Under the National Adaptation Planning Process

IMPLEMENTATION PLAN FOR PRIORITIZED ADAPTATION ACTIONS 2026-2036

GREEN CLIMATE FUND

REPUBLIKA E SHQIPËRISË
MINISTRIA E TURIZMIT DHE MJEDISIT

UNDP

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List of Acronyms and Abbreviations

AEZ	Agro-ecological zone
AAEF	Albanian American Enterprise Fund
ABI	American Bank of Investment
AF	Adaptation Fund
AFD	French Development Agency
AFOLU	Agriculture, Forestry and Other Land Use
AKPT	National Agency for Territorial Planning
ARA	Albanian Road Authority
ASPA	Albanian School of Public Adminsitration
AREF	Albanian Reconstruction Equity Fund
BCR	Benefit-Cost Ratio
BKT	Bankës Kombëtare Tregtare
BNG	Biodiversity Net Gain
CAPEX	Capital Expenditure
CBA	Cost-benefit Analysis
CC	Climate change
CCA	Climate Change Adaptation
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
COP	Conference of the Parties
EbA	Ecosystem-based Adaptation
EBRD	European Bank for Reconstruction and Development
EIB	European Investment Bank
EIF	Enhanced Integrated Framework
EIGE	European Institute for Gender Equality
EPC	Energy Performance Certification
ESG	Environmental, Social, and Governance
EU	European Union

FAO	Food and Agriculture Organization
FIB	First Investment Bank
FSC	Forest Stewardship Council
GBV	Gender-based violence
GCF	Green Climate Fund
GDI	Gender Development Index
GDP	Gross Domestic Product
GEF	Global Environment Facility
GEI	Gender Equality Index
GGF	Green for Growth Fund
GGGR	Global Gender Gap Report
GII	Gender Inequality Index
GIS	Geographical Information System
GIZ	German Agency for International Cooperation
GLTP	General Local Territorial Plan
GNSP	General National Spatial Plan
GNTP	General National Territorial Plan
GPP	Green Public Procurement
HDI	Human Development Index
IGEO	Institute of Geosciences
IKI	International Climate Initiative
IMF	International Monetary Fund
IMWGCC	Inter-Ministerial Working Group for Climate Change
INSTAT	Institute of Statistics
IPCC	Intergovernmental Panel on Climate Change
ISPB	Intesa Sanpaolo Bank
JICA	Japan International Cooperation Agency

KESH	Albanian Power Corporation
LAP	Local Adaptation Plan
LGBTIQ	Lesbian, Gay, Bisexual, Transgender, and Queer/Questioning, and Intersex
LNG	Liquefied Natural Gas
LPG	Liquefied Petroleum Gas
MARD	Ministry of Agriculture and Rural Development
MCA	Multi-criteria Analysis
MDB	Multilateral Development Bank
MFZ	Mediterranean Field Zone
MHSP	Ministry of Health and Social Protection
MHZ	Mediterranean Hilly Zone
MIE	Ministry of Infrastructure and Energy
MMZ	Mediterranean Mountainous Zone
MoE	Ministry of Environment
MoTCS	Ministry of Tourism, Culture and Sports
MPMZ	Mediterranean Pre-mountainous Zone
MW	Megawatt
NANR	National Agency of Natural Resources
NAP	National Adaptation Plan
NAPA	National Agency for Protected Areas
NAPM	National Action Plan on Mitigation
NAWRM	National Strategy of Water Resources Integrated Management
NBS	Nature-based Solutions
NCPA	National Civil Protection Agency
NDC	Nationally Determined Contribution
NEA	National Environmental Agency
NECP	National Energy and Climate Plan
NFA	National Forest Agency
NGFS	Greening the Financial System
NPV	Net Present Value
NSDI	National Strategy for Development and Integration
NSGE	National Strategy on Gender Equality
NTPA	National Territorial Planning Agency
OECD	Organisation for Economic Co-operation and Development
OPEX	Operational Expenditures

OTP	OTP Bank Albania
PCB	Procredit Bank
PE	Private Equity
PEFC	Programme for the Endorsement of Forest Certification
PES	Payments for Ecosystem Services
PV	Photovoltaic
RE	Renewable energy
REC	Resource Environmental Center
RZB	Raiffeisen Bank
SBFN	Sustainable Banking and Finance Network
SCCF	Special Climate Change Fund
SLR	sea level rise
SSP	Shared Socioeconomic Pathways
TAP	Trans-Adriatic Pipeline
TB	Tirana Bank
TTDI	Travel & Tourism Development Index
TWG	Technical Working Group
UBA	United Bank of Albania
UKCIF	United Kingdom Caribbean Infrastructure Partnership Fund
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNWTO	United Nations World Tourism Organization
USAID	United States Agency for International Development
USD	United States Dollar
VC	Venture Capital
WBG	World Bank Group
WBIF	Western Balkans Investment Framework
WEF	World Economic Forum
WFD	Westminster Foundation for Democracy
WMO	World Meteorological Organization
WQI	Water Quality Index
WRMA	Water Resources Management Agency
WTTC	World Travel and Tourism Council

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Introduction

This report forms part of the work conducted to design and validate a new National Adaptation Plan for Albania, including a series of complementing documents such as this Implementation Plan for prioritized adaptation actions .

1.1 Introduction to the project

The work conducted to prepare this report included the evaluation and prioritization of climate change adaptation options at the national level by conducting costing and feasibility analyses across five key sectors: agriculture and forestry, energy, transport, urban development, and tourism, including also some transversal or cross-sectoral measures. First, the adaptation measures were ranked using a multi-criteria analysis (MCA) that took into account factors such as implementation feasibility, social benefits, and alignment with strategic climate, vulnerability, and national priorities, which led to the prioritization of the best performing 66 measures. This prioritization was further supported by a comprehensive financial assessment, including a cost-benefit analysis for infrastructure-related measures.

Furthermore, the prioritization process was aligned with the recently developed Local Adaptation Plans (LAPs) for eight Albanian municipalities—Durrës, Elbasan, Fier, Gjirokastër, Krujë, Kukës, Përmet, and Vlorë—culminating in the development of the Adaptation Actions National Implementation plan encompassing the 66 prioritized adaptation actions.

In this context, the present report, provides a plan that outlines the actions required to implement the 66 selected measures that were prioritized from a given long-list in the previous project phase. The Implementation Plan includes key information about each measure including the necessary activities for implementation, estimated costing of the measure, timeline, responsibilities, potential funding sources and proposed monitoring and evaluation indicators.

Section 1 offers a succinct overview of the country, covering its geographical, demographic, environmental, economic, social, and gender dimensions, along with a summary of the main climate-related strategies, policies, and regulations that define the national framework.

Section 2 delivers an in-depth overview of the five priority sectors—agriculture and forestry, tourism, urban development, transport, and energy—offering a detailed analysis of their current conditions. It also features a comprehensive vulnerability and risk assessment, examining each sector's exposure to climate-related hazards and offering critical insights into their resilience.

Section 3 describes the process conducted to identify, prioritize and validate the key adaptation measures for addressing climate change expected impacts in Albania.

The Implementation Plan which covers the period 2026-2036, as per the national validation cicles, is detailed under Section 4 of the Plan. The section provides an overview of the objectives of the Plan, implementation activities for the adaptation measures, roles and responsibilities, timeline for the priority measures as well as a financial assessment and means of implementation, followed by a proposal and recommendations on Monitoring and Evaluation (M&E).

The Implementation Plan has been through a validation process with UNDP and Albanian stakeholders of the National Adaptation

Plan (NAP) process, and was presented and discussed in a workshop to ensure awareness of the Implementation Plan within the larger NAP preparation process.

1.2 National context

The following section provides a climate change adaptation-relevant country profile encompassing geographical, demographic, environmental, economic, social, and gender aspects, derived from the documents shared by UNDP revised through a desk review as well as additional sources.

Additionally, a summary of key climate-related strategies, policies, and regulations shaping the national framework is also outlined.

Geography

The Republic of Albania (hereafter referred to as Albania) is a country in the Balkans, situated in Southeast Europe. It operates as a constitutional republic with a democratically elected parliament. The judiciary is responsible for interpreting and applying the country's legal framework. Administratively, Albania is divided into 12 regions (Qark) and 61 municipalities, encompassing both urban and rural areas (bashki and komuna). Tirana serves as the capital. Its western coastline extends 476 km along the Ionian Sea in the south and the Adriatic Sea in the north, both part of the Mediterranean[1,2].

Albania covers a total land area of 28,748 km^2, with an average altitude of 708 meters above sea level, as mountainous terrain accounts for approximately 70% of its territory. The country is highly biodiverse, a result of its rugged topography, varied geological formations, diverse soil types, and a Mediterranean climate with continental influences. As of 2016, around 17% of Albania's land was designated as protected areas. Albania is also abundant in water resources, with an annual total flow rate of 39.22 billion m^3. Of this, 95% drains into the Adriatic Sea, while the remaining 5% flows into the Ionian Sea. These water resources play a crucial role in hydropower generation, supplying over 90% of the country's electricity, as well as supporting agricultural irrigation[1,2].

Albania experiences a Mediterranean climate, characterized by mild, humid winters and hot, dry summers, with a continental influence in the southeastern regions. The long-term annual average surface air temperature (1901–2023) is 12.4°C, while the mean annual precipitation is 93.3 mm^3. Climate projections for 2050 show a trend towards rising temperatures and more frequent heat waves, a decline in overall precipitation, and an increase in the frequency and duration of extreme weather events such as floods and droughts. Additionally, sea levels are expected to rise, further impacting the country's climate and environment[1,2].

Environment and Climate

Albania is renowned for its diverse ecosystems and habitats. The country's total land area is classified into three primary ecological zones—the coastal plain zone, the hilly transition sub-mountainous zone, and the mountainous zone—along with 13 sub-zones, all of which contribute to its rich biodiversity.

Forests cover approximately 36% of Albania's territory, while agricultural land accounts for 26%,

1. Government of Albania. (2021). Revised NDC. https://unfccc.int/sites/default/files/2022-08/Albania Revised NDC.pdf
2. Ministry of Environment. (2022). The Fourth National Communication of Albania on Climate Change.
3. Climate Change Knowledge Portal (World Bank Group). (2021). Climate Change Overview Country Summary Albania. https://climateknowledgeportal.worldbank.org/country/albania

and pastures make up 15%. Of these pastures, around 60% consist of alpine and sub-alpine meadows[4]. According to the latest forest statistics from InStat, in 2023, Albania's forest and pasture fund encompassed a total area of 1,420,973 hectares, accounting for 49.4% of the country's total land area. Forests covered 1,420,973 hectares, representing 68.3% of the forest and pasture fund. Meanwhile, pastures and meadows occupied 366,105 hectares, equivalent to 25.8% of the total fund[5].

Albania's forests and pastures host a wide variety of Mediterranean vegetation types, including shrublands, oak woodlands, beech forests, and mountain pines, along with a diverse range of animal species. Along the coastline, Albania is home to ecologically significant Mediterranean ecosystems, including lagoons, wetlands, sand dunes, river deltas, and hydrophilic and hygrophilous forests. Additionally, the country's lakes and rivers play a crucial role in maintaining biological and landscape diversity. The natural beauty of Albania's landscapes, combined with its ecological richness, makes it a promising destination for nature-based tourism and recreational activities[4].

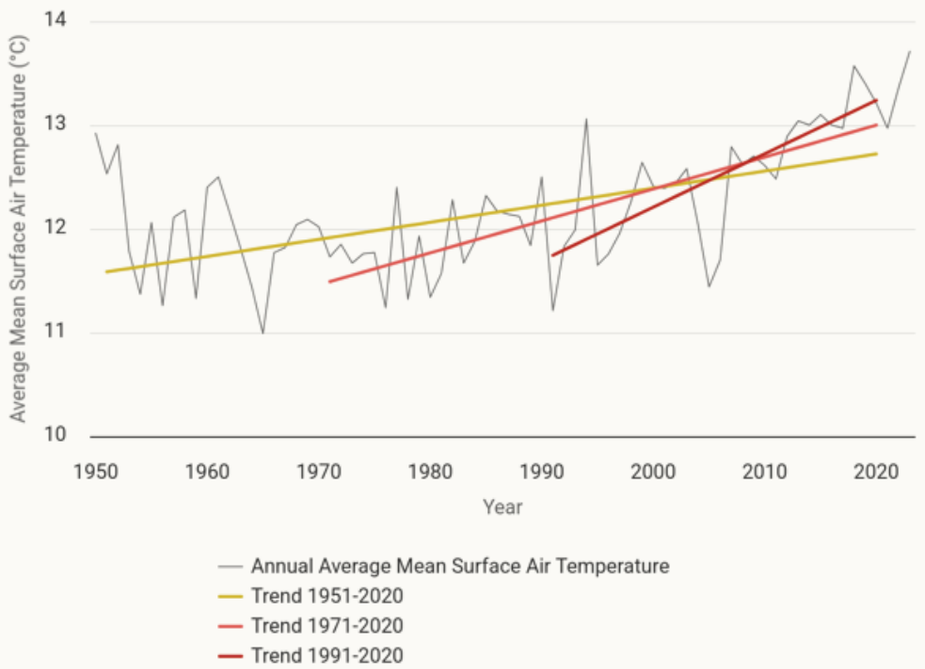
Based on available data, Albania boasts a rich and diverse array of flora and fauna, with approximately 3,200 species of vascular plants, 2,350 species of non-vascular plants, and 15,600 species of invertebrates and vertebrates. The country lies along a key bird migration route, making it an essential habitat for various avian species.

Albania is home to about 30% of Europe's flora and 42% of its mammal species, highlighting its ecological significance within the continent. The country's varied topography has created favorable conditions for the existence and preservation of numerous endemic and sub-endemic species. There are 32 endemic plant species with 150 subspecies exclusive to Albania, along with an additional 160 plant species that are sub-endemic to the Balkan region[4].

In terms of climate risks and natural hazards, Albania is exposed to considerable risks and disaster threats, with varying levels of severity across different regions. The primary natural hazards include floods, landslides, wildfires, earthquakes, snow avalanches, and biological threats such as pandemics and waterborne diseases. The country's vulnerability is further exacerbated by socio-economic factors such as population growth, urbanization, resource depletion, poverty, limited institutional capacity, insufficient disaster risk management, and low community participation[6].

4. Ministry of the Environment. (2014). Fifth national report of Albania to the United Nations Convention on Biological Diversity. May, 49. https://www.cbd.int/doc/world/al/al-nr-05-en.pdf
5. Instat (Institute of Statistics Albania). (2024). Forest Statistics, 2023. September, 1–4. https://www.instat.gov.al/media/13917/njoftim-per-media-statistikat-e-pyjeve-dhe-biodiversitetit-2024-ref-2023-eng-ok.pdf
6. National Civil Protection Agency. (2023). Disaster Risk Assessment at the Central Level – Consolidated Report.

Figure 1. Average mean surface air temperature annual trends with significance of trend per decade (1951-2023).



Source: Climate Change Knowledge Group, 2021[7]

Current Risks: Observed climate trends

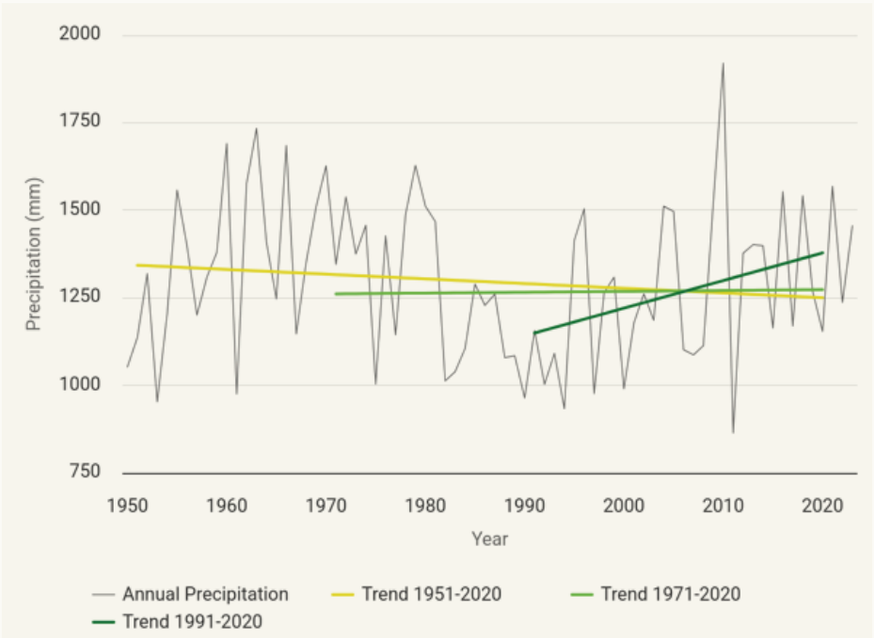
Temperature observations between 1951 and 2020 in Albania show interannual changes of annual average temperatures (Figure 1). Three distinct periods can be observed, namely an increase in annual average temperature from 1951 until 2020, 1971 until 2020 and 1991 until 2020.

Across the country, observations show a clear increase in surface air temperature: temperature trends in 1991-2020 were higher than the temperature trends for in 1951-2020[8].

Precipitation observations do not exhibit a definitive trend (Figure 2). Since the 1950s, a slight decline in the mean annual precipitation has been recorded; however, this decrease is not statistically significant. Conversely, the northern section of the coastal zone has experienced an increase in the number of rainy days per year[9]. Overall, while seasonal precipitation patterns show no substantial variation, an increase in rainfall intensity has been noted. Additionally, data from the Emergency Events Database highlight that floods have constituted the most frequent hydrometeorological hazard in Albania over the past two decades, although no discernible trend

7. Climate Change Knowledge Portal (World Bank Group). (2021). Climate Change Overview Country Summary Albania. https://climateknowledgeportal.worldbank.org/country/albania
8. Baastel. (2024). CLIMATE RISK ASSESSMENT OF THE AGRICULTURAL SECTOR.
9. Hodnebrog, O., Marelle, L., Alterskjær, K., Wood, R. R., Ludwig, R., Fischer, E. M., Richardson, T. B., Forster, P. M., Sillmann, J., & Myhre, G. (2019). Intensification of summer precipitation with shorter time-scales in Europe. Environmental Research Letters, 14(12), 124050.

Figure 2. Precipitation annual trends with significance of trend per decade (1951-2023).



Source: Climate Change Knowledge Group, 2021[11]

regarding their frequency has been identified[10]. Albania has been subject to **sea level rise**. As illustrated in Figure 3, an upward trend was observed between 1993 and 2004. This was followed by a three-year period during which the sea level rise anomaly showed a decline, before resuming an average increase between 2007 and 2015[12].

It is noteworthy that available observations indicate similar trends in temperature and precipitation intensity across the four climatic zones and AEZs of the country. However, no discernible trend has been identified in annual precipitation within any of these zones.

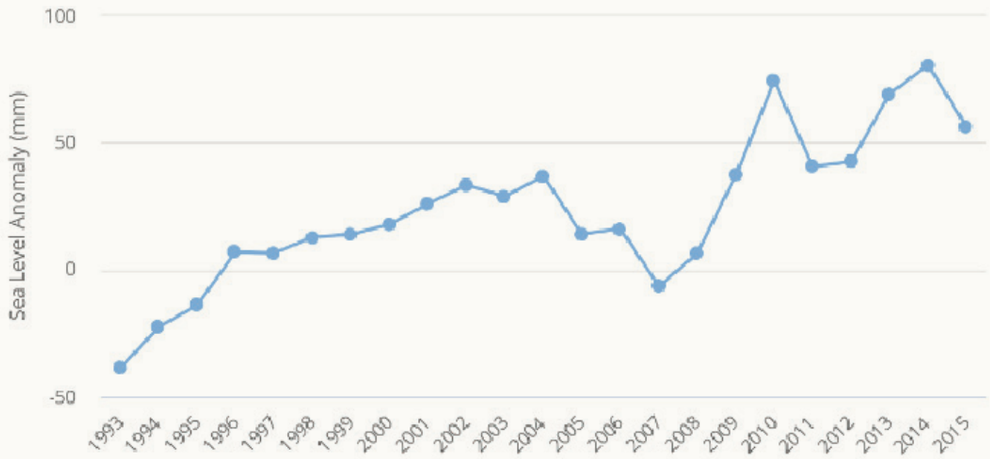
Future Risks: Climate projections

To understand Albania´s climate projections, a brief description of the five Shared Socioeconomic Pathways (SSPs) is presented below[12]:

SSP1: Global commons are being preserved**:** the boundaries of natural systems are being upheld, with an emphasis placed on human well-being rather than solely on economic growth. Income disparities, both between and within countries, are being diminished. Consumption patterns are directed towards minimizing the use of material resources and energy.

10. World Bank Group (WBG). (2021). Climate Risk Country Profile. https://doi.org/10.1596/36382
11. Climate Change Knowledge Portal (World Bank Group). (2021). Climate Change Overview Country Summary Albania. https://climateknowledgeportal.worldbank.org/country/albania
12. Baastel. (2024). CLIMATE RISK ASSESSMENT OF THE AGRICULTURAL SECTOR.

Figure 3. Albania's sea level rise anomaly (in mm) between 1993 – 2015.



Source: Climate Change Knowledge Group, 2021[11]

SSP2: development into the future: Income trajectories across countries are diverging markedly. Although some degree of cooperation exists between states, it remains limited in scope. Global population growth is moderate, stabilizing in the latter half of the century. Environmental systems are experiencing a degree of degradation.

SSP3: Regional rivalry: The resurgence of nationalism and regional conflicts has relegated global concerns to a lower priority. Policy agendas are increasingly centered on national and regional security matters. Concurrently, investments in education and technological advancement are declining, contributing to rising inequality. Several regions are experiencing severe environmental degradation. [17]

SSP4: Inequality: The gap between globally cooperative, developed societies and those remaining at lower stages of development, characterized by low income and limited educational attainment, is widening. While environmental policies prove effective in addressing local challenges in certain regions, they yield limited success in others.

SSP5: Fossil-fuelled Development: Global markets are becoming progressively integrated, fostering innovation and technological advancement. However, social and economic development relies heavily on the intensified exploitation of fossil fuel resources, with coal comprising a significant share, and is characterized by a globally prevalent energy-intensive lifestyle. While the world economy continues to expand, local environmental issues, such as air pollution, are being effectively addressed.

Each scenario has an associated global temperature rise:

Table 1. Projected rise of global temperature under different scenarios

	Near term, 2021–2040		Mid-term, 2041–2060		Long term, 2081–2100	
Scenario	Best estimate (°C)	Very likely range (°C)	Best estimate (°C)	Very likely range (°C)	Best estimate (°C)	Very likely range (°C)
SSP1-1.9	1.5	1.2 to 1.7	1.6	1.2 to 2.0	1.4	1.0 to 1.8
SSP1-2.6	1.5	1.2 to 1.8	1.7	1.3 to 2.2	1.8	1.3 to 2.4
SSP2-4.5	1.5	1.2 to 1.8	2	1.6 to 2.5	2.7	2.1 to 3.5
SSP3-7.0	1.5	1.2 to 1.8	2.1	1.7 to 2.6	3.6	2.8 to 4.6
SSP5-8.5	1.6	1.3 to 1.9	2.4	1.9 to 3.0	4.4	3.3 to 5.7

Source: IPCC, 2021.

Temperature

Projected annual changes in mean temperature relative to the reference climatological period (1996–2015) are expected to reach up to 0.8°C (ranging from 0.5°C to 1.1°C) by 2030 and 1.3°C (ranging from 0.8°C to 1.9°C) by 2050. Under the intermediate scenario SSP2-4.5, temperature increases by 2100 are projected to range between 1.4°C and 3.1°C annually, and between 1.9°C and 3.9°C during the summer. The high and very high emission scenarios, SSP3-7.0 and SSP5-8.5, project that annual and summer temperatures could rise by up to 4.6°C (ranging from 3.2°C to 6.8°C) and 6.0°C (ranging from 4.1°C to 8.9°C), respectively, by 2100. All SSPs forecast lower temperature increases in winter and spring relative to summer and autumn, with the most pronounced warming expected during summer under the aggressive scenarios SSP3-7.0 and SSP5-8.5[13].

Projected changes in maximum and minimum temperatures exhibit trends consistent with those of mean temperature. Under the intermediate scenario (SSP2-4.5), annual maximum temperatures are expected to increase by approximately 1.6°C (ranging from 1.1°C to 2.7°C) by 2050, and by 2.5°C (ranging from 1.6°C to 4.1°C) by 2100. The most aggressive scenario (SSP5-8.5) anticipates greater increases in maximum temperatures, particularly during summer months, potentially reaching 2.8°C (ranging from 1.8°C to 4.6°C) by 2050. Additionally, projections indicate that high-percentile temperatures (95th percentile) are likely to rise at a faster rate than mean temperatures, especially in summer. The concurrent rise in minimum temperatures further suggests that the intensity of heat waves will increase, with both the frequency and duration of such events expected to grow, particularly under the SSP5-8.5 scenario[13].

The number of hot days (defined as days with maximum temperatures ≥35°C) is projected to increase, while the number of cold (minimum temperature <0°C) and very cold days (minimum

13. Baastel. (2024). CLIMATE RISK ASSESSMENT OF THE AGRICULTURAL SECTOR.

temperature <-5°C) is expected to decline across all climatic zones under all scenarios. These trends are particularly pronounced under the SSP3-7.0 and SSP5-8.5 scenarios, relative to the reference period[13].

Absolute maximum and minimum temperatures are projected to rise under all SSP scenarios. Consequently, the return periods of extreme maximum temperatures are anticipated to decrease significantly, while the return periods of extreme minimum temperatures are expected to increase markedly across the Albanian territory[14].

Precipitation

All SSPs indicate a probable decline in both annual and seasonal precipitation relative to the 1995–2015 baseline across all projected time horizons up to 2100. The high-emission scenario SSP5-8.5 forecasts the most significant percentage reductions in precipitation, with annual and summer values projected to decrease by up to -5.8% (ranging from -32.7% to +17%) and -17.6% (ranging from -56.2% to +16.9%) respectively by 2050. In contrast, the lowest reductions in precipitation percentages are projected under SSP1-1.9 and SSP1-2.6, except during the summer months, where declines of up to -8.1% (-25.7% to +7.8%) and -10.2% (-32.5% to +9.5%) are anticipated[14].

The pronounced reduction at the 5th percentile of projected changes suggests a likely increase in drought frequency, while the substantial rise at the 95th percentile indicates a heightened risk of intensified heavy precipitation events. Analyses conducted across various scenarios and time horizons (2030, 2050, 2100), as well as for one to three consecutive days, reveal that the return periods for maximum precipitation levels are expected to shorten throughout Albania. For example, in the Elbasan area, an extreme precipitation event of approximately 145 mm/day, historically occurring once every 100 years, is projected to occur once every 70 years by 2050[14].

Sea level rise

All SSPs project an increase in sea level. Under the intermediate SSP2-4.5 scenario, sea level rise in the Durrës area is projected to reach approximately 24 cm (ranging from 6 to 30 cm) by 2050, and 65 cm (ranging from 17 to 83 cm) by 2100, relative to the 1995–2015 baseline period[14].

Other climatic variables

The frequency and duration of cold conditions are projected to decrease, alongside a reduction in the number of heating degree days. Conversely, cooling degree days are expected to increase, reflecting higher energy demand for cooling. These changes are particularly pronounced under the SSP3-7.0 and SSP5-8.5 scenarios[14].

Overall, there is strong consensus across all scenarios regarding the direction of projected climate changes, despite variations in their magnitude. Specifically, all scenarios indicate an increase in annual temperatures, a reduction in annual precipitation, a rise in sea levels, and a heightened occurrence of extreme events such as intense precipitation, droughts, and heatwaves. The magnitude of these changes escalates over time, with more significant shifts projected for 2050 compared to 2030, and for 2100 compared to 2050. Moreover, the degree of change is notably greater under more aggressive emissions scenarios[14].

For hazard severity assessments, it is essential to consider the range of scenarios. The lowest severity ratings are based on the most optimistic

14. Baastel. (2024). CLIMATE RISK ASSESSMENT OF THE AGRICULTURAL SECTOR.

scenario (SSP1-1.9) for the year 2030, while the highest severity ratings are derived from the more extreme scenarios, typically applying the SSP5-8.5 projections for 2050. This approach highlights both the potential progression of climate hazards and the critical influence of emission pathways on future conditions[14].

The projected changes align with the observed trends in temperature rise, sea level increase, and the heightened frequency of intense rainfall events. When comparing observed and projected changes in climate variables in Albania, two primary differences emerge: (i) an intensification of the observed trends in the projections, reflected in higher temperatures, greater sea level rise, and more intense heavy rainfall; and (ii) increased clarity regarding certain variables, particularly annual precipitation, where observations remain inconclusive, but all scenarios consistently project a decline. A third significant distinction lies in the nature of the data: while observations are derived from actual measurements, projections are based on model simulations under specific assumptions, inherently introducing a degree of uncertainty. Nevertheless, it is noteworthy that, for Albania, despite variations in the magnitude of change depending on the scenario, all scenarios generally converge in the direction of the projected changes[14].

1.3 Economy

Following 50 years of communist rule, Albania has undergone a significant transformation, evolving from one of Europe's poorest countries in the early 1990s to an upper-middle-income country by 2020. Over three decades of strong economic growth, Albania's GDP reached USD 15.24 billion in 2020, with a GDP per capita of USD 5,370.8. This upward trend continued with the country's GDP estimated at USD 23 billion and an annual GDP growth of 3.9%, reflecting its classification as an upper-middle-income economy[15]. This growth has been accompanied by structural economic shifts, moving from a reliance on raw materials, agriculture, and industry to a more diversified economy, where the service sector now plays a dominant role.

According to the Albanian Institute of Statistics (InStat), the labour force participation rate for individuals aged 15 to 64 was 75.1% in the fourth quarter of 2023. This rate represents the proportion of the working-age population that is either employed or actively seeking employment. A gender disparity remains evident, with the labour force participation rate for men recorded at 81.8%, while for women, it was 68.6%, reflecting a 13.2 percentage point gap between the two[16].
In terms of trends, the overall labour force participation rate increased by 0.4 percentage points compared to the same quarter in 2022. For men, the rate increased by 1.1 percentage points, whereas for women, it declined by 0.4 percentage points over the same period. Among the youth population aged 15 to 29, the labour force participation rate was 55.3% in Q4 2023, marking a decrease of 1.5 percentage points compared to Q4 2022c[16].
The employment rate for individuals aged 15 to 64 stood at 66.7% in Q4 2023, with a differentiated rate of 72.5% and of 61.1% for men and women respectively. The unemployment rate for individuals aged 15 and over was 10.7% in Q4 2023[16].

These statistics underscore persistent gender disparities in Albania's labour market, with men consistently exhibiting higher participation and employment rates compared to women.

15. World Bank Group (WBG). (2025). Albania. https://data.worldbank.org/country/albania
16. Instat (Institute of Statistics Albania). (2023). Quarterly Labour Force Survey. https://www.instat.gov.al/media/13103/lfs-q4-2023-pressrelesase-anglisht.pdf

1.4 Society

According to the latest population estimate from Albania's Institute of Statistics, as of January 1, 2023, the country had a total population of 2,761,785, reflecting a 1.1% decline compared to January 1, 2022[17]. The median age of Albania's population was 38.3 years. The youth dependency ratio, which measures the proportion of individuals aged 0–14 relative to those of working age (15–64), decreased slightly from 24.0% in 2022 to 23.8% in 2023. In contrast, the old-age dependency ratio, representing individuals aged 65 and older relative to the working-age population, increased from 23.1% to 24.4% over the same period. The sex ratio of the total population declined from 98.6 males per 100 females in 2022 to 98.0 in 2023. Similarly, the sex ratio at birth decreased slightly, from 107.6 male births per 100 female births in 2021 to 107.4 in 2022[17]. The Tiranë prefecture remains the most populous in Albania, accounting for approximately 33.5% of the total population. It is followed by Durrës and Fier, which represent 10.5% and 9.8% of the population, respectively[17].

According to the latest Human Development Index (HDI), Albania scored 0.81 in 2023, indicating a high level of human development, which grew substantially in the last years.

1.5 Gender

Albanian law officially declares equality between women and men, a significant step toward gender parity. According to the **2024 Global Gender Gap Index** by the World Economic Forum (WEF), Albania has made notable strides, ranking 23rd out of 146 countries[18]. Additionally, in the EU's Gender Equality Index (GEI), in January 2020, Albania launched its first GEI and scored 60.4 points, seven points lower than the EU-28 average in the same year[19]. In 2022, Albania's female HDI was 0.780, compared to 0.798 for males, resulting in a GDI[20] score of 0.977, which places the country in Group 1, indicating a relatively small gender gap in human development[21].

The Gender Inequality Index (GII) evaluates gender disparities across three key dimensions - reproductive health (assessed through the maternal mortality ratio and adolescent birth rate), empowerment (measured by the proportion of parliamentary seats held by women and the percentage of the population with at least some secondary education for both genders) and labor market participation (determined by the labor force participation rates of women and men). In 2022, Albania recorded a GII value of 0.116, ranking 34th out of 166 countries, indicating relatively low gender inequality compared to global standards[22].

The Albanian **National Strategy on Gender Equality (NSGE) 2021–2030** and its accompanying action plan reflect a strong commitment to upholding the rights of all individuals, with a particular focus on those experiencing multiple forms of discrimination and vulnerability. The strategy prioritizes support for young people, promotes social reforms, and integrates measures to address humanitarian

17. Instat (Institute of Statistics Albania). (2023). Population of Albania. June, 1–10.
18. World Economic Forum. (2024). Global Gender Gap 2024. Insight Report (Issue June). https://www3.weforum.org/docs/WEF_GGGR_2024.pdf
19. Ministry of Health and Social Protection, Instat (Institute of Statistics Albania), & European Institute for Gender Equality (EIGE). (2020). Gender Equality Index for the Republic of Albania 2020. January. https://eige.europa.eu/gender-equality-index
20. The Gender Development Index (GDI) assesses gender disparities in three key aspects of human development: health (measured by life expectancy at birth for females and males), education (evaluated through expected years of schooling for children and the average years of schooling for adults aged 25 and older) and living standards (determined by the estimated Gross National Income (GNI) per capita for both genders). The GDI is calculated as the ratio of the female HDI to the male HDI.
21. UNDP. (2024). Human Development Report Albania. https://hdr.undp.org/data-center/specific-country-data#/countries/ALB

emergencies[22]. However, the implementation of the strategy requires further strengthening, as the gender equality mechanism faces limitations in financial and human resources (Albania 2023 Report). Data collection for monitoring remains incomplete, though progress has been made in gender-responsive budgeting, with 9% of the medium-term budget allocated to supporting gender equality outcomes[23].

Representation in leadership positions

According to the **2025 "Women in Politics" global map**, developed by UN Women and the Inter-Parliamentary Union, Albania ranks 23rd in the world for the proportion of women serving as cabinet ministers and 44th for the percentage of women in Parliament[24]. At the local level, women's representation remains lower than that of men[25].

Gender disparities in formal employment poverty and social exclusion

According to **Women and Men 2023**, women's labor force participation (ages 15-64) increased to 66.7%, still trailing men. Women's employment rate was 58.9%, compared to 71.3% for men. Inactivity among women was mainly due to education/ training (18.3%) and household duties (16.9%); while men's inactivity is mainly for education (25%)[26].

Health disparities persist, with 15.4% of the population reporting unmet medical needs in 2021, disproportionately affecting women. Women and girls, especially the unemployed and those aged 0-17, face a higher risk of poverty and exclusion than men. Women continue to shoulder a disproportionate share of unpaid domestic and care work, significantly more than men, impacting their economic opportunities and well-being.

As climate change increases caregiving demands, the burden on women is expected to worsen, further affecting their economic and social participation[27].

Gender-based violence (GBV)

Efforts to combat gender-based violence have included increased economic support for domestic violence victims and training for healthcare providers. However, challenges remain in ensuring healthcare access for marginalized groups, including rural women, Roma and Egyptian women, and LGBTIQ individuals. Legal frameworks still require better alignment with international standards, such as the Istanbul Convention, to strengthen victim support[28].

1.6 Policy, legislative and regulatory framework

A structured overview of Albania's legislative and policy landscape on climate action is summarized below, presenting key laws, strategies, and plans that guide national efforts on mitigation, adaptation, and sustainable development and highlighting the legal and institutional frameworks that align Albania with EU environmental standards and international climate commitments, offering insight into the country's reinforced governance to face climate and environmental challenges.

Table 2 and 3 provide an overview of the key legislation, policies, plans, and strategies related to climate action.

22. Minister of Health and Social Protection. (2021). NATIONAL STRATEGY FOR GENDER EQUALITY 2021-2030. https://albania.unwomen.org/sites/default/files/2022-02/WEB_Strategjia Kombetare - EN.pdf
23. European Commission. (2023). Albania 2023 Report. https://enlargement.ec.europa.eu/system/files/2023-11/SWD_2023_690 Albania report.pdf
24. UN Women. (2025). Women in Politics: 2025. January. https://www.unwomen.org/sites/default/files/2025-03/women-in-politics-2025-en.pdf
25. UN Women. (2021). Women's representation in local government: a global analysis. December, 1–28.
26. UN Women, & Instat (Institute of Statistics Albania). (2023). MEN AND WOMEN.
27. UNDP Albania. (2024). MAINSTREAMING GENDER INTO THE NATIONAL ADAPTATION PLAN (NAP) PROCESS & Gender Action Plan.

Table 2. Legislative and regulatory framework.

