

ANTICIPATORY PUBLIC GOVERNANCE FRAMEWORK AS A FACTOR IN ENSURING NATIONAL RESILIENCE ON THE PATH TO THE EU

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INTRODUCTION

The contemporary paradigm of state-building amid global turbulence and chronic security challenges demands a fundamental transformation of the core principles underlying strategic planning and administrative decision-making. Traditional, reactive models focused purely on mitigating the consequences of existing crises demonstrate distinct institutional limitations and an inability to ensure the sustainable development of complex socio-economic systems. Under these circumstances, shifting toward proactive forms of governance becomes exceptionally urgent. The conceptual framework of Anticipatory Public Governance offers a systemic toolkit to identify latent threats¹, model alternative scenarios for the future, and integrate these predictive insights into current policy-making.

Ukraine's European integration process, which serves as an unalterable vector of its civilizational progress, unfolds under unprecedented external pressure and the internal restructuring of public institutions. Adapting domestic legislation to the *acquis communautaire* of the European Union is not merely a technical duplication of regulations, but a profound modernization of the entire public authority system². Within this context, the state's capacity to act preemptively becomes a critical factor in the success of the integration process. It allows the state not only to minimize the risks associated with the asymmetry of regulatory frameworks but also to harmoniously embed national priorities into the long-term strategies of the European community itself. National resilience acts as the fundamental cornerstone for the viability of any sovereign system in an era of permanent crises. This integral phenomenon encompasses the capacity of society, the economy, and state institutions to withstand critical stress, rapidly recover core functions following destructive impacts, and adapt to new geopolitical

¹ Ahern, D. (2025). The new anticipatory governance culture for innovation: Regulatory foresight, regulatory experimentation and regulatory learning. *European Business Organization Law Review*, 26(2), P. 247.

² Bertin, J., & Kranke, M. (2022). Anticipatory global governance: International organisations and the politics of the future. *Global Society*, 36(2), P. 159.

realities³. Ensuring such resilience is impossible without forming agile governance frameworks capable of continuous self-learning and strategic foresight.

The theoretical and methodological construct of anticipatory public governance rests upon three interconnected elements: strategic foresight, systemic institutional agility, and real-time feedback mechanisms. Implementing these elements transforms the state apparatus from a mechanistic executor of directives into a dynamic ecosystem that generates preventive tools to protect national interests. In the context of the Euro-integration movement, this translates into the capacity to evaluate in advance the implications of implementing common EU policies on the domestic market, the social sphere, and the security sector, thereby preventing potential points of friction from emerging. The specificity of the current stage of public administration modernization in Ukraine lies in the necessity of simultaneously addressing post-war reconstruction tasks and fulfilling EU membership criteria. Implementing anticipatory models allows for the synchronization of domestic reforms with the global development trends of the EU, particularly in digital transformation, environmental security, and energy independence. This shifts the movement toward the EU from a linear compliance process into an instrument for a qualitative leap in state capacity.

1. Conceptual Foundations of the Anticipatory Governance Framework in the Context of Ensuring National Resilience

In contemporary political science and public administration theory, the concept of anticipatory governance emerges as a direct response to the systemic limitations of reactive management models. Traditional institutional structures typically operate within a crisis-liquidation paradigm, which demonstrates low efficiency when facing the existential crises of the 21st century. In contrast, anticipatory governance focuses on the systemic integration of strategic foresight, futures analysis, and agile planning directly into public decision-making processes⁴. The fundamental premise dictates that a state's capacity to identify weak signals and potential threats before their full materialization serves as the primary baseline for its institutional viability.

The conceptual foundations of anticipatory governance rest upon three interconnected elements: strategic analysis, the integration of knowledge into decision-making processes, and institutional adaptability. The first element requires the deployment of a broad toolkit, ranging from scenario modeling to

³ Boyd, M., & Wilson, N. (2021). Anticipatory governance for preventing and mitigating catastrophic and existential risks. *Policy Quarterly*, 17(4), 27.

⁴ El-Ghalayini, Y. (2025). Digital transformation: A tool for anticipatory governance. In *Anticipatory governance: Shaping a responsible future* P. 237.

artificial intelligence methods for processing massive datasets⁵. The second component demands the dismantling of interagency silos and the creation of channels through which analytical forecasts seamlessly reach the desks of high-ranking officials. The third component defines the ability of state organs to rapidly alter their own internal configurations and organizational logic in response to newly emerging challenges. Without proper coordination among these elements, any attempt at forecasting remains a purely theoretical exercise, detached from the actual practice of state-building. Singapore's experience with its Centre for Strategic Futures (CSF) visually demonstrates how the synchronized interaction of analysts and policymakers minimizes strategic shock from global economic recessions⁶.

The concept of national resilience in contemporary security discourse has long expanded beyond mere military defense or civil protection frameworks. It is conceptualized as a comprehensive capacity of a social system to absorb disturbances, adapt to disruptive changes, and recover from large-scale crises and destabilizations. Resilience is not a static characteristic; rather, it is forged through the continuous, dynamic self-renewal of all spheres of public life, from critical infrastructure to the psychological well-being of the population. The key task of the state in this context becomes the minimization of vulnerabilities and the maximization of the nation's internal adaptive potential. Evidently, achieving such a state is impossible without implementing proactive managerial technologies that allow for the pre-emptive allocation of resources. Illustrative in this sense is Sweden's Comprehensive Defense concept, where societal resilience serves as the bedrock for deterring any form of external aggression⁷. The direct determinism between anticipatory governance and the level of national resilience constitutes a central axiom of the proposed theoretical approach. When government institutions possess verified models of situational development, they gain the ability to distribute scarce resources based on future, rather than merely current, needs. Proactive planning reduces the level of social anomie and panic during the onset of crisis situations, as action algorithms for the population and business communities are developed in advance.

