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**THE FOG OF THE FUTURE IS CLEARING:  
AN APPLICATION OF SEEDSTET APPROACH**

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# **THE FOG OF THE FUTURE IS CLEARING: AN APPLICATION OF SEEDSTET APPROACH**

## **AIM**

1. The phenomenon of war is as old as humanity. Its features have shown constant change over time. The most important source of this change is development in the security domain. Therefore, predicting the future security environment and preparing accordingly can provide an advantage against competing states. Neither Turkish National Defense University (TNDU) nor the Turkish Armed Forces (TAF) have a forecasting model that can envision the future. In this context, the purpose of this service paper is to introduce a new approach to predicting the future security environment for TNDU and TAF. Thus, strategic level planners will be able to have a robust prediction tool to increase the effectiveness of their future work.

## **INTRODUCTION**

2. People are inherently involved in constant conflict for their interests. While sometimes these disputes are solved peacefully, sometimes violence becomes an unavoidable element for resolution. This proposition applies even to societies because they are composed of people. As long as human beings exist, war and conflict will be inevitable.

3. TNDU is a primary institution to explore these concepts. It is also an institution that trains future TAF leaders. Associate Prof. Dr. Brigadier General Ersin GÖSE is the Executive Officer of TNDU. He is in charge of ratifying the curriculum of TNDU. This curriculum determines the content and duration of the courses. He expressed several times that TNDU needs a forecasting metric for shaping its programs. This service paper

will show the changing characteristics of the future security environment and review its effects on TNDU training programs, in this regard.

## **DISCUSSION**

4. The concept of security, which was previously limited to defense and military forces, has become much wider and more multidimensional today. Terrorism, globalization, migration, energy security, technological advancements, global climate change, organized crime, and drug trafficking are the main factors that affect today's security environment and the 21<sup>st</sup> century.

5. The developments in Syria, especially after the Arab Spring, are important in terms of showing the dimensions of the popular uprisings. With external support to uncontrolled masses, covert operations can bring states to the point of collapse. Similarly, the events in Ukraine have taught the world how to annex land in a modern sense. As a result of all the experiences, many experts stated that the discourse of conventional warfare has expired and has changed as a result of the developments in Ukraine.

6. Likewise, the activities of the ISIS terrorist organization have shown to the world that terror has become a state. To date, terrorist organizations, which have more light weapons and little manpower, have been replaced by organizations equipped with heavy weapons and with serious manpower support and ideological base. The global divergence of power from the west and the move to the east, and the shift of US interest in the Asian Pacific will create new political and economic challenges for Western countries. In light of all these factors, the 21<sup>st</sup> century is a multidimensional, multi-faceted and difficult century with asymmetrical threats and risks.

7. Although there are various analyses to explore this complexity and ambiguity, four approaches from Canada, the United Kingdom, the United States of America, and NATO are noteworthy. Canadian Armed Forces evaluate the security challenges from geopolitical, military, science & technology, economic, environmental, and social perspectives.<sup>1</sup> In the UK, academics from the Royal United Services Institute for Defence and Security Studies predict that trends in domestic pressures, politics and demographics, space, cyberspace, and technology will have influences on future security atmosphere.<sup>2</sup> The US approach concentrates on the chaotic, complex and competing features of the future security domain. It also foresees that technological evolution, resource competition, shifting demographics, and power diffusion trends will have destructive effects in this regard.<sup>3</sup> As a last, NATO examines four scenarios to predict future security risks and vulnerabilities. These scenarios are the dark side of exclusivity, deceptive stability, clash of modernities and new power politics.<sup>4</sup>

8. In light of this information, the writer proposes a scenario-based, hybrid approach, namely **Social, Economic, Energy, Domestic, Space & Technology Trends (SEEDSteT)** approach, **for the first time** in the literature to forecast the future security environment. SEEDSteT is hybrid because it offers a synthesis of the previous four approaches. Thus, it will generate robust results.

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<sup>1</sup> Canadian Chief of Force Development, “The Future Security Environment 2013-2040”, p. iii-v, (2014).

<sup>2</sup> Robert, Peters. “The Future Conflict Operating Environment Out to 2030”, Royal United Services Institute for Defence and Security Studies, p.iii, (2019).

<sup>3</sup> Kimberly Amerson and Spencer B. Meredith III, “The Future Operating Environment 2050: Chaos, Complexity and Competition”, Accessed 20 October, 2019. <https://smallwarsjournal.com/jrnl/art/the-future-operating-environment-2050-chaos-complexity-and-competition>

<sup>4</sup> Multiple Futures Project, “Navigating towards 2030, Final Report.”, p.17-28. (2009).

