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Enhancing urban and regional development for border security in Iran: A futures study of West Azerbaijan province

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Abstract

In the border regions of Iran, which include West Azerbaijan province, the interwoven dynamics between development and security present a multifaceted set of challenges. This comprehensive study delves into the intricate relationship between these two critical elements, with a focus on elucidating potential scenarios that impact on development and security alike. Employing a rigorous methodological approach, using advanced data analysis tools and incorporating insights from experts, this research identifies seven pivotal factors that play a crucial role in shaping the sustainable development and security landscape of these border regions. By using the Method for Inserting Knowledge into Decision Support Models (*Méthode d'Insertion de Connaissances dans les Modèles d'Aide à la Décision*) MicMac software, an in-depth analysis of both direct and indirect variables was conducted to precisely gauge their influence in border security. The outcomes of this extensive analysis provide a solid foundation for the construction of diverse scenarios, thus offering a wide spectrum of potential future trajectories for the region. The examination of these scenarios grants invaluable insights into the intricate nexus between development and security, reinforcing the essential need for a holistic and integrated approach to regional planning. This research effectively underscores the vital imperative of nurturing synergies between security and development for the sustained progress of Iran's border areas. With a focus on empirical data and informed projections, this study sheds light on the intricate dynamics at play, emphasising the pivotal role of an integrated approach to regional advancement.

Keywords: Border security, development and security, scenario, MicMac, West Azerbaijan, future status

VERBETERING VAN STEDELIKE EN STREEKSONTWIKKELING VIR GRENSVEILIGHEID IN IRAN: 'N TOEKOMSSTUDIE VAN WES-AZERBEIDJAN-PROVINSIE

In die grensstreke van Iran, insluitend die Wes-Azerbeidjan-provinsie, bied die verweefde dinamika tussen ontwikkeling en veiligheid 'n veelsydige stel uitdagings. Hierdie omvattende studie delf in die ingewikkelde verhouding tussen hierdie twee kritieke elemente, met 'n fokus op die toeligting van potensiële scenario's wat ontwikkeling en sekuriteit gelyktydig beïnvloed. Deur 'n streng metodologiese benadering, gebruik van gevorderde data-analise-instrumente en insigte van kundiges, identifiseer hierdie navorsing sewe deurslaggewende faktore wat 'n deurslaggewende rol speel in die vorming van volhoubare ontwikkeling en sekuriteitslandskap van hierdie grensstreke. Deur die gebruik van Metode vir die Invoeging van Kennis in Besluitsondersteuningsmodelle (*Méthode d'Insertion de Connaissances dans les Modèles d'Aide à la Décision*) MicMac-sagteware, is 'n in-diepte analise van beide direkte en indirekte veranderlikes gedoen om hul invloed presies te bepaal in grensveiligheid. Die uitkomst van hierdie uitgebreide ontleding verskaf 'n stewige grondslag vir die konstruksie van diverse scenario's, en bied dus 'n wye spektrum van potensiële toekomstige bane vir die streek. Die ondersoek van hierdie scenario's verleen waardevolle insigte in die ingewikkelde verband tussen ontwikkeling en sekuriteit, wat die noodsaaklike behoefte aan 'n holistiese en geïntegreerde benadering tot streekbeplanning versterk. Hierdie navorsing beklemtoon effektief die noodsaaklikheid om sinergieë tussen veiligheid en ontwikkeling te koester vir die volgehoue vooruitgang van Iran se grensgebiede. Met 'n fokus op empiriese data en ingeligte projeksies, werp hierdie studie lig op die ingewikkelde dinamika tussen veiligheid en ontwikkeling, en beklemtoon die deurslaggewende rol van 'n geïntegreerde benadering tot streeksvooruitgang.

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**NTLAFATSO EA NTS'ETSOPELE
EA LITOROPO LE LIBAKA HO
TS'IRELE TSA MEELI EA IRAN:
THUTO EA BOKAMOSO BA
PROFINSE EA WEST AZERBAIJAN**

Libakeng tsa meeli ea Iran, tse kenyeletsang profinse ea Azerbaijan Bophirimela, phallo pakeng tsa nts'etsopele le ts'ireletso e hlahisa mathata a mangata. Boithuto bona bo lekola kamano e rarahaneng lipakeng tsa lintlha tsena tse peli tsa bohlokoa, ho tsepamisitsoe maikutlo maemong a ka amang nts'etsopele le ts'ireletso ka ho ts'oana. Ho sebelisa mokhoa o matla oa ho etsa lipatlisiso, ka lisebelisoa tse tsoetseng pele tsa tlhahlobo ea tlhahisoleseling, le ho kenyeletsa lintlha tse tsoang ho litsebi, phuputso ena e supa lintlha tse supileng tsa bohlokoa tse bapalang karolo ea bohlokoa ho theheng nts'etsopele le ts'ireletso e tsitsitseng ea libaka tsena tsa moeli. Ka ho sebelisa Mokhoa oa ho Kenya Tsebo ho Mehlala ea Tšehetso ea Liqeto (*Méthode d'Insertion de Connaissances dans les Modèles d'Aide à la Décision*) software ea MicMac, ho ile ha etsoa tlhahlobo e tebileng ea mefuta e fapaneng e tobileng le e sa tobang tekanyo e nepahetseng ea tšusumetso tshireletsong ea meeli. Liphetho tsa tlhahlobo ena e pharaletseng li fana ka motheo o tiileng bakeng sa kaho ea maemo a fapaneng, ka hona li fana ka mekhoha e mengata ea tharollo molemong oa nako e tlang libakeng tse amehang. Tlhahlobo ea maemo ana e fana ka temohisiso ea bohlokoa mabapi le kamano e rarahaneng pakeng tsa nts'etsopele le ts'ireletso, e tiisang tlhoko ea mokhoa o akaretsang oa ho rala libaka. Patlisiso ena e totobatsa ka nepo bohlokoa ba ho holisa likamano lipakeng tsa ts'ireletso le nts'etsopele bakeng sa tsoelo-pele e tsitsitseng ea libaka tsa meeli ea Iran. Ka ho tsepamisa maikutlo tlhahisoleseling e matlafetseng le likhakanyo tsa tsebo, phuputso ena e fana ka leseli holim'a liphetho tse rarahaneng 'me tse totobatsang bohlokoa ba tsoelo-pele ea libaka e kopanetsoeng.

