

The Territorial Space of Green Transition / Transitioning from One Territorial System to Another through Nature-based Solutions / The Case of Finiq Municipality

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Abstract- *Climate change has been recognized by many, be it nations or international organizations, as an existential threat to the world. In this context, the EU has introduced the European Green Deal, with the aim of transforming the continent into a modern, climate-neutral, resource-efficient, and competitive economy. In this scenario, the goals set by the EU are: no net emissions of greenhouse gases by 2050; economic growth decoupled from resource use; no person and no place left behind. The new growth strategy of the EU was also recognized by the Western Balkan Countries (nonmembers of the EU) through the Sofia Declaration in November 2020, acknowledging the need for transformation of the region to turn sustainability and resilience challenges into opportunities and transpose elements of the European Green Deal in all interrelated priority sectors. Those sectors are represented by five main pillars: Climate, energy, mobility; Circular economy; Depollution; Sustainable agriculture and food production; and Biodiversity. Even though it is a multi-sectorial approach, it does not directly address the territorial aspect. The territory is rather seen as a common dominator of the five pillars. This resizes the question, what is the spatial domain of green transition in a given territory?*

In the Albanian context, after the territorial reform of 2014, the territory was consolidated into 61 municipalities. In the framework of the General Local Plans, each municipality categorized its territory into five main territorial systems: Urban; Nature; Agriculture; Water; and Infrastructure. Through the case of Finiq Municipality, we will further analyze the complexity of territorial systems in a given territory. For the purpose of analysis, a buffer of 1 km was applied to the territory of Finiq Municipality (Bistrica River Basin) where the predominance of a territorial system over another and the mixture of them was evaluated. After this evaluation, an operational framework was conceptualized using the most relevant documents related to climate change, from the international level to the local level, that are pertinent to the case of Finiq Municipality.

Taking into account the evidenced framework of green transition for the selected area, it is easier to propose effective nature-based solutions to be implemented in the transitional space between territorial systems. This was done by analyzing the concept of nature-based solutions, at first, and by reviewing case studies that deal with similar societal challenges as the ones identified in Finiq Municipality.

The main focus will be the area surrendering the Bistrica River, for the simple fact that it flows from the east, where we find a high predominance of the natural landscape, to the west where a predominance of human activity is more evident. Through the river, we will illustrate the unfolding of what was explained above.

Keywords:

Green Transition; Territorial Systems; Nature-based Solutions.

Introduction - Today the issue of climate change is recognized as an existential threat worldwide. As documented by the last report of the IPCC, this phenomenon in its complexity, is contributing, to the degradation of ecosystems; reduction of water and food security; increased damage to infrastructure; additional immortality; human migration and displacement; damaged livelihoods; increased mental health issues; and increased inequality (IPCC, 2022). During the last decade, the awareness levels regarding climate change have increased among the general population, where almost two-thirds of people across 50 countries view climate change as an emergency, calling for strengthened climate action (IPCC, 2022). This has also been reflected in the political sphere through several important policies such as the United Nations Framework Convention on Climate Change (UNFCCC) Paris Agreement (2015), the 2030 Agenda for Sustainable Development (2015), the Sendai Framework for Disaster Risk Reduction (SFDRR), The Convention on Biological Diversity (CBD), and so on, addressing various aspects of the problem at the global scale (IPCC, 2022).

On the European scale, the most important policy regarding climate action right now is the European Green Deal, announced in December 2019. The European Union's goal for a sustainable, carbon-neutral, and climate-resilient future is outlined in this comprehensive plan. The European Green Deal seeks to alter the EU's society and economy in order to reach net-zero emissions of greenhouse gases by 2050, while also fostering economic

development and social fairness, by not leaving anyone or any place behind (European Commission, 2023).

In this context, for states that are not part of the European Union, such as the Western Balkan Countries, the Sofia Declaration on the Green Agenda for the Western Balkans was developed in November 2020. Through it, the leaders of the Western Balkan Countries acknowledge the European Green Deal as the EU's new growth strategy toward a modern, climate-neutral, resource-efficient, and competitive economy (Regional Cooperation Council, 2023). The declaration is an important starting point for working towards the transformation of the region, by turning the sustainability and resilience challenges into opportunities. This will be done by transposing elements of the European Green Deal into the priority sectors, divided into five main pillars. The identified pillars of interest are as follows: Climate, energy, mobility; Circular economy; Depollution; Sustainable agriculture and food production; and Biodiversity (Regional Cooperation Council, 2023).

The process of transposing elements from the European Green Deal to the national level requires time. In the Albanian context, only the Law on Climate Change (Law No. 155/2020) and the Climate Change Strategy and Action Plans (NAP) (Ministry of Tourism and Environment, 2019) have been drafted. Regardless, due to unforeseen events, mainly the 2019 earthquake and the COVID-2019 pandemic, the implementation of the strategy is in its early stages (REC Albania,

2021). Hence, at the local level the work on climate change adaptation and mitigation, from an institutional perspective, has yet to start. The Law on Climate Change No. 155/2020 clearly states that the local power (municipalities) has a fundamental role in building a more sustainable and resilient future, by steering the process for the territories under their jurisdiction. Also, the NAP stresses the need to build capacities at the local level with the purpose of addressing climate change impacts in the territories under their administration (Ministry of Tourism and Environment, 2019). After three years, very few of the municipalities have shown commitment toward drafting climate action documents, and Finiq Municipality is not among them.

On the other hand, 90% of the municipalities in Albania have a territorial strategy, and Finiq Municipality is among them (AKPT, 2023). Since the territorial reform of 2014, there has been a reorganization of the local level, from 373 administrative local units (communes and municipalities) to 61 administrative local units (municipalities). As such, even the character of the territory under the administration of the local power changed from a clean cut of urban and rural to a complex of the two. During this time, all the municipalities have committed to drafting the General Local Plans for the territory under their jurisdiction, which defines their specific territorial development policies for a period of 15 years.

Since time is a crucial factor in the undergoing action against climate change, it might not be wise for municipalities to wait for the drafting and implementation of new strategies for climate change at the local level. It might be wiser to capitalize upon the General Local Plans, by using the territory as a common dominator for the five pillars of the green transition. By using the territorial systems identified in the GLP of the municipalities, coupled with the potential of Nature-based Solutions that can be implemented in a specific territorial system, in accordance with the 5 pillars of the green transition, the process of transition could be facilitated and, at the same time, rising awareness among the general public could be achieved.

This exercise will be performed for the case of Finiq Municipality, specifically targeting the territory crossed by the Bistrica River. Through this river, it will be possible to intersect all the factors mentioned above, since it crosses the municipality from east to west by going through all the territorial systems identified by the GLP.

