and 2030, defines progress indicators, estimates costs, assess risks and includes measures to be implemented.

4.4.6 Ukraine

Ukraine is currently working on the development of a NDC implementation roadmap specifying the actions per sector, objectives, timeframe, responsibilities, progress indicators and finances needed. The process is coordinated by the Ministry of Environmental Protection and Natural Resources and supported by the EU4Climate project.

The implementation of the following strategies is crucial to meet the NDC target, support energy efficiency and promote economic modernization:

- Concept and Action plan for state climate change policy implementation until 2030;
- Low emission development strategy of Ukraine till 2050;
- Law of Ukraine “On basics of monitoring, reporting and verification of GHG emissions”;
- Law of Ukraine “On ozone depleting substances and fluorinated greenhouse gases”;
- Energy Strategy of Ukraine until 2035;
- National Transport Strategy of Ukraine until 2030;
- National Waste Management Strategy of Ukraine until 2030;
- National Economic Strategy until 2030.

4.5 Lessons learned & best practice examples

In the following sub-chapter, we provide information on the countries’ experiences during the process of preparing their updated NDC (2021–2030), with the focus on the best practice examples and lessons learned.

4.5.1 Armenia

Reinforcing the legal status of the Climate Change Council

National climate change policies and actions are coordinated by the Inter-agency Coordinating Council for Implementation of Requirements and Provision of the UNFCCC, which was

established in 2012. Their role was reinforced in July 2021, when their status was revised and approved by the Prime Minister's Decree. The Council chaired by Deputy Prime Minister has the authority to coordinate reporting on climate change and ensure coherent policies for achievement of Armenia's commitments under UNFCCC and coordination of the NDC 2021–2030 as well as the implementation of the Goal 13 of the UN 2030 Agenda for Sustainable Development.

Strengthening the policy base to achieve climate ambitions

An important challenge is the transformation of the updated NDC into tangible actions that lead to long term low emission and climate-resilient development. The NDC Implementation Plan was initiated to support a more effective implementation process and coordination and to ensure transparency. It presents the identified priority activities and assessed resource needs. In this context, Armenia will need sustained financial, capacity building and technical support to regularly prepare, implement, and report on national actions under the Paris Agreement and more specifically against NDC targets for reducing GHG emissions. A financial strategy and investment plan for the NDC is currently under development, so that NDC can be used as a transformational change mechanism for scaling up investment in climate change. The Climate Public Expenditure and Institutional Review was an important milestone towards this process.

Using additional indicators

The new indicators such as GDP energy intensity and GHG emissions per unit of GDP were used to track Armenia's achievements towards low carbon economy.

4.5.2 Azerbaijan

Political Ownership

The State Commission on Climate Change serves as an effective institutional instrument to combat climate change in the country. It was first established in 1997, and in 2020 amendments concerning the composition of the Commission have been approved by a presidential decree. The Commission is now chaired by the Deputy Prime Minister and supported by a technical working group. The working group consists of experts from the relevant state bodies to ensure active participation of the relevant stakeholders in this process, strengthening of interagency relations, and to provide support to the role of the State Commission in the implementation of the country's commitments under the UNFCCC. The approved Action Plan of the Working Group will focus on; 1) Developing GHG Inventory and Monitoring, Reporting, and Verification (MRV) systems, 2) Evaluation of GHG emission reduction measures proposed by the sectors. This will allow the State Commission on Climate Change to ensure transparency in climate policy implementation in order to achieve the emission targets set out in the updated NDC.

4.5.3 Belarus

Strengthening the policy base to achieve climate ambitions

The Republic of Belarus, a country in transition, is an Annex I party, whose GDP per capita lags behind most of the other Annex I parties. Belarus is limited in capacities to mobilize capital and ensure additional investments in low-carbon technologies and innovations needed to reach more ambitious NDC. Thus, the Finance strategy is crucially needed to illustrate the routes of possible solutions and investment plan on reaching the NDC target with the use of financial mechanisms and international financial support.

Transforming the updated NDC into the tangible actions that lead to long-term low emission and climate-resilient development is quite a challenge. To achieve this, Belarus needs sustained financial, technical support and capacity building to assist in preparing, implementing, and reporting national actions under the PA and, more specifically, against NDC targets.

Strengthening capacity building and involving each ministry, state body for a joint action to implement the PA

There is still a need for:

- preparation of a reliable GHG inventory annually and its continuous improvement according to the latest IPCC guidelines
- establish a high-level climate change committee to streamline and coordinate actions and plans
- develop a monitoring system to analyze the progress towards NDC achievements
- conduct climate risk assessment and vulnerability of the sectors to include adaptation chapter in the next NDC
- integrate targets for climate protection and reduction of net greenhouse gas emissions into policies and measures

4.5.4 Georgia

Georgia identified two actions as best-practice experiences during the preparation of the NDC and will continue to apply these in the future.