Legislation	Year	Summary
Law No. 81/2017 on protected areas	**2017**	Establishes regulations for conservation, management, and sustainable use of protected areas, enhancing biodiversity protection, ecological restoration, and alignment with international and EU environmental standards.
Law no. 9867 on rules and procedures governing international trade of endangered species of wild fauna and flora	**2008**	Regulates international trade in endangered species of wild fauna and flora, ensuring compliance with CITES, preventing illegal trade, protecting biodiversity, and aligning with EU and international conservation standards.
Law No. 9587 on biodiversity protection	**2006**	Establishes measures for conserving ecosystems, species, and genetic resources, preventing biodiversity loss, promoting sustainable use, and aligning with EU and international environmental agreements.
Law No. 7/2017 on the promotion of the use of energy from renewable sources	**2017**	Promotes renewable energy use, supports investment in clean energy, enhances energy efficiency, and aligns with EU directives to ensure a sustainable, diversified, and low-carbon energy system.
Law No. 9876 on the production, transport and trade of renewable biofuels	**2008**	Regulates the production, transport, and trade of renewable biofuels, promoting sustainable energy, reducing dependence on fossil fuels, lowering emissions, and aligning with EU renewable energy and environmental standards.
Law No. 9244 on agricultural land protection	**2004**	Ensures sustainable land use, prevents degradation, regulates conversion, promotes soil conservation, and aligns with environmental and agricultural policies to safeguard food security and rural development.
Law No. 107/2014 on territory planning and development	**2014**	Regulates land use, urban planning, and sustainable development, ensuring environmental protection, resilience to climate change, and alignment with EU spatial planning standards.
Law no. 57/2020 on forests	**2020**	Promotes sustainable forest management, conservation, afforestation, biodiversity protection, and climate resilience while regulating forest use, governance, and aligning with EU environmental policies.
Law No. 103/2016 on aquaculture	**2016**	Regulates sustainable aquaculture development, ensuring environmental protection, resource management, food safety, and alignment with EU standards to promote responsible fish farming and economic growth.
Law on Fisheries No. 64/2012	**2012**	Regulates sustainable fisheries management, conservation of marine resources, responsible fishing practices, and compliance with EU and international standards to protect aquatic ecosystems and support the fishing industry.
Law No.10 431 dated 9.6.2011 on environment protection	**2011**	Establishes regulations for pollution control, biodiversity conservation, sustainable resource use, and environmental impact assessment, aligning with EU standards to promote ecological sustainability and climate resilience.
Law no. 155/2020 on climate change	**2020**	Sets a legal framework for mitigating greenhouse gas emissions, adapting to climate impacts, integrating climate policies across sectors, and aligning with EU and international climate commitments.
Law No. 9817 on agriculture and rural development	**2007**	Promotes sustainable agriculture, rural economic growth, food security, resource conservation, and alignment with EU policies to enhance competitiveness and environmental sustainability in rural areas.

Source: own elaboration.

Table 3. Policy framework.

Policies and plans	Year	Summary
Strategy on Agriculture, Rural Development, and Fisheries 2021–2027	**2022**	Promotes sustainable resource management, climate adaptation, agroforestry, organic farming, and fisheries resilience while enhancing rural economies, food security, and alignment with EU environmental policies.
Forest Policy Document 2030	**2018**	Focuses on sustainable forest management, afforestation, governance enhancement, climate resilience, and biodiversity conservation while promoting community involvement and aligning with EU environmental and climate policies.
National Energy and Climate Plan (NECP)	**2024**	Aims to reduce emissions, enhance energy efficiency, integrate renewable energy, and align with EU climate policies, ensuring a diversified, sustainable, and resilient energy system by 2030.
National Strategy on Climate Change	**2019**	Outlines mitigation and adaptation measures across sectors, targeting emission reductions, climate resilience, sustainable resource management, and EU policy alignment to foster a low-carbon, climate-resilient economy.
National Action Plan on Mitigation (NAPM)	**2019**	Focuses on reducing greenhouse gas emissions through sustainable energy, transport, agriculture, and forestry policies, aligning with EU climate goals to support a low-carbon and resilient economy.
Albania Country Strategy 2025-2030	**2025**	Aims to accelerate EU integration by implementing comprehensive reforms, enhancing institutional effectiveness, and fostering sustainable economic growth, with the goal of achieving full EU membership by 2030
National Strategy for Development and Integration (NSDI) 2015-2020	**2016**	Aimed to strengthen democracy, achieve EU integration, and promote a competitive, sustainable economy, ensuring fundamental human rights and improved quality of life.
National Tourism Strategy 2024-2030	**2024**	Aims to promote sustainable tourism growth, enhance infrastructure, and preserve cultural and natural heritage by focusing on six key pillars: investments, fiscal and regulatory policies, destination management, tourism product development, marketing, and capacity building.
National Strategy on Gender Equality (NSGE) 2021–2030	**2021**	Promotes gender equality, women's empowerment, and social inclusion, focusing on economic participation, decision-making, gender-based violence prevention, and alignment with EU and international gender policies.

Source: own elaboration.

In conclusion, the legislative and policy instruments presented reflect Albania's comprehensive approach to climate governance, spanning biodiversity protection, renewable energy, sustainable agriculture, and gender equality. Together, they demonstrate the country's commitment to integrating climate action across sectors in alignment with EU accession and global sustainability goals.

02

Climate change vulnerabilities in Albania

Below, a summary of the climate change vulnerabilities and risks for all five priority sectors—agriculture and forestry, tourism, urban development, transport, and energy— is presented, offering a detailed examination of their current state.

An in-depth analysis of the present conditions of the priority sectors is performed in order to encompass key structural, institutional, and operational characteristics, highlighting sectoral trends and development challenges. Additionally, it includes a thorough vulnerability and risk assessment based on UNDP Albania´s sectoral Climate Risk Assessments (CRAs) prepared as part of another consultancy assignment, evaluating sector-specific exposure to climate-related risks, providing valuable insights into the resilience of each sector. This sector-specific analysis offers critical insights into the strengths and weaknesses of each sector's adaptive capacity and overall climate resilience, which was essential information for the prioritization of the measures and for the design of the Implementation Plan.

2.1 Agriculture and forestry sector

Sectoral context

In 2022, agriculture contributed 16.9% to Albania's total GDP and served as the primary source of income for 25% of the population. The sector is predominantly composed of small farms (85%), with an average farm size of 1.2 hectares in 2019[28,29].

Livestock production plays a crucial role in Albania's agricultural output, with cow milk as the leading product, followed by bovine meat. Crop production is the second most significant agricultural subsector[30]. According to InStat (2023), the main crops cultivated in 2022 by land area were forages (40%), cereals (24%), vegetables (6%), potatoes (2%), and white beans (2%). In terms of production value, livestock accounted for over 50%, field or temporary crops for 30%, and fruit production for 20% [29,31].

Between 2000 and 2022, Albania's irrigated surface expanded from 60,000 hectares to 180,000 hectares. However, irrigation remains insufficient, covering only 37% of agricultural land in 2022. Additionally, grazing in Albania relies primarily on natural pastures[29].

Albanian agriculture is shaped by four agro-ecological zones (AEZs), closely linked to the country's four main climatic regions:

- Lowland Zone – Dominates temporary/field crop production, citrus, grapes, and olives.
- Intermediate Hill Zone – Supports diverse crop cultivation and livestock, including pigs and poultry.
- Southern Highlands – Home to fruit trees (mainly pome trees), sheep, and goat grazing.
- Northern and Central Mountains – Features a mix of fruit trees, livestock (bovines, horses), and grazing pastures.

In summary, temporary or field crop production is primarily concentrated in the lowlands, with

28. Baastel. (2024). CLIMATE RISK ASSESSMENT OF THE AGRICULTURAL SECTOR.
29. Invest in Albania. (2024). Invest in Agriculture in Albania. https://invest-in-albania.org/industries/agriculture/
30. Gjeci, G., Bicoku, Y., Gjeçi, G., Shytaj, F., & Biçoku, Y. (2018). Livestock Sector in Albania: Trends and Challenges. Albanian j. Agric. Sci, January, 221. https://www.researchgate.net/publication/330076095
31. World Bank Group (WBG). (2021). Climate Risk Country Profile. https://doi.org/10.1596/36382

some presence in other agro-ecological zones (AEZs). Permanent crops are categorized into fruit trees (mainly pome trees) and citrus, grapes, and olives. While fruit trees grow across all AEZs, they are most prevalent in the Southern Highlands. In contrast, citrus, grapes, and olives are mainly cultivated in the lowland and intermediate hill zones, with some presence in the Northern and Central Mountains. Livestock distribution varies across regions: bovines and horses are found in all four AEZs while pig and poultry farming is concentrated in the lowlands and intermediate hill zone. Sheep and goat grazing is most common in the intermediate hill zones and the Southern Highlands[32].

Climate change vulnerabilities and risks

An assessment of current and future climate risks across Albania's agro-ecological zones (AEZs) and agricultural subsectors reveals several key findings.

Firstly, there is a clear pattern in the evolution of risk ratings. In general, risk ratings remain stable under the least aggressive scenario projected for 2030. However, they tend to increase progressively with both the severity of the emissions scenario and the time horizon. By 2050, risk ratings rise even under less aggressive scenarios and are highest under the most aggressive scenarios (such as SSP5-8.5). Two notable exceptions exist: (i) the risk rating for bovine and horses increases even under the best-case scenario; and (ii) one particular subsector already holds the highest possible risk rating, meaning it cannot increase further regardless of the scenario or timeframe[33].

Secondly, the analysis shows a shift from mixed current risk levels to consistently higher future risks. Present-day risk ratings vary widely, encompassing low, moderate, high, and very high levels, depending on the AEZ or subsector. However, under the most pessimistic future scenarios, risk ratings converge at more concerning levels — typically moderate to very high—with no subsectors or AEZs maintaining low risk ratings. It is essential to clarify that risk ratings are indicative, not absolute. Even if a subsector maintains the same rating over time, the actual risk may still increase within that category. Additionally, a low rating does not imply an insignificant risk and should not be disregarded. The analysis also assumes an increase in adaptive capacity over time. Any deviation from this assumption would likely result in higher risk levels[33].

By AEZ, the Lowland consistently emerges as the most vulnerable zone, facing very high risk both currently and in the future. The Intermediate Hill zone follows closely, with risk levels increasing to match those of the Lowland under more severe scenarios. Both zones are particularly exposed to rising temperatures, water stress, and intensified precipitation, leading to soil erosion, flooding, and landslides, especially during spring and summer. The Southern Highlands are the third most at-risk zone, with moderate risk levels at present rising to high under the worst-case scenarios. Although this zone faces similar climate hazards, the intensity of heat and water stress is projected to be less severe than in the Lowland and Intermediate Hill zones. Finally, the North and Central Mountains are currently the least vulnerable, with low risk levels increasing to moderate under the worst scenarios. This region may benefit in the near term from a longer growing season due to milder winters, potentially offsetting some of the increased water and heat stress. However, over time, these benefits may diminish as climate impacts intensify[33].

By agricultural subsector, crops are generally more vulnerable to climate risks than livestock,

32. Baastel. (2024). CLIMATE RISK ASSESSMENT OF THE AGRICULTURAL SECTOR.

both current and in future projections. Within crops, temporary crops face the highest risk levels, especially under more aggressive scenarios and longer timeframes, where risks become very high. Permanent crops also face increasing risks, particularly in the Lowland and Intermediate Hill zones, due to rising temperatures and water stress. However, some areas, such as the North and Central Mountains, may become more suitable for certain permanent crops (e.g., citrus, grapes, olives) as harsh winter conditions ease. The trajectory of risk for permanent crops is therefore more variable, depending on crop type, location, and scenario. In general, though, risks increase over time and with the severity of emissions scenarios, becoming very high under the worst-case conditions[33].

In the livestock subsector, bovine and horses are consistently identified as the most vulnerable, with their risk levels becoming very high under the most severe climate projections. This is primarily due to heightened exposure to heat and water stress, except in populations located in the North and Central Mountains. Other livestock subsectors, such as pig and poultry, and sheep and goats, exhibit lower risk levels, remaining moderate even in the worst scenarios. For pig and poultry, although their controlled environments may initially buffer climate impacts, risks are projected to rise over time due to persistent heat and water stress. Sheep and goats in the North and Central Mountains are expected to maintain lower risk levels, benefitting from milder winters. However, in other regions, such as the Southern Highlands and Intermediate Hill zone, risks are projected to increase to moderate levels under more pessimistic scenarios or longer timeframes[33].

In conclusion, both AEZs and agricultural subsectors in Albania face escalating climate risks over time, particularly under aggressive emissions scenarios. The analysis underscores the importance of considering both the temporal dimension and the varying degrees of vulnerability across zones and subsectors, as well as the critical role of adaptive capacity in mitigating these risks.

2.2 Tourism sector

Sectoral context

Tourism in Albania is a relatively recent development, with its emergence delayed by several factors, including inadequate transportation infrastructure, limited private car ownership, a scarcity of accommodation establishments, and low per capita income, which restricted domestic tourism spending. During the communist regime, the state controlled the organization and location of vacations for many families, further limiting tourism opportunities. Additionally, Albania remained almost entirely isolated from the outside world between 1946 and 1991 due to its political system, effectively preventing foreign tourism. It was only in the late 1990s that the country began experiencing a significant influx of international visitors[34].

In the past few decades, Albania has seen an extraordinary rise in foreign tourist arrivals. While national tourism data is unavailable, it is reasonable to assume that domestic tourism has also expanded alongside economic development. Between 2000 and 2022, the number of incoming tourists grew by more than 2000%, despite the severe impact of the 2019 earthquake on the sector. With the exception of the two-year pandemic period, Albania has experienced uninterrupted growth in tourist arrivals. Moreover, the structural factors driving this growth appear to have remained resilient, as preliminary 2023

33. Baastel. (2024). CLIMATE RISK ASSESSMENT OF THE AGRICULTURAL SECTOR.
34. Baastel. (2024). CLIMATE RISK ASSESSMENT OF THE TOURISM SECTOR.

data indicate a 29% increase in tourist numbers compared to 2022[35].

The World Tourism Organization (UNWTO) has ranked Albania as the second-fastest-growing destination worldwide in terms of international tourist arrivals. In its *World Tourism Barometer*, which analyzes global tourism trends from January to July 2022, the UNWTO reported that Albania experienced a 19% increase in visitors compared to 2019, marking one of the strongest post-pandemic recoveries in the sector. During the January-August period, the country recorded over 5.6 million foreign visitors, surpassing 2019 levels by approximately 800,000. According to the same report, international tourist flows worldwide nearly tripled between January and July 2022, rising by 172% compared to the same period in 2021. However, the global tourism sector still operated at only 60% of its pre-pandemic level, as many destinations struggled to regain previous trends[35].

In the subsequent year, Albania maintained its rapid growth, securing the third position globally in the *UNWTO World Tourism Barometer* for January to July 2023. Notably, Albania outperformed several renowned European destinations, including Greece, Italy, Spain, Croatia, and France, making it the fastest-growing tourism destination on the continent[35].

The tourism sector plays a significant role in Albania's socio-economic development. According to the 2022 Economic Impact of Travel and Tourism report by the World Travel and Tourism Council (WTTC), the industry's total contribution to the economy is substantial accounting for approximately 25% of GDP in 2024[35]. As a labor-intensive sector, tourism provided employment throughout its value chain for around 226,000 people, representing 20% of the country's workforce. Although comprehensive gender-disaggregated employment data in the sector are lacking, reports suggest that women play a substantial—though often informal—role in family-run home-stay businesses. Additionally, more than half of the country's handicraft and fashion enterprises are women-led. The accommodation and food services sector alone accounted for 17.5% of all service sector activities and 10.6% of total business activity in Albania in 2021[35] .

Tourism also serves as a major source of income for the country. In 2021, revenue from inbound tourism generated by non-residents reached USD 2.4 billion, constituting approximately 83% of Albania's total exports and playing a crucial role in the balance of payments. This trend is closely linked to changes in tourism expenditure. Between 2005 and 2021, annual tourism revenue followed a structural growth trend, increasing from USD 900 million in 2015 to nearly USD 2.5 billion in 2021, surpassing even the pre-pandemic peak of 2019. Investment in tourism has also expanded, reaching USD 210 million in 2021, which accounted for 7.5% of total investments in the country [35] .

Albania's tourism sector is heavily dependent on European visitors, with over 90% of tourists coming from Europe[35].

Understanding where tourists travel within Albania provides further insights into the sector. According to INSTAT (2022), the most visited prefectures were Tirana (22%), Vlorë (19%), Korce (17%), and Durrës (14%). Additionally, 67% of tourists prefer coastal municipalities, drawn by Albania's extensive coastline, Mediterranean climate, and affordable prices, which make it an attractive destination for beach and sun tourism. As expected, tourist arrivals peak in August (15%), with the May–September period accounting for

35. World Travel & Tourism Council. (2022). ALBANIA 2022 Annual Research: Key Highlights.

more than half of the country's total yearly tourist numbers[36]. Beyond coastal tourism, urban centers, mountainous areas, and heritage sites are also gaining popularity. Albania's tourism sector is diversifying, as evidenced by the growing number of visitors to protected areas (3.3 million in the first eight months of the year) and an increasing preference among foreign tourists for the northern region (41%). These trends indicate a broadening of tourism offerings and an extension of the travel season beyond the traditional summer months[37]. According to the Travel & Tourism Development Index (TTDI) 2024 Insight Report, Albania ranks 66th out of 119 countries, with a score of 3.87 out of 7 (where 1 represents the lowest performance and 7 the highest). The TTDI evaluates factors and policies that support the sustainable and resilient growth of the travel and tourism sector, which, in turn, contributes to a country's overall development[37].

Climate change vulnerabilities and risks

An analysis of both current and anticipated climate risks affecting Albania's tourism subsectors was performed and revealed several key findings. A key observation is the general increase in risk ratings over time. Most subsectors show a higher risk under future conditions, even in the best-case scenario, which corresponds to the least aggressive climate pathway by 2030. Under the worst-case scenario—representing the most severe climate projections by 2050—risk ratings increase significantly across all subsectors, including under less aggressive scenarios by mid-century. The only exception is cultural tourism, where the risk rating does not increase under the best-case scenario[37].

Another notable finding concerns the severity of future risks. While current risks may vary, future risks—particularly under the worst-case scenario—are clearly alarming. High to very high-risk ratings in this scenario underscore uncertainties about whether the growth of the tourism sector is contributing to its own resilience. For instance, it is unclear whether tourist numbers would have increased further without climate impacts, complicating sensitivity assessments. Additionally, while ongoing development could enhance the sector's adaptive capacity, in the worst case, it fails to do so. This would occur if tourism revenues are not reinvested in strengthening climate resilience, leading to greater pressure from rising tourist numbers without the necessary safeguards[37].

The high (for cities and art tourism) and very high (for sun-and-sea, ecotourism, and cultural tourism) risk ratings under the worst-case scenario illustrate the urgent need for adaptation investments across all subsectors. It is important to emphasize that these risk ratings, as explained elsewhere in the analysis, are not static measures of absolute risk. First, within each rating, the actual level of risk can vary significantly, particularly at the upper or lower ends. For example, although ecotourism maintains a very high-risk rating in both best- and worst-case scenarios, this does not imply stability; the level of risk worsens under the worst-case scenario. Second, even a low or very low risk rating signals the need for immediate adaptation action. These ratings are based on the assumption of steadily increasing adaptive capacity. Should adaptive actions be weak or insufficient, actual risk levels would be higher[37]**.**

When comparing subsectors, ecotourism emerges as the most vulnerable, with a very high-risk rating under both best- and worst-case scenarios. This is due to its direct reliance on Albania's natural environment and biodiversity,

36. Baastel. (2024). CLIMATE RISK ASSESSMENT OF THE TOURISM SECTOR.
37. WEF, & University of Surrey. (2024). Travel & Tourism Development Index 2024 - Insight Report. 1–97. https://www.weforum.org/publications/travel-tourism-development-index-2024/in-full/

which are highly sensitive to climate change. Although all tourism subsectors depend on natural resources, the primary appeal of sun-and-sea, cities and art, and cultural tourism is somewhat less directly tied to environmental conditions. However, these segments are by no means safe: projected sea-level rise, for example, threatens beaches, coastal accommodations, urban centers, and cultural heritage sites—reflected in their high to very high-risk ratings under the worst-case scenario[37].

Finally, differences in risk levels between tourism segments can be explained by how each has benefited from Albania's economic development. The sun-and-sea and cities and art segments have gained the most, particularly in terms of infrastructure, governance, and financial access. They are also expected to benefit more rapidly from future improvements. In contrast, ecotourism and cultural tourism have lagged behind, evidenced by their higher current risk levels. Even if future development supports all segments equally, these two will require additional effort to strengthen their adaptive capacity and bridge existing gaps, particularly regarding infrastructure and governance[37].

2.3 Urban Development sector

Sectoral context

The urban sector in Albania has undergone significant transformations over time. The first local elections in 1992 led to the formation of 373 municipalities and communes, marking the beginning of decentralized urban governance. In 1998, amendments to Law No. 8405 introduced strategic planning but simultaneously facilitated the shift of property ownership from the state to private entities, accelerating informal urban development. Further changes occurred in 2000 with Law No. 8652, which restructured urban planning by establishing 12 districts (Qarks) to improve coordination between municipalities, communes, and the central government. However, the law contained legal ambiguities, leading to misinterpretations and misuse of urban regulations[38]. A major reform took place in 2009 with the approval of Law No. 10119, which introduced fundamental changes in territorial planning and governance. This law established the National Agency for Territorial Planning (AKPT) to enhance coordination across different government levels and sectors. Additionally, the National Territorial Council was created, defining distinct roles for various actors: local government councils were responsible for planning, while municipalities handled land development. These reforms improved decision-making, transparency, and accountability, notably through the creation of the Territorial Register Database. Law No. 10119 laid the foundation for the development of local plans and clarified the roles and responsibilities of local institutions in urban governance[39].

In 2013, Albania undertook a major restructuring of local governance by merging 373 local authorities into 61 larger municipalities. While intended to improve governance, this reform disrupted the urban planning system, as political instability, shifting priorities, frequent legal amendments, and limited institutional capacity at both local and central levels created uncertainty. The role of existing districts (Qarks) in urban planning and development remained unclear, further complicating the process. To address these challenges, Albania approved its General National Spatial Plan (GNSP) in 2016. This national planning framework was designed to coordinate territorial planning among the Territorial Planning Council, central government offices, and local authorities through cross-sectoral policies. Together with

38. Baastel. (2024). CLIMATE RISK ASSESSMENT OF THE URBAN DEVELOPMENT SECTOR.

the General Local Spatial Plan, these documents established the three core components of land use planning in Albania: territorial development strategy, territorial planning, and development regulation[39].

In 2017, the Ministry of Urban Development was abolished, and its responsibilities were transferred to the Ministry of Infrastructure and Energy (MIE). Since then, the National Territorial Planning Agency has operated under this ministry, with the MIE overseeing the drafting and implementation of national policies and programs related to urban planning and development. At the national level, the General National Territorial Plan (GNTP) serves as the primary framework for urban development, complemented by Sectoral Plans and Detailed Plans for Areas of National Importance. Similarly, at the local level, the General Local Territorial Plan (GLTP) plays a crucial role, supported by Sectoral Plans and Local Detailed Plans. Both the GNTP and GLTP incorporate three key components: the Territorial Development Strategy, the Territorial Plan, and the Regulation of Development[39].

With an estimated population of almost 2.8 million in 2023 and a relatively high population density of 98 inhabitants per km^2, Albania is a highly urbanized country[39]. This urbanization is the result of a significant demographic shift, with the urban population increasing from one-third in the early 1990s to approximately 62% in 2020. The growth has been driven by both population increases and internal migration, particularly toward the Tirana and Durrës prefectures. By 2020, about 36% of the population was estimated to reside in coastal areas[39].

Albania's urbanization is marked by a strong concentration in the Tirana-Durrës corridor, creating economic, social, spatial, and environmental disparities compared to the more remote mountainous and central regions. While urban areas feature a mix of formal and formalized buildings, a significant number of informal structures remain, often in risk-prone areas. Cities also display varied building typologies, primarily privately owned, with an urgent need for infrastructure improvements[39].

Urban development in Albania is closely linked to climatic conditions, which are categorized into four climatic zones: Mediterranean Field Zone (MFZ), Mediterranean Hilly Zone (MHZ), Mediterranean Pre-mountainous Zone (MPMZ), and Mediterranean Mountainous Zone (MMZ). According to the *Climate Scenarios for Albania*, climate projections were developed using SimClim AR6 software, incorporating meteorological data from cities such as Tirana, Durrës, Fier, Shkodër, Elbasan, Pogradec, Kukës, Lezhë, Peshkopi, Përmet, Tepelenë, Ersekë, Pukë, Selenicë, Konispol, Vlorë, Gjirokastër, and Krujë. Each of these cities falls within one of the four climatic zones, as detailed in national climate assessments[39].

The Socioeconomic Scenarios Report (2019) indicates that 40.2% of Albania's population (1,158,776 people) resides in these cities. Among them, 36.6% (1,055,160 people) live in the MFZ, 1.6% (45,445) in the MHZ, 1.2% (34,099) in the MPMZ, and 0.8% (24,072) in the MMZ, highlighting the concentration of urban populations in coastal and lowland areas[40].

According to the Socioeconomic Scenarios Report (2023), in 2020, it was estimated that a third of the population (36%) lived in the coastal areas which include Tirana, Vlorë, Elbasan and Shkodër[41].

The identified subsectors—residential, social,

39. Pojani, E. (2023). REPORT ON SOCIO – ECONOMIC SCENARIOS.
40. Baastel. (2024). CLIMATE RISK ASSESSMENT OF THE URBAN DEVELOPMENT SECTOR.
41. Pojani, E. (2023). REPORT ON SOCIO – ECONOMIC SCENARIOS.

productive, and supply network present throughout Albania, spanning coastal, plain, hilly, and mountainous regions. As a result, all urban development subsectors are influenced by the country's diverse climatic conditions, making it impossible to categorize any single subsector within a specific climatic zone. Consequently, the assessments of exposure, sensitivity, and adaptive capacity cover two perspectives. First, the report summarizes climate-related risks for cities within each of the four climatic zones—MFZ, MHZ, MPMZ, and MMZ. Second, sumps up the risks specific to each urban development subsector, considering their distinct characteristics and vulnerabilities, all based on the risk assessment performed by another assignment[41].

Climate change vulnerabilities and risks

The climate change risks affecting Albania's urban development sector—specifically the **residential, social, productive, and supply network subsectors**—were assessed both for the present and projected future conditions, resulting in several critical findings. The analysis indicates that, across the country's four urban climatic zones, the level of risk increases significantly in the future compared to current conditions[41].

Presently, all four zones are classified as having a "Low" risk level. However, under both best-case and worst-case future scenarios, the risk escalates sharply. In particular, the Medium Frequency Zone (MFZ) and Medium High Zone (MHZ) are projected to face "Very High" risks, while the Medium Precipitation Medium Zone (MPMZ) and Medium Medium Zone (MMZ) are rated "High" under the best-case scenario and "Very High" under the worst-case[41].

Given the spatial distribution of Albania's urban population, the urban sector faces substantial exposure. Major urban centers such as Tirana, Durrës, Vlorë, Fier, Shkodër, and Elbasan—primarily located in the MFZ—are particularly vulnerable, with a future risk rating of "Very High" under both scenarios. Similarly, smaller yet significant cities like Kukës, Pogradec, Peshkopi, Pukë, and Ersekë are expected to experience "High" risk levels under the best-case scenario and "Very High" under the worst-case scenario[41]**.** **At the subsector level, the analysis reveals a marked increase in risk ratings for all four subsectors. Currently, the residential and social subsectors face a "High" risk, while the productive and supply network subsectors are rated "Low."** However, projections suggest that, under both best- and worst-case scenarios, all four subsectors will face "Very High" risk levels. This increase is especially pronounced in the productive and supply network subsectors, which shift from "Low" to "Very High" risk[41].

These assessments are informed by observed trends such as rising average temperatures, intensified precipitation events, and sea level rise (SLR). Future projections, which consider changes in temperature extremes, precipitation patterns, drought conditions, and SLR, consistently indicate heightened vulnerability across all subsectors[41].

2.4 Energy sector

Sectoral context

Albania is endowed with a wide variety of **energy** resources ranging from oil and gas, coal, hydropower, natural forest biomass and other renewable energy (solar power, wind power, geothermal). In 2023, oil accounted for the largest share of supply of energy at 43%, followed by hydropower (34%) and biofuels and waste (12,9%). However, fossil-fuel-based generation has declined in recent years, particularly since 2019, while hydropower generation has fluctuated significantly over the years. In 2023, Albania's total energy production was 1,773 kilotonnes of oil

equivalent (Ktoe), above the 2017–2022 average of 1,718 Ktoe. In 2023, production rebounded, with hydroelectric output increasing by over 6% compared to 2022.

Regarding fossil fuel reserves, Albania holds oil, gas, and coal deposits. The state-owned oil company AlbPetrol estimates that Albania has approximately 120 million barrels of recoverable oil, with the Patos-Marinza oilfield being one of the largest onshore oilfields in continental Europe. However, oil production has recently declined, largely due to a sharp drop in output from the Patos-Marinza field. Similarly, natural gas production has decreased, falling from 82 Ktoe (5%) in 2017 to 39 Ktoe (2%) in 2023, with nearly all extracted gas being used to fuel domestic oil production. In contrast, coal production has experienced a resurgence. After becoming nearly absent in the early 2000s, coal's share in Albania's energy mix increased from 2% in 2019 to 9% in 2023. The country's coal reserves are primarily located in Tirana-Durrës, Memaliaj, Pogradec, and Korça, with lignite extraction taking place at six mines in Tirana, three in Pogradec, and two in Korça[42].

Albania imports gas and oil through two coastal terminals, with the country exporting most of its crude oil while importing the majority of its refined oil. In terms of natural gas, Albania plans to enhance its energy security by connecting to the Trans-Adriatic Pipeline (TAP) via a natural gas pipeline and an LNG terminal. However, energy imports were significantly impacted by the COVID-19 pandemic[43].

In rural areas, biomass remains the primary energy source, mainly in the form of fuelwood used for heating and cooking. Both commercial logging and household fuelwood collection take place, with a portion of the fuelwood being exported. In recent years, there has been growing demand for stoves and pellets, though Albania's fuelwood sector remains largely informal[43].

Hydropower dominates Albania's electricity generation, accounting for 95% of the country's installed capacity, which totaled 2,096 MW in 2018. The Albanian Power Corporation (KESH) owns the majority of this capacity (1,448 MW), while private producers contribute approximately 755 MW. Most of Albania's hydropower capacity comes from large-scale hydropower plants (1,904 MW), while small hydropower plants account for 192 MW. The Drin River in northern Albania is the country's largest river and hosts the three main KESH-owned hydropower plants, known as the Drin River cascade: Fierza (500 MW), Komani (600 MW), and Vau i Dejës (250 MW). Currently, Albania relies on the Drin River Basin for over 90% of its domestic hydropower production[43].

Despite its strong hydropower sector, wind and solar energy remain underdeveloped, accounting for only 1% of Albania's electricity production in 2023, although the country has significant untapped potential. The Adriatic Coast offers particularly favorable conditions for wind energy, with an estimated total wind power potential exceeding 2,000 MW. The Albanian government has set a target to generate 5% of total electricity from wind by 2025. However, while 222.5 MW of wind capacity was awarded through an auction, installation has yet to be implemented[43].
Similarly, Albania has considerable solar energy potential, with many regions receiving solar radiation ranging from 1,185 kWh/m^2 to 1,700 kWh/m^2 per year. Under clear weather conditions, each square meter of horizontal surface in Albania can absorb around 2,200 kWh per year. Currently, the implementation of two solar photovoltaic (PV) farms with a combined installed capacity of 240 MW is underway[43].

42. Baastel. (2024). CLIMATE RISK ASSESSMENT OF THE ENERGY SECTOR.

On the energy demand side, transportation (37%), residential (26%), and industrial (21%) sectors are the largest consumers of energy. Compared to other countries in the region, household and industrial energy consumption levels remain relatively low. One contributing factor is energy poverty, with 37% of Albanian households reporting an inability to keep their homes warm. The lack of a gas distribution network means that electricity, fuelwood, and LPG (in gas cylinders) are the main energy sources for residential use, while refined oil is available for the transport sector[43].
Climate change vulnerabilities and risks

A thorough evaluation of current and projected climate risks to Albania's energy sector reveals several key insights, indicating that climate change impacts are expected to intensify across all subsectors in the future. The analysis shows a general trend: risk ratings increase from current conditions to future projections, even under the best-case scenario (SSP1-1.9 by 2030). Under the worst-case scenario (the most aggressive SSP by 2050), risks escalate significantly, not only for that scenario but also for all other pathways and timeframes. A notable exception is the transmission and distribution subsector, where no risk increase is observed under the best-case scenario. This can be attributed to anticipated investments aimed at strengthening Albania's transmission and distribution infrastructure, resulting in a more resilient and efficient network with reduced electricity losses[43].

The second key observation relates to the severity of future risks. While current risk levels present a mixed picture, future risks—particularly under the worst-case scenario—are concerning. In most subsectors, the elevated risk levels are directly linked to projected reductions in water availability, notably affecting the oil, gas, coal, and hydropower subsectors. For the transmission and distribution subsector, however, the heightened risk arises from other climate factors such as extreme heat, rising average temperatures, and intense precipitation events. The fuelwood subsector presents a more complex case: although water scarcity contributes to its increased risk, projections related to extreme heat and heavy precipitation also play a significant role. In sum, the fuelwood subsector is classified as being at "Very High" risk under the worst-case scenarios, highlighting the multifaceted nature of its vulnerability[43].

A subsector-specific overview indicates the following:

- **Transmission and Distribution: Moderate risk currently,** rising to **"Very High" under the worst-case future scenario.**
- **Fuelwood and Hydropower: Low current risk,** increasing to **"Very High" in the worst-case scenario.**
- **Oil, Gas, and Coal: Also** face **increasing risks,** primarily influenced by changes in water availability and sea level rise.
- **Wind and Solar Power: Currently assessed as "Very Low" risk,** increasing to **"Moderate" under the worst-case scenario,** making them the least at risk.

Despite the relatively lower risk for wind and solar energy, they have currently a limited contribution to the overall energy mix so further investment in those to diversify the sector and enhance resilience could be an option for increased resilience of the energy sector. Conversely, the highly exposed subsectors—transmission and distribution, fuelwood, and hydropower—are particularly vulnerable to extreme precipitation, sea level rise, and temperature extremes, with precipitation posing the greatest threat[44].

In the case of hydropower, vulnerability is primarily tied to reduced water availability in

43. Baastel. (2024). CLIMATE RISK ASSESSMENT OF THE ENERGY SECTOR.

rivers and inland water bodies. The oil, gas, and coal subsector faces similar risks, though it has access to additional water sources, such as the sea. Nevertheless, sea level rise introduces further risks specific to this subsector, unlike hydropower[44]. Regarding adaptive capacity, the potential for improvement varies by subsector. Policies and strategies favoring renewable energy are likely to prioritize wind and solar development, given Albania's resource potential and the role these sources can play in complementing hydropower. Although hydropower is expected to remain central to Albania's energy sector, its relative importance may decline, with large-scale new investments unlikely in the near term[44].

For the transmission and distribution network, planned investments are anticipated to bolster resilience, though the sector will also face increased demand for network expansion and stability. The oil, gas, and coal subsector presents uncertainties: Albania has the potential for increased production, particularly in response to the European Union's search for alternative energy sources following geopolitical shifts. However, it remains unclear whether Albania will expand its extraction and refining capacities, which would enhance the subsector's adaptive capacity[44].

The fuelwood subsector's future is similarly uncertain. While governmental interest in biomass and biofuels is expected to grow, increased demand without formalization of production could lead to overconsumption and reduced adaptive capacity. Conversely, if sustainable forest management practices are adopted and formalization increases, the subsector's resilience may improve. Additionally, expanding the electricity distribution network may reduce reliance on fuelwood in rural areas, but the overall impact on the subsector's adaptive capacity remains uncertain[44].

Overall, Albania's energy sector faces mounting climate-related risks, particularly in water-dependent subsectors. Strengthening adaptive capacity through targeted investments, diversification, and sustainable management will be essential to mitigate vulnerabilities and ensure long-term energy security[44].

2.5 Transport sector

Sectoral context

The transport sector in Albania encompasses a diverse range of modalities, including road, railway, maritime, and air transport, each playing a critical role in supporting economic activity, connectivity, and mobility at both national and regional levels. The following sections will analyze the different subsectors.

Road transport

In recent years, Albania has undergone significant road infrastructure development, particularly on its main state roads. Connections between the north and south and the east and west of the country are now possible, though their efficiency varies. There are three official motorway segments in Albania: Thumanë-Milot-Rrëshen-Kalimash (A1), Levan-Vlorë (A2), and partly Tirane-Elbasan (A3). Major cities are linked by either new single/dual carriageways or well-maintained roads, with a dual carriageway connecting Durrës (in the west) to Tirana, Vlorë (in the southwest), and partially to Kukës (in the northeast). However, many rural roads remain in poor condition, as large-scale reconstruction efforts only began in the late 2000s, led by the Albanian Development Fund. The vast majority of roads in Albania are owned and maintained by state and local governments[44].

44. Baastel. (2024). CLIMATE RISK ASSESSMENT OF THE TRANSPORT SECTOR.

Passenger road transport vehicles are distributed across the country, though their concentration varies by region. In 2024, the prefecture of Tirana had the highest number of vehicles per prefecture with 333,444 road vehicles, accounting for 35% of all registered vehicles, while Gjirokastër had the lowest at 2%. The number of passenger road transport vehicles per 1,000 inhabitants has steadily increased between 2010 and 2022. The total number of road vehicles with the status of active and temporarily deregistered, for the fourth quarter of 2024, in the territory of the Republic of Albania until December is 959,226 vehicles. In the category of road vehicles by type, the largest percentage of the total number of road vehicles is occupied by passenger cars (80.8 %), mixed transport vehicles (6.0 %) and motor vehicles (5.8 %)[45].

According to Instat´s Road Transport Statistics of 2024, the length of the road network in use was 3,606 km, referring to different categories, such as motorway, interurban or urban and local roads. Secondary interurban roads occupy about 74.2 % of the length of the road network[46].

Railway transport

Albania's railway network primarily follows a vertical orientation, with certain sections intersected by horizontal rail lines, particularly in coastal areas where the country's largest cities are located. The state-owned Albanian Railways S.A. operates the railway system, and all trains run on diesel-powered engines, as there is no electrified railway infrastructure[46].

Over the past decades, rail passenger traffic has experienced a steady decline, reaching a point where, by 2021, it accounted for less than 1% of the passenger transport sector. This decrease is largely attributed to a lack of political and public support. In contrast, rail freight transport has increased in the past ten years. Until 2015, Albanian Railways was the sole provider of freight transport services, but from 2016 onward, private operators also began operating in the sector. According to INSTAT, coal, lignite, crude oil, and natural gas make up 98.5% of transported freight, while metal, mining products, and quarry materials account for the rest[47].