The aim is to re-invent Finiq Municipality in a more sustainable and resilient way, able to withhold the consequences of climate change, under the umbrella of the European Green Deal, by capitalizing on existing territorial policies and available green solutions.

Research Question

What constitutes the spatial domain of transition?

Under the threat of climate change, it is fundamental to act urgently towards the common goal of building sustainable and resilient territories with the available political and spatial tools. As mentioned before, none of the five pillars identified in the Sofia Declaration directly address the spatial dimension of the territory, but each of them indicates and suggests changes that will fundamentally transform it.

How can we use the Sofia Declaration, acknowledged by all the WBC, including Albania, and existing territorial policies, such as the General Local Plans like the case of Albania, to identify the space of green transition in a given territory? For this purpose, it is necessary to better analyze both the Sofia Declaration and the General Local Plan of Finiq Municipality from a spatial perspective, to envision the transformation the territory might take in the future.

What other solutions can be explored to unlock or facilitate the process of green transition by the local administrative units in their territories? Just analyzing the given documents cannot help us visualize the possible transformation of the territory. The exploration of nature-driven or inspired solutions can prove helpful not just to visualize but also to raise awareness and build a renewed identity for a local community in a given territory.

Methodology Used

Firstly, an in-depth analysis of the five pillars of the green transition, relevant to the region of the WBC, will be performed from a spatial perspective. As mentioned before, the five pillars mostly refer to specific sectors that aggravate the effects of climate change or are further aggravated by it. They do not address directly the territorial aspect, but on the other hand, they indicate and suggest important transformations to it. In parallel, an analysis of the General Local Plan will take place, with an emphasis on the territorial systems identified by the strategy, to better understand the spatial composition of Finiq Municipality. This analysis will be enriched with important

data for each territorial system, extracted from the GPL. The combination of those two analyses will help us understand which green transition pillar to prioritize in a given territory composed of a specific combination of territorial systems. This will help us filter the most appropriate nature-based solution that could facilitate the process of green transition from the local level and spatial dimension.

Secondly, we will delimit the study area. Since Finiq Municipality has a vast territory, a sample of it will be chosen that incorporates all the territorial systems present in the municipality. As mentioned before, the Bistrica River crosses the municipality from east to west, passing through all the five territorial systems of Finiq. To further delimit the area, a buffer of 1 km will be applied to the river and the composition and the intertwining of the territorial systems will be analyzed and enriched by relevant data extracted from the GPL of Finiq Municipality. At this point, the study area will be divided into sub-areas in accordance with their spatial composition.

Thirdly, through the intersection of the five pillars of green transition, the territorial systems present in the study area, and the potential nature-based solution that can be implemented in those specific sub-areas, represented in a detailed table, we can better understand the spatial dimension of green transition in the territorial context. Through this simplified exercise, we can better envision the transformative aspect of green transition in the territory, with its ability to reinvent it in a more sustainable and resilient way.

The final aim is to build an exercise that aligns the available policies and strategies of different governmental levels that address just green transition issues, directly or indirectly, in a top-down and bottom-up manner, to promote possible decision-making or interventions based on sound arguments. An emphasis on sound arguments, since in cases like Albania studies or data are scarce.

Results

The Green Agenda for the Western Balkan, the Sofia Declaration

The Green Agenda for the Western Balkan, stated in the Sofia Declaration of November 2020, is presented as a new growth strategy toward a modern, climate-neutral, resource-efficient, and competitive economy (Regional Cooperation Council, 2023). This document mostly gives precise indications towards building an effective legislative and policy

framework at the institutional level, able to steer the process of green transition efficiently, at least in theory. This is done for five main pillars identified by the European Green Deal. Despite the highly institutional character of this growth strategy, we will try to visualize the spatial dimension for each pillar, by focusing on keywords used in this particular document.

The first pillar is called climate, energy, and mobility. It focuses on the aspect of achieving neutrality by 2050, emphasizing key concepts like the importance of reducing greenhouse gas emissions and the decarbonization of the economy. It targets three main sectors, namely the energy sector, the household sector, and the mobility sector. From a spatial perspective, the household sector falls under the urban territorial system, while the mobility sector falls under the infrastructural territorial system. In the case of the energy sector, detecting the spatial dimension of it is more complex. The general idea is to shift towards renewable energy sources which can be solar, water, or wind-driven in the case of Finiq Municipality. Since the energy sector does not fall under a specific territorial system, it can have a more flexible character depending on the specific local context. At the moment, Finiq Municipality has four power water plants that produce renewable energy (Finiq Municipality, 2021), indicating an orientation toward water-driven energy.

The second pillar is the Circular Economy. To achieve the broader goal of neutrality, it emphasizes the need to transition from a linear to a circular economy. The main focus in this case is waste. To reduce the amount of waste it is necessary to address this problem in the resource-intensive industrial sectors, introduce recycling, improve waste management infrastructure, raise awareness, reduce plastic pollution, especially in marine territories, and use innovative and sustainable practices. In the case of Finiq Municipality, which is composed of small settlements that heavily rely on agriculture and livestock, transitioning toward a circular economy in those sectors and day-to-day life could prove quite beneficial.

The third pillar is depollution. As the name implies, it focuses on the problem of pollution in three components air, water, and soil. It emphasizes the need to build or improve the monitoring system to keep in check the pollution in air, water, and soil. In the case of Finiq Municipality, the main polluters of air are industrial activities, transportation, and deforestation (Finiq

Municipality, 2021). For water, the main polluters are wastewater from settlements and agricultural and industrial activity (Finiq Municipality, 2021). In the case of soil degradation, the main causes are deforestation and floods (Finiq Municipality, 2021).

Sustainable agriculture and food production is the fourth pillar in the Sofia Declaration. As the name implies, the main focus is the agriculture sector. It focuses on introducing innovative practices and improving the safety of the food chain supply. In the GLP of Finiq Municipality, the agricultural sector is a priority in the long run as it employs most of the workforce in the region (Finiq Municipality, 2021).

The last pillar addresses biodiversity. It emphasizes the need for building joint regional actions and monitoring systems that focus on halting biodiversity loss and protection and restoration of ecosystems since biodiversity goes beyond political or jurisdictional borders. In the case of Finiq Municipality, the forest ecosystem is at imminent risk given the fact that only 25% of the original forest remains due to human activity and climate change (Finiq Municipality, 2021). Finiq also shares a border with Greece, as such joint actions are needed in the context of biodiversity.