1. INTRODUCTION

A critical examination of recent literature delves into the myriad challenges associated with various border regions and nations, primarily shaped by their roles within the global and regional context. This analysis is intimately linked to two pivotal political transformations affecting the U.S.-Mexico border. First, the implementation of the North

American Free Trade Agreement (NAFTA) significantly bolstered economic integration in North America, facilitating the unrestricted flow of goods, services, and capital. However, it simultaneously introduced novel security concerns. Secondly, the tragic events of 11 September 2001 have redefined U.S. borders, viewing them as potential conduits for terrorists and transnational criminal networks (Suliman, 2014; Mumme, 2023). Consequently, this led to a deeper entwining of border security within the broader international security paradigm. These two political junctures have left a profound impact, both on the ground and in academic discourse, compelling scholars to grapple with the intricate web of issues surrounding U.S. border security within the context of neoliberal free trade and the looming spectre of terrorism (Wunderlich, 2020; Tambe & Thayer, 2021). According to the current situations in Iran and conflicts in the Middle East, new development in the Persian Gulf countries, Azerbaijan and Armenia border changes invites to delve into the practices of these border security actors, shedding light on how their everyday routines and administrative procedures influence the evolving landscape of border governance, offering valuable methodological insights for studying border security as a dynamic and multifaceted practice (Matjasch, 2021; Bahgat & Ehteshami, 2021).

In Iran, the northwestern border regions are considered crucial for security, with West Azerbaijan province being particularly important, due to its strategic location as a key gateway connecting Iran and Europe. This study aims to identify the main factors affecting the sustainable development and security of the border areas in West Azerbaijan province and to explore various scenarios related to these factors. This research aims to explain pathways towards bolstering both development and security in this critical region. West Azerbaijan province is situated in a geopolitically pivotal location, and shares borders with three significant nations in the Middle East and South Caucasus:

Turkey, Iraq, and the Republic of Azerbaijan (Nakhchivan Autonomous Region). Its geographical and geostrategic significance, as the gateway and connecting bridge between Iran and Europe, positions it as one of Iran's foremost border provinces, next in prominence only to Khuzestan (Reisinezhad, 2020; Rashidi *et al.*, 2020).

Previous studies have mainly concentrated on geopolitical boundaries and security matters, neglecting environmental considerations. In contrast, this research pays considerable attention to environmental issues (Ghalehtemouri, 2024), examining the ecosystem and the possible consequences of changes, and their implications for the growth and environmental health of border cities. The political border of the province spans from the southern region of Sardasht, situated in the small Zab River valley adjacent to Iraqi Kurdistan, to its northernmost point at Buralan (Dim Qashlaq) on the province's desert border with Turkey. This border, characterised by challenging geographical features such as rugged and impossible terrain, as well as various ethnic movements, is recognised as one of the nation's most unstable and sensitive frontiers (Baldi *et al.*, 2021). It has been plagued by a range of social, military, and political challenges, including the smuggling of various contraband items such as goods, fuel, alcoholic beverages, drugs, weapons, and ammunition (Canning & Tombs, 2021).

Development and security challenges in border regions such as West Azerbaijan province present a complex situation that requires careful consideration. This study explores the intricate relationship between development and security in these areas, emphasising the importance of addressing the underlying issues. Seven key factors influencing sustainable development and security are identified, underscoring the critical need for proactive measures. The creation of different scenarios is crucial for planning and

preparedness, offering a range of potential outcomes for policymakers and stakeholders to consider. By leveraging data analysis and expert insights, this study provides a solid framework for navigating the complexities of border region dynamics and promoting sustainable development, while enhancing security in Iran's border areas.

2. LITERATURE REVIEW

2.1 Border security meaning and concepts

The process of border securitisation, both historically and in contemporary contexts, has resulted in the dispersion of border security functions, extending their influence far beyond traditional geopolitical boundaries, penetrating deep into the very core of the societies they are designed to safeguard (Balzacq, 2019; Nauman, 2021). This evolution in border security practices relates to the emergence of a relatively new sphere of concepts and operational approaches that redefine the nexus between statehood, citizenship, and territoriality (Moisio *et al.*, 2020; Casaglia *et al.*, 2020; Kerntopf, 2023). This domain, while identified by varying names in different regions, is perhaps most visibly represented in the United States through the intricate web of policies, programmes, subjectivities, and identities associated with 'homeland security'. However, its influence resonates in numerous national and regional contexts (Walters, 2004; De Genova, 2007; Browning, 2015).

It is essential to note that, even as contemporary analyses of borders and globalisation attempt to move beyond state-centric perspectives, the territorially bound state remains a significant reference point (Laine, 2021; Sasaoka *et al.*, 2022). The discourse on a 'borderless world', fuelled by the rapid globalisation of economic, political, and cultural aspects, has given way to a heightened focus on the 'world of borders' (Sparke *et al.*, 2004; Paasi *et al.*, 2018). State borders, although only one aspect of a multifaceted border landscape, have persisted

and continue to be redefined and effectively employed as markers of sociopolitical organisation and nation-building processes. Understanding these borders remains critical in comprehending the functioning of states and how borders can be harnessed to mobilise and define territory, security, identities, emotions, memories, and various forms of national socialisation (Kashani-Sabet, 1997; Van Houtum & Berg, 2018; Donnan & Wilson, 2021; Borrelli, 2021; Mottaghi, Ghalehtimouri & Ghareh-Beygi, 2023). The complex network of influential individuals, operating at various levels from local to supranational, is crucial to the management of border security and control. These individuals navigate a complicated landscape of competing ideas and security approaches, shaping the fundamental nature of border governance and promoting cross-border relationships (Anderhuber, 2019; Avdaliani, 2022).

2.2 Challenges in border security

Dynamic interaction presents challenges such as conflicting priorities that affect landscapes, economic well-being, society, and local communities. When examining this study at the local level, it is evident that the principles of New Public Management play a crucial role in guiding the actions of influential individuals involved in border security. In this intricate web of power, supranational institutions and complex networks intersect with political, social, and cultural influencers in host societies, influencing abstract political discussions, including globalisation and supranational governance. Ultimately, these influential individuals act as key intermediaries, maximising their influence over territory and security practices (Tabb, 2004; Hasanbegovic, 2020; Burden, 2023). Iran is a nation with a diverse geopolitical landscape in the Middle East, facing a range of security and geopolitical challenges. These challenges include issues related to racial diversity, religious minorities, environmental threats, and various security concerns

(Fingar, 2009; Reveron & Mahoney-Norris, 2018). The complex border regions in Iran highlight a significant regional imbalance between these areas and the central regions. This imbalance hinders the development of the border regions and contributes to insecurity, due to their strategic location and lack of developmental initiatives (Messerli *et al.*, 2019) (Figure 1).

