

**NEMZETI KÖZSZOLGÁLATI EGYETEM**  
**VÉDELMI-BIZTONSÁGI SZABÁLYOZÁSI ÉS KORMÁNYZÁSTANI**  
**KUTATÓMŰHELY**

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**VÉDELMI-BIZTONSÁGI SZABÁLYOZÁSI ÉS**  
**KORMÁNYZÁSTANI MŰHELYTANULMÁNYOK**

2022/24.

**JUHÁSZ ISTVÁN**

*Future resilience - Global environmental changing and National  
Security in 2050 and beyond resilience*



## Rólunk

A műhelytanulmány (working paper) műfaja lehetőséget biztosít arra, hogy a még vállaltan nem teljesen kész munkák szélesebb körben elérhetővé váljanak. Ezzel egyrészt gyorsabban juthatnak el a kutatási részeredmények a szakértői közönséghez, másrészt a közzététel a végleges tanulmány ismertségét is növelheti, végül a megjelenés egyfajta védettséget is jelent, és bizonyítékot, hogy a később publikálandó szövegben szereplő gondolatokat a working paper közzétételekor a szerző már megfogalmazta.

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A műfaji jellegből adódóan a leadott szövegekre vonatkozó terjedelmi korlát és egységes megjelenési forma nincs, a szerzőtől várjuk az absztraktot és a megjelentetni kívánt művet oldalszámozással, egységes hivatkozásokkal.

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A kiadvány ötletét az MTA Jogtudományi Intézet Law Working Papers sorozatának sikeréből merítettük.



# **Védelmi-biztonsági Szabályozási és Kormányzástani Műhelytanulmányok 2022/24.**

## **Szerző:**

*Juhász István ezredes, Honvédelmi Minisztérium*

## **Szerkesztő:**

*Dr. Kádár Pál PhD dandártábornok*

## **Kiadja**

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*Védelmi-Biztonsági Szabályozási és Kormányzástani Kutatóműhely*

## **Kiadó képviselője**

*Dr. Kádár Pál PhD dandártábornok*

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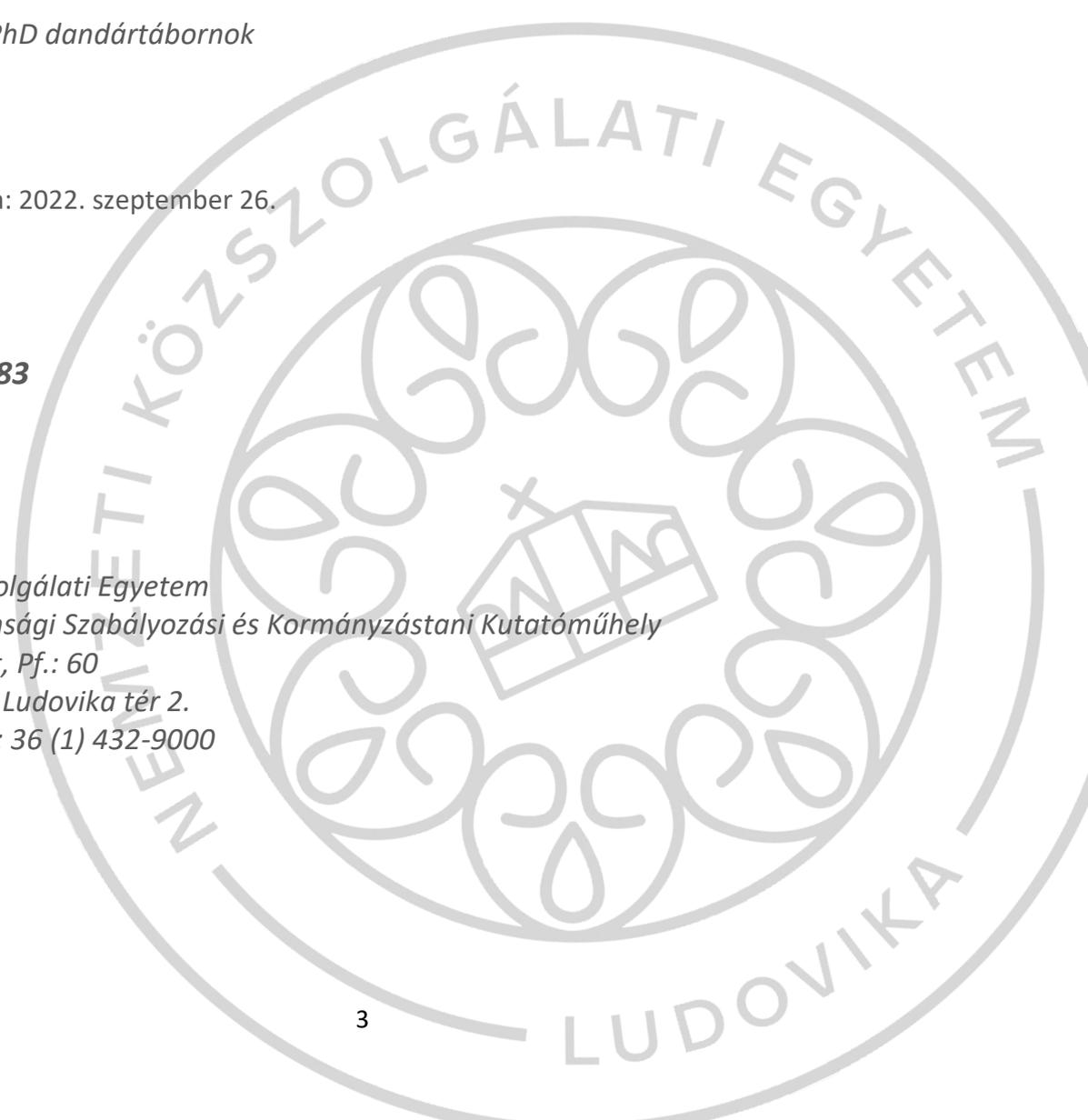
*Nemzeti Köszolgálati Egyetem*

*Védelmi-Biztonsági Szabályozási és Kormányzástani Kutatóműhely*

*1441 Budapest, Pf.: 60*

*Cím: 1083 Bp., Ludovika tér 2.*

*Központi szám: 36 (1) 432-9000*



István JUHÁSZ<sup>1</sup>

## Future resilience - Global environmental changing and National Security in 2050 and beyond resilience

*"Climate change is real, it is happening right now. It is the most urgent threat facing our entire species, and we need to work collectively together and stop procrastinating."*<sup>2</sup>  
- Leonardo DiCaprio

### Introduction

The global security environment is going through dynamic and fundamental changes. Globalization has entered a new era of information technology, which builds on long-term sustainable growth. Technology has revolutionised how we live today, but its globalization has introduced new challenges. This era is based on networks and fusions. There is already entrenched competition for markets and businesses. The renewed geographical locations become geofusion hubs, where the stored data is the most sought after commodity. The three most important keywords of the new world order would be complexity, connectivity, and sustainability.<sup>3</sup> The future has started.

With the reorganization of the global power, the current infrastructure of the global security will further deteriorate. In turn, this may increase uncertainty amongst allies. Possible multipolarity of the world order is to be determined by the increase in economic competition between the United States and China. In addition, the intensification of the growing political opposition at the same time. In recent years, U.S. attention has turned eastward to Asia, which has led to a shift in transatlantic relations.

The Earth's limited resources are rapidly decreasing. The global security environment shows as a deteriorating trend, and with the reorganization of the global power, the doubtfulness increases further. These processes enforce and increase the importance of the identification of rational responses to new risks and threats. The increasing emphasis on non-military challenges requires increased adaptability and a comprehensive approach by nations, states and national defense forces. The swift development of innovation and technology can also offer an opportunity to solve global challenges.

In my study, I will summarize and analyze the most important megatrends, characterize the main and most dangerous global challenges in and after 2050, and threats that have longterm effects on our nation. The possible future is to implement a comprehensive national resilience plan that is vital for all of us.

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<sup>1</sup> Colonel István JUHÁSZ, HUN MoD Military Management Department, e-mail: istvan.juhasz2@hm.gov.hu

<sup>2</sup> Leonardo DiCaprio, <https://www.scientificamerican.com/article/leonardo-dicaprio-uses-oscar-speech-to-urge-action-on-climate-change/> (Accessed on 23 September 2022)

<sup>3</sup> Colonel István JUHÁSZ, National security and international environment at 2050, building future resilience - in what direction diplomacy is changing until 2050 and beyond, National Security Review 2022/1. p. 1. [https://www.knbsz.gov.hu/hu/letoltes/szsz/2022\\_1\\_NSR.pdf](https://www.knbsz.gov.hu/hu/letoltes/szsz/2022_1_NSR.pdf) (Accessed on 23 september 2022)

## National security and international environment at 2050 - Facts

Based on the results of the research, the 21<sup>st</sup> century is evolving to be a land-era, called the Eurasian era, ending a 500-year Atlantic era. Today, 147 global companies produce 40% of world's GDP<sup>4</sup>, and nearly 700 companies account for 80% of global GDP. These companies are concentrated in hubs and cities, where a workforce with specialized skills is available. In addition to strategic corporations and nation-states, the new power centers of the 21<sup>st</sup> century will be cities. Today, in an era of the cities and urban networks, there are 64 global urban areas that produce more than half of the world's GDP.<sup>5</sup> The three most important areas for the coming period, according to the World Economic Forum<sup>6</sup> forecast, will be the land area - 00between the Indian Ocean, the Arctic Ocean and the two oceans - Eurasia.<sup>7</sup>

The changes of the global strategic environment and future frontiers negatively affect defense and deterrence. Nature and the distribution of global power has changed as well. (ex: geopolitical and geoeconomic shifts, systemic competitions, rapid technological change, and transnational challenges are occurred and typical). Our world is moving from a global civilization to a sustainable, new "geocivilization".