Integration of vulnerable groups in NDC preparation

Paragraph 12 of Georgia's updated NDC identifies the vulnerable groups of the country. In order to take into consideration the particular interests, needs, capabilities, roles and responsibilities of the key stakeholders, especially the vulnerable groups, the meetings with vulnerable groups and civic organizations working on climate change and gender issues have been conducted during the process of updating the document.

Establishment of Climate Change Council

The Government of Georgia has established a governmental advisory body—the Climate Change Council—for implementing and tracking the updated Nationally Determined Contribution. The Council represents an instrument for ensuring transparency in climate policy implementation in order to achieve the emission targets set out in this document.

4.5.5 Moldova

For Moldova, the experience gained during the preparation and approval of the initial NDC served as a main support in the development and promotion of the updated NDC.

The NDC2 unconditional target is foreseen to be reached by implementing the efficient incentives and redirecting public investments to less emission intensive activities. In respect to NDC2 conditional target, financial support is envisaged from relevant donors, mostly from Green Climate Fund (GCF); currently, the Country Programme of the Republic of Moldova for engagement with GCF for the 2020–2024 years is under consideration for approval; a comprehensive assessment of country's capacity, financial and technology needs is conducted to implement a pipeline of measures to mitigate and adapt to climate change;

Taking into account existing gaps and barriers in **engaging the private sector** in climate investment, a set of measures are to be developed to provide capacity building and technical assistance to the private sector of Moldova.

4.5.6 Ukraine

It is worth noting the positive experience of conducting a detailed modelling of the country's economy system. The modelling covered all economic sectors and made it possible to analyse different scenarios of economic development, the impact of existing climate and energy plans and strategies, as well as additional necessary policies and measures.

The process of NDC preparation is characterized by inclusiveness and openness for discussion and comments with the involvement of stakeholders and the public at all stages.

The central executive bodies were also involved in the working group at all stages of the process of NDC preparation, which positively influenced the further negotiation of the document.

5. Annexes

Additionally, under Annexes, the Project will also provide case studies from four partner countries, which addressed some of the key issues that would support their climate action; in Armenia, focus was on a review of public expenditures dedicated to climate change, in Georgia a public poll on climate change was carried out, while in the Republic of Moldova and Ukraine studies focused on opportunities of mainstreaming the climate action into the waste and transport sectors, respectively. All studies provided recommendations for improvement and suggested steps forward to help with the implementation of the countries' updated NDCs.

5.1 Case study Armenia—climate policy and expenditure review

Climate change is being addressed in Armenia by a variety of climate policies addressing mitigation, as well as adaptation, which require substantial public expenditures—but the extent of this has not been monitored so far. In 2020, Armenia carried out a review of public expenditures, the policy framework and the institutional set-up. The objective was to better manage expenditures, to improve policy mainstreaming, policy implementation and future-planning. This was done by applying the 'Climate Policy and Expenditure Review' (CPEIR) tool and was carried out as part of the activities of the EU4Climate project.

The review established that Armenia has well-developed public finance budgeting systems, however, the identification of expenditures, budgeting and reporting of cross-sectoral policies, such as climate change, will require the development of new institutional mechanisms within the budgeting process, use of climate budget tagging, as well as improved inter-ministerial coordination.

Beyond understanding and managing expenditures to support climate change mitigation and adaptation, it is likewise important to identify expenditures harmful to the climate, such as fossil fuel subsidies. An analysis of these expenditures has not been part of the study.

In more detail, the following key questions have been addressed by the assessment:

1. How does climate change policy translate into programs and objectives?

To answer this question, a review of the policy framework including legal acts, national strategies and programs, medium-expenditure frameworks and international agreements was performed. It revealed that Armenia does not have a specific comprehensive strategic

document addressing climate change; the subject is merely represented in sectoral development strategies and programs by different government agencies. Armenia initiated a Transformation Strategy 2050 in 2020, which lays down 16 long-term development goals, of which some are closely related to climate change. Nevertheless, a long-term low emission development strategy has not yet been developed. In order to ensure the implementation of sectoral policies, introduction of monitoring requirements, such as climate related indicators, was recommended.

2. How effective are institutions in formulating and implementing climate responses?

In 2012 Armenia established the ‘Interagency Coordination Council for the Implementation of the Requirements and Provisions of the UN Framework Convention on Climate Change’. The council is chaired by the Minister of Environment and consists of representatives from 14 ministries, the Statistical Committee, the Public Services Regulatory Commission and the National Academy of Sciences. Technical support and consultancy to the Council is provided by a working group with a wide range of experts. Forestry and water issues are managed by two sector specific committees.