3. STUDY AREA

West Azerbaijan province in northwestern Iran covers 37,412km², making up 2.65% of the country's land area, ranking 11th in size. It shares approximately 16% of Iran's total land borders with neighbouring nations, including Nakhichevan Autonomous Republic and Turkey to the north, East Azerbaijan province to the east, Kurdistan province to the south, and Turkey and Iraq to the west. Notably, it is the sole Iranian province bordering three foreign countries, granting it a unique geopolitical standing. The province has a total border length of 888km, with the longest land border of roughly 518km along the northern and western frontiers shared with Turkey, and the shortest being approximately 131km along the northern water border adjacent to the Aras River and Nakhichevan Autonomous Republic (Nazarnejad, Shahhossein & Asadzadeh, 2018). West Azerbaijan was chosen as the study area, due to its proximity to Russia, Azerbaijan, Turkey, Armenia, and Iraq, all of which have historical connections to Iran. These countries share elements of Iranian culture and history, and the international and Russian policies towards neighbouring countries have presented challenges and transborder issues. Furthermore, the province has a 239km land border with Iraq to the west, as depicted in Figure 1.

4. METHODS AND MATERIALS

4.1 Research design

This research uses a practical approach that combines qualitative and quantitative data-analysis methods. It employs innovative methodologies such as the Delphi method, foresight, analytical techniques, and exploratory science (Komasi, Hashemkhani Zolfani & Cavallaro, 2022). The Delphi method is a research technique that involves gathering and distilling the anonymous judgements of a panel of experts on a specific topic or issue through multiple rounds of structured communication and feedback (Mousavi *et al.*, 2023). In this study using the Delphi technique, the survey data were obtained from three rounds. In Round 1, extracted from the open-ended questionnaire and extant literature, 38 initial variables were identified in four components (economic, natural and physical, political and security, social and culture) as factors that play a crucial role in shaping sustainable development and security. In Rounds 2 and 3, these variables were set as the items in the Delphi-matrix questionnaire and the pairwise matrix comparison questionnaire to determine the seven key factors and to predict various potential scenarios for these factors using impact analysis and scenario analysis. Impact analyses and pairwise comparison (Nordstokke, 2014) was used, because variables could be weighed on a Likert scale (Parolin, 2023: 3378), and then ranked directly and indirectly based on impact and influence. The variables with the highest score had the most impact/influence on possible future outcomes for development and sustainable security in West Azerbaijan's border areas.

4.2 Population, sample, and response rate

Delphi sample sizes depend more on group dynamics in reaching consensus than on their statistical power (Kheradranjbar, Mohammadi & Rafiee, 2022). A

non-probability snowball sampling method was used to assemble the expert panel, with initial experts recommending the participation of their peers (Kamanroodi & Jafarpour Ghalehtemouri, 2020). Delphi panel members were introduced from planning specialists and prominent university professors in the field of regional development, sustainable security, and border areas. Finally, 35 experts were invited to participate in the Delphi survey. In the Delphi process, general rules of thumb indicate that 14-30 people for a homogeneous population (that is, experts coming from the same discipline such as, for example, planning specialists) are generally considered to be sufficient to achieve consensus (Kheradranjbar *et al.*, 2022) (Table 1).

4.3 Data collection

From 2 March 2023 to 1 May 2023, two rounds of data collection, using the Delphi method and

questionnaires, were performed. In Round 1, an open-ended questionnaire was distributed among the 35 experts of independent panel members via email to state their views on the question: What are the most important factors that affect the sustainable development of the border areas of West Azerbaijan province in the four areas of economic, natural and physical, political and security, and social and culture categories?

In Round 2, experts were asked to independently apply weights to items in a Delphi questionnaire matrix of 38 statements, across 38 variables, that were extracted from Round 1. Experts were asked to evaluate the impact of these variables using a 4-point Likert scale to determine the influence of each variable in the row on the statement in the column.

In Round 3, experts were tasked with assigning weights to items in a Delphi questionnaire matrix consisting of 7 factors derived from

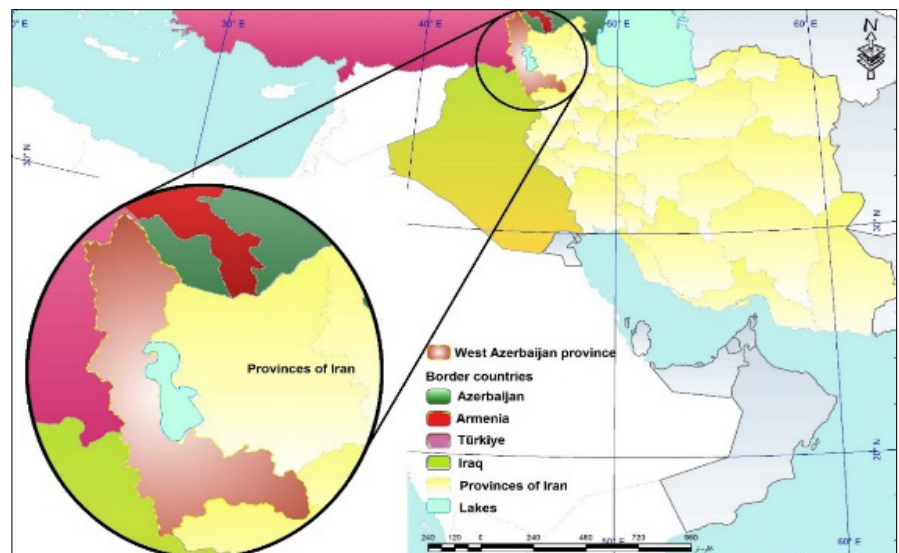


Figure 1: West Azerbaijan province

Source: Authors

Table 1: Profile of experts

Demographic	Category	F (n=35)	%
Specialist	Planners	5	14
	Decision makers	6	17
	Local government managers	5	14
	Townhall managers	6	17
Professors	Urban planning geography	4	12
	Regional security	5	14
	Political geography	4	12

Round 2. These weights were applied independently across 23 statements to explore potential scenarios.

4.4 Analysis and interpretation of the data

Data extraction from the open-ended questionnaire and the identification of the initial effective variables was done using thematic analysis (Brady, 2015) to group the 35 answers from the experts and reviews from literature on 'border security' under four key components, (economic, natural and physical, political and security, and social and culture), each with their respective indicators. After grouping the responses, labels were generated for 38 factors identified as the initial factors that affect the sustainable development of border areas (see Table 1).

MicMac software was used to examine the degree of interrelation connections between these variables using cross-impact analysis (Shafiee-Masuleh *et al.*, 2020). Cross-impact analysis is used in Delphi studies and allows for possible future scenarios and their interpretation, in order to answer a number of research questions on different subjects such as the future of environmental management (Hanna & Noble, 2015). This approach helps address complex security issues such as border security, by understanding relationships between variables, infrastructure dependencies, cybersecurity challenges, and general security issues (Janparvar *et al.*, 2022). The matrix is a 38x38 dimension matrix reflecting the 38 variables, with rows influencing columns. To determine relationship strength, items in the matrix were weighed on a 4-point scale where 0 = no relationship; 1 = weak relationship; 2 = moderate relationship; 3 = strong relationship, and P = potential relationship (see Table 2). In this stage, with a total of n variables, a comprehensive set of n*n questions (amounting to approximately 1,444 questions (relationships) for the 38 variables considered in this research) were generated.