In 2013, China began implementing the "The Belt and Road program<sup>8</sup>" that is also the largest and most significant investment in human history. China's long-term plan goals to recover the former historical, cultural, economic and commercial significance of Eurasia by building the new Silk Road<sup>9</sup> and shifting the focus from the oceans to the mainland in terms of development an axis and routes.<sup>10</sup>

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<sup>4</sup> Gross Domestic Product (GDP) is the total monetary or market value of all the finished goods and services produced within a country's borders in a specific time period. <https://www.investopedia.com/terms/g/gdp.asp> (Accessed on 24 September 2022)

<sup>5</sup> 21 items for the 21st century - Theses for the new world order in geoeconomics, <https://novekedes.hu/mag/21-tetel-a-21-szazadhoz-tezisek-a-geookonomiai-uj-vilagrendhez> (Accessed on 24 September 2022)

<sup>6</sup> The World Economic Forum is the International Organization for Public-Private Cooperation. The Forum engages the foremost political, business, cultural and other leaders of society to shape global, regional and industry agendas. It was established in 1971 as a not-for-profit foundation and is headquartered in Geneva, Switzerland. It is independent, impartial and not tied to any special interests. <https://www.weforum.org/about/world-economic-forum> (Accessed on 24 September 2022)

<sup>7</sup> Roland-Berger Trend Compendium 2050 Six megatrends that will shape the world, p.7. <https://www.rolandberger.com/en/Insights/Publications/Roland-Berger-Trend-Compendium-2050-Population-and-Society.html> (Accessed on 18 September 2022)

<sup>8</sup> Ibid. p. 7.

<sup>9</sup> The New Silk Road is also called the Belt and Road Initiative. It links countries in Europe, Asia, and Africa together. The plan was initiated by Xi Jinping, President of the People's Republic of China. The New Silk Road focuses on investment for railway, highway and port construction. <https://www.chinahighlights.com/silkroad/new-silk-road.htm> (Accessed on 24 September 2022)

<sup>10</sup> Colonel István JUHÁSZ, National security and international environment at 2050, building future resilience - in what direction diplomacy is changing until 2050 and beyond, National Security Review 2022/1. p. 3. [https://www.knbsz.gov.hu/hu/letoltes/szsz/2022\\_1\\_NSR.pdf](https://www.knbsz.gov.hu/hu/letoltes/szsz/2022_1_NSR.pdf) (Accessed on 23 september 2022)

The New Silk Road connects the contributors that make up the new phase of globalization: it accounts for about 40% of world's GDP and 70% of the Earth's population.<sup>11</sup> By these facts - security challenges, risks and threats - we have to analyse the state's intentions and military capabilities, reviewing those possible hazards that could affect our country. (Figure 1.)

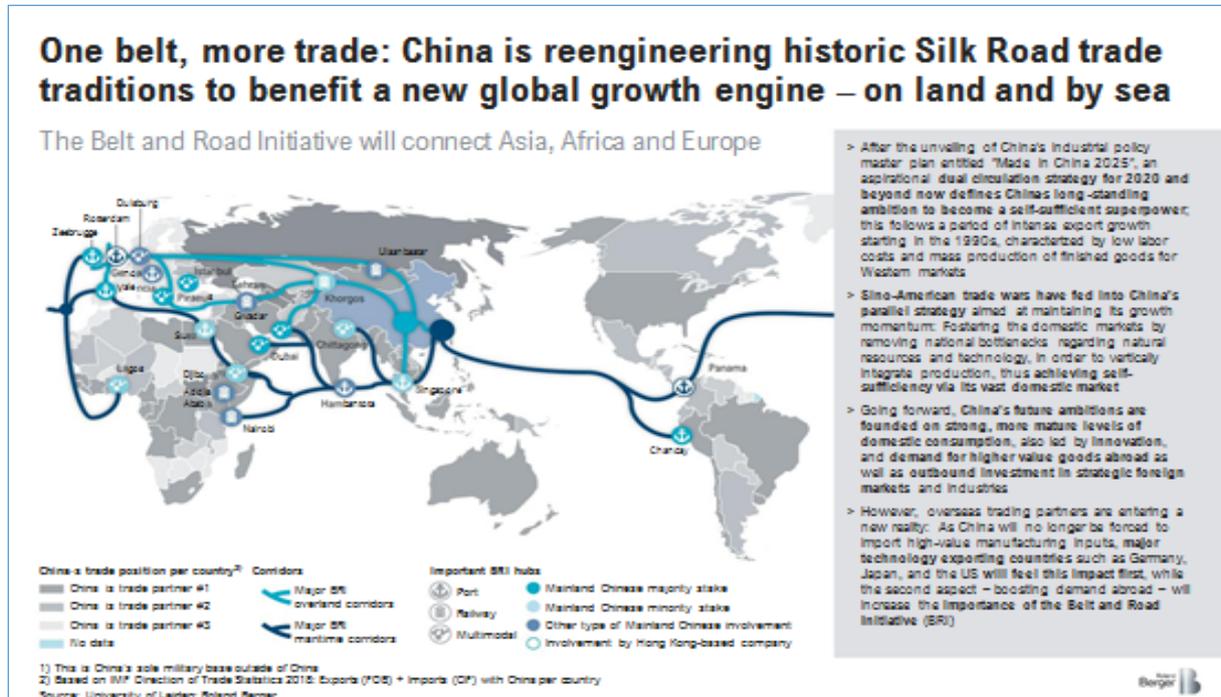


Figure 1.

### The Belt and Road Initiative

(Source: University of Leiden, Roland-Berger Trend Compendium 2050. Megatrend 4. p. 29.)

According to the Roland Berger Trend Compendium in 2050, the 9.7 billion people living on Earth would find a way to manage the planetary system effectively. Hunger and poverty would have been eliminated.<sup>12</sup> Everyone would have access to adequate food, clothing, housing, healthcare, education, energy, clean water and sanitation.<sup>13</sup> Children under the age of five would no longer die from preventable disease; virtually no elderly would die from cold or heat exposure.<sup>14</sup>

<sup>11</sup> China's Belt and Road Initiative (BRI), sometimes referred to as the New Silk Road, is one of the most ambitious infrastructure projects ever conceived. Launched in 2013 by President Xi Jinping. <https://www.cfr.org/backgrounder/chinas-massive-belt-and-road-initiative> (Accessed on 18 September 2022)

<sup>12</sup> Roland-Berger Trend Compendium 2050 Six megatrends that will shape the world, Megatrend 1. p. 6. <https://www.rolandberger.com/en/Insights/Global-Topics/Trend-Compendium/> (Accessed on 18 Sept 2022)

<sup>13</sup> Colonel István JUHÁSZ, National security and international environment at 2050, building future resilience - in what direction diplomacy is changing until 2050 and beyond, National Security Review 2022/1. p. 3. [https://www.knbsz.gov.hu/hu/letoltes/szsz/2022\\_1\\_NSR.pdf](https://www.knbsz.gov.hu/hu/letoltes/szsz/2022_1_NSR.pdf) (Accessed on 23 september 2022)

<sup>14</sup> Global Change, International Geosphere-Biosphere Programme <http://www.igbp.net/news/features/features/2050avisionforourplanet.5.1b8ae20512db692f2a680003425.htm> (Accessed on 18 September 2022)

## Focusing transnational challenges

In my study, I do not analyze and research all of the transnational challenges<sup>15</sup> and megatrends today. Based on the Roland-Berger Trend Compendium 2050. "Six megatrends that will shape the world" research we can separate the following main megatrends and subsystems:

1. **People and Society:** Population, Migration, Values and Education;
2. **Health and Care:** Pandemics and other Wildcards, Diseases and Treatments, Caregiving;
3. **Environment and Resources:** Climate change and Pollution, Resources and Raw materials, Ecosystems at Risk;
4. **Economic and Business:** Globalization Revisited, Power Shifts, Sectoral Transformation, Debt Challenge;
5. **Technology and Innovation:** Value of technology, Artificial Intelligence, Humans and Machines
6. **Politics and Governance:** Future of democracy, Governance and Geopolitics, Global Risk.<sup>16</sup>

By summarizing the analyzed most important megatrends, in my opinion, we can characterize the main global problems, challenges and threats that would have longterm effects on our nation. An overview of these megatrends are as follows.

