# Enhancement of the Nationally Determined Contribution under the Paris Agreement

State of implementation of energy efficiency policies and measures

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### FOREWORD

This publication is an assessment of the state of implementation of the national energy efficiency policies and measures for climate change mitigation in Albania's NDC 2016-2030; it supports the Ministry of Tourism and Environment in the enhancement of the Nationally Determined Contribution for the reduction of greenhouse gas emissions 2021-2030, as well as in the qualitative fulfilment of the obligations of Albania towards the United Nations Framework Convention on Climate Change and the Paris Agreement.

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# Abbreviations AEE BAU

AFF	Eneray Efficiency Agency
RΔU	Business as Usual
CNG	Compressed natural das
DCM	Decision of the Council of Ministers
FBRD	European Bank for Reconstruction and
LUNU	Development
FF	Energy efficiency
GHG	Greenhouse Gas
HEV	Hybrid electro vehicles
	Intended Nationally Determined Contribution
INSTAT	Institute of Statistics
	Land Lise Land Lise Change and Forestry
MFF	Ministry of Finance and Economy
MIE	Ministry of Infrastructure and Energy
MRV	Monitoring Reporting Verification
MTRD	Medium Term Budget Programme
	Nationally Appropriate Mitigation Action
	Nationally Determined Contribution
NEA	National Environmental Agency
	National Environmental Agency
	National Energy Efficiency Action Plan
	National Reflewable Effelgy Sources Action Plan
NSCLAP	Plans
SLED	Support for Low-Emission Development in South
	Eastern Europe
TNC	Third National Communication
UNDP	United Nations Development Programme

# Executive Summary

An assessment of the state of implementation in 2021 of Albania's Nationally Determined Contribution in relation to national policies and measures on energy efficiency has been carried out. For a more effective revision of the NDC, the implementation of the measures of the previous NDC and other sectoral plans needs to be reviewed. This assessment comprises the NDC 2016–2030, the 2nd and 3rd National Energy Efficiency Action Plan 2017–2020 and the National Strategy of Climate Change and Action Plans 2019–2030 until 2021.

The state of implementation of the NDC of 2015 has not been monitored before until present; the level of realization of the national GHG emissions target has not been measured since 2015 and it is at present unknown.

The NDC 2015 is a collection of existing studies, plans and measures and, taken together, represents the final GHG emissions reduction targets. This method of developing the NDC proved to be a difficult exercise as stated by the NDC authors themselves. In this context, the implementation of the first NDC can only be assessed in terms of how effective the implementation of each individual plan has been. This limitation applies to all of the NDC's measures. One example is the implementation of the 1st NEEAP, which was valid until 2016 only and has been replaced by a new plan. The 1st NEEAP was neither monitored nor evaluated. No comprehensive implementation score can be provided for the NDC 2015 as it currently stands.

For the purposes of this report, the implementation of the 2nd and 3rd NEEAP 2017–2020, which were implemented during the NDC's timeframe, has been evaluated; moreover, the majority of measures covered in the two NEEAPs have been carried over from the first one. The 3rd NEEAP includes a detailed list of efficiency measures across all sectors. The costs and potential GHG reductions are identified. All of the measures of the 2nd and 3rd NEEAP have been carried over and adopted in the National Strategy of Climate Change and Action Plans 2019–2030; by assessing the Strategy, the resulting evaluation is also valid for both the 2nd and 3rd NEEAP.

The main results of the report indicate very sluggish implementation of legal acts. Even though sectoral laws on energy efficiency and energy performance in buildings were approved early on, namely in 2015 and 2016, respectively, their realisation through secondary legislation has been very slow. One major enabling development was the establishment of the Agency for Energy Efficiency in 2016, which, however, only become operational in early 2019. Since then, and especially throughout 2020 and beyond, the Agency has been an enabler of the development of secondary legislation necessary to ensure its functioning as well as the creation of the first generation of licensed energy auditors and managers. The Agency is also instrumental in monitoring action plans related to energy efficiency.

Very few measures included in the NSCCAP have been implemented. To determine whether other energy efficiency measures outside of the Strategy have been introduced, an overview of the government's Middle Term Budget Plan of 2017 to 2022 is provided. It is found that nearly 40 projects are directly related to energy efficiency. These projects, however, are mostly not present in the Action Plans. There is a disconnection between the Action Plans' requirements and the projects the government actually implements.

There is no specific code or categorisation for the energy efficiency measures specific to the MTBPs; it is therefore difficult to find relevant information and measure spending and the impact of these measures. The recommendations presented in this report are meant to contribute to the revision of NDC 2015, towards purposefully developed measures, relying less on already existing action plans or strategies of various origins.

There is need to adopt a single national approach to modelling and to apply a single model in all documents, regardless whether they are developed by different projects, in order to facilitate their aggregation in overarching plans such as the NDC.

Finally, a single unified monitoring exercise is recommended over the many scattered monitoring requirements included in the current NDC and NSCCAP. The introduction of the National Energy and Climate Action Plan as a single cohesive document and approach to energy efficiency, as well as of a single set of monitoring requirements are expected to address this issue.

### **1. INTRODUCTION**

This document presents an assessment of the state of implementation in 2021 of Albania's Nationally Determined Contribution for the reduction of greenhouse gases in relation to national policies and measures on energy efficiency. It is prepared in support of the Ministry of Tourism and Environment in the process of enhancement of Albania's Nationally Determined Contribution 2030 and the qualitative fulfilment of its obligations towards the United Nations Framework Convention on Climate Change and the Paris Agreement.