The key factors that affect the sustainable development of border

areas were identified from the cross-impact analysis, by ranking the initial factors directly and indirectly based on impact and influence (the type of variable) using MicMac software. They were then classified according to their location in the influence/dependence map of variables (see Figure 1). The variables with the highest average score had the most influence on security in the border regions. Finally, seven out of the 38 factors were selected as the key factors.

Following the identification of seven key factors related to the sustainable development and security of the border areas of West Azerbaijan

province, using the Ensemble feature in Scenario Wizard software (Moradi *et al.*, 2023), various potential situations were envisioned for these factors. Scenario analysis with matrix visualisation, scenario tree, spider diagram, and scenario storyboards enables informed decision-making and strengthens security measures, by identifying critical parameters and evaluating complex interactions (Narula *et al.*, 2021; Asgari *et al.*, 2023; Nikkhah, 2023). Possible situations for key factors are considered, and mutual effects are represented in a matrix questionnaire format, with weighting via pairwise comparisons in which

Table 2: Influential indicators in the sustainable development and security of border areas

Components	Indicators	Label
Economic	Healthy economic activities	Var1
	Seasonal and local exhibitions	Var2
	Border markets and free trade zones	Var3
	Supporting and investing in income-generating projects	Var4
	New job opportunities	Var5
	Economic capacity of the region in the field of foreign trade	Var6
	Tourism capabilities	Var7
	Investment from neighbouring provinces at the national and international level	Var8
Natural and physical	Geographical location	Var9
	Natural resources	Var10
	Historical and natural places near the border	Var11
	Communication position	Var12
	Appropriate customs and border terminal (Bazargan, Serov, Tamerchin)	Var13
	Long land borders	Var14
Political and security	Existence of tensions between Kurds and Azeri Turks	Var15
	Insecurity caused by deprivation compared to neighbouring provinces	Var16
	The phenomenon of smuggling goods, weapons, drugs and alcoholic beverages	Var17
	Ethnic and religious groups incompatible with the government in the region	Var18
	The existence of organised groups in the region (Pajak, P.K.K., ISIS, and others)	Var19
	Instability and tension of border neighbours and their effects	Var20
	The accessibility of illegal weapons and ammunition available to the people of the region	Var21
	Existence of threat-oriented views to the borders of the province	Var22
	Unauthorised presence and movement of foreign nationals in the region	Var23
	Military, security and law enforcement centres and units based in the region	Var24
	Ethnic and religious conflicts in the border towns of the region	Var25
	Military political legitimacy by the majority of the people	Var26
	Measures and policies implemented by the system regarding religious and ethnic minorities in the region	Var27
	The level of relations between the central government and neighbouring countries in the region	Var28
Social and cultural	The structure of clan and tribal life in border areas	Var29
	Social anomalies in the region (alcohol, drugs, etc.)	Var30
	Formation of personality and individual identity versus ethnic identity	Var31
	Low level of social and cultural facilities and services in the region	Var32
	The feeling of discrimination of minorities against the majority	Var33
	The solidarity of the Kurdish minority with overseas tendencies	Var34
	Cultural centres of religious minorities in the region	Var35
	Influence of publications and media from virtual space	Var36
	Ethnic and religious pluralism	Var37
	Ethnic extremist currents in the region	Var38

the situations can show static = 0, optimal = 1, critical = 2, with variable correlation measurement within a range from -3 to +3.

4.5 Limitations to the study

The most highly skilled experts resided in the main city of West Azerbaijan province, Tabriz. It was critical to identify a group of qualified experts in border cities who had first-hand experience living in these areas, in order to provide more insightful answers to the questions. As a result, this study aimed to identify experts with extensive experience working and living in these regions, in order to conduct a thorough assessment.

5. RESULTS AND DISCUSSION

5.1 Initial factors that affect border security

Table 2 shows a total of 38 items in four components identified and short-labelled as the initial factors that affect sustainable development and security of border areas in West Azerbaijan province. For each of the four components, the indicators were identified and listed including economic (comprising 8 indicators), natural and physical (with 6 indicators), political and security (encompassing 14 indicators), and social and cultural (comprising 10 indicators) (Table 3).

5.2 Matrix results

Table 3: Initial data analysis of cross-impact matrix

Indicator	Value
Matrix size	38
Number of interactions	2
Number of zeros	88
Number of ones	351
Number of twos	695
Number of threes	289
Number of P	21
Total	1356
Fill rate	93.91%

Table 3 shows the cross-impact results from MicMac software; the matrix displayed a filling rate of 93.90%, indicating a substantial influence between the initial

factors. Within the total of 1,444 assessable relationships in this matrix, 88 relationships had a value of zero, signifying no mutual influence between those specific factors. On the other hand, 351 relationships had a value of one, suggesting a limited influence. Moreover, 695 relationships had a value of two, indicating relatively robust interrelations between the factors. In addition, 289 relationships had a value of three, denoting that these key factors had highly significant and profound influence on each other. Lastly, there were 21 relationships with a value of P, signifying potential and indirect relationships between the factors.

These preliminary findings form the foundation for the subsequent phases of the research, enabling delving deeper into understanding the complex web of relationships between these factors and their implications for sustainable development and security in the border areas of West Azerbaijan province.

Figure 2 shows the classification of the initial items affecting sustainable development and security of border areas, classified according to their location in the influence/dependence map of the variables. The results show that the majority of the factors link to the influential variables (simultaneously have a very high influence and dependence) and two-facet variables (have a high influence and high dependence) quadrants.

The analysis of variables and their positions within the direct-effects matrix has yielded fascinating findings. Out of the 38 variables, 11 have emerged as influential variables, exerting substantial direct effects. Moreover, there are 10 two-way variables demonstrating mutual influence, 6 independent variables with no direct impact, and 11 regulatory variables that actively shape the system's dynamics. This classification underscores the intricate web of factors influencing the sustainable development and security of the region.

