PROT-N

Territorial Strategy

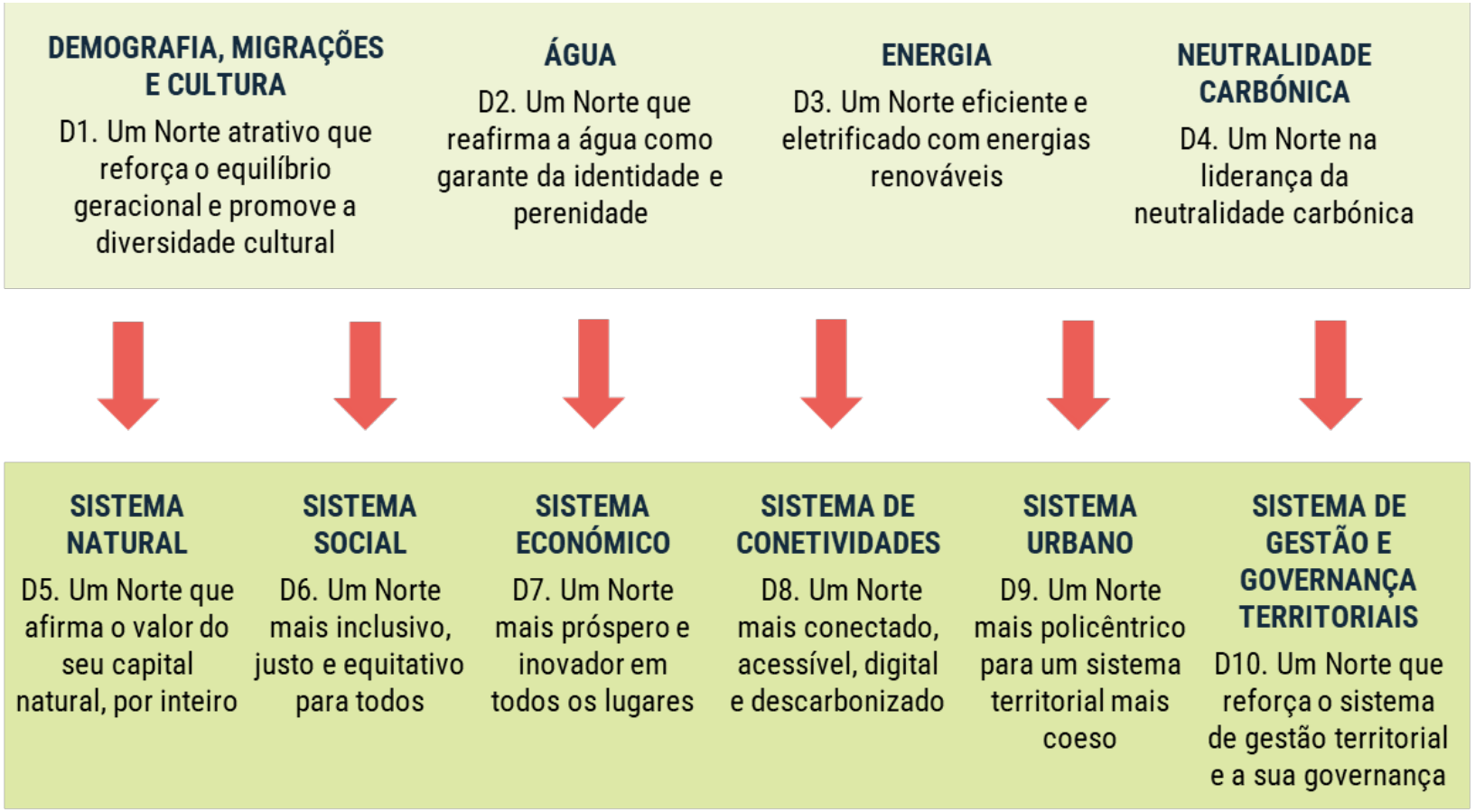
EVERY STUDENT NEEDS TO KNOW:
- Slide 2
- Slides 4 AND 5

EACH STUDENT CHOOSES A SYSTEM:
- Natural System - slides 8 and 9
- Social System - slides 10 and 11
- Economic System - slides 12 and 13
- Connectivity System - slides 14 and 15
- Urban System - slides 16 and 17
- Critical Vulnerabilities - slides 18 and 19

EVERY STUDENT NEEDS TO KNOW:
- Territorial Model: slides 20 -25

Territorial Strategy

The 10 Territorial Challenges and the 39 Territorial-Based Strategic Options (OEBT) of PROT-NORTE came from this approach:



Territorial Challenges and Strategic Options for the North

D1 – AN ATTRACTIVE NORTH THAT STRENGTHENS GENERATIONAL BALANCE AND PROMOTES CULTURAL DIVERSITY

1.1 Increasing population attractiveness and improving intergenerational and intercultural dialogue

1.2 Ensure ways of reconciling personal, family and professional life, and promote active and healthy ageing
healthy ageing

1.3 Increasing access to cultural diversity and improving regional balance

D2 – A NORTH THAT REAFFIRMS WATER AS THE GUARANTOR OF IDENTITY AND LONGEVITY

2.1 Improving the territory's water resilience

2.2 Strengthening water availability and reserves according to use

2.3 Promoting improved water use efficiency

D3 – AN EFFICIENT AND ELECTRIFIED NORTH WITH RENEWABLE ENERGIES

3.1 Reinforcing the use of Renewable Energy Sources (RES) to produce electricity and H2

3.2 Boosting energy storage and strengthening network infrastructures

3.3 Promoting electric mobility and the H2 resource

3.4 Improving the sufficiency, efficiency and resilience of buildings

D4 – A NORTHERN LEADER IN CARBON NEUTRALITY

4.1 Mitigating emissions in territories with high GHG emissions and low carbon stocks

4.2 Preserving carbon stocks in territories with low GHG emissions and high carbon stocks

4.3 Increasing sequestration and carbon stocks in territories with low GHG emissions and low carbon stocks

D5 – A NORTH THAT EMPHASIZES THE VALUE OF ITS NATURAL CAPITAL, IN ITS ENTIRETY

5.1 Establishing a new understanding of natural capital

5.2 Promoting a sustainable nature valued by all

5.3 Ensuring soil conservation and sustainable management of water and geological resources

5.4 Strengthening the interaction between Society and Nature, a unique Health of all for all

5.5 Knowing vulnerabilities, reducing risks and increasing resilience

Territorial Challenges and Strategic Options for the North

D6 – A MORE INCLUSIVE, FAIR AND JUST NORTH FOR ALL

6.1 Improving access to housing and living conditions
6.2 Promoting educational equity and justice
6.3 Winning in health by strengthening innovation, equity and population resilience
6.4 Minimizing vulnerabilities, improving inclusion and promoting spatial justice

D7 – A MORE PROSPEROUS AND INNOVATIVE NORTH EVERYWHERE

7.1 Strengthening the scientific and technological system and increasing the region's innovative performance
7.2 Enhancing human capital, generating quality employment and increasing productivity
7.3 Developing sustainable and inclusive tourism
7.4 Boosting rural opportunities
7.5 Giving the forest a new centrality

D8 – A MORE CONNECTED, ACCESSIBLE, DIGITAL AND DECARBONIZED NORTH

8.1. Promote technological transition by improving digital accessibility and telecommunications
8.2 Strengthening infrastructures for internationalization
8.3 Organizing collective road transport networks and services that are suited to territorial occupation models
8.4 Reducing citizens' dependence on individual motorized transport for local and regional tripsções interurbanas
8.5 Organizing and managing a regional road network to mediate between the national network and municipal networks

D9 – A MORE POLYCENTRIC NORTH FOR A MORE COHESIVE TERRITORIAL SYSTEM

9.1 Strengthening the role of urban centers as anchors of innovation, attractiveness and external affirmation
9.2 Improving access to services of general interest for greater socio-spatial justice
9.3 Improving inter-urban and rural-urban links
9.4 Promoting innovation and intra-urban quality

D10 – A NORTH THAT STRENGTHENS THE TERRITORIAL MANAGEMENT SYSTEM AND ITS GOVERNANCE.

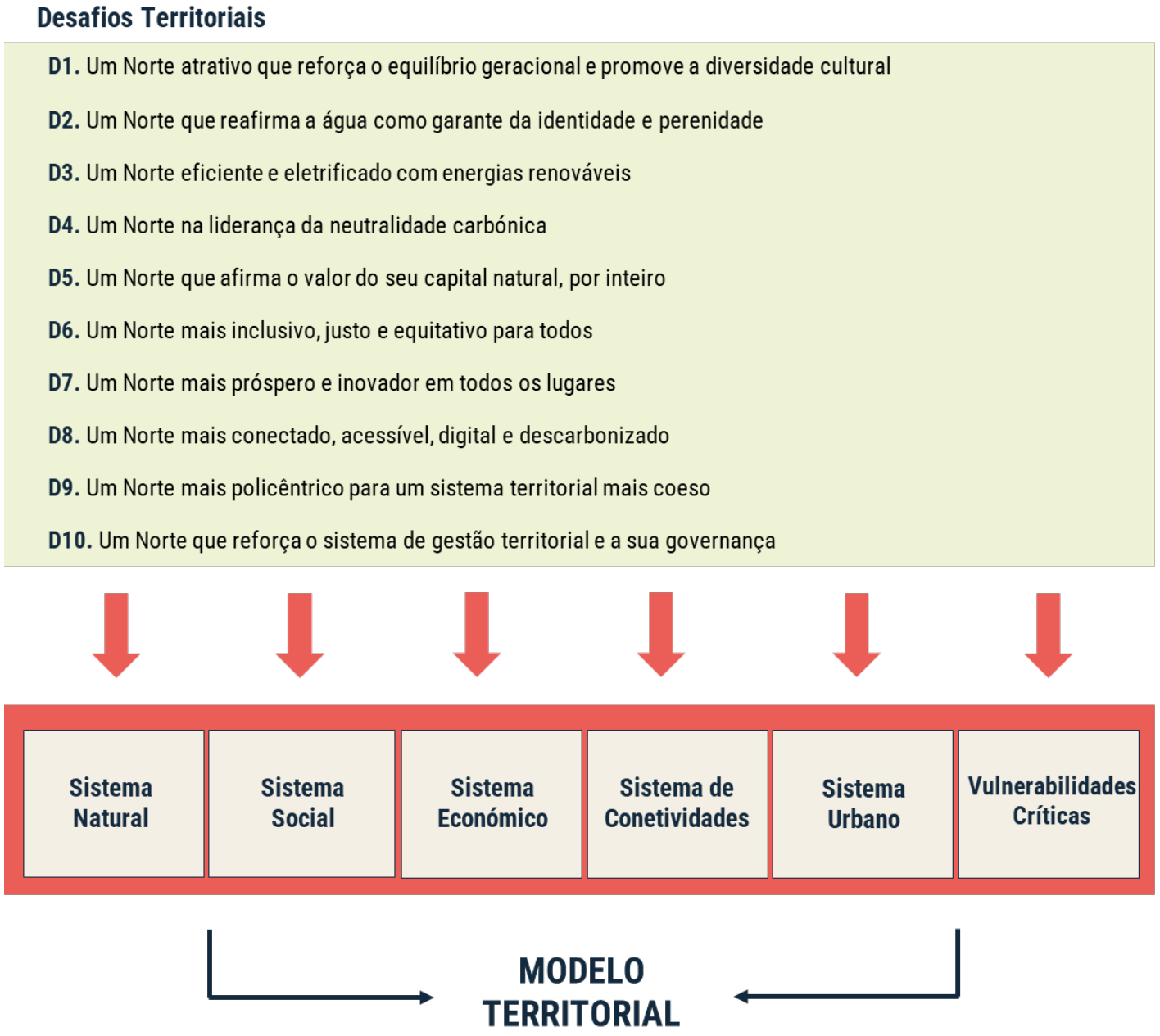
10.1 Speeding up the planning cycles entrusted to the Central Administration
10.2 Strengthening the strategic and programmatic dimension of PDMs
10.3 Qualifying territorial management