The analysis concentrates on the national policies and measures on energy efficiency in the following national strategic documents:

- Nationally Determined Contribution 2016-2030
- 2nd and 3rd National Energy Efficiency Action Plan 2017-2020
- National Strategy of Climate Change and Action Plans 2019-2030

In addition to the assessment of the state of implementation, the document presents an overview of the methodology, comprising assumptions, baseline, database, and models applied in each of these national strategies, providing an understanding of the level of the alignment on these terms of the current national policies and measures on energy efficiency and climate change.

### 2. METHODOLOGY OF THE ASSESSMENT OF THE STATE OF IMPLEMENTATION

### 2.1 Methods of assessment

The assessment of the implementation of measures is based on the combination of actions described below, in no particular order of priority:

- Legal review: A research will be made in the official page of the Center for Official Publications, for the specific legal acts, sub-laws, Decision of Council of Ministers, published Orders of Prime Minister, ministers etc.
- Interviews: interviews, one of the most important sources of information for the assessment, have been carried out with governmental institutions' staff directly responsible for the drafting and implementation of the documents subject of this

assessment; interviews were conducted with the following governmental institutions:

- Ministry of Tourism and Environment: responsible for developing and submitting for approval the NDC; responsible for cooperating with the monitoring institutions of the NDC, such as the National Agency for Environment;
- National Environmental Agency: responsible for monitoring of the NDC as well as for updating the GHG inventory;
- Ministry of Infrastructure and Energy: responsible for the energy and transport sectors, the two biggest emitters of GHGs; it develops the National Energy and Climate Action Plan, which includes all sectors of the NDC; the two documents must be aligned, and the plans must complement each other;
- Agency for Energy Efficiency: responsible for implementing and monitoring the national energy efficiency plan; it is also responsible for energy efficiency local data collection;
- Web search: review of the official websites of the relevant ministries and institutions (use of key words, specific titles, etc.);
- Review of the budget plans of the institutions responsible for NDC implementation throughout the years;
- 5. Research of direct procurement from the Agency for Public Procurement;
- Auditing and monitoring reports of other institutions, international and non-government organisations, for example, the High State Control and the United Nations Development Programme.

The following table presents the methods of assessment by the type of measure for which they have been applied.

### 2.2 Limitations of methodology

The documents being reviewed have not been subjected to monitoring or an implementation review by government institutions. The main obstacle is that the Monitoring Verification Platform was never established for the NDC, and that the Ministry of Infrastructure and Energy was not engaged in monitoring the National Energy Efficiency Action Plan. No other monitoring report is available for comparison. Table 1: Method of assessment by type of measure

Type of Measure in the Plan/Strategy etc.		Method of assessment						
	Legal Review	Interviews	Web search	Budget Plan Review	АРР	Auditing and reports from NGOs		
National Legislation Acts	х							
Sub-Legal Acts	Х							
Infrastructure development (renovation of buildings etc.)		Х		х	х			
Awareness raising Campaigns, Promotions etc.		Х	Х	х		х		
Creation of Institutions	Х			х				
Financial Instrument (Tax penalties or incentives)	Х	Х		х		х		
Monitoring and evaluation Documents		Х				х		
Creation of Plans, Strategies, Roadmaps, etc.	Х	Х				х		

Moreover, there is limited presence of databases in the State institutions of previous EE initiatives or projects. A list of activities from international donors and NGOs is also missing.

- 1. On the interviews: For the purposes of this implementation report, the most useful source of information are the interviews that were conducted with representatives of the responsible institutions. Although the interviews provide insights and valuable information, they are limited to the experience of the individual interviewee. Although the interviewees have been working for their institutions for a relatively long time and are in charge of the respective matter, they might not recall or be unaware of certain developments. To address this potential limitation, the interview questions were sent to the interviewees in advance to allow them time to prepare for the interview.
- On the web search: The limitation of this method is that the institutions' web pages may not have been updated and may only include categorised information. This is usually not the case. To address this limitation, searches using key words and the web pages of donors and partners were carried out as well.
- 3. On budget plans review: The limitation of reviewing the budget plans is its lack of structure.

Although structure is evident in the main areas (energy, environment, etc.), there is no specific code or category for EE.

4. On research on direct procurement from the Agency for Public Procurement: The limitation is that not all public funds supporting EE are in fact described as EE measures, making tracking difficult.

# 3. METHODOLOGICAL OVERVIEW OF NDC 2015

### Type of the INDC: "baseline scenario outcome"

The Albanian government selected the option of an "outcome-based Intended Nationally Determined Contribution (INDC)". Contrary to "greenhouse gas mitigation actions-based INDC", which comprises a list of specific policies, sectoral strategies or other measures or projects with emissions reduction potential, an outcome-based INDC entails the delivered aggregate effect of measures on the economy as a whole or within selected sector(s). An outcomebased INDC's emissions reduction is compared to a historical base year or projected future emissions or emissions intensity reduction. It also represents a common type of pledge within the international climate regime. As a sub-category of an outcomebased INDC, the government has selected a "baseline scenario outcome" which represents a reduction in

GHG emissions relative to projected future emissions (e.g. x% GHG reduction below Business As Usual by a specific date, see Figure 1 for an example).





Source: Ministry of Environment, 2015

#### Base year: 2016

For the baseline, the year 2016 was chosen as starting point of the emission reduction efforts and 2030 as the end point of the scenarios, as it takes into consideration all the emission reduction efforts compared to a later start (i.e. 2020) and is suitable for a "baseline scenario outcome" target.

### GHGs covered: CO,

Since only limited data on GHG emissions—with the exception of  $CO_2$ —were available until 2012, and because uncertainty regarding accounting of other greenhouse gases is high, the INDC was only determined for  $CO_2$ . Land use, land-use change and forestry emissions are not considered here as demand for solid data and an in-depth understanding of the trends of net emissions from these sectors has been lacking and uncertainty exists in terms of removals in the LULUCF sector in Albania. Net emissions from these sectors might change the country's emissions scenarios considerably, as certain segments of these sectors can absorb carbon-dioxide emissions, thus reducing the overall amount of net emissions.