Climate Change Strategy and Action Plans, Albania

The General National Climate Change Strategy and Plan 2020-2030 (SKNK&P document) is designed to support the implementation of EU legislation on environment and climate, aiming to strengthen intersectoral coordination in Albania for measures on climate, environmental protection, and sustainable development (Ministry of Tourism and Environment, 2019). This document represents an overall cross-sectoral strategy and plan, providing an overview of goals, policy objectives, and measures focused on climate change mitigation and adaptation in relevant sectors, assessing potential synergies and gaps, financial implications, and planning pathways for low-carbon development (Ministry of Tourism and Environment, 2019).

Through this strategy, Albania aims to build a low-carbon economy guaranteeing sustainable growth in line with the GHG emission pathways, defined in the NDCs, to which all sectors will contribute. The main identified sectors, in this context, are energy, transportation, agriculture, and land use changes including forestry (LUCF) (Ministry of Tourism and Environment, 2019).

Other strategic priorities include:

- building a monitoring system for the emissions of greenhouse gases, following EU directives (Ministry of Tourism and Environment, 2019);

- building institutional capacities and strengthening collaboration to better address climate change issues at every level (Ministry of Tourism and Environment, 2019);

- integrating climate change in sectorial planning strategies (Ministry of Tourism and Environment, 2019);

- strengthening capacities and raising awareness about climate change (Ministry of Tourism and Environment, 2019);

- transposition of EU legislative framework about climate change in every sector (Ministry of Tourism and Environment, 2019).

Regarding the local level, the strategy states that one of its priority actions is to draft municipal plans for climate change adaptation. Following the guidelines of the responsible ministry and the National Agency of Territorial Planning (AKPT), municipalities should draft climate change adaptation plans and implement 10 pilot actions of territorial resilience (Ministry of Tourism and Environment, 2019). Despite the timeline, this is a process that has not started yet.

In the initial three years (2019-2021) only 77k Euros have been disbursed for climate change-related activities or projects foreseen in the SKNK&P document. This amount represents only 14% of the planned budget that should have been disbursed in this period, the total amount being roughly 550k Euros (REC Albania, 2021). Hence, it is clear that the strategy implementation is moving slowly and is still a long way from the local level.

The General Local Plan of Finiq Municipality

The GLP is the main territorial strategy at the local level, enabled by the territorial reform of 2014 (AKPT, 2023). The strategy is made by five main documents: the in-depth analysis document (not available to the general public) where a preliminary analysis of different aspects of the territory under the jurisdiction of the municipality is made; the development plan, which is a document that synthesizes the findings of the in-depth analysis and gives a general orientation about the direction that the development of the territory will take in the next 15 years (Finiq Municipality, 2021); the territory development strategy documents clearly states the vision of the municipality, its strategic objectives and the priority development projects to be

implemented in the next 15 years (Finiq Municipality, 2021); the local regulation document that determines the applicable rules, norms, standards and instruments, as well as orient the procedures, for the existing and future use and development of the land (Finiq Municipality, 2021); and finally the strategic environmental assessment document that evaluates the effects of the GLP in the territory and proposes mitigation measures from an environmental perspective (Finiq Municipality, 2021).

All of those documents have the same starting point, which are the five territorial systems, the bases for analyzing and developing a territorial vision as stated in the Council of Ministers Decision No. 671. Since the focus of this paper is Finiq Municipality, we will analyze how those territorial systems are defined specifically in the GLP of this particular municipality. Specifically, the five territorial systems are as follows: urban system; infrastructure system; agricultural system; water system; and natural system.

1) The urban system is defined as the totality of all the built structures present and planned in the territory. This system in Finiq Municipality is distributed in 53 settlements, which are all villages, with a population of 10,529 residents (INSTAT, 2011). In other terms, the spatial space of the urban system in Finiq Municipality is 3.15% of the territory or 1,458.13 ha (Finiq Municipality, 2021).

2) The infrastructure system is defined as the system that withholds the main infrastructural networks at the national and local levels. This system incorporates not just the transportation infrastructure but also other public infrastructures like energy infrastructure, water supply infrastructure, sewerage infrastructure, waste management infrastructure, and irrigation and drainage infrastructure of the agricultural land. Even though this system is quite complex, spatially speaking, it takes only 1.12% of Finiq Municipality or 518.3 ha (Finiq Municipality, 2021).

3) The agricultural system is defined as the combination of agricultural land and pastures, the main economic sectors of the economy of Finiq Municipality. It constitutes 26.79% of Finiq territory or 12,392.84 ha (Finiq Municipality, 2021).

4) The water system is seen as the combination of the surface water network, mainly lakes and rivers. In Finiq Municipality we can count four important rivers and the Butrint Lake, which is also both a Ramsar protected area and a UNESCO cultural

heritage site. Spatially speaking, the water system occupies only 0.76% of the territory in Finiq, or 351.88 ha (Finiq Municipality, 2021).

5) The natural system is seen as no man's land, in the sense that it is perceived as wilderness, encompassing in it the forest capital, the natural landscape, and the biodiversity realm. It is the vastest territorial system of the municipality, occupying 68.17% of the territory or 31,531.52 ha (Finiq Municipality, 2021).

Nature-based Solutions (NbS)

Nature-based solutions is an umbrella term that refers to various ecosystem-based methods to address multiple socioeconomic concerns. The idea is based on the ecosystem approach, which seeks to manage land, water, and living resources holistically in a way that fosters conservation, restoration, and sustainable usage in an equitable manner. The core of the nature-based solution approach is that we should cooperate with nature rather than compete with it. This entails addressing climate change through adaptation and mitigation techniques (SDGAcademyX, 2023).

In the international climate discourse, NbS has become a crucial component of the larger global endeavor to accomplish the goals of the Paris Agreement on Climate Change. This is because they address issues such as decarbonization, mitigating climate change risks, and developing climate-resilient civilizations. Through the application of NbS, it is feasible to reestablish ecological growth, represent an all-encompassing, human-centered response to climate change, and restore harmony between people and nature. In essence, they are effective, long-term, cost-effective, and globally scalable (Climate Action Summit 2019, 2019). According to research, NbS might supply roughly 30% of the cost-effective mitigation needed by 2030 to moderate warming to less than 2°C (IUCN, 2020), achieving nature's mitigation capacity of 10-12 gigatons of CO₂ per year (Climate Action Summit 2019, 2019). Also, Nature-based Solutions can generate income for local communities as well as benefits for municipalities that depend on these resources for their health and well-being (IUCN, 2020).