As of 2024, the length of the railway network in use in Albania is 253 km. The railways lines, currently in use, are as follows: Borderline - Gjorm with a length of 93 km, Durrës - Elbasan with a length of 76 km, Rrogozhinë – Fier with a length of 49 km, Fier - Vlorë of 35 km[45]. However, train speeds remain low, and the quality of service is poor and inconsistent. Additionally, rolling stock, including wagons, passenger coaches, and locomotives, is outdated and in need of replacement. The signaling system is nearly obsolete, with many components having deteriorated over the years[48]. The Transport Institute of Albania has initiated studies on regional rail connections, including a proposed project linking Albania with Greece via Korçë. The Albania-Kosovo railway is currently in the report phase, while the construction of the Tirana-Durrës railway, including a connection to Tirana International Airport, is set to begin soon[45].

Maritime transport

With one-third of its borders along the sea, Albania benefits from favorable natural conditions for

45. Instat (Institute of Statistics Albania). (2024). Road Transport Statistics. 2–6. https://www.instat.gov.al/media/14903/statistikat-e-transportit_tr-iv-të_2024-rrugorë-_en.pdf
46. Ministry of Industry and Trade. (n.d.). The Albanian Railways S.A. INFORMATION FOR ALBANIAN RAILWAYS. https://mpo.gov.cz/assets/dokumenty/53075/60518/634353/priloha001.pdf
47. Instat (Institute of Statistics Albania). (2024). Rail Transport Statistics. 1–4. https://www.instat.gov.al/media/13238/statistikat-e-transportit_tr-i-re_2024-hekurudhorë_en.pdf
48. TYPSA. (2019). Second Five Years Review of the Albanian National Transport Plan (ANTP3). https://www.arrsh.gov.al/te-ngarkuara/pdf/TR4689-FINAL-ANTP3-PART-I-ED1.pdf

developing a strong maritime sector. The Port of Durrës is the main port in the country from which was transported 96.0 % of the volumes of freights transported by sea or 1,606 thousand tons. The total volume of freights transported from the port of Durrës increased by 3.4 % compared to the same period of the previous year. In the first quarter of 2024, the total volume of goods transported by sea, encompassing both exports and imports, reached 1,316.8 thousand tonnes. With an annual processing capacity of approximately 4 million tons of goods, the port manages containers, bulk cargo, fuel vessels, and passenger ferries[49].

Other significant ports include the Port of Vlora (south), Port of Shëngjin (north), and Port of Saranda (south). Additionally, two secondary ports, the Port of Romano and Port Vlora 2, are specialized in fuel and liquefied gas transportation. While the four main ports handling goods and passengers are state-managed, the two hydrocarbon transport ports operate under concession agreements[45].

Albania does not have a significant inland shipping sector. The only notable inland transport activity is passenger ferry services on Lake Shkodra (bordering Montenegro) and Lake Ohrid (bordering North Macedonia)[50].

Air transport

"Mother Teresa" International Airport is Albania's only fully operational international airport, with an annual passenger capacity of 1 million. Strategically located in central Albania, it is in close proximity to Tirana and the Port of Durrës[51].

In the north, Kukës Airport was constructed but is currently not offering passenger services. In the south, construction is underway for a new airport near Vlora, though the project has faced opposition due to potential violations of national laws on protected areas and non-compliance with the Bern Convention (the Euro-African Agreement on Migratory Water Birds). Additionally, Sarandë Airport, located in southern Albania, exists but is currently not operational[51].

In the first quarter of 2024, 55,067 aircraft transited through Albanian airspace, with 75.8% classified as overflights. The volume of freight handled by air transport, amounted to 499.5 tons[51]. Additionally, during the first quarter of 2024, a total of 1,909,757 passengers traveled by air (Instat (Institute of Statistics Albania), 2024a).

Climate change vulnerabilities and risks

An analysis of Albania's transport sector highlights key trends in both current and future climate risks across its diverse subsectors. The primary observation is the consistent increase in risk ratings from present conditions to future scenarios. Under the best-case scenario (SSP1-1.9 by 2030), most subsectors experience a rise in risk levels. This trend intensifies under the worst-case scenario (the most aggressive SSP pathway by 2050), with risk ratings increasing significantly, not only for that scenario but across all SSPs by mid-century. The sole exception is the railway transport subsector, which maintains its current risk level under the best-case scenario. This stability is attributed to Albania's projected investments aimed at improving the resilience and efficiency of the railway system[51].

Another critical finding relates to the severity of future risks. While current risks are moderate and vary by subsector, future risks, particularly under the worst-case scenario, are notably alarming.

49. Instat (Institute of Statistics Albania). (2024). Maritime Transport Statistics. https://www.instat.gov.al/media/13237/statistikat-e-transportit_tr-i-rë_2024-detar_en.pdf
50. Baastel. (2024). CLIMATE RISK ASSESSMENT OF THE TRANSPORT SECTOR.
51. Instat (Institute of Statistics Albania). (2023). Population of Albania. June, 1–10.

A key driver of these heightened risks is the projected increase in intense precipitation, which poses substantial threats such as erosion, flooding, and landslides. These hazards disproportionately affect the road and railway subsectors due to their extensive geographical networks, making them highly (best-case) to very highly (worst-case) vulnerable. In contrast, maritime and air transport subsectors, which are concentrated in specific locations (ports and airports), face lower exposure to such widespread precipitation events[51].

Additionally, other climate variables such as rising average temperatures and extreme heat are expected to impact primarily the railway and maritime subsectors, given the current condition of their infrastructure and equipment. The maritime subsector is also particularly vulnerable to projected sea level rise, adding another layer of risk[51].

When broken down by subsector:

- **Road and Railway Transport: Both currently face low risk** but are projected to experience **very high risk under the worst-case scenario.**
- **Maritime Transport: Presently at very low risk**, but similarly expected to face **very high risk in the worst-case future scenario.**
- **Air Transport:** Identified as the least vulnerable, with **risk levels rising from very low currently to moderate under the worst-case scenario.**

It is important to note that, while the railway subsector currently accounts for only a small share of Albania's transport activity, planned future investments could significantly expand its role. Strengthening the railway network could serve as a crucial adaptation strategy by providing an alternative to road transport, thereby increasing the sector's overall resilience. Given the dominance of road transport in passenger movement, and the substantial economic roles of air transport (particularly for tourism) and maritime transport (for goods), climate resilience in all subsectors is essential[51].

In particular, it is recommended that adaptation measures for the maritime subsector address sea level rise. Furthermore, upgrading infrastructure and equipment across the sector is necessary to mitigate the projected impacts of rising temperatures and extreme heat[51].

Regarding adaptive capacity, future improvements are likely but will vary across subsectors. The road transport subsector is expected to benefit the most, owing to Albania's significant investment pipelines and its strategic importance. Conversely, the air transport subsector may see fewer future investments, though it has benefited from substantial improvements over the past decade, with ongoing projects continuing[52].

For the maritime transport subsector, while some planned actions exist, large-scale infrastructure investments are not anticipated in the near term, leaving it more exposed to climate risks. The railway subsector shows a unique case: although significant long-term investments are planned, there is a noticeable gap in mid-term financing, creating uncertainties about its broader expansion beyond key routes such as Durrës-Tirana-Vlorë and cross-border connections with Montenegro and Greece. Nevertheless, completing these priority lines would substantially improve the adaptive capacity of Albania's transport system and could contribute to reducing emissions by offering a viable alternative to road transport[53].

52. Baastel. (2024). CLIMATE RISK ASSESSMENT OF THE TRANSPORT SECTOR.

03

Process for the identification and prioritization of the adaptation measures

The process to define and prioritize the 66 priority adaptation actions or measures has been a multi-step process that has included different consultations and validations with UNDP and the national experts participating in the preparation of the NAP, also taking inputs from previous assignments implemented under the NAP process.

In this regard, the whole process conducted for the selection of the measures is summarized below:

INITIAL COMPILATION OF THE LONG LIST OF MEASURES

1. In October 2024, a compilation of the initial list of 151 adaptation measures prepared in a previous assignment by Baastel was conducted, based on the review of literature as part of the first activities within the current consultancy assignment.

REVIEW OF THE LONG-LIST AND MULTICRITERIA ANALYSIS (MCA)

2. Initial review of the long list of measures by UNDP and the NAP Coordinator to simplify the list and avoid overlaps and duplications among the measures. The results were a list of 94 measures.

3. Global Factor reviewed further the long list to consider the existing 8 Local Adaptation Plans (LAPs) in the NAP, and to address the feedback that measures should include locations, when possible, for which some of the locations were taken from the LAPs when the national-level measure also appeared in one or several of the 8 LAPs.

4. A first iteration of the multicriteria analysis was conducted and submitted to UNDP in December 2024 to prioritize the most relevant, beneficial and urgent measures, which led to the prioritization of 55 adaptation measures.

5. In the process of feedback to the MCA, adjustments in the assessments to some of the measures were suggested by the experts. In parallel, to further inform the process, the NAP coordinator team prepared a list of 13 forestry/agriculture/NbS geographically referenced measures including locations for those interventions in a GIS map (See Annex VIII). Moreover, Global Factor further reviewed the long-list of measures to finetune-it, reviewing and eliminating some measures that were more climate change mitigation-related, and added some measures from the Gender Strategy as the initial long-list did not include specific gender considerations in its conception. With this, a final longlist of 114 measures was identified.

6. The second iteration of the MCA was submitted to UNDP in January 2025, including all the adjustments and feedback received by UNDP and by the national and international experts participating in the NAP process regarding the methodology and the long list of measures, which led to the prioritization of 66 measures across five priority sectors: agriculture and forestry, tourism, urban development, energy, transport, including also transversal or cross-sectoral measures.

The final criteria and weights considered for the MCA after validation with the different stakeholders were the following:

Table 4. The final criteria and weights considered for the MCA after validation with the different stakeholders.

Group	Criterion	Description	Internal Weight	Weight justification	Assessment methodology	
1: Feasibility	**Financial feasibility**[53]	The assessment already performed in the previous consultancy assignment implemented by Baastel for this criterion was considered and complemented/ reviewed to evaluate the financial feasibility of the measures. E.g.: *Are the initial and maintenance budgets necessary for this measure affordable and manageable?*	0.40	This criterion is given the highest weight in group 1 because it ensures that resources are used efficiently, maximizing financial feasibility of the measures	Low – 1	The measure is resource-intensive and requires funding not available.
					Medium – 2	The measure involves an intermediate level of economic resource-intensiveness which is partially available or could be available through complementary funding resources.
					High - 3	The measure requires a low level of investment which is currently available for expenditure e.g. a soft approach measure such as a policy/regulatory measure or a measure that proposes minimal infrastructure development and is limited to piloting or small-scale interventions, or high-budget measures that have already assigned a budget line in the national budget.
	Technical feasibility	Evaluates the capacity to implement the measure effectively from a technical, operational and resource availability point of view. It involves assessing whether the necessary infrastructures, technologies and skills exist to develop the measure. The assessment considered the analysis conducted by Baastel and the national stakeholders for this criterion and was further reviewed by the team of experts and UNDP. E.g.: *What is the feasibility of the measure from a technological perspective?*	0.30	Technical feasibility ensures that the necessary infrastructure, technologies and skills are in place to implement the measure effectively, which is fundamental to the success of any measure.	Low – 1	The implementation of this measure requires advanced technologies and know-how currently not available in the country.
					Medium – 2	The implementation of this measure requires relatively uncomplicated and manageable technologies that are partially available in the country.
					High - 3	The implementation of this measure requires no advanced technologies or requires only technical expertise already available in the country.
	Institutional feasibility	Evaluates whether there are adequate knowledge, human resources and the coordination mechanisms necessary to implement the measure. The evaluation of this criterion took into account the scoring assessed by Baastel and the national stakeholders. E.g.: *What is the feasibility of the measure from an institutional perspective?*	0.30	This criterion assesses whether institutions and governance mechanisms are prepared to implement and sustain the measure, ensuring its operational feasibility.	Low – 1	Public authorities at different levels of governance currently do not have the knowledge or the resource capacity to implement the measure, and the necessary coordination mechanisms to ensure adequate collaboration of efforts at horizontal and vertical level are not in place.
					Medium – 2	Public authorities at different levels of governance currently have partially the knowledge or the resource capacity to implement the measure, but could be reinforced with further training, capacity building or coordination mechanisms to ensure adequate collaboration of efforts at horizontal and vertical level.
					High - 3	Public authorities at different levels of governance currently have the knowledge and resource capacity (staff, tools, etc.) to implement the measure.

53. The scores for this criterion were already given to the Consultant from a previous assignment. They have been reviewed.

Group	Criterion	Description	Internal Weight	Weight justification	Assessment methodology	
2: Social co-benefits	**Social acceptability**	Evaluates the alignment with existing local structures and acceptance and support of society towards the measure, without generating resistance. Includes the disposition of the communities to participate and collaborate towards its implementation. The assessment started with a review and completion of the evaluations provided under a previous assignment. E.g.: *What is the level of community acceptance and support for implementing this adaptation measure?*	0.45	Social acceptance indicates the degree of support from communities and stakeholders, which is crucial for the implementation and long-term sustainability of the measure.	Low – 1	The measure has low social acceptability, its benefits and positive impacts are limited and confined to only small portions of the population spectrum or are non-existent.
					Medium – 2	The measure entails intermediate social acceptance, its benefits and positive impacts are extensive but do not reach the entire population.
					High - 3	The measure shows high social acceptability, and its benefits and positive impacts resonate through the entire population spectrum (or very high representation of the total spectrum of the population).
	Contribution to gender equality, just resilience and benefits for particularly vulnerable groups	Evaluates how the measure can contribute to more inclusive and equitable development, ensuring that benefits are distributed in a socially just manner, addressing any social inequalities and guaranteeing broad and fair benefits for vulnerable groups and communities (e.g. indigenous), women and youth. E.g.: *Does it support vulnerable groups? What is the potential for reducing inequalities in climate change impacts and/or gender equitable participation?*	0.55	This criterion ensures that the measure is inclusive and considers gender equity, social justice and benefits for vulnerable groups, promoting fair and equitable adaptation.	Low – 1	The measure has a low contribution to gender equality, its benefits and positive impacts lack distribution in a socially just manner and do not reach particularly vulnerable groups and communities.
					Medium – 2	The measure has an intermediate contribution to gender equality, its benefits and positive impacts are distributed in a socially just manner and can reach particularly vulnerable groups and communities.
					High - 3	The measure has a high contribution to gender equality, its benefits and positive impacts are broadly distributed in a socially just manner and reach particularly vulnerable groups and communities.

Group	Criterion	Description	Internal Weight	Weight justification	Assessment methodology	
3: Strategic Alignment	**Alignment with national strategies**	Evaluates the extent to which the adaptation measure aligns with national priorities, particularly with the National Strategy for Development and Integration 2030 and the Revised NDC (2016-2030) and its Action Plan, as well as the level of engagement with CSO and other relevant stakeholders to ensure broad-based support and inclusivity. E.g.: *To what extent is aligned with national priorities?* The three main priorities outlined in the National Strategy for Development and Integration 2030 are based on a primary goal aimed at the full integration of the country into the European Union, and are the following: 1. Democracy and strengthening of institutions and good governance; 2. Agenda for sustainable economic development, connectivity and green growth; 3. Social cohesion. The NDC and its Action Plan state an overall emissions reduction target of 20.9 percent below BAU, (6.674 ktCO2e reduction from 2021 to 2030) and adaptation measures for settlements, populations and tourism in the coast and the AFOLU sector for agricultural crops, livestock, forestry, pastures and meadows, lagoons and wetlands, aquaculture and fisheries.	0.35	Alignment with national climate strategies and policies, together with stakeholder engagement, strengthens national ownership and support, which increases the likelihood of success.	Low – 1	The measure entails a low degree of alignment with overall national priorities, particularly with those outlined in the National Strategy for Development and Integration 2030 and the Revised Nationally Determined Contribution (2016-2030) along with the Action Plan and does not promote stakeholder engagement nor enhance national ownership and support.
					Medium – 2	The measure entails an intermediate level of alignment with overall national priorities and those outlined in the National Strategy for Development and Integration 2030 and the Revised Nationally Determined Contribution (2016-2030) together with its Action Plan, promotes stakeholder engagement and improves national ownership and support.
					High - 3	The measure entails a high degree of alignment with overall national priorities, particularly with those outlined in the National Strategy for Development and Integration 2030 and the Revised Nationally Determined Contribution (2016-2030) along with its Action Plan, significantly enhances stakeholder engagement and considerably improves national ownership and support.

Group	Criterion	Description	Internal Weight	Weight justification	Assessment methodology	
3: Strategic Alignment	**Priority as vulnerability reduction potential**	Urgency of implementation considering the potential of the measure to reduce vulnerabilities and future costs.	0.45	Priority is key to identifying measures that need to be implemented quickly to avoid increases in and to reduce vulnerability and future costs, helping to prevent adverse impacts.	Low – 1	The measure partially contributes to addressing vulnerability towards a climate threat and/or responds to an urgent need that could be in the medium to long term (2029-2036 or beyond) (e.g. major socio-economic changes, need for innovation and resources, etc.).
					Medium – 2	The measure contributes to addressing vulnerability towards a climate threat and responds to an urgent need (e.g. flood threat, energy crisis, loss of biodiversity, etc.) in the medium term (2029-2032).
					High - 3	The measure contributes to addressing vulnerability towards two or more climate threats and responds to one or more urgent needs such as flood threat, energy crisis, loss of biodiversity, etc. in the short term (2026-2028).
	Environmental sustainability and mitigation co-benefits	Assesses the degree to which the proposed measure generates positive environmental externalities (e.g. air quality, water quality, soil quality, conservation, biodiversity) that contribute to climate change adaptation and biodiversity and ecosystem conservation and considers GHG emission reductions, particularly the so called “mitigation co-benefits”	0.20	This criterion ensures that the measure promotes environmental benefits, and analyses contributions to GHG emissions reductions.	Low – 1	The measure promotes a low level of environmental sustainability and does not generate positive externalities that contribute to a reduction of GHG emissions.
					Medium – 2	The measure shows an intermediate contribution to overall environmental sustainability and generates partial positive externalities that contribute to climate change mitigation through a reduction of GHG emissions.
					High - 3	The measure shows a high level of contribution to environmental sustainability and generates substantial contributions to GHG emissions reductions.

The measures with a total average performance of over 70% were selected as priority, based on the classification summarized in the table below:

Table 5. Classification of measures according to their level of priority.

Global Score Range	Classification	Description
0.85 - 1.00	**Very High Priority**	The measure performs excellently across all key criteria and group of criteria evaluated. It is feasible, well-aligned, and offers broad benefits and should be implemented with urgency given its potential to reduce vulnerabilities.
0.70 - 0.85	**High Priority**	The measure is generally solid and positive but may have specific areas in which its performance is not assessed as high. Implementation is feasible and clearly beneficial although it is not necessarily one of the most urgent measures.
0.50 - 0.79	**Moderate Priority**	The measure has significant weaknesses in one or more key areas. Major adjustments are needed before it can be considered viable, socially beneficial or aligned with country priorities.
0.00 – 0.5	**Not a Priority**	The measure performs poorly in critical areas. It is neither feasible nor advisable that it forms part of the NAP in its current state.

Source: own elaboration

The 66 priority interventions' sectoral representation is as follows:

21 measures in total for agriculture and forestry sectors

- 11 measures for tourism sector
- 9 measures for urban development sector
- 8 measures for energy sector
- 7 measures for transport sector
- 10 cross-sectoral measures

7. The results of the MCA were presented in an online session counting with the participation of UNDP, several national and international experts hired by UNDP for the NAP process, and technical staff from the Ministry of Environment and Tourism in February 2025. The results of the MCA for each of the 66 measures are included in the measures' factsheets (see Annex I through VI).

3.1 Cost benefit analysis (CBA)

8. Once the 66 priority interventions had been defined, a Cost Benefit Analysis (CBA) had to be performed to further explore the economic analysis and feasibility of the measures related to green and grey infrastructure among all the 66 measures. In this regard, the shortlist of measures was carefully analyzed to identify green, grey and soft interventions. The 21 green and grey measures that included infrastructure interventions were selected in agreement with UNDP and the NAP coordinator to conduct the CBA.

9. The Consultant conducted the CBA analysis, for which UNDP facilitated exchanges of information with the national experts so that the consulting team could have all the available costing information for the 21

measures. The costing information facilitated was validated by the Ministry of Agriculture.

10. Taking into consideration the information available, the Consultant further complemented the data on costs and benefits through the following steps:

a. consultations with national NAP experts to gather information on the target areas of intervention,

b. when the targets were not available the Consultant conducted analysis of GIS information to estimate target surfaces of implementation of the measures, or reviewed national documents and strategies that could support the definition of the areas of intervention such as the National Strategy for Irrigation, Drainage and Flood Prevention or the National Agriculture Strategy.

c. Compilation of cost and benefits information when it had not been facilitated by the national experts. This included the compilation of information from similar interventions whether in Albania or in the region to conduct a cost and benefit transfer methodology.

d. Based on the information available, which was not always complete, the Consultant performed a CBA providing an estimation of the cost-benefit ratio and of the net present value of the measures, including a sensitivity analysis with a different discount rate[54].

11. The Cost Benefit analysis was submitted to UNDP in April 2025. The results of the CBA are included in the factsheets for the relevant measures (see Annex I through VI). The feedback received to the CBA exercise from different national and international experts participating in the NAP process is currently being incorporated.

3.2 Preparation of the implementation plan

12. The Consultant prepared the present Implementation Plan that includes key information to facilitate the implementation of the 66 measures selected. The structure of the Plan and the Measures Factsheets were discussed with UNDP and the National NAP coordinator for validation. Moreover, the preparation process included also close coordination and consideration of other inputs prepared by other consultants under the NAP, such as the Monitoring and Evaluation Framework of the NAP, for which a dialogue with the NAP's M&E expert was facilitated to ensure alignment.

13. Before the submission, the proposed set of activities necessary for the implementation of each of the 66 measures, together with its proposed implementation timeline and monitoring and evaluation indicators were submitted to UNDP and the experts working on the NAP for feedback and validation.

14. The Plan has been subject to a process of validation and results were shared with key national stakeholders in a workshop in Tirana.

54. Further information on the MCA and CBA methodologies is provided in Deliverable 1 of the present consultancy assignment.

04

Implementation plan

4.1 Objectives

The *general objective* of this Implementation Plan is to establish a coherent and actionable framework to guide the delivery of priority climate change adaptation measures in Albania across key sectors: Agriculture, Forestry, Energy, Tourism, Urban Development, Transport, and Cross-sectoral domains. The Plan is designed to transform sectoral adaptation priorities into concrete interventions that are technically feasible, financially viable, and socially inclusive.

By doing so, the Plan contributes to the reduction of climate-related vulnerabilities—both sectoral and territorial—while enhancing the country's institutional capacity, inter-institutional coordination, and long-term adaptive resilience. It fosters a collaborative environment that enables all relevant actors—governmental, municipal, and non-governmental—to engage effectively in the implementation process, ensuring that adaptation measures respond to both national priorities and local needs.

To achieve its purpose, the Plan is structured around the following *specific objectives*:

1. Establish the institutional and operational conditions for effective implementation, by defining roles and responsibilities, coordination mechanisms, and resource mobilization strategies at national and local levels.

2. Strengthen multi-level and cross-sectoral collaboration among ministries, public agencies, municipalities, and other key stakeholders to ensure alignment, coherence, and ownership in the implementation of adaptation measures.

3.

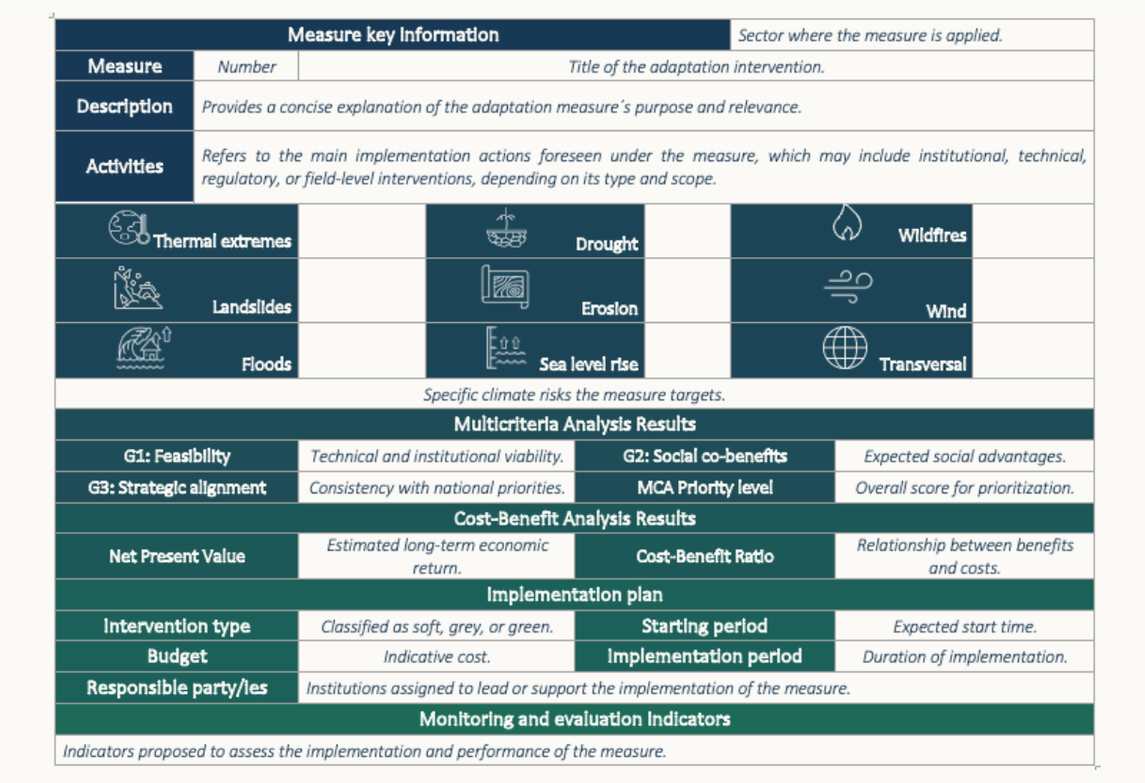
These objectives lay the foundation for a comprehensive implementation framework that defines institutional roles, establishes implementation timelines, assesses financial needs and opportunities, and sets the basis for monitoring and evaluation. Together, these elements aim to ensure that adaptation measures are delivered effectively, coherently, and sustainably across all sectors and levels of governance.

4.2 Typologies and complementary nature of adaptation measures

The Implementation Plan adopts a typological classification of adaptation measures to address the multidimensional nature of climate vulnerability in a systematic and integrated manner. The identified actions are grouped into three complementary categories—soft, green, and grey—reflecting their functional characteristics, implementation modalities, and contribution to reducing exposure and sensitivity, while enhancing adaptive capacity.

- **Soft measures** refer to non-structural interventions such as research and risk assessments, communication and awareness activities, governance and coordination mechanisms, planning and regulatory instruments, and financial or incentive-based tools. These measures aim to strengthen institutional frameworks and create enabling conditions for adaptation.
- **Grey measures** involve engineered or technological solutions designed to reduce physical exposure to climate hazards. These include resilient infrastructure, drainage and water retention systems, seawalls, early warning systems, and adaptive technologies.
- **Green measures** (nature-based approaches) leverage the restoration, conservation, or sustainable management of ecosystems to reduce climate risks and deliver multiple co-benefits, including biodiversity enhancement and ecosystem service provision. Examples include ecosystem restoration, reforestation, agroecological techniques, and bioengineering solutions.

Figure 4. Adaptation Actions Fact Sheet.



Measure key information			Sector where the measure is applied.
Measure	Number	Title of the adaptation intervention.	
Description	Provides a concise explanation of the adaptation measure´s purpose and relevance.		
Activities	Refers to the main implementation actions foreseen under the measure, which may include institutional, technical, regulatory, or field-level interventions, depending on its type and scope.		
Thermal extremes		Drought		Wildfires	
Landslides		Erosion		Wind	
Floods		Sea level rise		Transversal	
Specific climate risks the measure targets.			
Multicriteria Analysis Results			
G1: Feasibility	Technical and institutional viability.	G2: Social co-benefits	Expected social advantages.
G3: Strategic alignment	Consistency with national priorities.	MCA Priority level	Overall score for prioritization.
Cost-Benefit Analysis Results			
Net Present Value	Estimated long-term economic return.	Cost-Benefit Ratio	Relationship between benefits and costs.
Implementation plan			
Intervention type	Classified as soft, grey, or green.	Starting period	Expected start time.
Budget	Indicative cost.	Implementation period	Duration of implementation.
Responsible party/ies	Institutions assigned to lead or support the implementation of the measure.		
Monitoring and evaluation indicators			
Indicators proposed to assess the implementation and performance of the measure.			

The integrated application of soft, grey, and green adaptation measures is recognized as a critical component of integrated adaptation strategies, as their complementary nature enables more effective, context-specific, and system-wide responses to climate impacts. When implemented in a coordinated manner, these measures contribute simultaneously to increasing adaptive capacity, by strengthening institutional frameworks and supporting informed decision-making; reducing exposure, through the deployment of physical protection and risk mitigation infrastructure; and reducing sensitivity, by enhancing the resilience of ecosystems, livelihoods, and key services.

This combined effect ultimately supports the overarching objective of vulnerability reduction, reinforcing the sustainability, coherence, and long-term impact of climate adaptation strategies in Albania.

4.3 Summary Fact Sheets for Adaptation Measures: A guide for implementation

To support the effective implementation of the adaptation measures identified in this Plan, a set of summary fact sheets has been prepared. These fact sheets serve as a practical tool to consolidate key information for each proposed intervention, offering a standardized overview that facilitates decision-making, coordination among actors, and the mobilization of resources.

The fact sheets compile relevant data related to the measure's objective and description,

the climate hazards it addresses, the scope and nature of proposed activities, and its classification within a typology of soft, green, or grey interventions. They also include results from multicriteria and cost-benefit analyses, estimated implementation timelines, responsible institutions, and indicative budget needs. In addition, monitoring and evaluation indicators are provided to support tracking and performance assessment (see Figure 4).

This format enables a clear and actionable understanding of the adaptation portfolio and contributes to enhancing transparency, coherence, and readiness of adaptation planning and delivery at both national and local levels.

Implementation activities

The identification of specific activities and/or steps of each measure is an essential step to ensure its successful implementation as it provides a greater understanding of the scope of the measure, and of the activities that need to be executed by the different parties before the measure and its corresponding objectives can be considered as “completed”. In this regard, each of the 66 adaptation measures presented already in Section 3 (see above) was broken-down into a series of between two and ten specific implementation activities per measure.

Table 6. Implementation activities for the adaptation measures.

No.	Sector	Adaptation Measure	Activities
1	Cross-sectoral	**Strengthening Regional Resilience: Supporting the Western Balkans Adaptation Roadmap**	1.1 Provide technical expertise and advisory support to the Regional Cooperation Council in the design, structure, and methodology of the Climate Adaptation Innovative Roadmap, ensuring it reflects regional vulnerabilities, sectoral needs, and climate projections up to 2050. 1.2 Contribute to the development of the Roadmap by reviewing and validating drafts, supporting stakeholder engagement processes, and ensuring regional coherence. 1.3 Facilitate dialogue and coordination with key stakeholders across the Western Balkans to ensure the Roadmap reflects national adaptation priorities and supports regional cooperation.
2	Cross-sectoral	**Optimizing Climate Coordination: Strengthening the IMWGCC Framework**	2.1 Conduct an institutional review of the IMWGCC's current structure, mandate, decision-making processes, and coordination mechanisms related to climate adaptation. 2.2 Identify key barriers and gaps hindering inter-sectoral collaboration and effective implementation of adaptation measures within the IMWGCC. 2.3 Provide targeted recommendations to improve the functionality, coordination capacity, and strategic alignment of the IMWGCC with national climate adaptation frameworks. 2.4 Propose improvements to decision-making protocols within the IMWGCC to enhance transparency, efficiency, and accountability in adaptation planning and implementation.
3	Cross-sectoral	**Enhancing Capacities for Adaptation: Support for the Climate Change Technical Group and create and capacitate a Steering Group**	3.1 Provide targeted capacity-building support (e.g. technical training, guidance materials) to the Climate Change Adaptation Technical Working Group. 3.2 Establish a Steering Group at municipal level with clearly defined roles and responsibilities to coordinate and monitor local adaptation actions. 3.3 Deliver training sessions for municipal Steering Group members on adaptation planning and reporting mechanisms linked to the NAP and Local Action Plan.
4	Cross-sectoral	**Enhancing climate resilience through improved data systems**	4.1 Develop or upgrade centralized climate information platforms to enable data integration, sharing, and access across sectors and governance levels. 4.2 Strengthen institutional capacities for climate data collection, processing, and analysis through training, provision of tools, and development of standard protocols. 4.3 Establish or enhance real-time monitoring systems and early warning systems for climate-related hazards. 4.4 Strengthen climate resilient health system through enhanced climate-health data and early warning system, integrated evidence-based policies and institutions and upgraded health infrastructure and response capacities
5	Cross-sectoral	**Nature-based solutions and Biodiversity Net Gain Developer Schemes**	5.1 Establish and restoring green corridors for biodiversity connectivity by identifying priority areas, and restoring native vegetation through plantation and wildlife-friendly infrastructure (eco-bridges, underpasses, etc). 5.2 Enhancing cultural and recreational ecosystem services through conservation by restoring protected areas to improve public access, develop infrastructure for sustainable recreation (trails, wildlife observation areas, angling, eco-tourism zones, etc.), and ensuring conservation of landscapes while promoting public engagement. 5.3 Implement biodiversity net gain as a regulatory standard in planning by introducing a net gain policy for new development projects and establishing an offset program requiring developers to restore or compensate for habitat loss. Pilots in the target municipalities may be considered.

No.	Sector	Adaptation Measure	Activities
6	Cross-sectoral	**Fostering Climate Resilience Awareness Raising and Training for Adaptation and Mitigation**	6.1 Develop and deliver targeted training modules on climate change adaptation and mitigation for key practitioners, public institutions, municipalities, and essential service providers. 6.2 Conduct awareness-raising sessions for the general public and local communities, with a focus on high-priority climate risks, practical adaptation responses, and community-level resilience strategies. 6.3 Organize tailored workshops and informational materials for businesses and start-ups, highlighting the role of ecosystems in adaptation, examples of nature-based solutions, and available funding opportunities to support climate-resilient innovation. 6.4 Raise awareness at the municipal level on the climate vulnerability of protected areas, through communication campaigns, stakeholder dialogues, and integration of ecosystem risk topics in local outreach events.
7	Cross-sectoral	**Innovative Climate Finance Mechanisms: Piloting Sustainable Financing Strategies**	7.1 Identify and assess potential climate finance instruments relevant for the national and municipal context, including insurance schemes, payments for ecosystem services (PES), entry permits, and conditional loans. 7.2 Design a sustainable climate finance strategy, incorporating selected instruments and establishing guiding principles for pilot implementation in municipalities. 7.3 Pilot selected financing mechanisms at the municipal level, in coordination with local authorities, to test feasibility, public acceptance, and institutional requirements.
8	Cross-sectoral	**Piloting risk management Assessments for Climate-Resilient Businesses**	8.1 Conduct sector-specific risk assessments for selected private companies to identify climate vulnerabilities, operational risks, and potential adaptation opportunities tailored to each sector. 8.2 Develop and deliver practical tools, guidelines, and training modules to help companies understand, assess, and integrate climate-related risks into their risk management processes. 8.3 Compile lessons learned and recommendations from pilot assessments to guide the future scaling up of climate-informed private sector risk management practices.
9	Cross-sectoral	**Promoting Gender-Sensitive Climate Adaptation: Training Stakeholders and Developing Inclusive Tools**	9.1 Design and deliver gender-sensitive training sessions targeting national and local government officials, NGOs, community leaders, and technical staff involved in climate adaptation planning and implementation. 9.2 Develop and disseminate practical gender-responsive materials and tools, such as guidelines, checklists, and case studies, to support the integration of gender considerations into adaptation initiatives. 9.3 Ensure inclusive participation in trainings by actively engaging women, youth, and marginalized groups, and addressing barriers to access such as language, location, and scheduling.
10	Cross-sectoral	**Educating Communities: Adaptation and disaster awareness-raising**	10.1 Design and implement age-appropriate educational materials and activities for primary and secondary schools focused on climate change impacts, adaptation measures, and nature-based solutions. 10.2 Organize community-based awareness events such as climate fairs, exhibitions, workshops, and interactive sessions to engage residents on disaster resilience and local adaptation practices, particularly address at media, policymakers, and marginalized groups.
11	Agriculture	**Empowering farmers: financial support for climate-resilient infrastructure**	11.1 Design and implement targeted financial support schemes to enable farmers to invest in climate-resilient infrastructure. 11.2 Prioritize financing for the installation of hail protection systems, such as anti-hail nets or shelters, in regions most exposed to severe hailstorms. 23.3 Promote the modernization of greenhouses by supporting investments in climate-resilient designs, including improved insulation, automated ventilation, and water-efficient technologies. 11.4 Support the establishment of shelterbelts and windbreak systems, including tree rows or hedgerows, to reduce wind exposure, prevent soil erosion, and enhance microclimate stability on farms.