The Ministry for Environment is the designated authority to develop and implement climate change policy on the national level. For this reason, a Climate Policy Department has been established in the Ministry’ structure responsible for the planning. Another unit, the ‘Environmental Project Implementation Unit’ is managing the implementation of environmental projects by providing the allocated state budget to the projects, and also acting as the implementing entity for international funding (e.g. Green Climate Fund).

In Armenia, the involvement of civil society is enabled through a public council. It is an independent consultative body comprising more than 20 civil society organizations (CSOs).

The review revealed that although the institutions and an inter-governmental body are established, that the current status and scope of authorities are not sufficiently coordinated to effectively address all the issues related to climate change². Especially, the lack of a mandate for the Ministry of Environment to engage in climate-relevant programs of other ministries limits progress. Additionally, the review recommended to adopt measures that will allow for increased engagement and awareness of civil society.

3. How much of the budget is allocated to addressing climate change?

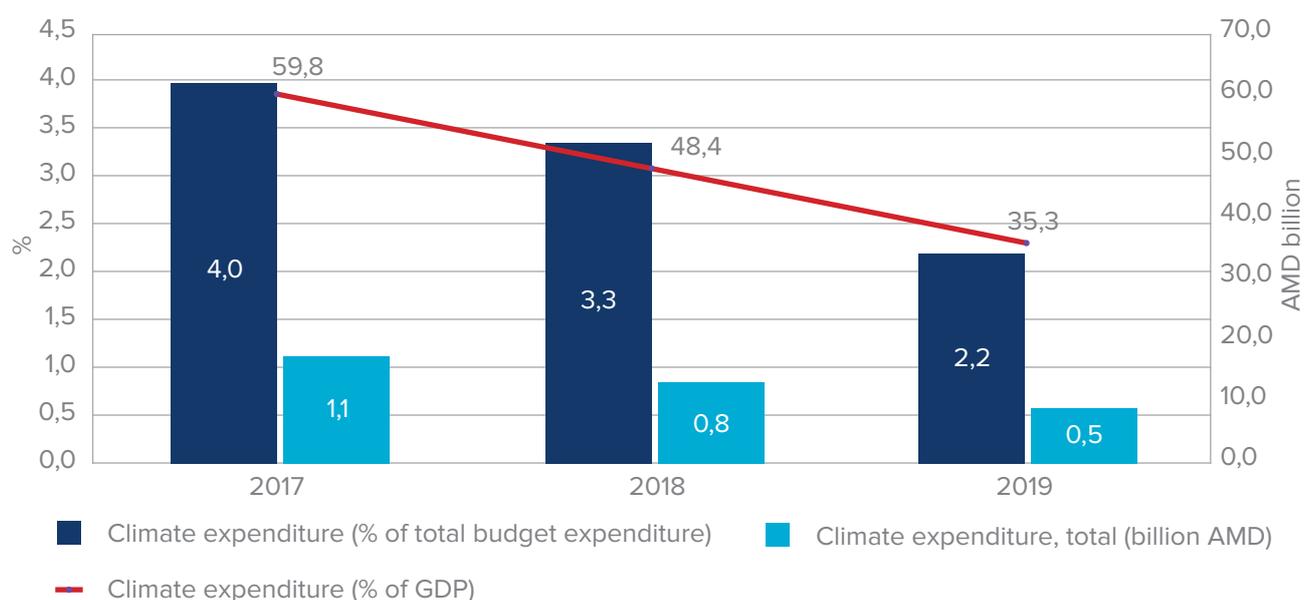
The basis for this exercise was the state budget for the period 2017–2019. To define climate related expenditures, spending was classified into six different mitigation areas (e.g. transport) and/or seven different adaptation areas (e.g. tourism) and weighted according

² The Decree N 719-A of the Prime Minister of the Republic of Armenia was signed on 6 July 2021, according to which the Council is now chaired by the Deputy Prime Minister.

to their relevance. Weighting was based on the purpose/objective of the spending and the impact on GHG emissions or climate resilience.

The expenditure review found that, on average, around 3.2% of Armenia’s budget was spent on climate activities between 2017 and 2019, although both the absolute and relative amount of climate expenditures has fallen over the three years reviewed (see Figure 1). Looking at the single years, it is noted that climate expenditures decreased by more than 40% in three years’ time. This trend holds also true for the share of climate expenditures in GDP, which more than halved.