One of the most complex aspects of constructing anticipatory governance is overcoming the ontological and epistemological uncertainty of the future. Any long-term forecast relies on subjective interpretations of available data

⁵ Guston, D. H. (2014). Understanding 'anticipatory governance'. *Social Studies of Science*, 44(2), P. 226

⁶ 2025 Strategic Foresight Report: Strategic foresight and resilience 2.0. Brussels : European Commission, 2025. URL: https://ec.europa.eu/commission/presscorner/detail/en/ip_25_2036

⁷ Strategic Foresight: Horizon scanning and scenario planning. Brussels: European Committee of the Regions, 2025. URL: <https://www.cor.europa.eu/en/better-regulation-and-active-subsidiarity/strategic-foresight>

and can be completely invalidated by the appearance of "black swans"— low-probability events with catastrophic consequences⁸. The academic community emphasizes that the goal of anticipatory management is not to guess the exact date of a specific crisis, but to prepare the system to function under various alternative conditions.

The objective proving ground for testing the efficacy of anticipatory governance is the protection of critical infrastructure, which forms the material basis of national resilience. Energy grids, transport hubs, digital communications, and life-support systems are primary targets for conventional strikes, as well as hybrid and cyberattacks⁹. An anticipatory approach requires the mandatory implementation of stress-testing for infrastructural objects during their modernization and operational phases, based on the worst theoretically possible scenarios. This involves creating redundant capacities, decentralizing generation, and forming strategic reserves of equipment long before an actual deficit occurs. If institutions act exclusively post-factum, the restoration of destroyed nodes takes too much time, which paralyzes the vital functions of the entire state organism. Ukraine's deployment of distributed generation and protective structures for energy facilities under conditions of ongoing war serves as a vivid, albeit forced, example of transitioning to rigorous anticipatory actions.

The implementation process of anticipatory governance often encounters serious resistance within the bureaucratic apparatus itself due to deep-seated cognitive biases. Political elites in democratic countries are typically oriented toward short electoral cycles lasting four or five years, which counter-incentivizes investments in long-term projects. Public officials exhibit a propensity for normative thinking, extrapolating their past successful experiences onto future challenges that possess a fundamentally different nature¹⁰. Furthermore, there is a psychological aversion to alarming forecasts, which at higher levels of authority transforms into the deliberate ignoring of analytical reports.

The current stage of public administration development is inextricably linked to the utilization of advanced digital technologies as the primary driver of anticipatory governance. Machine learning algorithms and big data analytics enable the monitoring of public sentiment, economic fluctuations, and security markers in real time. The creation of digital twins of cities or entire economic sectors provides governments with a unique opportunity to

⁸ Heo, K., & Seo, Y. (2021). Anticipatory governance for newcomers: Lessons learned from the UK, the Netherlands, Finland, and Korea. *European Journal of Futures Research*, 9(1), Article 9. <https://doi.org/10.1186/s40309-021-00179-4>

⁹ *ibid.*

¹⁰ Johnston, K. (2026). Anticipatory governance? Capacity for unintended policy outcomes. *Public Money & Management*, 46(1) <https://doi.org/10.1080/09540962.2026.2578913>

simulate the consequences of various managerial decisions and natural cataclysms in a safe virtual environment. However, the automation of analytics must not completely displace the human factor, as final strategic evaluation and ethical responsibility remain the sole prerogative of human analysts. At the same time, digital tools provide an unprecedented speed of data processing, which is critically needed in highly dynamic threat environments. Estonia's use of the X-Road data exchange platform allows its government to instantly assess the resilience of public services against potential external cyber interventions¹¹.

Anticipatory governance cannot achieve sustainable success if it remains confined exclusively within closed government offices or classified analytical centers. True national resilience is built upon a high level of mutual trust between state institutions and civil society organizations, which forms the social capital of a nation. Citizens must be viewed not merely as passive objects of anticipatory protection, but as active subjects of information gathering and localized security planning¹². Engaging expert circles, business communities, and volunteer movements in scenario development allows for the consideration of hidden local factors invisible from the macro-level.

For example, the presented structural and functional model of the comprehensive deployment of anticipatory governance demonstrates a rigorous logical and methodological sequence, wherein each hierarchical level serves as an ontological prerequisite for the next. At the core of this schema's architecture lies a fundamental paradigmatic shift from reactive crisis management toward a proactive, deliberative model of public administration. This baseline layer reconfigures classical state-building theory by pivoting the focus from liquidating the consequences of destabilizing shocks to the preemptive scanning of the event horizon and the identification of "weak signals"¹³. The triad of structural components – foresight, knowledge integration, and institutional agility – forms the synergetic core of the anticipatory framework, translating theoretical predictive models into flexible decision-making algorithms insulated from interagency compartmentalization. The technological layer of the model, which leverages predictive Big Data analytics, digital twins, and decentralized intelligent networks (smart grids), integrates directly into the vector of European integration. Convergence with the EU regulatory framework (*acquis*

¹¹ Digital Estonia 2030: Estonia's Digital Society Strategy 2030. Tallinn: Ministry of Economic Affairs and Communications, 2023. URL: <https://www.mkm.ee/en/digital-estonia-2030>.