No.	Sector	Adaptation Measure	Activities
12	Agriculture	**Safeguarding farmers: Compensation and assistance programs for disaster recovery**	12.1 Design disaster relief funds and emergency assistance schemes to support farmers experiencing income loss due to climate-related disasters. 12.2 Establish clear eligibility criteria and application procedures to ensure timely and equitable access to compensation and assistance by affected farming households. 12.3 Develop awareness and communication campaigns to inform farmers about the availability, conditions, and procedures of compensation mechanisms.
13	Agriculture	**Action Plan for Invasive Species Under Changing Climate Conditions**	13.1 Conduct climate-sensitive risk assessments to identify priority invasive species whose distribution, impact, or resilience may increase under changing climate conditions. 13.2 Define targets and strategic objectives for invasive species prevention, early detection, control, and eradication in alignment with national biodiversity and adaptation goals. 13.3 Develop a phased implementation plan with clear timelines, responsibilities, and resource needs for each stage of the invasive species management cycle. 13.4 Establish monitoring protocols and data collection mechanisms to evaluate effectiveness and inform adaptive management of invasive species under future climate scenarios.
14	Agriculture	**Strengthening Flood Protection: Riverbank Restoration and Floodplain Expansion Across Key Albanian Rivers**	14.1 Hydrological modeling and flood risk mapping in the priority rivers to identify vulnerable areas where riverbanks and floodplains require restoration. 32.2 Engineering design for the restoration works of vulnerable riverbanks and dams based on the vulnerabilities detected. 14.3 Riverbank Restoration and Dam Repairs: Focus on the restoration and repair of riverbanks embankments and dams along key river streams such as Drini, Buna, Mati, Ishmi, and Vjosa to restore the 300km of flood protection embankments identified in the National Strategy for Irrigation, Drainage and Flood Protections. Efforts will aim to strengthen existing and new flood protection infrastructure, improve erosion control, and prevent damage caused by heavy rainfall or rising sea levels. Emphasize sustainable practices that incorporate natural vegetation to reinforce riverbanks and promote ecosystem resilience. 14.4 Monitoring and Maintenance of River Protection Systems: Set up a monitoring system to track the effectiveness of riverbank restoration, floodplain expansion, and flood barrier construction. As well as early warning systems to be prepared against possible affections. Regular inspections will ensure that the infrastructure remains intact and continues to provide protection. 14.5 Community Engagement and Flood Risk Awareness: Engage local communities in flood risk management by raising awareness about flood protection measures, the importance of riverbank restoration, and the role of wetlands in flood mitigation. Encourage local participation in maintenance and restoration activities, empowering residents to take an active role in the protection of their environments. And establish specific population evacuation plans in case of extreme climate hazards.

No.	Sector	Adaptation Measure	Activities
15	Agriculture	**Implementing Habitat Creation and Nature-Based Solutions to Combat Soil Erosion**	15.1 Identify and map erosion-prone areas for targeted areas. Conduct geospatial analysis and field surveys to map erosion-prone areas, compared with climate risk assessment to identify high-risk zones and define interventions aligned with local adaptation strategies. 15.2 Based on the needs identified, establish Vegetative Buffers and Restoring Natural Barriers by planting native grasses, shrubs, and trees along riverbanks, hillsides, and agricultural lands to stabilize soil and reduce sediment loss. 15.3 Implementing agroforestry and sustainable land management for soil stability by introducing agroforestry systems, using native perennial crops and intercropping methods to prevent soil depletion, and promoting regenerative farming techniques. 15.4 Soil bioengineering and green infrastructure for slope stabilization including: reinforcement of steep slopes through bioengineering solutions, applying geotextiles and biodegradable erosion control blankets and utilizing deep-rooted native species to provide natural anchoring. 15.5 Foster community-led reforestation and soil conservation programs to actively engage farmers, indigenous groups and local organizations in land restoration efforts, including capacity buildings.
16	Agriculture	**Enhancing IGEO's (Institute of Geosciences) Capacity for Coastal Monitoring and Data Provision on Environmental Changes and risks**	16.1 Conduct a capacity needs assessment of IGEO to identify technical, human, and institutional gaps related to coastal and environmental monitoring. 16.2 Upgrade technical infrastructure and equipment to support real-time data collection on coastal erosion, saltwater intrusion, groundwater quality, and vegetation cover in vulnerable coastal areas. 16.3 Develop and implement standardized monitoring protocols to ensure data accuracy, consistency, and comparability across coastal sites. 16.4 Deliver targeted training programs for IGEO staff and partners on data collection methodologies, remote sensing, and data management systems related to climate impacts on coastal ecosystems.
17	Agriculture	**Expanding and Modernizing Irrigation Systems for Enhanced Agricultural Resilience**	17.1 Mapping and identifying existing irrigation systems and its status: Develop a specific map and/or clear list of each existing irrigation system and its status, followed by areas requiring new systems and feasibility studies. 17.2 Construction of New Irrigation Systems: Develop and construct new irrigation systems across key agricultural regions, focusing on expanding irrigation coverage to 360,000 hectares. Prioritize the installation of modern irrigation technologies, such as drip and sprinkler systems, to improve water efficiency and ensure year-round crop production. Key areas of focus include Durrës, Elbasan, Gjirokastër, Kukës, and Vlorë. 17.3 Rehabilitation of Existing Irrigation Infrastructure up to 240,000 hectares: Undertake the rehabilitation and upgrade of existing irrigation systems, including the repair of aging infrastructure such as canals, pipes, and pumping stations. Special focus will be placed on rehabilitating water reservoirs and damaged dams in areas such as Përmet, ensuring a reliable and sustainable water supply for agriculture. 17.4 Development of Sustainable Water Management Practices: Promote the adoption of sustainable water management practices in agricultural regions, including the use of smart irrigation technologies and the efficient management of water resources. Train farmers in water conservation techniques and the efficient use of irrigation systems to maximize productivity while minimizing water waste. 17.5 Monitoring and Maintenance of Irrigation Systems: Implement a regular monitoring and maintenance program to ensure the continuous operation of irrigation systems. This will include scheduled inspections of all infrastructure, repairing any damage, and ensuring that water distribution is efficient. The program will also track the performance of the irrigation systems in enhancing agricultural productivity.

No.	Sector	Adaptation Measure	Activities
18	Agriculture	**Sustainable Water Security through Rainwater Harvesting Infrastructure**	18.1 Site assessment, prioritization of interventions and feasibility analysis in close cooperation with farmers and local communities. Based on existing and complementary vulnerability and water infrastructure assessments, design suitable interventions for rainwater infrastructure, water reserves and dam reparation. 18.2 Construction of Rainwater Harvesting Infrastructure: Build or maintain rainwater harvesting systems in strategic locations identified in the previous activity to improve water availability, particularly in areas vulnerable to drought and water scarcity. These systems will collect and store rainwater for agricultural, domestic, and industrial use, increasing resilience to climate change impacts. 18.3 Restoration of Water Reserves and repair of damaged dams to achieve the National targets : Focus on the restoration of existing water reserves to enhance their capacity to store water including the cleaning, reinforcement, and expansion of existing reservoirs and cisterns to improve water storage for use during dry periods, and of reparation of approximately 230 critical damaged dams (highlighted in blue points in the map) ensuring that the functionality of these dams will safeguard water supply for communities and ecosystems, especially during periods of irregular rainfall. 18.4 Regular Maintenance of Rainwater Harvesting Infrastructure Systems: Implement a comprehensive maintenance program for rainwater harvesting systems and restored water reserves. This will involve periodic inspections, cleaning, and repairs to ensure the continued functionality and longevity of the infrastructure. 18.5 Capacity building and awareness-raising for Water Conservation Practices: Promote water conservation practices in regions equipped with rainwater harvesting infrastructure, ensuring that municipalities, communities, farmers, and industries use the collected water efficiently.
19	Forestry	**Enhancing Forestry Efficiency through EU Regulatory Compliance**	19.1 Policy Alignment and Implementation: Review and Update National Policies: Ensure national forestry policies are aligned with EU regulations, such as the EU Forest Strategy for 2030 and the Regulation on Deforestation-free Products Legislative Amendments: Amend existing forestry laws to incorporate EU standards and guidelines 19.2 Sustainable Forest Management: Adopt Sustainable Practices: Implement sustainable forest management practices that comply with EU standards, focusing on biodiversity conservation and climate resilience Certification Programs: Promote certification programs like FSC (Forest Stewardship Council) and PEFC (Programme for the Endorsement of Forest Certification) to ensure sustainable forestry practices 19.3 Capacity Building and Training: Training Programs: Develop and conduct training programs for forestry professionals on EU regulations and sustainable forest management practices Knowledge Sharing: Facilitate knowledge sharing and best practices among forestry stakeholders through workshops and seminars 19.4 Monitoring and Reporting: Forest Monitoring Systems: Establish robust forest monitoring systems to track compliance with EU regulations and assess the health and sustainability of forests. Data Collection and Reporting: Implement standardized data collection and reporting mechanisms to provide accurate information on forest conditions and management 19.5 Stakeholder Engagement: Collaborative Platforms: Create platforms for collaboration among government agencies, NGOs, and private sector stakeholders to ensure coordinated efforts in forestry management. Public Awareness Campaigns: Conduct public awareness campaigns to educate communities about the importance of sustainable forestry and compliance with EU regulations 19.6 Financial Incentives: Funding Programs: Develop funding programs to support sustainable forestry initiatives and compliance with EU regulations Subsidies and Grants: Provide subsidies and grants to forest owners and managers who adopt sustainable practices and comply with EU standards

No.	Sector	Adaptation Measure	Activities
20	Forestry	**Advancing Sustainable Forestry: Afforestation Fund and Green Procurement Initiatives**	20.1 Design the governance and financing structure of the Afforestation Fund, including eligibility criteria, priority areas, and allocation mechanisms aligned with national adaptation and biodiversity strategies. 20.2 Conduct a spatial assessment to identify degraded or climate-vulnerable areas suitable for afforestation, ensuring ecological integrity and alignment with local land-use plans. 20.3 Launch a pilot phase of the afforestation program, including financial disbursement to local projects and community-based initiatives. 20.4 Develop and adopt green procurement guidelines for the forestry sector, promoting sustainably sourced timber and ecosystem-friendly practices.
21	Forestry	**Revitalizing Damaged Lands: Integrating NbS and EBA with Agroforestry Practices**	21.1 Site identification, assessment and strategic planning. Through a mapping exercise of degraded areas in the regions identified, the affected regions will be classified by level of degradation, to develop a priority restoration plan. 21.2 Forest regeneration and reforestation in target areas: Has, Kukës, Pukë, Fushë-Arrëz, Mirditë, Mat, Klos, Dibër, Bulqizë, Shkodër, Krujë, Korçë, Kolonjë, Vlorë. The activity will restore native tree species through planting of local and fire-resistant species and through the introduction of fire prevention and resilience techniques such as buffer zones and firebreaks, mixed-species reforestations and fire-resistant tree belts to minimize the spread of future wildfires. 21.3 Implementing NbS and bioengineering for soil and infrastructure protection in forest areas in the target areas of Tropojë, Has, Kukës, Mirditë, Dibër, Mat, Bulqizë, Klos, Bovillë (Tirana), Krujë, Gramsh, Skrapar, Tepelenë. Interventions may include techniques such as firewalls, vegetated retaining wall, and soil-stabilizing plant species to prevent erosion. 21.4 Fire prevention, monitoring and risk mitigation measures by enhancing wildfire risk monitoring and early warning systems and training local communities and forestry teams in fire prevention and rapid response strategies. 21.5 Promoting Community-Based Sustainable Forest Management: Engage local communities in forest restoration through capacity-building programs, sustainable harvesting, and fire prevention training.
22	Forestry	**Strengthening Forest and Pasture Protection: Investments in Human Capacity and Firefighting Resources**	22.1 Conduct a needs assessment to identify gaps in personnel, training, and equipment for forest and pasture fire prevention and response in climate-vulnerable areas. 22.2 Design and implement targeted training programs for firefighting personnel, focusing on climate-adaptive fire prevention, early detection, and rapid response strategies. 22.3 Upgrade and procure firefighting equipment adapted to the needs of forest and pasture environments, including vehicles, protective gear, communication tools, and water transport systems. 22.4 Establish or enhance early warning and fire risk monitoring systems, integrating meteorological data and climate projections to improve preparedness. 22.5 Promote inter-agency coordination and joint simulation exercises between forestry departments, local governments, and emergency services to strengthen institutional response capacity.

No.	Sector	Adaptation Measure	Activities
23	Forestry	**Advancing Afforestation: Establishing Regional Nurseries for Drought-Resistant Species**	23.1 Site selection, land acquisition and infrastructure development for the four nurseries. Site suitability and availability assessments will be performed to identify the four suitable locations. After this, an implementation plan for the nurseries will be drafted with the definition of infrastructure needed (soil preparation, shadow/greenhouse areas, drip irrigation, water tanks, storage facilities etc.) 23.2 Constructing and Equipping Regional Nurseries: Develop four strategically located nurseries with irrigation systems, seed storage, and controlled environments to optimize seedling growth. 23.3 Cultivating Native and Drought-Resistant Tree Species: Propagate and maintain a diverse selection of native tree species adapted to local climate conditions for long-term afforestation success. 23.4 Establishing a Seed Collection and Storage Program: Develop a seed bank to collect and store genetically diverse, locally adapted seeds for continuous nursery operations and climate resilience. 23.5 Training and Capacity Building for Local Communities: Provide technical training for local communities and forestry professionals on nursery management, seed collection, and sustainable planting techniques. 49.6 Developing a Monitoring System for Seedling Growth and Survival: Implement a monitoring framework to track seedling health, growth rates, and post-planting survival in afforestation sites.
24	Forestry	**Supporting Migration of Rare and Endemic Forest Species to higher altitudes**	24.1 Identifying Suitable High-Altitude Habitats: Conduct ecological assessments to identify optimal high-altitude areas with the necessary climatic and soil conditions for species relocation. 24.2 Developing Assisted Migration Protocols: Establish guidelines for transplanting rare and endemic species, ensuring minimal ecological disruption and maximizing adaptation success. 24.3 Establishing Experimental Relocation Plots: Set up pilot plots to monitor species adaptation and refine best practices for future large-scale migrations. 24.4 Providing Financial and Technical Support for Habitat Management: Offer incentives and training for local stakeholders to manage new high-altitude habitats, ensuring long-term conservation. 24.5 Monitoring and Long-Term Adaptation Strategy Development: Implement a continuous monitoring program to track species health, ecosystem interactions, and necessary adaptations over time.

No.	Sector	Adaptation Measure	Activities
25	Forestry	**Restoring Vital Ecosystems: Protecting and Regenerating Coastal and Riverine Green Belts and Protective Ecosystems**	25.1 Site selection, risk assessment and strategic planning. Hydrological, geomorphological, risk assessment and remote sensing studies to identify intervention areas and to define a plan for intervention. 25.2 Implementing bio-engineering measures for coastal erosion management in Velipoje, Kepi Rodonit, Bishti I Palles, Kurbin (Patok), Fier (Darzeze), Durrës (Rushkull) and Vlorë (Pylli Sodes). Use vegetated embankments, dune stabilization, and wetland restoration in sensitive coastal areas to mitigate erosion and enhance flood defenses 25.3 Protecting and regenerating coastal green belts in the areas of Velipoje, Patok Lagoon, Rrushkull, Karpen, Spille, Karavasta, Vjosa discharge, Dukat, Karaburun, Pishë-Poro, Lukova, and Saranda. Protect, expand, and improve existing coastal green belts by planting native vegetation, improving connectivity between coastal ecosystems and implementing coastal buffer zones to filter pollutants. 25.4 Engineering coastal protection works (grey infrastructure) in the areas of Velipoje, Kune-Vain, Patok-Fushë Kuqe, Rrushkull, Divjake-Karavasta, Narta, and Butrint. Interventions may include the construction of coastal embankments, breakwaters to reduce wave action, and sea walls to protect against high tides and storm surges, limiting coastal retreat. Sustainability of structures will be promoted by integrating eco-friendly materials where possible. 25.5 Strengthening Riverine Ecosystem Resilience: Implement soil stabilization with native plants and vegetal erosion control measures in riverine zones, particularly in Bovilla and watersheds in Drini, Mati, Erzeni, Shkumbini, Vjosa, and Semani, to reduce sedimentation and enhance flood management. 25.6 Enhancing Monitoring and Adaptive Management Strategies: Establish long-term monitoring programs for coastal and riverine ecosystems, integrating satellite imagery and on-site biodiversity assessments to measure the effectiveness of restoration efforts.
26	Forestry	**Sustainable Financing Through Payment for Ecosystem Services (PES)**	26.1 Conduct an assessment to identify key ecosystem services (e.g., water regulation, carbon sequestration, biodiversity protection) and their main beneficiaries at national and local levels. 26.2 Develop a institutional framework to enable and regulate PES schemes, including procedures for contracting, fund management, benefit-sharing, and monitoring. 26.3 Pilot PES agreements in selected areas by establishing formal contracts between service beneficiaries and service providers, with mechanisms to channel funds towards sustainable land and ecosystem management. 26.4 Provide technical assistance to local stakeholders to ensure effective participation in PES schemes.
27	Forestry	**Integrated Ecosystem Restoration and Resilience: Addressing Soil Erosion in Key Albanian Regions**	27.1 Site selection, risk assessment and strategic planning. Hydrological, geomorphological, risk assessment and remote sensing studies to identify intervention areas and to define a plan for intervention. 27.2 Implementing Bio-Engineering and Riparian Buffers to Combat Soil Erosion: Utilize bio-engineering solutions such as vegetative buffers, terracing, and erosion-resistant native plant species for slope stabilization. Protect and restore riparian and wetland vegetation in erosion-prone areas to enhance water retention, filter pollutants, and support biodiversity 27.3 Enhancing Community Engagement and Sustainable Land Management: Develop local training programs to promote sustainable agricultural and forestry practices that reduce soil erosion and enhance ecosystem resilience. 27.4 Strengthening Monitoring and Adaptive Management Strategies: Establish long-term ecosystem monitoring to be prepared in case of climate hazards, track the effectiveness of restoration efforts, and refine adaptive management approaches.

No.	Sector	Adaptation Measure	Activities
28	Forestry	**Combating Erosion and Flooding: Strategic Habitat Restoration and Reforestation in Key Albanian Regions**	28.1 Site selection to identify specific areas and interventions for implementing habitat creation and restoration to reduce soil erosion, prevent flooding, and enhance ecosystem resilience in the strategic locations identified. 28.2 Restoring Degraded Forests and Pasturelands in Key Regions: Implement reforestation in Durrës (194,84 ha.) and Fier (931,96 ha.) targeting areas degraded by wildfires, overgrazing, and deforestation 28.3 Establishing Green Belts Along the Vjosa and Seman Rivers: Plant native tree species along the Vjosa (137,8 ha) and Seman rivers (Fier) (55,63 ha.) to stabilize riverbanks, reduce sedimentation, and mitigate flood risks. 28.4 Nature-Based Solutions (NbS) for Erosion and Flood Control: Implement NbS, such as bio-engineering solutions, terracing, and vegetation barriers, to restore degraded areas and control soil erosion in forested and pastureland regions. 28. 5 Focused Restoration in Vlora Coastal and Mountain Ecosystems: Restore key ecosystems in Dukat, Llogora, Karaburun to protect against soil erosion, and Pishë-Poro Forest (6740ha) to protect against coastal erosion and biodiversity loss. 28.6 Targeted Reforestation in Dukat i Vjetër: Restore 354,4 hectares of degraded forest in Dukat i Vjetër (Vlora), where soil erosion and deforestation have led to land degradation and loss of productive land.
29	Forestry	**Sustainable Landscape Management: Enhancing Water Quality and Biodiversity at Viroi Lake in Gjirokastër**	29.1 Site assessment, planning and stakeholder engagement by conducting ecological and hydrological assessment, GIS mapping and remote sensing to identify areas for intervention and to define a plan for restoration interventions involving relevant stakeholders and communities. 29.2 Reforestation with Native Species: Implement reforestation initiatives around Viroi Lake using native tree and shrub species to restore degraded areas, stabilize the soil, and enhance biodiversity. Strengthening riparian buffer zones will help reduce sediment inflow into the lake, improving water quality and ecosystem resilience. Drought-resistant vegetation will be prioritized to adapt to changing climatic conditions. 29.3 Erosion Control Measures: Establish erosion control measures such as vegetative buffers, terracing, and bioengineering techniques to reduce soil erosion and prevent sedimentation in the lake. These actions will protect water quality and enhance the resilience of surrounding landscapes. 29.4 Water Quality Improvement Initiatives: Implement measures to enhance water quality in Viroi Lake by reducing pollution sources, improving wastewater management, and promoting sustainable agricultural practices in the surrounding areas. This includes establishing buffer zones, controlling nutrient runoff, and monitoring water quality parameters. 29.5 Biodiversity Conservation and Habitat Enhancement: Strengthen biodiversity conservation by restoring natural habitats, reintroducing native species, and creating ecological corridors around the lake. This includes protecting wetland areas, improving fish habitats, and enhancing conditions for bird and aquatic species.

No.	Sector	Adaptation Measure	Activities
30	Forestry	**Enhancing Climate Resilience in National Parks and Protected Areas**	30.1 Climate Change Impact Assessments and Specific CC Adaptation Plans in Protected Areas: Conduct thorough climate change impact assessments for national parks and protected areas, with a particular focus on the “Bredhi i Hotovës-Dangëlli” National Park in Përmet. This will involve studying the effects of climate change on rare and endemic species, evaluating shifts in habitat distribution, identifying vulnerable areas, and identifying adaptive measures. 30.2 Establishment of Buffer Zones around Protected Areas: Promote the creation and enforcement of buffer zones around Bredhi i Hotovës-Dangëlli, the Vjosa River National Park and other protected areas in Vlora to reduce external pressures such as urban development, agriculture, and tourism. These zones will act as natural buffers to safeguard biodiversity and maintain ecosystem functions. 30.3 Monitoring of Endemic and Rare Species: Implement a comprehensive monitoring system for endemic and rare species within the Vjosa River and “Bredhi i Hotovës-Dangëlli” National Park. Regular surveys will track population dynamics and health of these species, ensuring timely interventions if necessary. 30.4 Capacity Building for Local Communities and Stakeholders: Strengthen the capacity of local communities, conservationists, and government agencies to manage protected areas and buffer zones. This will include training on climate change adaptation strategies, biodiversity conservation, and sustainable land management practices.
31	Forestry	**Restoration of forest layers to protect crops in Vlora**	31.1 Studies to determine optimal locations for forest layer integration and engagement with farmers and local communities to define the areas and necessary interventions to identify the best options and species to provide wind protection for agricultural crops. 31.2 Restoration of Forest Layers Between Agricultural Areas in Vlora to cover 345,47 ha: Promote the restoration of forest layers between agricultural surfaces in Vlora, specifically in areas such as Dukat i Ri, Tragjas, and Radhimë. These forest layers will help create microhabitats that enhance biodiversity, improve soil fertility, and provide natural windbreaks for crops, reducing the negative impact of strong winds and improving overall crop resilience, promoting the plantation of native tree species that can support biodiversity. 31.3 Community Involvement and Sustainable Practices: Involve local farmers and communities in the restoration process, ensuring that forest layers are maintained sustainably over time. Provide training and resources on agroforestry practices and the long-term benefits of integrating trees with crops.
32	Tourism	**Strategic Spatial Planning for tourism: Redirecting Development from High-Risk Areas**	32.1 Conduct spatial risk mapping to identify flood plains, surface water accumulation zones, and buffer zones of protected areas that are unsuitable for tourism development. 32.2 Develop spatial planning guidelines that integrate climate risk considerations, defining no-build zones and priority areas for tourism redirection. 32.3 Engage stakeholders—including municipalities, tourism investors, and environmental authorities—in participatory planning workshops to align spatial planning with economic and conservation goals. 32.4 Establish financial mechanisms (e.g., conditional permits, incentives, or redirection subsidies) to support the relocation or redesign of tourism developments away from high-risk areas. 32.5 Implement zoning regulations and enforce land-use plans through monitoring, inspections, and penalties for non-compliance.

No.	Sector	Adaptation Measure	Activities
33	Tourism	**Climate-proofing tourism infrastructure: Incentive packages for climate-proofing the tourism sector infrastructure**	33.1 Define a long-term renovation action plan for climate-resilient tourism infrastructure based on findings from the sectoral vulnerability and risk analysis. 33.2 Develop and adopt climate-resilient procurement and construction standards to guide renovation and new developments in the tourism sector. 33.3 Design and launch a financial incentive package to support energy-efficient and climate-resilient thermal comfort solutions (e.g., use of high albedo materials, shading systems, green roofs, vertical greening, natural ventilation, and thermal insulation) for tourism accommodations. 33.4 Establish technical support mechanisms to assist tourism businesses in accessing financing, complying with new standards, and implementing renovation measures.
34	Tourism	**Strategic Planning for Coastal Resilience: Buffer Zones and Sea Gate Adaptations**	Key Activities for Determining Buffer Zones 34.1.1 Identify areas most vulnerable to sea level rise and increased river bed levels 34.1.2 Use GIS and remote sensing to map areas prone to flooding and erosion 34.1.3 Develop and enforce regulations that define buffer zone widths and restrictions on development within these zones 34.1.4 Ensure buffer zones are integrated into local and regional land-use plans 34.1.5 Educate communities about the importance of buffer zones for flood and erosion protection 34.1.6 Engage local stakeholders, in the planning and implementation process 34.1.7 Establish vegetated buffers with native plant species to stabilize soil and reduce erosion 34.1.8 Implement ongoing monitoring and maintenance programs to ensure the effectiveness of buffer zones Key Activities for Implementing Sea Gates 34.2.1 Assess the technical, economic, and environmental feasibility of sea gate installations 34.2.2 Develop detailed designs and engineering plans for sea gates, considering local conditions and potential impacts 34.2.3 Secure all required permits and approvals from relevant authorities 34.2.4 Conduct thorough environmental impact assessments to identify and mitigate potential adverse effects 34.2.5 Construct and install sea gates, ensuring they are built to withstand local environmental conditions 34.2.7 Establish protocols for the operation of sea gates, including opening and closing procedures during storm events 34.2.8 Implement a schedule for regular inspections and maintenance to ensure the sea gates remain functional and effective

No.	Sector	Adaptation Measure	Activities
35	Tourism	**Protecting Vlora Bay: Preserving Posidonia Habitats and Underwater Cultural Heritage Against Climate Impacts**	35.1 Conduct seabed mapping and assessment of Posidonia meadows to define the scope and options for the restoration efforts. 35.2 Restoring and Expanding Posidonia Seagrass Meadows: Actively restore degraded Posidonia meadows through transplanting and conservation efforts to enhance coastal resilience. 35.3 Promoting Natural Beach Areas and Protecting Posidonia Banquettes: Encourage the use of natural beach areas while preserving Posidonia beach casts and banquettes to maintain ecosystem balance including the development of sustainable tourism activities. 35.4 Monitoring Climate Impacts on Underwater Cultural Heritage: Develop monitoring programs to assess the effects of rising sea temperatures and erosion on submerged archaeological sites. 35.5 Implementing Marine Protected Areas (MPAs) for Conservation: Designate and enforce marine protected zones in Vlora Bay to safeguard Posidonia habitats and underwater heritage from human and climate-induced threats. 35.6 Engaging Local Communities in Conservation Efforts: Promote capacity building around conservation and community-led initiatives and sustainable tourism practices to support conservation while ensuring economic benefits for the region. 35.7 Sustainable monitoring systems to protect seagrass meadows: Install eco-friendly mooring buoys to prevent anchor damage to Posidonia meadows and other sensitive marine ecosystems. 35.8 Marine debris removal and plastic waste reduction programs: Establish local initiatives for beach and seabed cleanup to reduce pollution impacting marine biodiversity and tourism appeal.
36	Tourism	**Strengthening the policy and regulatory framework for Sustainable Tourism: Policy Review and Regulatory Enhancement**	36.1 Conduct a diagnostic review of tourism-related laws, policies, and regulatory instruments to identify gaps, inconsistencies, and opportunities for integrating stronger sustainability provisions. 36.2 Develop policy recommendations and proposed amendments to align tourism regulations with national climate adaptation goals, sustainability standards, and environmental protection priorities. 36.3 Update or develop legal and regulatory instruments to reinforce sustainable tourism practices, including specific provisions on environmental safeguards, land-use restrictions in ecologically sensitive areas, and climate resilience requirements for tourism infrastructure.
37	Tourism	**Integrating Climate Data for Sustainable Tourism: Guidelines for resilient business management and National Reporting**	37.1 Develop and implement guidelines for standardized data collection in the tourism sector, focusing on indicators related to climate vulnerability, environmental impacts, and sustainability performance. 37.2 Strengthen institutional and technical capacities of tourism authorities and private sector actors through training and technical assistance on data collection, analysis, and reporting practices. 37.3 Establish or upgrade digital platforms or databases to compile and manage climate-related tourism data, ensuring interoperability with national reporting and monitoring systems.

No.	Sector	Adaptation Measure	Activities
38	Tourism	**Climate-proofing Tourism Infrastructure: Adaptive Designs for Climate Risk Mitigation**	38.1 Climate risk assessment for existing and planned tourism infrastructure and site selection for areas that are particularly vulnerable to define direct interventions by the public sector and study potential for private sector involvement. 38.2 Review the building codes and analyze whether the inclusion of additional climate-resilient design principles to construct or refurbish climate-resilient tourism infrastructure is necessary, emphasizing also enforcement : Defining and incorporating resilience criteria in the design and building of hotels, lodges and recreational spaces with elevated foundations, flood-proof materials and reinforced structures, and drainage systems to withstand extreme weather events through the building codes. Moreover, enforcement shall be reinforced through auditing and inspection mechanisms. 38.3 Provide capacity building to key tourism operators and constructors into the new climate-resilient principles and good practices in the sector, covering the inclusion of nature-based solutions to protect coastal resorts and recreational areas while promoting biodiversity. 38.4 Implementing climate-resilient measures in specific public touristic areas detected in the study of risks to ensure the infrastructure is climate-proofed against the different climate threats and expected impacts.
39	Tourism	**Protecting Coastal Zones: Integrated Regulations, Planning and Management for Climate Resilience and Sustainable Development**	39.1 Identify areas most vulnerable to sea-level rise, storm surges, and beach erosion 39.2 Use GIS and remote sensing to map areas prone to flooding and erosion 39.3 Develop Integrated Coastal Management Plans and Maritime Spatial Planning: Create comprehensive plans that address climate resilience and sustainable development 39.4 Establish Coastal Setback Regulations: Implement regulations to ensure infrastructure is set back from high-risk areas 39.5 Enforce Zoning Laws: Regulate coastal development to prevent maladaptive practices 39.6 Public Awareness Campaigns: Educate communities about the importance of coastal zone protection and climate resilience 39.7 Stakeholder Involvement: Engage local stakeholders, including property owners and developers, in the planning and implementation process 39.8 Implement regular monitoring and maintenance systems to ensure the effectiveness of coastal protection measures, including tracking changes in sea-level rise, coastal erosion, and storm-related impacts. conditions, including sea-level rise, erosion rates, and storm impacts. 39.9 Adaptive Management Strategies: Use monitoring data to inform adaptive management strategies and make necessary adjustments
40	Tourism	**Building Climate Resilience Capacity: Training Tourism Operators in Sustainable Practices and Adaptation Strategies**	40.1 Design and develop tailored training modules on climate adaptation, risk reduction, and sustainable tourism practices, adapted to the needs of different types of tourism operators (e.g., hotels, tour guides, travel agencies). 40.2 Develop practical toolkits and guidelines to support the integration of climate resilience and environmental sustainability into day-to-day tourism operations.
41	Tourism	**Digital Hubs for Climate-Resilient Tourism: Sharing Knowledge and Best Practices**	41.1 Design and launch a centralized online platform tailored to the tourism sector, with user-friendly access to climate adaptation resources, sustainability guidelines, and practical tools. 41.2 Upload and regularly update content including training modules, case studies, toolkits, policy documents, and technical guides to support climate-resilient practices in tourism. 41.3 Promote the platform through awareness campaigns targeting tourism businesses, public agencies, and local communities to encourage widespread use and engagement.

No.	Sector	Adaptation Measure	Activities
42	Tourism	**Protecting Tourism Assets: Enforcing Regulations and Restoring Ecosystems for Sustainable Development**	42.1 Conduct enforcement actions to ensure compliance with existing environmental and land-use regulations in tourism development zones, especially coastal and forested areas. 42.2 Promote sustainable construction practices by developing and disseminating guidelines on climate-resilient and environmentally sound tourism infrastructure. These guidelines will include sustainable practices to protect coastal and natural tourism assets, with a focus on restoring degraded ecosystems, preserving biodiversity, and promoting low-impact design approaches that ensure the long-term environmental sustainability of tourism activities.
43	Urban development	**Maritime and Territorial Planning for Climate Resilience: Preparing for Rising Seas and Changing Environments**	43.1 Conduct a spatial vulnerability assessment of coastal and low-lying urban areas to identify zones at risk using GIS tools, climate projections, and socio-economic data. 43.2 Develop land-use planning guidelines based on climate risk data, defining priority zones for protection, managed retreat, restricted development, and resilient infrastructure placement. 43.3 Prepare a Climate-Resilient Territorial Development Plan that integrates risk-informed land use, zoning restrictions, and adaptation infrastructure priorities to guide sustainable urban expansion and redevelopment in vulnerable areas.
44	Urban development	**Strategic Spatial Planning for Risk Reduction: Redirecting Developments and Managing Surface Water Flood Risks**	44.1 Conduct a spatial analysis and mapping of high-risk areas in targeted municipalities, including flood plains and protected area buffer zones, using hydrological modelling and land-use data. 44.2 Prepare a Surface Water Management Plan for municipalities with significant flood risk, identifying causes, vulnerable zones, and potential nature-based or engineered mitigation measures. 44.3 Integrate the results into updated spatial planning instruments at municipal level, including zoning regulations and land-use restrictions that prevent new developments in high-risk areas. 44.4 Allocate funding and technical support for the implementation of priority actions from the Surface Water Management Plans, including green infrastructure and flood mitigation projects.
45	Urban development	**Incentive schemes to increase extreme temperature resilience of the building stock**	45.1 Conduct a detailed assessment of the national building stock to identify vulnerabilities and prioritize buildings (public and private) most exposed to heat stress and poor energy performance. 45.2 Design a financial incentive package that supports the installation of passive cooling and insulation measures, clearly differentiating support lines for the public and private sectors. 45.3 Prioritize public sector buildings offering essential services (e.g. hospitals, kindergartens, schools, emergency shelters) for the first phase of financial support, ensuring equitable geographic distribution. 45.4 Launch a targeted support program for private buildings, including awareness campaigns and technical guidance to encourage uptake of cooling measures in homes and businesses.
46	Urban development	**Integrating Green Spaces into Public Infrastructure Development through Green Public Procurement**	46.1 Develop voluntary national Green Public Procurement (GPP) standards aligned with EU GPP criteria, specifically incorporating requirements for integrating green infrastructure and nature-based elements in all public infrastructure projects. 46.2 Create practical guidelines and templates for procurement officers and contracting authorities to include green space components in tenders related to roads, parks, sport areas, parking lots, and other public facilities. 46.3 Deliver training programs and awareness-raising workshops for public procurement officials and technical staff at national and municipal levels on the application of the GPP standards. 46.4 Pilot the application of the new GPP standards in selected municipalities to assess feasibility, gather feedback, and identify opportunities for wider rollout and refinement of the approach.

No.	Sector	Adaptation Measure	Activities
47	Urban development	**Restoring Green Corridors: Reforestation and Urban Greening Initiatives**	47.1 Conduct ecological and environmental assessments and map and prioritize areas for restoration and planting of green corridors in alignment with Local Adaptation Plans in Gjirokastêr and Pêrmet. 47.2 Prepare land and conduct planting activities to restore and develop new green corridors promoting connectivity of green spaces and fostering urban green spaces to mitigate heat island effects. The restoration and planting exercise aims at improving soil quality, reducing erosion, protecting and restoring ecosystems and reducing extreme weather impacts.
48	Urban development	**Climate Risk Assessment for Durrës, Elbasan, Fier, and Beyond: Developing a Comprehensive Vulnerability Map**	48.1 Collect and consolidate existing climate hazard data (flooding, storm surge, droughts, heatwaves, and storms) from national and local sources for each targeted municipality. 48.2 Conduct participatory risk assessments with local authorities and stakeholders to identify exposure, sensitivity, and adaptive capacity of populations, infrastructure, and ecosystems. 48.3 Develop and validate a GIS-based Climate Vulnerability Map for each municipality, integrating multi-hazard data and socio-economic vulnerability indicators.
49	Urban development	**Flood event emergency plans**	49.1 Develop or update Flood Event Emergency Response Plans for the municipalities of Durrës, Elbasan, Gjirokastër, Kukës, Përmet, and Vlora, detailing clear protocols, roles, and responsibilities. 49.2 Conduct annual reviews and simulation exercises to test the effectiveness of the emergency plans, assess gaps in response capacity, and incorporate lessons learned. 49.3 Identify and allocate necessary emergency resources (e.g., equipment, personnel, shelters, communication systems) to ensure municipalities are prepared to implement the plans efficiently. 49.4 Train local authorities, first responders, and community leaders on emergency procedures, communication protocols, and flood response coordination mechanisms.
50	Urban development	**Enhancing Urban Resilience: Assessing Greenspaces and Sustainable Drainage Solutions**	50.1 Assessment and planning to analyze feasibility and priority spots for increasing the volume of greenspaces and sustainable urban drainage systems in municipalities, considering land use with a focus in Vlora, Elbasan and Durrês municipalities, defining a plan for implementation of the interventions. 50.2 Implement tree-planting initiatives in key urban zones to increase water retention and mitigate flood risks in the priority municipalities. 50.3 Implementing Permeable Pavements and sustainable urban drainage systems in High-Risk Areas: Replace impermeable surfaces with permeable pavements in key urban locations to improve groundwater recharge and reduce flash flooding.
51	Urban development	**Sustainable Urban Design: Conservation and Restoration of Permeable and Infiltration Areas**	51.1 Develop policy and regulatory provisions that mandate a minimum percentage of permeable surfaces in all new urban developments and major renovations, including the prohibition of excessive surface sealing. 51.2 Integrate nature-based solutions (NbS) for urban permeability—such as bioswales, green roofs, permeable pavements, and rain gardens—into national and local policy frameworks and urban design codes. 51.3 Draft and adopt national guidelines for incorporating permeable areas and infiltration features into infrastructure planning and public works, promoting their standard use in roads, parking areas, and open spaces.