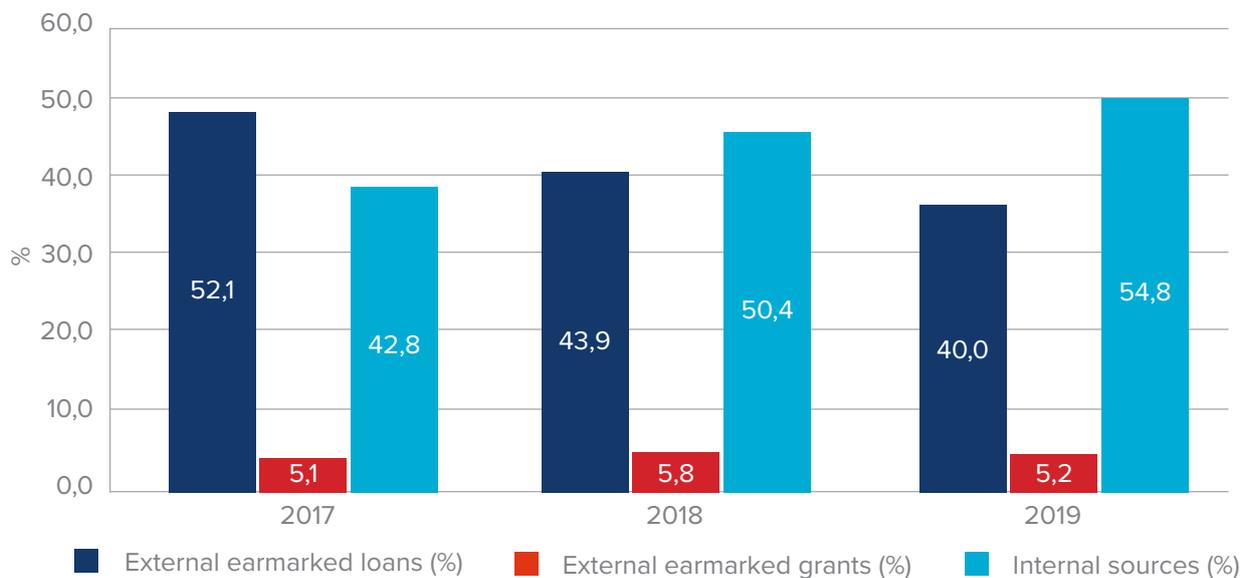
Figure 1: Climate expenditures in 2017–2019



However, it is important to stress that the decline in climate expenditures has been much more pronounced among externally financed expenditures than those are domestically financed. The share of externally financed climate expenditures within the total climate expenditures fell from 57.2% in 2017 to 45.2% in 2019. This largely reflects the decreasing budget performance of these externally financed expenditures, with these projects and programmes increasingly subject to significant revisions to the initially approved budget during implementation. As for the climate expenditures financed from internal sources, although the latter has decreased in absolute terms year by year its share in total climate expenditures has increased reaching from 42.8% in 2017 to 54.8% in 2019 (see Figure 2). The overall financial performance³ of climate measures for 2017–2019 was lower than the level of the overall performance of the state budget in those years. For example, in 2019, the performance of climate measures was only around 60% vis-à-vis almost 99% overall performance of state budget.

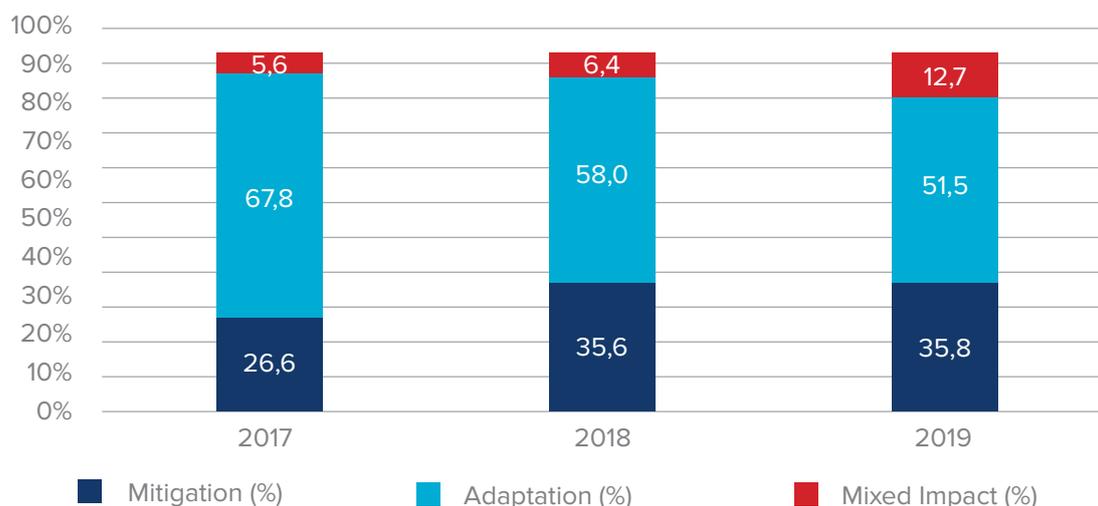
³ Calculated as the ratio of total actual expenditures on climate change related measures to the total actual expenditures on those measures in the initial budget approved by the National Assembly of the Republic of Armenia