### 1. PEOPLE AND SOCIETY - OVERPOPULATION, MIGRATION FLOWS

The results of the research, in 2050 there are 1.9 billion more people who will inhabit our planet (2020 - 7.8 billion, 2050 - 9.7 billion, and 2100 - 10.9 billion). World population growth is powered by growth in less developed countries. Population in Sub-Saharan Africa will double from 2020 to 2050. The world also faces the challenge of changing age demographics. In 2050 there will be more than 1.5 billion people aged 65+ years (2020 - 727 million) and 3.2 million aged 100+. Around 2027, India is expected to overtake China as the world's most populous country. In 2050 India will have more than 1.6 billion inhabitants. Standing shoulder to shoulder, the predicted 9.7 billion potent population of 2050 would span the equator more than 240 times. However, average global population density will only rise to 71 people (2021 - 58 people) per km<sup>2</sup>.<sup>17</sup>

According to research, the population in developed regions is projected to grow only slightly by 0.5% from 2020 to 2050, to 1.3 billion people. On the other hand, the population in less

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<sup>15</sup> Transnational Challenges: There is a growing overlap between the EU's internal and external security problems. Terrorism, organised crime and unregulated migration not only pose a threat to European internal security, but also have a serious impact on the stability of Europe's immediate neighbourhood. Very often, they find their roots in conflicts and instability further abroad in Africa or Asia. The 2015 migration crisis showed the limits of that approach, and has sparked a new wave of reforms. <https://www.iss.europa.eu/topics/transnational-challenges> (Accessed on 18 September 2022)

<sup>16</sup> Roland-Berger Trend Compendium 2050: Population and Society, Megatrend 1. p. 3. <https://www.rolandberger.com/en/Insights/Publications/Roland-Berger-Trend-Compendium-2050-Population-and-Society.html> (Accessed on 23 September 2022)

<sup>17</sup> Ibid. p. 7.

developed regions is expected to grow by 20.4% or 1.1 billion people over the same period, reaching 6.6 billion people in 2050. Particularly, the highest growth is expected for least developed regions with an increase of 77.5% or 800 million people. (Figure 2.)

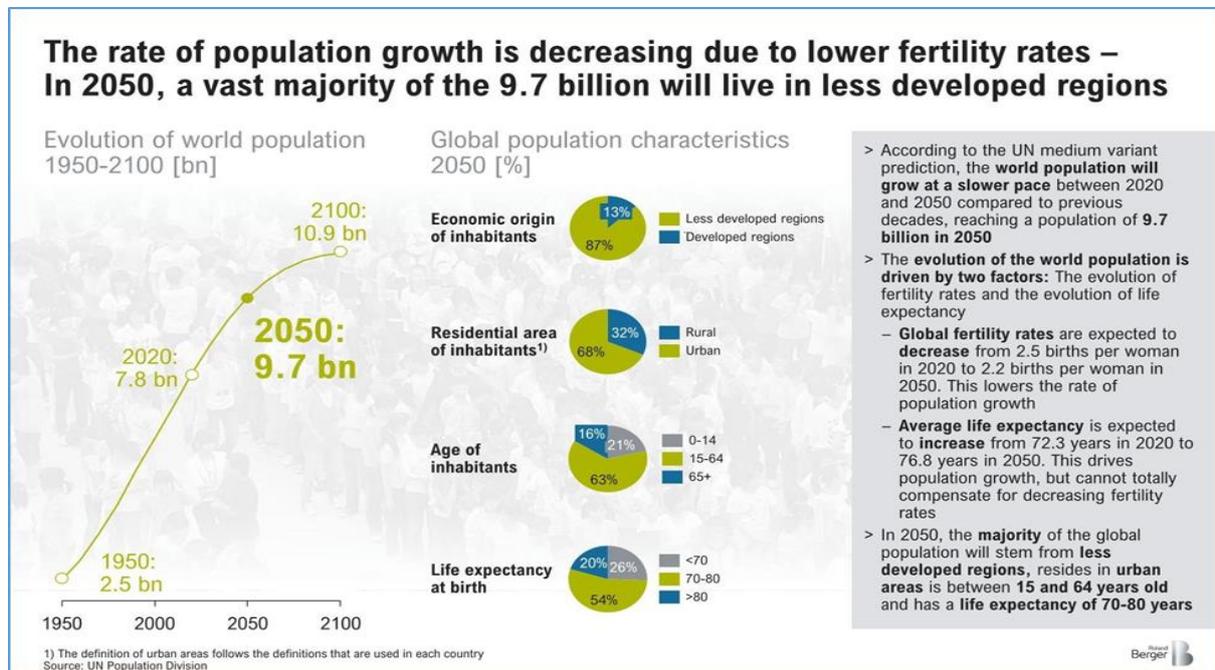


Figure 2.

### The rate of population growth in 2050

(Source: UN Population Division, Roland-Berger Trend Compendium 2050: Megatrend 1. p. 6.)

Migration - Intraregional and interregional migration, in all its complexity, would mainly be driven by the pursuit of economic betterment. For internally displaced people, their story would be to escape from local conflict, violence, and/or disasters within their own borders.

According to analyses, International net migration flows between regions are expected to be on a high level toward 2050. Without global action to 2050, up to 143 million internal climate migrants are projected for Sub-Saharan Africa, South Asia, and Latin America.<sup>18</sup>

Values - The evolution of human freedoms would present a mixed picture: The global consensus on values based on human rights, and personal, civil, religion and economic freedoms will shift alongside the global power shift. All regions are aging, with fewer people of working age having to support more people who are elderly - Interregional differences remain significant.

Today, 55% of the world's population live in urban areas. This is expected to increase to 68% by 2050. Nine of the fifteen biggest urban agglomerations in 2035 will be located in Asia. By 2030, the world is speculated to have 43 megacities. Today, 33 megacities are home to about

<sup>18</sup> Roland-Berger Trend Compendium 2050: Population and Society, Megatrend 1. p. 26.  
<https://www.rolandberger.com/en/Insights/Publications/Roland-Berger-Trend-Compendium-2050-Population-and-Society.html> (Accessed on 18 September 2022)

1/8 (just over 500 million) of the world's urban well-spring<sup>19</sup> - but it is important to remember that nearly half of the world's urban population resides in much smaller settlements with less than half a million inhabitants.

Migration is a complex topic - Not every migrant has crossed a border, not every immigrant is a refugee. People who move from one country to another are international migrants. They are defined as either living in a country other than their country of birth or in a country other than their country of citizenship. Although this broadly covers both economic migrants (with and without work authorization) and includes other international migrants such as educational migrants. In addition, this also applies to refugees, but then refers to different legal rights and viewpoints.<sup>20</sup> (Figure 3.)

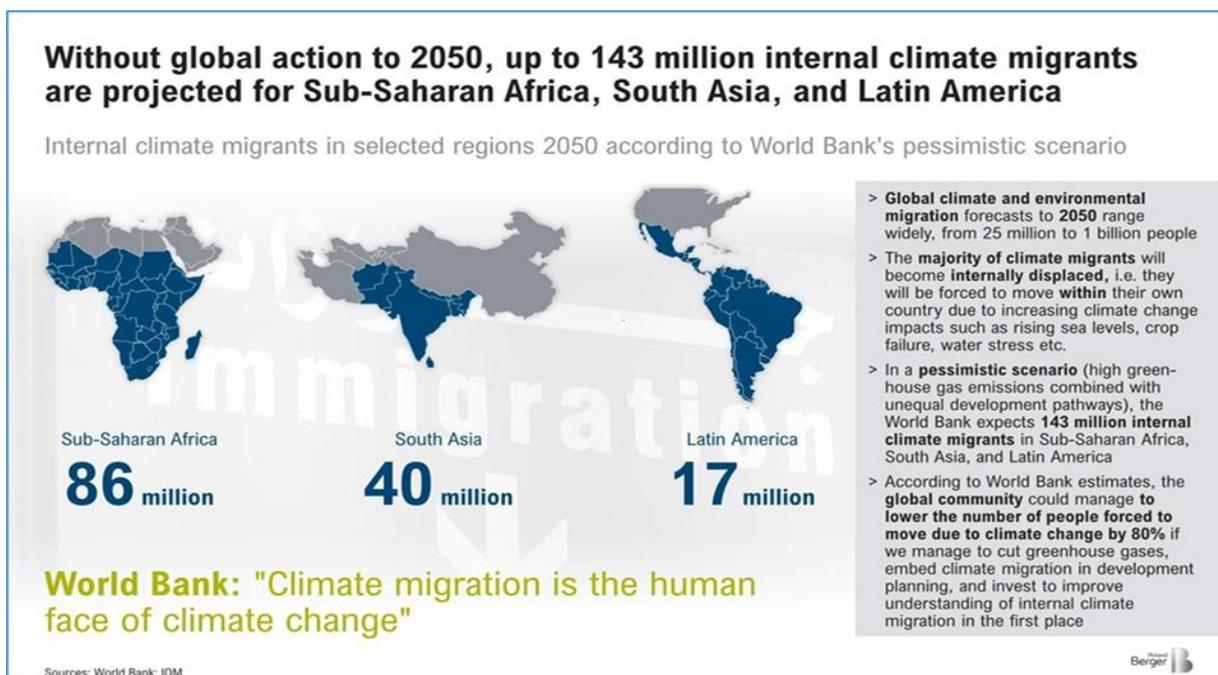


Figure 3.