No.	Sector	Adaptation Measure	Activities
52	Energy	**Protecting Energy Infrastructure against strong winds: Rehabilitating Substations and Transmission Lines**	52.1 Study on vulnerable and affected electrical substations and power transmissions lines and design of interventions to address the vulnerabilities detected. 52.2 Upgrading Transmission Towers with Wind-Resistant Designs: Reinforce or replace transmission towers with wind-resistant structures, using materials and designs that withstand high wind loads. 52.3 Installing Aerodynamic Insulators and Cables: Use aerodynamic conductors and dampers to reduce wind-induced vibrations and minimize the risk of cable galloping or breakage. 52.4 Strengthening Substation Structures Against Wind Loads: Retrofit substations with reinforced roofing, wind barriers, and secure equipment anchoring to prevent damage from high winds. 52.5 Implementing Vegetative Windbreaks Around Energy Infrastructure: Plant rows of resilient trees and shrubs to act as natural wind barriers, reducing wind speed and protecting transmission lines and substations.
53	Energy	**Enhancing Building Efficiency: Energy Performance Certificates and Resilient Standards**	53.1 Develop a national framework for Energy Performance Certification (EPC), including classification criteria, assessment methodology, and compliance procedures. 53.2 Develop and adopt climate-resilient building standards, incorporating energy efficiency, passive cooling, water management, and material resilience to extreme weather events. 53.3 Provide technical guidance and training for engineers, architects, and construction professionals on the application of EPCs and climate-resilient design standards.
54	Energy	**Exploring the Energy sector Potential: Demand-Side Management and Energy Storage Studies**	54.1 Conduct a national-level assessment of current electricity demand patterns, identifying opportunities for demand-side management and energy storage to respond to climate-induced stresses on the power system. 54.2 Analyze the technical and economic potential of various energy storage technologies in different climate scenarios. 54.3 Identify and prioritize interventions to enhance power grid flexibility, including infrastructure upgrades, regulatory measures, and incentive schemes for demand-side management and storage integration.
55	Energy	**Protecting the energy infrastructure: Monitoring Emergency and Risk Areas**	55.1 Identify and map energy infrastructure sites exposed to climate-related hazards, prioritizing critical facilities. 55.2 Develop and implement a risk-based monitoring protocol for the identified sites, incorporating early warning indicators and thresholds for emergency response. 55.3 Establish a centralized data system to collect and manage real-time information on environmental risks affecting energy infrastructure, ensuring accessibility to relevant authorities for rapid decision-making.
56	Energy	**Enhancing Heatwave resilience through Efficient Air Conditioning Technology Deployment and Climate Refuges**	56.1 Provide financial and technical support for the installation of energy-efficient air conditioning systems in buildings located in municipalities with high exposure to extreme heat, prioritizing those identified in Local Adaptation Plans (LAPs). 56.2 Support the implementation of retrofitting measures for improved thermal insulation and passive cooling as outlined in the National Adaptation Plan (NAP), with special attention to vulnerable households and essential services. 56.3 Identify and map potential public climate refuges, including libraries, community centers, and shaded green spaces, ensuring equitable geographic coverage and accessibility for vulnerable groups. 56.4 Promote the creation and improvement of urban public spaces as climate refuges through the integration of vegetation, water features, shade structures, and heat-resilient design principles.

No.	Sector	Adaptation Measure	Activities
57	Energy	**Optimizing Renewable Energy for Resilient Systems: Grid Innovation and Storage Investments**	57.1 Promote the installation of renewable energy systems in climate-vulnerable areas, prioritizing critical infrastructure and public facilities. 57.2 Support the deployment of smart grid technologies to improve real-time energy distribution, enhance grid flexibility, and ensure system stability under extreme climate conditions through a combination of technical assistance, regulatory facilitation, and targeted financial incentives. 57.3 Facilitate investment in energy storage solutions, such as battery storage systems, through public-private partnerships, targeted financing schemes, and incentive mechanisms. 57.4 Strengthen the regulatory framework to streamline permitting processes and encourage integration of decentralized renewable energy into the national grid.
58	Energy	**Advancing Gender Equity in Energy: Training and Support for Women in Renewable Energy Projects**	58.1 Design and deliver training programs for women focused on skills development in renewable energy technologies, tailored to local energy needs. 58.2 Establish mentorship and internship opportunities in the energy sector for women and young professionals to promote long-term career pathways. 58.3 Provide technical and financial support to women-led renewable energy projects, especially in underserved and rural communities. 58.4 Promote gender-sensitive policies within the energy sector to encourage inclusive hiring practices, leadership roles for women, and supportive working environments in climate-resilient energy initiatives.
59	Energy	**Building Resilience in Hydropower: Optimized Operations and Strengthened Infrastructure**	59.1 Updating Dam and Reservoir Operation Protocols: Revise reservoir management protocols and define optimize water storage and release based on climate projections and changing seasonal patterns. 59.2 Retrofitting Hydropower Facilities for Climate Resilience: Implement structural upgrades to dams and turbines to withstand prolonged droughts and extreme weather events, such as heavy rainfall. 59.3 Enhancing Sediment Management in Reservoirs: Apply sustainable dredging and controlled diversions, to maintain storage capacity and operational efficiency. 59.4 Implementing Advanced Climate and Hydrological Monitoring Systems: Deploy sensors and forecasting models to monitor real-time variations in precipitation and water inflows.
60	Transport	**Regular Vulnerability and Risk Analysis and Definition of Resilience-Building Measures for Road Infrastructure**	60.1 Conduct climate vulnerability and risk assessments of critical road infrastructure, bridges, and tunnels at the national level, focusing on exposure to floods, landslides, heatwaves, and other climate-related hazards. 60.2 Establish a national schedule for periodic reassessment of risks to critical transport infrastructure to ensure that assessments remain current and responsive to evolving climate scenarios. 60.3 Identify and prioritize risk-reduction interventions in high-risk municipalities (Durrës, Elbasan, Krujë, Kukës, and Vlora), including structural upgrades, improved drainage systems, and slope stabilization measures.
61	Transport	**Geological Studies for Sustainable Roads: Bio-Engineering Solutions to reduce Erosion and Flood risks**	61.1 Conduct detailed geological and geotechnical studies in the identified vulnerable areas to assess soil stability, erosion patterns, and risk of landslides, with specific focus on the listed municipalities and road segments. 61.2 Design and propose site-specific bio-engineering solutions, such as vegetative slope stabilization, retaining structures, and drainage systems tailored to each location's conditions and risk level.

No.	Sector	Adaptation Measure	Activities
62	Transport	**Advancing Sustainable and Climate Resilient Urban Mobility: Developing and Reviewing Urban Mobility Plans**	62.1 Develop or review Sustainable Urban Mobility Plans at municipal level, ensuring they are climate-proofed and aligned with national adaptation priorities. These plans shall cover adaptation-relevant elements such as: a) Guidelines for assessing vulnerabilities and hazards affecting the road network; b) Development and implementation of climate-resilient plans for road infrastructure projects; c) Definition of road maintenance mechanisms through multiannual road maintenance plans and Road Asset Management Systems. 62.2 Pilot the implementation of climate-resilient Sustainable Urban Mobility Plans in Durrës, Elbasan, Gjirokastër, Përmet, and Fier, ensuring participatory planning, intersectoral coordination, and alignment with identified climate risks.
63	Transport	**Adapting Critical Transport Infrastructure: Advanced Risk Assessment and Resilient Design Solutions**	63.1 Conduct climate vulnerability and risk assessments of maritime, railway, and other critical transport infrastructure using advanced climate modelling to evaluate future exposure to extreme events such as floods, droughts, and storms. 63.2 Incorporate adaptive infrastructure measures into national and sectoral transport plans, such as flood-resistant road designs, elevated rail lines, reinforced tracks, climate-resilient construction materials, seawalls, and storm-resistant port structures. 63.3 Mainstream climate adaptation in maritime and railway transport regulations, ensuring that planning, construction, and maintenance standards reflect projected climate conditions and resilience criteria. 63.4 Strengthen early warning systems and emergency response protocols for transport systems, particularly in high-risk zones, to reduce service disruptions and damages during extreme weather events.
64	Transport	**Integrating Nature-Based Solutions and environmental based adaptation for Transport sector resilience: Enhancing Infrastructure with Nature-Based and Ecosystem-Based Adaptation**	64.1 Carry out an assessment of options to implement green corridors alongside road infrastructure to mitigate climate change impacts preventing the heat island effect, mitigating flood risks and erosion. The analysis shall identify the kms and surrounding surfaces of specific roads in which interventions are to be conducted, together with the implementation plan and feasibility analysis. 64.2 Riparian Buffer Strips Along River-Adjacent Roads: Establishing vegetative buffer zones along roads near rivers to reduce erosion, stabilize banks, and minimize flood damage. 64.3 Permeable Pavements and Green Drainage in Urban Transport: Replacing conventional pavements with permeable alternatives. 64.4 Afforestation and terracing for Landslide Prevention on Mountain Roads: Planting native trees and vegetation on slopes along key transport routes, and implement terrace systems to reduce soil erosion and landslide risks. 64.5 Coastal Wetland Protection for Transport Resilience: Restore and conserve coastal wetlands to act as natural barriers against storm surges and coastal erosion affecting transport infrastructure. 64.6 Sustainable Dredging Practices for Navigable Waterways: Implement environmentally responsible dredging techniques to maintain transport waterways while preserving marine biodiversity. 64.7 Green Corridors Along highways and Railways: Restoration and instauration of tree lined corridors and green belts along major roads and railway lines to reduce heat stress, provide shade, absorb pollutants, work as noise barriers, and improve biodiversity connectivity. 64.8 Bio-engineering for road and railway stabilization: Use bio techniques for slope stabilization like vegetative covers and planted terraces along vulnerable transport routes prone to landslides or erosion in non-mountainous areas. 64.9 Living shorelines for coastal transport resilience: use oyster reefs, vegetative buffers to stabilize shorelines and protect transport infrastructure from wave action and sea-level rise. 64.10 Integration of green bridges for wildlife crossings: develop eco-friendly overpasses and underpasses for wildlife to prevent roadkill and ensure safe species migration across transport networks.

No.	Sector	Adaptation Measure	Activities
65	Transport	**Climate Resilience Transport Policies: Embedding Climate Adaptation in Regulatory Frameworks**	65.1 Review and revise existing transport-related policies and regulatory frameworks to integrate climate adaptation objectives, ensuring consistency with national and sectoral climate strategies. 65.2 Establish cross-sectoral coordination mechanisms to align transport planning with land use, environmental protection, and climate adaptation efforts, promoting a systems-level approach to infrastructure development. 65.3 Develop legal provisions and planning guidelines that mandate climate risk assessments and the incorporation of adaptation measures in all new transport infrastructure projects. 65.4 Organize technical consultations and policy dialogues between ministries of transport, environment, urban development, and finance to identify synergies and strengthen institutional coordination for climate-resilient transport planning.
66	Transport	**Innovative Partnerships for Sustainable Transport: Funding Climate-Resilient Transport Infrastructure**	66.1 Design climate finance instruments to support investments in resilient infrastructure, renewable energy integration, and low-impact construction technologies in the transport sector. 66.2 Establish public-private partnerships (PPPs) to mobilize co-financing for climate-resilient transport infrastructure, ensuring alignment with national adaptation priorities and long-term sustainability. 66.3 Conduct a needs assessment at national and regional levels to identify context-specific technological gaps and financial barriers to the adoption of low-impact, innovative solutions in infrastructure development. 66.4 Develop financial incentives and regulatory frameworks to promote the uptake of advanced climate-resilient materials and construction practices by private contractors and infrastructure developers.

4.5 Roles and responsibilities

Main national and sectoral stakeholders for climate change adaptation

The institutional framework for climate change adaptation in Albania is embedded within the country's broader governance system, which combines centralized authority with sector-specific mandates. National and subnational institutions collaborate to design and implement climate-resilient policies, supported by formal coordination mechanisms that facilitate policy coherence across ministries and administrative levels. These arrangements are grounded in Albania's constitutional organization, which defines the distribution of executive, legislative, and judicial powers, and establishes the institutional basis through which climate-related responsibilities are exercised.

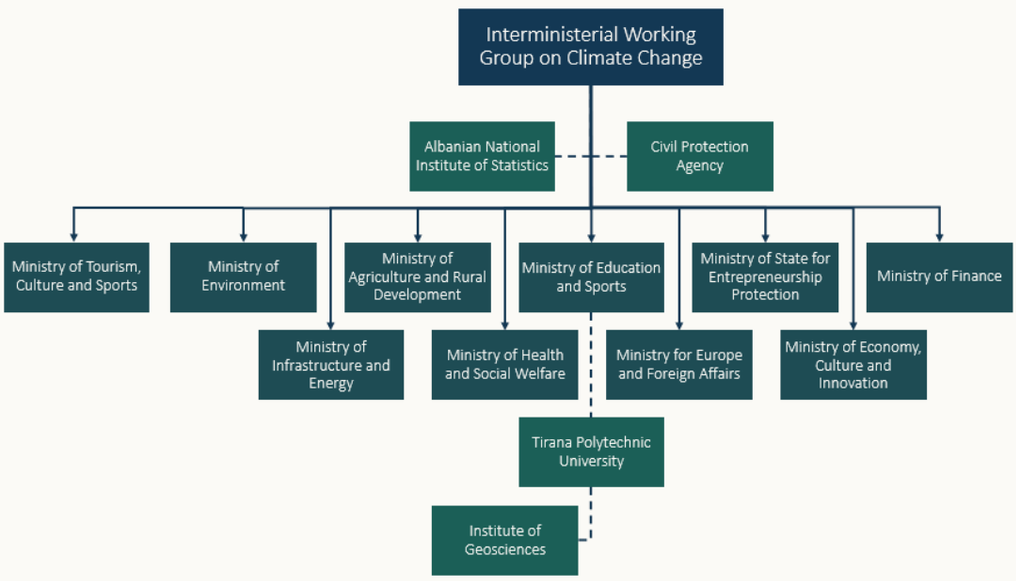
Albania operates as a unitary parliamentary constitutional republic, where the institutional distribution of powers defines the framework within which national policies, including those related to climate change adaptation, are developed and implemented. The President serves as Head of State, while executive authority is led by the Prime Minister as Head of Government within a multi-party system. The Council of Ministers, composed of the Prime Minister and Cabinet ministers, exercises executive power; legislative authority resides in Parliament, and the judiciary operates independently.

Regarding the Council of Ministers, this body is the principal executive organ of the Albanian government, responsible for implementing both foreign and domestic policies. It is led by the Prime Minister and includes ministers responsible for different sectors of government, such as the economy, energy, agriculture, infrastructure, environment, education, and others. Ministers are nominated by the Prime Minister, formally appointed by the President, and confirmed by the Parliament. They are supported by Deputy Ministers and General Secretaries, who assist in the execution of technical and administrative duties. This institutional structure ensures sectoral coordination and policy implementation across national priorities, including climate change adaptation.

Within this institutional framework, climate change governance in Albania is coordinated through a multi-level system. At the national level, the Ministry of Environment (MoE) is the lead authority for environmental and climate policy and hosts the Climate Change Unit, which acts as the national focal point to the United Nations Framework Convention on Climate Change (UNFCCC)[55]. The Ministry also leads the Interministerial Working Group on Climate Change (IMWGCC) [56], composed of expert members from the National Environment Agency, the National Civil Protection Agency, the Institute of Statistics, and the Institute of Geosciences, along with representatives from the following ministries[57].

55. Westminster Foundation for Democracy (WFD); Resource Environmental Center Albania (REC). (2021). MONITORING OF THE CLIMATE CHANGE STRATEGY IN ALBANIA, 2020-2030 FOR 2019-2021. https://www.agora-parl.org/sites/default/files/agora-documents/REC EN_Monitoring of the Climate Change Strategy in Albania.pdf#:~:text=cooperation with EU regulations,issues related to environment and
56. Observatori Albania. (2023). RESEARCH ON MAINSTREAMING GENDER INTO EFFORTS TO FIGHT. https://observator.org.al/wp-content/uploads/2024/02/Research-on-mainstreaming-gender-into-efforts-to-fight-climate-change-in-Albania-Post.pdf#:~:text=Inter%02Ministerial
57. Albanian Government Council of Ministers. (n.d.). Retrieved April 8, 2025, from https://kryeministria.al/en/qeveria/

Figure 5. Interministerial Working Group on Climate Change



Source: Own elaboration.

In practice, adaptation to climate change is implemented by sectoral ministries and agencies, often in close coordination with **municipal authorities**. The country's 61 municipalities have a critical role in adaptation planning and implementation, as they manage key responsibilities such as local infrastructure (roads, drainage systems, water supply), land-use regulation, environmental protection, and public service delivery. By law, each municipality is required to develop a Local Adaptation Plan (LAP), which increasingly integrates climate adaptation measures in line with national priorities.

Municipalities retain autonomy to implement adaptation measures but often require coordination with national institutions for technical guidance and financial resources. Coordination mechanisms, such as the National Association of Municipalities, help align municipal actions with national strategies and facilitate knowledge sharing among local governments.

To better understand how adaptation is operationalized across levels of government, the following section presents a sector-by-sector overview of the key institutions involved, outlining their mandates and specific roles in climate adaptation planning and implementation.

Cross-sectoral

- **Albanian School of Public Adminsitration (ASPA):** is a central public institution dedicated to the training of civil servants from both

central and local government, as well as personnel from independent institutions and other individuals external to the civil service. Established in 2000 under the name Institute of Public Administration Training (ITAP), it was restructured in 2013 to operate under its current designation. ASPA's mandate and operations are governed by Law No. 152/2013 "On Civil Servants" and Council of Ministers Decision No. 138, dated 12 March 2014, which outlines the rules for the organization and functioning of ASPA, including the training of civil servants and other interested individuals. ASPA provides a range of services encompassing both in-person and online training formats, targeting employees of public administration and other stakeholders. Annually, it delivers training to approximately 5,000 public officials through a portfolio of over 100 training modules. The institution collaborates with a diverse network of trainers, drawing from public administration, academia, and local experts across various disciplines[58].

- **Ministry of Health and Social Protection (MHSP):** is the governmental body entrusted with the oversight of the national healthcare system and social protection programs. Its core responsibilities include the formulation and implementation of policies in the fields of healthcare and social welfare, the regulation of healthcare services, and the assurance of equitable access to these services. Additionally, the MHSP plays a key role in coordinating the activities of various stakeholders both within and beyond the healthcare sector. It is also charged with the execution and alignment of policies related to social protection and social inclusion.

- **Ministry of Finance:** Leads macroeconomic and fiscal policy, public budgeting, revenue administration, and financial oversight. It plays a central role in mobilizing, managing, and coordinating public and international finance—including EU assistance—for climate-related investments, while ensuring transparency, debt sustainability, and efficient public expenditure across national and subnational levels.

- **Albanian National Institute of Statistics (INSTAT):** Serves as the central authority for producing official statistics and coordinating the national statistical system. It provides timely, reliable, and comparable data essential for evidence-based policy planning, including the monitoring and evaluation of climate adaptation measures and socio-economic vulnerabilities.

Tourism Sector

- **The Ministry of Tourism, Culture and Sports (MoTCS):** is the central body charged with shaping and implementing national policy in tourism, cultural heritage, arts, and sport. It develops and proposes legal and regulatory frameworks, strategies and action plans for sustainable cultural-tourism growth, while coordinating with local governments and international bodies. The role of the newly created ministry will be central for the NAP's adaptation measures. The Ministry of Environment, which was before together with the Ministry of Tourism is a key stakeholder for adaptation in the tourism sector. Moreover, ithas oversight over a network of specialized national agencies[59], that play a critical role in implementing adaptation and sustainability efforts relevant to the tourism sector: for example the **National Agency for Protected Areas (NAPA)**, responsible for the nature and biodiversity protection and conservation in Albania.

58. Albanian School of Public Administration (ASPA). (2024). Who we are? https://aspa.gov.al/en/kush-jemi-ne/
59. Ministria e Turizmit dhe Mjedisit. (n.d.). Retrieved April 8, 2025, from https://turizmi.gov.al/institucionet-vartese/

- **National Environmental Agency (NEA)**: Responsible for monitoring environmental conditions and enforcing regulations, NEA also supports the integration of climate data (e.g., air quality, temperature, environmental stressors) into tourism planning, particularly in ecologically sensitive zones.

- **National Tourism Agency**: Facilitates tourism promotion, development, and strategic investment. It plays a supporting role in integrating climate resilience into tourism branding, destination planning, and infrastructure development.

- **National Coastal Agency**: Oversees planning and regulation along Albania's coastline, including management of erosion, land-use pressures, and environmental safeguards for coastal resorts and tourist towns increasingly exposed to sea-level rise and extreme weather events.

- **National Forestry Agency:** Supports adaptation in mountainous and forested tourism areas through reforestation, fire management, and landscape restoration. Forest protection directly enhances the resilience and appeal of nature-based tourism assets.

- **National Waste Management Agency**: Oversees policies and operations related to solid waste management, ensuring that tourism destinations are resilient to waste-related environmental degradation, which can worsen due to climate-induced flooding or surges in tourist flows.

- **The National Territorial Planning Agency (NTPA),** under the infrastructure ministry collaborates with MoTCS. A notable initiative is the Cross-Sectoral Coastal Plan, which is integrating climate adaptation measures to protect coastal tourism infrastructure[60].

- **Agency for Water Resources Management (AMBU)**: Serves as the national authority for integrated water resources management, overseeing the water cadaster, user registry, and river basin management plans. It plays a critical role in safeguarding water quantity and quality—both essential for ecosystems, public health, and economic resilience—amid increasing pollution pressures and climate change impacts.

Agriculture Sector

- **Ministry of Agriculture and Rural Development (MARD):** MARD is the lead agency for agriculture and rural policy, and it plays a critical role in adaptation due to agriculture's high climate vulnerability. Formally, MARD is a member of the IMWGCC and is tasked with integrating climate resilience into agricultural strategies and programs.

- Functionally, MARD collaborates with research institutes (like the Agricultural University of Tirana) and its regional extension offices to build farmers' adaptive capacity.

- **Water Resources Management Bodies:** Because irrigation and water supply are vital for agriculture, the **Water Resources Management Agency (WRMA)** and the National Water Council are important actors[61] Legally, NAWRM is responsible for implementing Albania's Integrated Water Resources Management Strategy, which includes climate adaptation objectives such as improving water storage and allocation during climate extremes.

60. Agjencia Kombëtare e Planifikimit të Territorit (AKPT). (n.d.). Retrieved April 8, 2025, from https://planifikimi.gov.al/index.php?id=akpt_about&L=2
61. National Strategy of Water Resources Integrated Management 2018-2027. (n.d.). Retrieved April 8, 2025, from https://www.fao.org/faolex/results/details/en/c/LEX-FAOC181221/#:~:text=,strategy and building synergies

Urban Development Sector

- **Ministry of Infrastructure and Energy (MIE):** this ministry is the government department responsible for urban planning, housing, public works, and territorial development policy. MIE's mandate includes setting building codes, land-use planning regulations, and oversight of major urban infrastructure – all of which are crucial for climate adaptation. The ministry's representatives participate in the IMWGCC to coordinate efforts with the environment and other sectors.

- **National Territorial Planning Agency (NTPA):** The NTPA is a specialized agency under MIE that develops and enforces territorial plans and urban design standards. It has a direct role in adaptation by guiding how cities expand or regenerate in a climate-resilient way. The NTPA spearheaded the Cross-Sectoral Integrated Coastal Plan with explicit climate change considerations, such as designating buffer zones in flood-prone coastal areas and regulating construction to reduce vulnerability[62]. NTPA also works on urban redevelopment projects that incorporate green infrastructure to manage urban heat and runoff. In practice, NTPA's work is a coordination mechanism linking ministries – it works with MoTCS for environmental assessments and with municipalities to implement plans. This collaborative role makes NTPA a key functional actor ensuring national adaptation policies.

- **National Civil Protection Agency (NCPA) and Ministry of Defense:** Climate adaptation in urban areas overlaps significantly with disaster risk management. The NCPA, under the Ministry of Defense, is charged with nationwide civil protection and emergency response, operates early warning systems and coordinates emergency response drills in cities. In the context of adaptation, NCPA is a critical actor for building urban resilience – for example, by establishing flood evacuation plans, supporting the climate-proofing of critical infrastructure, and running public awareness campaigns on extreme heat.

Energy Sector

- **Ministry of Infrastructure and Energy (MIE) – Energy Department:** MIE also oversees the energy sector and is responsible for integrating climate adaptation into energy policy and infrastructure planning. Formally, MIE contributes to climate adaptation via the National Energy Strategy and is represented on the IMWGCC, indicating its formal role in national climate coordination. The ministry's mandate on energy includes working with the **National Agency of Natural Resources (NANR)** and the energy regulator to ensure that new energy projects are resilient to future climate conditions.

- **National Agency of Natural Resources (NANR):** NANR is an agency under MIE responsible for supervising and monitoring the use of natural resources, particularly in mining, petroleum, and energy sectors. In terms of adaptation, NANR conducts assessments of how climate change may affect energy resource availability and recommends adaptive measures. While NANR's formal focus is resource management, it functionally contributes to adaptation by providing data and analysis that inform climate-resilient energy planning.

- Technical institutions like the **Institute of Geosciences (IGEO)** support the energy sector by offering climate data and forecasts.

62. Ministry of Environment; Inter-Ministerial Working Group on Climate Change. (2021). National Adaptation Planning (NAP) to Climate Change in Albania. Framework for the Country Process. https://unfccc.int/sites/default/files/resource/National_Adaptation_Plan_Albania.pdf#:~:text=,National Agency for Territory Planning

Transport Sector

- **Ministry of Infrastructure and Energy (MIE) – Transport Infrastructure:** MIE is likewise the lead institution for transport (roads, rail, ports, aviation). It holds formal authority to plan, build, and maintain national transport infrastructure, and thus is central to climate-proofing these assets. Through the IMWGCC and other coordination bodies, MIE shares information on infrastructure vulnerabilities and adapts standards in consultation with MoTCS and civil protection authorities.

- **Albanian Road Authority (ARA):** ARA is responsible for managing the national road network. In practice, ARA is at the forefront of implementing transport adaptation. It conducts climate vulnerability assessments of roads and bridges and has begun incorporating the findings into its maintenance and upgrade programs. For instance, after severe flood events in recent years, ARA — with World Bank support — mapped flood-prone road segments and is elevating roadbeds or reinforcing embankments accordingly[63].

- Other entities under MIE, such as the **General Maritime Directorate** and **Civil Aviation Authority**, also integrate adaptation within their scopes. The Maritime Directorate oversees ports and coastal navigation and the Civil Aviation Authority considers extreme weather patterns in aviation safety (like improving airport drainage for heavy rain). They often participate in inter-agency committees on critical infrastructure resilience, ensuring a unified approach.

Forestry Sector

- **Ministry of Environment (MoE)**: is the lead authority responsible for environmental protection, natural resource management, biodiversity conservation, climate change mitigation and adaptation, and oversight of water, forest, waste and air quality policies. It proposes national environmental laws, coordinates implementation across sectors, leads reporting obligations (including to international conventions), and supervises agencies that enforce environmental assessments, permits, inspections, and protected-area management. Under its remit are also the environmental monitoring system, the national inventory of emissions, and integration of environmental safeguards into sectoral planning (including infrastructure and tourism projects). **-- Forestry Policy:** MoE also serves as Albania's forestry authority, guiding policy on forest management, reforestation, and watershed protection. Healthy forests are a cornerstone of climate adaptation (reducing flood runoff, preventing landslides, moderating local climates), so MoE's mandate in this sector is highly relevant. Formally, MoE oversees the implementation of the **National Forestry Policy and the Law on Forests (2020[64])**, and it coordinates with other ministries (e.g. Agriculture, since agro-forestry intersects rural development) on cross-cutting issues.

- **National Forest Agency (NFA):** The NFA is a specialized agency that was created to provide technical support and oversight of forest management. NFA's role is to assist and supervise local forest administrations, maintain the National Forest Inventory, and implement nationwide programs like reforestation, erosion control, and pest management.

63. Xiong, J., & Espinet Alegre, X. (2019). Climate Resilient Road Assets in Albania. Climate Resilient Road Assets in Albania, February. https://doi.org/10.1596/31616

64. Law no. 57/2020 on forests. (n.d.). Retrieved April 8, 2025, from https://www.fao.org/faolex/results/details/fr/c/LEX-FAOC212764/#:~:text=This Law aims to preserve,against the opportunity that forests

- **National Parks and Protected Areas (NAPA and Regional Agencies):** Albania's protected forests are managed by NAPA (under the Ministry of Environment) and its regional branches. These entities have mandates to conserve biodiversity and ecosystems, which overlap with climate adaptation goals. While its formal role is environmental conservation, NAPA contributes significantly to Albania's climate adaptation through both policy (advocating for ecosystem-based adaptation in national plans) and practice (on-the-ground restoration and conservation efforts).

In summary, Albania's institutional landscape for adaptation involves a hierarchy of formal mandates (laws, strategies, designated lead agencies) combined with functional partnerships (working groups, joint projects, technical coordination) that together drive adaptation policy and action.

Key roles and responsibilities necessary for the implementation of the adaptation measures

Respective roles and responsibilities within this Implementation Plan refer to the institutional, policy, and governance structures established to coordinate and implement climate change adaptation actions. These include the entities responsible for executing the proposed measures across different levels of government and sectors. Such institutional arrangements may involve the creation of sub-committees or working groups, the clear assignment of responsibilities to relevant national and sectoral institutions, the development of policies and regulations to promote climate-resilient practices, and the allocation of financial and technical resources. Moreover, effective implementation also depends on the active involvement of municipal authorities, whose collaboration with national institutions is essential to ensure that adaptation efforts are context-specific, well-coordinated, and aligned with both national strategies and local needs.

In this framework, the Interministerial Working Group on Climate Change (IMWGCC) plays a pivotal role in ensuring cross-sectoral coordination and institutional alignment. Composed of key ministries, departments, and agencies, the IMWGCC serves as a high-level mechanism for guiding adaptation policy, facilitating collaboration across sectors, and supporting the mainstreaming of climate considerations throughout government planning and decision-making processes.

To operationalize this multi-level governance system and ensure clarity in the distribution of responsibilities, the Implementation Plan adopts a structured and hierarchical approach (Figure 6):

- **Responsible entities of each adaptation action**: These include the governmental ministries, agencies, and, where applicable, municipal authorities responsible for leading the implementation of sector-specific adaptation measures. They are tasked with the execution and monitoring of actions within their respective areas of competence, ensuring an integrated, multi-sectoral, and coherent approach to climate adaptation. For certain locally driven actions, municipalities will act as lead implementing entities in coordination with national counterparts.

- **Related governmental bodies**: These are institutions whose mandates intersect with the adaptation action/measure and which support its implementation by providing technical input, policy alignment, or operational resources. These may include other ministries, national agencies, or public institutions that contribute to the delivery of specific components of the adaptation measure or help ensure inter-sectoral consistency.

Figure 6. Institutional Arrangements for the Implementation Plan.

Source: Own elaboration.

- **Other Key Partners**: This category comprises non-governmental actors such as the private sector, civil society organizations, academia, education providers, emergency units, local civil protection commissions, community-based organizations (CBOs), media, and local constituencies. These stakeholders contribute through technical expertise, research, outreach, and community mobilization. They also play a vital role in generating and sharing data for the monitoring and evaluation of adaptation progress. While not decision-makers, their participation ensures that adaptation strategies are inclusive, science-informed, and grounded in local realities.

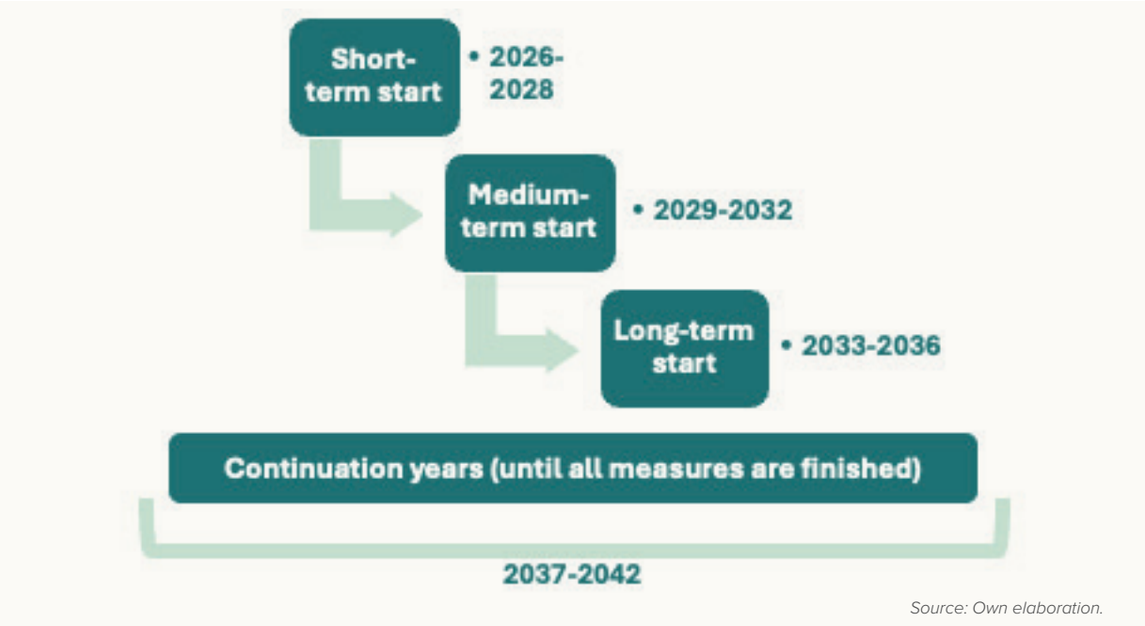
The implementation of adaptation measures will require a multi-level and inclusive institutional structure that builds upon Albania's existing governance framework. This structure must enable bidirectional coordination—allowing locally led adaptation efforts to inform national strategies, while ensuring that national priorities and resources support effective action at the local level.

Further information on the lead and supporting institutions assigned to each adaptation action can be found in the detailed factsheets provided in Annex I through VI.

4.6 Timeline for implementation

The proposed **timeline** for the **Implementation Plan is set to cover the period between 2026 and 2036**, in aligned with the national approval cicles that the Implementation Plan will have to follow after its design phase. This timeframe has been established to ensure a comprehensive and strategic approach to climate adaptation actions entailed in the NAP, allowing for the implementation of the adaptation measures´ long-term policies, programs, and initiatives aimed at enhancing resilience across all 5 sectors. The

Figure 7. Implementation periods.



Source: Own elaboration.

extended horizon provides adequate time for capacity building, infrastructure development, policy integration, and continuous M&E to assess progress and make necessary adjustments. The plan would have to be reviewed an evaluated towards the end of the period to define a new Implementation Plan with continuing and/or new adaptation measures.

The **starting year of implementation** for each adaptation measure was determined based on expert judgment and country needs and readiness, taking into account the country's institutional and operational capacities. This judgment was complemented by the total Multi-Criteria Analysis (MCA) score, the assigned level of priority under the MCA, and the sector-specific ordering of priorities. This combined approach ensured a staggered timeline that enhances feasibility and coordination. The proposed start periods for each measure are distributed as shown in figure 7.
With this, short-term measures would start at some point between 2026 and 2028 given their urgency or ease of implementation; medium-term measures would commence execution between 2029 and 2032; while the measures that would start later in time are those that fall under the category of long-term, for which implementation would begin between 2033 and 2036 given their complexity, larger amount of funds necessary or requirement for previous studies before implementation can commence.

Continuation years, that cover the period 2037-2042 are the years until the execution of all measures are finalised, however no new measures will start in this period, as it is already outside the planning cycle of the Implementation Plan, that cover the ten year period 2026-2036.
Duration of the implementation period was considered as the adaptation measure´s implementation in years, this is how many years the execution of a measure is expected to last until the objectives are fully achieved. Assigned duration of the implementation period for the adaptation measures varies as it depends

on the specific nature of the activities within each adaptation measure, ranging from 1 year to 10 years.

To facilitate the planning exercise, the Consultant has proposed also a **tentative specific start year**. A Gantt Diagram has been prepared indicating the starting year of the implementation period and duration of the execution in years for each of the adaptation measures (see Table 7).

As shown in the Diagram below, most of the proposed measures are designated to start implementation in the short to medium term, underscoring the urgency of addressing immediate and less urgent vulnerabilities. Actions starting in the short-term constitute the largest proportion (58%), as they are crucial for laying the groundwork for resilience and supporting long-term adaptation efforts, and may have in some cases a smaller level of preparation before the Action's execution can start when compared to other infrastructure measures (for example, some "soft" measures that aim to foster coordination and communication efforts). Medium-term actions follow with 27%, reflecting the importance of addressing key challenges across all five sectors. In contrast, long-term actions represent only 15% of the total, as most of the actions included in the Plan should start as soon as possible.

Table 7. Starting year and duration of the implementation period for all adaptation measures.