Figure 2: Sources of funding for climate expenditures in 2017–2019



The number of budget programs being related to climate change increased from 137 to 182 in 2019, whereby more than 65% of the policy measures are highly relevant. But for only 6,6% the primary objective is to address climate change mitigation or adaptation. The budget spending on adaptation is significantly higher than on mitigation in all years (see Figure 3). Expenditures for programs to mitigate emissions in the transport sector are highest (52%). In the adaptation area most is spent on human settlement, infrastructure and energy (34%) and water resources (28%).

Figure 3: Climate Expenditures by climate change response



As a conclusion, financing of climate activities has a relatively low priority as expenditures decreased during 2017 and 2019. But Armenia has increased the number of programs addressing climate change, though only a small share of these programs has climate change as their primary objective.

4. How can the existing financing scheme be improved to better integrate climate change?

Each year the Ministry of Finance leads the budgeting process which foresees the preparation of Medium-Term Expenditure Framework (MTEF) and the draft budget for the coming year. Each Ministry and other state body submit their budget allocations based on their sectoral implementation programs, which may include climate relevant measures. The budget documents do not disclose information on climate-related expenditures in any way. All climate-related budget expenditures are diluted within budget programs/measures developed around sectoral development goals and implemented by various government agencies. Although the Ministry of Environment is the state body responsible for the development of state policy in the field of climate change mitigation and adaptation, there is no specific mechanism to coordinate climate programs and expenditures among different state bodies.

Armenia has well-developed PFM budgeting systems. However, identification of expenditures, budgeting and reporting of cross-sectoral policies, such as climate change, will require the development of new institutional mechanisms within the budgeting process.

The current situation could be improved by establishing coordination mechanisms between government agencies for cross-sectoral policies. This includes the development of methodologies and guidance for identifying climate relevant measures ('climate budget tagging'), calculation of costs and expected impacts, as well as the introduction of performance indicators that help to measure the impact⁴. Such information will also support transparency and accountability for climate relevant expenses.

5.2 Case study Georgia—public poll on climate change

What Does the Georgian Population Think About CLIMATE CHANGE?

With the aim of researching climate-change related knowledge and behavior in Georgia, a nationwide opinion poll with 1,100 face-to-face interviews was carried out in 2020 with the support of the EU4Climate project. Tackling climate requires everyone's efforts, not only the governments and business are required to act, but also citizens. In order to assess the awareness and readiness of the population, this survey was carried out and revealed that Georgian population was well aware of the global threat posed by climate change.

⁴ The Decree N 472-L of the Prime Minister of the Republic of Armenia was signed on 04 May 2021, according to which the template for development and evaluation of a public investment project proposal includes a reference on possible contribution of the project to climate change mitigation and adaptation.

Poll revealed that the Georgian population is aware of the threat posed by climate change to the world and to the country but is not sufficiently convinced about the potential contribution everyone can make. Therefore, further awareness raising will be needed in Georgia, which also includes information on the economic, social and environmental co-benefits of mitigating climate change.

Almost all Georgians (98%) have heard about climate change, and 58% percent of Georgians identified climate change among the three main challenges the world was facing today. Most information is received by television (81%) and by social media (43%), with more than half of the people (55%) receiving information several times a week. Nevertheless, the knowledge about international agreements and corresponding national reporting on climate change is hardly known (only 10% had heard about the national Climate Action Plan). However, it is without question that climate change is also happening at country level, and people are well aware of the impacts (such as extreme precipitation, floods, droughts).

Regarding the actions needed, the opinion is split. 49% of respondents think that climate change cannot be stopped whereas 45% of respondents believe it is not too late to act. The majority of the Georgian population (65%) is convinced that individual behaviour can contribute to combatting climate change. Interestingly, this attitude is not reflected in current lifestyles and behaviour. Public transport is only used regularly by 34% of the respondents (and it is never used by 21% of respondents). 84% of the people hardly ever use a bicycle as a means of transport. The decision of the population on which and how much fuel or energy is consumed depends primarily on economic savings and less on emission savings.

Further main results per topic are summarised below:

1. Awareness about climate change

How far is the population aware of climate change?

- **97,6 % of respondents have heard about climate change**

How important is it to receive information on climate change?

- receiving information/knowledge on climate is considered highly important

How does the Georgian population receive information about climate change?

- 80,9% receives information from television
- 42,7% receives information from social media

How often is information on climate change received?