PROT-N

Territorial Model

Territorial Model

The Northern region's Territorial Model takes the 10 Territorial Challenges and is based on the 5 Territorial Systems.
It also takes into account a set of Critical Vulnerabilities that can condition it:



Natural System

Affirming the natural capital of the North, in its entirety, means encompassing the entire unsealed territory, constituting a “settlement ground” where local uses and resources are reconciled in a sustainable and perennial way. The interdependence and interaction are clear, and the long-term economic, social and environmental survival of the entire North - natural, rural and urban - depends on its good management.

The Natural System has to be able to synthesize the fundamental factors (water and soil, biodiversity, carbon neutrality and energy) with the rural economy, based on the primary sector (agriculture, forestry and mineral resources), to which the cultural dimension is no stranger, but also on the production of renewable energy sources (hydro, wind, photovoltaic), as well as nature and rural tourism. In addition to all these activities, there is the expansion of urban areas and infrastructures which, despite the benefits they bring, always detract from the area of this “natural ground”. This is the great complexity and challenge of PROT-NORTE, because all forms of land use have a direct relationship, positive or negative, with the fundamental factors mentioned. In addition to these human dimensions, which are inherent to the occupation of the territory, climate change is associated with significant changes and extreme episodes that tend to be more severe, highlighting the need for proactive intervention in all territories, especially the most vulnerable ones.

This Natural System, as a synthesis exercise, identifies the macro territories, with contrasts dictated by biophysical nature, to be considered when dealing with these interactions. Thus, the North is distinguished by three territorial contexts, with their own differentiated opportunities, risks and vulnerabilities:

- A central transition area, at high elevation, consisting mainly of the NEA, which brings together the fundamental values of natural capital, and which corresponds to the greatest regional occurrence of the RNAP, the RN2000 and the ASRF, the high-altitude catchment areas and strategic water reserves, and the main carbon stocks, and where the lowest GHG emissions occur. This area is intended to prioritize conservation measures for stable natural assets, as well as the promotion of agro-sylvo-pastoral activity, of which extensive mountain livestock farming and the production of maritime pine are the greatest assets. These activities contribute positively to promoting water retention and infiltration, and the maintenance and fixation of carbon stocks in the soil, except when rural fires occur. It is also an important area for nature tourism. The restoration of habitats for wolves, oak forests and other species of woodland, and the functional continuity of these spaces, which is achieved through ecological corridors, will enable international nature conservation targets to be met, and will improve the conditions for refuge and movement of wildlife species, making the territories more resilient to climate change.

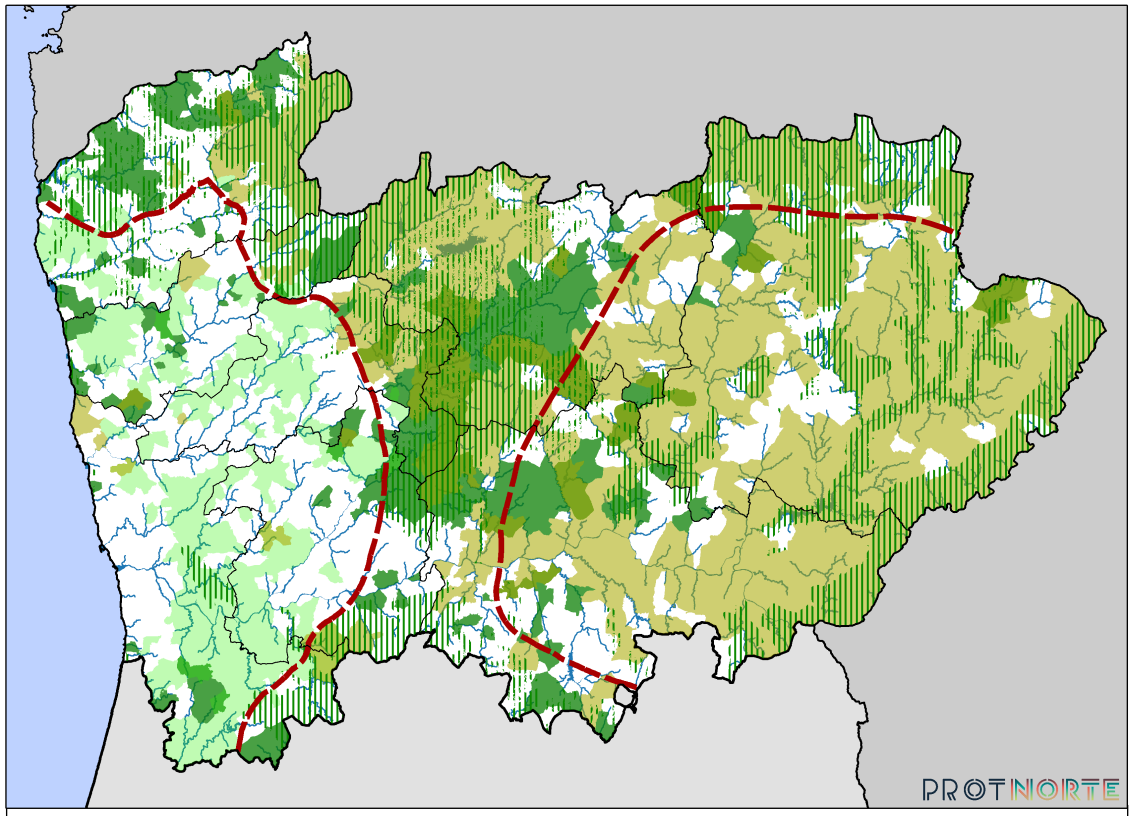
- A second area, which is mostly part of the APAF, corresponds to the interior of Trás-os-Montes and Alto Douro, where you'll find the largest agricultural production basins (vineyards, olive groves, chestnuts, almonds), almost all small ruminant milk production and an important part of extensive mountain livestock farming. This territory is par excellence for agricultural production, both in terms of area and production value. It is also an important area for rural and nature tourism. It also has great potential for photovoltaic energy production. GHG emissions are low, but carbon stocks are equally low which, with the risk of soil desertification and water scarcity, makes this territory particularly vulnerable if farming is to continue to be the solution and its economic and social engine.

It is imperative to identify strategic investments that, supported by the best known production and processing technologies and the most adapted species and cultivars, will increase the added value generated and, at the same time, protect and regenerate the soil, fix carbon and retain, store and infiltrate water, reducing the risk of rural fires. Rural fires also have a negative impact on the carbon balance of this territory.

- **A third area, the northwest coast, is smaller, and although it contains most of the region's sealed urban area, it is also home to a large area of eucalyptus production, and where the intensive dairy and meat production basins make an important contribution to the regional total in terms of value. This is a region where GHG emissions are high and carbon stocks are low, which, due to the intensification of production, and associated with environmental issues such as the Esposende-Vila do Conde Vulnerable Zone, weigh negatively on the balance sheet, forcing us to consider a form of agriculture that has to find a new balance in its production systems. Reference is made to the potential importance of the areas surrounding large urban agglomerations which, through active management, can help to mitigate the effects of heat islands, increase water retention and infiltration capacity and thus improve the quality of urban life, reducing the risks associated with rising temperatures and irregularities in the hydrological cycle. The aim is also to provide the enjoyment of nature, in a context of proximity, making it accessible to all.** . At the same time, these spaces can be important pockets of fresh food production to supply short distribution and consumption chains, contributing to food security and reducing the carbon footprint. For all these reasons, these are the spaces that should make up the Peri-urban Network of Natural Spaces. The characteristics of urban dispersion and their proximity to forest and agricultural areas is a determining factor for a specific macro fire regime, aggravating the negative carbon balance.

Finally, due to their importance (600,000 hectares in the region) and spatial cross-cutting nature, we highlight the predominantly unpopulated forest areas (scrubland, spontaneous herbaceous vegetation and areas without vegetation). Some of this corresponds to extensive grazing areas, whether or not they coincide with the RNAP and/or RN2000, others to burnt forest areas that are still regenerating naturally or not, depending on the recurrence of the fire, but there is also a part of the remaining area that is best suited to the installation of new infrastructures for the production of renewable energies, as well as for the exploitation of mineral resources.

Natural System



Social System

The Northern region's Social System must reflect, firstly, socio-demographic dynamics and structures, taking into account not only demographic loss and ageing trends, but also the existence of younger population structures and the potential for attracting residents. Secondly, it is important to identify and territorialize existing social vulnerability profiles and reflect the different configurations of social problems, which are increasingly complex and heterogeneous. Thirdly, it is necessary to consider the supply and quality of services of general interest, given the changes in population structures and the importance of improving the quality of life and well-being of all citizens.