9. Realism is the oldest and prevailing theory of international politics. This theory puts states in the center of world affairs. The states are solely in charge of providing security because they can't trust any other organization.<sup>5</sup>As a result, states are watchdogs of security in societies. Therefore, it is a must to explore social trends for comprehending security. These factors form the first component of **SEEDSteT**. They are about the changes in the population structure, urbanization, globalization, food & water needs, and the diseases.<sup>6</sup>

10. The United Nations Department of Economic and Social Affairs (UN DESA) expects that population growth, population ageing, migration, and urbanization will have notable consequences for societies. It estimates that the world's population will have risen from 7.7 billion in 2019 to 9.7 billion in 2050. This increase will come mostly from sub-Saharan Africa. Moreover, “47 least developed countries are among the world's fastest-growing – many are projected to double in population between 2019 and 2050 – putting pressure on already strained resources.”<sup>7</sup>

11. Population growth will continue to bring about population movements. Migration from poorer countries to richer countries will continue to increase.<sup>8</sup> Factors triggering

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<sup>5</sup> Stephen M. Walt, “Realism and Security”, Oxford Research Encyclopedia, International Studies, p. 1-27, (2010) Accessed 20 October, 2019. <https://oxfordre.com/internationalstudies/internationalstudies/view/10.1093/acrefore/9780190846626.001.0001/acrefore-9780190846626-e-286>

<sup>6</sup> Bárbara A. Willaarts, Ignacio Pardo, Gabriela De La Mora, Urbanization, socio-economic changes and population growth in Brazil: dietary shifts and environmental implication, Conference: XXVII IUSSP International Population Conference, At Busan, South Korea, 2013.

<sup>7</sup> United Nations Department of Economic and Social Affairs, “World Population Prospects 2019: Highlights”, Accessed 20 October, 2019. [https://population.un.org/wpp/Publications/Files/WPP2019\\_Highlights.pdf](https://population.un.org/wpp/Publications/Files/WPP2019_Highlights.pdf)

<sup>8</sup> Ibid.

cross-border migration will be globalization, different demographics, income inequality between regions, and the existence of migration networks between various countries.

12. There was a milestone event in 2018 for the population dynamics. The number of people aged 65 years old and over outstripped the number of children aged 5 and under worldwide, for the first time. Unfortunately, the world's population continues ageing. UN DESA projects that the "65 years or over age level globally will surpass the number of adolescents and youth aged 15 to 24 years" by 2050.<sup>9</sup>

13. However, the rate of population growth will decrease in developed countries. Urbanization, ageing, and reduced fertility in developed countries will also shrink the existing labour market for the military and civilian workforce.<sup>10</sup> The surplus of young populations in developing countries such as the Middle East and North Africa will likely fuel instability. Owing to the urbanization rate in underdeveloped countries and environmental factors, internal displacements will be much higher than international migration rates, in some countries.

14. UN DESA also forecasts that 68% of the world population will be living in urban areas during the 2050s. In fact, there will be "43 megacities with more than 10 million inhabitants" by 2030.<sup>11</sup> Due to the rapid urbanization, the volume of urbanization

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<sup>9</sup> Ibid.

<sup>10</sup> Peter Auer, Mariàngels Fortuny, "Ageing of the Labour Force in OECD Countries: Economic and Social Consequences", *Employment Sector International Labour Office Geneva*, (2000).

<sup>11</sup> United Nations Department of Economic and Social Affairs, "2018 Revision of World Urbanization Prospects", Accessed 20 October, 2019. <https://www.un.org/development/desa/publications/2018-revision-of-world-urbanization-prospects.html>



required for home, office, transportation services, and infrastructure needs will also increase in the next forty years.

15. Local administrations will face difficulties in providing sufficient security and services to urban areas. This will lead to the growth of black markets, which resonates with human trafficking and illegal trade. Moreover, megacities will rise as international actors that may impact the whole country. People will prefer a city rather than a country's identity.<sup>12</sup>

16. Increasing urbanization will further expose countries' conventional forces to asymmetric threats and increase the priority of the Peacekeeping Operations in comparison to conventional operations.

17. The infrastructure and means of transport have improved since the 1990s. Transnational companies have become more widespread. Capital has few barriers than ever before. The world's production level has reached unprecedented levels. Information sharing has become cheap and fast. These developments have made the world much smaller.