- 54,7% of Georgia's population receive information on climate change several times a week

How aware is the population of national documents outlining national priorities or global obligations with regard to climate change?

- The population is not aware at all with documents such as low emission development strategies, Climate Action Plan, National Determined Contribution, etc.

2. Recognising climate change as a challenge?

What are the most critical global challenges?

- 57,9% identified climate change among the three main challenges among poverty, lack of food and drinking water, and infectious diseases
- 15,3% think that climate change is the most critical global challenge
- For 61,1% climate change is very serious global problem

What are the negative consequences of climate change?

- Global warming, droughts: 96,1%
- Disaster like floods, avalanches, etc: 92,8%
- Melting glaciers, warming ocean: 91,8%
- Epidemics: 60,1%

How important is climate change at country level?

- It is considered very important

What are the most important problems in Georgia?

- Frequency and intensity of floods and freshets
- Frequency and intensity of hail
- Extreme precipitation

Which of Georgia's regions are considered most vulnerable to climate change?

- Hail: Kakheti

- Floods: Imereti, Racha-Lechkhumi, Svaneti
- Mudflows: Ajara

Which changes have been noticed most?

- 38,5% noticed invasive new species (e.g. stink bug)
- 31,2% noticed an increase in the frequency of droughts
- 23,8% noticed deforestation
- 19,4 did not notice anything

3. Attitudes

Is climate change real?

- **91,4% state that climate change is a real/objective process that endangers life on earth**
- 4,8% find climate change a social myth

Can individuals do something about it?

- 64,7% agree that their behaviour/lifestyle, individuals can contribute towards neutralizing the dangers caused by climate change.
- 36,2% think they personally cannot do anything

Who can handle the consequences of climate change best?

- 9,8% government
- 32,8% environmental organisations
- 25,9% international organisations

4. Social behaviour

What mobility modes are most common in Georgia?

- Public transport: regular use 33,8%, never use 20,6%
- Walking: 25,5% almost always walk, 16,0 rarely walk at all
- Cycling: 4,0% regularly cycle, 83,5% rarely cycle at all

Which steps is the Georgian population taking towards an energy-conscious lifestyle?

- 86,6% believe that an energy-conscious lifestyle can reduce their monthly expenses
- 7,9% do not believe that an energy-conscious lifestyle can reduce their monthly expenses
- 80,4% use energy-efficient lightbulbs
- 61,2% reduce electricity consumption to save energy

How often does the Georgian population buy organic or bio products?

- 12,1% regularly
- 39,6% often
- 16,5% rarely

5. Motivation

What is the main reason for using public transport?

- 54,2% stated that it is more convenient

What is the main reason for walking?

- 70,2% stated because of health reasons

What is the main reason for buying organic food?

- 87,3% stated because of health reasons

5.3 Case study Moldova—mainstreaming of climate change into the waste sector

Waste and its disposal are a complex environmental problem. Waste's physical and chemical impacts on the natural environment and the wildlife are well known, but waste also makes a significant contribution to the worsening of climate crisis: waste sector contributes an average of 3% to the global greenhouse gas emissions. Waste and resource management thus present significant opportunities in reducing greenhouse gas emissions both from the decomposition of the waste itself and by recovering material and energy value from waste.

In Moldova waste accounts for around 10% of total national direct greenhouse gas emissions, being the third largest source of greenhouse gas emissions after the energy sector and agriculture. It also accounts for almost half of Moldova's emissions of methane, the short-lived climate pollutant 28 times more damaging than CO₂ because it absorbs more energy and thus traps atmospheric heat more effectively.

According to Moldova's Low Emission Development Strategy⁵, Moldova plans to reduce greenhouse gas emissions from waste by up to 47% compared to 1990, in the next ten years. **Guided by the EU acquis on waste and circular economy⁶, the EU4Climate project identified the areas of the existing legislation in the waste management that need to be improved in order to achieve this goal and enabling further legislative alignment with the EU, formulated a series of recommendations:**