¹² Kallo, J., & Välimaa, J. (2025). Anticipatory governance in government: The case of Finnish higher education. *Higher Education*, 89(2), P. 369.

¹³ Kimbell, L., & Vesnić-Alujević, L. (2020). After the toolkit: Anticipatory logics and the future of government. *Policy Design and Practice*, 3(2), P. 97.

communautaire) in the domains of digital interoperability, climate resilience, and medium-term financial planning is conceptualized not as passive legal copying, but as a dynamic process of generating "strategic trust"¹⁴ Preventive control and the automation of anti-corruption monitoring networks (such as the Prozorro and DREAM ecosystems) operate as the primary institutional filters that guarantee transparency and efficiency in absorbing European cohesion funds (*Figure 1*).

The teleological vector of the analyzed matrix culminates in the final target – ensuring dynamic national resilience as an integral characteristic of societal viability in an era of global polycrisis. The framework clarifies that resilience is not a static defensive state, but is forged through a continuous loop of institutional learning, shock absorption, and the subsequent rapid adaptation of the state apparatus. The preemptive diversification of threats – ranging from the demographic modeling of migratory waves to threat hunting within the fuel and energy sector – safeguards the state's subjecthood and sovereignty under conditions of high uncertainty.



Fig. 1. Structural and Functional Model of the Anticipatory Governance Framework for Ensuring National Resilience

¹⁴ Varzhanskiy, I., et al. (2025). Foresight and active forecast potential for improving defense capability. *European Journal of Interdisciplinary Studies*, 17(1), P. 11

Forming a cohesive system of anticipatory governance is a prolonged evolutionary process that requires a profound restructuring of a state's political and legal landscape. It is necessary to establish specialized national and supranational institutions that possess autonomy from current political conjunctures and are funded through protected budget lines. Educational standards for training the new generation of civil servants must mandatorily include disciplines in foresight, systems analysis, and chaos theory. In the long-term perspective, those political systems that can harmonize day-to-day operational management with a forward-looking strategic vision will ultimately prevail. The resilience of the state of the future will be measured not by the amount of accumulated weaponry or the volume of gold reserves, but by the speed of its institutional learning and anticipation. In conclusion, the adoption of an anticipatory model represents the only choice-less path toward preserving sovereignty and survival for any nation in the era of global polycrisis.

In conclusion, the institutionalization of an anticipatory governance framework represents the foundational paradigm shift necessary to transition Ukraine's public administration from a legacy reactive model to a proactive, future-proof system¹⁵. By systematically integrating strategic foresight, advanced predictive data technologies, and agile institutional structures, the state moves beyond temporary crisis liquidation toward the pre-emptive mitigation of systemic vulnerabilities. This structural evolution is not merely an internal administrative reform, but a core catalyst for macro-regional integration, providing the exact institutional capacity and digital interoperability required to absorb the complex regulatory and financial mandates of European Union membership.

2. Current State and Challenges of Implementing Proactive Governance in Ukraine at the Stage of Alignment with the EU

At the current stage of Ukraine's European integration, the transition from reactive management to proactive governance emerges as a critical imperative for modernizing the public administration system. This process demands more than a mechanical transposition of the European Union's regulatory acts; it requires a fundamental restructuring of domestic institutions based on the principles of strategic anticipatory planning. The primary challenge lies in the fact that Ukraine's current legal framework remains burdened by the Soviet legacy of linear regulation, which is inherently oriented toward post-factum control rather than crisis prevention. To achieve full compatibility with the

¹⁵ Kharazishvili, Y., et al. (2025). Scientific and strategic foresighting: The trajectory of sustainable development (on the example of Ukraine's energy security). *Sustainable Futures*, 9, Article 100580. <https://www.sciencedirect.com/science/article/pii/S2666188825001509>

acquis communautaire, the government must systematically integrate foresight tools into policymaking procedures at their earliest stages¹⁶. Instead of enacting laws as a mere reaction to already manifested problems, ministries must evaluate the long-term consequences of their decisions through the prism of coming decades. A prominent example of this methodological complexity is the adaptation of the European Green Deal standards, which requires Ukrainian agencies to calculate long-term climate risks thirty years into the future without possessing an adequate methodological framework.

The implementation of proactive governance in Ukraine encounters severe internal resistance driven by the deeply entrenched institutional culture of the domestic civil service. Traditional Ukrainian bureaucracy remains oriented toward executing immediate top-down directives and complying with formal instructions, a mindset that fundamentally contradicts the agile philosophy of anticipatory management. Furthermore, a pronounced institutional dualism is observable within executive bodies, where newly established directorates for strategic planning are forced to operate within archaic, rigidly hierarchical ministerial structures¹⁷. This structural friction results in a situation where high-quality analytical reports and scenario models generated by progressive specialists are routinely ignored by senior leadership due to the perceived priority of daily operational tasks. Proactive governance demands institutional autonomy and a willingness to assume responsibility for long-term risks – competencies for which the majority of mid-level civil servants remain professionally unprepared. The trajectory of the Public Administration Reform (PAR), supported by EU macro-financial assistance, clearly illustrates this conflict, as institutional changes are frequently reduced to paper-based compliance to meet formal funding conditions.