Implemented methods that fall under the broad category of NbS have a wide range. They can be split into four categories, starting with their basic scope: practices or activities for disaster risk reduction, practices or actions for climate change

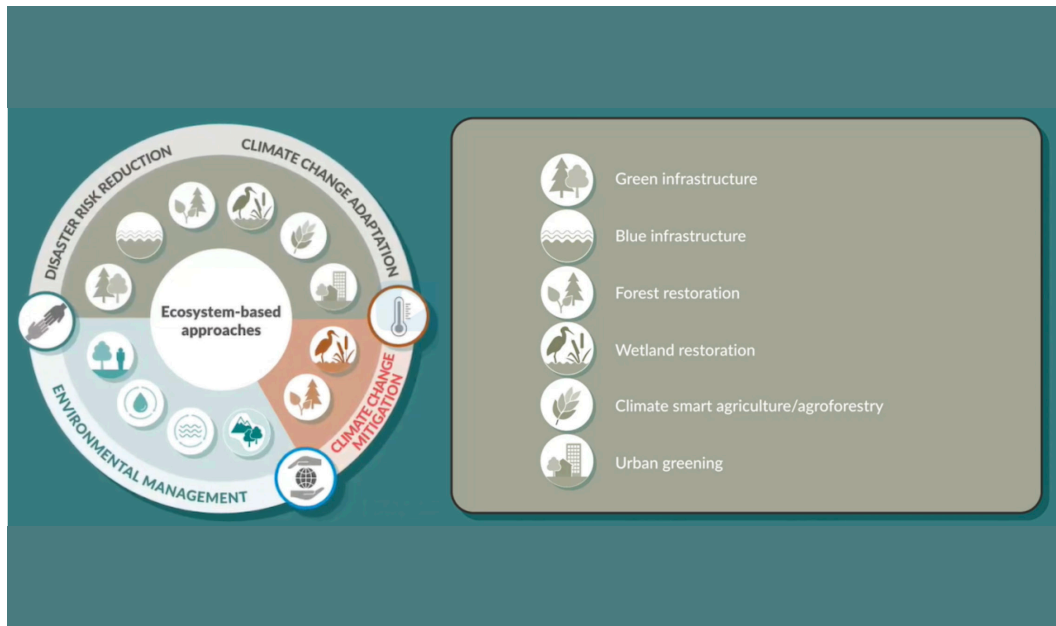


Fig 1 / Schematic representation of Nature-based Solutions source / SDGAcademyX. (2023). *Nature-based Solutions for Disaster and Climate Resilience* (Course code NBS001). Retrieved from <https://learning.edx.org/course/course-v1:SDGAcademyX+NBS001+3T2021/home>

adaptation, practices or actions for mitigating climate change, and practices or actions for environmental management (SDGAcademyX, 2023). Nature-based solutions can take several forms within these macro scopes, adapting to the natural and social contexts of a specific territory. However, the broadness of the term may make it difficult for interested parties to grasp. As NbS is incorporated into policy and implemented by projects, it is clear that more clarification is required. IUCN, one of the first organizations to actively support NbS in the past decades, has developed a standard for NbS based on eight criteria and 28 indicators (IUCN, 2020), as shown below:

- Criterion 1: NbS effectively addresses societal challenges (3 indicators) - to make sure the NbS is developed as an approach to a societal challenge where all stakeholders must be involved in the decision-making process used to determine the priority challenge (IUCN, 2020).
- Criterion 2: Design of NbS is informed by scale (3 indicators) - to promote NbS designs that take into account the complexity and uncertainty that are present in living, dynamic landscapes (IUCN, 2020).
- Criterion 3: NbS results in a net gain to biodiversity and ecosystem integrity (4 indicators) - the functionality and connectivity of the ecosystem must be actively improved through NbS design and implementation (IUCN, 2020).
- Criterion 4: NbS are economically viable (4 indicators) - the economic feasibility of the intervention should be sufficiently taken into account, both during the

planning phase and during the monitoring of the implementation (IUCN, 2020).

- Criterion 5: NbS are based on inclusive, transparent, and empowering governance processes (5 indicators) - NbS must acknowledge, involve, and respond to the concerns of a wide range of stakeholders, particularly rights holders (IUCN, 2020).
- Criterion 6: NbS equitably balance trade-offs between the achievement of their primary goal(s) and the continued provision of multiple benefits (3 indicators) - necessitates that proponent of NbS recognize that compromises will inevitably occur and use a fair, open, and inclusive procedure to balance and manage them throughout time and space (IUCN, 2020).
- Criterion 7: NbS are managed adaptively, based on evidence (3 indicators) - requires that NbS implementation plans contain provisions that permit adaptive management as a response to uncertainty and as a means for effectively harnessing ecosystem resilience (IUCN, 2020).
- Criterion 8: NbS are sustainable and mainstreamed within an appropriate jurisdictional context (3 indicators) - necessitates that NbS initiatives take into account, cooperate with, and align with sectoral, national, and other policy frameworks and be developed and overseen with a mindset toward long-term sustainability (IUCN, 2020).

Later, significant case studies of NbS that have the ability to address particular societal issues in the context of Finiq Municipality will be evaluated using those criteria as a filter. Natural-based solutions are sporadically used in Albania as part of various

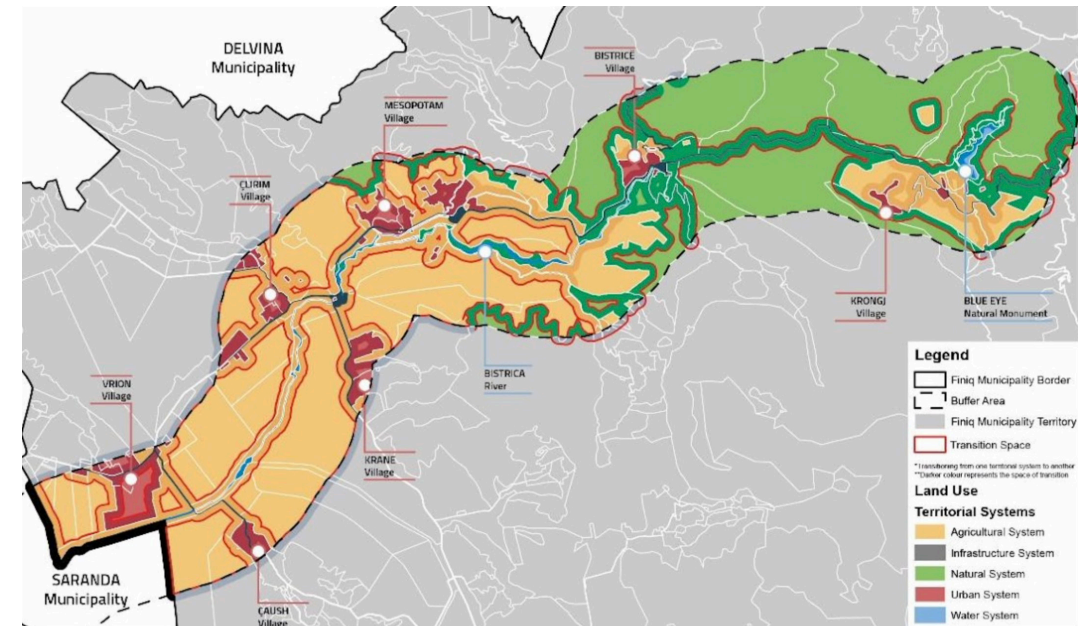


Fig2 / Bistrica River, the composition of territorial systems and the space of transition source / Author's processing based on information from GLP Finiq Municipality

programs, most of which are funded by foreign donors¹. Governmental authorities and civil society organizations frequently work together with the local community to implement these initiatives. Such programs have a very small impact and are rarely effectively disseminated. Currently, NbS initiatives are not institutionalized, putting their execution in the hands of individual players (civil society, academia, local and sectorial governmental actors), despite the fact that some governmental actors have gained some experience with projects of this sort.