1. Improving standards of construction and closure of landfills. There are currently 1,139 landfills in operation in Moldova, and the largest majority do not meet the environmental requirements regarding their construction and operation. In 2016 Moldova approved the Law on Waste, and it is recommended that the Law is further strengthened and operationalized with adoption of specific sectoral regulations, such as Regulation on waste disposal and the National list of accepted waste for each class of landfill. In addition, Construction standards on waste disposal should provide for procedures to seal the landfill, collect biogas and conduct post-closure monitoring.
2. Improving waste disposal regime and promoting waste separation. Unstable sewage sludge and biodegradable waste are currently landfilled lead to greenhouse gas emission when they decompose. It is recommended that the National List of accepted waste for each class of landfill be drawn up as a separate document to prevent the disposal of unstabilised sewage sludge on non-hazardous landfills in the future.
3. Treating biodegradable waste. Biodegradable waste sent to landfills produces methane when the organic matter decomposes anaerobically. Reducing the amount of such waste that goes to the landfill will mitigate the impact of waste on the climate. It is recommended that Moldova amends the 2016 Waste Law to provide a legal definition of biological waste, including the sludge resulting from wastewater treatment, the biodegradable component of the street waste and biodegradable waste from marketplaces. The law should be further amended to introduce specific targets to reduce the amount of biodegradable waste that is disposed at landfills and to empower local or regional public administration authorities to take action on biodegradable waste through the local waste management plans.
4. Recycling to ensure the decrease of the amount of waste to be disposed of or incinerated. When recycled materials replace new materials, it not only reduces the amount of waste to be disposed, it also decreases the need for extraction or production of new materials. It

5 The Strategy was approved by Government Decision no. 1470 of 30 December 2016

6 <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1583933814386&uri=COM:2020:98:FIN>

is recommended to amend the Waste Law to include the Extended manufacturer responsibility scheme as well as other applicable economic instruments covering their application, envisaged measures, and powers of the central public authority to enable this. It is also recommended that the Action Plan on Waste Management Strategy, currently under preparation in Moldova, also includes sections describing applicability and functionality of deposit-return system, the system for management fees for Waste of Electrical and Electronic Equipment (WEEE), etc.

5. Setting specific tariffs to differentiate the different types of waste. Economic instruments are an effective tool to improve waste management. Moldova is advised therefore to develop a regulation on setting waste management tariffs or fees, which would establish the method of calculation of the costs of waste and sanitation services, as well defining how much the tariffs would be. This would facilitate waste prevention, separation at source and re-use/recycling, reduction in use of landfills and encourage waste treatment technologies. Tariffs and their differentiation can be efficiently used to encourage the reduction of disposal, in particular of streams that lead to methane generation and/or are recyclable and thus can replace raw materials, the extraction and processing of which consume more energy than recycling.
6. Reducing GHG emissions through circular economy. Circular economy is a system in which the input of resources and waste, emissions and energy losses are reduced by slowing down, closing or narrowing the loops of the use of energy and materials. This can be achieved through long-term design, maintenance, repair, reuse, refurbishment and recycling. To encourage circular economy it is recommended to update the Law on payment for environmental pollution to introduce disposal fees for hard-to-recycle or non-recyclable products and to improve the fees for landfilling waste. Introduction of the “pay as you throw” (PAYT) scheme can be another tool to encourage circular economy. Waste management as a cross-cutting issue can be also addressed in other national documents, for example, the National Strategy for agricultural and rural development, which should include targets for recovery of bio-waste and its use in agriculture, as well as for the recovery of construction and demolition waste. Independently, financial instruments should be introduced to encourage renewable energy generation from biogas. It is also recommendable to enable sanctions applicable on administrative-territorial units (ATU) that do not comply with the target on the quantity of disposed of waste.
7. Mitigation of GHG emissions by eliminating anaerobic wastewater treatment. A significant volume of emissions results from wastewater treatment plant operations. For this reason, it is important for the wastewater treatment sector to propose specific reduction targets and associated measures, to be coordinated with the sector’s adaptation plans. It is recommended that measures for retrofitting the wastewater treatment plants and improving the quality of sludge by assuring that biogas is captured and efficiently used from energy perspective are introduced into the Water supply and sanitation strategy. To ensure

their implementation it is recommended that a National Strategy for Sludge Management, along with the requirement to establish sludge management plans at all wastewater treatment plants, is developed.

The EU4Climate project also assessed the risks climate change presents to the waste sector in Moldova and made recommendations for specific adaptation measures⁷. The connection between climate change risks and the waste sector is poorly understood and regulated in Europe. However, the waste sector is not exempt from these risks and good practice suggests the need to study this link in order to mitigate risks and identify adaptation measures.

In cooperating with donors and IFIs in the area of waste management, EIB supports regulation of solid waste management estimated at around EUR 200 million. The investment programme will be deployed in 8 Waste Management Regions in line with the National Waste Management Strategy for 2013–2027 and co-financed by EBRD at EUR 25 million. Chisinau also benefits from the EBRD's Green Cities Framework that will support the landfills clean up with EUR 10.5 million provided by EBRD, EIB, and EU. Additionally, activities under the regional EU4Environment project, implemented by UNEP are also addressing this issue.