A successful instance of anticipation was the pre-emptive storage of natural gas by European traders in Ukrainian facilities, which balanced the risk of transit interruptions, yet this mechanism requires systematic codification into domestic law. Ukraine has achieved significant breakthroughs in digitalization, creating unique structural prerequisites for implementing the concept of "government by default." Through the "Diia" ecosystem and the "Trembita" registry interoperability framework, the state has successfully deployed the initial components of proactive public service delivery¹⁸. Proactivity in the digital sphere dictates that the state autonomously initiates the delivery of a service to a citizen or a business entity based on real-

¹⁶ Middelburg, M. (2023). Casting light on EU governance: Reflection and foresight in an era of crises. *Review of Finance*, 4(5), P. 35.

¹⁷ Van Woensel, L. (2024). Foresight in EU policy-making: Purpose, mindsets and methods. *European Law Journal*, 30(3), P. 367.

¹⁸ Soloviova, A., & Fomin, A. (2025). Ukraine and the EU: Prospects and challenges on the road to integration. *Acta de Historia & Politica: Saeculum XXI*, 9, P. 61.

time data analysis before an official application is filed. However, achieving full alignment with the European Union's Interoperable Europe Act introduces a major challenge regarding personal data protection and cybersecurity. Domestic databases often remain fragmented, and their security parameters do not always satisfy the rigorous demands of the General Data Protection Regulation (GDPR). While automated services for registering internally displaced persons or distributing emergency financial aid demonstrated the potential of proactivity, designing similar scalable algorithms for the broader commercial sector remains an unfulfilled task.

The process of harmonizing Ukraine's financial system with European Union norms requires a radical intensification of proactive financial monitoring to prevent money laundering and terrorist financing. European partners place heavy emphasis on transitioning from the post-factum recording of suspicious transactions to a comprehensive risk-based approach that detects illicit financial flows at their point of inception. This imperative is directly linked to the broader de-oligarchization process and the enhanced scrutiny of politically exposed persons (PEPs), which constitutes one of the most stringent conditions for EU accession. The primary challenge rests on the capacity of the National Bank of Ukraine and the State Financial Monitoring Service to dynamically update risk criteria amidst rapidly evolving sanctions-evasion schemes¹⁹. Proactive financial risk management requires the deployment of machine learning algorithms to analyze anomalies within corporate registries in real time. The institutional reform of the Bureau of Economic Security (BES) clearly illustrates that without a shift toward analytical tools and rigorous personnel vetting, the agency remains an inefficient instrument of pressure rather than an analytical center for economic crime prevention.

The Ukrainian agricultural sector stands as one of the most powerful globally, yet its integration into the EU's Common Agricultural Policy (CAP) generates profound structural contradictions²⁰. Proactive governance within the agricultural sector requires the Ministry of Agrarian Policy and Food to execute a timely transformation of agricultural subsidies, shifting from volume-based production support to financing eco-schemes and small-scale farming. While domestic agro-holdings are structurally optimized for raw commodity exports, the European model incentivizes deep processing and strictly limits the application of specific pesticides and fertilizers. If Ukraine fails to proactively modify crop patterns and technological workflows today,

¹⁹ *ibid.* P. 63.

²⁰ Koskimaa, V., & Raunio, T. (2024). Expanding anticipatory governance to legislatures: The emergence and global diffusion of legislature-based future institutions. *International Political Science Review*, 45(2), P. 267.

domestic farmers will face catastrophic quotas and financial penalties upon accession. The border-blocking crisis initiated by European farmers in 2024–2025 offered empirical proof that a lack of proactive scenario modeling regarding the impact of Ukrainian grain on the EU internal market leads to severe geopolitical disruptions.

The most critical threat to national resilience and the execution of proactive policies in Ukraine is an unprecedented demographic crisis, severely exacerbated by large-scale external migration. State institutions are forced to formulate strategies for human capital repatriation under conditions where millions of citizens are rapidly integrating into the socio-cultural fabric of EU host nations. A proactive approach demands the immediate creation of structural conditions for repatriation, ranging from simplifying the recognition of European academic degrees to launching targeted preferential credit lines for veterans and returning migrants. For an extended period, however, the Ministry of Social Policy relied on obsolete statistical models that failed to reflect the true variance in migratory intentions. Resolving this problem necessitates deep institutional coordination with Eurostat to establish a unified data framework for monitoring population movements. Without precise, anticipatory labor market planning and systemic pension reform, Ukraine's post-war reconstruction risks stagnation due to an absolute deficit of qualified human resources. The ongoing war has inflicted catastrophic damage on Ukraine's natural environment, necessitating the formulation of a unique, proactive ecological policy that has no precedents in European administrative practice²¹. European environmental law strictly mandates the operation of an extensive, real-time online monitoring network for air, water, and soil quality, as outlined in the Directives on ambient air quality and cleaner air. In contrast, the majority of Ukraine's water treatment facilities and ecological observation posts are either destroyed or technologically obsolete. Proactivity in this domain requires moving beyond the mere documentation of ecocide damages for international tribunals; it demands embedding strict ecological parameters into every single infrastructure project under the "Build Back Better" principle. The Ministry of Environmental Protection and Natural Resources must develop predictive mapping of groundwater contamination caused by heavy munitions to prevent the long-term poisoning of entire regions²². The liquidation of the consequences of the Kakhovka HPP destruction remains a highly complex challenge, where decisions on restoration or re-wilding

²¹ Gaïti, B., & Georgakakis, D. (2024). What future for EU foresight? A critical perspective on the institutionalisation of foresight. *European Law Journal*, 30(3), P. 447.