### Sectors covered: energy and industry

Ideally, an INDC covers the entire economy, which entails five key sectors in the GHG inventory: energy, industrial processes, agriculture, land use change and forestry, and waste.

However, excluding LULUCF and other GHGs other than  $CO_2$  limits the emissions covered by the INDC to less than 60 per cent of GHG emissions in the inventory. Nevertheless, including other gases would result in very high uncertainty and it was thus decided that the INDC will focus on the energy sector and industrial processes, which are both defined in the GHG inventory

### Models applied: PRIMES, complemented by SLED and LEAP

The government selected the following models and key parameters:

- 1. Development of a baseline
  - a. emissions for the year 2012 (and corresponding data on the fuel mix) are consistent with NC3 modelling;
  - As a default, trends from the PRIMES model were used for projections of energy intensity and activity levels;
  - c. The contribution of other sectoral models was partly considered (in particular, the SLED electricity and buildings sector models and the LEAP demand side model).
- 2. Development of a mitigation scenario:
  - a. assess potential measures and their costs and propose a set of low cost measures to go beyond efforts contained in the baseline.

### **Baseline Scenario**

The three models (PRIMES, SLED and LEAP) generated baseline scenario supply and demand results based on various assumed parameters for the service, residential, industry, transport, agriculture, energy and electricity sectors. 'These results reflect the GHG emissions between 2012 (last year with available data) and 2030, illustrated in the following tables:

Thus, the baseline or Business as Usual scenario confirms that the transport, industry, residential and service sectors are the main emitters, with a significant increase in emissions by 2030 driven by economic growth.

Table 2: Energy-related non-biogenic CO2 emissions in demand sec	tors

Sector	2012 (Gg CO <sub>2</sub> )	2015 (Gg CO <sub>2</sub> )	2020 (Gg CO <sub>2</sub> )	2025 (Gg CO <sub>2</sub> )	2030 (Gg CO <sub>2</sub> )
Residential	195.00	207.28	222.02	237.23	256.32
Service	55.70	61.63	71.02	82.33	96.04
Industry	770.27	837.01	953.13	1,101.46	1,273.59
Transport	2,237.56	2,431.10	2,681.75	2,897.72	3,197.43
AFF	242.98	275.18	307.32	341.04	310.96
Non Energy Use	100.67	100.67	100.67	100.67	100.67
Total Gg CO <sub>2</sub>	3,602.18	3,912.86	4,335.90	4,760.44	5,235.01

Source: Data from Ministry of Environment, 2015

#### Table 3: Process emissions

Sectors	2012 (Gg CO <sub>2</sub> )	2015 (Gg CO <sub>2</sub> )	2020 (Gg CO <sub>2</sub> )	2025 (Gg CO <sub>2</sub> )	2030 (Gg CO <sub>2</sub> )
Industry	210	227	290	433	758
Total Gg CO2	210	227	290	433	758

Source: Data from Ministry of Environment, 2015



### Figure 2: Total emissions by sector

Source: Data from Ministry of Environment, 2015

Within the scope of the modelling exercise, several uncertainties in the results remained, namely:

- base year data uncertainties, including data on energy consumption at the sectoral level (e.g. related to the output of industrial sub-sectors or of the transport sector);
- inconsistencies between different data sources;
- unexpected tendencies in economic growth and/ or socio-economic change would influence the estimations;
- uncertainties related to emissions developments, which can have a significant impact on the emissions of a small country;
- limited amount of time and resources available to address these uncertainties and poor data quality.

### Scenario for 2030

For the development of the INDC scenario, a cost benefit analysis of potential measures that go beyond the baseline scenario was carried out. The objectives of the cost-benefit analysis were:

To conduct a cost-benefit assessment of different GHG mitigation scenarios using Marginal Abatement Cost Curves;  To suggest optimal mitigation scenario(s) to be used for submission as Albania's economy-wide mitigation contribution in its INDC.

### INDC scenario assumptions and modelling results

The resulting measures from the cost-benefit analysis for the INDC scenario are listed in Column Two of Table 3. Consistent with the baseline scenario, the INDC scenario covers CO2 emissions only and excludes the LULUCF sector. Moreover, efforts were undertaken to harmonise energy consumption projections with a European Bank for Reconstruction and Development (EBRD) study, which underpinned the sustainable transport strategy. Based on this information, the LEAP model was applied to the demand side while the SLED model was applied to the supply side (electricity sector).

The respective measures were based on the recommendations of the National Energy Efficiency Action Plan and the Third National Communication (TNC). Additional mitigation measures for the transport and industrial sector were considered based on international experience as well as the introduction of a 10 percent biofuel policy until 2030 for the transport sector.