18. Hence, non-governmental organizations, religious groups, and exceedingly strong individuals who transcend the resources of the state or international networks will build a very intricate future. Governments' relations with non-state actors will increase to shape

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<sup>12</sup> US Joint Force Development, "Joint Operating Environment 2035, The Joint Force in a Contested and Disordered World", p.11-12, 2016. Accessed 20 October, 2019. <https://fas.org/man/eprint/joe2035.pdf>

all issues from security to economic development in this complex future.<sup>13</sup>

Correspondingly, security providers have to be ready for this new environment.

19. Climate change will cause production shocks in agriculture. This will lead to price changes and an additional burden to poor people.<sup>14</sup> Additionally, agricultural production will fall because of population decline in villages. Urbanization and increasing population together with climate change will bring on increased demand for food and clean water. This condition will deepen the security problem in Africa, the Middle East, and Asia.

20. Outbreaks of plague-like epidemics, such as that leading to the death of the medieval European population, are unlikely to occur for the next twenty years. With today's technology and the knowledge of bacteria and viruses, the fight against diseases has increased. But underdeveloped countries still suffer from diseases such as Ebola, Middle East Respiratory Syndrome, and Zika, although not as deadly as in the past.<sup>15</sup> Despite extensive efforts, the difference between developed and underdeveloped countries in the field of health can continue to exist in the future. Human masses in developed countries can still show sensitivity to the epidemic of diseases, as a result of increasing urbanization and globalization.

21. These changes in social life will contribute to identifying the source of instability, the use of human resources, shaping the force structure, reducing uncertainty, and

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<sup>13</sup> Future States Forum, "40 For the Next 40", Toffler Associates, Accessed 20 October, 2019. <http://pjneal.com/documents/40fortheNext40101011.pdf>

<sup>14</sup> Hans Joachim Schellnhuber, "Climate change effects on agriculture: Economic responses to Biophysical Shocks", Potsdam Institute for Climate Impact Research, p.3279, (2013).

<sup>15</sup> World Health Organization, "Managing Epidemics – Key Facts about Major Deadly Diseases, Luxembourg, p.56-160, (2018).

identifying the needs of security forces. Directing large organizations such as security organizations requires a long time. Therefore, using the scenario-based forecasting model will reduce this amount of time needed.

22. National economic markets have become highly linked together through globalization. Therefore, the risk of a "domino effect" of an economic crisis has increased. In such a situation, countries may increase tensions by trying to protect their national interests, disregarding existing international agreements. Cuts in military spending due to the economic crises of the countries that currently hold military superiority will cause them to lose their dominance in the future. Additionally, the difference between developed and underdeveloped countries will be wide. This situation will cause unrest, violence, terror, and instability both within and between communities. All in all, these economic trends comprise the second part of **SEEDSteT approach**.

23. The third component of SEEDSTeT approach is trends in energy. Economic growth, convergent structural changes, and improvement of living standards are affecting world energy consumption. The U.S. Energy Information Administration expects a significant increase in energy demand by 2040. A large part of this demand comes from non-OECD countries. Although technological advances in drilling and crushing will increase future natural gas production, there will be a change in production from fossil fuels to renewable and nuclear power. <sup>16</sup>

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<sup>16</sup> U.S. Energy. Information Administration, International Energy Outlook, p.9-11, (2016), Accessed 20 October, 2019 [https://www.eia.gov/outlooks/ieo/pdf/0484\(2016\).pdf](https://www.eia.gov/outlooks/ieo/pdf/0484(2016).pdf)

24. However, security is inversely proportional to energy dependence. Countries will seek to increase the use of local resources to increase the level of national security and reduce energy dependence, diversify resources from many countries instead of single countries, and develop good relations with the Neighbours. Meanwhile, competition between countries on energy production and access to energy will also increase.

25. Domestic factors will constitute another part of the future security environment. People have a reliance on technological devices. All of these devices need electricity to operate. The dependence on electricity has never been greater. Trade, public transportation, and retail store replenishment are all electricity-based.

26. In 2003, a large part of the Northeast and Midwest of the US and Ontario experienced a four-day power outage. Electric Consumer Research Council estimated that the cost of the blackout is between seven and ten billion dollars to the US alone.<sup>17</sup> The security dimension of the incident is a separate topic of discussion, in addition to the social aspect. President George W. Bush and Prime Minister Jean Chrétien directed the formation of a joint task force to investigate this aspect of the incident.<sup>18</sup> This is an example of how to harm a nation domestically without using either a single soldier or a bullet. As a result, domestic trends are another part of SEEDS<sub>TeT</sub> approach.

27. Space and technology are other elements of security. Many people are unaware of their connection with space. But many satellites orbit the globe to provide services from

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<sup>17</sup> Electric Consumer Research Council, "The Economic Impacts of the August 2003 Blackout," (February 2, 2004).