²² Umbach, G. (2024). Futures in EU governance: Anticipatory governance, strategic foresight and EU Better Regulation. *European Law Journal*, 30(3), P. 417.

require large-scale, interdisciplinary foresight involving leading European scientists.

While Ukraine's decentralization reform is widely recognized as highly successful, the pre-accession stage places fundamentally new demands on local governments. Upon attaining full membership, Ukraine will gain access to billions from the EU Cohesion Funds; however, these resources are allocated exclusively for precisely justified, proactively developed regional development projects. The majority of Ukrainian municipalities, particularly those recently de-occupied or situated near front lines, currently lack specialists capable of drafting complex project proposals according to European project management methodologies. The government's proactive regional policy must therefore focus on the mass training of local leaders and the establishment of functional regional development agencies long before the actual opening of the funds²³. If project documentation drafting is postponed until the moment of accession, the state will fail to absorb the allocated financial resources due to local bureaucratic incapacity.

The final and most critical element in the architecture of proactive governance in Ukraine is ensuring zero tolerance for corruption through the preventative activities of the specialized anti-corruption infrastructure. The National Agency on Corruption Prevention (NACP), the National Anti-Corruption Bureau (NABU), and the Specialised Anti-Corruption Prosecutor's Office (SAPO) must function as a synchronized anticipatory mechanism that identifies corruption risks in large-scale reconstruction projects during the tender planning phase, rather than after the misappropriation of funds. The European Union explicitly links Ukraine's accession progress to the efficiency of the Prozorro digital procurement system and the "DREAM" digital restoration platform. The primary challenge lies in safeguarding the political independence of these institutions against attempts by legacy elites to restrict their mandates through the judicial system. Proactivity here requires the complete automation of asset declaration verifications through algorithms capable of cross-referencing officials' lifestyles with corporate and property registries across multiple jurisdictions²⁴. Only by institutionalizing such a transparent, automated preventative framework can Ukraine preserve the strategic trust of Western allies, which remains the foundational condition for financing national resilience and achieving final European integration.

²³ Lazaro, C., & Rizzi, M. (2023). Predictive analytics and governance: A new sociotechnical imaginary for uncertain futures. *International Journal of Law in Context*, 19(1), P. 72-77.

²⁴ Petrashko, L. (2023). "DREAM BIG"-Ukraine of dreams after victory: Sustainability, modernization and leadership. In European dimensions of the sustainable development and academic-business forum: Let's revive Ukraine together <https://dspace.nuft.edu.ua/server/api/core/bitstreams/919c020c-04a1-42e6-a31a-b964baf10ab5/content#page=10>

The analyzed structural and logical matrix represents a descriptive-analytical model of institutional transformations, capturing key systemic bottlenecks and destructive factors during the adaptation phase of Ukraine's public administration system to European Union standards. At the core of this framework's determinism lies a critical analysis of the transition from inertial, linear lawmaking to a proactive model of public management under the conditions of Euro-integration transit. The primary analytical block precisely localizes a fundamental institutional challenge – the phenomenon of institutional dualism, which manifests as a structural and mental conflict between newly established, agile strategic planning directorates and archaic departmental silos burdened by a legacy bureaucratic administrative culture. This initial dichotomy generates resistance to innovation and stagnates the implementation of anticipatory administrative decisions at the very stage of policy design. The middle segment of the schema details specific sectoral friction points, illustrating that proactive governance during the pre-accession period does not unfold in an isolated vacuum, but within highly dynamic and volatile crisis environments. Through the lens of the energy sector, the matrix demonstrates the shift toward mathematical load-forecasting models within the framework of ENTSO-E synchronization, which demands the physical decentralization of generation assets amid persistent military threats. Parallely, deep regulatory contradictions are identified within agrarian policy, where the strict eco-schemes and green mandates of the EU's Common Agricultural Policy (CAP) require immediate recalibration of domestic export structures to preempt future quota penalties. The matrix proves that the digitalization of public services and the deployment of predictive socio-demographic models for human capital repatriation are interconnected elements, yet both remain structurally constrained by the rigorous boundaries of the EU's General Data Protection Regulation (GDPR) and concurrent cybersecurity mandates (*Figure 2*).

The final teleological tier of the diagram isolates the "gateway criteria" and ultimate output, anchoring the logic of institutional analysis to the concept of macro-regional resilience. The framework argues that the automation of anti-corruption prevention – powered by integrated digital networks like Prozorro and DREAM – serves as the primary mechanism for generating strategic trust with Brussels, which remains a non-negotiable prerequisite for the successful absorption of EU Cohesion Funds. The proactive identification of corruptive risks during the pre-tender planning phase is thus positioned as a foundational baseline for institutional viability. Ultimately, the presented model demonstrates that overcoming these institutional and sectoral barriers is not merely a technical compliance exercise for *acquis communautaire*

alignment, but the sole systemic vector for securing long-term national security and macroeconomic stability as a future EU member state.