Sector	Measure according to INDC <sup>F</sup>	CO2 reduction (kt)	Cost of investment (000 EUR)	Source/assumptions
Residential & Service	Thermal insulation of family dwellings (wood, kerosene, LPG)	50 <sup>a</sup>	21,000	TNC: Albania-specific cost data
Industry	Establishing most efficient boiler (fuel-like diesel and coal fired)	225 <sup>в</sup>	15,000	TNC: GACMO model
	Transition from coal/oil to natural gas	52 <sup>c</sup>	0	No additional costs for natural gas-fuelled vs. coal/oil-fuelled equipment; Natural gas is available to main industrial sites under the baseline
Transport	Increase efficiency of oil and diesel fleet with new technology Road vehicles using alternative fuels (hybrid, EV, gas) Transition from private to public transport	116 <sup>d</sup>	195,000	All cost-effective measures in transport MACC; Natural gas is available to vehicle depots at no additional cost for gas distribution (from EU data)
	Modal switch to biofuel by 10% in 2030	265	456,000	A 100 mln litre capacity biofuel plant costs USD 250 mln (from UK data)
Total		708 <sup>E</sup>	687,000	

Table 4: Overview of NDC 2015 emissions reduction scenario for 2030

A 12 for wood; 37 for LPG; 1 for kerosene

B 128 for fuel; 97 for coal

C 5% of total emissions in the industry sector; assumption made by NDC 2015: the CO2 emission factor of natural gas is 10% lower than that of oil and 30% lower than that of coal; switching to natural gases would reduce emissions by around 20% - the potential for switching to renewables is lower but could reach 100% emission savings. Consequently, it is assumed that the industrial sector can reduce emissions by 20% x 25% = 5% in 2030 through the transition from fuel/oil to natural gas

D 3.6% of the 2030 BAU emission projection

E 11.5% compared to BAU

F Respective measures were based on recommendations in the NEEAP and the TNA. Additional mitigation measures for the transport and industrial sectors were considered based on international experience as well as the introduction of a 10% biofuel policy until 2030 for the transport sector

### **Emissions reduction target**

The selected measures of the INDC scenario led to the following emission reduction target for the INDC:

- Baseline scenario target: the country is committed to reducing its CO<sub>2</sub> emissions by 11.5 per cent compared to the baseline scenario in the period between 2016 and 2030. This reduction is equal to 708,000 tonnes of CO<sub>2</sub> emissions by 2030.
- CO<sub>2</sub> budget: Albania's envisaged emission trajectory would result in a limit of 2 tonnes of GHG emissions annually per capita by 2050.
- Sectors covered: energy and industrial processes.

The authors of the INDC modelling made the following recommendations for additional contribution to climate mitigation, by 2030:

- The potential for cost-effective mitigation is likely to be understated in the TNC and NEEAP; this is also the case in our preliminary estimate on the transport sector's potential based on international measures and vehicle stock data from the EBRD report.
- It may not be reasonable to set the target of achieving all cost-effective mitigation measures by 2030 since this requires considerable investment costs and other barriers associated with, for example, retrofitting a large share of the building stock.
- The baseline as well as the mitigation potential of all sectors are characterised by major uncertainties; hence, any contribution of INDC mitigation measures should be carefully designed, allowing for the possibility to re-base them once further data become available.

### 4. INTERCONNECTION BETWEEN NDC, NEEAPS AND NSCCAP

Throughout this project, one consistent theme took shape, namely that the EE measures defined have been carried over from one plan to the next. EE measures were first laid out in the 1st NEAAP of 2011–2018 and the need to realise all of its measures was included in the 1st NDC of 2016–2030. The 2nd and 3rd NEEAP of 2017–2020 incorporated some of the measures of the 1st NEEAP, even though no monitoring has ever been carried out.

The NDC 2016–2030 and the 2nd and 3rd NEEAP of 2017–2020 have served as a basis for the National Strategy of Climate Change and Action Plans of 2019–2030, and nearly all measures were carried over without modification.

Because the Strategy's measures have been carried over from both the 2nd and 3rd NEEAP as well as from the NDC 2015, the implementation of all EE measures in the Strategy and those in the NDC 2015 and NEEAP that were not carried over to the Strategy will, for the purposes of this report, be reviewed separately.

# 5. STATE OF IMPLEMENTATION OF NEEAP 2011–2018

The NDC 2015 determines the measures of NEEAP 2011–2018 as necessary to reduce GHG emissions. For the purposes of this report, the implementation of the 2nd and 3rd NEEAP 2017–2020 is analysed, considering that it carries over the measures of the 1st NEEAP; moreover, the 2nd and 3rd NEEAP is the only documents that provides a brief description of the implementation and challenges of the 1st NEEAP.

### 5.1 Achievements of NEEAP 2011–2018

Albania did not face many challenges related to the implementation of the measures contained in the NEEAP adopted by the government in September 2011. Many of the measures required the cooperation of ministries and other bodies outside of the Ministry of Economy, Trade and Energy, and the MEI. In other words, mutual understanding about, inter-ministerial coordination and, consequently, support for the Plan's legal and financial measures were absent, preventing the integration of measures into sector-based plans. Moreover, the adoption of the Law "On Energy Efficiency", aimed at finalising the legal and regulatory framework for the establishment of a market for energy services, the creation of an agency dedicated to EE and the EE Fund was overdue. Some measures were not realistic, however, particularly the proposed timelines and readiness to monitor and implement the measures. Despite these difficulties, some progress has been made in terms of EE in Albania. A number of pilot projects for the renovation of public buildings have been developed, trainings for auditors and energy managers conducted with the support of international financial institutions and donors, while domestic banks have provided lending lines for EE measures, mainly for improving the external appearance/layer of buildings.

The formal assessment of the energy savings achieved by the above measures was hampered by the lack of a monitoring and verification scheme under which bottom-up savings could be calculated, while the availability and quality of national statistics has limited the usefulness of the "top-down" method. To enable timely and accurate reporting during the period covered by the most recent NEEAP, the establishment of a monitoring and verification scheme is considered a priority.

# 6. STATE OF IMPLEMENTATION OF NDC 2015

# 6.1 Energy efficiency measures in the building sector

The energy efficiency measures in the building sector that were included in NDC 2015 are presented in Table 5.

The following observations can be made about the measures presented above:

On Measure 1: The Third National Communication is not part of the scope of this implementation report. Its measures have been carried over from other approved action plans.

On Measure 2: The 1st NEEAP was replaced in 2017 by the 2nd and 3rd NEEAP; for the purposes of this implementation report, the second plan will be considered, since the measures of the first one were only valid until 2016.