Bistrica River, Finiq Municipality

The Bistrica River is located in the Northern part of the territory of Finiq Municipality, flowing from east to west. In the valley of this river are located the most important settlements of this municipality and we also find a high concentration of agricultural land. This river is maintained by underground water sources, giving it a crystalline appearance and a low temperature, and sustaining it with enough water even in the summer

season (Finiq Municipality, 2021). In the buffer area of a 1 km radius of the Bistrica River, we find quite a complex landscape that drastically varies from east to west. In this area live approximately 2,200 people or 21% of the population of Finiq Municipality (INSTAT, 2011). The settlements grow larger in the western part of the buffer area, while in the eastern part, they are smaller in size and population and also more isolated. From a territorial perspective, the area is composed of 49.4% from the agricultural system, 41.6% from the natural system, 6.2% from the urban system, 1.4% from the infrastructure system, and 1.3% from the water system. From their predisposition in the territory (fig.2) we can identify two thematic sub-areas, the agricultural thematic area in the western part of the territory and the natural thematic area in the eastern part of the territory.

Agriculture Thematic Area

In this area, we find a predominance of the agriculture territorial system. If we take into account an area of 100 m from

2 Macro Areas			
Predominance of the Agricultural System		Predominance of the Natural System	
Space of transition			
Constant transitions	Sporadic transitions	Constant transitions	Sporadic transitions
- Agriculture to Urban	- Water to Urban	- Nature to Urban	- Agriculture to Urban
- Agriculture to Water	- Infrastructure to Water	- Nature to Water	- Infrastructure to Water
- Agriculture to Infrastructure	- Urban to Infrastructure	- Nature to Infrastructure	- Urban to Infrastructure
- Agriculture to Natural	- Water to Natural	- Nature to Agriculture	

Fig3 / Table showing the identified transitions in the two thematic areas source / the author

1 / Some NbS projects in Albania: Building the Resilience of Kune-Vaini Lagoon through Ecosystem-based Adaptation (EbA) (UNEP); Assisted natural forest regeneration on degraded lands (WB); Embedding RRI in Western Balkan Countries: Enhancement of Self-Sustaining R&I Ecosystems (Horizon Programme)

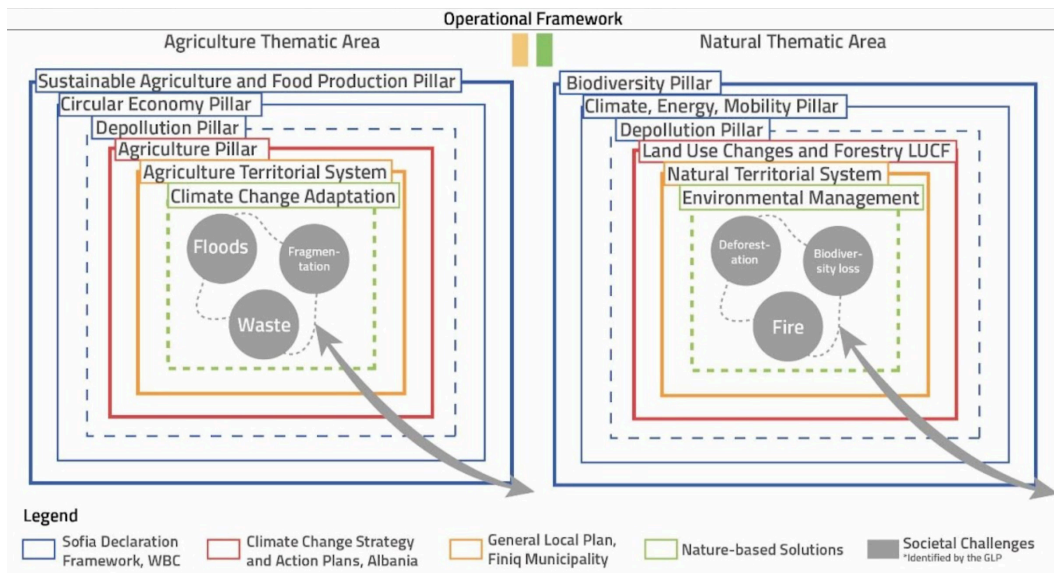


Fig4 / Operational framework, from the international level to the local level source / the author

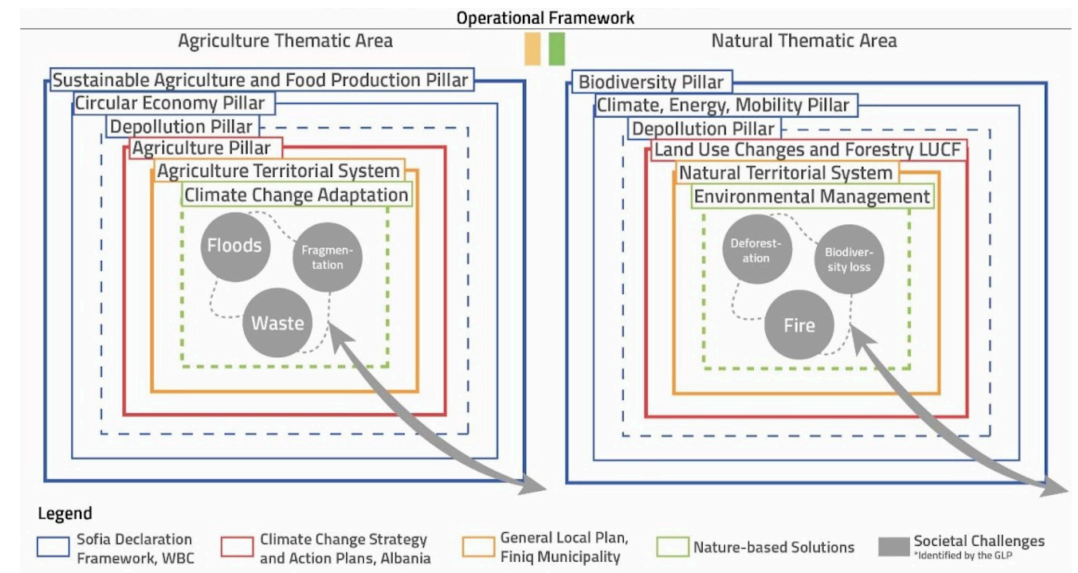


Fig6 / Operational framework, from the international level to the local level source / the author