No.	Adaptation Measure	Responsibilities	Implementation Years																
			Short-term start period			Medium-term start period			Long-term start period					Continuation years					
			'26	'27	'28	'29	'30	'31	'32	'33	'34	'35	'36	'37	'38	'39	'40	'41	'42
1	Strengthening Regional Resilience: Supporting the Western Balkans Adaptation Roadmap	MoE, Municipalities			■	■	■												
2	Optimizing Climate Coordination: Strengthening the IMWGCC Framework	MoE, Municipalities		■	■														
3	Enhancing Capacities for Adaptation: Support for the Climate Change Technical Group and create and capacitate a Steering Group	MoE, Municipalities		■	■	■													
4	Enhancing climate resilience through improved data systems	MoE			■	■	■												
5	Nature-based solutions and Biodiversity Net Gain Developer Schemes	MoE, Municipalities				■	■	■	■	■	■								
6	Fostering Climate Resilience Awareness Raising and Training for Adaptation and Mitigation	MES, ASPA		■	■	■	■												
7	Innovative Climate Finance Mechanisms: Piloting Sustainable Financing Strategies	MOF, Municipalities			■	■	■	■											
8	Piloting risk management Assessments for Climate-Resilient Businesses	MECI			■	■	■												
9	Promoting Gender-Sensitive Climate Adaptation: Training Stakeholders and Developing Inclusive Tools	MHSP, ASPA					■	■											
10	Educating Communities: Adaptation and disaster awareness-raising	MES					■	■	■	■									
11	Empowering farmers: financial support for climate-resilient infrastructure	MARD			■	■	■	■	■	■	■	■	■	■					
12	Safeguarding farmers: Compensation and assistance programs for disaster recovery	MARD				■	■	■	■	■	■	■	■	■	■				
13	Action Plan for Invasive Species Under Changing Climate Conditions	MARD					■	■	■										
14	Strengthening Flood Protection: Riverbank Restoration and Floodplain Expansion Across Key Albanian Rivers	MARD, Municipalities	■	■	■	■	■	■											

No.	Adaptation Measure	Responsibilities	Implementation Years																
			Short-term start period		Medium-term start period					Long-term start period				Continuation years					
			'26	'27	'28	'29	'30	'31	'32	'33	'34	'35	'36	'37	'38	'39	'40	'41	'42
15	Implementing Habitat Creation and Nature-Based Solutions to Combat Soil Erosion	MARD, Municipalities			■	■	■	■	■	■									
16	Enhancing IGEO's Capacity for Coastal Monitoring and Data Provision on Environmental Changes and risks	MARD			■	■													
17	Expanding and Modernizing Irrigation Systems for Enhanced Agricultural Resilience	MARD, Municipalities		■	■	■	■	■	■										
18	Sustainable Water Security through Rainwater Harvesting Infrastructure	MARD, Municipalities		■	■	■	■	■	■										
19	Enhancing Forestry Efficiency through EU Regulatory Compliance	MoTE	■	■	■	■	■	■											
20	Advancing Sustainable Forestry: Afforestation Fund and Green Procurement Initiatives	MoTE			■	■	■	■											
21	Revitalizing Damaged Lands: Integrating NbS and EBA with Agroforestry Practices	MoE, Municipalities	■	■	■	■	■	■											
22	Strengthening Forest and Pasture Protection: Investments in Human Capacity and Firefighting Resources	MoE, Municipalities			■	■	■	■											
23	Advancing Afforestation: Establishing Regional Nurseries for Drought-Resistant Species	MoE, Municipalities	■	■	■	■	■	■	■	■	■	■							
24	Supporting Migration of Rare and Endemic Forest Species to higher altitudes	MoE, Municipalities			■	■	■	■	■	■									
25	Restoring Vital Ecosystems: Protecting and Regenerating Coastal and Riverine Green Belts and Protective Ecosystems	MoE, Municipalities	■	■	■	■	■	■											
26	Sustainable Financing Through Payment for Ecosystem Services (PES)	MARD								■	■	■	■	■	■				
27	Integrated Ecosystem Restoration and Resilience: Addressing Soil Erosion in Key Regions	MoE, Municipalities								■	■	■	■	■	■	■	■	■	■
28	Combating Erosion and Flooding: Strategic Habitat Restoration and Reforestation in Key Albanian Regions	MoE, Municipalities	■	■	■	■	■	■	■	■									

No.	Adaptation Measure	Responsibilities	Implementation Years																	
			Short-term start period			Medium-term start period				Long-term start period					Continuation years					
			'26	'27	'28	'29	'30	'31	'32	'33	'34	'35	'36	'37	'38	'39	'40	'41	'42	
29	Sustainable Landscape Management: Enhancing Water Quality and Biodiversity at Viroi Lake in Gjirokastër	MoE, Municipalities								■	■	■								
30	Enhancing Climate Resilience in National Parks and Protected Areas	NAPA, Municipalities							■	■	■	■	■	■	■	■				
31	Restoration of forest layers to protect crops in Vlora	MARD, Municipalities				■	■	■	■	■	■	■								
32	Strategic Spatial Planning for tourism: Redirecting Development from High-Risk Areas	MoE, MoTCS	■	■																
33	Climate-proofing tourism infrastructure: Incentive packages for climate-proofing the tourism sector infrastructure	MoE, MoTCS					■	■	■											
34	Strategic Planning for Coastal Resilience: Buffer Zones and Sea Gate Adaptations	MoE, MoTCS, Municipalities				■	■	■												
35	Protecting Vlora Bay: Preserving Posidonia Habitats and Underwater Cultural Heritage Against Climate Impacts	MoTE, MoTCS, Municipalities									■	■	■	■						
36	Strengthening the policy and regulatory framework for Sustainable tourism: Policy Review and Regulatory Enhancement	MoE, MoTCS			■	■	■	■												
37	Integrating Climate Data for Sustainable tourism: Guidelines for resilient business management and National Reporting	MoE, MoTCS	■	■	■															
38	Climate-proofing tourism Infrastructure: Adaptive Designs for Climate Risk Mitigation	MoE, MoTCS		■	■	■	■	■	■	■	■	■	■							
39	Protecting Coastal Zones: Integrated Regulations, Planning and Management for Climate Resilience and Sustainable Development	MoE, MoTCS				■	■	■	■	■										
40	Building Climate Resilience Capacity: Training tourism Operators in Sustainable Practices and Adaptation Strategies	MoE, MoTCS		■	■															
41	Digital Hubs for Climate-Resilient tourism: Sharing Knowledge and Best Practices	MoE, MoTCS		■	■															

No.	Adaptation Measure	Responsibilities	Implementation Years																
			Short-term start period		Medium-term start period				Long-term start period					Continuation years					
			'26	'27	'28	'29	'30	'31	'32	'33	'34	'35	'36	'37	'38	'39	'40	'41	'42
42	Protecting tourism Assets: Enforcing Regulations and Restoring Ecosystems for Sustainable Development	MoE, MoTCS			■	■	■	■											
43	Maritime and Territorial Planning for Climate Resilience: Preparing for Rising Seas and Changing Environments	MIE						■	■	■									
44	Strategic Spatial Planning for Risk Reduction: Redirecting Developments and Managing Surface Water Flood Risks	MIE			■	■	■	■	■	■									
45	Incentive schemes to increase extreme temperature resilience of the building stock	MIE								■	■	■	■	■	■	■	■	■	■
46	Integrating Green Spaces into Public Infrastructure Development through GPP	MIE					■	■	■										
47	Restoring Green Corridors: Reforestation and Urban Greening Initiatives	MoE, Municipalities				■	■	■	■	■	■								
48	Climate Risk Assessment for Durrës, Elbasan, Fier, and Beyond: Developing a Comprehensive Vulnerability Map	MIE, Municipalities			■	■	■	■											
49	Flood event emergency plans	MIE, Municipalities		■	■	■	■												
50	Enhancing Urban Resilience: Assessing Greenspaces and Sustainable Drainage Solutions	MIE, Municipalities	■	■	■	■	■	■	■	■									
51	Sustainable Urban Design: Conservation and Restoration of Permeable and Infiltration Areas	MIE, Municipalities										■	■	■	■	■			
52	Protecting Energy Infrastructure against strong winds: Rehabilitating Substations and Transmission Lines	Albanian System Transmission Operator						■	■	■	■	■	■						
53	Enhancing Building Efficiency: Energy Performance Certificates and Resilient Standards	MIE						■	■	■	■	■							
54	Exploring the Energy sector Potential: Demand-Side Management and Energy Storage Studies	MIE				■	■	■											
55	Protecting the energy infrastructure: Monitoring Emergency and Risk Areas	MIE			■	■	■	■											

No.	Adaptation Measure	Responsibilities	Implementation Years																	
			Short-term start period			Medium-term start period				Long-term start period				Continuation years						
			'26	'27	'28	'29	'30	'31	'32	'33	'34	'35	'36	'37	'38	'39	'40	'41	'42
56	Enhancing Heatwave resilience through Efficient Air Conditioning Technology Deployment and Climate Refuges	MIE, Municipalities											■	■	■	■	■		
57	Optimizing Renewable Energy for Resilient Systems: Grid Innovation and Storage Investments	MIE								■	■	■	■	■	■	■	■	■	■
58	Advancing Gender Equity in Energy: Training and Support for Women in RE Projects	MIE		■	■	■	■	■											
59	Building Resilience in Hydropower: Optimized Operations and Strengthened Infrastructure	MIE			■	■	■	■	■	■									
60	Regular Vulnerability and Risk Analysis and Definition of Resilience-Building Measures for Road Infrastructure	MIE –Transport Infrastructure, Municipalities			■	■	■	■	■	■									
61	Geological Studies for Sustainable Roads: Bio-Engineering Solutions to reduce Erosion and Flood risks	MIE –Transport Infrastructure, Municipalities					■	■	■	■	■	■							
62	Advancing Sustainable and Climate Resilient Urban Mobility: Developing and Reviewing Urban Mobility Plans	MIE –Transport Infrastructure, Municipalities									■	■	■	■					
63	Adapting Critical Transport Infrastructure: Advanced Risk Assessment and Resilient Design Solutions	MIE –Transport Infrastructure, Municipalities			■	■													
64	Integrating Nature-Based Solutions and environmental based adaptation for Transport sector resilience: Enhancing Infrastructure with Nature-Based and Ecosystem-Based Adaptation	MIE –Transport Infrastructure, Municipalities						■	■	■	■	■							
65	Climate Resilience Transport Policies: Embedding Climate Adaptation in Regulatory Frameworks	MIE –Transport Infrastructure, Municipalities		■	■	■													
66	Innovative Partnerships for Sustainable Transport: Funding Climate-Resilient Transport Infrastructure	MIE –Transport Infrastructure											■	■	■	■	■		

4.7 Financial assessment

This section provides a comprehensive overview of Albania's climate finance landscape, outlining climate-related risks, investment needs, and possible financing sources, along with the cost estimations for implementing the 66 prioritized adaptation measures across key sectors based on detailed cost calculations for green and grey infrastructure, more complex measures and a CBA analysis for those, and on costing of similar interventions in other projects whether in Albania, in the region or internationally. The information from this financial assessment is further complemented in the NAP's Financing Strategy which offers a detailed analysis about the gaps, opportunities and instruments suitable to fund the NAP adaptation measures's budget needs throughout national and international funding.

Overview of climate finance in Albania

Albania's climate finance landscape is shaped by the country's increasing exposure to both climate-related and geophysical risks. As an emerging economy in the Western Balkans, Albania faces structural vulnerabilities due to the rising frequency and intensity of extreme events, including floods, droughts, landslides, and earthquakes. These hazards continue to undermine economic growth, damage critical infrastructure, and threaten social cohesion.

One of the most disruptive events in recent history was the 2019 earthquake, which registered a magnitude of 6.3 on the Richter scale the strongest in three decades. The earthquake resulted in 51 fatalities, over 913 injuries, and directly affected more than 200,000 individuals, including 17,000 people displaced from their homes. Severe losses were recorded in the housing and tourism sectors, particularly in Tirana and Durrës, Albania s two most populous and economically important municipalities. Total damage was estimated at approximately 7.5% of national GDP[65].

In parallel, Albania continues to face cumulative impacts from climate change. The country has a longstanding history of riverine flooding, particularly between September and March, a period that receives 80 85% of annual precipitation. Risk assessments indicate that a once-in-100-year flood could affect 20 districts, 110 municipalities, 341 villages, over 85,000 buildings (with a combined built-up area of 7.9 million m^2), and more than 565,000 inhabitants[66]. These projections highlight the urgency of mobilizing financial resources to strengthen national resilience. Albania's additional annual investment needs for adaptation and mitigation are estimated at between 0.7% and 2.5% respectively of yearly GDP for the 2025–2050 period[69]. These figures underscore the importance of unlocking significant volumes of public and private capital to close investment gaps and meet climate goals.

At the international level, **Albania has steadily increased its access to climate finance from multilateral sources**. In 2024, the Green Climate Fund (**GCF**) approved the project "ALBAdapt – Climate Services for a Resilient Albania", which provides USD 24.8 million in GCF funding and an additional USD 12.6 million in co-financing. The project seeks to establish a National Framework for Climate Services and modernize Albania's Hydrometeorological Service in alignment with World Meteorological Organization (WMO) standards[67]. The country is also suitable for accesssing **Adaptation Fund**'s funding that could be a relevant instrument for facilitating the investments needed in adaptation.

From a regulatory perspective, the Bank of Albania (BoA) has taken decisive steps toward

65. World Bank Group (WBG). (2024). Public Disclosure Authorized WESTERN BALKANS 6 Country Compendium.
66. Government of Albania. (2021). Revised NDC. https://unfccc.int/sites/default/files/2022-08/Albania Revised NDC.pdf
67. GCF. (2024). SAP041 ALBAdapt – Climate Services for a Resilient Albania. https://www.greenclimate.fund/project/sap041

integrating climate-related considerations into the financial system. In 2020, **the BoA joined the Network for Greening the Financial System** (NGFS), and in 2024, it became a member of the **Sustainable Banking and Finance Network** (SBFN). In May 2023, the BoA's Supervisory Council approved Phase I (2023–2025) of its roadmap for the management and supervision of climate-related financial risks, developed in collaboration with the World Bank. This roadmap outlines the BoA's initial response to both physical and transition climate risks and sets the foundation for mainstreaming green finance within Albania's financial architecture. Despite this progress, **Albania's green finance ecosystem remains nascent**. The country's financial sector is largely bank-based, with shallow capital markets and no comprehensive sustainable finance framework in place. To advance, Albania must adopt a green taxonomy aligned with the European Union, implement a sustainability disclosure regime for financial and non-financial entities, and develop standards for issuing thematic bonds—including green, social, sustainable, and sustainability-linked bonds.

Aligned with its European Union accession ambitions, Albania has demonstrated a strong commitment to sustainable finance as a means of achieving long-term economic and environmental sustainability. The country actively participates in regional and international platforms such as the Western Balkans Sustainable Finance Initiative and the EU Sustainable Finance Action Plan, reflecting its intention to harmonize national financial practices with EU standards and transition toward a low-carbon, climate-resilient economy.

Financial assessment of the priority measures

Estimation of costs

As part of the ongoing efforts to operationalize Albania's climate adaptation agenda and particularly the NAP, the present Implementation Plan for Prioritized and Costed Adaptation Actions has developed an initial cost estimation for the execution of priority adaptation measures across seven key sectors: tourism, agriculture and forestry, transport, urban, energy, and cross-sectoral or transversal sector. This section presents a preliminary assessment of the financial resources required to implement the identified 66 priority measures, forming the basis for future investment planning and resource mobilization.
The cost estimates are grounded in sectoral consultations, expert judgment, and available reference literature. While indicative, they provide a strategic reference point to inform future feasibility analyses, project preparation processes, and national or international financing dialogues during the Plan's implementation phase. These estimations are designed to support both infrastructure-focused and soft interventions that enhance Albania's resilience to climate change across multiple dimensions.

The preliminary analysis suggests that **the total investment required for the implementation of 66 adaptation interventions amounts to approximately USD 9.8 billion** that shall be disbursed across the execution years of the measures (see Section Timeline 4.4) from 2026 until 2042. Considering current macroeconomic projections, Albania's GDP is expected to grow steadily at an average rate of 3.3% annually. This projected economic expansion implies that the relative fiscal burden of the adaptation investment will diminish over time, reinforcing its long-term viability and alignment with national development pathways. Breakdown of the estimated costs by type of intervention, priority, timeline and budget category are presented in the following section.

Cost-benefit analysis

It is important to note that, unlike grey and green interventions, whose costs were estimated

using the cost-benefit analysis (CBA) approach, the soft interventions were assessed through a preliminary estimation based on the costing of similar measures/projects whether in Albania or internationally. To inform these estimates, a review of secondary sources and similar projects implemented in the region was conducted, with the aim of identifying comparable cost references. Based on this review, a minimum and maximum cost estimate was selected for each measure, according to the type and scale of intervention. Given the exploratory nature of these estimations, it is recommended that each soft intervention be assessed individually in future stages using more detailed and context-specific data, in order to generate cost estimates that are more accurately aligned with on-site implementation conditions. National experts are working on providing further information about the measures through the development of concept notes for each one of them, which will be informed by this Report and present an opportunity to adjust these cost estimates based on local information.

The costing exercise conducted confirms the prioritization of the 66 measures applied during the first phase of the present Consultancy assignment. Green and grey infrastructure measures have been thoroughly analyzed through a CBA analysis given their more complex implementation nature and consequent need for more detailed financial planning and assessment. In this regard, of the total 66 proposed adaptation measures, the 21 that were related with green and grey infrastructure interventions were subject to a detailed analysis.

The analysis followed an established methodology for cost benefit analysis inspired by European Commission guidelines, the IMF-World Bank CPAT tool, and leading academic literature. To capture the long-term nature of climate adaptation benefits, the CBA was conducted over a time horizon of 25 years, as benefits of adaptation measures are felt more acutely only in the medium and long-term. Therefore, the period of analysys for the cost and benefits covers 2026-2051.

Costs were gathered through templates filled by national experts and supplemented with data from local plans and international benchmarks. Capital expenditures (CAPEX) covered implementation activities, while operational expenditures (OPEX) reflected maintenance, extended only for the purpose of the CBA through 2051 to ensure comparability with long-term benefits. When local cost data was missing, values were estimated based on comparable interventions or regional proxies.

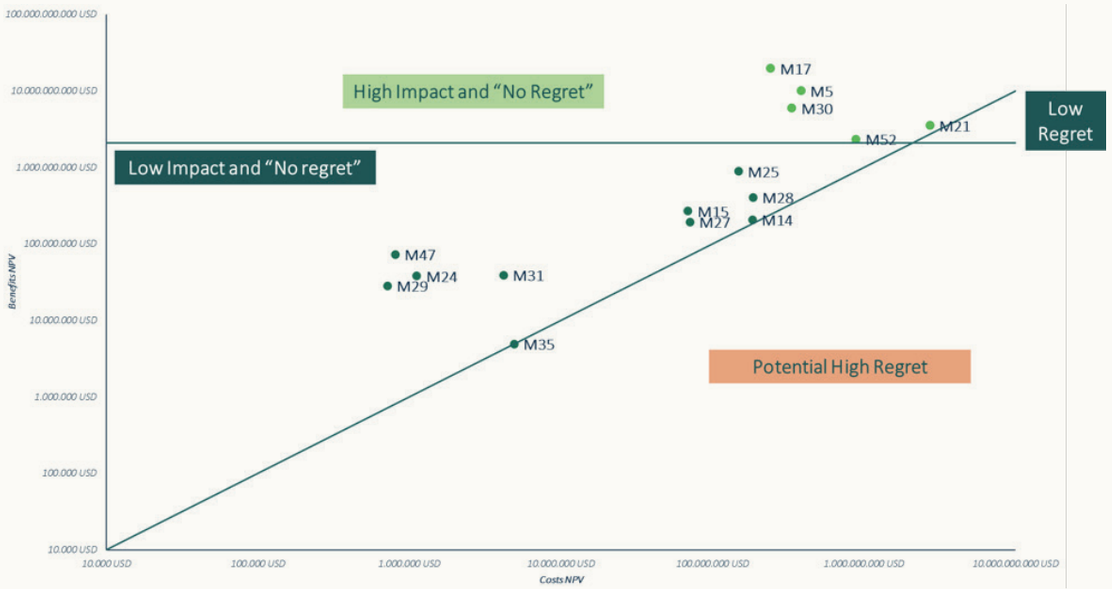
The benefits of the measures were quantified using two approaches: the valuation of **ecosystem services** (e.g., air purification, water retention, biodiversity gains), and the estimation of **avoided damages** (e.g., from floods or soil erosion). Ecosystem values were derived from the Ecosystem Services Valuation Database (ESVD), and applied using surface area estimates derived from GIS data and consultations.

Using a **3% discount rate** (aligned with EU norms), the Net Present Value (NPV) and the Benefit-Cost Ratio (BCR) were calculated. These metrics allowed for a comparative assessment of the economic efficiency of each measure.

This process ensured that the selected measures were not only environmentally and socially beneficial, but also economically sound, supporting robust investment decisions in climate resilience.

Six of the infrastructure measures did not offer sufficient data on implementation targets to calculated detailed costs and benefits. Despite this, the results of the CBA for the remaining infrastructure measures show a favourable

Figure 8. Cost-benefit relationship of adaptation measures under Scenario 1, based on total discounted benefits and costs (NPV).



Measures shown in lime green correspond to those classified as High Impact and No Regret, while the blue-green dots represent measures in the Low Impact and No Regret quadrant. Values are presented on a logarithmic scale. Source: Own elaboration.

assessment, as shown in the graph below, that represents the net present value (NPV) results for the measures[68]. This graphical representation has informed the prioritization exercise to select actions that offer strong economic justification under uncertainty.

In the graph, the **diagonal line** represents the threshold where benefits equal costs—**measures above this line are economically efficient and considered "low regret" options**. The horizontal line indicates a threshold of high impact, allowing policymakers to distinguish between high- and low-impact interventions.

The intersection of the two lines defines four quadrants, which represent:

High impact and "no regret": measures with benefits higher than costs and above-average benefit levels. These are the most favourable options for implementation as the benefits are high and highly exceed costs.

Low impact and "no regret": measures with benefits higher than costs but below-average benefit levels.

Low regret: measures where costs exceed benefits, but benefits are still above average.

Potential high regret: measures with higher costs than benefits and below-average benefit levels. These measures are normally not prioritised for implementation as they could not be as beneficial.

68. Detail on the Net Present Value results and on the Benefit-Cost ratio for each measure covered in the CBA are provided in the measures' Facthseets in the Annexes of this Report.

Measures **No. 5, 17, 21, 30, and 52** fall into the **"high impact and no regrets"** category. Meanwhile, measures **No. 14, 15, 24, 25, 27, 28, 29, 31, 35**, **and 47** are classified as **"low impact and no regrets"**. The first group offers significant net benefits that clearly outweigh their costs. These measures are considered strategically optimal for implementation due to their strong cost-benefit ratios and robustness under uncertainty. Their high impact suggests that they contribute substantially to reducing climate risks or enhancing resilience, while the "no regret" label indicates that their implementation remains advantageous even in the absence of severe climate impacts.

The second group of measures, classified as **low impact and no regrets**, **also presents a positive cost-benefit ratio but with more modest benefits**. While they may not deliver transformative outcomes individually, they are economically sound and low-risk, making them valuable as complementary or supportive actions within a broader adaptation strategy. Their implementation is often justified by their low cost, ease of execution, or relevance in specific local or sectoral contexts.

The analysis has been complemented through a **senstivity test by applying a scenario analysis**, so that the sensitivity of the results was examined to see how the results would be modified by changes in the variables and methodology employed. The sensitivity analysis performed considers how the CBA results would change if a variation in the applied discount rate is introduced (this is, from 3% to 5% discount rate), and if the benefits of each of the measures would take longer to be achieved. In this alternative scenario, instead of taking the proposed implementation years to reach their benefits' peak, the infrastructure measures take up to a period of 15 years to reach its highest point from the moment in which implementation begins. In Scenario 2—where benefits take 15 years to reach their peak—the **majority of adaptation measures still maintain a positive Net Present Value (NPV)**, reaffirming their long-term economic viability, particularly those focused on ecosystem restoration and water resilience.

However, **two measures stand out as exceptions**:

- **Measure 14** (*Flood Protection and Riverbank Restoration*)
- **Measure 35** (*Posidonia Habitat Protection in Vlora Bay*)

For two measures, 14 and These two measures shift into the **"Potential High Regret"** category, as their cost-benefit ratios turn negative under the delayed benefits scenario. For **Measure 35**, the sharp drop in benefits is due to the extended time needed to achieve ecological results, reducing total benefits over the analysis period. For **Measure 14**, the absence of key benefit data (e.g., erosion control services) led to an incomplete valuation, which, if included, could restore its viability.

Despite these exceptions, **Measure 14 is still considered worth pursuing**, given its strategic relevance and the likelihood that its actual benefits are underestimated. In contrast, **Measure 35 may require closer scrutiny**, reassessment of assumptions, and exploration of non-monetized co-benefits to justify its implementation. Overall, the scenario confirms that **most measures remain robust** even in an alternative scenario, though it highlights the importance of carefully managing assumptions and data gaps for measures with tighter margins. This insight is key for improving financial planning and refining prioritization strategies. The results of the CBA have been summarized in Annex IX.

Implementation costs by type of intervention

The implementation of adaptation interventions is categorized by typology—green, grey, and soft

Table 8. Estimated budget by type of intervention.

Type of intervention	Estimated Costs (USD)	Estimated Costs (%)	No. Adaptation measures	Adaptation measures (%)
Green intervention	4,410,400,115	45%	15	23%
Soft intervention	3,152,953,700	32%	45	68%
Grey intervention	2,237,343,161	23%	6	9%
Total estimated	**9,800,696,976**	**100%**	**66**	**100%**

Source: Own elaboration.

measures—to reflect the diversity of approaches needed to build climate resilience. This typological approach facilitates a strategic allocation of resources based on the nature and complexity of each intervention. **Green interventions represent a significant share of the overall investment**, with a total of 15 interventions requiring **approximately USD4.41 billion**. These actions emphasize ecosystem-based solutions and the use of natural infrastructure to buffer climate impacts, restore degraded landscapes, and enhance biodiversity co-benefits.

Soft interventions, which focus on enabling conditions such as capacity building, policy reform, institutional coordination, and data systems, account for the largest number of measures. 45 interventions fall under this category, with an estimated **budget of USD3.15 billion**, underscoring the critical role of governance and knowledge-based systems in driving effective adaptation. **Grey interventions**, though fewer in number with only 6 interventions, are capital-intensive and essential for safeguarding infrastructure and critical services against extreme climate events. These engineered solutions account for **USD2.24 billion** in estimated costs. In total, the implementation of 66 adaptation interventions will require approximately USD9.8 billion.

It should be noted that there are two measures for which cost estimates could not be provided. These are measure 38 of Tourism "Climate-proofing Tourism Infrastructure: Adaptive Designs for Climate Risk Mitigation" and measure 50 of the urban development sector "Enhancing Urban Resilience: Assessing Greenspaces and Sustainable Drainage Solutions". Both measures require the refurbishment of building infrastructure to climate-proof it, however, no target was available yet in terms of m^2, number of buildings to refurbish, or percentage of the building stock, so the cost estimation could not be provided. Once this information is available, the unit cost for m^2 of renovation provided by the Consultant in the CBA can be escalated to calculate a raw estimation of the possible costs for the measures.

Implementation costs by timeline and annual distribution

The budget allocation estimates per period considering the start moment of the measures and the actual disbursements are shown in table 9. **The budget planning or commitments are spread in an evenly manner throughout the**

Table 9. Estimated budget by timeline.

Timeline	Budget planning/commitments		Budget annualization proposal (disbursements)	
	Budget Estimated per measure start date (USD)	Number of measures	Disbursements Estimated (USD)	% of the total budget
Long-term (2033-2036)	3,017, 008,804	10	6,649,179,967 (disbursements end in 2042)	68%
Medium-term (2029-2032)	3,637,373,692	18	2,609,730,508	27%
Short-term (2026-2028)	3,146,314,481	38	541,786,502	6%
Total estimated	**9,800,696,977**	**66**	**9,800,696,977**	**100%**

Source: Own elaboration.

Plan's implementation period: 2026-2036. However, as shown on the table, **the short-term has a larger number of measures** that start implementation in that period when compared to the medium and long-term. This is **because a majority of the soft measures is supposed to commence execution during the years 2026-2028**, as they are measures that can contribute notably towards vulnerability reduction across sectors, but require a lower level of preparation and financial resources when compared to green and grey infrastructure measures, which start implementation in most cases in the medium and long-term periods of the Plan to allow for longer preparatoy phases.

The table offers also information on the actual expected budget disbursements per period. Considering that the measures implementation duration in years goes from 2 to 10 years, their execution timespan may extend across the different periods of the plan. For example, **if a measure starts in 2028 and lasts ten years, its expected budget commitment would have to be already assigned in the short term (2026-2028), however, its implementation would last until 2038, so the budget disbursements would be split between the short-, medium- and long-term periods of the Implementation Plan**. That is the reason why budget disbursements go as far as the year 2042, which is the year in which the last measures would finalize its execution. No measure starts execution later than the 10 years' Implementation Plan's planning cycle, this is, no later than 2036.

The largest share of **budget disbursements for the implementation of adaptation interventions is primarily directed towards the long-term ,** which account for 68% of the total estimated budget disbursements, equivalent to USD 6.65 billion. These budget allocation refers to the measures that start execution in the long-term, for which all disbursements will be in the long term, combined with the measures that will have started in the medium and short term but will finalize execution (and hence disbursements) in the last period of the Plan.

Table 10 . Annual distribution of adaptation investment disbursements (2025–2042) and percentage of total budget.

Year	Disbursements	%
2026	4.659.800 USD	0,05%
2027	7.529.882 USD	0,1%
2028	529.596.820 USD	5,4%
2029	662.060.265 USD	6,8%
2030	802.079.015 USD	8,2%
2031	804.689.152 USD	8,2%
2032	340.902.076 USD	3,5%
2033	1.471.731.191 USD	15,0%
2034	1.314.666.566 USD	13,4%
2035	1.284.405.814 USD	13,1%
2036	614.986.908 USD	6,3%
2037	365.760.242 USD	3,7%
2038	360.947.182 USD	3,7%
2039	350.722.182 USD	3,6%
2040	307.589.881 USD	3,1%
2041	289.185.000 USD	3,0%
2042	289.185.000 USD	3,0%
Total	**9.800.696.977 USD**	**100%**

Medium-term budget disbursements represent 27% of the total budget and USD2.61 billion, highlighting their strategic role in scaling adaptation efforts through integrated and sustained actions.

The measures starting earlier in time, this is between **2026 and 2028, receive the smallest portion of funding disbursements** in the Plan, totaling USD541.79 million—just 6% of the total budget, reflecting a phased and gradual approach in budget and resources focused on systemic change and building resilience over time.

When the estimated investment allocations are annualized and compared to Albania's current GDP, estimated at USD 26.5 billion (2025), the disbursement profile reflects a structured and phased financing strategy aligned with the technical nature and sequencing of adaptation measures. The analysis is based on **annualized disbursements**, with the total cost of each intervention distributed across its implementation period. For this calculations, for infrastructure measures, activities related to feasibility studies, planning, and assessments before actual construction or planting work are scheduled

during the **first two years** of each intervention, while **construction and execution phases are allocated from year three through the final year of implementation of each measures**. For soft interventions the budget is split evenly throughout each measure's execution years. More detail on this analysis is provide in the table in Annex XI. This structure results in a gradual increase in investment levels over the initial years, followed by a peak in disbursements and a progressive decline in the later stages of implementation, as shown in table 10, that provides codes of colour to facilitate the visualization of disbursements intensiveness throughout the measures' implementation years, with green meaning least intensive, evolving towards yellow, orange and red depending on the required budget disbursements per year.

Over the full implementation horizon from 2026 to 2036, the average annual investment amounts to approximately USD 712 million, equivalent to 2.69% of Albania's 2025 GDP. This level of investment remains substantial and within a fiscally manageable range, particularly if supported through concessional and soft climate finance, sequenced budgeting, and full integration into Albania's public investment planning frameworks. **The highest annual disbursements are projected between 2033 and 2035, with a peak of USD 1.47 billion in 2033, followed by USD 1.31 billion in 2034 and USD 1.28 billion in 2035**, each representing between 4.85% and 5.55% of 2025 GDP. In contrast, disbursements in the early years of implementation remain modest, below USD 10 million in both 2026 and 2027, rising significantly in 2028 as full-scale implementation activities commence.

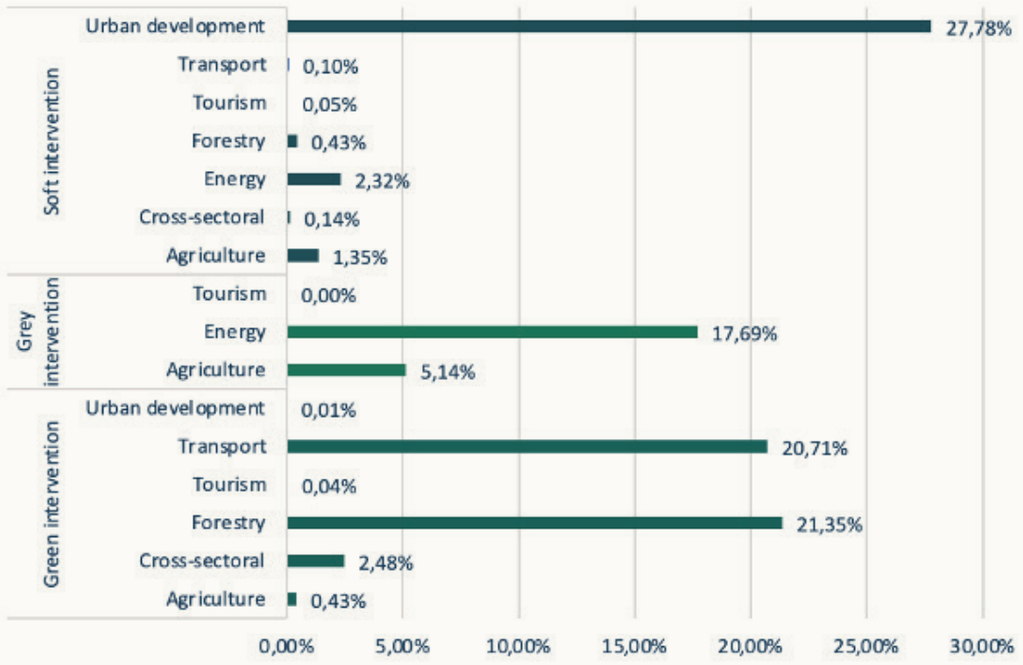
Towards the end of the implementation period, from 2037 to 2042, disbursements gradually decrease and stabilize, reaching around USD 289 million per year, which represents approximately 1.09% of current GDP. This decline reflects the completion of major infrastructure components of the measurse and the transition towards consolidation and maintenance of adaptation systems.

Implementation costs by sector and type of measure

Figure 8 below presents the percentage distribution of estimated costs associated with the various climate change adaptation options, categorized by type of intervention (soft, grey, and green) and by sector. This visualization provides a clear overview of the priority investment areas under Albania's NAP, based on the approach and nature of the proposed measures. Regarding **soft interventions**, there is a **clear concentration of costs in the urban development sector**, which accounts for 27.78% of the total estimated budget for this type of intervention. This indicates a high priority placed on non-structural measures related to urban planning, land use regulation, strengthening of local institutional capacities, and the enhancement of climate governance in urban settings. Other sectors with a modest share in this category include energy (2.32%) and agriculture (1.35%), while transport, tourism, and cross-sectoral interventions each represent only 0.5% or less of the total budget for soft interventions. This pattern suggests that soft measures are primarily oriented toward urban planning and management rather than sector-specific technical actions.

For grey interventions, the energy sector dominates, representing 17.69% of the total estimated costs. This points to a strong emphasis on climate-resilient infrastructure, such as reinforced power grids, generation facilities adapted to extreme weather events or secured energy distribution systems. The agriculture sector follows with 5.14%, likely reflecting investments in irrigation infrastructure, reservoirs, or other hydraulic structures. It is noteworthy that tourism and urban development sectors' grey infrastructure costs remain yet to be confirmed as

Figure 9. Estimated Cost Distribution of Adaptation Options by Intervention Type and Sector.



Source: Own elaboration.

the target infrastructure to be addressed is to be defined.

Green interventions, in turn, exhibit a strong **focus on two main sectors: forestry (21.35%) and transport (20.71%).** This is particularly significant, as it highlights the importance of nature-based solutions within Albania's national adaptation strategy—especially in the protection of transport infrastructure from landslides or flooding, and in the restoration of forest ecosystems that provide essential climate services.

A moderate level of investment is also recorded in cross-sectoral measures (2.48%), while tourism and agriculture maintain an almost symbolic presence in this category, showing potential for future integration of more ecosystem-based adaptation into those sectors.

Table 11 below summarizes the information about the preliminary cost estimation required for implementing the 66 prioritized adaptation measures.

Table 11. Preliminary cost estimations for implementing the 66 prioritized adaptation measures.