### Internal climate migrants in 2050

(Sources: World Bank, IOM, Roland-Berger Trend Compendium 2050. Megatrend 1. p. 26.)

People displaced in their own country due to conflict, violence or disaster. In 2019, the number of Internally Displaced People (IDPs) reached a new highpoint of over than 50.8 million, that is two times higher number than in 2010 (24.9 million).

Furthermore, at least 5.1 million people - a first ever estimate - were internally displaced by disasters, such as floods, earthquakes and wildfires, across 95 countries and territories by the end of 2019.<sup>21</sup> (Figure 4.)

<sup>19</sup> Roland-Berger Trend Compendium 2050 Six megatrends that will shape the world, Megatrend 1. p. 15-20. <https://www.rolandberger.com/en/Insights/Global-Topics/Trend-Compendium/> (Accessed on 18 Sept 2022)

<sup>20</sup> Ibid. p. 20-26.

<sup>21</sup> Roland-Berger Trend Compendium 2050 Six megatrends that will shape the world, Megatrend 1. p. 25. <https://www.rolandberger.com/en/Insights/Global-Topics/Trend-Compendium/> (Accessed on 18 Sept 2022)

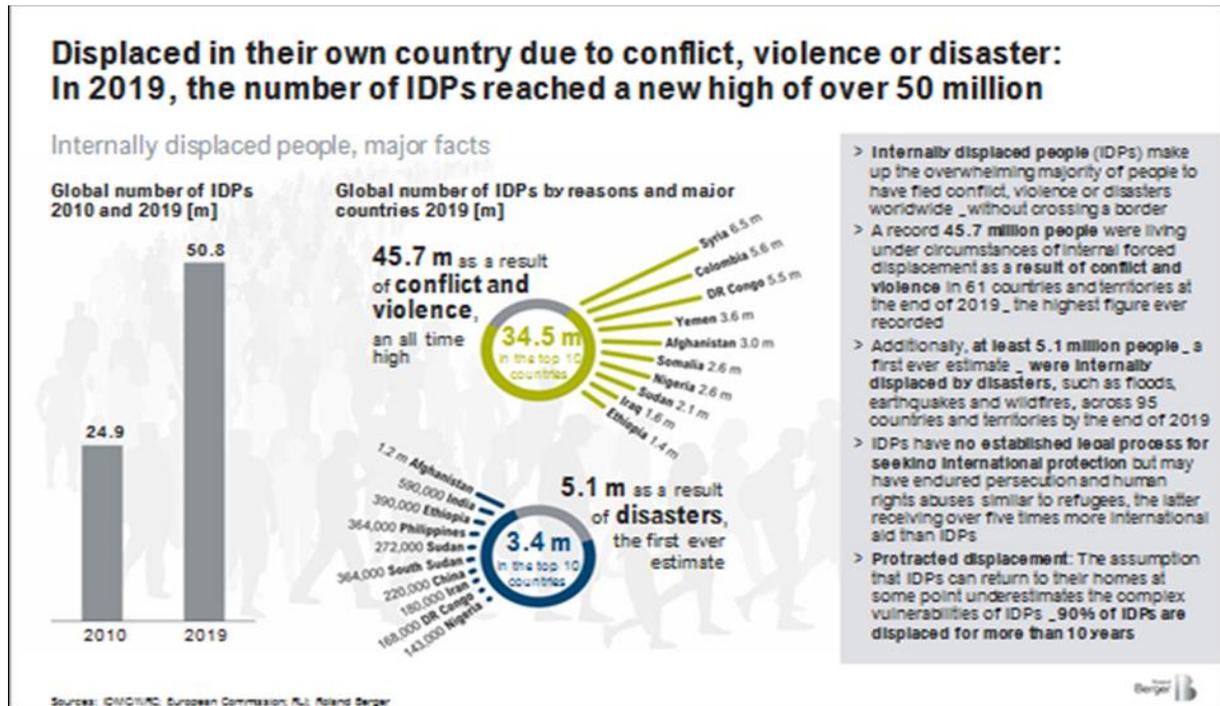


Figure 4.

### Internally displaced people, major facts

(Sources: IDMC/NRC; European Commission; RLI; Roland Berger 2020, Megatrend 1. p. 25.)

## 2. HEALTH AND CARE - GLOBAL HEALTH

Pandemics and Other Wildcards - We are very vulnerable to pandemics - this much is clear in 2020 and in earlier 21<sup>st</sup> century epidemics: SARS, ZIKA, MERS, Ebola etc. Alongside this, we are increasingly facing climate change as a health risk.<sup>22</sup> Now and in 2050, global access to medical care and funding will remain highly uneven. (Figure 5.)

Pandemics are not the only threat to global health. Numerous other challenges lie ahead on the way toward 2050. Air pollution would kill approximately 7 million people every year. The global community must prepare for future pandemics, starting with the containment of epidemics. Climate change would cause more extreme weather events<sup>23</sup> exacerbating malnutrition and the spread of infectious diseases.

Because of unregulated prescription practices of medical professionals and the overuse of antibiotics (among other harmful factors), Anti-Microbial Resistance would be rising, jeopardizing achievements of modern medicine. Both a more targeted use of antibiotics and the development of new antibiotics would be key. One third of the global population would

<sup>22</sup> Ibid. p. 7.

<sup>23</sup> Extreme weather events: Some extreme weather and climate events have increased in recent decades, and new and stronger evidence confirms that some of these increases are related to human activities. Heatwaves, extreme rainfalls, floods, thunderstorms, typhoons, hurricanes, tornadoes, tropical cyclones, hailstorms, storm surges, droughts, and wildfires are all extreme events. <https://nca2014.globalchange.gov/highlights/report-findings/extreme-weather> (Accessed on 25 September 2022)

lack access to medicine, vaccines, and diagnostic tools. Improving access to medication while ensuring its quality would also require fighting sub-standard and black market products.<sup>24</sup>

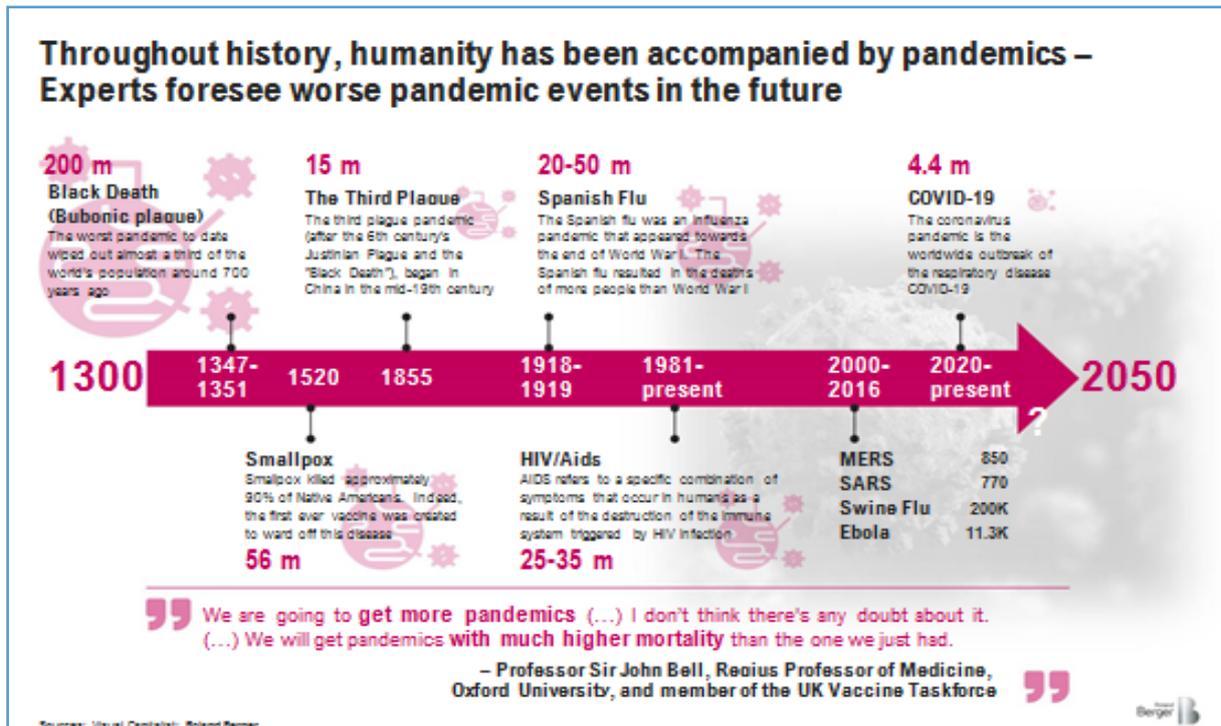


Figure 5.