Demographic trends show that there is still a marked urban concentration and a progressive depopulation of rural, less densely populated and border areas. Demographic projections point to a general population decline. However, this downward trend may become less noticeable as recent dynamics show a vast territory with the capacity to attract foreign population. Even so, the increase in the elderly population is becoming more and more significant and is expanding territorially, raising numerous social concerns, especially when ageing is accompanied by a number of social problems.

In the North, territorial contexts of great diversity coexist, and social vulnerabilities emerge with different characteristics and intensities.

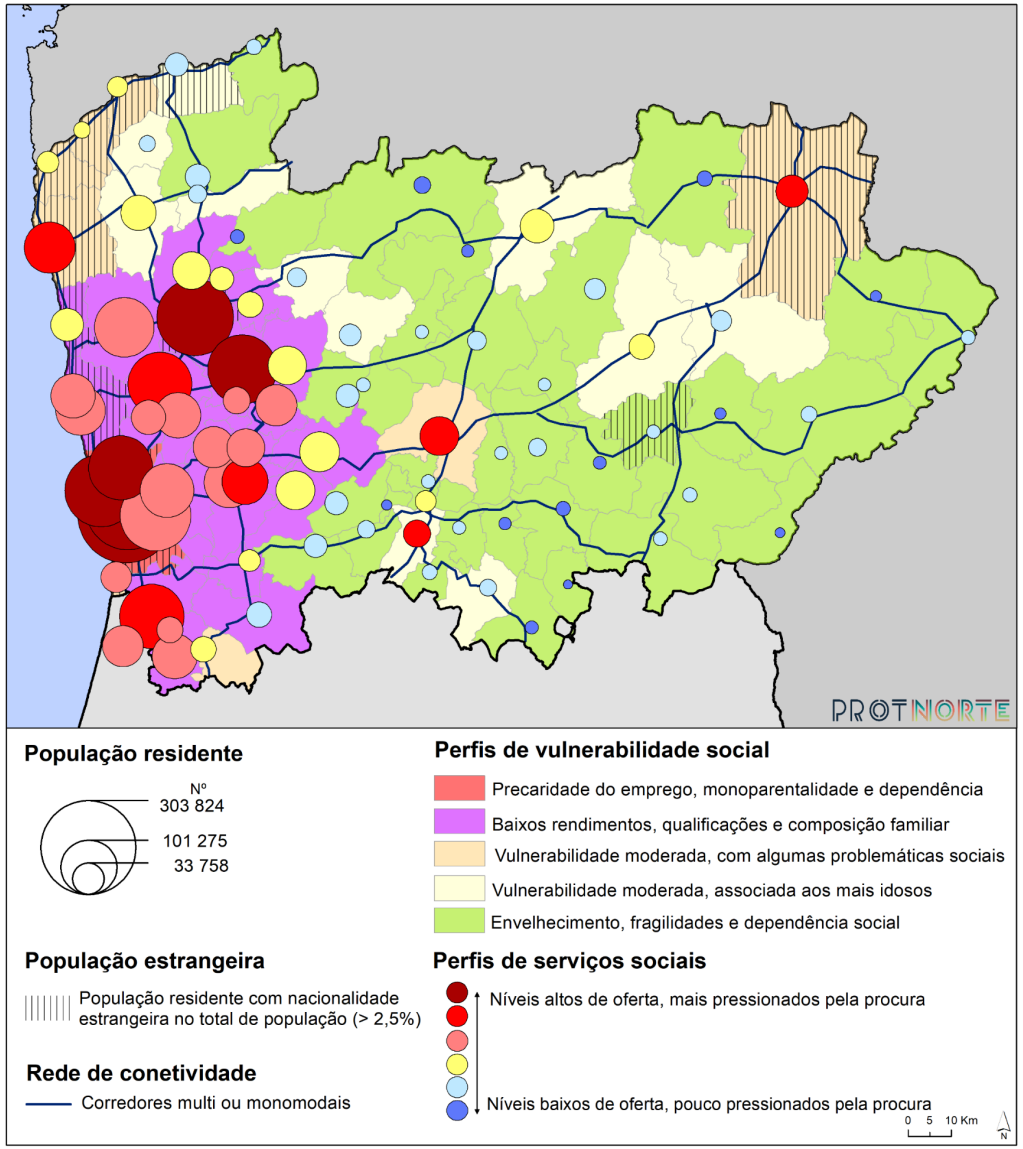
- It is in the denser core of the metropolitan area and in the main urban centers of the northwest that the most social problems and a significant presence of vulnerable groups are concentrated in absolute terms. The problems are mainly associated with the fragility of the labor market, due to precarious employment, potential unemployment and low incomes, coupled with low qualifications. Situations of family and individual vulnerability coexist, particularly large or single-parent families, with economic difficulties, situations of social dependency and lack of social integration, particularly among the immigrant population. But it is also in these areas that the levels of accessibility and supply of social services are highest, even though they are increasingly under pressure from demand and the growing need to qualify services and resources. Education, health and social support services are priority areas for intervention.

- - In some urban centers and in a transition zone, between Alto Minho and Tâmega e Sousa, there is a relatively reasonable offer of services. Situations of social vulnerability are differentiated, with some problems associated with situations of job insecurity, low income, dependence and social disintegration.

- Then, in a vast territory that extends to the border, high levels of social vulnerability stand out, marked by the strong aging of the population, associated with low income and strong social dependence (e.g. CSI, food support). Aging itself also means individual fragility derived from increased levels of physical and mental disability. In more remote territories, aging becomes more unprotected due to levels of depopulation and isolation and insufficient support in terms of health and social care. There is a need to move towards new service models in order to increase equity and territorial cohesion.

- **Territorial policies must respond to this diversity and complexity of social geographies, with different characteristics both in sociodemographic terms and also revealed by social vulnerabilities and the configuration of the provision of services of general interest. In this context, public policies must be able to guarantee equal opportunities to citizens, regardless of their geographical location, sociodemographic situation or any other social and individual condition.**

Social System of the Northern Region



Economic System

The Economic System for the Territorial Model of the Northern Region must consider that this is a region with significant weight in the national economy. It makes very significant contributions to the GVA and to the internationalization of the Portuguese economy, whether through the capacity of the Region's production system to insert itself into international value chains and global trade networks, or through its insertion into multi-scale knowledge and innovation networks. The Region holds diverse human, institutional, organizational, cultural and environmental capital that create mosaics of territorial capital with potential for economic appreciation. The diaspora, with roots in the Region, maintains strong ties with their places of origin, which, combined with cultural and emotional capital and other amenities, can strengthen foreign investment.

The territorial model must take into account that the Region shows internal disparities, particularly highlighted by the asymmetries that result from the profile of economic activities predominant in each territory, which gives rise to a dual structure: the expanded Northwest, polarized by the offer of higher-level services in the AMP and by the services and industry of a dense group of medium-sized cities, and the Northeast dominated by activities such as agriculture, forestry and some construction industry, supported by services offered by a few medium-sized cities that clearly need to reinforce their capacity to structure social development and the economic growth of this territory

Future development trajectories must enable the strengthening of territorial cohesion within the Northern region, but also with the rest of the country's regions and the European Union, in order to position itself among the group of highly innovative regions and free itself from the trap of intermediate development in which it finds itself trapped. To this end, all territories must contribute to the social development and economic growth of the Region (and the country), based on their endogenous potential and by strengthening their capacity to mobilise external resources.genos.

Policies for the Region should focus on strengthening current economic trajectories (strengthening the smart specialisation strategy and existing territorial clusters) and creating or importing new development trajectories, always taking into account the diversity of sub-regional characteristics that make up the Region's mosaic. The MPA is the structuring node of the regional economic system, playing a central role in the Region's integration at European and global levels, and policies should therefore strengthen its international centripetal capacity. The heart of the metropolitan area, with its density and diversity of higher-level services and more complex activities, has the potential to create trajectories based on the related variety with a higher level of complexity (which does not prevent the importation of new trajectories via the unrelated variety). To the north of the Metropolitan Area, urban centres stand out with their size, density and diversity of economic activities, such as Braga, Guimarães and Viana do Castelo, associated with other urban centres, organising an urban-industrial territorial structure, with a diversified range of services, sometimes rare and of a higher level. The Alto Minho, with its recent strong industrial dynamics, associated with the cross-border innovation system with Galicia, can deepen and diversify its trajectories. The Cávado, with increasing industrial diversification, is geared towards strengthening technological production, and should intensify the links between the R&D system and companies. The Ave, deeply rooted in textiles, footwear and clothing, should persist in incorporating innovation and creating brands. The Tâmega e Sousa is emerging as an area of expansion for business location, in addition to the development trajectories based on the furniture and construction industries. In the south of the metropolis, economic growth trajectories are emerging around the moulds and machinery and equipment industries, with a demonstrated capacity to develop innovation processes. A transitional zone is emerging throughout this territory, where construction and some industry predominate, and which functions as a new area of industrial expansion.