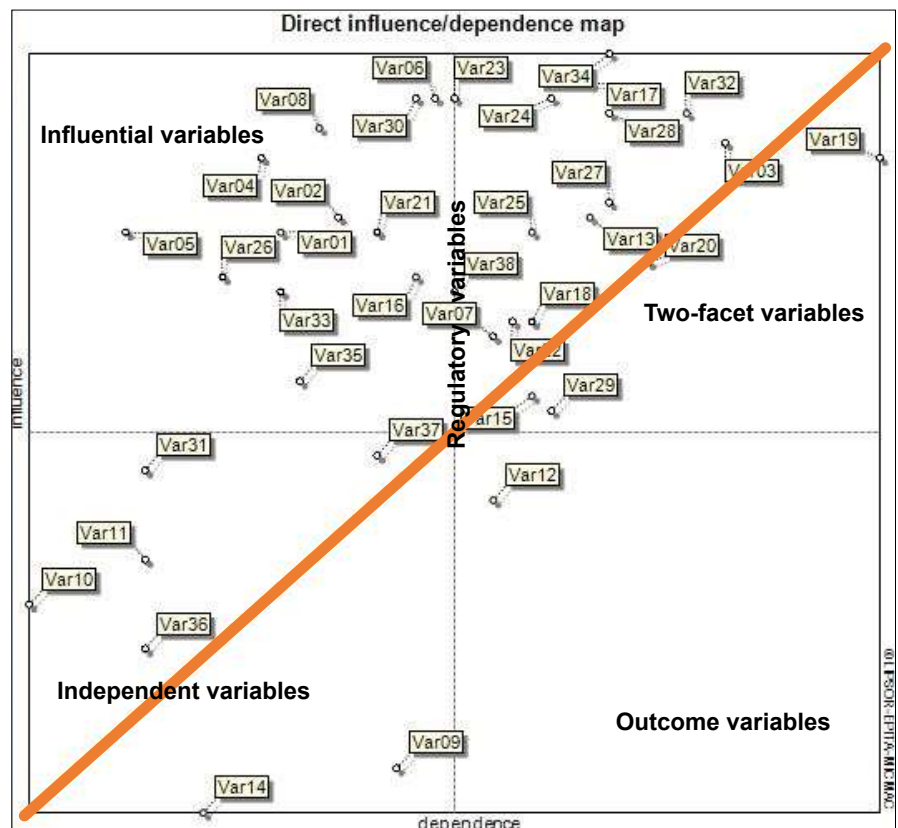


Figure 2: Distribution of variables based on direct influence/dependence map

5.2.1 Influencing or determining variables

These variables represent the most critical factors that have a significant impact on the development and stable security of West Azerbaijan province's border areas. Among the 38 variables examined in this research, 11 variables have been identified as determinants and influencers. These include healthy economic activities, seasonal and local exhibitions, support and investment in income-generating projects, new job opportunities, the economic capacity of the region in foreign trade, investment from neighbouring provinces at the national and international levels, the accessibility of illegal weapons and ammunition to local residents, unauthorised presence and movement of foreign nationals in the region, and military political legitimacy as perceived by the majority of the population. In addition, social anomalies in the region such as issues related to alcohol and drugs have been recognised as determining and influential variables.

5.2.2 Two-faceted variables

These variables exhibit a unique dual characteristic, having both high influence and being significantly affected by other variables. They are pivotal and strategic in nature and have the power to influence the dynamics and change within the system. Among the 38 variables studied in this research, 10 fall into this category. These two-faceted variables include border markets and free trade zones, suitable customs and border terminals (such as Bazargan, Seru, and Tamrchin), the phenomenon of smuggling of goods, weapons, drugs, and alcoholic beverages, the existence of organised groups in the region (including Pajak, P.K.K., ISIS, and others), the instability and tension of border neighbours and their effects, military, security, and law enforcement centres and units based in the region, measures and policies implemented by the system concerning religious and ethnic minorities in the region, the level of relations between the central

government and neighbouring countries in the region, and the low level of social and cultural facilities and services in the region. In addition, the solidarity of the Kurdish minority with overseas tendencies falls into this category.

5.2.3 Outcome or affected variables

These variables are situated in the southeast section of the figure and are often referred to as outcome variables. They hold great significance within the system, as they are significantly impacted by other variables but have minimal influence on the system as a whole. These variables can be considered outcomes of the independent and influential variables. If the independent and influential variables exhibit positive trends, these outcome variables will also reflect positivity. In this research, none of the 38 variables have been classified as direct or influencing outcome variables.

5.2.4 Independent variables

Located in the southwest section of the figure, these variables have minimal impact and effectiveness. They appear to have limited connection to the system, as they neither hinder primary variables nor contribute to the evolution and progress of the system. Out of the 38 variables examined in this research, six variables have been classified as independent variables, namely geographical location, natural resources, historical and natural sites near the border, long land borders, the development of individual personality and identity versus ethnic identity, and the impact of virtual space publications and media.

5.2.5 Regulatory variables

Positioned closer to the centre of the figure, regulatory variables function as adjustment factors, sometimes acting as secondary levers within the system. Depending on the objectives and policies employed by planners and managers, these variables can be elevated to influential, determining, or target and risk variables. Among the 38

variables in this study, 11 variables are situated within the regulatory category. These include tourism capabilities, communication position, the existence of tensions between Kurds and Azeri Turks, insecurity stemming from deprivation in comparison to neighbouring provinces, ethnic and religious groups with differing affiliations within the region, the presence of threat-oriented perspectives concerning the province's borders, the structure of clan and tribal life in border regions, minority perceptions of discrimination against the majority, cultural centres for religious and ethnic minorities in the region, ethnic and religious pluralism, and the presence of extremist ethnic and religious currents in the region. These designations help clarify the roles and significance of the variables within the research study.

5.3 Ranking of initial factors that affect border security

Table 4 shows the ranking of the ratings from the cross-impact analysis done with MicMac software on how the initial factors had a direct/indirect influence and impact on each other. The items with the highest score had the most influence on the realisation of border security and sustainable development of the border areas in West Azerbaijan province.

The results of the direct/indirect matrix data analysis show that Kurdish minority solidarity to overseas tendencies (Var34; score 325 and 322), smuggling goods, weapons, drugs and alcoholic beverages (Var17; score 318 and 325), and the economic capacity of the region in the field of foreign trade (Var6; score 314 and 316) as the most important variables that have a direct and indirect impact on border security. The presence of organised groups in the region (Pajak, P.K.K., ISIS, and other) (Var19; score 352 and 352), border markets and free trade zones (Var3; score 322 and 317), and the lack of social and cultural facilities and services in the region (Var32; score of 314 and 310) have been identified and introduced as the most important

variables that have a direct and indirect influence on border security.

5.5 Ranking of the key factors affecting border security

In the cross matrix (Table 4), the sum of the row numbers of each variable that shows the degree of influence and the column sum of each variable that also shows the degree of influence of that variable from other variables were used to identify the key factors affecting border security.