### History of pandemic events

(Sources: Visual Capitalist; Roland Berger 2050, Megatrend 2. p. 7.)

Diseases and Treatments - Healthcare and medical technology predictions and expectations, including opposite technological developments, are multiply, not all will accomplished, but cell and gene therapies are some of the most promising. Caregiving - The trend in increasingly age-related diseases, such as dementia, points at a strong increase in the need for cost-intensive care. An increasing number of professional caregivers is required to support the growing number of older people and their complex care needs.<sup>25</sup>

Spain is the healthiest place to be in the world, but European countries perform very well, essentially. There are five other European nations ranked among the top 10 in 2019, Italy (2<sup>nd</sup>), Iceland (3<sup>rd</sup>), Switzerland (5<sup>th</sup>), Sweden (6<sup>th</sup>) and Norway (9<sup>th</sup>). The healthiest Asian nation was Japan, jumping three places to 4<sup>th</sup> compared to the 2017 survey, displacing Singapore, which fell to 8<sup>th</sup>.<sup>26</sup>

<sup>24</sup> Colonel István JUHÁSZ, National security and international environment at 2050, building future resilience - in what direction diplomacy is changing until 2050 and beyond, National Security Review 2022/1. p. 6. [https://www.knbsz.gov.hu/hu/letoltes/szsz/2022\\_1\\_NSR.pdf](https://www.knbsz.gov.hu/hu/letoltes/szsz/2022_1_NSR.pdf) (Accessed on 23 September 2022)

<sup>25</sup> Roland-Berger Trend Compendium 2050 Six megatrends, Megatrend 2. p. 20-25. <https://www.rolandberger.com/en/Insights/Global-Topics/Trend-Compendium/> (Accessed on 18 Sept 2022)

<sup>26</sup> Roland-Berger Trend Compendium 2050 Six megatrends, Megatrend 2. p. 19. <https://www.rolandberger.com/en/Insights/Global-Topics/Trend-Compendium/> (Accessed on 18 Sept 2022)

Coronavirus-19<sup>27</sup> infection broke into the world as a kind of “invisible enemy”. The fight against the pandemic requires flexible and agile responsiveness, countermeasures, as well as structured comprehensive solutions and the creation of state-of-the-art platforms. The biological event will have a define and irreversible impact on our future. Focusing on the results of research, as 2022 begins, COVID-19 and its economic and societal consequences continue to cause a critical threat to the world. Vaccine inequality<sup>28</sup> and a resultant uneven economic recovery risk compounding social fractures and geopolitical tensions. In the poorest 52 countries - home to 20% of the world’s people - only 6% of the population had been vaccinated.

The COVID-19 disease<sup>29</sup> is a global health crisis, yet many more locally contained epidemic events are taking place every year. While the Corona pandemic spread to almost all countries and regions of the world, thereby generating global awareness. An epidemic is the occurrence in a community or region of cases of an illness, specific health-related behavior, or other health-related events clearly in excess of normal expectancy. A pandemic is an epidemic occurring worldwide or over a very wide area, crossing international boundaries, and usually affects a much larger number of people. The coronavirus crisis is reinforcing the message, that it is not a matter of „if” another epidemic will strike, but „when”. When it strikes it will most likely spread fast, potentially threatening millions of lives. Governments need to prepare for further outbreaks. One reason for the rapid spread is to be found in unhygienic interactions with goods, animals and people, unconsciously spreading viruses potentially across greater distances.<sup>30</sup> (Figure 6.)

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<sup>27</sup> SARS-CoV-2: the coronavirus (Severe acute respiratory syndrome coronavirus 2 of the genus Betacoronavirus) that is the causative agent of COVID-19, <https://www.merriam-webster.com/dictionary/SARS-CoV-2> (Accessed on 25 September 2022)

<sup>28</sup> COVID Vaccine Inequality - within the first year of distribution of vaccines against COVID-19, high-income countries (HICs) have achieved vaccination rates of 75-80%, whilst low-income countries (LICs) vaccinated <10%. <https://www.frontiersin.org/articles/10.3389/fpubh.2022.821117/full> (Accessed on 24 Sept 2022)

<sup>29</sup> COVID-19 is the disease caused by a new coronavirus called SARS-CoV-2. WHO first learned of this new virus on 31. December 2019, following a report of a cluster of cases of ‘viral pneumonia’ in Wuhan, People’s Republic of China. <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/question-and-answers-hub/q-a-detail/coronavirus-disease-covid-19> (Accessed on 25 September 2022)

<sup>30</sup> Roland-Berger Trend Compendium 2050 Six megatrends, Megatrend 2. p. 6. <https://www.rolandberger.com/en/Insights/Global-Topics/Trend-Compendium/> (Accessed on 18 Sept 2022)



Figure 6.

### COVID-19 as a Human Tragedy

(Sources: Johns Hopkins University; IMF; Roland Berger 2020, Megatrend 2. p. 6.)

When people think of the deadliest diseases in the world, their minds probably jump to the fast-acting, incurable ones that grab headlines from time to time. However, many of these types of diseases do not rank in the top 10 causes of worldwide deaths. An estimated 55.4 million people passed away worldwide in 2019, and 74% of these deaths were because of noncommunicable diseases, or chronic conditions that progress slowly. Perhaps even more surprising is that several of the deadliest diseases are partially preventable. Non-preventable factors include where a person lives, access to preventive care, and quality of healthcare, all of which factor into risk. However, there are several steps that everyone can take to lower their risk.<sup>31</sup>

Essentially, let us see what 10 of the deadliest diseases<sup>32</sup> is worldwide:

- 1) **Coronary Artery Disease** - The deadliest disease in the world is coronary artery disease (CAD). 8.8 million deaths in 2015 - 15.5% deaths worldwide, increased from 2000 to 2015, from 6 million to 8.8 million.

<sup>31</sup> Roland-Berger Trend Compendium 2050 Six megatrends, Megatrend 2. p. 21.

<https://www.rolandberger.com/en/Insights/Global-Topics/Trend-Compendium/> (Accessed on 18 Sept 2022)

<sup>32</sup>The Top 10 Deadliest Diseases - Conditions such as heart disease, stroke, and respiratory infections account for the majority of deaths each year around the world. With that said, there are many steps you can take to prevent these deadly diseases. <https://www.healthline.com/health/top-10-deadliest-diseases> (Accessed on 18 Sept 2022)

- 2) **Stroke** - A stroke occurs when an artery in your brain is blocked or leaks. This causes the oxygen-deprived brain cells to begin dying within minutes. 6.2 million deaths in 2015 - 11.1% deaths worldwide, increased from 2000 to 2015, from 5.7 million to 6.2 million.
- 3) **Lower respiratory infections** - A lower respiratory infection is an infection in your airways and lungs. 3.2 million deaths in 2015 - 5.7% deaths worldwide, decreased from 2000 to 2015, from 3.4 million to 3.2 million.
- 4) **Chronic obstructive pulmonary disease** - Chronic obstructive pulmonary disease (COPD) is a long-term, progressive lung disease that makes breathing difficult. Chronic bronchitis and emphysema are types of COPD. 3.1 million deaths in 2015 - 5.6% deaths worldwide, consistend from 2000 to 2015.
- 5) **Trachea, bronchus, and lung cancers** - Respiratory cancers include cancers of the trachea, larynx, bronchus, and lungs. 1.7 million deaths in 2015 - 3% deaths worldwide, increased from 2000 to 2015, from 1.2 million to 1.7 million.
- 6) **Diabetes mellitus** - Diabetes is a group of diseases that affect the production or use of insulin. 1.6 million deaths in 2015 - 2.8% deaths worldwide, increased from 2000 to 2015, from 1 million to 1.6 million.
- 7) **Alzheimer's disease and other dementias** - Alzheimer's disease is a progressive disease that destroys memory, interferes with decisionmaking, and interrupts normal cognitive functions. These include thinking, reasoning, and other everyday behaviors. 1.5 million deaths in 2015 - 2.7% deaths worldwide, increased from 2000 to 2015, from 1.2 million to 1.5 million.
- 8) **Dehydration due to diarrheal diseases** - Diarrhea is when you pass three or more loose stools in a day. If your diarrhea lasts more than a few days, your body loses too much water and salt. This causes dehydration, which can be fatal in severe cases. 1.4 million deaths in 2015 - 2.5% deaths worldwide, decreased from 2000 to 2015, from 2.2 million to 1.4 million.
- 9) **Tuberculosis** - TB is a lung condition caused by bacteria called *Mycobacterium tuberculosis*. It is a treatable airborne bacterium, although some strains are resistant to conventional treatments. 1.3 million deaths in 2015 - 2.4% deaths worldwide, decreased from 2000 to 2015, from 2.3 million to 1.3 million.
- 10) **Cirrhosis** - Cirrhosis is the result of chronic or long-term scarring and damage to the liver. The damage may be the result of a kidney disease, or it can be caused by conditions such as hepatitis, alcoholic liver disease, or nonalcoholic fatty liver disease. 1.2 million deaths in 2015 - 2.1% deaths worldwide, increased from 2000 to 2015, from 905K to 1.2 million.<sup>33</sup> (Figure 7.)