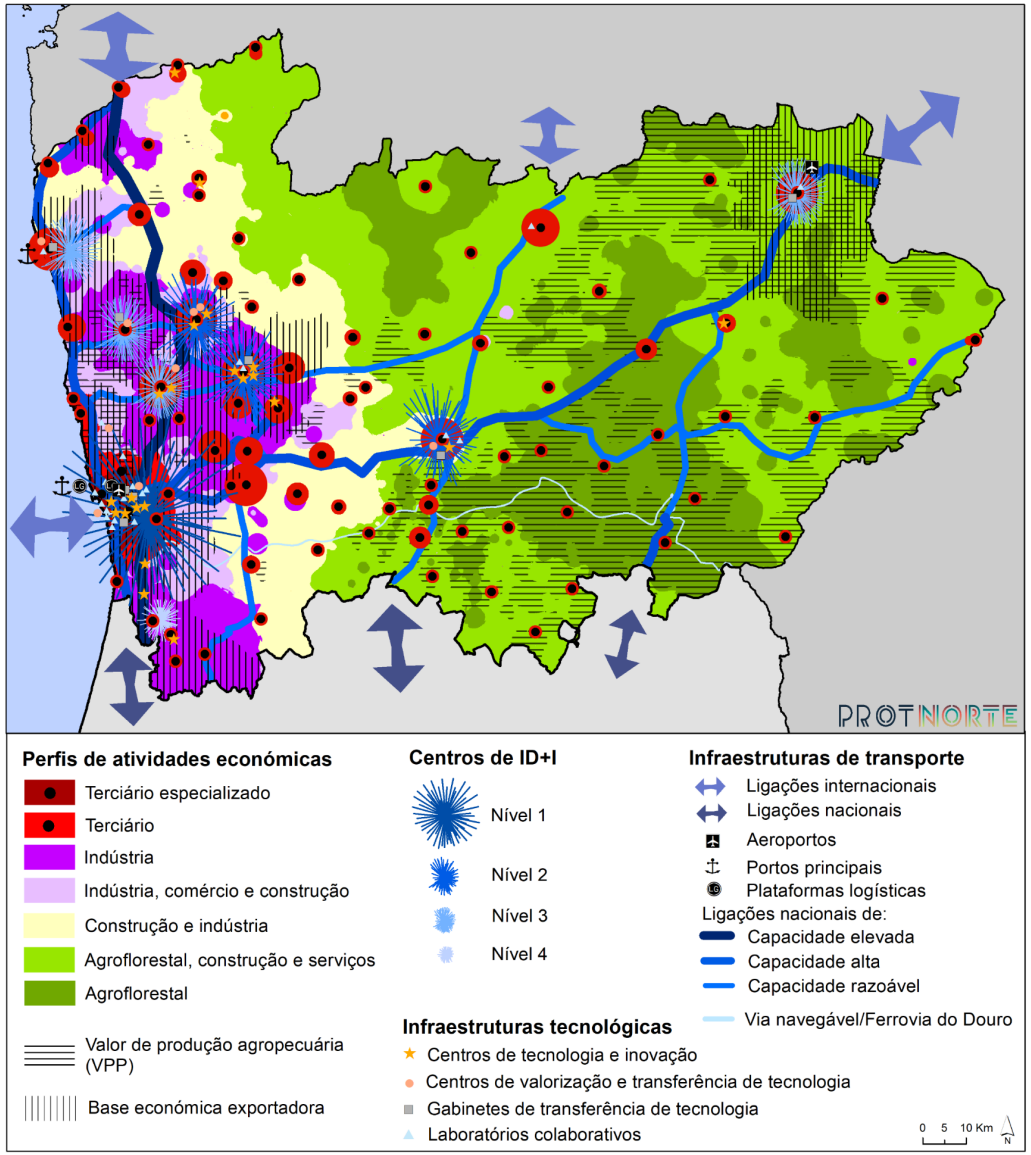
The economic structure of the Northeast is supported by the medium-sized cities of Vila Real, Bragança, Mirandela and Chaves, whose development is mainly driven by the provision of services and some industry (especially in Bragança). In addition, small urban areas (municipal capitals) offer local services. The Northeast must view the green and digital transitions as opportunities to leverage development trajectories, which is why investing in digital network infrastructure should be a priority.

Agriculture, livestock and forestry are the main occupation of the territory, confirm the region's export vocation (Douro and Vinhos Verdes), have a wide range of excellent agri-food products (DOP and IGP) of community recognition, contribute to the country's food security , and support the landscape associated with nature and rural tourism. In the 14 agricultural production basins, from the traditional TM olive grove to the dairy basin, there are 500 thousand hectares in production which, in value, represent a wealth of R$ 1 billion in the North. However, given the circumstances of their activities, especially outdoors, climate change is a given when planning for the future. In effect, the concentration of production basins in the Northeast coincides with the Northern territory, which is more susceptible to desertification, a high occurrence of drought and high susceptibility to heat waves, and also an unfavorable condition

The main forest areas, eucalyptus and maritime pine, occupy around 300,000 hectares, the first on the coast and the second in the high transition zone, coinciding with the ASRF. Both contribute to the regional paper, cardboard and furniture industries. As in agriculture, they are closely interdependent with the logic of the natural system (water, biodiversity and carbon) and climate change, but they have an even more relevant risk, that of rural fires, which affect current and future heritage, so that there is an urgent need for efficient management of this issue. Finally, mention the importance of non-treed forest spaces (known as cerrado), almost 1 million hectares, mainly in the transition zone and in the Northeast, due to their importance in foraging support for extensive beef cattle farming, and the environmental and biodiversity value of these spaces. already classified, in the contribution to the economy of nature/rural tourism, in the production of renewable energy, but also for the opportunity they represent in strengthening this last objective, in the exploration of mineral resources and in the recovery of old burned forest areas.

The primary sector therefore plays a fundamental role in the contribution it makes to the region's economy, the maintenance of populations in the territory, the positive balance in the water and carbon cycles, so that agriculture and forestry must be assumed as a solution and not as a problem, which public policies must promote continuously.

Economic System



Connectivity System

Ensure investment in safe, efficient and sustainable digital broadband infrastructures (fixed and mobile) in all territories, but with priority in those with low population density, inland or rural areas, installing high-capacity electronic communications networks (Gigabit) in territories not covered by the telecommunications market (e.g. white zones or target areas), where these commercial operations are not profitable, thus seeking to supply, through public investment, in the wholesale and (part) retail components, the offer of services not covered by the obligations arising from the 5G auction. Without this electronic communication network, it is not possible to develop knowledge- and technology-intensive productive activities such as precision agriculture (or agriculture 4.0), through the use of digitalization technologies, geographic information systems, territorial digitalization, sensing, of automation or robotization that increase the economic efficiency of intermediate inputs (relationship between the level of input use and the level of production), such as fertilizers, phytopharmaceuticals, water or energy, through their use in quantity, time and most suitable location. Without this network, it is also not possible to develop the necessary digital public services in a context of aging and depopulation, particularly in the area of health and, thus, in the reorganization of the supply in terms of quality (e.g. technological modernization of diagnostic and therapeutic equipment, highly advanced and specialists), and in quantity (e.g. new information technologies to facilitate family-centered and close care).

The accessibility, transport and mobility component should constitute a reference for: (i) the formation of a thinking/strategy specific to the Region; (ii) the review of sectoral plans and the plans of the entities that manage the main infrastructures that guarantee the internationalization of the regional economy; (iii) the review of municipal planning plans. It represents a vision of how connectivity structures different urban structures, as well as the territorial complexities involved..

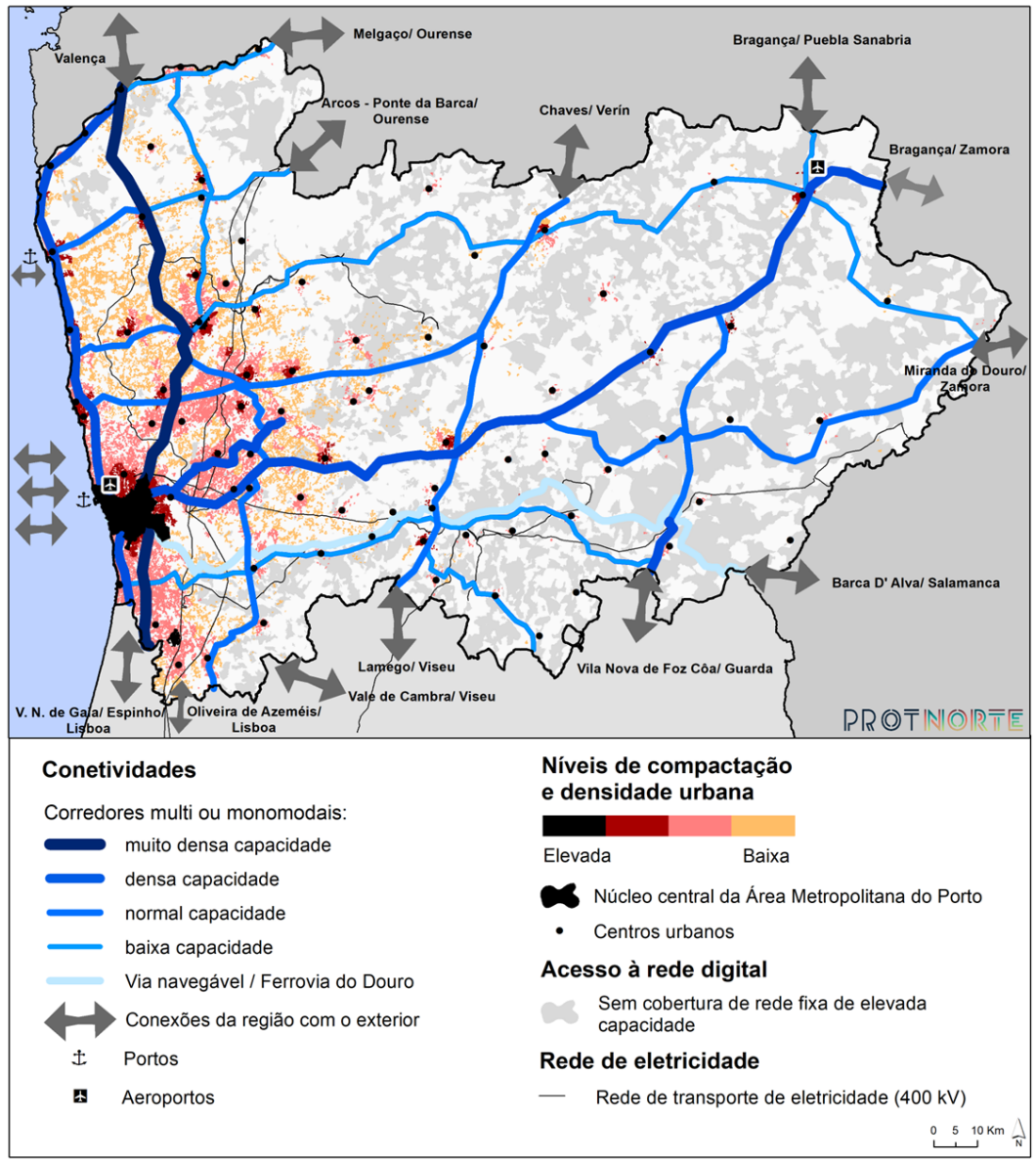
The future will certainly focus on the importance of organising/managing transport services for people and goods within a framework of multimodal provision suited to different territorial scales; and will reduce the need to build infrastructure, particularly within urban areas. The biggest infrastructure gaps are now of two very distinct types: (i) building a modern railway network, well-connected to the outside world and serving to strengthen regional polycentrism; (ii) restructuring canal spaces in urban areas with a view to reducing the number of vehicles and balancing the modal split, which is essential to increasing a more sustainable mobility pattern based on multimodality, reliable public transport and micromobility, as well as bioclimatisation.