Conceptual Framework of Institutional and Sectoral Challenges in Deploying Proactive Governance within the EU Alignment Stage

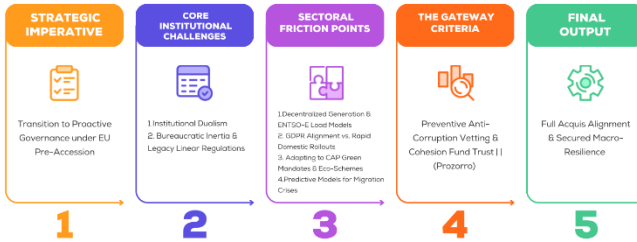


Fig. 2. Conceptual Framework of Institutional and Sectoral Challenges in Deploying Proactive Governance within the EU Alignment Stage

In conclusion, the structural and empirical diagnostic substantiates that the current phase of Ukraine's alignment with the European Union is characterized by a profound dialectical tension between legacy reactive administration and emerging proactive governance frameworks. The systemic institutional dualism dividing agile strategic directorates from rigid bureaucratic silos, combined with severe friction points across vital sectors such as energy grid synchronization, CAP agrarian compliance, and predictive migration management, underscores that legislative transposition alone is insufficient for successful integration. Ultimately, overcoming these operational and administrative bottlenecks through the institutionalization of automated preventive frameworks – exemplified by the Prozorro and DREAM ecosystems – constitutes the definitive gateway for securing international strategic trust. This transformation is not merely a technical compliance mandate for *acquis communautaire* alignment, but the foundational administrative prerequisite for safeguarding macro-regional resilience and sovereign economic viability as a future EU member state.

3. Strategic Vectors and Technologies for Deploying the Anticipatory Governance Model Toward EU Membership

The deployment of the anticipatory governance model in Ukraine on its path to EU membership requires, first and foremost, the establishment of a

robust regulatory framework for the mandatory application of strategic foresight instruments. The current methodology of public decision-making must be synchronized with European practices, specifically the principles undergirding the European Commission's annual Strategic Foresight Reports²⁵. This imperative entails a statutory mandate requiring scenario analysis for every national project or structural reform at the earliest stages of policy formulation (ex-ante evaluation). Institutionalizing foresight will insulate the state from chaotic lawmaking and guarantee the long-term stability of public policy, remaining independent of shifting electoral cycles. A practical milestone in this direction must be the establishment of the National Bureau of Strategic Foresight under the Cabinet of Ministers of Ukraine, tasked with coordinating departmental think tanks in alignment with the EU Directorate-General for Research and Innovation (DG RTD). This measure will lay the groundwork for a proactive state posture within Ukraine's future participation in the Committee of Permanent Representatives (COREPER). Efficient anticipatory governance in the 21st century is unattainable without deploying a powerful digital infrastructure anchored in machine learning algorithms and Big Data processing. The primary technological vector in this domain involves creating a unified, nation-wide analytical platform that integrates data streams from all departmental registries, monitoring systems, and satellite imagery. Utilizing predictive analytics will enable government structures to detect latent correlations between economic indicators, social trends, and security markers in real time. This technical leap will mark a transition from the retrospective analysis of static statistical reports to the preemptive modeling of complex socio-economic processes. Integrating this platform into the European Data Spaces initiative will guarantee international interoperability and high precision in cross-border forecasting. A prominent example of this approach is the deployment of artificial intelligence to monitor customs declarations and logistics supply chains, minimizing the risks of cross-border crime and smuggling before borders are even crossed.

The transition toward anticipatory governance demands a radical transformation in the training and professional development systems of civil servants. Traditional competency models, which focus on the linear execution of fixed job descriptions, must be replaced with a dynamic architecture of future-proof skills, including systems thinking, uncertainty management, and

²⁵ Adaptive governance in the era of frontier technologies: Policy Report. Florence: European University Institute, 2026. URL: <https://cadmus.eui.eu/bitstreams/e40c146f-8543-49fc-91fd-b4d0f005a76d/download>

riskology²⁶. The National Agency of Ukraine on Civil Service (NACS), in close cooperation with leading academic institutions, must design and implement specialized master's programs in Anticipatory Public Administration. A new generation of public managers must master methodologies of scenario building, disruptive technology analysis, and the stress-testing of institutional systems. Furthermore, a structured system of incentives and institutional protections must be established for analysts whose alarming yet verified forecasts are frequently dismissed by political leadership due to short-term political opportunism. Implementing regular policy exercises and wargaming simulations according to the standards of the European Security and Defence College (ESDC) will forge vital crisis-management skills across all strata of the bureaucratic apparatus.

The strategic vector for scaling the anticipatory model relies heavily on reforming the public financial management system toward proactive and medium-term budgeting. Ukraine must abandon the practice of annual, ad-hoc budgetary gap-filling and fully transition to three- and five-year strategic expenditure planning aligned with the EU's Multiannual Financial Framework (MFF). The technological tool powering this shift is an automated system of preventive financial control that analyzes the risks of inefficient asset allocation during the initial publication of tenders. This capability is critically important for managing upcoming investments from the EU Cohesion Funds and the Ukraine Facility, where any delays caused by procedural errors will block funding flows. The state must learn to proactively reserve matching funds for European projects so that regional municipalities do not forfeit grants due to a lack of localized resources. Poland's historical experience, which demonstrated the highest absorption rate of European investments by establishing specialized guarantee funds well in advance, must be systematically implemented into the Ukrainian financial system.

Implementing anticipatory governance in the ecological sphere constitutes a foundational condition for fulfilling the requirements of the Paris Agreement and the standards of the European Green Deal²⁷. Ukraine must pivot from passive environmental pollution monitoring toward the predictive modeling of industrial impacts and wartime ecocide consequences on domestic ecosystems. The key technology here is the deployment of an automated sensor network combined with Geographic Information Systems (GIS) to forecast water resource behavior, soil degradation, and wildfire propagation

²⁶ Lysaght, T. (2022). Anticipatory governance and foresight in regulating for uncertainty. *The American Journal of Bioethics*, 22(1), P. 52.