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<sup>33</sup> The Top 10 Deadliest Diseases - CAD, Stroke, Respiratory illness, COPD, Cancers, Diabetes, Alzheimer's disease, Diarrhea, TB, Cirrhosis <https://www.healthline.com/health/top-10-deadliest-diseases> (Accessed on 18 Sept 2022)

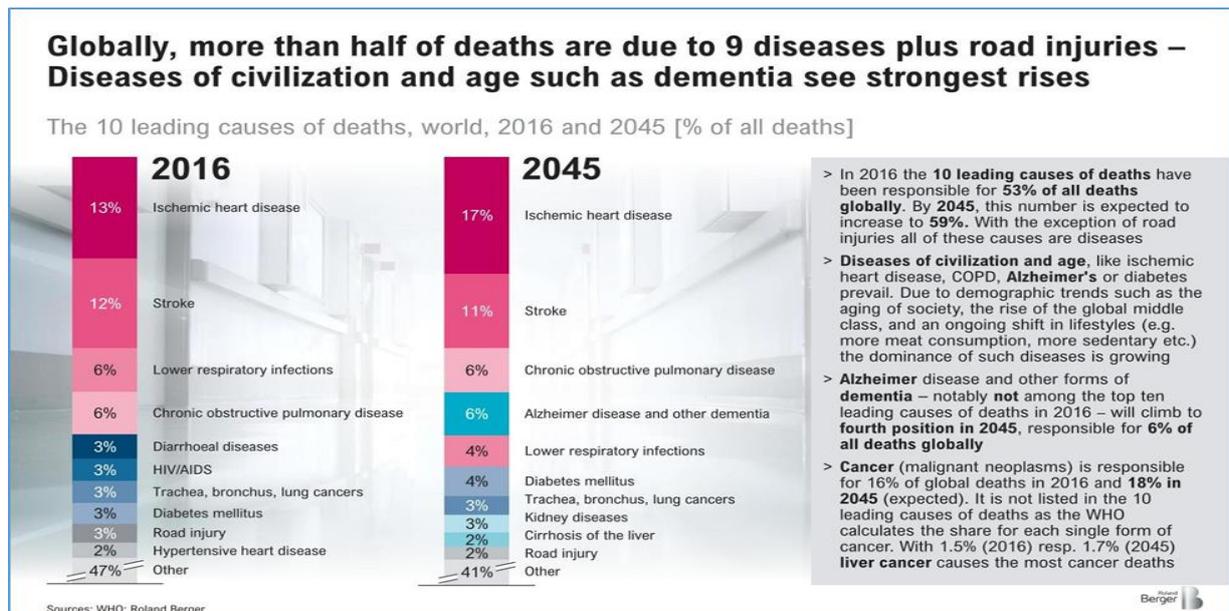


Figure 7.

### Leading diseases of civilization

(Sources: 2021 - WHO<sup>34</sup>, Roland-Berger Trend Compendium 2050. Megatrend (2021) 2. p. 21.)

### 3. ENVIRONMENT AND RESOURCES - CLIMATE CHANGE AND POLLUTION

Climate change is expected to have significant impacts on natural resources, the world economy and human health. It will lead to increased temperatures, rising sea levels, altered precipitation patterns and increased frequencies of extreme weather events, such as floods and droughts. Impacts will occur even if the world achieves the United Nations Framework Convention on Climate Change (UNFCCC)<sup>35</sup> objective of limiting global temperature increase to within two degrees above its pre-industrial level. While the EU is striving to ensure that this global commitment is respected, it also has to prepare for the possibility that the global temperature may well rise by three degrees or more. The Commission's strategy for reducing the risks posed by climate change is both to mitigate, by reducing emissions of greenhouse gases, and to adapt, by reducing exposure and vulnerability to expected impacts. Eventually, climate change mitigation and adaptation will be essential considerations in growth and development strategies, in particular in achieving the EU's Europe 2020 targets and the UN's Millennium Development Goals<sup>36</sup>.

<sup>34</sup> World Health Organization: WHO's primary role is to direct international health within the United Nations' system and to lead partners in global health responses. <https://www.who.int/> (Accessed on 24 September 2022)

<sup>35</sup> United Nations Framework Convention on Climate Change (UNFCCC) The COP 26 Presidency and the incoming-COP 27 Presidency are committed to ensuring a transparent and inclusive process in the lead-up to COP 27 to be convened in Sharm el-Sheikh, Egypt from 6-18 November 2022. <https://unfccc.int/> (Accessed on 21 September 2022)

<sup>36</sup> UN's Millennium Development Goals - [https://joint-research-centre.ec.europa.eu/scientific-activities-z/climate-change\\_en](https://joint-research-centre.ec.europa.eu/scientific-activities-z/climate-change_en) (Accessed on 18 September 2022)

Climate change - will be one of the major threats to the stability of states and societies in the decades to come. Climate change will stress the world’s economic, social, and political systems, where institutions and governments are unable to manage the stress or absorb the shocks of a changing climate, the risks to the stability of states and societies will increase. The sharpest risks arise when multiple pressures accumulate. As climate change interacts with other contextual factors, seven compound risks emerge. Local resource competition, livelihood insecurity and migration, extreme weather events and disasters, volatile food prices and provision, transboundary water management, sea-level rise and coastal degradation, and unintended effects of climate policies. The global community must step up climate change efforts in the period to 2050, and a rethink is on the cards regarding the current target of keeping global warming below 2°C. More recently, 1.5°C has been considered safer. This will require quick, far-reaching, and unprecedented changes across all aspects of society.<sup>37</sup> (Figure 8.)

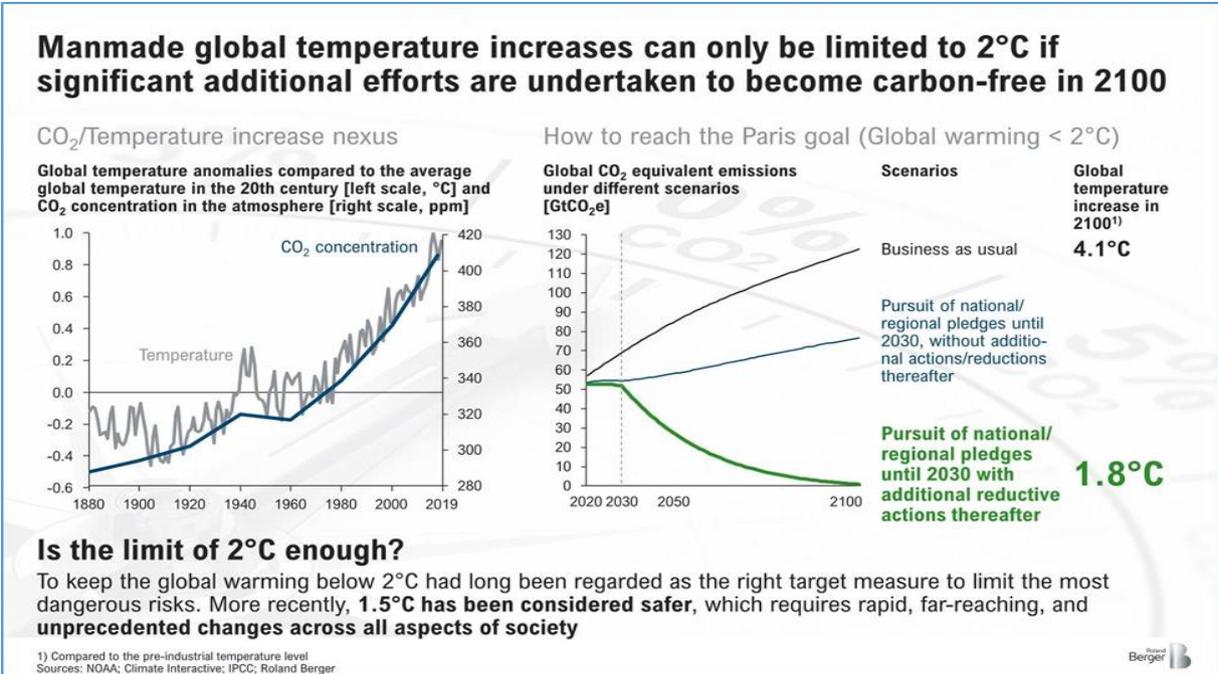


Figure 8.

**Manmade global temperature increases**

(Sources: NOAA, Climate Interactive, IPCC, Roland-Berger TC 2050. Megatrend 3. p. 28.)

Manmade global temperature increases could only be limited to 2°C if significant additional efforts are undertaken to become carbon-free in 2100. Other types of pollution would be damaging our environment and threaten human health, informed limitation and directed efforts would be a key.