After direct and indirect influence rotation, the average score based on total row and total column values of each variable was calculated and extracted (see Table 5). With average influence scores of 79 and above, Table 5 shows the seven variables

extracted as the key factors affecting border security. These seven factors play the most important role in the future of sustainable development and security in the border areas of West Azerbaijan province and was used for predicting future scenarios.

5.6 Scenario analysis results

Following the identification of seven key factors related to the sustainable development and security of the border areas of West Azerbaijan province, using MicMac software, various potential scenarios were envisioned for these factors. Experts and specialists have developed a total of 23 different possible situations for the seven key factors, encompassing a spectrum of favourable and unfavourable

conditions. The number of possible situations for each factor corresponds to its level of influence and significance, ranging from three to four situations per factor, as outlined in Table 6. Based on the number of possible situations and condition classification of each, results from the analysis show two scenarios with strong compatibility in sustainable development and security.

Scenario 1 shows seven positive (optimal) future situations, and scenario 2 shows seven challenging (critical) situations. These situations serve as representations of possible and plausible future outcomes, aiding in strategic planning and decision-making processes for the province's border areas. Based on the research findings, the following scenarios emerge:

Scenario 1: Positive for the future

1. Strengthening border markets and free trade zones.
2. Decisively preventing the proliferation of smuggling of goods, weapons, drugs, and alcoholic beverages.
3. Preventing the emergence of organised groups in the region.
4. Enhancing military, security, and police centres and units within the region.
5. Elevating the level of diplomatic relations between the central government and neighbouring countries.
6. Swiftly improving social and cultural facilities and services within the region.
7. Reducing the affinity of the Kurdish minority with overseas trends.

Creating border markets (A1) represents an impactful strategy for fostering inter-regional exchanges. In particular, free trade zones hold a critical role in the planning and development of border areas. Neglecting these zones could lead to significant challenges, including population instability. This is especially pertinent in less developed regions such as West Azerbaijan province, which presents an ample opportunity for the disruptive influence of illicit goods smuggling (B4). Consequently, strategic foresight and expert

Table 4: The rating of direct and indirect influence of factors that affect border security

Rank	Label	Direct impact	Label	Direct influence	Label	Indirect impact	Label	Indirect influence
1	Var34	325	Var19	352	Var17	325	Var19	352
2	Var17	318	Var03	322	Var34	322	Var03	317
3	Var06	314	Var32	314	Var06	316	Var32	310
4	Var23	314	Var20	306	Var30	312	Var20	306
5	Var24	314	Var27	299	Var24	310	Var27	298
6	Var30	314	Var28	299	Var23	310	Var34	297
7	Var28	310	Var34	299	Var08	310	Var28	297
8	Var32	310	Var13	295	Var28	306	Var17	295
9	Var08	306	Var17	295	Var32	305	Var13	294
10	Var03	302	Var24	287	Var03	303	Var24	288
11	Var04	299	Var29	287	Var04	301	Var29	287
12	Var19	299	Var15	283	Var19	292	Var18	285
13	Var27	287	Var18	283	Var27	289	Var25	285
14	Var02	283	Var25	283	Var01	289	Var15	284
15	Var13	283	Var22	279	Var13	286	Var22	281
16	Var01	279	Var07	276	Var05	283	Var12	277
17	Var05	279	Var12	276	Var21	282	Var07	276
18	Var21	279	Var23	268	Var02	280	Var38	272
19	Var25	279	Var38	268	Var25	278	Var23	269
20	Var20	272	Var06	264	Var26	271	Var30	261
21	Var16	268	Var16	260	Var20	270	Var16	261
22	Var26	268	Var30	260	Var16	267	Var09	260
23	Var33	264	Var09	256	Var33	262	Var06	259
24	Var38	264	Var21	253	Var22	261	Var21	255
25	Var18	256	Var37	253	Var38	260	Var37	253
26	Var22	256	Var02	245	Var18	255	Var02	239
27	Var07	253	Var08	241	Var07	247	Var08	237
28	Var35	241	Var35	237	Var15	243	Var35	236
29	Var15	237	Var01	233	Var35	239	Var01	233
30	Var29	233	Var33	233	Var29	230	Var04	232
31	Var37	222	Var04	230	Var31	217	Var33	232
32	Var31	218	Var26	222	Var37	217	Var26	225
33	Var12	210	Var14	218	Var12	212	Var14	222
34	Var11	195	Var11	207	Var11	193	Var31	209
35	Var10	184	Var31	207	Var10	186	Var11	207
36	Var36	172	Var36	207	Var36	176	Var36	205
37	Var09	141	Var05	203	Var09	140	Var05	200
38	Var14	130	Var10	184	Var14	133	Var10	184

Table 5: Ranking of key factors based on direct effects

Label	Indicator	Total rows	Total columns	Average score	Rank
Var19	The existence of organised groups in the region (Pajak, P.K.K., ISIS, and others)	78	92	85	1
Var3	Border markets and free trade zones	79	84	82	2=
Var32	Low level of social and cultural facilities and services in the region	81	82	82	2=
Var34	The solidarity of the Kurdish minority with overseas tendencies	85	78	82	2=
Var17	The phenomenon of smuggling goods, weapons, drugs and alcoholic beverages	83	77	80	3=
Var28	The level of relations between the central government and neighbouring countries in the region	81	78	80	3=
Var24	Military, security and law enforcement centres and units based in the region	82	75	79	4
Var27	Measures and policies implemented by the system regarding religious and ethnic minorities in the region	75	78	77	5
Var6	Economic capacity of the region in the field of foreign trade	82	69	76	6=
Var23	Unauthorised presence and movement of foreign nationals in the region	82	70	76	6=
Var20	Instability and tension of border neighbours and their effects	71	80	76	6=
Var13	Appropriate customs and border terminal (Bazargan, Serov, Tamerchin)	74	77	76	6=
Var30	Social anomalies in the region (alcohol, drugs, etc.)	82	68	75	7
Var25	Ethnic and religious conflicts in the border towns of the region	73	74	74	8
Var8	Investment from neighbouring provinces at the national and international levels	80	63	72	9
Var18	Ethnic and religious groups incompatible with the government in the region	67	74	71	10
Var16	Insecurity caused by deprivation compared to neighbouring provinces	70	68	70	11=
Var21	The accessibility of illegal weapons and ammunition available to the people of the region	73	66	70	11=
Var22	Existence of threat-oriented views to the borders of the province	67	73	70	11=
Var29	The structure of clan and tribal life in border areas	61	75	70	11=
Var38	Ethnic extremist currents in the region	69	70	70	11=
Var2	Seasonal and local exhibitions	74	64	69	12=
Var4	Supporting and investing in income-generating projects	78	60	69	12=
Var7	Tourism capabilities	66	72	69	12=
Var15	Existence of tensions between Kurds and Azeri Turks	62	74	68	13
Var1	Healthy economic activities	73	61	67	14
Var33	The feeling of discrimination of minorities against the majority	69	61	65	15
Var12	Communication position	55	72	64	16=
Var26	Military political legitimacy by the majority of the people	70	58	64	16=
Var5	New job opportunities	73	53	63	17=
Var35	Cultural centres of religious minorities in the region	63	62	63	17=
Var37	Ethnic and religious pluralism	58	66	62	18
Var31	Formation of personality and individual identity versus ethnic identity	57	54	56	19
Var11	Historical and natural places near the border	51	54	53	20
Var9	Geographical location	37	67	52	21
Var36	Influence of publications and media from virtual space	45	54	50	22
Var10	Natural resources	48	48	48	23
Var14	Long land borders	34	57	46	24
Total		2608	2608		