With regard to the organisation/management of services, the preparation of the second generation of tenders for public road transport, integrating regular supply and flexible supply in a way that captures a greater dimension of demand, will represent the great challenge that the Region faces. Considering what should be formatted in a supra-municipal/regional logic.

The proposed model is based on three structuring aspects: (i) planning and management of a regional road network capable of absorbing what is excess in the PRN, and also the municipal infrastructure that plays a relevant role on a supra-municipal scale; (ii) integrated road-rail management of strategic corridors for the urban system and for the territorial diversity/complexity present; (iii) planning action that respects the territorial scale of each mode and means of transport, under penalty of creating services that are difficult to sustain economically and financially due to the inadequacy of supply to potential demand, or due to insufficient bilaterality in the supply between different modes of transport.

The most relevant corridors do not reflect ‘the infrastructure’ itself, but rather the services they must provide in terms of their size/range relationship. In some cases, the relevance lies in the transport capacity offered, especially if it is multimodal; in others, relevance is based on valuing the social, natural and economic heritage of the most depopulated territories. Four types of corridors are defined that structure the Region, at different scales and performance levels: very dense capacity corridors, or main ones, integrating highway and railway line of the main TEN-T network; dense capacity corridors, or secondary corridors, integrating highways and railway lines of the global network (all other railway connections); ‘normal’ capacity corridors (third level), integrating other exclusively high- and medium-performance road structuring connections; low capacity corridors (fourth level), exclusively road, in which the structuring function is not based on traffic capacity, but rather on the role they play in organizing the territory on a regional and inter-regional scale, based on an infrastructure adapted to the demand and with proportionally qualified conditions to guarantee territorial and social cohesion. For the mentioned road-rail corridors, management/operation models integrated into the same concessionary solution must be studied and worked on, capable of promoting balance in the modal distribution. The corridors that are based on national roads (N101, N103, N222, etc.) still play a highly relevant role as axes for the heritage, landscape and tourism enhancement of natural territories.

Connectivity System



Urban System

The Urban System for the Northern Region establishes a strategy to reinforce polycentrism as a territorial model. The construction of this polycentric urban system focuses on urban development and greater integration between territories, through greater inter-urban and rural-urban relations. The aim is to reduce regional disparities and establish the Region within the national framework. Strengthening horizontal (intra-regional) and vertical (inter-regional) interactions within the urban system depends on a set of factors that should be prioritized for a desirable territorial organization. The regional urban system is organized around the following elements:

urban centers, which structure the organization of the territory and guarantee a diversified offer of urban services and functions;

territorial subsystems that articulate close relationships and contextualize more integrated dynamics of urban-rural development;

urban networks, which provide opportunities for inter-urban cooperation and contribute to strengthening regional sustainability and accelerating urban transitions

The regional urban system is organised around a set of urban centres that offer a variety of urban functions, with different levels of specialisation. At the highest level, there are urban hubs that provide a wide range of functions or services, from the most basic and essential to the most specialised. At the lowest levels, there are small hubs, offering a limited range of services, especially those of primary necessity. At the regional level, the urban system presents a relatively unbalanced structure, requiring a new territorial organisation. The Northwest has a polycentric urban system, ensuring a diversified supply of services, with different levels of specialisation. On the other hand, territories with lower population density show weaknesses and highlight the need for a more proactive public policy. The polarities, regardless of the context, should activate policies that are more focused on accelerating fairer urban transitions.

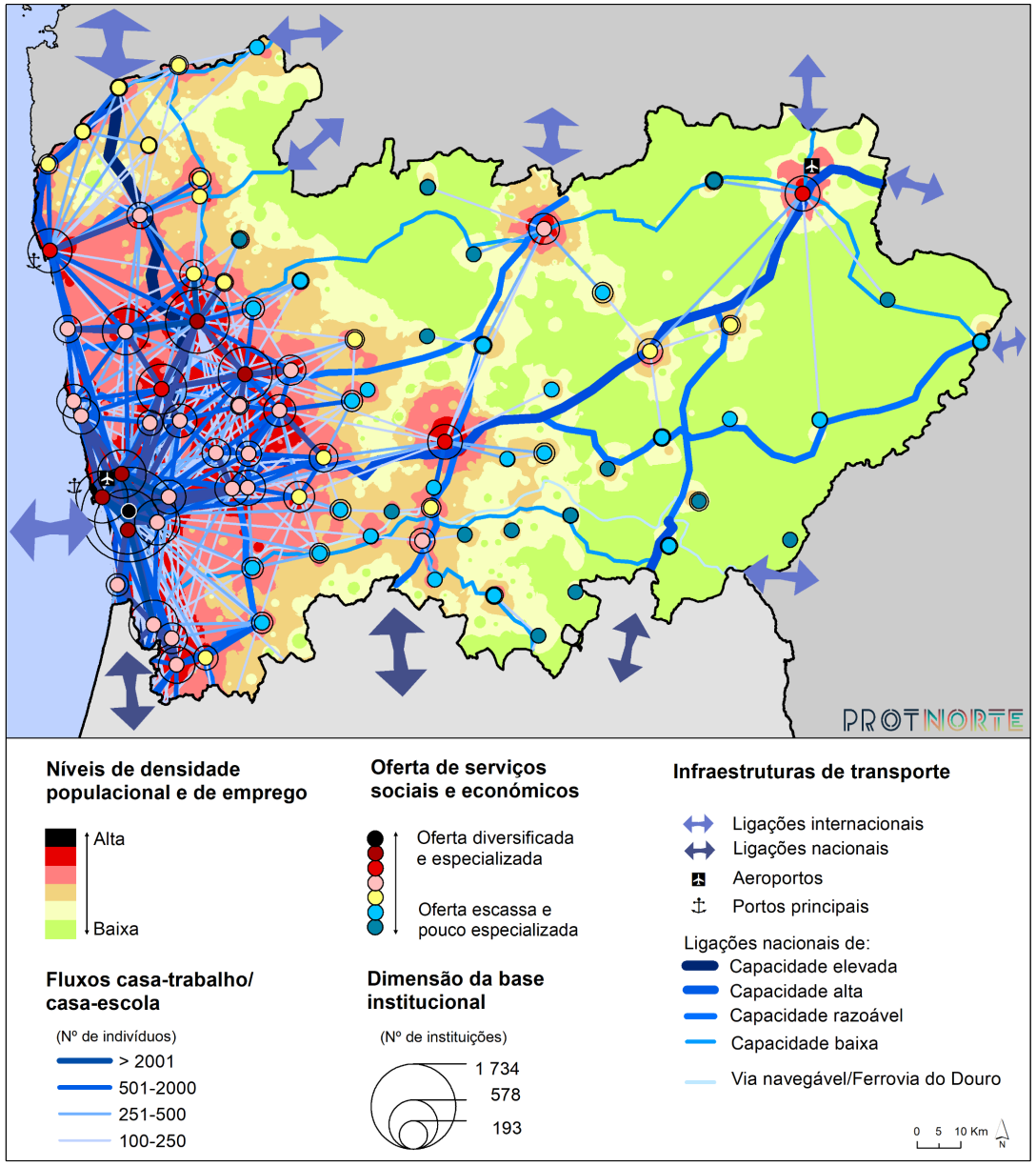
The second element considers that the consolidation of a regional polycentric urban system is also based on the existence of territorial subsystems, structured by local and sub-regional flows, interactions and partnerships. These are spaces for citizenship, valorisation of territorial assets, life frameworks and territorial integration, reinforcing proximity, inter-urban and rural-urban synergies. At a regional level, several subsystems emerge, framed in contexts with different urban problems and challenges: On the one hand, it is necessary to qualify the urban system of the Northwest, investing in innovation and urban regeneration and increasing territorial resilience. These are contexts of great conflict of uses, heavily pressured by urbanisation processes and multifunctionality, where ecological systems have difficulty coexisting or resisting. It is crucial for urban systems to trigger transformative processes, aiming at the development of innovative urban solutions, particularly in terms of the digitalisation of services, economic regeneration, local food supply, sustainable mobility and housing supply.

On the other hand, it is necessary to consolidate the urban system of the transitional territories. Around the Northwest, an extensive crown extends vertically, portraying a large territory of diffuse urbanization, polarized by small or intermediate-sized urban centers, where urban-rural relations are intense. These are areas under strong pressure due to housing demand and the need for large spaces for industry, logistics and wholesale trade, in an exceptional natural context. In this context, the consolidation of the axis between Chaves-Vila Real-Lamego(-Viseu) also deserves emphasis. The challenges focus on urban-rural relations, on creating conditions that generate greater vitality and viability of the systems, innovating in urban qualification and in the responses to be given to residential and economic attractiveness in harmony with the natural and cultural capital.

Finally, it is necessary to affirm the urban system of rural areas, recreating new perspectives for territorial development. These are territorial subsystems that need to be structured in rural areas with low urban density, with a relatively scarce supply of services and less expressive interurban flows. Socio-ecological transitions can create new strategic opportunities that need to be incorporated and promoted. Therefore, it is essential to increase urban attractiveness and enhance existing natural and cultural resources, fostering mechanisms that trigger innovative processes around priority missions. In this context, the consolidation of the Vila Real-Mirandela-Macedo de Cavaleiros-Bragança structuring axis deserves emphasis. There is also a need to structure an urban axis between Vila Real-Carrazeda de Ansiães-Vila Flor-Alfândega da Fé-Miranda do Douro and another between Armamar-Vila Nova de Foz Côa-Freixo de Espada à Cinta.

The vitality of the urban system can also be supported by a set of urban networks. These networks are organized with the aim of creating approaches aimed at building fairer urban transitions, focused on desirable and plausible scenarios, supported by visions that involve communities. In practice, they are “bottom-up” approaches structured around common urban challenges.

Urban System



Critical Vulnerabilities

Critical vulnerabilities arise from natural, technological and mixed risks that present a high or moderate degree of susceptibility and their specific impact on territories and populations. The mapping presented for the Northern territory was based on the identification carried out on a macro scale by the PNPOT (DGT, 2019) and the results of the “National Risk Assessment” (ANEPC, 2019), having been carried out a weighting of the main risks that occur in the North and are represented on a regional scale and that contribute to the formulation of the Territorial Model.