Source of the measure	Comment	Measure included	Mitigation potential 2030 (kt/year)
TNC	Measures have been excluded due to the poor	Thermal insulation of households - wood	12
	methodology of calculation of the GACMO model; the mitigation potential may have been	Thermal insulation of households - LPG	37
	underestimated by modelling the reduction of	Thermal insulation of households - kerosene	1
	sources unlikely to be utilized	Thermal insulation of households - DH	0
		District heating	38
		Central heating	26
NEEAP	The mitigation measures have a very small impact on GHG emissions	Package of mitigation measures of the NEEAP for year 2018	0
Energy Community	An approximate cost of the measures is provided; LEAP and PRIMES data have been used to determine energy split and household growth; the measures are assumed to include all buildings listed in the building inventory	Cost effective refurbishment of buildings	203
GACMO	GACMO model has been used with a 2030	Efficient domestic lighting with CFLs	0
	estimate of emission factors from the SLED model; cost effective numbers are high even though emissions savings are so small, because cost savings, driven by electricity savings, are high	Solar water heater, residential	0
		Efficient office lighting with CFLs	0
		Efficient refrigerators	0
		Efficient domestic lighting with LEDs	0
SLED refurbishment	Only cost effective measures have been assumed to apply; it is assumed that 1% - 5% of properties are destroyed each year, and 5% of	Insulation of internal, external walls and roofs	539
	existing buildings are retrofitted each year, and a 5% discount rate; the electricity emissions factor is assumed to be from SLED in 2030		640

### Table 5: Measures in the building sector in the NDC 2015

Source: Data from Ministry of Environment, 2015

The authors of the NDC made the following remarks about the limitations of this measure: "The measures contained in the NEEAP present savings in total across all sectors of only approximately 0.3 kt CO2 in 2018. This seems very low and may indicate an error in the units presented or in the calculation of impact. Therefore, there is low confidence in this mitigation contribution."

On Measure 3: This measure assumes the target's full implementation. The EE target (energy savings) in the building sector was assumed to be 1 per cent annually, accumulating to a total of 9 per cent by 2020. The NDC analyses the building inventory, roughly estimates the potential for energy savings and the most cost effective energy saving measures. These are presented for each building stock. All profitable measures (positive net present value) were included in the packages considered. The baseline is the total energy consumption at the time the analysis was carried out in 2012.

On Measure 4: GACMO is a model that assesses savings and emission reductions. The model is not meant to be a detailed country-specific model. The model has been designed to facilitate assessment with minimal data required. Our initial analysis of the model suggests that fuel mix or power generation assumptions have little impact on the model. One of the model's key drivers is the assumption of the implementation of measures in future scenarios which determine the abatement potential of each measure considered and the emissions factor included in the model. The baseline assumes that many different technology choices currently meet energy demand. These technologies have to be assessed carefully to better understand the model's legitimacy. In this context, this model cannot be considered a measure in itself but a tool to enable the assessment of savings based on different measures.

On Measure 5: The SLED project provides both the expected costs and energy savings for two types of refurbishment packages (standard and ambitious) in Albania's existing building stock. This measure in itself is a modelling exercise, not a detailed plan. The authors cite the following limitation: "It has not been possible to check or validate these figures as the SLED modelling project is ongoing".

## 6.2 Energy efficiency measures in the industrial sector

The EE measures in the industrial sector included in the NDC 2015 are described in Table 6.

These measures are not an integral part of the NDC itself but refer to other studies and models. Also, some measures are not specific to EE but rather to the replacement of fuel (e.g. clinker).

According to the methodology used in this report, no initiatives (in terms of these measures) were found to have been taken in the industrial sector.

Source of the measure	Comment	Measures included	Mitigation potential 2030 (kt/year)
	Measures have been excluded due to the poor methodology of calculation of the GACMO model; the	Efficient boilers fuel oil - diesel	128
TNC	mitigation potential may have been underestimated by modelling the reduction of GHG emissions through renewable energy sources unlikely to be utilized	Efficient boilers coal	97
NEEAP	The mitigation measures have a very small impact on GHG emissions	Package of mitigation measures of the NEEAP in industry for year 2018	0
	GACMO model has been used with a 2030 estimate of emission factors from the SLED model: cost effective	Efficient electric motors - industry	0
GACMO	numbers are high even though emissions savings are so small, because cost savings, driven by electricity	Efficient electric motors - services	0
	savings, are high	Clinker replacement	164

Table 6: Measures in the industrial sector in the NDC 2015

Source: Data from Ministry of Environment, 2015

# 6.3 Energy efficiency measures in the transport sector

The following EE measures in the transport sector are included in the NDC 2015:

Table 7: Measures i	h the transp	ort sector in the	NDC 2015

Category of mitigation measure	Disaggregated mitigation measure
Increased efficiency for the petrol and diesel fleet	Modern vehicles will include two or three suitable additive technologies aimed at increasing vehicle efficiency
	Alternative fuels - petrol HEV
Untake of alternatively fuelled read vehicles	Alternative fuels - diesel HEV
Uptake of alternatively fuelled road vehicles	Alternative fuels - EV (electric vehicles)
	Alternative fuels - CNG (gas-fuelled vehicles)
Modal shift	Shift from private vehicles to public transport (bus rapid transit scheme)
Biofuels	10% biofuel penetration by 2030 (5% by 2025)

Source: Data from Ministry of Environment, 2015

The following observations can be made about the abovementioned measures:

The above measures were based on expert judgement. The only measure directly related to EE is the first one, whilst the other measures are aimed at increasing the efficient use of resources.

Using the methodology described for the assessment of the implementation described above, no initiatives in additive technologies have been introduced to date to increase EE.