each territorial system as the space of transition, it is possible to identify constant and sporadic transitions among the territorial systems of Finiq Municipality. In this thematic area, constant transitions can be called every transition from agriculture to other territorial systems. While sporadic transitions happen when the other territorial systems intersect with each other, which is less frequent in this area. This space, being at the margins of the territorial systems, is often neglected in the planning process, creating a discontinuity in the territory. According to the available planning documents of Finiq Municipality, the most pressing societal challenges in this thematic area are flash floods that mostly impact the agricultural lands of the area (Finiq Municipality, 2021); fragmentation of the agricultural land, an issue that afflicts Albania in general (Finiq Municipality, 2021); and waste management of any kind, from solid waste management to sewage and agricultural waste, causing pollution of soil, water and air (Finiq Municipality, 2021). From here we can build up the operational framework for guiding the process of space transition in a given territory.

From the perspective of the Sofia Declaration, this thematic area falls mainly under the pillar of sustainable agriculture and food production, pressing for environmentally friendly agriculture and production according to EU standards (Regional Cooperation Council, 2023). The circular economy is another relevant pillar for this area since it is strongly connected with the management of waste (Regional Cooperation Council, 2023). Depollution is a relevant pillar, given its strong monitoring approach (Regional Cooperation Council, 2023), but is not the main focus. The Climate Change Strategy and Action Plan of Albania identifies agriculture as one of the main sectors that must be addressed in this context. The proposed agricultural measures in the strategy seek to achieve, in particular, the political objectives that support the reduction of emissions for sustainable food production, preserve and increase the carbon content of agricultural lands and, as a result, increase the potential of carbon absorbers and protect carbon reserves in terrestrial ecosystems (Ministry of Tourism and Environment, 2019). This will be achieved by introducing the conservation of agroforestry components and green

2 Macro Areas			
Predominance of the Agricultural System		Predominance of the Natural System	
Space of transition			
Constant transitions	Sporadic transitions	Constant transitions	Sporadic transitions
- Agriculture to Urban	- Water to Urban	- Nature to Urban	- Agriculture to Urban
- Agriculture to Water	- Infrastructure to Water	- Nature to Water	- Infrastructure to Water
- Agriculture to Infrastructure	- Urban to Infrastructure	- Nature to Infrastructure	- Urban to Infrastructure
- Agriculture to Natural	- Water to Natural	- Nature to Agriculture	

Fig5 / Table showing the identified transitions in the two thematic areas source / the author

infrastructures in farming areas (Ministry of Tourism and Environment, 2019). At the local level, the most important planning document for Finiq Municipality is the General Local Plan. The strategy of the GLP holds agriculture as one of the most important economic drivers of the municipality and an integral part of its identity (Finiq Municipality, 2021). In this context, the strategy stresses the need for sustainable growth of the agriculture sector by improving the agriculture infrastructure, producing high-quality products, and developing the agro-tourism aspects of the industry (Finiq Municipality, 2021). The last ladder of the operational framework is Nature-based Solutions. In this thematic area, given the identified societal challenges, the main scope of NbS in the area should focus on climate change adaptation. Given the variety of such practices, later on, we will analyze one implemented practice related to agriculture that dealt with similar societal challenges as the ones identified in this specific thematic area.

Natural Thematic Area

A natural territorial system predominates in this region. Even in this situation, we can still detect both constant and sporadic transitions between the territorial systems by choosing a 100-meter-square area from each territorial system as the space of transition. Every shift from nature to other territorial systems might be referred to in this thematic area as a constant transition. Sporadic transitions take place when the other territorial

systems cross paths, but they are less common.

The most urgent societal challenges in this thematic area, according to the Finiq Municipality's planning documents, are deforestation, where only 25% of the original forest area is left (Bashkia Finiq, 2021); biodiversity loss as a result of changes in land use over time (Bashkia Finiq, 2021); and fires brought on by both natural and man-made causes (Bashkia Finiq, 2021). From this point, we may construct the operational framework for directing the space transition process in a certain territory.

If we take into consideration the Sofia Declaration, this thematic area relates to the biodiversity pillar and calls for the preservation and restoration of natural ecosystems (Regional Cooperation Council, 2023). Another important pillar for this area is climate, energy, and mobility, which is closely related to the management of renewable resources (Regional Cooperation Council, 2023). Given its robust monitoring strategy, depollution is a pertinent pillar but is not the primary focus (Regional Cooperation Council, 2023).

Land Use, Land Use Change, and Forestation (LULUCF) is one of the key issues to be tackled with the macro-objective of reducing greenhouse gas emissions, according to Albania's Climate Change Strategy and Action Plan. The forest area in Albania has been wildly overused and deteriorated during the past decade (Ministry of Tourism and Environment, 2019). As a result, the strategy aggressively

encourages forestation, rehabilitation, and conservation of such regions while emphasizing the necessity for sustainable management of forests (Ministry of Tourism and Environment, 2019). In order to improve energy efficiency and renewable energy, it is also crucial to rethink the forestry industry's practices (Ministry of Tourism and Environment, 2019).

The natural system is viewed as a valuable resource to be utilized for sustainable tourism in the GLP of Finiq Municipality (Bashkia Finiq, 2021). With a total area of around 14,500 ha and a wide range of biological species, the forests are a significant ecosystem (Bashkia Finiq, 2021). Therefore, one of the primary strategic goals of the territorial plan is environmental conservation, which is achieved by encouraging forestation, techniques for rehabilitation, and monitoring procedures for fire prevention (Bashkia Finiq, 2021).

Nature-based Solutions make up the final ladder of the operational framework. Given the stated societal concerns in this thematic area, environmental management should be the primary NbS focus. Given the range of these techniques, we will examine one that was

implemented in a forest region and dealt with societal issues that were similar to those mentioned in this particular thematic area.

Nature-based Solutions, case studies Bioremediation to reduce nitrate contamination

Sri Lanka, Kalpitiya Peninsula

High levels of groundwater nitrate contamination have been reduced and food production increased through the use of bioremediation, restored vegetation, and organic farming techniques (Nature-based Solutions Initiative, 2021).