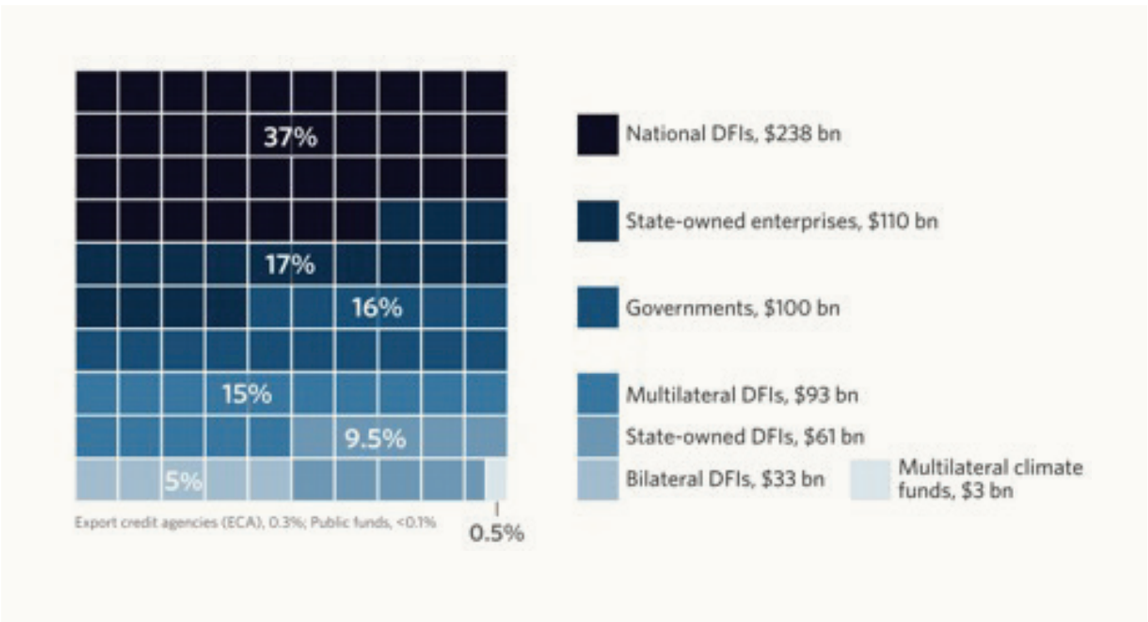
No.	Sector	Adaptation measure	Type of intervention	Budget
1	Cross-sectoral	Strengthening Regional Resilience: Supporting the Western Balkans Adaptation Roadmap	Soft intervention	315.000 USD
2		Optimizing Climate Coordination: Strengthening the IMWGCC Framework	Soft intervention	420.000 USD
3		Enhancing Capacities for Adaptation: Support for the Climate Change Technical Group and create and capacitate a Steering Group	Soft intervention	745.000 USD
4		Enhancing climate resilience through improved data systems	Soft intervention	1.500.000 USD
5		Nature-based solutions and Biodiversity Net Gain Developer Schemes	Green intervention	242.793.396 USD
6		Fostering Climate Resilience Awareness Raising and Training for Adaptation and Mitigation	Soft intervention	1.500.000 USD
7		Innovative Climate Finance Mechanisms: Piloting Sustainable Financing Strategies	Soft intervention	6.080.000 USD
8		Piloting risk management Assessments for Climate-Resilient Businesses	Soft intervention	200.000 USD
9		Promoting Gender-Sensitive Climate Adaptation: Training Stakeholders and Developing Inclusive Tools	Soft intervention	143.000 USD
10		Educating Communities: Adaptation and disaster awareness-raising	Soft intervention	3.025.000 USD
11	Agriculture	Empowering farmers: financial support for climate-resilient infrastructure	Soft intervention	29.600.000 USD
12		Safeguarding farmers: Compensation and assistance programs for disaster recovery	Soft intervention	102.250.000 USD
13		Action Plan for Invasive Species Under Changing Climate Conditions	Soft intervention	160.000 USD
14		Strengthening Flood Protection: Riverbank Restoration and Floodplain Expansion Across Key Albanian Rivers	Grey intervention	179.022.000 USD
15		Implementing Habitat Creation and Nature-Based Solutions to Combat Soil Erosion	Green intervention	41.787.500 USD
16		Enhancing IGEO's (Institute of Geosciences) Capacity for Coastal Monitoring and Data Provision on Environmental Changes and risks	Soft intervention	322.200 USD
17		Expanding and Modernizing Irrigation Systems for Enhanced Agricultural Resilience	Grey intervention	249.123.998 USD
18		Sustainable Water Security through Rainwater Harvesting Infrastructure	Grey intervention	75.849.163 USD

No.	Sector	Adaptation measure	Type of intervention	Budget
19	Forestry	Enhancing Forestry Efficiency through EU Regulatory Compliance	Soft intervention	17.600.000 USD
20		Advancing Sustainable Forestry: Afforestation Fund and Green Procurement Initiatives	Soft intervention	8.540.000 USD
21		Revitalizing Damaged Lands: Integrating NbS and EBA with Agroforestry Practices	Green intervention	1.494.738.115 USD
22		Strengthening Forest and Pasture Protection: Investments in Human Capacity and Firefighting Resources	Soft intervention	475.000 USD
23		Advancing Afforestation: Establishing Regional Nurseries for Drought-Resistant Species	Green intervention	2.249.360 USD
24		Supporting Migration of Rare and Endemic Forest Species	Green intervention	894.780 USD
25		Restoring Vital Ecosystems: Protecting and Regenerating Coastal and Riverine Green Belts and Protective Ecosystems	Green intervention	145.561.688 USD
26		Sustainable Financing Through Payment for Ecosystem Services (PES)	Soft intervention	16.000.000 USD
27		Integrated Ecosystem Restoration and Resilience: Addressing Soil Erosion in Key Albanian Regions	Green intervention	62.573.351 USD
28		Combating Erosion and Flooding: Strategic Habitat Restoration and Reforestation in Key Albanian Regions	Green intervention	124.943.176 USD
29		Sustainable Landscape Management: Enhancing Water Quality and Biodiversity at Viroi Lake in Gjirokastër	Green intervention	479.334 USD
30		Enhancing Climate Resilience in National Parks and Protected Areas	Green intervention	257.461.805 USD
31		Restoration of forest layers to protect crops in Vlora	Green intervention	3.282.947 USD

No.	Sector	Adaptation measure	Type of intervention	Budget
32	Tourism	Strategic Spatial Planning for tourism: Redirecting Development from High-Risk Areas	Soft intervention	600.000 USD
33		Climate-proofing tourism infrastructure: Incentive packages for climate-proofing the tourism sector infrastructure	Soft intervention	800.000 USD
34		Strategic Planning for Coastal Resilience: Buffer Zones and Sea Gate Adaptations	Soft intervention	504.000 USD
35		Protecting Vlora Bay: Preserving Posidonia Habitats and Underwater Cultural Heritage Against Climate Impacts	Green intervention	3.606.119 USD
36		Strengthening the policy and regulatory framework for Sustainable Tourism: Policy Review and Regulatory Enhancement	Soft intervention	120.500 USD
37		Integrating Climate Data for Sustainable Tourism: Guidelines for resilient business management and National Reporting	Soft intervention	290.000 USD
38		Climate-proofing Tourism Infrastructure: Adaptive Designs for Climate Risk Mitigation	Grey intervention	TBC
39		Protecting Coastal Zones: Integrated Regulations, Planning and Management for Climate Resilience and Sustainable Development	Soft intervention	657.000 USD
40		Building Climate Resilience Capacity: Training Tourism Operators in Sustainable Practices and Adaptation Strategies	Soft intervention	430.000 USD
41		Digital Hubs for Climate-Resilient Tourism: Sharing Knowledge and Best Practices	Soft intervention	34.000 USD
42		Protecting Tourism Assets: Enforcing Regulations and Restoring Ecosystems for Sustainable Development	Soft intervention	1.450.000 USD
43	Urban development	Territorial Planning for Climate Resilience: Preparing for Rising Seas and Changing Environments	Soft intervention	290.000 USD
44		Strategic Spatial Planning for Risk Reduction: Redirecting Developments and Managing Surface Water Flood Risks	Soft intervention	3.027.000 USD
45		Incentive schemes to increase extreme temperature resilience of the building stock	Soft intervention	2.715.000.000 USD
46		Integrating Green Spaces into Public Infrastructure Development through Green Public Procurement	Soft intervention	380.000 USD
47		Restoring Green Corridors: Reforestation and Urban Greening Initiatives	Green intervention	568.544 USD
48		Climate Risk Assessment for Durrës, Elbasan, Fier, and Beyond: Developing a Comprehensive Vulnerability Map	Soft intervention	196.000 USD
49		Flood event emergency plans	Soft intervention	2.500.000 USD
50		Enhancing Urban Resilience: Assessing Greenspaces and Sustainable Drainage Solutions	Green intervention	TBC
51		Sustainable Urban Design: Conservation and Restoration of Permeable and Infiltration Areas	Soft intervention	1.200.000 USD

No.	Sector	Adaptation measure	Type of intervention	Budget
52	Energy	Protecting Energy Infrastructure against strong winds: Rehabilitating Substations and Transmission Lines	Grey intervention	986.298.000 USD
53		Enhancing Building Efficiency: Energy Performance Certificates and Resilient Standards	Soft intervention	3.500.000 USD
54		Exploring the Energy sector Potential: Demand-Side Management and Energy Storage Studies	Soft intervention	2.900.000 USD
55		Protecting the energy infrastructure: Monitoring Emergency and Risk Areas	Soft intervention	875.000 USD
56		Enhancing Heatwave resilience through Efficient Air Conditioning Technology Deployment and Climate Refuges	Soft intervention	38.200.000 USD
57		Optimizing Renewable Energy for Resilient Systems: Grid Innovation and Storage Investments	Soft intervention	176.850.000 USD
58		Advancing Gender Equity in Energy: Training and Support for Women in Renewable Energy Projects	Soft intervention	4.900.000 USD
59		Building Resilience in Hydropower: Optimized Operations and Strengthened Infrastructure	Grey intervention	747.050.000 USD
60	Transport	Regular Vulnerability and Risk Analysis and Definition of Resilience-Building Measures for Road Infrastructure	Soft intervention	457.000 USD
61		Geological Studies for Sustainable Roads: Bio-Engineering Solutions to reduce Erosion and Flood risks	Soft intervention	2.900.000 USD
62		Advancing Sustainable and Climate Resilient Urban Mobility: Developing and Reviewing Urban Mobility Plans	Soft intervention	1.200.000 USD
63		Adapting Critical Transport Infrastructure: Advanced Risk Assessment and Resilient Design Solutions	Soft intervention	2.700.000 USD
64		Integrating nature-based solutions and environmental based adaptation for Transport sector resilience: Enhancing Infrastructure with Nature-Based and Ecosystem-Based Adaptation	Green intervention	2.029.460.000 USD
65		Climate Resilience Transport Policies: Embedding Climate Adaptation in Regulatory Frameworks	Soft intervention	218.000 USD
66		Innovative Partnerships for Sustainable Transport: Funding Climate-Resilient Transport Infrastructure	Soft intervention	1.900.000 USD
Total				**9.800.696.977 USD**

Figure 10. Climate finance by public actor (USD bn). Source: Climate Policy Initiative, 2023.



Means of implementation: possible sources of funding and instruments

The successful implementation of Albania's prioritized adaptation actions requires a strategic combination of financing sources and enabling mechanisms. This section outlines the landscape of available funding, distinguishing between public and private sources, and highlights the key actors, instruments, and channels through which climate finance is mobilized and delivered. Public sources include multilateral climate funds, development banks, and bilateral cooperation partners, which have historically played a leading role in adaptation finance. In parallel, private sector engagement—though still emerging—offers growing opportunities through commercial banking, microfinance, venture capital, and blended instruments. Together, these mechanisms form the financial backbone necessary to support Albania's climate-resilient transition.

Public sources

In Albania, **the role of public finance remains central**, particularly in the absence of a fully developed private green finance ecosystem. National and municipal governments are instrumental in mobilizing and managing international climate funds, often acting as implementing or executing entities for externally funded projects.

This is especially relevant given Albania's eligibility for concessional finance and technical assistance from the European Union and international climate finance mechanisms such as the Green Climate Fund (GCF), the Global Environment Facility (GEF), and the Adaptation Fund. Strengthening the coordination and absorptive capacity of public institutions is therefore essential to enhancing the country's climate finance readiness and ensuring effective delivery of resources. Public

Table 12. Public sources of financing, summary table.

Multilateral funds from the UNFCCC Climate Finance Mechanism	• Adaptation Fund (AF) • Global Environment Facility (GEF) • Green Climate Fund (GCF) • Special Climate Change Fund (SCCF)
Multilateral Development Banks (MDBs) and other multilateral agencies	• European Bank for Reconstruction and Development (EBRD) • European Investment Bank (EIB) • Food and Agriculture Organization (FAO) • United Nations Development Programme (UNDP) • United Nations Environment Programme (UNEP) • World Bank Group (WBG)
Bilateral Development Finance Institutions and other bilateral sources	• European Union (EU) • French Development Agency (AFD) • German Agency for International Cooperation (GIZ) • Italian Development Cooperation • International Climate Initiative (IKI) • Japan International Cooperation Agency (JICA) • KfW (Kreditanstalt für Wiederaufbau) • United States Agency for International Development (USAID)

funding sources include national resources (involving central, state, or local governments and their agencies) and resources from international organizations that direct their funding either through government entities or directly to private sector projects.

According to the Climate Policy Initiative, **in 2021/2022 public actors provided nearly 60% of the total climate finance**, committing an annual average of USD 640 billion[69]. Out of all public sources of climate finance national DFIs were the main contributor, followed by state-owned enterprises and governments (Figure 8).

In the same period tracked adaptation finance was dominated (98%) by public actors with some fragmented flows from the private sector. Although adaptation finance grew by 28% from the 2019/2020 period reaching an all-time high of USD 63 billion, it still fell short of the estimated needs for developing countries of USD 212 billion/year by 2030[76].

Table 12 shows a list of the public sources of climate finance that have funded projects in Albania.

69. Buchner, B., Naran, B., Padmanabhi, R., Stout, S., Strinati, C., Wignarajah, D., Miao, G., Connolly, J., & Marini, N. (2023). Global Landscape of Climate Finance 2023.

Multilateral funds from the UNFCCC Climate Finance Mechanism

Multilateral funds under the UNFCCC Climate Finance Mechanism play an increasingly important role in supporting Albania's efforts to adapt to climate change and pursue low-emission development. As a non-Annex I Party to the UNFCCC, Albania is eligible to access financial resources from key multilateral climate funds, including the Green Climate Fund (GCF), the Global Environment Facility (GEF), and the Adaptation Fund. These funds have been instrumental in financing capacity-building, institutional strengthening, and the implementation of climate-resilient infrastructure projects across the country. For instance, the GCF-funded project "ALBAdapt – Climate Services for a Resilient Albania", approved in 2024 with a contribution of USD 24.8 million, aims to establish a national climate services framework and strengthen the country's meteorological and hydrological systems in alignment with international standards[70]. The engagement with these multilateral mechanisms reflects Albania's commitment to fulfilling its climate obligations under the Paris Agreement[71] and enhancing its readiness to absorb and effectively utilize climate finance[77,78].

Multilateral Development Banks (MDBs) and other multilaterals

This group comprises financial institutions established by multiple countries with the mandate to provide financial support and technical assistance for development projects, particularly in developing and emerging economies. Multilateral Development Banks (MDBs) operate on a global scale to promote inclusive and sustainable development by financing initiatives in areas such as infrastructure, environmental protection, public services, and climate resilience. Their instruments include concessional and non-concessional loans, grants, guarantees, and technical advisory services, which are extended to governments, subnational entities, and the private sector.

In the context of global climate finance, MDBs are key actors in mobilizing and delivering resources to support both mitigation and adaptation efforts. During the 2021/2022 period, multilateral development finance institutions (DFIs) contributed USD 93 billion to climate finance globally representing approximately 15% of total public climate finance commitments and marking a significant 36% increase compared to USD 68 billion in 2019/2020[72].

This upward trend illustrates the growing role of MDBs in climate action, amidst ongoing discussions to enhance their capital adequacy frameworks and lending capacity, as outlined in the 2023 Independent Review. These proposed reforms—alongside global calls for a systemic restructuring of international financial institutions such as the IMF and MDBs—aim to optimize their capacity to support countries in navigating the climate crisis.Nevertheless, the allocation of MDB financing remains uneven. While around 40% of MDB climate finance is directed to high-income countries, Least Developed Countries (LDCs) received only 14% (USD 13 billion), with a significant share provided in the form of debt instruments. This imbalance highlights the need for more equitable and concessional financing modalities to ensure that the most vulnerable countries are not further burdened[73].

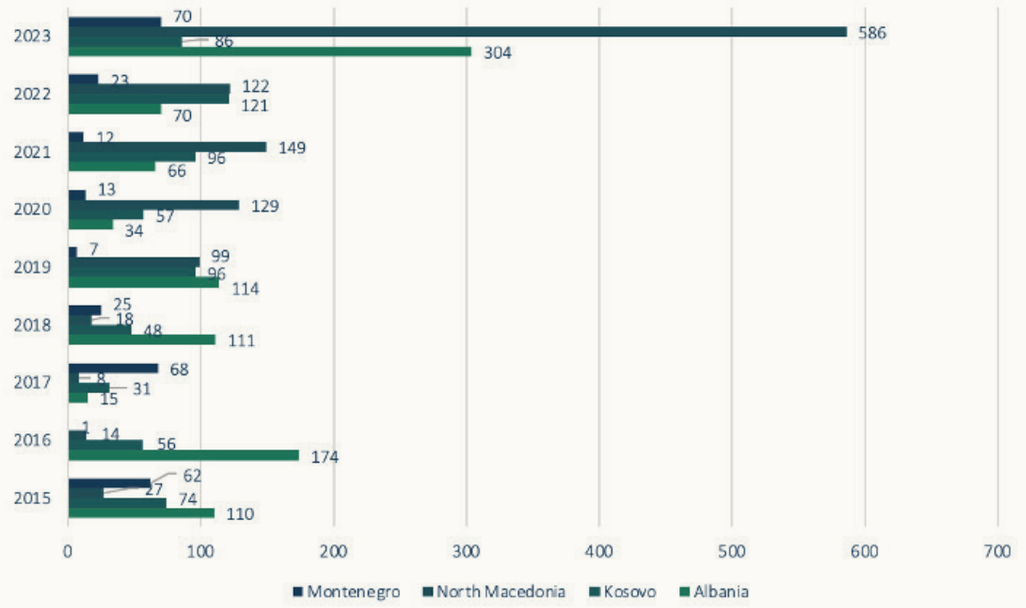
70. UNFCCC. (2023). Biennial Assessment and Overview of Climate Finance Flows. https://unfccc.int/topics/climate-finance/resources/biennial-assessment-and-overview-of-climate-finance-flows

71. GCF. (2024). SAP041 ALBAdapt – Climate Services for a Resilient Albania. https://www.greenclimate.fund/project/sap041

72. Buchner, B., Naran, B., Padmanabhi, R., Stout, S., Strinati, C., Wignarajah, D., Miao, G., Connolly, J., & Marini, N. (2023). Global Landscape of Climate Finance 2023.

73. Connolly, J., Richmond, M., Wallock, W., & Abraham, S. (2024). Tracking and Mobilizing Private Sector Climate Adaptation Finance. https://www.climatepolicyinitiative.org/wp-content/uploads/2024/09/Tracking-and-Mobilizing-Private-Sector-Climate-Adaptation-Finance-2024.pdf

Figure 11. Climate finance flows to Western Balkans from the MDBs, period 2015-2023.



Source: Own elaboration based on the Joint MDB Climate Finance Report 2023.

In Albania, MDBs—such as the European Bank for Reconstruction and Development (EBRD), the European Investment Bank (EIB), and the World Bank Group—have played an instrumental role in supporting national development and the country's climate transition. These institutions have financed key infrastructure projects in energy, water management, and sustainable transport, while also providing policy support to align Albania's financial and regulatory frameworks with European Union standards. Notably, the EBRD has been active in promoting green energy investments and supporting the private sector's capacity to integrate climate risk into business operations.

Albania's access to MDB climate finance is closely tied to its EU accession trajectory, which has facilitated eligibility for a range of blended finance instruments and technical assistance packages. As Albania works to strengthen its climate finance readiness, enhancing coordination mechanisms with MDBs, increasing absorptive capacity at the institutional level, and ensuring alignment with EU sustainable finance policies will be crucial to fully leveraging these resources for transformative climate action.

Bilateral Development Finance Institutions and other bilateral sources

Bilateral Development Finance Institutions (DFIs) and other bilateral sources constitute a vital channel of climate finance for Albania, complementing multilateral efforts and often aligning with the country's European integration objectives. Institutions such as the French Development Agency (AFD), the German

Development Bank (KfW), and the Italian Development Cooperation have provided targeted financial and technical support for climate-related initiatives in sectors such as renewable energy, water resource management, and sustainable urban development. These bilateral partners frequently offer concessional loans, grants, and capacity-building assistance, often in coordination with EU-funded programmes. For example, KfW has supported the rehabilitation of hydropower infrastructure and grid modernization, contributing both to Albania's energy transition and to enhanced climate resilience. Moreover, bilateral finance has played an important role in strengthening Albania's institutional readiness for climate action, particularly in areas such as environmental governance, data systems, and project preparation[74]. The strategic alignment of bilateral climate finance with national development priorities and EU accession benchmarks underscores its significance as a driver of Albania's low-carbon and climate-resilient transformation[75,76].

Private sources

In addition to the international public sources of climate finance outlined in the previous section, this subsection highlights the principal sources of private climate finance—both international and domestic—that contribute to the financing of climate-related initiatives in Albania.

According to the Global Landscape of Climate Finance 2024, private sector actors accounted for 49% of total climate finance globally, providing an annual average of USD 625 billion during the 2021/2022 period—up significantly from USD 318 billion in 2019/2020[77]. Of this increase, approximately USD 120 billion can be attributed to improved data availability in the buildings, infrastructure, and agriculture, forestry and land use (AFOLU) sectors. The remaining USD 187 billion stems from increased financial flows to the energy and transport sectors. While most of this financing is concentrated in high-income and emerging economies, it highlights the growing relevance of private investment in global climate action.

In Albania, private sector engagement in climate finance remains limited but is gradually evolving. The financial landscape is predominantly bank-centric, with relatively shallow capital markets and modest participation by institutional investors. Nonetheless, certain segments—particularly renewable energy and energy efficiency—have attracted growing interest from international and regional private investors, including commercial banks, private equity firms, and infrastructure funds. Projects such as solar and wind farms have been co-financed through public-private partnerships and blended finance structures, often involving multilateral institutions such as the EBRD and the EIB, which play a catalytic role in de-risking investments and mobilizing private capital[78].

Corporations are another important source of private climate finance. Globally, corporate actors provided USD 192 billion in 2021/2022, representing 31% of all private flows. The bulk of these investments—91%—were directed toward renewable energy and low-carbon transport, with an estimated 25% allocated to energy-efficient

74. OECD. (2023). Climate Finance Provided and Mobilised by Developed Countries in 2013-2021. https://www.oecd.org/en/publications/2023/11/climate-finance-provided-and-mobilised-by-developed-countries-in-2013-2021_517fec8e.html
75. European Commission. (2023). COMMISSION STAFF WORKING DOCUMENT Albania 2023 Report. https://enlargement.ec.europa.eu/system/files/2023-11/SWD_2023_690 Albania report.pdf
76. OECD. (2023). Climate Finance Provided and Mobilised by Developed Countries in 2013-2021. https://www.oecd.org/en/publications/2023/11/climate-finance-provided-and-mobilised-by-developed-countries-in-2013-2021_517fec8e.html
77. Buchner, B., Naran, B., Padmanabhi, R., Stout, S., Strinati, C., Wignarajah, D., Miao, G., Connolly, J., & Marini, N. (2023). Global Landscape of Climate Finance 2023.
78. European Commission. (2023). Albania 2023 Report. https://enlargement.ec.europa.eu/system/files/2023-11/SWD_2023_690 Albania report.pdf

Table 13. Private sources of financing in Albania, summary table.

Commercial banks	• American Bank of Investment (ABI) • Bankës Kombëtare Tregtare (BKT) • Credins Bank (Credins) • First Investment Bank (FI Bank) • Intesa Sanpaolo Bank (ISP) • OTP Bank Albania (OTP) • Procredit Bank (PCB) • Raiffeisen Bank (RZB) • Tirana Bank (TB) • Union Bank (Union) • United Bank of Albania (UBA)
Microfinance Institutions and Non-Bank Financial Institutions (NBFIs)	• Crimson Finance Fund Albania • FED Invest • Fondi Besa (Besa Fund) • IUTE Credit Albania • NOA • Raiffeisen Leasing sh.a.
Private Equity and Venture Capital	• Albanian Reconstruction Equity Fund (AREF) • Albanian American Enterprise Fund (AAEF)

buildings and resilient infrastructure[84]. In Albania, while corporate-led climate investments are still nascent, a number of domestic companies in the construction, tourism, and energy sectors are beginning to incorporate sustainability considerations into their operations. However, there remains a considerable need to enhance the enabling environment—through regulatory incentives, technical assistance, and access to green finance instruments—to foster greater private sector involvement in climate mitigation and adaptation. The private sector encompasses a very diverse group of non-governmental actors, as shown in table 13.

Commercial banks

Commercial banks in Albania represent an emerging, though still underutilized, source of climate finance. The Albanian banking sector is dominated by a small number of institutions, with a traditionally conservative approach to lending and limited exposure to green finance instruments. However, growing awareness of climate-related financial risks and the country's alignment with European Union sustainable finance policies are gradually catalyzing change. Some commercial banks—such as ProCredit Bank Albania[79]—have begun to offer green credit lines and energy-

79. Bank of Albania. (2023). Green Strategy 2023–2025: Roadmap for Climate Risk Management in the Financial Sector.

efficiency loan products, often in partnership with international financial institutions like the European Bank for Reconstruction and Development (EBRD) or the European Investment Bank (EIB).

These collaborations are typically supported through technical assistance and de-risking instruments, such as guarantees or concessional co-financing, to incentivize investment in sectors such as renewable energy, energy-efficient buildings, and sustainable agriculture. Despite these initial efforts, the green finance portfolio across Albania's commercial banking sector remains limited, due in part to a lack of regulatory incentives, low awareness among clients, and the absence of standardized green lending criteria. Strengthening the regulatory framework, integrating climate risk into financial supervision[87], and promoting the development of green financial products will be essential to scale up the role of commercial banks in financing Albania's climate transition[86,80].

Microfinance Institutions and Non-Bank Financial Institutions (NBFIs)

Microfinance Institutions (MFIs) and Non-Bank Financial Institutions (NBFIs) in Albania play a modest but increasingly relevant role in expanding access to climate finance, particularly among underserved populations such as smallholder farmers, rural entrepreneurs, and micro and small enterprises (MSEs). These institutions are well-positioned to support bottom-up climate action by providing tailored financial products that can fund climate-resilient agriculture, energy-efficient technologies, and small-scale renewable energy solutions. Several Albanian MFIs, such as Fondi BESA and NOA, have begun integrating environmental sustainability into their lending practices, supported in some cases by donor-funded technical assistance programs or credit lines from international partners.

NBFIs—including leasing companies, factoring services, and consumer credit institutions—are also gradually exploring green financing opportunities, particularly in energy-efficient appliances, electric mobility, and sustainable construction. However, the scale of green finance through MFIs and NBFIs remains limited due to structural challenges such as lack of access to affordable capital, limited capacity to assess climate-related investments, and the absence of dedicated green financial frameworks or taxonomies.

To fully leverage the potential of MFIs and NBFIs in climate finance, it will be essential to strengthen regulatory support, facilitate access to blended finance instruments, and enhance institutional capacity for climate risk assessment and green product development. These institutions can play a strategic role in democratizing access to climate finance and supporting inclusive, locally driven adaptation and mitigation efforts across Albania[81].

Private Equity and Venture Capital

Private equity (PE) and venture capital (VC) are increasingly recognized as critical instruments for mobilizing private capital toward climate-related innovation and entrepreneurship in Albania. Although the PE/VC ecosystem in the country remains relatively underdeveloped, it offers important entry points for financing green growth, particularly in emerging sectors such as renewable energy, energy efficiency, sustainable construction, and climate-smart agriculture. According to the European Investment Fund, the Western Balkans region accounted for less than 0.5% of total European private equity and venture

80. EBRD. (2023). EBRD Green Economy Transition Approach in Albania.
81. UNDP. (2024). Albania Development Finance Assessment.

capital flows in 2022, reflecting the nascent state of the market[82].

Notable institutional actors in Albania include the Albanian Reconstruction Equity Fund (AREF), which supports private sector development through equity investments in growth-oriented enterprises, and the Albanian American Enterprise Fund (AAEF), established with U.S. government support to promote sustainable private sector growth. While these funds are not explicitly climate-focused, they present significant potential for integration of environmental, social, and governance (ESG) criteria and climate investment priorities. In addition, international blended finance vehicles such as the Green for Growth Fund (GGF) and the Western Balkans Investment Framework (WBIF) have leveraged concessional capital to attract private co-investment in Albania's renewable energy and energy efficiency sectors.
Other Instruments

Albania has access to a range of financial and fiscal instruments to support climate change adaptation, each offering specific advantages for mobilizing resources and addressing the country's climate vulnerabilities.

- **Climate Bonds and Green Finance:** Climate bonds are targeted financial instruments designed to fund environmental and climate-related projects, while green finance more broadly encompasses investments that promote environmental sustainability. Although Albania has yet to issue a sovereign green bond, the global green bond market—valued at USD 2 trillion in 2022—presents a promising opportunity for financing sustainable infrastructure and ecosystem protection. Albania could leverage its partnerships with multilateral institutions, such as the European Investment Bank (EIB), to build the necessary regulatory frameworks and market readiness for green bond issuance in the future[83,84].

- **Debt-for-Nature Swaps:** Debt-for-nature swaps offer dual benefits by simultaneously reducing public debt and channeling funds toward environmental conservation. While Albania has not yet implemented such a mechanism, successful cases in other countries demonstrate their effectiveness in supporting biodiversity while improving fiscal sustainability. Given Albania's rich natural capital—such as the Vjosa River, one of Europe's last wild rivers—this instrument holds significant potential for financing nature-based solutions and enhancing climate resilience[85].

- **Blended Finance:** Blended finance combines public and private resources to de-risk investments and attract private capital toward climate resilience projects. Globally, this mechanism has mobilized over USD 160 billion, particularly in climate-vulnerable regions. In Albania, efforts such as the 2025 cooperation agreement between the Bank of Albania and the EIB aim to strengthen the financial system's climate resilience by integrating climate risk management into financial supervision and aligning with EU green finance standards[90,91].

- **Fiscal Instruments:** Fiscal tools such as carbon taxes, environmental levies, and subsidies for renewable energy play an essential role in tackling climate challenges. In 2022, Albania introduced a carbon tax as part of its

82. European Investment Fund (EIF). (2025). EIF for Venture Capital & Private Equity funds. https://www.eif.org/EIF_for/venture_capital_equity_funds/index.htm
83. Bank of Albania. (2023). Green Strategy 2023–2025: Roadmap for Climate Risk Management in the Financial Sector.
84. European Investment Bank (EIB). (2022). 2022-2023 EIB GLOBAL REPORT THE IMPACT. https://www.eib.org/attachments/lucalli/20230033_eib_global_report_the_impact_en.pdf
85. Banque de France. (2024). Climate economics: from the veil of uncertainty to three convictions for action. https://www.banque-france.fr/en/governors-interventions/climate-economics-veil-uncertainty-three-convictions-action

alignment with EU environmental policy. This measure not only discourages greenhouse gas emissions but also generates fiscal space to support mitigation and adaptation programs[86].

- **Public-Private Partnerships (PPPs):** PPPs are a key mechanism for mobilizing private sector investment in climate-related infrastructure. Albania has used PPPs to advance renewable energy and infrastructure resilience projects. A notable example is the 2025 trilateral agreement between Italy, Albania, and the United Arab Emirates to develop large-scale renewable energy infrastructure in Albania. Under this initiative, energy generated from solar and wind projects will be partially exported to Italy via an undersea cable, representing a EUR 1 billion investment in regional energy security and climate[87]. Although PPPs are not financial instruments per se, they serve as cross-cutting mechanisms that can be applied across various financing sources and sectors.

- **Catastrophe Bonds:** Catastrophe bonds (Cat Bonds) are risk transfer instruments that provide governments with rapid financial resources following extreme natural disasters. Although Albania has not yet issued Cat Bonds, the country's exposure to earthquakes—such as the 2019 event that caused damages equivalent to 7.5% of GDP—and frequent flooding highlight their potential relevance. Cat Bonds transfer disaster risk to capital markets: if a predefined event occurs, funds are disbursed to support recovery efforts. Instruments like the World Bank's Capital-at-Risk Notes have been successfully used in other regions and could form part of Albania's future disaster risk financing strategy, especially as the country aligns with EU resilience standards.

Table 14 below presents the entities that have financed or have the potential to finance projects across the sectors analyzed. Green indicates that the entity has directly financed projects in the sector; yellow denotes partial or indirect support; and dark green signifies that, to date, no financing has been identified in that sector by the institution.

86. Tax Foundation Europe. (2024). Carbon Taxes in Europe, 2024. https://taxfoundation.org/data/all/eu/carbon-taxes-europe-2024/
87. Associates Press. (2025). Italy, Albania and UAE ink clean energy cooperation deal. https://apnews.com/article/italy-albania-uae-energy-cop28-86289dbc2d029c684923efa656fd04a2

Table 14. Entities that have financed or have the potential to finance projects across the sectors analyzed.

Potential Sources of Project Financing in Albania		Entity	Sector					
			Agriculture and Forestry	Tourism	Urban	Transport	Energy	Cross-sectoral
Private Sources	Multilateral funds from the UNFCCC Climate Finance Mechanism	Adaptation Fund (AF)						
		Global Environment Facility (GEF)						■
		Green Climate Fund (GCF)						
		Special Climate Change Fund (SCCF)				■		
	Multilateral Development Banks (MDBs) and other multilateral agencies	European Bank for Reconstruction and Development (EBRD)						
		European Investment Bank (EIB)						
		Food and Agriculture Organization (FAO)		■	■	■	■	■
		United Nations Development Programme (UNDP)						
		United Nations Environment Programme (UNEP)						
		World Bank Group (WBG)						
	Bilateral Development Finance Institutions and other bilateral sources	European Union (EU)						
		French Development Agency (AFD)		■				
		German Agency for International Cooperation (GIZ)						
		Italian Development Cooperation				■		
		International Climate Initiative (IKI)						
		Japan International Cooperation Agency (JICA)		■				
		KfW (Kreditanstalt für Wiederaufbau)		■				
		United States Agency for International Development (USAID)		■		■		
		United Kingdom Caribbean Infrastructure Partnership Fund (UKCIF)	■					

Potential Sources of Project Financing in Albania		Entity	Sector					
			Agriculture and Forestry	Tourism	Urban	Transport	Energy	Cross-sectoral
Public Sources	Commercial banks	American Bank of Investment (ABI)						
		Bankës Kombëtare Tregtare (BKT)						
		Credins Bank (Credins)						
		First Investment Bank (FI Bank)						
		Intesa Sanpaolo Bank (ISP)						
		OTP Bank Albania (OTP)						
		Procredit Bank (PCB)						
		Raiffeisen Bank (RZB)						
		Tirana Bank (TB)						
		Union Bank (Union)						
		United Bank of Albania (UBA)						
	Microfinance Institutions and Non-Bank Financial Institutions (NBFIs)	Crimson Finance Fund Albania						
		FED Invest						
		Fondi Besa (Besa Fund)						
		IUTE Credit Albania						
		NOA						
		Raiffeisen Leasing sh.a.						
	Private Equity and Venture Capital	Albanian Reconstruction Equity Fund (AREF)						
		Albanian American Enterprise Fund (AAEF)						

4.8 Monitoring and Evaluation

As part of the Implementation Plan for prioritized and costed adaptation actions, developing a robust Monitoring and Evaluation (M&E) framework is crucial, which is why it is essential to establish a systematic process for tracking progress and periodically assessing the effectiveness of implemented actions. A well-structured M&E system facilitates the identification of implementation gaps, supports the timely adjustment of the proposed interventions, and ensures the efficient and effective use of resources. This requires the definition of specific indicators to measure both the progress and outcomes of adaptation measures across relevant sectors. Moreover, it is critical to ensure the availability of reliable, up-to-date data to support monitoring efforts, alongside conducting regular evaluations to assess the performance of interventions and their contribution to enhancing climate resilience. This M&E approach will serve as a sound basis for evidence-based decision-making and the continuous refinement of adaptation strategies in Albania.

M&E Indicators

To ensure that the indicators selected are meaningful, relevant, and effective in measuring progress toward a specific goal or objective, the M&E indicators were determined following the Specific, Measurable, Achievable, Relevant and Time-bound (SMART) criteria:

- **Specific**: Indicators must be clearly defined and focused, accurately reflecting what is intended to be measured. Indicators are tailored to each specific adaptation measure.
- **Measurable**: Indicators should yield consistent results regardless of who uses them. All indicators are expressed in quantifiable terms (e.g., numbers, percentages, or binary outcomes such as policy developed/not developed).
- **Achievable**: Data collection for the indicators should be feasible and cost-efficient. The information targeted by the indicators is designed to be easily obtainable and suitable for regular monitoring.
- **Realistic**: Indicators must be directly linked to the intended outcomes. Each indicator is aligned with the specific results of the corresponding adaptation measure.
- **Time-Bound**: Indicators should be associated with a defined timeframe, including the frequency of data collection. Indicators will be monitored annually until the 8-year update of the NAP.

Additionally, aside from the SMART criteria, the indicators will also consider social and gender issues. For the appropriate follow up of the adaptation measures, each responsible entity will carry out **annual** (as a minimum) reviews of the status of the indicators and will prepare a performance report for each review. As a recommendation, a committee in charge of monitoring M&E indicators could be established. In this way, there will be regular information on the degree of progress and the distance to the targets set.

Table 15 below shows the indicators for the different groups of adaptation measures.

Table 15. Different groups of adaptation measures and general indicators.

Type of action	Description	
Soft approaches	Strategies that use non-structural tools to address climate change-related problems, such as creating laws and regulations, establishing governance frameworks, and raising public awareness.	• **Community Engagement:** Assess the number of community-led initiatives emerging from governance frameworks. • **Capacity Building Outcomes:** Evaluate the number of workshops conducted and the percentage of participants who implement learned practices. • **Public Awareness:** Monitor the dissemination of information to the public through outreach activities and education campaigns, assessing the reach and effectiveness of communication strategies. • **Stakeholder Engagement:** Assess the level of involvement and collaboration among stakeholders in adaptation activities, indicating the effectiveness of capacity-building efforts in fostering partnerships. • **Best Practices Identification:** Track the identification and adoption of best practices in climate change adaptation, indicating the transfer of knowledge and successful implementation of adaptive measures. • **Access and Availability:** Measure the increase in the availability of financing options for adaptation projects. • **Resource Mobilization:** Account the amount of funds mobilized for climate adaptation activities. Assess the diversity of funding sources and mechanisms utilized. • **Gender Participation:** Measure the percentage of women and marginalized groups participating in policy and governance decision-making processes. • **Equitable Access to Resources:** Assess the extent to which different social groups, including women and persons with disabilities, can access financial and technical support for adaptation. • **Social Inclusion in Awareness Campaigns:** Monitor whether communication strategies effectively reach diverse populations, including vulnerable groups.
Grey (Technical and Structural approaches)	Construction of physical infrastructure and use of technologies to mitigate climate change effects, such as early warning systems, cooling systems, retaining walls, and dams.	• **Disaster Response Time:** Monitor the effectiveness of early warning systems by tracking response times during extreme events. • **Cost-Benefit Analysis:** Assess the cost-effectiveness of structural interventions in reducing economic losses during climate hazards. • **User Satisfaction:** Survey the satisfaction of users or beneficiaries of the newly constructed infrastructure. • **Infrastructure Quality and Performance:** Compliance with climate resilience design standards. Structural integrity during climate-related events.
Green (Nature-Based and Ecosystem-Based approaches)	Focus on protecting, conserving, and sustainably managing ecosystems to address social, economic, and environmental challenges while promoting resilience and biodiversity.	• **Carbon Sequestration**: Monitor the amount of carbon absorbed by reforestation or restoration initiatives. • **Environmental Quality Improvement:** Measure changes in areas where nature-based interventions, such as green corridors, have been implemented. • **Species Recovery:** Track the recovery of key species or biodiversity indices in restored ecosystems. • **Sustainability Practices:** Assess the percentage of local communities adopting nature-based solutions as part of their livelihood strategies.

An example of possible indicators for the proposed adaptation measures include:

- Number of geological studies and define bio-engineering measures implemented along roads to combat erosion, land degradations and landslides, or damage caused by extreme temperatures in key vulnerable areas.

- Total area (Km^2) of rehabilitated and reforested dunes and embankments and percentage increase in green cover.

- Number of implemented sustainable urban drainage systems.

- Number of climate risk and vulnerability assessments conducted for climate resilient businesses.

- Amount of investment allocated to climate-resilient data systems (USD/year).

- Number of air conditioning technologies installed in domestic and non-domestic buildings in extreme heat-prone regions.

- Number of stakeholder engagement sessions conducted with transportation authorities, local communities, and advocacy groups to ensure inclusive transport planning.

- Percentage of key transport infrastructure upgraded to withstand flooding, erosion, and landslides.
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Indicator proposals for each adaptation measure are included in the Fact Sheets in Annex I through VI and in the table below:

Table 16. Proposed indicators for the adaptation measures.