5.4 Case study Ukraine—mainstreaming of climate change into the transport sector—micromobility

Transport is a sector with significant global climate impact. As a major user of energy, the transport sector burns most of the world's petroleum and is responsible for almost a quarter of the world's carbon dioxide emissions from fuel combustion. It is also associated with other environmental problems, such as noise and air pollution, which directly affect human health. In fact, Ukraine's national transport strategy notes that 90–95 percent of all air pollution in cities comes from road transport.

In Ukraine, the transport sector accounts for 16% of national CO₂ emissions and is thus one of the key sectors where mitigation is required to achieve national climate goal of 65% emission reduction by 2030. In the next ten years Ukraine plans to increase electricity and renewable energy use in the transport sector by 50%, reducing greenhouse gas emissions coming from mobile sources by 40% compared to 1990.

Considering that most people in Ukraine live in cities, development of attractive and environment-friendly alternatives to road transport such as safe and comfortable public transport and micromobility is one of the goals of Ukraine's NDC. Micromobility is a type of urban mobility that involves using light vehicles adapted for one-person travel, such bicycles or electric microvehicles.

⁷ For example, one such measure could be applying additional defences to protect the infrastructure against floods and the formation of anaerobic conditions in landfills in the areas that are frequently flooded.

Micromobility has already taken a strong hold in Ukraine and the conditions are favorable for its popularity in urban centers to grow even further. It can provide many benefits to society: flexible mobility, reduced emissions in cities, personal savings, and reduced burden on the transport network.

In order to assist Ukraine with this innovative area of public policy, the EU4Climate project analyzed best international practices, conducted interviews with managers of companies providing micromobility services in the Ukrainian cities, and surveyed their users, formulating policy recommendations for the roll out of micromobility solutions in Ukraine:

1. Defining clearly what micromobility vehicles are; their key design features, such as speed, capacity, and weight. Best international practice sets limit to the maximum design speed of the vehicle at 20 or 25 km/h, and/or power limit from 500 to 1000 W.
2. Restrictions against distractions should be required of users. The use of vehicles under the influence of alcohol and drugs, as well as the use of electronic devices and headphones while driving should be expressly prohibited. In some countries and cities, there are additional practices aimed to make it impossible to drive while intoxicated—for example, rental scooters “turn off” in the evening in city districts where there are many bars and restaurants.
3. Legal framework is required to set criteria for the use of micromobility vehicles to differentiate them from bicycles and other vehicles. In some cases, the micromobility vehicles meeting such criteria can be equated to bicycles completely or conditionally. In other cases, a separate definition can be provided along with further “cycling” rules, for example, the need to have serviceable brakes, mandatory use of reflective elements and lighting in the dark, requirement to move within the cycling infrastructure or—in case of its absence—on the right side of the road.
4. Moving on the sidewalk should be prohibited due to the danger to pedestrians. If allowed, the speed of the sidewalk movement should be close to the speed of pedestrians at 5–8 km/h. The highest speed on the sidewalk cannot be more than 10 km/h and there should be an obligation to slow down when approaching pedestrians.
5. The legal framework should set the minimum age of users, which could be from 12 to 18 years. If this limit is lower, there should be additional conditions: being accompanied by an adult or the availability of a special child license (if similar practice is used for bicycles). Unaccompanied movement could be allowed from 14–16 years.
6. Use of helmets should be recommended but is not advised to be mandatory. The helmets can be made mandatory for children. Introducing mandatory vehicle identification or special licenses could be also a consideration.

7. Electric scooter rental policies should be encouraged. This can be delegated to the local authorities, through mandating agreements or contracts with service providers. Such agreements should stipulate the total number and technical characteristics of vehicles, zones and time frames of their operation, and other conditions, i.e. limiting of speed for new users, automatic speed reduction in case of software-detected movement of two people on one vehicle, detection of drunk driving or a general ban on renting vehicles at night time in districts with a large number of evening drinking establishments. The agreements can also include the provisions allowing cities to collect depersonalized data on movement and incidents that can be used to better plan urban transport infrastructure, detailed instructions on permitted places and methods of parking vehicles, conditions for user insurance, etc.
8. The difficulty of recording violations in many countries is offset by high fines to discourage at least the most serious and dangerous violations. Moreover, the fines can be established for both users and rental service providers.
9. In order to have a positive impact on the environment and public health, micromobility policies should promote, as far as possible, the replacement of passenger cars with micromobility vehicles.
10. The most effective measure to promote micromobility and increase the related road safety is the development of cycling infrastructure, which was particularly evident in 2020 during the COVID-19 pandemic and related lockdowns.

Cities in Europe, South and North America, Asia are rapidly developing light transport infrastructure as a tool to address transport and environmental issues, as well as improve overall road safety. These experiences can be used as a basis for advancing innovating transportation policies in Ukraine. Care should be taken, however, to ensure that micromobility supports displacement of private vehicles and does not crowd out the use of public transport.



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