Table 6: Key factors and possible scenarios related to sustainable development and security

Factor	Label	Possible situation	Condition	Scenario
Var3 Border markets and free trade zones	A1	Strengthening border markets and free trade zones	Optimal	1
	A2	Consolidation and continuation of the status quo	Static	0
	A3	Weakening border markets and free trade zones	Critical	2
Var17 Smuggling goods, weapons, drugs and alcoholic beverages	B1	Decisive prevention of the spread of smuggling of goods, weapons, drugs and alcoholic beverages	Optimal	1
	B2	Gradual prevention of the spread of smuggling goods, weapons, drugs and alcoholic beverages	Optimal	1
	B3	Continuation of the status quo	Static	0
	B4	Increase in the spread of the phenomenon of smuggling of goods, weapons, drugs and alcoholic beverages	Critical	2
Var19 The existence of organised groups in the region (Pajak, P.K.K., ISIS, and others)	C1	Preventing the creation of organised groups in the region	Optimal	1
	C2	Continuation of the status quo	Static	0
	C3	Encouragement to create organised groups in the region	Critical	2
Var24 Military, security and law enforcement centres and units based in the region	D1	Strengthening military, security and law enforcement centres and units located in the region	Optimal	1
	D2	Consolidation and continuation of the status quo	Static	0
	D3	Weakening military, security and law enforcement centres and units based in the region	Critical	2
Var28 Relations between the central government and neighbouring countries in the region	E1	Improving the level of relations between the central government and neighbouring countries in the region	Optimal	1
	E2	Continuation of the status quo	Static	0
	E3	Reducing the level of relations between the central government and neighbouring countries in the region	Critical	2
Var32 Lack of social and cultural facilities and services in the region	F1	Rapid strengthening of social and cultural facilities and services in the region	Optimal	1
	F2	Gradual strengthening of social and cultural facilities and services in the region	Optimal	1
	F3	Continuation of the status quo	Static	0
	F4	Stabilisation of the status quo	Critical	2
Var 34 Solidarity of the Kurdish minority with overseas tendencies	G1	Reduction of solidarity of the Kurdish minority to overseas trends	Optimal	1
	G2	Continuation of the status quo	Static	0
	G3	Increasing the solidarity of the Kurdish minority with overseas tendencies	Critical	2

management are imperative for the province's leadership.

Scenario 2: Challenging for the future

1. Weakening border markets and free trade zones.
2. Escalation in the spread of smuggling goods, weapons, drugs, and alcoholic beverages.
3. Encouraging the creation of organised groups in the region.
4. Diminishing military, security, and police presence in the region.
5. Decreasing the level of diplomatic relations between the central government and neighbouring countries.
6. Maintaining the current low level of social and cultural facilities and services.
7. Observing an increase in the Kurdish minority's affiliation with overseas trends.

Organised groups such as PKK, Pejak, and their affiliated branches pose a threat to peace in border areas and neighbouring countries. Their violent actions against government forces and civilians instigate fear, insecurity, and discontent among the populace. In addition, the presence of various ethnic groups forms a crucial aspect of subcultures, exerting a significant influence on national solidarity. Neglecting this aspect could potentially endanger the fragile balance of national solidarity, particularly in ethnically diverse regions such as Iran's West Azerbaijan province. Visual representations such as a graph plotting the likelihood and severity of each scenario against time, aid planning and decision-making would illustrate the varying impacts of different scenarios, enabling policymakers to prioritise resources and adapt strategies accordingly for effective border management.

5.7 Key factors in the network system

In a network system, the distribution of variables on the influence/dependence map shows the degree of stability of the system.

In stable systems, the distribution of the variables showed a 'L-form'; that is, some variables have a great influence, and some have a great dependence (Na'imi & Purmohammadi, 2016: 59). Key factors in stable network systems signify elements that can effectively control the system (distributed in upper left corner of the map) and factors that can be viewed as dependent key factors that follow the guidance of other key factors without significantly influencing the system's dynamics (distributed in the lower right corner of the map). In unstable systems, the state is more complex than in stable systems; in these systems, the variables are distributed around the diagonal axis of the map (Na'imi & Purmohammadi, 2016). Figure 3 shows that all key factors are distributed in the upper right corner around the diagonal axis of the map. These factors exert a substantial influence on the system and, in turn, are significantly affected by the system. This category of key factors is often linked to the potential emergence of complex system behaviour. This shows that the future state of border security, based on a sustainable network system in Iran's West Azerbaijan province, is not stable.

Notably, this network analysis is based on the combined assessment of both direct and indirect effects, providing a more comprehensive understanding of these key factors' roles in the system.

5.8 Sustaining the scenarios – Key assumptions

Table 7 offers insights into the compatibility and assumptions consistency within the scenarios. It illustrates the compatibility values corresponding to the assumptions of key factors and their influence, highlighting the most effective among each factor's set of assumptions.