<sup>18</sup> "Final Report on the August 14, 2003 Blackout in the United States and Canada: Causes and Recommendations", p.1, (April 2004).

communication, trade, power systems to health care, agriculture, entertainment, and weather forecast for the people.<sup>19</sup> As such, the global government space expenditure increased to \$772 billion in 2018.<sup>20</sup> It will continue to rise gradually in the future. Although the United Nations Office for Outer Space Affairs (UNOOSA) strives for endorsing broad cooperation in the peaceful uses of space,<sup>21</sup> countries inevitably see space as a contested domain. They see because space provides a competitive advantage. Therefore, space has become the fourth operation environment, in addition to air, land, and sea for today`s security providers.

28. Advances in technology have led to significant changes in all areas of life. Each innovation paves the way for another innovation. Predictions in the Back to Future movies turned into reality in just 30 years. Technological advancement will continue to take place with the same speed in information technology, unmanned systems, biotechnology, gene technology, nanotechnology, clean technology, alternative energy, health technologies, neuroscience, robotics, drones, 3D & 4D printing, augmented reality, virtual reality, artificial intelligence, cognitive computing, quantum computing, self-learning robots,<sup>22</sup> navigation and blockchain.

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<sup>19</sup> Committee on National Security Space Defense and Protection Division on Engineering and Physical Sciences, “National Security Space Defense and Protection Public Report”, p.2, (2016). Accessed 20 October, 2019. [https://www.defensedaily.com/wp-content/uploads/post\\_attachment/141290.pdf](https://www.defensedaily.com/wp-content/uploads/post_attachment/141290.pdf)

<sup>20</sup> The Space Report, 2019, Q1, Space Foundation, p.11. Accessed 20 October, 2019. <https://promo.spacefoundation.org/tsr/quarterly-reports/TheSpaceReport19Q1.pdf>

<sup>21</sup> United Nations Office for Outer Space Affairs, Annual Report 2018, Accessed 20 October, 2019. <http://www.unoosa.org/oosa/en/aboutus/annual-reports.html>

<sup>22</sup> Mario Raich, Simon Dolan, Dave Ulrich, And Claudio Cisullo, “Insights into The Transformation of Business in The Cyber-Age”, The European Business Review, p .11, (2018). [http://globalfutureofwork.com/wp-content/uploads/2018/11/INSIGHTS\\_INTO\\_THE\\_TRANSFORMATION\\_OF\\_BUSINESS\\_IN\\_THE\\_CYBER-AGE-e.pdf](http://globalfutureofwork.com/wp-content/uploads/2018/11/INSIGHTS_INTO_THE_TRANSFORMATION_OF_BUSINESS_IN_THE_CYBER-AGE-e.pdf)

29. Trends in technology are the most influential ones for the future security environment because their effects on the battlefield are enormous. If the history of warfare is subject to classification, then technology becomes the main parameter of this taxonomy. Therefore, it is essential to put a high priority on analyzing technological changes.

30. The security environment of the future will appear as an environment where the line between war and peace becomes more blurred and uncertainties increase. The conflicts in the first half of the 21<sup>st</sup> century have shown that developed countries will still have a superiority regarding kinetic forces in this environment. But the weak actors will compete with this superiority by exploiting information technologies. Moreover, developing communication technologies will convey substantially more transparency. This will bring about more burden for decision-makers in the developed nations as compared with their counterparts in the underdeveloped world.

## **CONCLUSION**

31. With the rise of globalization and the great influence of non-state actors, changes in society, space, technology, economy, and use of force will have a significant impact on the political and economic landscape over the next two decades. The SEEDSteT approach provides a holistic and scenario-based approach to understanding this dynamic environment. Decision-makers in TNDU can identify their training needs according to the SEEDSteT approach to train future leaders. Thus, education planning will be built on stronger assumptions. The evolution of warfare stems from technological advances.

Therefore, strategic level planners have to give special attention to monitoring and evaluating technological trends in the SEEDSteT approach.

## **RECOMMENDATION**

32. Organizations face innovations more frequently than their 20<sup>th</sup>-century counterparts. This makes "Change" the key characteristic of today. Organizations must manage change as a requirement of the system approach. For this purpose, there is more need for future projection studies. The SEEDSteT approach provides a solution within this framework. It is recommended to be repeated every three years to direct the training of TAF commanders. Furthermore, it is suggested that the future operational environment can be estimated based on the aforementioned approach. The force structure, procurement process, and modernization projects can also be directed within this scope.

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