Overview of context and outcomes

Communities in Kalpitiya Peninsula rely on the aquifer for water because of the region's irregular and poor rainfall, but chemical fertilizers from monocropping contaminated wells with nitrate. 64% of the newborns in the area were impacted by this pollution, which produced greenhouse gas emissions and other health problems. The vegetation area was also made more unstable by warming temperatures, salt-laden winds, and deforestation (Nature-based Solutions Initiative, 2021).

Nature-based Intervention

In order to lessen its reliance on chemical fertilizers, replenish its water supplies, and

regenerate the surrounding ecology, the community participated in bioremediation and biological fencing. They cleaned up contaminated soil and groundwater using organic microorganisms. Deep-rooted trees created a root mat that aided in the uptake of contaminants. Straw and coconut peat improved the sandy soil for bioremediation. To increase output and restore the environment, salt-tolerant trees were planted alongside wind-breaking fences. Organic farming techniques were used instead of monocropping, and 8,000 plants of 54 kinds were utilized. Due to the intervention's success, it was applied to more than a thousand wells in Kalmunai, on the opposite coast of Sri Lanka (Nature-based Solutions Initiative, 2021).

Outcomes:

- The capacity for carbon sequestration has likely increased by the observed growth in the local tree and plant cover (Nature-based Solutions Initiative, 2021);
- Using organic farming practices could reduce nitrous oxide emissions (Nature-based Solutions Initiative, 2021);
- By allowing year-round harvesting, transitional monocropping reduces the hazards associated with climate change (Nature-based Solutions Initiative, 2021);
- The fertility of the soil rose, eliminating

the need for chemical fertilizers (Nature-based Solutions Initiative, 2021);

- Nitrate levels in the water decreased, which may have a positive impact on health outcomes (Nature-based Solutions Initiative, 2021);

- Better domestic harvest use was made possible by improved soil quality and organic farming (Nature-based Solutions Initiative, 2021).

In the table below, we can observe how the selected case study aligns with the standard proposed by IUNC for NbS and what potential it holds for the case of Finiq Municipality.

Promoting sustainable livelihoods through forest conservation and the protection and cultivation of native medicinal plants, Venezuela, Ramal de Calderas forest corridor in Barinas

By introducing and cultivating medicinal plants, the Foundation for Alternative Tropical Agriculture and Sustainable Development (FUNDATADI) seeks to protect indigenous forests and biodiversity while fostering sustainable livelihoods (Nature-based Solutions Initiative, 2021).

Overview of context and outcomes

Over 1,000 indigenous plant and animal

IUCN Global Standard for NbS		Case Study	Finiq Municipality
Criterion		<i>Bioremediation to reduce nitrate contamination, Sri Lanka</i>	<i>Agriculture Thematic Area</i>
Criterion 1	NbS effectively address societal challenges	Reliance on chemical fertilizers, deteriorated water quality, and compromised local ecosystem	From the Strategic Environmental Assessment document, similar societal challenges have been observed
Criterion 2	Design of NbS is informed by scale	Peninsula	Bistrica River Basin, western part
Criterion 3	NbS result in a net gain to biodiversity and ecosystem integrity	Utilizing organic microorganisms to purge contaminated soil or groundwater is known as bioremediation	Bioremediation can help to preserve the unique characteristics of Bistrica River by enacting an organic method for cleaning up contaminated groundwater
Criterion 4	NbS are economically viable	Project funding was provided by the National Water Supply and Drainage Board	Funding can be achieved through international (UNEP; WB; EU; etc) and national (ADF; MTE; etc) donors
Criterion 5	NbS are based on inclusive, transparent and empowering governance processes	The National Water Supply and Drainage Board and village community groups worked together to oversee the project	The collaboration of the local community and the local level of governance is a necessity for the successful implementation
Criterion 6	NbS equitably balance trade-offs between the achievement of their primary goal(s) and the continued provision of multiple benefits	In addition to increasing soil organic matter and sequestering carbon in the soil, phytoremediation provides a low-cost way to provide potable water and creates flora that supports biodiversity	Introducing innovative techniques in the practice of agriculture and preserving or improving the quality of groundwater
Criterion 7	NbS are managed adaptively, based on evidence	From February 2004 to January 2009, water quality and the efficiency of bioremediation were monitored	The implementation of a monitoring strategy is necessary
Criterion 8	NbS are sustainable and mainstreamed within an appropriate jurisdictional context	Kalpitiya Peninsula, Sri Lanka	Municipality

Tab1 / The intersection between the IUCN standard for NbS, the selected case study, and Finiq Municipality source / (IUCN, 2020); (Nature-based Solutions Initiative, 2021); (Melvani & Pathmarajah, 2011); (Finiq Municipality, 2021); Author's processing

IUCN Global Standard for NbS		Case Study	Finiq Municipality
Criterion		<i>Promoting sustainable livelihoods through forest conservation and the protection and cultivation of native medicinal plants, Venezuela</i>	<i>Nature Thematic Area</i>
Criterion 1	NbS effectively address societal challenges	Progressive deforestation over the past two decades	From the Strategic Environmental Assessment document, similar societal challenges have been observed
Criterion 2	Design of NbS is informed by scale	Village	Bistrica River Basin, eastern part
Criterion 3	NbS result in a net gain to biodiversity and ecosystem integrity	Reforestation; Medicinal plant cultivation; Monitoring and evaluation	Forestation is necessary in the area and medicinal plants are a neglected asset of the area due to low awareness levels
Criterion 4	NbS are economically viable	Funding for the project came from the National Water Supply and Drainage Board	Funding can be achieved through international (UNEP; WB; EU; etc) and national (ADF; MTE; etc) donors
Criterion 5	NbS are based on inclusive, transparent and empowering governance processes	Home gardens, medicinal plants and secondary processing; Organic farming; Participatory planning; 'Human development' workshops	The collaboration of the local community and the local level of governance is a necessity for the successful implementation
Criterion 6	NbS equitably balance trade-offs between the achievement of their primary goal(s) and the continued provision of multiple benefits	From coffee and animal husbandry to medicinal plants; Community mobilization	Introducing forest management concepts and diversifying local economies
Criterion 7	NbS are managed adaptively, based on evidence	Taking stock of costs and benefits with the local community to better understand the benefits of agricultural diversification	The implementation of a monitoring strategy is necessary
Criterion 8	NbS are sustainable and mainstreamed within an appropriate jurisdictional context	Ramal de Calderas forest corridor, 49 families	Municipality

Tab2 / The intersection between the IUCN standard for NbS, the selected case study, and Finiq Municipality source / (IUCN, 2020); (Nature-based Solutions Initiative, 2021); (UNDP, 2012); (Finiq Municipality, 2021); Author's processing

species, including 21 endangered species, are at risk due to the ongoing deforestation that has been occurring over the past 20 years (UNDP, 2012).