For the internationally adopted climate change scenarios, it is expected that the change in temperature, precipitation and occurrence of extreme events patterns will have, in the North, special consequences in the worsening of drought, in the frequency of heat waves, in the increased risk of rural fires, in the progression of soil desertification, in the worsening of situations of water erosion, flooding and coastal overtopping, in river flooding and in mass movements on slopes.

The identification and mapping of critical vulnerabilities will always be an opportunity for land use planning and territorial development, to the extent that it allows for more informed decisions to be made about the use, occupation and transformation of land, in order to prevent and reduce the risk to people and property and to identify adaptation needs depending on the areas in which they occur.

In the North, rural fires constitute the most critical vulnerability, a situation that could worsen given that an increase of 15 to 40 days of extreme conditions per year is estimated for their occurrence. However, this is a risk that we intend to address with the implementation of the Northern Regional Action Programme of the Integrated Rural Fire Management System, as well as with the territorial planning and management that is now proposed. The risk associated with rural fires was mapped based on the different fire regimes, as they best reflect human interaction with the occupation of the territory, the type of biomass/fuel, the soil and climate conditions of the territory and the history of fires. It also has the advantage of considering a long serious series, from 1980 to 2017, allowing rural fires to be contextualised in terms of their size and intensity, time and origin, distinguishing territories according to typologies. This approach allows for the establishment of better proactive strategies specific to each territory and corresponding fire regime. Thus, peri-urban fires require the management of interfaces and the adoption of adaptation measures, forest fires require the management of biomass and compartmentalization systems, and livestock and agricultural fires essentially require the adoption of the respective good practices. Preventing severe rural fires makes it possible to counteract the devastating effects in terms of loss of human lives, material goods, forest and agricultural resources, maintaining soil productivity, preserving biodiversity, improving the quality of water bodies and containing carbon emissions.

Coastal erosion and exposure to the risk of overtopping and coastal flooding are directly related to the sediment deficit. The Caminha-Espinho Coastal Coast Program (POC-CE) defines Safeguard Strips against Coastal Erosion that include the land area in which there is a probability of erosion, corresponding to the possible migration of the coastline to the interior and Safeguard Strips against Overtopping and Coastal flooding that correspond to the land area in which there is a probability of overtopping or coastal flooding by the ocean, taking into account the scenarios of expected rise in the average sea water level and the occurrence of extreme meteorological phenomena such as meteorological uplift . The Critical Areas of Protection, Accommodation and Planned Retreat assume special relevance in structuring the POC-CE territorial model and in operationalizing the coastal risk prevention and reduction strategy. These are the coastal areas where, given the susceptibility to coastal risks and the respective occupation, priority adaptation interventions must be carried out, framed in specific strategies guided by planning principles that, in each case, represent a better compromise between the costs of interventions and the benefits that will result from them, in terms of safeguarding people, material goods and natural values.

In the North, around twenty areas with significant potential flood risk have been identified, which include the Area Adjacent to the River Tâmega, and it is essential to ensure the retention and infiltration of water in the upper and intermediate stretches of the basins, prevent new waterproofing interventions, promote improved drainage, restore river connectivity and renaturalize areas adjacent to water courses, in order to minimize the effects of flooding.

n the Northeast, the interrelated risks of drought and heat waves dominate, which, in turn, aggravate the situation of soil desertification risk and vulnerability to fire. Adapting to drought and heat waves involves implementing good water management practices in agriculture, industry and the urban sector, to prevent impacts resulting from drought and scarcity phenomena. In urban areas, reducing vulnerability to heat waves and increases in maximum temperatures requires the implementation of green infrastructure, with drought-resistant vegetation and the creation of water retention basins, the renaturalization and recovery of the permeability of pavements, and the creation of shady areas.

In the Northwest, the Esposende-Vila do Conde Vulnerable Zone stands out, which corresponds to the area known as the dairy basin, and for which there are specific requirements for controlling groundwater pollution by nitrates.

The technological risks highlighted concern the infrastructure and industrial and commercial activities existing in the North and which materialize in the risk of large dams breaking and the risk of accidents occurring in fixed installations with dangerous substances. There are specific prevention and control mechanisms for these types of risks.

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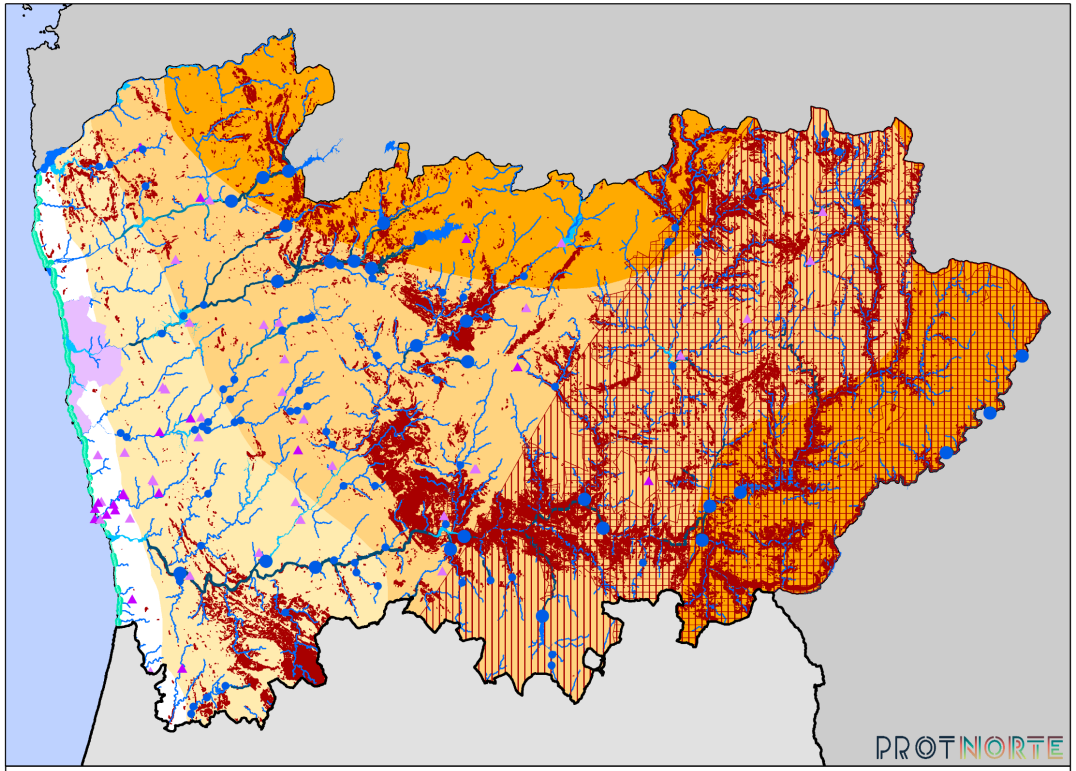
Vulnerabilidades Críticas da Região Norte



Territorial Model

The PNPOT clearly explains the importance of each part of the territory and its specific characteristics, in view of the major changes underway, embodying a vision that integrates and values the various components of territorial systems at a national level, identifying the set of public policies and practices to be implemented with a view to improving external competitiveness and internal cohesion.

The construction of the Northern Territorial Model incorporates the strategic reflection of Territorial Systems and advances in terms of territorial integration inspired by the PNPOT, considering the specific characteristics of the territories and the challenges of evolution that they face. Methodologically, the Territorial Model was constructed in four stages:

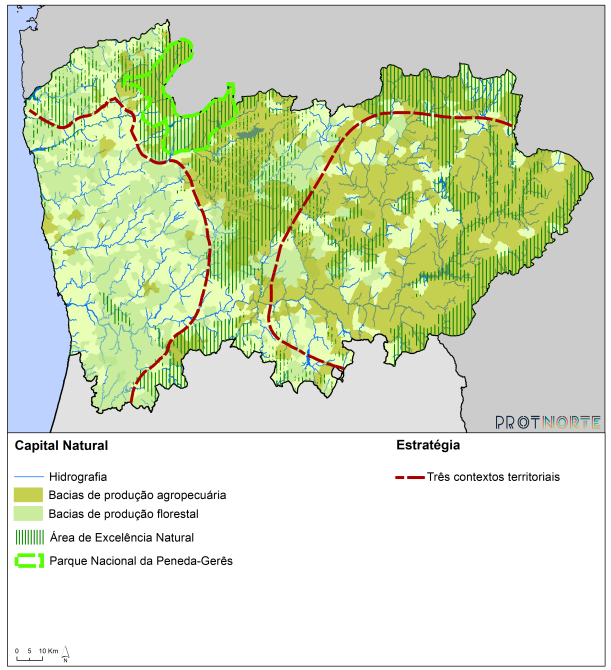
First, starting from the Natural System, the "ground of the North" that ensures the good functioning of the water and carbon cycles, where the use and exploitation of resources must be reconciled in a sustainable and lasting way. Three relevant territorial contexts were identified for the development of different strategic approaches: i) the Northwest, where the most intensive agricultural and forestry systems dominate, but where there is a need to establish a Peri-urban Network of Natural Spaces; ii) the central hinge zone, at high altitude, consisting mainly of the Area of Natural Excellence, which corresponds to the majority of classified and protected areas and almost all of the common lands, associated with extensive mountain livestock farming and maritime pine production; iii) the Northeast, where the greatest diversity of products with recognized agri-food excellence is found and where the largest areas of agricultural production basins are concentrated.

The long-term economic, social and environmental survival of the entire North, natural, rural and urban, will depend on the good management of this "ground".