Based on the results, the assumptions "preventing the creation of organised groups in the region" and "strengthening military, security, and law enforcement centres and units located in the region" had the most compatibility for the sustainable development and security of West Azerbaijan's border regions. These two assumptions exert a profound and harmonious effect on the scenarios, underscoring their significance. Surprisingly, the assumption "decisive prevention of the spread of the phenomenon of trafficking in goods, weapons, drugs, and alcoholic beverages", while being the most influential assumption within the key factor "the phenomenon

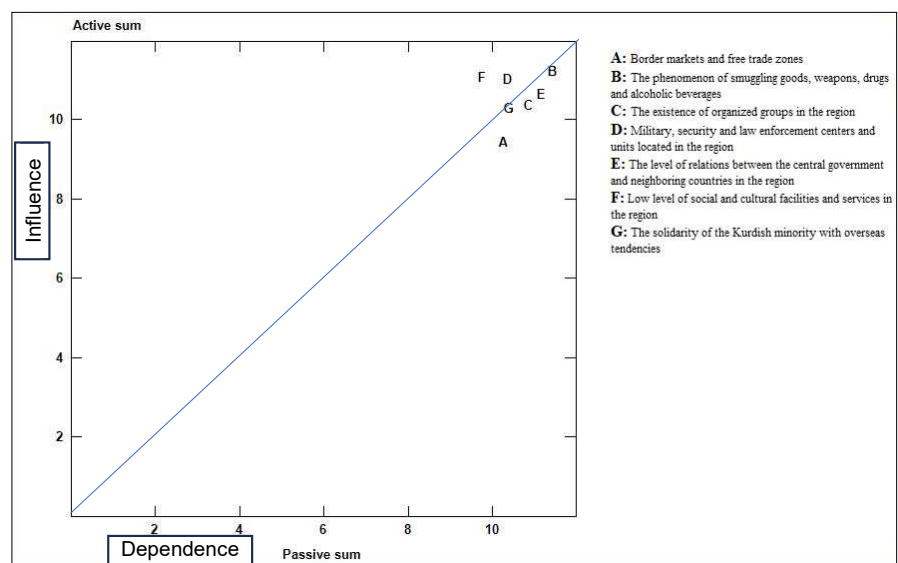


Figure 3: System network of sustainable development and security scenarios of the border regions of West Azerbaijan province

of trafficking in goods, weapons, drugs, and alcoholic beverages”, paradoxically exhibits the lowest compatibility value. This indicates that, despite its influence within the factor, it may not align as seamlessly with the broader scenarios for the sustainable development and security of West Azerbaijan’s border regions. The support for this descriptive assumption appears to be relatively weak within these scenarios.

6. CONCLUSION

The intricate nature of border regions, which serve as the interface between a nation’s internal and external environments, calls for careful consideration in regional development. The nexus between development and security is particularly evident in these border areas, where actions and reactions are inextricably linked. Stable security stands as a cornerstone of a country’s foreign policy objectives, reflecting the essence of independence, territorial integrity, and sovereignty. Recent years have underscored the increasing importance of cross-border cooperation for the sustainable development of neighbouring border cities. Given the significant shifts in geopolitics and economics, along with their implications for national security, research on the state of development and security in border areas has emerged as a paramount challenge for countries.

This research employed document studies and leveraged the expertise of specialists and experts well-versed in the target area. It identified critical variables and components

within the research domain. These variables were subsequently included in an impact analysis matrix questionnaire, and their connections to the relevant field were evaluated by experts. The primary aim of this research was to pinpoint key influential factors and employ scenario planning in the pursuit of development and sustainable security in West Azerbaijan’s border areas, all guided by a foresight approach. Given that this method, like others, requires scientific and logical tools, the study relied on MicMac software to analyse 38 factors associated with the research subject in West Azerbaijan province. It assessed their effects (both direct and indirect) and categorised them by type (determinants, two-dimensional variables, influential variables, independent variables, and regulatory variables). Ultimately, seven key factors were extracted.

The results of the key factors assessment led to the formulation of two types of scenarios: strong and weak. The former encompasses desirable and critical scenarios, describing ideal and deteriorating circumstances, respectively. Of note, all seven key factors identified in this study are situated in the upper right quadrant of the system-network map. Notably, in the section addressing the compatibility of scenario assumptions, “preventing the creation of organised groups in the region” and “strengthening military, security, and law enforcement centres and units in the region” was found to be the most effective, displaying the highest compatibility with the scenarios. In contrast, the assumption concerning the

“decisive prevention of the spread of the phenomenon of trafficking in goods, weapons, drugs, and alcoholic beverages” exhibited the lowest compatibility value.

This research underscores the importance of adopting sound renal methodologies by decision-makers and institutions to resolve regional issues and challenges in West Azerbaijan province’s border areas. The research findings highlight the identification and positioning of various variables within the influence axis of the matrix of direct effects. Of the 38 variables scrutinized, 11 were categorised as influencing variables, 10 as two-dimensional variables, and 6 as independent variables. In addition, 11 variables were classified as regulatory variables, and none as direct-result variables. The inclusion of seven two-faceted variables, characterised by their significant impact and influence, was crucial in steering the course of this research. They were chosen after extensive consultation with experts. Recognising the symbiotic relationship between security and development in border areas is vital in reshaping regional methodologies. Policies for security and defence in border areas encompass a multifaceted approach, integrating both preventive and responsive measures. They involve border surveillance, law enforcement cooperation, and intelligence-sharing to combat illicit activities such as smuggling and terrorism. In addition, diplomatic engagements and treaties foster collaboration among neighbouring nations, enhancing border security through mutual trust and cooperation.

Table 7: The most effective assumptions and their consistency

Key factor	Assumption	Compatibility
The existence of organised groups in the region	Preventing the creation of organised groups in the region	16
Military, security and law enforcement centres and units located in the region	Strengthening military, security and law enforcement centres and units located in the region	16
The level of relations between the central government and neighbouring countries	Improving the level of relations between the central government and neighbouring countries in the region	15
Border markets and free trade zones	Strengthening border markets and free trade zones	13
The solidarity of the Kurdish minority with overseas trends	Reduction of solidarity of the Kurdish minority to overseas trends	12
Low level of social and cultural facilities and services in the region	Rapid strengthening of social and cultural facilities and services in the region	5
The phenomenon of smuggling goods, weapons, drugs and alcohol	Decisive prevention of the spread of the phenomenon of smuggling of goods, weapons, drugs and alcoholic beverages	4

Importantly, these policies prioritise the protection of human rights and uphold international legal frameworks, ensuring that security measures are proportionate and respectful of individual liberties. By combining vigilance with diplomacy and adherence to rule of law, these policies strive to maintain peace and stability along borders. Therefore, seamless integration of security and development considerations into border areas' development plans is essential. Sustainable development, which aligns with defence and ensures stability, calls for a novel approach. Therefore, the framework for sustainable development in border areas should encompass a two-way perspective, wherein development plans prioritise not only the traditional elements of sustainable development, but also incorporate defence stability. By linking security and development in border areas, it becomes evident that these endeavours are mutually reinforcing. The realisation of security and defence in border areas finds its expression through development programmes to foster stability and prosperity. Rather than solely relying on militarisation, governments increasingly recognise the importance of addressing root causes of insecurity such as poverty and lack of infrastructure. Development initiatives, ranging from education to economic empowerment and infrastructure projects, not only improve livelihoods, but also mitigate drivers of conflict. By bolstering local economies and enhancing social cohesion, these programmes create a conducive environment for effective security measures, promoting long-term peace and resilience in border regions.

DECLARATION

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