<sup>37</sup> Trend Compendium 2050 Six megatrends that will shape the world, Megatrend 3. p. 28. <https://www.rolandberger.com/en/Insights/Publications/Roland-Berger-Trend-Compendium-2050-Environment-Resources.html> (Accessed on 18 September 2022)

Air pollution is a serious problem in today's world. Nine out of 10 people breathe air that exceeds WHO air pollution guidelines. Air pollution is responsible for 1 in 8 deaths worldwide. Water pollution remains a similar challenge. The Great Pacific Ocean Garbage Patch contains 1.8 trillion pieces of plastic in an area of 1.6 million m<sup>2</sup> that is approximately 3 times the size of France.

Land pollution faces logistic crises. Globally, 33% of waste is still openly dumped, and approximately 40% goes to landfills. There is even an issue of light pollution as 83% of the world's population live under light-polluted skies. The battle to contain CO<sup>2</sup> and other forms of pollution requires proactive and innovative action.

Noise pollution in work environments remains underregulated, as roughly 466 million people globally suffer from disabling hearing loss not due to age. Nearly half a billion people would be suffering from disabling, mostly work-related hearing loss due to excessive noise levels.

In the future, water demand is going to be growing, and so is food demand - we need more calories to feed a more populous world, but we also need to waste less.<sup>38</sup> (Figure 9.)

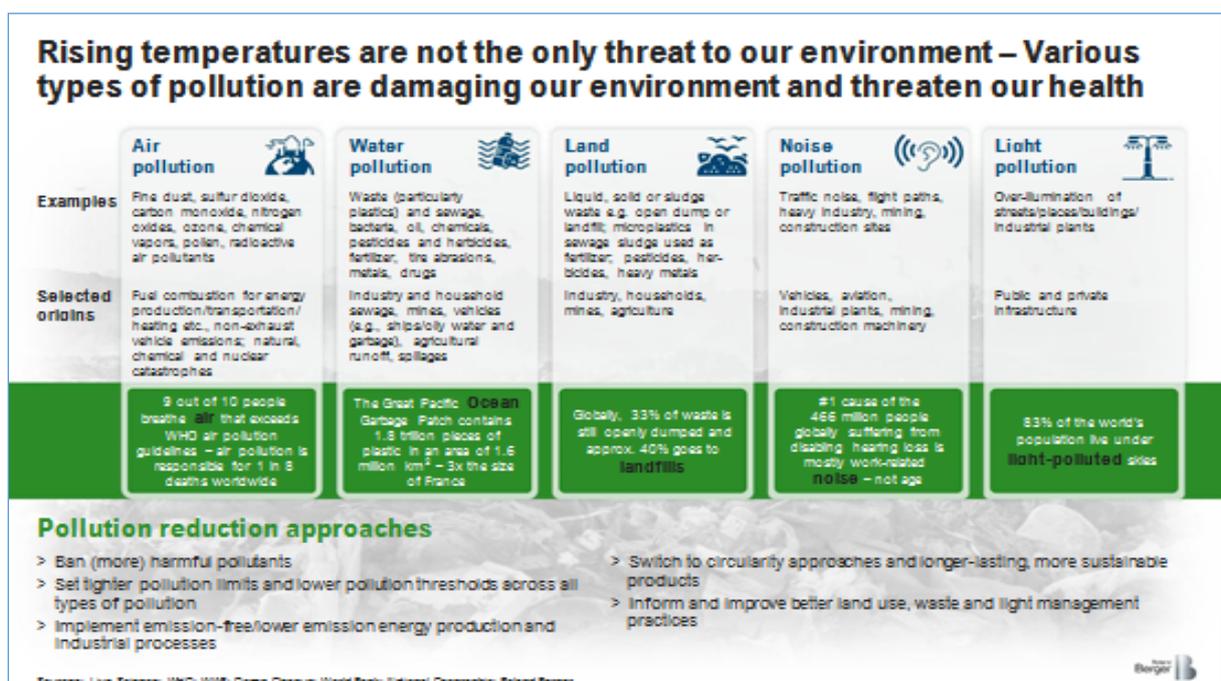


Figure 9.

### How pollution are damaging our environment

(Sources: Live Science; WHO; WWF; Ocean Cleanup; World Bank; National Geographic; RBTC 2050. MT 3. p. 14.)

Resources and Raw Materials - On current trajectories, our 2050 global energy mix is expected to be dominated by fossil fuels. An inconvenient truth about energy consumption is that unless coordinated efforts change global usage patterns, fossil fuels will still top the 2050 energy mix.

<sup>38</sup> Roland-Berger Trend Compendium 2050 Six megatrends, Megatrend 3. p. 14. <https://www.rolandberger.com/en/Insights/Publications/Roland-Berger-Trend-Compendium-2050-Environment-Resources.html> (Accessed on 18 September 2022)

Demand for rare earths used in permanent magnets, e.g. for electric vehicles, digital technologies or wind generators, could increase tenfold by 2050. By that time, the EU will require around 60 times more lithium, essential for e-mobility, and 15 times more cobalt, used in electric car batteries. Raw materials face supply-side issues. China is the main supplier of raw materials deemed critical. The demand for water and food is expected to grow significantly by 2050. Water, food, and energy resources aside, a high number of raw materials are critical for our economy. China is the dominant supplier for these commodities.<sup>39</sup> (Figure 10.)

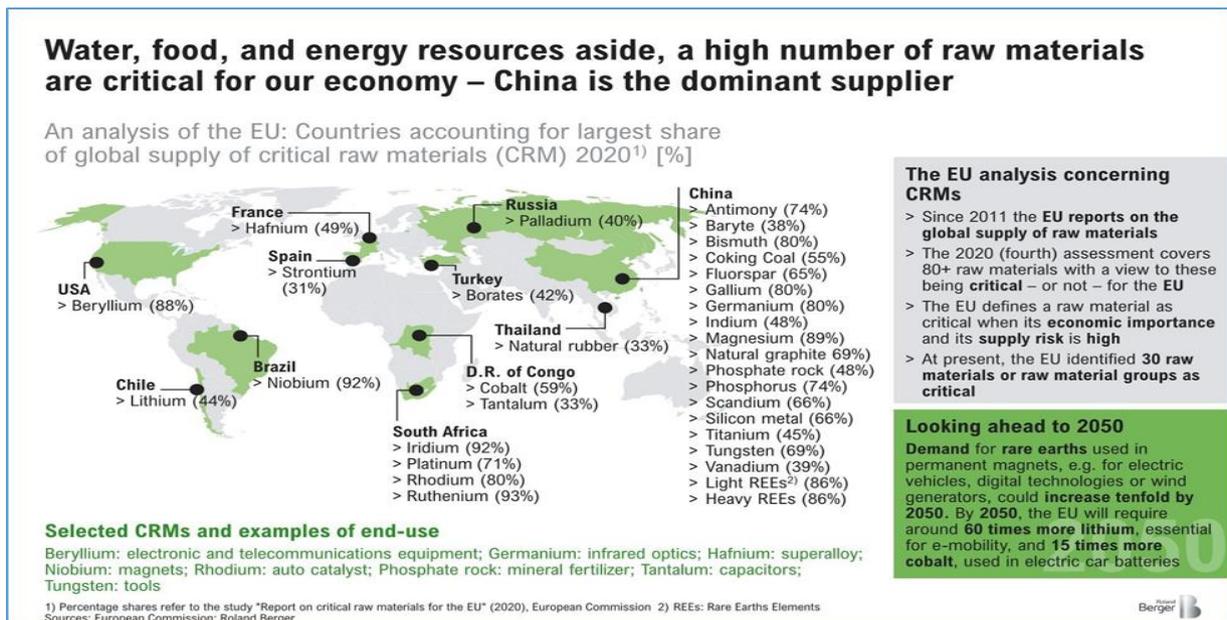


Figure 10.

### Water, food and energy resources

(Sources: European Commission, Roland-Berger TC. Megatrend 3. 2050. p. 34.)

## 4. ECONOMIC AND BUSINESS

Global trade has long been the engine of globalization and growth - The Global Financial Crisis growth rates of trade have nearly halved. While the global marketplace provides a growing number of people with a seemingly unending flow of goods, too many people in developing countries struggle to meet their daily needs, with limited access to basic services and functional markets. Widespread unemployment, rapid urbanization, and environmental degradation challenge efforts to reduce poverty and increase economic development in many poor countries.<sup>40</sup>

<sup>39</sup> Roland-Berger Trend Compendium 2050 Six megatrends that will shape the world p. 34.

<https://www.rolandberger.com/en/Insights/Publications/Roland-Berger-Trend-Compendium-2050-Environment-Resources.html> (Accessed on 18 September 2022)

<sup>40</sup> Ibid. p.34-42.

Economic power is shifting further toward emerging countries, with Regional Comprehensive Economic Partnership (RCEP)<sup>41</sup> Asia-Pacific countries set the course for a global economic power bloc. With global supply chains weakened a trend toward more domestic production has been observed. Power Shifts - The newly announced Asian trading power bloc, RCEP, is taking its position as a global force, this also highlights future opportunities for other established power blocs in terms of ease of trade. (Figure 11.)