Nature-based Intervention

In order to promote sustainable means of living and preserve indigenous woods in the biologically diverse Ramal de Calderas forest corridor, FUNDATADI works with rural communities in northwest Venezuela. They put a lot of effort into protecting the over 47 hectares of coffee forest and reforestation with native trees from neighborhood nurseries. Native medicinal herbs are organically grown in family gardens to promote agricultural diversification, and local businesses transform the raw materials into salable goods like syrups, infusions, and soaps (Nature-based Solutions Initiative, 2021).

Outcomes:

- More than 1500 native trees were planted between 2007 and 2009 as a result of conservation initiatives and family gardening of medicinal herbs, which reduced pressure on nearby forests (UNDP, 2012);

- 11 species were preserved through the cultivation of medicinal plants, assisted by training and capacity building (UNDP, 2012);

- Through plant cultivation and sales, new revenue streams were developed as a result of the cooperative project between Piedemonte Andino communities and the FUNDATADI (UNDP, 2012);

- Comprehensive monitoring keeps track of institutional capabilities, environmental changes, and implications on biodiversity throughout time (UNDP, 2012).

In the table below, we can observe how the selected case study aligns with the standard proposed by IUNC for NbS and what potential it holds for the case of Finiq Municipality.

Conclusions and Recommendations

Nowadays, in the international discourse, climate change is seen as an imminent threat that needs to be addressed at every level. As such, there are several documents of legislative, strategic, and institutional nature that have been drafted and will continue to be drafted to deal with this issue at every level of government, from the international level to the local level. Since the local level of government is usually the last ladder, it is quite behind in the process of developing the necessary documents for climate change mitigation and adaptation. On the other hand, the territories under the jurisdiction of the local level are the ones that suffer most

from the impacts of climate change.

Even though the necessary documents to deal with this phenomenon are not ready yet at the local level, the local stakeholders hold the pertinent territorial knowledge to identify the most vulnerable communities and territories. This knowledge is usually contained in important planning documents, like in the case of Albania which are called General Local Plans (PLG). By analyzing such documents, it is possible to identify the societal challenges that are related to or aggravated by climate change.

By using the keywords and key concepts underlined by those documents it is possible to build an operational framework that can be applied to a given territory. This can play as a starting point from which to navigate the vastity of nature-based solutions that can address a given challenge. NbS are strongly connected to the specific context of a territory, as seen from the case studies, making it difficult to grasp the best practices to be implemented. Hence, a starting point is needed to pinpoint which NbS will have a meaningful impact in a given territory or community. Also, since no one has consistent experience with NbS practices, following a standard and implementing indicators for the monitoring process can only be useful, from a management perspective.

In the case of Finiq Municipality, the most neglected space in the process of planning is, what we call in this paper, the transitional space. A transitional space is when you transition from one territorial system, for example, agriculture, to another, for example, nature. Given its peripheral nature, it is often avoided in the planning process, or at least this is true in the selected case study. In this space, the implementation of NbS can create the most visible impact in the territory and raise awareness about the nature of NbS. Implemented pilot projects at the local level, that are created to deal with climate change issues, have the potential to influence policy at the other levels of government, which is especially true regarding new and unknown societal challenges such as climate change. Also, such projects have the ability to improve awareness levels among the general public regarding the phenomenon of climate change, by making them part of the decision-making process.

Having said that, an endeavour such as this requires a strong political will from the local level, which is hard to achieve in centralized governmental systems, like

the case of Albania. Other stakeholders, like NGOs and academia, are more flexible actors in such cases but have a lower impact at the policy level. The engagement of different stakeholders is key for the successful implementation of NbS projects, as seen in the selected case studies.

References

AKPT. (2023, March 26). *Plane të Përgjithshme Vendore*. Retrieved from *Plane të Përgjithshme Vendore*, AKPT: <https://planifikimi.gov.al/index.php?id=732>

Climate Action Summit 2019. (2019). *Compendium of Contributions Nature-Based Solutions*. UN.

European Commission. (2023, March 26). *Strategy and policy - Priorities 2019-2024 - European Green Deal*. Retrieved from *Europa*: https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en

Finiq Municipality. (2021). *General Local Plan, Strategic Environmental Assessment*. Finiq: Finiq Municipality.

Finiq Municipality. (2021). *Local General Plan, Local Regulations*. Finiq: Finiq Municipality.

Finiq Municipality. (2021). *Local General Plan, Territorial Development Plan*. Finiq: Finiq Municipality.

Finiq Municipality. (2021). *Local General Plan, Territory Development Strategy*. Finiq: Finiq Municipality.

INSTAT. (2011). *Population and Housing Census*. Tirana: INSTAT.

INSTAT. (2011). *Population and Housing Census, 2011*. Retrieved July 20, 2023, from *INSTATGIS*: <https://instatgis.gov.al/#!/prefectures/population/prefpop1>

IPCC. (2022). *Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. (D. R. H.-O. Pörtner, Ed.) Cambridge, UK and New York, NY, USA: Cambridge University Press. doi:10.1017/9781009325844

IUCN. (2020). *IUCN Global Standard for Nature-based Solutions. A user-friendly framework for the verification, design and scaling up of NbS*. Gland, Switzerland: IUCN.

Melvani, K., & Pathmarajah, S. (2011). *Bioremediation of Nitrates in groundwater*.

Ministry of Tourism and Environment. (2019). *Climate Change Strategy and Action Plans*. Tirana: Republic of Albania.

Nature-based Solutions Initiative. (2021). *NbS Case Study platform*. Retrieved July 21, 2023, from *NbS Case Study platform Web site*: <https://casestudies.naturebasedsolutionsinitiative.org/>

REC Albania. (2021). *MONITORING OF THE NATIONAL STRATEGY FOR CLIMATE CHANGE, 2020 - 2030 FOR 2019 - 2021*. Tirana: Westminster Foundation for Democracy (WFD).

Regional Cooperation Council. (2023, March 26). *Sofia Declaration on the Green Agenda for the Western Balkans*. Retrieved from *Leaders Declaration on the Green Agenda for the Western Balkans 10 November 2020*: <chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.rcc.int/download/docs/Leaders%20Declaration%20on%20the%20Green%20Agenda%20for%20the%20WB.pdf/196c92cf0534f629d43c460079809b20.pdf>

SDGAcademyX. (2023, July 19). *Nature-based Solutions for Disaster and Climate Resilience*. Retrieved from <https://learning.edx.org/course/course-v1:SDGAcademyX+NBS001+3T2021/home>

UNDP. (2012). *Foundation for Alternative Tropical Agriculture and Sustainable Development (FUNDATADI), Venezuela. Equator Initiative Case Study Series*. New York: UNDP.