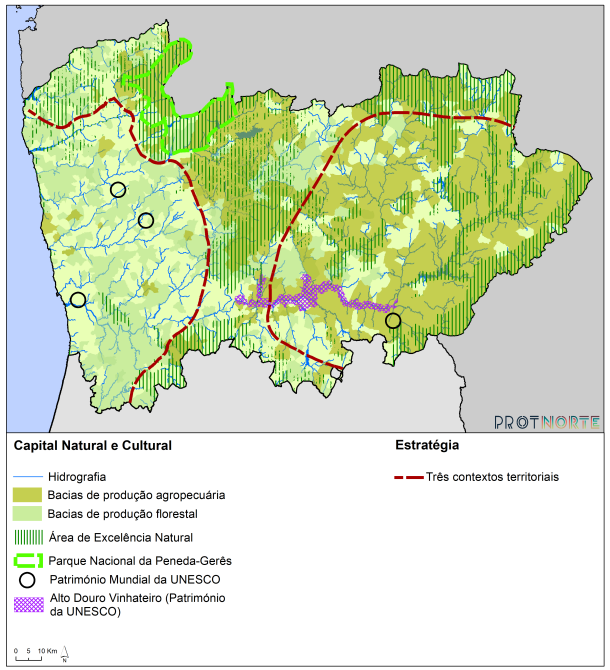
- Then, within these three territorial contexts, heritage sites were included, integrating historical-cultural values. In terms of UNESCO World Heritage Sites, the following sites were located: the Historic Center of Porto, Luiz I Bridge and Serra do Pilar Monastery; the Sanctuary of Bom Jesus, in Braga; the Historic Center of Guimarães; the Alto Douro Wine Region; and the Prehistoric Rock Art Sites of the Côa River Valley and Siega Verde. These heritage sites symbolize the importance of integrating the cultural aspect into the territorial strategy, aiming to ensure the preservation of local identity and culture and the values of territorial belonging. Also classified by UNESCO, there are two Geoparks in the Region, Arouca and Terras de Cavaleiros, as well as two Transfrontier Biosphere Reserves, Gerês-Xures and Meseta Ibérica.
- Afterwards, the Urban and Economic Structure was included, in order to design the regional urban system. In the Northwest, a polycentric urban system is evident, with a central nucleus and several urban hubs, designing a multifunctional structure, with different densities and intensities of land use. The structure of activities highlights a strongly industrial Northwest, where several service hubs emerge, with different levels of specialization.
- Outside this context, small centers and small and medium-sized cities offer a set of essential services in terms of quality of life and well-being for the resident population, in a vast rural context where agriculture and forestry dominate, although in demographic loss. In this context, polycentrism must be anchored in a set of urban axes.
- - Finally, the connectivity system was added in order to give expression to the relational space. Connectivity networks, the crossing of flows and different levels of accessibility highlight the importance of connections in the construction of a polycentric vision of the regional urban system. The commitment to a polycentric network is based on the development of complementarities and cooperation networks. Therefore, it is necessary to prioritize the levels of connectivity between contiguous urban centers, providing new possibilities for complementarity and the construction of competitive advantages. Reinforcing connectivity levels with the outside world is also strategic, with the neighboring regions of Central Portugal, Galicia and Castilla-León.
- Capital importance deserves digital accessibility, whose generalization of access to the internet and digital services to people and companies are recognized as a valuable asset for territorial cohesion and equal opportunities, especially in the context of small centers and small and medium-sized cities.
- Thus, the Territorial Model of the North region is developed around 3 Territorial Strategies, which reconnect the development of urban centers of different sizes with their industrial, agricultural and rural surroundings:

- The qualification of the multifunctionality and polycentrism of the Northwest.
- The valorization of spaces of natural excellence, and the consolidation of the urban-rural intermediation axis.
- The qualification of the agricultural system and the structuring of the urban networks of the Northeast.
- In the development of the work, for each of these 3 Territorial Strategies, the challenges already stated are embodied. For each challenge, the measures, projects and guidelines that will promote the development and co-creation of "bottom-up" solutions are identified, which are intended to be innovative and collaborative, ensuring greater levels of sustainability and resilience. In order to feed this process, some problems are systematized below.

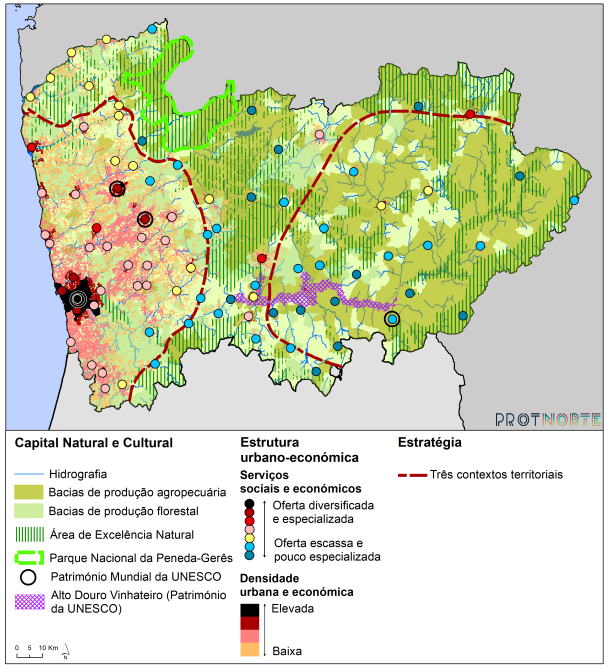
1) Natural Capital



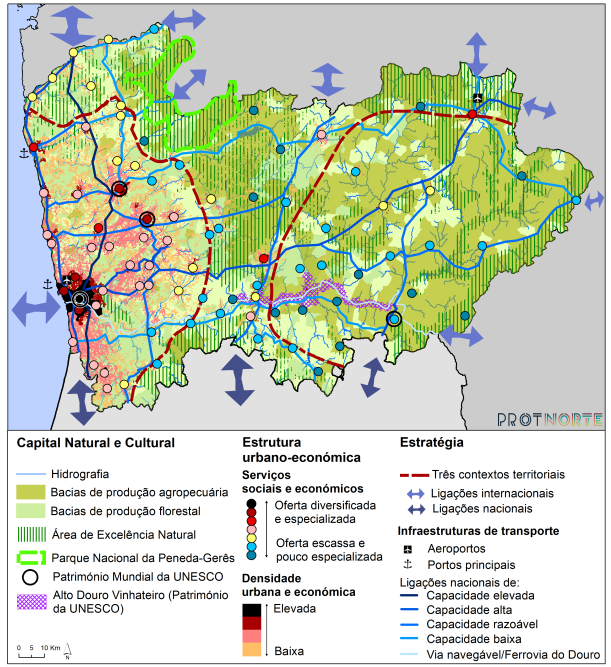
2) Cultural Capital



3) Urban-economic structure



4) Connectivities



The qualification of the multifunctionality and polycentrism of the Northwest requires a commitment to innovation and urban prosperity and to increasing territorial resilience. In this context, each NUTS III incorporates heterogeneous realities that must be addressed locally, taking into account a set of problems.as:

- The Northwest has a strong urban polarity, with large and medium-sized cities and a large number of small urban centers. It is a territory under great pressure from urbanization processes and multifunctional uses, where the built environment is intertwined with ecological systems. Several challenges arise in terms of sustainability and urban resilience.
- In strategic terms, it is crucial that urban centers drive systemic changes in several areas, such as the economy, energy, food, water and waste, mobility, housing and services. The transformative capacity of territories depends on the capacity of urban areas to drive profound changes to face current challenges, promoting well-being and strengthening resilience..
- In urban contexts, it is necessary to promote the efficient use of land, reconfiguring the urban form, recovering it, providing habitable conditions, valuing commerce and proximity services, and increasing bioclimatic comfort and sustainable mobility. An integrated policy approach aimed at well-being and sustainability in relation to built environments (housing, transport, infrastructure, urban design, water and waste management) is needed.
- In these territories, changes in economic activities are expected, as a result of technological and ecological transition processes, but also changes in styles and ways of life. Major impacts are expected from ongoing transitions, namely: in the textile, clothing and footwear industry; in wood, furniture and cork; in the manufacture of equipment and machines; in molds and in the automobile industry. Furthermore, new activities are emerging here, particularly in the area of digital and energy.
- It is in urban centralities that the actors most capable of activating processes of innovation and economic regeneration are located. Favoring a regenerative economy implies more inclusive and sustainable processes, which take into account local resources, which change production systems, location models and forms of production, increasingly seeking to reduce negative environmental externalities. Furthermore, it is crucial to promote the food transition, the proximity economy and the qualification of urban-rural interstitial spaces, notably through the creation of a peri-urban network of natural spaces.
- It is essential to develop a territorial approach towards climate action and resilience for the Northwest. Green spaces can retain and absorb surface water and reduce urban flooding and increase peri-urban biodiversity and the physical and mental well-being of residents. Thus, the intelligent management of water and effluents, the valorization of green spaces, the prevention and combat of floods, interventions to mitigate the impacts of cold waves and heat waves, are some of the strategies to be intensified in these densely populated territories.
- Responding to the various challenges also requires countering socio-spatial segmentation and promoting processes of social inclusion and innovation. The ageing of the population, physical and mental disabilities, and the resulting isolation, worsen situations of social vulnerability for a large number of residents. Technological and ecological transitions also require special attention to the need to promote fair transitions.
- In a large arc that surrounds the dense Northwest, stretching between Alto Minho and Tâmega e Sousa, crossing the interior of Cávado and Ave, and extending to Vale de Cambra, it is a priority to intervene in order to reduce the existing spatial segmentation. In these contexts, it is necessary to promote the qualification of services in urban centres (health, education, culture, social support, etc.) and the reinforcement of urban infrastructure levels (water, sanitation and waste). These are contexts under great pressure due to the demand for housing, where buildings need to meet the needs of new families, prioritizing urban densification, while preserving and enhancing the quality of environmental resources. Strategies focused on innovation (social, education, health and environment) drive urban changes that may transform these territories in the future. In economic terms, it is necessary to continue to innovate the economic base in order to improve employability and returns on assets.

The valorization of spaces of natural excellence and the consolidation of the urban-rural intermediation axis involves enhancing an intervention mainly based on wasteland areas that support the majority of agro-silvo-pastoral and forestry production, in the production of energy sources renewable energy (water and wind) and in its conciliation with the conservation of these natural spaces, essential support infrastructures, simultaneously, for all nature and rural tourism and for the well-being and quality of life of residents.

This subsystem comprises the main natural assets of the North (soil, water and biodiversity) and also ensures the proper functioning of the water and carbon cycles, ensuring their storage and stock. It covers the entire Area of Natural Excellence that extends from Serra de Arga, with emphasis on the Peneda Gerês National Park, the only one in the country, and extends through the highlands of Barroso, Alvão, Marão to Montemuro, Freita and Arade and also through the Montesinho Natural Park.