Measure 2 has been integrated in Law 85/2019, which amends Law 92/2014 "On the value added tax in the Republic of Albania", which removes the VAT on imported electric vehicles.

### 7. STATE OF IMPLEMENTATION OF NEEAP 2017–2020 AND NSCCAP 2019–2030

As described above, the National Strategy of Climate Change and Action Plans 2019–2030 has incorporated the majority of measures already present in the NEEAP 2017–2020. Therefore, for the purposes of this implementation report, the list of measures assessed will be drawn from the strategy. The measures that were implemented prior to the approval of the NSCCAP will be addressed separately.

The majority of measures that have been fully or partially implemented refer to legal acts. The implementation of EE measures, on the other hand, is lacking.

# 7.1 State expenditures between 2017 and 2021

To provide a bigger picture of the government's EE efforts, a review of the Middle Term Budget Programme has been conducted.

In the MTBP, the programme Support for Energy, which the Ministry of Economy, Trade and Energy is responsible for, has been assigned the code 04320 and is described as follows:

"The policy of this programme consists of: developing policies and strategies for sustainable development of the energy sector, the implementation of the programme and priorities of the Government, tasks associated with the implementation of the Treaty establishing the Community of Energy and of the EU Directives, which consists of completing the legal and institutional framework of the energy sector in line with the acquis communautaire; guarantee of secure supply of the economy with energy resources."

Based on the review of the MTBPs throughout the years, we identify 40 measures that are directly or mostly related with EE measures. These measures, however, do not always align with the measures described in the NEEAP or NSCCAP. More often, the measures are of a legal nature and conducting studies to assess potential savings, or sectoral opportunities for energy savings is difficult. We also observe that part of the funds are allocated to contributing to VAT or other expenditures for projects supported by foreign donors such as KfW, etc.

An EE audit conducted by the High State Control identified the following ratio of EE measures to total expenditure for energy within the "Support for Energy" programme:

### Table 8: Mid-term budget plan of the program "Support for energy"

Budget 000 ALL	2016	2017	2018	2019
Budget of "Support for Energy"	788,549	2,279,600	8,574,775	4,959,900
Budget for EE	313,604	561,400	502,751	726,207
Ratio	40%	25%	6%	15%

Source: Data from High State Control, 2020

### A comprehensive list of measures in the MTBPs over the years is provided below.

МТВР	Project No.	Title	Duration	Total Costs (000 ALL)
2017	05074	Rehabilitation of Student City, VAT Reimbursement	2017-2019	657,000
2017	05073	Project for energy efficiency on rehabilitation of some buildings in Vlora, Gjirokastra, Korça	2016-2017	105,000
2017	05066	Monitoring of energy efficiency in buildings	2016	1,000
2017	05069	Functioning of AEE	2016	20,000
2017	05070	Study on energy management problems on the Albanian sectors of the economy	2016	500
2017	05079	Functioning of the AEE	2017-2019	138,000
2017	05087	Manual for green procuring	2017-2019	11,000
2017	05233	Software for energy certification of buildings	2017-2019	29,900
2018	05281	Energy Certification of Public buildings	2018-2019	198,900
2018	05282	Auditing and establishment of the obligatory scheme for energy efficiency in 5-8 large energy consumers	2018-2019	16,000
2018	05283	Application of use of alternative systems for high energy efficiency on the technical systems of a residential center	2017-2019	57,000
2018	05287	Rehabilitation of Student City	2017	140,000
2020		Improved laws in the field of energy efficiency	2020	15,400
2020		Reconstruction Building with efficient measures	2020	25,675
2020		Reconstruction Building with efficient measures 1	2020	430,410
2020	M064095	VAT - ENERJ Project - Project VAT payment	2020	9,000
2020	18BIO27	Complete feasibility study for the installation of Charging Towers for electric cars in the Republic of Albania	2020	45,059
2020	19AC202	Cooperation Greece Albania for buildings with zero consumption, (nZEBs)	2020	30,336

### Table 9: Mid-term budget programs 2017-2021

МТВР	Project No.	Title	Duration	Total Costs (000 ALL)
2020	19AC205	Energy Efficiency Sector Support Project and Renewable Energy Development	2020	30,832
2020	19AC303	VAT Cooperation Greece Albania for buildings with zero consumption, (nZEBs)	2020	
2020	M064091	Application of the use of high efficiency alternative systems for technical systems in a residential center. Study and use of highly efficient systems	2020	
2020	GM06095	Rehabilitation of Student City Nr. 2 Rehabilitated buildings with energy efficiency measures	2020	
2021	90602AB	Improved laws in the field of energy efficiency	2021	19,400
2021		Reconstruction Building with efficient measures	2021	8,141
2021		Reconstruction Building with efficient measures 1	2021	500,000
2021	M064095	VAT Project - ENERGY - VAT payment project	2021	6,000
2021	18BI017	VAT - LED Project - The main way to improve energy efficiency in public schools and spread the use of renewable	2021	1,200
2021	18BIO24	Project idea, feasibility study and project implementation of the central heating system of Korça excluding timber (new project)	2021	19,000
2021	18BI027	Complete feasibility study for the installation of Charging Towers for electric cars in the Republic of Albania	2021	16,000
2021	18BIO31	Information Billing Project, Awareness campaigns, education and training on Energy Efficiency	2021	8,400
2021	18BI034	Pilot Project for Improving Energy Efficiency in Wastewater Treatment Plants	2021	10,000
2021	18BI035	Pilot Project for Improving Energy Efficiency in Water Supply	2021	10,000
2021	18BI036	Pilot project for the construction of a building with "O Energy"	2021	14,000
2021	19AC2O2	Cooperation Greece Albania for buildings with zero consumption, (Greece cooperates with Albania for nZEBs)	2021	20,224
2021	19AC205	Energy Efficiency Sector Support Project and Renewable Energy Development Project	2021	6,000
2021	19AC3O3	VAT Cooperation Greece Albania for buildings with zero consumption, (Greece cooperates with Albania for nZEBs)	2021	4,000
2021	19AC304	Local Cost Cooperation Greece Albania for zero consumption buildings, (Greece cooperates with Albania for nZEBs)		1,300
2021	19AC306	PRO Project PRO - ENERGY	2021	4,000
2021	M064091	Application of the use of high efficiency alternative systems for technical systems in a residential center Study and use of highly efficient systems	2021	7,000
2021	GM06095	Rehabilitation of Student City No. 2 - Rehabilitated buildings with efficient measures	2021	390,000
2021	18BIO33	Project Organization of awareness campaigns and activities for the promotion of Energy Efficiency		2,000