№	Sector	Adaptation Measure	Proposed indicators
1	Cross-sectoral	**Strengthening Regional Resilience: Supporting the Western Balkans Adaptation Roadmap**	1.Completion and official adoption of the Western Balkans Climate Adaptation Innovative Roadmap. 2.Number of regional consultations, workshops, or meetings held to develop and refine the Roadmap.
2	Cross-sectoral	**Optimizing Climate Coordination: Strengthening the IMWGCC Framework**	1. Number of municipalities with operational Steering Groups that meet regularly and report on NAP and Local Action Plan progress. 2. Percentage of Climate Change Adaptation Technical Working Group (TWG) and Municipal Steering Group members trained in climate adaptation planning and implementation. 3. Number of climate adaptation policies or actions recommended by the TWG and adopted at the municipal level.
3	Cross-sectoral	**Enhancing Capacities for Adaptation: Support for the Climate Change Technical Group and create and capacitate a Steering Group**	1. Number of training sessions conducted for the Climate Change Adaptation Technical Working Group. 2. Percentage of municipalities with operational Steering Groups in place. 3. Number of Steering Group members trained in adaptation planning and reporting.
4	Cross-sectoral	**Enhancing climate resilience through improved data systems**	1. Existence of an operational climate information platform (new or upgraded) providing accessible data and services. 2. Number of technical staff trained in climate data collection, processing, and analysis. 3. Percentage of vulnerable areas covered by real-time monitoring and early warning systems.
5	Cross-sectoral	**Nature-based solutions and Biodiversity Net Gain Developer Schemes**	1. Increase in percentage of species richness and abundance in restored green corridors and protected areas. 2. Number of kilometers of green corridors established or restored with native vegetation and wildlife-friendly infrastructure. 3. Number of recreational infrastructure elements developed or improved in restored protected areas. 4. Number of new development projects applying biodiversity net gain (BNG) principles through offset or restoration requirements. 5. Number of jobs created through the implementation of nature-based solutions and habitat restoration initiatives. 6. Number of policies, plans, or local development regulations that integrate nature-based solutions and biodiversity net gain principles.
6	Cross-sectoral	**Fostering Climate Resilience Awareness Raising and Training for Adaptation and Mitigation**	1. Number of training modules developed and delivered to public institutions and essential services. 2. Number of awareness-raising events conducted in climate-vulnerable communities. 3. Number of business-oriented workshops conducted on nature-based solutions and climate financing. 4. Number of municipalities conducted communication activities on ecosystem vulnerability.
7	Cross-sectoral	**Innovative Climate Finance Mechanisms: Piloting Sustainable Financing Strategies**	1. Climate finance strategy document completed and officially validated, incorporating assessed instruments relevant to national and municipal levels. 2. Number of municipalities participating in pilot implementation of climate finance mechanisms.

№	Sector	Adaptation Measure	Proposed indicators
8	Cross-sectoral	**Piloting risk management Assessments for Climate-Resilient Businesses**	1. Number of private companies that completed climate risk and vulnerability assessments. 2. Number of practical tools and guidance materials developed and delivered for climate risk integration. 3. Percentage of participating businesses implementing risk mitigation measures based on their assessments. 4. Number of sectors covered by pilot risk management assessments. 5. Completion of a summary report outlining key lessons learned, challenges, and recommendations (yes/no).
9	Cross-sectoral	**Promoting Gender-Sensitive Climate Adaptation: Training Stakeholders and Developing Inclusive Tools**	1. Number of gender-sensitive training sessions conducted at national and municipal levels. 2. Number of gender-responsive tools and materials developed (e.g., checklists, guidelines, case studies). 3. Number of stakeholders who received or accessed gender-responsive materials. 4. Percentage of training events that achieved gender-balanced participation (at least 40% women). 5. Number of women, youth, and marginalized individuals who actively participated in at least one climate adaptation training session.
10	Cross-sectoral	**Educating Communities: Adaptation and disaster awareness-raising**	1. Number of schools having received educational materials (e.g. guides, posters, actiivty books) for climate change adaptation and nature-based solutions. 2. Number of schools integrating climate change and adaptation topics into their curricula or extracurricular activities. 3. Number of community awareness events held on climate adaptation and disaster resilience.
11	Agriculture	**Empowering farmers: financial support for climate-resilient infrastructure**	1. Total amount of financial support allocated to farmers for climate-resilient infrastructure investments. 2. Total area (in hectares) covered by hail protection systems installed with financial support. 3. Total surface area (in m^2) of greenhouses upgraded or constructed with climate-resilient features through the financing scheme. 4. Number of farms implementing shelterbelt systems with financial support.
12	Agriculture	**Safeguarding farmers: Compensation and assistance programs for disaster recovery**	1. Total amount of funding allocated through disaster compensation and emergency assistance schemes. 2. Percentage of targeted farming communities receiving communication materials on disaster compensation mechanisms.
13	Agriculture	**Action Plan for Invasive Species Under Changing Climate Conditions**	1. Validated and phased implementation plan for invasive species management developed, incorporating climate risk assessments and strategic targets (yes/no). 2. Existence of standardized and operational monitoring system for climate-sensitive invasive species (yes/no).

№	Sector	Adaptation Measure	Proposed indicators
14	Agriculture	**Strengthening Flood Protection: Riverbank Restoration and Floodplain Expansion Across Key Albanian Rivers**	1. Number of kilometers of riverbanks and flood protection embankments restored or repaired in priority river basins. 2. Number of flood-prone areas mapped and prioritized through hydrological modeling and flood risk assessments. 3. Number of restored river segments using nature-based solutions (e.g., vegetated embankments, riparian buffers) for erosion and flood control. 4. Number of operational early warning systems and flood monitoring stations installed in vulnerable river basins. 5. Number of communities reached through flood risk awareness campaigns and community engagement activities. 6. Number of municipalities with updated flood evacuation plans and community-based flood preparedness strategies.
15	Agriculture	**Implementing Habitat Creation and Nature-Based Solutions to Combat Soil Erosion**	1. Number of erosion-prone areas identified and mapped using geospatial and field-based assessments. 2. Number of hectares restored with vegetative buffers and natural erosion barriers using native plant species. 3. Number of hectares under agroforestry or regenerative land management systems established in erosion-prone agricultural areas. 4. Number of slope stabilization interventions implemented using soil bioengineering and green infrastructure techniques. 5. Percentage reduction in soil erosion or sedimentation rates in treated zones. 6. Number of community members (e.g., farmers, indigenous groups) trained or engaged in reforestation and soil conservation initiatives. 7. Number of local adaptation plans or land-use plans integrating nature-based erosion control measures.
16	Agriculture	**Enhancing IGEO's (Institute of Geosciences) Capacity for Coastal Monitoring and Data Provision on Environmental Changes and risks**	1. Existence of a completed and formally validated capacity needs assessment report for IGEO (Yes/No). 2. Percentage of progress in establishing an operational coastal and environmental monitoring system at IGEO, including infrastructure upgrades, standardized protocols, and staff training (%).
17	Agriculture	**Expanding and Modernizing Irrigation Systems for Enhanced Agricultural Resilience**	1. Number of new irrigation systems constructed and existing irrigation systems rehabilitated. 2. Total irrigation area (ha) expanded (target: from 230,000 to 360,000ha). 3. Percentage of irrigation systems under regular monitoring and maintenance schedules (%)
18	Agriculture	**Sustainable Water Security through Rainwater Harvesting Infrastructure**	1.Number of critical water reserves and damaged dams restored in line with national targets (target: 230 sites). 2. Total storage capacity (m^3) restored or created through water reserve rehabilitation and rainwater harvesting infrastructure. 3. Percentage of rainwater harvesting and storage systems under active maintenance plans. 4. Percentage of users (households, farmers, institutions) in intervention areas reporting adoption of water conservation practices.

№	Sector	Adaptation Measure	Proposed indicators
19	Forestry	**Enhancing Forestry Efficiency through EU Regulatory Compliance**	1. Number of national forestry policies, strategies, or legislative instruments revised to align with EU regulations. 2. Percentage of managed forest areas certified under recognized sustainable forest management schemes (e.g., FSC, PEFC). 3. Number of forestry professionals trained in EU-aligned sustainable forest management practices. 4. Number of forest monitoring systems established or upgraded to track compliance with EU forestry standards. 5. Number of multi-stakeholder coordination platforms or consultations conducted to support EU-aligned forestry governance. 6. Total amount of funding or financial incentives disbursed to support sustainable forestry practices and compliance with EU regulations.
20	Forestry	**Advancing Sustainable Forestry: Afforestation Fund and Green Procurement Initiatives**	1. Formally approved governance and financing structure for the Afforestation Fund, including eligibility criteria, priority areas, and allocation mechanisms (yes/no). 2. Total amount of funding disbursed through the Afforestation Fund for pilot projects and community-based afforestation initiatives. 3. Percentage of forestry sector institutions and agencies that have received the green procurement guideline.
21	Forestry	**Revitalizing Damaged Lands: Integrating NbS and EBA with Agroforestry Practices**	1. Total area (ha) of reforested and enhanced forest ecosystems (target: 169,000ha). 2. Number of NbS and EBA measures implemented in forest degraded areas to support forest regeneration. 3. Number of NbS and bioengineering measures implemented in target areas for soil and infrastructure protection. 4. Number of training sessions conducted with local communities and forestry teams in fire prevention and rapid response strategies. 5. Number of engagement sessions conducted with local communities in forest restoration through capacity building programs, sustainable harvesting and fire prevention training.
22	Forestry	**Strengthening Forest and Pasture Protection: Investments in Human Capacity and Firefighting Resources**	1. Validated needs assessment on personnel, training, and equipment gaps for forest and pasture fire prevention and response completed (yes/no). 2. Proportion of firefighting personnel in climate-vulnerable areas trained in climate-adaptive fire prevention, detection, and response. 3. Fire prevention and response system operational, including upgraded equipment and functional early warning and monitoring systems (yes/no). 4. Number of joint simulation exercises conducted to test inter-agency wildfire response coordination.
23	Forestry	**Advancing Afforestation: Establishing Regional Nurseries for Drought-Resistant Species**	1. Number of regional forest nurseries established to support afforestation and reforestation efforts in bare and eroded forest lands affected by wildfires and logging (target: 4 nurseries). 2. Number of native and drought-resistant tree species cultivated. 3. Total area (km^2) of bare and eroded forest lands affected by wildfires and logging afforested and/or reforested.

№	Sector	Adaptation Measure	Proposed indicators
24	Forestry	**Supporting Migration of Rare and Endemic Forest Species to higher altitudes**	1. Number of forest tree species detected in higher altitudes. 2. Total area (ha) of suitable high-altitude habitats identified with appropriate climatic and soil conditions for species relocation. 3. Amount of investment allocated for establishing and managing the new high altitude areas (USD/ year). 4. Number of training sessions conducted for establishing and managing new high altitude areas.
25	Forestry	**Restoring Vital Ecosystems: Protecting and Regenerating Coastal and Riverine Green Belts and Protective Ecosystems**	1. Number of coastal sites with bio-engineering erosion control measures implemented. 2. Number of hectares of coastal green belts restored or expanded with native vegetation. 3. Number of grey infrastructure coastal protection works completed (e.g., embankments, breakwaters, sea walls). 4. Percentage of coastal protection structures integrating eco-friendly materials or nature-based components. 5. Number of watersheds with soil stabilization and erosion control measures implemented using native vegetation. 6. Number of site-specific coastal risk and hydrological assessments completed to guide intervention planning. 7. Number of monitoring sites established for tracking coastal and riverine ecosystem restoration using satellite and field-based methods
26	Forestry	**Sustainable Financing Through Payment for Ecosystem Services (PES)**	1. Existence of a national assessment report identifying key ecosystem services and their main beneficiaries at national and local levels (Yes/No). 2. Existence of an institutional and regulatory framework for PES schemes formally adopted (Yes/No). 3. Number of formal PES contracts signed between service providers and beneficiaries in pilot areas. 4. Percentage of targeted stakeholders receiving technical assistance on PES scheme participation.
27	Forestry	**Integrated Ecosystem Restoration and Resilience: Addressing Soil Erosion in Key Albanian Regions**	1. Number of bioengineering measures implemented to combat soil erosion and enhanced ecosystem resilience in degraded lands. 2. Total area (ha) of degraded land improved to combat erosion and ecosystem resilience in Përmet (target: 3,834.44 ha). 3. Total area (ha) of degraded land improved to combat erosion and ecosystem resilience in Vlora (target: 374,57 ha).
28	Forestry	**Combating Erosion and Flooding: Strategic Habitat Restoration and Reforestation in Key Albanian Regions**	1. Total area (ha) of degraded forests and pasturelands restored through reforestation and vegetation-based erosion control in Durrës and Fier (target: 1,126.8 ha) 2. Total area (ha) of green belts with native species established along the Vjosa and Seman rivers (targets: 137.8 ha in Vjosa and 55.63 ha in Seman) 3. Total area (ha) reforested in Dukat i Vjetër to reduce erosion and restore degraded land (target: 354.4 ha) 4. Number of sites where nature-based solutions (e.g., terracing, vegetative barriers, bioengineering) are implemented for erosion and flood control. 5. Percentage increase in vegetative ground cover in restored forest and pastureland areas. 6. Number of ecological monitoring sites established to track vegetation growth, soil stability, and biodiversity in restored areas. 7. Total area (ha) restored in Pishë-Poro Forest to protect against coastal erosion and biodiversity loss (target: 6,740 ha)

№	Sector	Adaptation Measure	Proposed indicators
29	Forestry	**Sustainable Landscape Management: Enhancing Water Quality and Biodiversity at Viroi Lake in Gjirokastër**	1. Total area (ha) of land restored around Viroi Lake in Gjirokastër (target: 339,85 ha). 2. Number of native tree species detected in reforested areas. 3. Total area (ha) covered by erosion control measures (vegetative buffers, terracing, and bioengineering techniques) to reduce soil erosion and prevent sedimentation in the lake. 4. Increase in water quality according to physical (temperature, turbidity, color and odor, total suspended solids), chemical (pH, dissolved oxygen, nitrates and phosphates, conductivity and total dissolved solids, heavy metals, chemical oxygen demand and biological oxygen demand) and biological (coliform bacteria, especially E. coli, macroinvertebrate diversity and algal presence) parameters and standards and indices (e.g. Water Quality Index, WQI).
30	Forestry	**Enhancing Climate Resilience in National Parks and Protected Areas**	1. Number of climate change impact assessments conducted. 2. Total area (ha) of buffer zones established around the Vjosa River National Park and other protected areas. 3. Number of habitats and species identified under Natura 2000 in the municipality of Vlora, within and beyond protected areas. 4. Area (ha) of habitats protected and number of Natura 2000 species under protection within and beyond protected areas in the municipality of Vlora.
31	Forestry	**Restoration of forest layers to protect crops in Vlora**	1. Total area (ha) of forest layers between agricultural surfaces restored (target: 345,47 ha). 2.Percentage increase in average crop yield in areas adjacent to restored forest layers. 3. Increased crop resilience according to agronomic and biophysical (yield stability, yield gap, drought or flood tolerance, pest and disease resistance), physiological and genetic (root system depth and structure, stomatal conductance, leaf temperature and resilient genotypes), environmental (soil health and organic matter, agro biodiversity and water use efficiency) indicators and composite indices and frameworks (Crop Resilience Index).
32	Tourism	**Strategic Spatial Planning for tourism: Redirecting Development from High-Risk Areas**	1. Existence of a spatial risk map identifying flood plains, surface water accumulation zones, and buffer zones of protected areas unsuitable for tourism development (Yes/No). 2. Number of spatial planning guidelines developed and adopted that define no-build zones and redirection priorities for tourism infrastructure. 3. Number of tourism development projects redirected or redesigned based on financial mechanisms supporting relocation from high-risk areas. 4. Number of enforcement actions taken to ensure compliance with zoning regulations and climate-informed land-use plans in tourism areas.
33	Tourism	**Climate-proofing tourism infrastructure: Incentive packages for climate-proofing the tourism sector infrastructure**	1. Tourism sector renovation action plan developed and formally adopted, integrating climate resilience and findings from vulnerability and risk analysis (Yes/No). 2. Climate-resilient procurement and construction standards for tourism infrastructure developed (Yes/No). 3. Total amount (USD) allocated through operational financial incentive schemes to support energy-efficient and climate-resilient renovation of tourism accommodations. 4. Number of tourism businesses receiving technical assistance to access financing and implement climate-resilient renovation measures.

№	Sector	Adaptation Measure	Proposed indicators
34	Tourism	**Strategic Planning for Coastal Resilience: Buffer Zones and Sea Gate Adaptations**	1. Number of vulnerable coastal and riverine areas identified and mapped using GIS and remote sensing tools. 2. Number of buffer zones legally designated and integrated into local or regional land-use plans. 3. Number of hectares of vegetated buffer zones established or restored with native plant species. 4. Number of sea gate feasibility assessments and engineering designs completed and approved. 5. Number of sea gates constructed and operational with established storm event protocols. 6. Number of community awareness and stakeholder engagement sessions conducted on buffer zones and flood risk management. 7. Percentage of buffer zones and sea gates under active monitoring and maintenance programs.
35	Tourism	**Protecting Vlora Bay: Preserving Posidonia Habitats and Underwater Cultural Heritage Against Climate Impacts**	1. Number of hectares of Posidonia meadows assessed, restored, or newly established through transplantation and conservation efforts. 2. Number of marine protected areas (MPAs) designated and enforced for Posidonia habitat and underwater heritage protection in Vlora Bay. 3. Number of sustainable mooring systems (e.g., eco-friendly buoys) installed to protect seagrass meadows from anchor damage. 4. Number of monitoring sites established to track the impact of climate change on underwater cultural heritage in Vlora Bay. 5. Percentage increase in awareness and participation of local communities in Posidonia and marine heritage conservation activities. 6. Number of natural beach areas designated and managed for the protection of Posidonia banquettes and promotion of sustainable tourism. 7. Volume of marine debris removed from priority areas of Vlora Bay through cleanup campaigns and plastic waste reduction programs.
36	Tourism	**Strengthening the policy and regulatory framework for Sustainable Tourism: Policy Review and Regulatory Enhancement**	1. Diagnostic review of tourism-related policies and regulations completed, identifying gaps and opportunities for integrating sustainability and climate resilience (Yes/No). 2. Number of policy recommendations or legal amendments proposed to strengthen sustainability and climate adaptation in tourism regulations. 3. Number of updated or newly adopted legal and regulatory instruments promoting sustainable and climate-resilient tourism practices.
37	Tourism	**Integrating Climate Data for Sustainable Tourism: Guidelines for resilient business management and National Reporting**	1. Standardized guidelines for climate vulnerability and environmental impact data collection in the tourism sector developed and formally adopted (Yes/No). 2. Percentage of targeted tourism stakeholders trained on data collection, analysis, and reporting practices related to climate vulnerability and environmental sustainability. 3. Number of digital platforms or databases established or upgraded to manage climate-related tourism data with links to national reporting systems.
38	Tourism	**Climate-proofing Tourism Infrastructure: Adaptive Designs for Climate Risk Mitigation**	1. Climate risk assessment completed and climate-resilient design standards incorporated into updated building codes for tourism infrastructure (Yes/No). 2. Percentage of targeted tourism developers and construction professionals trained in climate-resilient building techniques and nature-based solutions. 3. Total number of public tourism infrastructure sites constructed or retrofitted with climate-resilient design features in high-risk areas.

№	Sector	Adaptation Measure	Proposed indicators
39	Tourism	**Protecting Coastal Zones: Integrated Regulations, Planning and Management for Climate Resilience and Sustainable Development**	1. Number of Integrated Coastal Management Plans and Maritime Spatial Plans developed and approved for high-risk coastal areas. 2. Number of coastal areas mapped for flood and erosion risk using GIS and remote sensing tools. 3. Percentage of new coastal development projects complying with setback regulations and zoning laws. 4. Number of coastal monitoring stations established or upgraded to track sea-level rise, erosion rates, and storm impacts. 5. Number of public awareness and stakeholder engagement initiatives conducted to promote coastal resilience and sustainable coastal development. 6. Number of adaptive management decisions or revisions made to coastal plans or strategies based on monitoring data.
40	Tourism	**Building Climate Resilience Capacity: Training Tourism Operators in Sustainable Practices and Adaptation Strategies**	1. Number of tailored training modules developed on climate adaptation, risk reduction, and sustainable tourism practices for tourism operators. 2. Percentage of targeted tourism operators and stakeholders trained on climate-resilient and environmentally sustainable tourism practices. 3. Number of toolkits and practical guidelines developed to support integration of climate resilience and sustainability into tourism operations.
41	Tourism	**Digital Hubs for Climate-Resilient Tourism: Sharing Knowledge and Best Practices**	1. Centralized online platform for the tourism sector developed and operational, providing access to climate adaptation resources (Yes/No) 2. Number of climate adaptation resources (e.g. toolkits, training modules, policy documents) uploaded and maintained on the platform. 3. Number of tourism stakeholders reached through awareness campaigns promoting the use of the online platform.
42	Tourism	**Protecting Tourism Assets: Enforcing Regulations and Restoring Ecosystems for Sustainable Development**	1. Mechanism for regular enforcement of environmental and land-use regulations operational in tourism development zones (Yes/No). 2. Guidelines on climate-resilient and environmentally sound tourism infrastructure developed and disseminated to relevant stakeholders (Yes/No). 3. Percentage of new tourism infrastructure projects in coastal and forested areas incorporating low-impact, biodiversity-sensitive, or ecosystem-restorative design elements.
43	Urban development	**Maritime and Territorial Planning for Climate Resilience: Preparing for Rising Seas and Changing Environments**	1. Spatial vulnerability assessments completed for coastal and low-lying urban areas using climate projections and socio-economic data (yes/no). 2. Land-use planning guidelines developed incorporating sea-level rise, storm surge, and erosion risk data (yes/no). 3. Number of municipalities or coastal zones covered by an approved Climate-Resilient Territorial Development Plan.

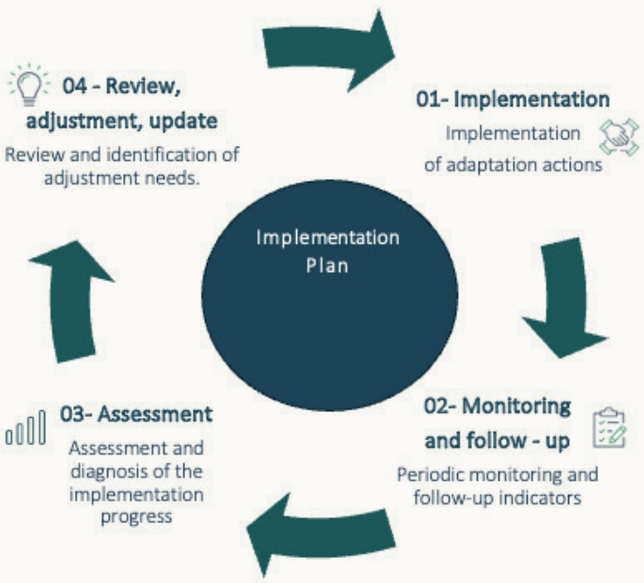
№	Sector	Adaptation Measure	Proposed indicators
44	Urban development	**Strategic Spatial Planning for Risk Reduction: Redirecting Developments and Managing Surface Water Flood Risks**	1. Number of municipalities with high-risk areas mapped using hydrological modelling and integrated land-use data. 2. Number of Surface Water Management Plans developed for municipalities with significant surface water flood risk. 3. Number of updated municipal spatial planning instruments incorporating zoning regulations or land-use restrictions in high-risk flood-prone areas. 4. Amount of funding allocated or mobilized for implementation of priority actions from Surface Water Management Plans, including nature-based solutions.
45	Urban development	**Incentive schemes to increase extreme temperature resilience of the building stock**	1. Number of building stock assessments completed identifying vulnerabilities to heat stress and poor energy performance across public and private sectors. 2. Number of financial incentive schemes designed and operationalized for passive cooling and thermal insulation measures in public and private buildings. 3. Number of public buildings offering essential services (e.g. hospitals, schools, emergency shelters) receiving financial support for the installation of passive cooling and insulation measures. 4. Number of private households or businesses receiving financial or technical support for the implementation of passive cooling solutions.
46	Urban development	**Integrating Green Spaces into Public Infrastructure Development through Green Public Procurement**	1. Number of voluntary Green Public Procurement (GPP) standards developed and adopted that include green infrastructure and nature-based solutions for public infrastructure projects. 2. Number of procurement guidelines and tender templates developed to support the integration of green space components in public infrastructure projects. 3. Number of procurement officials and technical staff trained on green public procurement standards and nature-based infrastructure integration. 4. Number of municipalities piloting the application of voluntary GPP standards in public infrastructure procurement processes.
47	Urban development	**Restoring Green Corridors: Reforestation and Urban Greening Initiatives**	1. Total area (km^2) of re-greening in Gjirokastra city. 2. Total area (km^2) of green belts with Plane and poplar trees rebuilt along the Drino and Vjosa River. 3. Length (km) of greenbelts along the Drino River. 4. Length (km) of greenbelts along the Vjosa River.
48	Urban development	**Climate Risk Assessment for Durrës, Elbasan, Fier, and Beyond: Developing a Comprehensive Vulnerability Map**	1. Number of municipalities with completed and validated GIS-based Climate Vulnerability Maps integrating multi-hazard data and socio-economic vulnerability indicators. 2. Number of participatory risk assessments conducted with local stakeholders to identify vulnerability and adaptive capacity in target municipalities. 3. Number of municipal datasets consolidated and integrated into the national climate hazard information system for vulnerability mapping.

№	Sector	Adaptation Measure	Proposed indicators
49	Urban development	**Flood event emergency plans**	1. Number of municipalities with updated and approved Flood Event Emergency Response Plans that include protocols, roles, and responsibilities. 2. Number of flood emergency simulation exercises conducted annually in target municipalities to test plan effectiveness and coordination capacity. 3. Percentage of target municipalities with essential emergency response resources (equipment, shelters, communication systems) identified and allocated in accordance with emergency plans. 4. Number of local authorities, first responders, and community leaders trained on flood emergency procedures and coordination protocols in target municipalities.
50	Urban development	**Enhancing Urban Resilience: Assessing Greenspaces and Sustainable Drainage Solutions**	1. Number of feasibility studies conducted for increasing the volume of green spaces and sustainable urban drainage systems in Vlora, Elbasan and Durrês. 2. Number of permeable pavements and sustainable urban drainage systems implemented.
51	Urban development	**Sustainable Urban Design: Conservation and Restoration of Permeable and Infiltration Areas**	1. Number of urban planning policies or regulations adopted mandating minimum percentages of permeable surfaces in new developments and major renovations. 2. Number of national or local policy frameworks updated to integrate nature-based solutions (e.g. bioswales, green roofs, rain gardens) for improved urban permeability. 3. Number of national guidelines developed and officially adopted for integrating permeable areas and infiltration measures into infrastructure development.
52	Energy	**Protecting Energy Infrastructure against strong winds: Rehabilitating Substations and Transmission Lines**	1. Number of transmission towers with wind resistant structures upgraded. 2. Number of aerodynamic conductors and dampers installed to reduce wind induced vibrations and minimize the risk of cable galloping or breakage. 3. Number of substations retrofitted with the reinforced roofs, wind barriers or secure equipment anchoring to prevent from high damage winds. 4. Number of vegetative windbreaks implemented around energy infrastructure to reduce wind speed and protecting transmission lines and substations.
53	Energy	**Enhancing Building Efficiency: Energy Performance Certificates and Resilient Standards**	1. Number of buildings issued with Energy Performance Certificates (EPCs) in accordance with the national framework. 2. Number of climate-resilient building standards developed and officially adopted, addressing energy efficiency, passive cooling, and material resilience. 3. Number of professionals (engineers, architects, builders) trained on EPC implementation and climate-resilient design standards.
54	Energy	**Exploring the Energy sector Potential: Demand-Side Management and Energy Storage Studies**	1. Completion of a national assessment report identifying electricity demand patterns and opportunities for demand-side management and storage under climate stress scenarios. 2. Number of energy storage technologies assessed for technical and economic feasibility under multiple climate-related hazard scenarios. 3. List of prioritized interventions for enhancing grid flexibility finalized, including infrastructure, regulatory, and financial mechanisms for integration of storage and demand-side measures.

№	Sector	Adaptation Measure	Proposed indicators
55	Energy	**Protecting the energy infrastructure: Monitoring Emergency and Risk Areas**	1. Percentage of critical energy infrastructure sites mapped and classified by level of exposure to climate-related hazards. 2. Number of energy infrastructure sites with an operational risk-based monitoring protocol, including early warning thresholds. 3. Centralized data system for real-time monitoring of environmental risks affecting energy infrastructure is operational and accessible to designated authorities.
56	Energy	**Enhancing Heatwave resilience through Efficient Air Conditioning Technology Deployment and Climate Refuges**	1. Number of buildings equipped with energy-efficient air conditioning systems in heat-prone municipalities. 2. Number of vulnerable households and essential service buildings retrofitted for thermal comfort. 3. Number of public climate refuges identified, mapped, and made accessible. 4. Area (in m^2) of urban public space upgraded with vegetation, water features, or shade structures.
57	Energy	**Optimizing Renewable Energy for Resilient Systems: Grid Innovation and Storage Investments**	1. Installed renewable energy capacity in climate-vulnerable areas (MW). 2. Number of smart grid systems or components deployed in priority regions. 3. Energy storage capacity added to the national grid (MWh). 4. Number of regulatory reforms adopted to enable renewable energy integration.
58	Energy	**Advancing Gender Equity in Energy: Training and Support for Women in Renewable Energy Projects**	1. Number of women trained in renewable energy technologies through targeted programs. 2. Number of women-led renewable energy projects supported with technical and/or financial assistance. 3. Percentage increase in women's employment in the renewable energy sector.
59	Energy	**Building Resilience in Hydropower: Optimized Operations and Strengthened Infrastructure**	1. Number of dam and reservoir operation protocols revised. 2. Number of hydropower facilities retrofitted with structural upgrades to dams and turbines. 3. Number of structural upgrades to dams and turbines implemented to withstand prolonged droughts and extreme weather events such as heavy rainfall. 4. Number of reservoirs applied with sustainable dredging and controlled diversions to maintain storage capacity and operational efficiency. 5. Number of risk assessments conducted for hydropower infrastructure. 6. Number of sensors and forecasting models deployed in advanced climate and hydrological monitoring systems to monitor real time variations in precipitation and water inflows.
60	Transport	**Regular Vulnerability and Risk Analysis and Definition of Resilience-Building Measures for Road Infrastructure**	1. Number of climate vulnerability and risk assessments completed for critical transport infrastructure. 2. Number of high-risk transport infrastructure sites prioritized for risk-reduction interventions. 3. Percentage of identified priority sites with completed intervention plans.
61	Transport	**Geological Studies for Sustainable Roads: Bio-Engineering Solutions to reduce Erosion and Flood risks**	1. Number of geological and geotechnical studies completed in targeted road segments. 2. Number of road segments with bio-engineering designs completed and approved. 3. Percentage reduction in landslide- or erosion-related road disruptions in treated segments.

№	Sector	Adaptation Measure	Proposed indicators
62	Transport	**Advancing Sustainable and Climate Resilient Urban Mobility: Developing and Reviewing Urban Mobility Plans**	1. Number of municipalities with climate-proofed Sustainable Urban Mobility Plans developed or revised. 2. Number of Sustainable Urban Mobility Plans incorporating vulnerability assessments and climate hazard mapping. 3. Number of municipalities implementing multiannual climate-resilient road maintenance plans. 4. Percentage of road infrastructure projects in pilot cities designed or upgraded using climate-resilient standards. 5. Number of participatory consultations conducted during Sustainable Urban Mobility Plan development and implementation.
63	Transport	**Adapting Critical Transport Infrastructure: Advanced Risk Assessment and Resilient Design Solutions**	1. Number of climate vulnerability and risk assessments conducted for critical transport infrastructure. 2. Percentage of national and sectoral transport plans incorporating climate-resilient infrastructure measures. 3. Number of updated maritime and railway regulations incorporating climate adaptation standards. 4. Number of transport facilities equipped with enhanced early warning systems and emergency response protocols. 5. Percentage reduction in disruption time for transport services during extreme weather events
64	Transport	**Integrating Nature-Based Solutions and environmental based adaptation for Transport sector resilience: Enhancing Infrastructure with Nature-Based and Ecosystem-Based Adaptation**	1. Length (km) of transport infrastructure (roads or railways) with green corridors or vegetative buffers established. 2. Number of transport infrastructure segments where bio-engineering or slope stabilization techniques have been implemented. 3. Number of riparian buffer strips or coastal wetlands restored or established to protect adjacent transport infrastructure. 4. Percentage of newly designed or rehabilitated transport infrastructure segments incorporating low-impact technologies (e.g., permeable pavements, green drainage systems). 5. Number of eco-bridges or wildlife crossings constructed or upgraded along transport corridors. 6. Percentage reduction in transport infrastructure disruptions due to climate-related hazards (e.g., flooding, erosion, landslides) in areas with NbS interventions.
65	Transport	**Climate Resilience Transport Policies: Embedding Climate Adaptation in Regulatory Frameworks**	1. Number of transport policies and regulatory frameworks revised to integrate climate adaptation. 2. Number of operational cross-sectoral coordination mechanisms established. 3, Percentage of new transport infrastructure projects subject to climate risk assessments. 4. Number of legal provisions or planning guidelines developed mandating climate adaptation in transport planning. 5. Number of inter-ministerial technical consultations and policy dialogues conducted.
66	Transport	**Innovative Partnerships for Sustainable Transport: Funding Climate-Resilient Transport Infrastructure**	1. Number of climate finance instruments designed and operationalized. 2. Volume of private capital mobilized through PPPs. 3. Number of national and regional needs assessments completed. 4. Percentage of infrastructure projects incorporating low-impact technologies. 5. Number of financial and regulatory incentive schemes implemented

Figure 12. Monitoring and update process



SSource: Own elaboration.

This M&E proposal focuses on the indicators for the adaptation measures and is framed within the development process of the NAP M&E Plan that is being developed in parallel to the current assignment. Overall, the information and knowledge provided by these indicators is a decisive input for decision-making, as well as for guaranteeing the implementation success of the NAP.

Updating and Revising the Implementation Plan

Adaptation planning and the strengthening of resilience are not static processes. Consequently, the Implementation Plan must remain a dynamic instrument—capable of addressing emerging challenges and adapting to evolving realities, including regulatory, institutional, socio-economic, and technological changes that may arise during its implementation period. This necessitates periodic updates to the document. As illustrated in Figure 10, the proposed monitoring and evaluation system will play a critical role following the Plan's implementation, providing essential feedback to guide actions and support effective execution. These mechanisms will enable the assessment of both the degree of implementation and the overall effectiveness of the Plan, ensuring its continued relevance and alignment with national priorities over time.

Table 17. Transversal monitoring indicators. Source: Own elaboration.

Indicators	Description
Implementation rate of Adaptation Measures	*Percentage of planned adaptation actions that have been fully implemented.*
Timeliness of Plan revisions	*% of planned review activities (mid-term or final update) completed within the scheduled timeline.*

4.9 Lessons Learned

The implementation of adaptation strategies in climate-vulnerable contexts frequently presents complex challenges, particularly in reconciling the differing priorities and operational scales of local and national stakeholders. This experience has reaffirmed the importance of coordinated governance structures and the value of methodological rigor in both planning and implementation stages. In this section, some of the main lessons learnt from the process are outlined, including key challenges encountered and the strategic responses developed to overcome them, with the intention of informing future adaptation planning in similar contexts.

One of the principal challenges faced was the coordination of adaptation interests across different governance levels. Local actors often prioritize context-specific, immediate interventions that respond to tangible, short-term risks, while national institutions typically focus on long-term, strategic objectives aligned with broader development and climate commitments. This divergence in priorities and temporal scales created friction in decision-making, especially during the design of monitoring and evaluation (M&E) frameworks. For instance, local stakeholders expressed the need for indicators that reflect local realities and can be easily tracked with existing resources, while national actors required data that align with reporting commitments under the UNFCCC and national development strategies. These disparities, if left unaddressed, risked undermining the legitimacy, ownership, and effectiveness of the adaptation plan.

The **availability of data** on estimated targets for each of the measures, specially for those analysed in the CBA has also been a **challenge throughout the process**. The measures to identify the missing data have included sharing templates so that national experts could provide the available information, discussion with national experts on how additional data could be retrieved, and GIS and desk review by the Consultant to be able to fill-in the missing information. These techniques have been sufficient in most case, although for some particular measures, more detailed field studies will have to be implemented to define the final scope.

To address these issues, a key strategy was the **subdivision of each adaptation measure into specific, costed activities**, guided by the previously conducted CBA and MCA. This subdivision allowed for a more granular and practical framing of adaptation interventions, bridging the gap between broad policy objectives and local implementation capacities. Each activity was clearly defined with its own expected output, timeline, and indicative cost, facilitating more precise planning and easing the integration of both local and national perspectives. By anchoring the activities to the CBA, stakeholders could better understand the rationale behind prioritization and resource allocation, enhancing transparency and acceptability.

Furthermore, the **assignment of a responsible party or institution to each adaptation action** proved to be a decisive factor for improving accountability and fostering cross-sectoral engagement. This strategy allowed for a clear distribution of roles and responsibilities, reducing overlaps and enhancing coordination among institutions. In several instances, joint responsibility was assigned to promote collaboration between national and local entities. This arrangement not only increased ownership but also enabled better follow-up of implementation and M&E processes, as each actor understood its role and had the mandate to deliver or support delivery.

A third and complementary strategy was the **adoption of SMART (specific, measurable, achievable, realistic, and time-bound)**

indicators for the monitoring and evaluation of each adaptation measure. The use of SMART indicators contributed to the design of a robust and actionable M&E framework, enabling more transparent tracking of progress and outcomes over time. These indicators were carefully selected to reflect both national reporting requirements and local relevance, ensuring that progress could be measured effectively across governance levels. Moreover, the SMART criteria facilitated the integration of M&E into existing data collection systems and institutional workflows, reducing the burden on implementing agencies.

In conclusion, the experiences gathered during this process underscore the necessity of harmonizing adaptation planning across scales through deliberate institutional design and participatory planning methods. Subdividing actions in alignment with cost-based prioritization and assigning responsible entities for implementation contributed significantly to overcoming governance challenges. Future initiatives in similar contexts are encouraged to adopt these strategies early in the process, ensuring that both the strategic vision of national planning and the practical insights of local actors are meaningfully integrated.

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Annexes

SCAN TO SEE ANNEXES

GREEN
CLIMATE
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REPUBLIKA E SHQIPËRISË
MINISTRIA E TURIZMIT DHE MJEDISIT

UNDP