It should be noted that all NUTS III contain areas integrated into this subsystem. This is the pivotal territorial subsystem that guarantees and provides sustainability throughout the North, where public policies must:

Aim for the protection, enhancement and restoration of existing natural capital, ensuring the primary mission of nature and biodiversity conservation.

• Focus on the maintenance and promotion of extensive mountain and forestry livestock systems, improving their management in order to ensure value production, namely with the introduction of innovation, allowing this balance to improve water retention and infiltration and the maintenance of carbon stocks in the soil.

• Ensure the operationalization of the objectives of the Integrated Rural Fire Management System by reducing the negative effects of the fire regime associated with different economic, social and environmental levels, in particular through the implementation of the Northern Regional Action Plan.

• Promote nature tourism associated with these territories of natural excellence and all productive and cultural activities related to the rural world that guarantee the quality of the experience.

• Develop the use of mining resources by adopting the best available practices and always seeking to increase value chains and internalize them locally, respecting the prevailing environmental constraints.

• Promote the consolidation of existing cluster networks and anchor transformation processes in the urban centers of this network by strengthening interurban and urban-rural connections with the surrounding rural territories. Interventions should focus on innovation processes, on projects that can trigger new dynamics, some focused on providing services of general interest, others geared towards attracting new residents and new economic activities, ensuring the digital connectivity of these territories, favoring a more regenerative urban and rural economy, which serves and values local resources, of which the PNPG villages are a good example, whose network allows parts of the territory to remain alive.

• Contribute to the consolidation of the Chaves - Vila Real - Peso da Régua – Lamego axis. Investing in this urban-rural corridor allows you to streamline a strategy focused on a priority mission. Strengthening the existing urban network will allow us to achieve better levels of efficiency and effectiveness in the management of public policies and the implementation of more integrated strategies based on innovative projects. Preferably, this axis should extend, to the south, to Viseu, as well as, to the north, to Verin and enhance an inter-regional and cross-border urban network.

In this pivotal territorial subsystem, which corresponds, for the most part, to the Area of Natural Excellence, urban spaces and rural territories must cooperate around their specificities and complementarities, innovating in residential attractiveness, in the valorization of their natural resources, and in the promotion of cultural heritage and identities. In this regional context, it is essential to develop integrated strategies and interventions, based on a shared vision, which structures resources and values different territorial contexts. The spatial contiguity of the issues requires consultation between different NUTS III.

The qualification of the agricultural and livestock system and the urban structure of the Northeast, which occupies almost all of the CIM of Terras de Trás-os-Montes and Douro and also a small part of Alto Tâmega and Barroso, where the largest basins of agricultural and livestock production are concentrated, whether for plant production (vineyards, olive groves, chestnuts, almonds and apples) or animal production (an important part of extensive mountain livestock farming and almost all milk production from small ruminants).

This is the territorial, solar subsystem of agri-food excellence, presenting the highest concentration of agri-food products of quality recognized by the EU (DOP and PGI) in the North, where it is necessary to view rurality as an opportunity and not as a problem.

In an unrepeatable context of growth in urban centers due to existing demographic circumstances, qualification involves a differentiating focus on rural development and the intensification of the connection between urban centers and the surrounding area. Also in this context, it is necessary to structure urban polycentrism and create mechanisms that trigger innovative processes around priority missions in terms of developing complementarities and urban cooperation networks. In an urban-rural strategy, to be developed in an experimental and innovative way, it is proposed to structure a set of urban axes, which should anchor or energize a multiplicity of territorial interventions (interurban; urban-rural, rural-rural) and promote active participation of various local and regional actors. Public policies must:

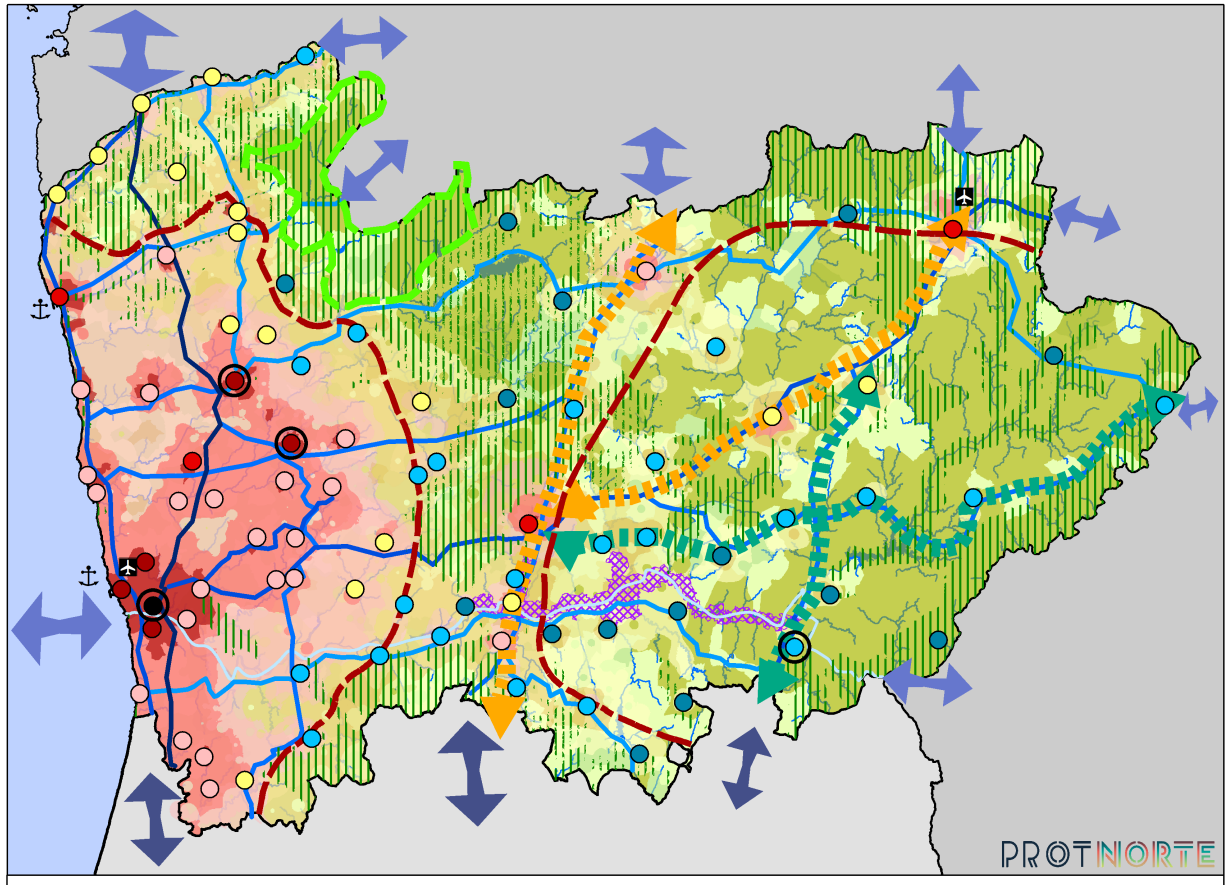
Contributing to the consolidation of the urban axis of Vila Real, Mirandela, Macedo de Cavaleiros and Bragança is a priority mission, as it highlights an important potential in terms of territorial balance, which is strategic for the North region, in terms of equity and territorial cohesion.

Undertake the structuring of the Vila Real, Sabrosa, Alijó, Carrazeda de Ansiães, Vila Flor, Alfândega da Fé, Mogadouro and Miranda do Douro axis, anchoring a crucial urban-rural intervention strategy to support the territorial unlocking of this extensive area.

Cooperate in the affirmation of the Macedo de Cavaleiros, Alfândega da Fé, Torre de Moncorvo and Vila Nova de Foz Côa axis, in a potentially inter-regional strategy to be coordinated for the south, also a priority. These are small urban centers that have to reinforce complementarities with a view to building economies of scale, particularly in the provision of collective services or tourism development. The Prehistoric Rock Art Sites of the Côa River Valley and Siega Verde and the recently created Lagos do Sabor are a unique heritage with high strategic potential.

- Support the dynamics of productive investment that occurs in the territory, effectively solving, collectively or individually, the problem of water scarcity for irrigation, but simultaneously, finding solutions for production systems, technologies, equipment and cultivars that respond in a more efficient way. efficient to chronic lack of water and allow the improvement of the condition of soils in relation to carbon stock.
- Promote a strategy to value this agri-food potential, increasing the added value of different productions by strengthening the agro-industrial transformation component, promoting and internationalizing higher-value products, supporting local solutions that increase the territory's resilience.
- Promote work and life solutions that allow the labor force necessary to reinforce the territory's agricultural activity to stabilize in decent conditions.
- Reduce the fire risks of fire regimes associated with this territory and the dynamics of desertification through the measures considered in the Northern Regional Action Plan for the Integrated Management of Rural Fires.
- Promote rural tourism associated with these areas of agri-food excellence and all productive and cultural activities connected to the rural world that guarantee the quality of the experience.
- Develop the use of forest areas without forest stands, where the benefit of photovoltaic and wind production from renewable energy sources is maximum, as long as it is compatible with the prevailing environmental conditions.
- In this territorial subsystem, urban and rural areas must be reconnected, cooperating around their specificities and complementarities, promoting agri-food products of quality recognised by the EU. At the same time, and as a condition for viability, efforts must be made to equip territories with high-performance digital networks, viewing the green and digital transitions as opportunities to boost development trajectories.

Territorial Model of the Northern Region



Capital Natural e Cultural

- Hidrografia
- Bacias de produção agropecuária
- Bacias de produção florestal
- Área de Excelência Natural
- Parque Nacional da Peneda-Gerês
- Património Mundial da UNESCO
- Alto Douro Vinhateiro (Património da UNESCO)

Estrutura urbano-económica

Serviços sociais e económicos

- Oferta diversificada e especializada
- Oferta escassa e pouco especializada

Densidade urbana e económica

- Alta
- Baixa

Estratégia

- Três contextos territoriais
- Eixos em Consolidação
- Eixos de Estruturação
- Ligações internacionais
- Ligações nacionais

Infraestruturas de transporte

- Aeroportos
- Portos principais

Ligações nacionais de:

- Capacidade elevada
- Capacidade alta
- Capacidade razoável
- Capacidade baixa
- Via navegável/Ferrovia do Douro

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