# 7.2 Achievements on the legislative framework of energy efficiency

The focus in both the 2nd and 3rd NEEAP and the NSCCAP is on enabling the adoption of legal acts. The main acts are the sectoral law of energy efficiency and the law on energy performance in buildings. The establishment and functioning of the AEE is also one of the main enabling factors for successful developments in EE.

The following table presents the most important legal acts in the area of EE.

We observe that following the approval of the sectoral law on Energy Efficiency in 2015 and the law on Energy Performance in Buildings in 2016, the next steppingstone was the establishment of the AEE.

Unfortunately, the Agency was underfunded from 2016–2018 and staff were only employed in 2019. The law describes the functions of the AEE in depth and its relevance for the implementation of action plans as

well as their monitoring. Recently, as observed by the number of legal acts put forward and approved, the AEE's relevance has increased in terms of capacities and funds and has started licensing energy auditors and energy managers.

The AEE can be considered the most important institution after the MIE in the implementation of EE measures included in the documents, which this implementation report review.

### 7.3 Monitoring the implementation of energy efficiency measures

Each of the three documents reviewed in this report has a monitoring plan, but their implementation processes have not been subject to monitoring or evaluation; therefore, there is no monitoring of the implementation of the energy efficiency measures contained in these documents.

To illustrate, the following table presents the monitoring requirements of the three documents reviewed above, as well as of other national documents related to the scope of the three reviewed documents.

Туре	No.	Title
Law	124/2015	On Energy Efficiency
Law	28/2021	On modifications and additions to the Law 124/2015 "On Energy Efficiency", as amended
Law	116/2016	On energy performance in buildings
DCM	852/7.12.2016	On the establishment and functioning of the Agency for Energy Efficiency
DCM	342/22.5.19	On the approval of categories, criteria and requirements of qualification for energy managers
DCM	407/19.6.2019	On the approval of categories, criteria and requirements of qualification for energy auditors
DCM	256/27.3.2020	On the approval of the methodology for calculating the optimal costs for minimum criteria of performance of buildings or their components
DCM	537/8.7.2020	On the approval of minimum performance requirements of buildings and their components
DCM	934/25.11.2020	On the approval of criteria and procedures for the method and amount of selecting certificates that will be verified and the process of monitoring buildings' energy performance certificates
DCM	958/2.12.2020	On the approval of procedures and conditions of certification of energy performance in buildings and of the model, content and criteria of registering the "building energy performance certificate"

#### Table 10: Legal acts on energy efficiency in force

Source: Data from Official Publication Centre, 2021

Table 11: Monitoring requ	uirements o	of national	documents
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Document	Validity	Institution of M&E	M&E Methodology
Nationally Determined Contribution in the framework of UNFCCC	2015-2030	Ministry of Tourism and Environment	Unspecified
Interconnected Environmental Strategy	2015-2020	Ministry of Tourism and Environment	DCM No. 1189 dated 18/11/2009 "On the rules and procedures for the drafting and implementation of the national environmental monitoring programme"
National Strategy for Integration and Development	2014–2020	Department of Development and Financing of Foreign Aid	Annual reporting; methodology described in NSDI II
NAMA: Replacing Fossil Fuels with Non-hazardous Waste in the Albanian Cement Industry	2015-2020	Ministry of Infrastructure and Energy	Annual reporting in the MRV process
NAMA: Financing Mechanism for Energy Efficiency in Buildings	2015-2020	Ministry of Infrastructure and Energy (under the responsibility of the NAMA Implementing Party)	Annual reporting in the MRV process
First Action Plan at the National Level on Energy Efficiency	2010-2018	Ministry of Infrastructure and Energy	Annual reporting according to the Plan
Renewable Energy Sources Action Plan Albania	2015-2020	Ministry of Infrastructure and Energy	Annual reporting according to the Plan
Intersectoral Strategy for Agricultural and Rural Development	2013-2020	Ministry of Agriculture and Rural Development	Annual reporting according to the Decision of the Prime Minister no. 139, dated 1/07/2010
Rural Development Programme 2014–2020 under the Pre-Accession Assistance Instrument	2014–2020	Ministry of Agriculture and Rural Development	Annual reporting; methodology described in this document
Biodiversity Strategy Policy Document	2016-2020	Ministry of Tourism and Environment	Annual reporting; methodology described in this document
Transport Sector Strategy and Action Plan	2016-2020	Ministry of Infrastructure and Energy	n/a
Sustainable Transport Plan - Basic document	2016-2020	Ministry of Infrastructure and Energy	Annual reporting, indicators reported in the document

Source: Data from Ministry of Tourism and Environment, 2019

### 8. AUDIT OF THE HIGH STATE CONTROL ON ENERGY EFFICIENCY

In October 2020, the High State Control published an audit report on EE and institutional arrangements and the legal set up in this regard. The audit's key finding is as follows:

"Energy efficiency-related measures introduced by the MIE and AEE in our country have not been effective. By not approving a series of bylaws, the MIE has failed to finalise Law No. 124/2015 "On Energy Efficiency" and Law No. 116/2016 "On Energy Performance in Buildings". The National Calculation Methodology has not been approved by DCM. MEI has not drafted the Strategy for Renovation of Public Buildings and the National Plan for increasing the number of buildings with "near zero energy" performance as part of NEEAP 2017–2020. AEE has not monitored NEEAP 2017–2020 and the Minister of Energy and Infrastructure has never reported to the Council of Ministers about the implementation of the National Action Plan for Energy Efficiency. As a result of the lack of HLC and energy auditors certified by AEE, no energy audit has been performed to date. The non-functioning of the Energy Efficiency Fund has affected the financing of the programme in the field of EE, the development of pilot projects to study new technologies, research and development activities to increase EE, undertaking awareness campaigns and the development of financial mechanisms and fiscal incentives for investment. The EE projects audited in this audit have not achieved their main objectives. Despite the current situation, during the time this audit was being conducted (January to June 2020), AEE has drafted a series of bylaws and sent them for approval to the MEI. The adoption of these acts, together with the implementation of the recommendations for the audited entities, would improve the implementation of EE measures."

The High State Control provides detailed recommendations on each specific issue identified.

### 9. FINDINGS AND RECOMMENDATIONS

### Finding 1

The state of implementation of the NDC of 2015 has not been monitored before until present; the level of realization of the national GHG emissions target has not been measured since 2015 and it is at present unknown.

#### Finding 2

The measures included in the NDC 2015 have been carried over in previous and ongoing strategic documents that were not developed by the creators of the NDC themselves. Examples can be found in the titles of measures covered by the SLED study, GACMO, implementation of the NEEAP, etc. As stated in the NDC itself, aligning the different studies and action plans, especially in terms of modelling, is a difficult exercise. The studies use different models, e.g. LEAP, PRIMES, TIMES, etc.

### **Recommendation 2**

A single unified approach should be introduced in the newNDC. The plans and measures should be developed separately from existing plans and strategies or a single modelling exercise should include them all. Ideally, a unified approach should be introduced at the national level in which a specific model is specified and continuously refined and used by all action plans. Examples could be LEAP, PRIMES, TIMES, etc.

### Finding 3

There is a disconnection between similar purpose documents and the carrying over of measures from one action plan to the other. One example is the carrying over of all measures from the 2nd and 3rd NEEAP to the NSCCAP, even though both plans were developed at different times, by different consultants and are based on different models. This approach creates the risk of a negative feedback loop in developing new documents if they constantly refer to one another. For example, the EE measures of NEEAP have been included in the National Energy Strategy, which simultaneously also advocates the same measures.

#### **Recommendation 3**

Streamlining the planning process is essential. Action plans should not duplicate or replicate each other. A new planning approach was introduced by the Governance Regulation of 2018. Action plans and strategies will be replaced by the National Energy and Climate Action Plan, which will replace the NEEAP, the NAPRES and the NES.

#### Finding 4

There is a general lack of monitoring and evaluation of energy and climate change related documents.

#### Finding 5

Each of the documents describes its own monitoring methodology and approach: the NDC relies on the monitoring, reporting and verification approach while the NEEAP relies on monitoring by the Agency for Energy Efficiency. This lack of a unified approach to monitoring of energy efficiency measures across documents undermines any process of monitoring and, even more so, a process of the evaluation of their state of implementation.

#### **Recommendation 5**

The introduction of a single, unified method to monitor EE measures. In this regard, the National Energy and Climate Action Plan resolves this issue by implementing only one set of measures to monitor.

#### Finding 5 - 1

While reviewing the MTBPs for EE projects, we identify a lack of a specific category and code for such types of expenditures. All EE measures fall within the category of "Support for energy" which is quite broad. The only method for assessing whether a measure should be counted towards efficiency implementation is the short description available in the table. It is impossible to identify for many of the measures, as they are covered by collaboration projects with international organisations and the government excludes VAT or provides a partial contribution for these.

### Recommendation 5 - 1

Create a system for the tracking of expenditures along the state expenditures. A well-defined codification in the budget would allow the institutions themselves to properly monitor the action plans. The projects in the MTBP should explicitly mention which part or component contributes to EE. This approach would also allow for a better check of the balance of monitoring by actors outside of the government, such as civil society organisations, etc. A methodology should be developed to help categorise measures that have a full or partial EE impact when planned in the MTBPs.

### Finding 6

A recurrent theme was identified from the interviews conducted with representatives of ministries and line institutions. All individuals interviewed pointed out the distinct lack of in-house capacities in their respective institutions. This lack of capacities limits the institutions' field of action, which in turn resort to reliance on support from donors. Only few capacities are available to elaborate and review the drafts and work produced by consultants. EE issues are of a highly technical nature and often have a wide range of implications, and the staff might find themselves unprepared. Another problem is retaining capacity. Trainings provided by NGOs and international organisations focus on the individuals responsible for a certain issue only, but often, this individual might be appointed to perform other duties or leave the institution altogether. One clear example of this is the lack of a single qualified person in all government institutions who understands how to use specific energy modelling tools (such as LEAP, TIMES, PRIMES, etc.)

### **Recommendation 6**

The government should focus on institutional capacities and a clear structured approach should be implemented in coordination with donors to build and retain capacities. A priority list should be created which identifies the key areas that would benefit the most from boosting capacities and efforts should be concentrated on increasing the most impactful capacities. Examples could include increasing capacities in budgeting, cost benefits analyses, energy modelling, etc.

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