²⁷ Muiderman, K., van der Hel, S., & van der Zouwen, M. (2023). Is anticipatory governance opening up or closing down future possibilities? Findings from diverse contexts in the Global South. *Global Environmental Change*, 81, Article 102690. <https://doi.org/10.1016/j.gloenvcha.2023.102690>

patterns. The Ministry of Environmental Protection and Natural Resources must proactively develop adaptation scenarios for vulnerable sectors, particularly agriculture, against irreversible climate changes over the next thirty years. This foresight will allow the state to adjust subsidy frameworks beforehand, incentivize circular economy technologies, and build green infrastructure. A prime example of successful technological anticipation is the creation of a digital hydrological twin of the Dnipro River basin, which allows the government to engineer preventive measures against seasonal floods and industrial disasters.

The energy vector of deploying a proactive model requires transforming the fuel and energy complex from a centralized system into a decentralized, flexible smart grid network. Instead of responding linearly to capacity deficits or structural infrastructure damage, the state must deploy artificial intelligence technologies to forecast consumption curves and optimize energy distribution dynamically. The anticipatory protection of critical infrastructure objects requires creating an integrated early warning system against cyber and physical threats based on automated network traffic analysis²⁸. Furthermore, government policy must heavily incentivize the accelerated development of utility-scale energy storage systems and hydrogen technologies to balance the power grid during peak load intervals. The timely synchronization of the Ukrainian electricity market with European spot exchanges within the Internal Energy Market (IEM) framework will enable the proactive importing of resources at optimal tariff rates. A telling example of technological anticipation is the deployment of Virtual Power Plants (VPPs), which aggregate hundreds of small-scale renewable sources into a single, digitally managed power matrix.

In the realm of regional policy and spatial planning, the primary technology of anticipatory governance manifests in creating Digital Twins of cities and administrative regions. These three-dimensional virtual models, integrated with real-time Big Data, allow local authorities to simulate the architectural, logistical, and social consequences of urban development decisions long before construction begins. The Ministry for Communities and Territories Development must establish a unified standard for these platforms, ensuring their absolute interoperability with the European Union's Destination Earth initiative. Utilizing digital twins during post-war reconstruction will enable the proactive calculation of engineering utility loads, optimization of public transit routing, and reduction of carbon emissions. This workflow will prevent the inefficient expenditure of donor aid and ensure the compliance of new infrastructure objects with EU

²⁸ Robertson, S. L. (2022). Guardians of the future: International organisations, anticipatory governance and education. *Global Society*, 36(2), P. 197.

sustainability principles. A successful empirical example is the digital blueprint developed for the city of Mykolaiv with European architectural support, which allowed planners to preventively optimize the city's water supply strategy for decades to come²⁹.

Overcoming Ukraine's profound demographic crisis necessitates abandoning reactive social welfare payouts in favor of the proactive management of human capital. The strategic vector in this domain involves deploying predictive modeling technologies to map migration flows and labor market dynamics based on mobile network operator data and cross-border registries. The Ministry of Social Policy, in coordination with European institutions, must establish an Early Warning System for vulnerable socio-economic groups. This tool will allow the state to proactively offer retraining programs, target subsidies, or provide psychological support before an individual falls below the poverty line or experiences systemic marginalization. The State Employment Service must transform into an analytical hub that projects professional demands 5 to 10 years into the future, aligning state educational quotas with the real-time trajectories of the European labor market³⁰. An example of such anticipation is the integrated platform for veterans, which automatically maps out customized rehabilitation and employment paths based on the predictive profiling of health data and prior professional backgrounds.

The security vector of anticipatory governance requires integrating threat intelligence technologies and preventive deterrence into the comprehensive system of national resilience³¹. In the face of persistent hybrid aggression, Ukraine must operate within a continuous Threat Hunting paradigm, exposing malware campaigns and hostile disinformation operations during their weaponization phases. The technological bedrock of this process requires expanding the network of departmental Security Operations Centers (SOCs) fully integrated with the European Cybersecurity Competence Centre (ECCC). Utilizing artificial intelligence to parse anomalies in the network traffic of state institutions will enable the blocking of Advanced Persistent Threats (APTs) before critical databases are breached. Concurrently, the

²⁹ Yemelianenko, L., & Zakharova, K. (2022). Foresight in public management as a regulation tool under the conditions of economic uncertainty. In I. Radionova (Ed.), *The economics of uncertainty: content, evaluation and regulation*. Scientific Center of Innovative Researches OÜ. https://library.krok.edu.ua/media/library/category/monografiji/radionova_0012.pdf#page=25

³⁰ Todisco, L., Paoloni, N., & Demartini, P. (2025). Foreseeing the future: Anticipatory governance as a response to the technological and managerial challenges in the public sector. *International Journal of Public Sector Management*, P. 11.

³¹ Vaquero-Piñeiro, C., Terribile F., & Giovannini, E. (2025). Anticipatory governance systems: A review of approaches to develop public policies for sustainable development. *Journal of Economic Interaction and Coordination*, P. 13.

proactive management of the information space demands algorithms designed for the automated detection of deepfakes and botnets on social media networks. Collaborative exercises with the NATO Cooperative Cyber Defence Centre of Excellence (CCDCOE) and EU security structures to stress-test scenarios of large-scale infrastructure cyberattacks represent a tangible expansion of this proactive shield³²³³.

The final vector in deploying this model is the creation of technological and legal instruments designed to embed civil society into the anticipatory planning loop. Anticipatory governance cannot achieve sustainable success without leveraging crowdsourcing technologies and monitoring societal expectations via digital participation platforms. The government must implement tools of deliberative democracy, such as digital citizens' panels, to debate long-term strategies and evaluate the ethical dimensions of emerging technologies. This inclusion will allow for the early diagnosis of potential social friction and public anxieties before they escalate into polarized political crises. Engaging the scientific community, independent think tanks, and business associations in drafting national foresight initiatives will guarantee high-quality scenario modeling and generate broad public consensus for European integration reforms. A successful technological execution of this principle is visible in the integration of the DREAM platform with civic monitoring tools, empowering citizens to proactively influence the prioritization of reconstruction objects within their respective local communities.

CONCLUSIONS

A synthesis of the theoretical and methodological foundations of this study demonstrates that the anticipatory model of public governance is a fundamental prerequisite for transforming the modern state into a system capable of preempting crises rather than merely responding to them. Shaping the conceptual framework of this model within the context of ensuring national resilience requires a shift from reactive administration to proactive strategizing. This entails integrating foresight tools, continuous monitoring of weak signals, and scenario modeling into the policy-making process. Consequently, national resilience is viewed not as a static state of preservation, but as a dynamic capacity of the system to adapt, recover, and evolve under conditions of permanent geopolitical turbulence. An analysis of

³² Hrytsai, S. (2023). Digitization of government as a global trend of the future: Implementation of the “electronic state” policy (on the example of Ukraine). *Reality of Politics: Estimates-Comments-Forecasts*, 24(2), P. 47-51

³³ Likarchuk, D. S. (2026). Anticipatory governance as a tool for the national strategic resilience within the modern international relations system. *Mizhnarodni Vidnosyny: Teoretyko-Praktichni Aspekty*, 17, P. 91

the current state and challenges of implementing proactive governance in Ukraine reveals a tangible gap between existing institutional intentions and practical execution at the stage of alignment with the European Union. Despite evident progress in the digitalization of public services and the approximation of legislation to EU standards, the domestic system of public governance remains largely hierarchical and oriented toward mitigating the consequences of already manifested crises. The key destructive factors in this context include fragmented interagency coordination, a deficit of analytical personnel capable of working with complex predictive models, and the lack of a long-term planning horizon under the prolonged legal regime of martial law.

Ukraine's European integration vector imposes stringent requirements on the flexibility and compatibility of its governance structures with European institutions, where strategic foresight is an integral component of common security and development policies. The harmonization process demands more from the Ukrainian authorities than the mere replication of legal acts (*acquis communautaire*); it requires a profound cognitive and procedural overhaul of the administrative culture.

Identifying the strategic vectors for deploying the anticipatory public governance model allows for outlining the contours of a systemic reform that must rest upon three interconnected pillars: the regulatory codification of predictive procedures, the modernization of the institutional framework, and the development of human capital. A priority area is the establishment of a unified coordination center for strategic analysis and forecasting, functioning as an intellectual hub for all branches of government. Concurrently, it is critically important to restructure the training and professional development systems for civil servants, focusing their curricula on strategic management tools, risk management, and big data analysis. In the technological dimension, the implementation of this model directly depends on the depth of integrating innovative tools for data collection, processing, and interpretation.

In conclusion, it can be asserted that the establishment of an anticipatory public governance model in Ukraine is not merely an academic recommendation, but an alternative-free condition for the survival and successful development of the state in the modern globalized world. It acts as the primary factor for ensuring long-term national resilience and serves as a reliable bridge toward full membership in the European Union. The success of this transformation will depend on the political will to enact genuine institutional changes, the state's capacity to invest in high-tech solutions, and the readiness of the public sector to operate preemptively, transforming potential threats into opportunities for accelerated development.

SUMMARY

This study addresses the critical problem of shifting Ukraine's public administration from a traditional, reactive framework to an anticipatory governance model to ensure comprehensive national resilience on its path to European Union membership. The research highlights that under the conditions of permanent geopolitical turbulence and the prolonged legal regime of martial law, the current domestic system remains overly hierarchical and focused primarily on crisis mitigation rather than crisis preemption. To resolve this institutional gap, the paper explores the conceptual foundations of embedding strategic foresight, weak signal monitoring, and scenario modeling directly into the state policy-making process. The results of the analysis reveal a tangible mismatch between Ukraine's existing legislative intentions and the practical execution of proactive governance during the current stage of EU alignment. Furthermore, the study identifies fragmented interagency coordination and a severe deficit of analytical personnel trained in complex predictive modeling as key structural barriers. In response to these challenges, the research outlines a systemic reform resting upon three interconnected pillars: regulatory codification of predictive procedures, institutional modernization, and human capital development. A major result of the study is the proposed establishment of a unified coordination center for strategic forecasting to serve as an intellectual hub for all branches of government. Additionally, the paper evaluates the technological dimension of this transition, emphasizing the integration of artificial intelligence, predictive analytics, and cognitive modeling to create data-centric administrative ecosystems. Ultimately, the study concludes that deploying an anticipatory model is an alternative-free condition to minimize integration risks and synchronize national resilience programs with the EU *acquis communautaire*. The findings prove that such a structural transformation secures Ukraine's future agency as a resilient EU member state capable of actively reinforcing pan-European security.

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