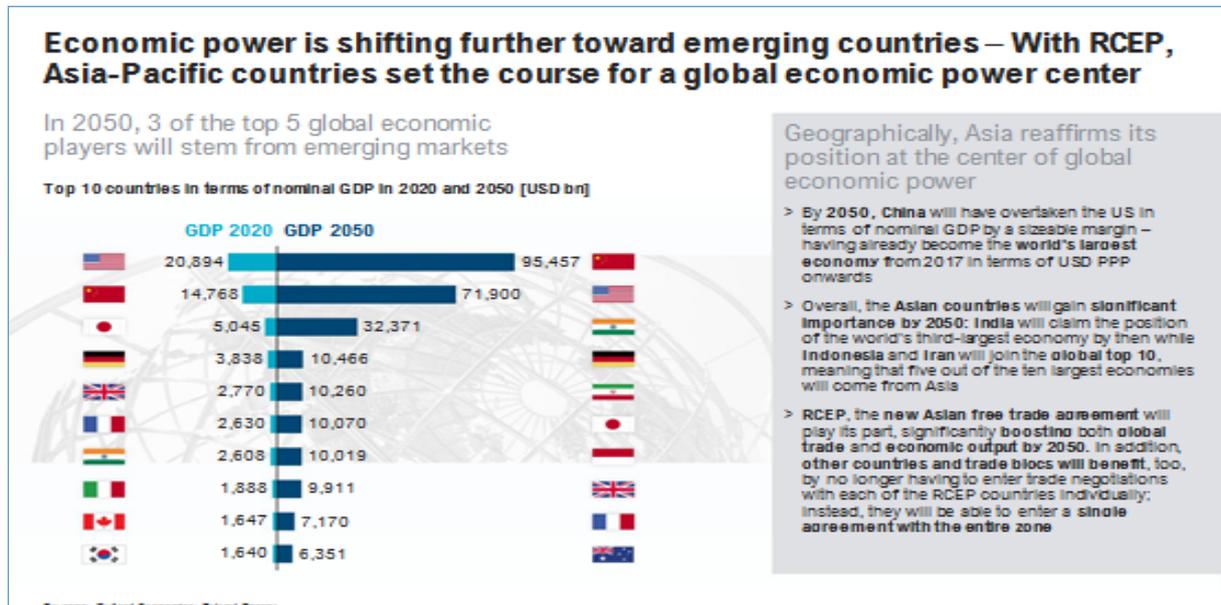


Figure 11.

### Economic power in 2050

(Sources: Oxford Economics<sup>42</sup>, EEAS, Roland-Berger TC. Megatrend 4. 2050. p. 20.)

Sectoral Transformation - On a sectoral analysis, industrial transformation is the key challenge. The main drivers are decarbonization and new technologies across sectors such as utilities and automotive, among others. For states and governments, the rise in national debt levels - partly due to the cost of the coronavirus pandemic - will be a challenge.

Debt Challenge - There is significant uncertainty about how the global economy can deleverage without significant adverse implications for economic activity. The next decade could bring a reflationary fiscal response, in sharp contrast to the austerity measures undertaken in the 2010s.<sup>43</sup>

<sup>41</sup> Regional Comprehensive Economic Partnership (RCEP) - is a proposed free trade agreement (FTA) between the ten member states of the Association of Southeast Asian Nations (ASEAN) <https://rcepsec.org/> (Accessed on 24 September 2022)

<sup>42</sup> Oxford Economics is a leader in global forecasting and quantitative analysis. Our worldwide client base comprises more than 2,000 international corporations, financial institutions, government organisations, and universities. <https://www.oxfordeconomics.com/about-us> (Accessed on 24 September 2022)

<sup>43</sup> Roland-Berger Trend Compendium 2050 Six megatrends that will shape the world, p.34-38. <https://www.rolandberger.com/en/Insights/Publications/Roland-Berger-Trend-Compendium-2050-Population-and-Society.html> (Accessed on 18 September 2022)

In 2050, 3 of the top 5 global economic players will stem from emerging markets. In November 2020, the RCEP formed by the ten ASEAN<sup>44</sup> member states plus five other countries in the Asia-Pacific region including China, Japan, South Korea, New Zealand and Australia.<sup>45</sup> (Figure 12.)

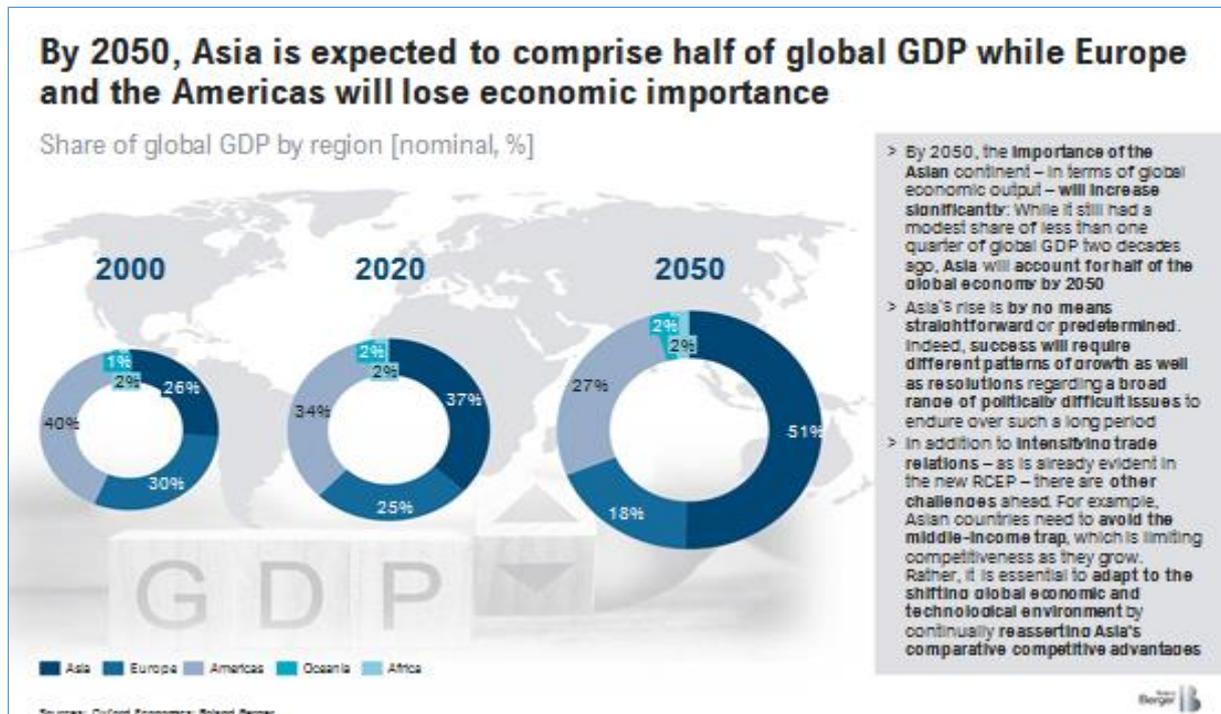


Figure 12.

### Global GDP by region 2000 – 2050

(Sources: Oxford Economics; Roland-Berger Trend Compendium 2050. Megatrend 4. p. 21.)

## 5. TECHNOLOGY AND INNOVATION

By the World Economic Forum<sup>46</sup>'s Global Risks Report that is based on its annual Global Risks Perception Survey, the Top 10 global risks over the next 10 years are as follows: extreme weather, climate action failure, human environmental damage, infectious diseases, biodiversity loss, digital power concentration, digital inequality, interstate relations fracture, cybersecurity failure and livelihood crises.

<sup>44</sup> Association of Southeast Asian Nations - ASEAN The Association of Southeast Asian Nations, or ASEAN, was established on 8 August 1967 in Bangkok, Thailand. <https://asean.org/> (Accessed on 30 September 2021)

<sup>45</sup> Roland-Berger Trend Compendium 2050 Six megatrends that will shape the world <https://www.rolandberger.com/en/Insights/Publications/Roland-Berger-Trend-Compendium-2050-Economics-Business.html> (Accessed on 18 September 2022)

<sup>46</sup> World Economic Forum - The Forum engages the foremost political, business, cultural and other leaders of society to shape global, regional and industry agendas. It was established in 1971 as a not-for-profit foundation and is headquartered in Geneva, Switzerland. It is independent, impartial and not tied to any special interests. The Forum strives in all its efforts to demonstrate entrepreneurship in the global public interest while upholding the highest standards of governance. Moral and intellectual integrity is at the heart of everything it does. <https://www.weforum.org/about/world-economic-forum> (Accessed on 24 September 2022)

Value of Technology - While technology and innovation drive prosperity, the lack of such capabilities is a major hurdle for developing countries to draw level with developed nations. While the latter have made high levels of investment commitments going forward, e.g. in quantum computing technologies, AI, and cybersecurity, such levels are simply not within the reach of the former. Artificial Intelligence (AI) - Particularly in the field of AI, an ever more evident number of technologies are being lined up and/or are coming out of the pipeline.<sup>47</sup>

Human & Machines - AI experts predict a near limitless progression of the capabilities of AI technologies, such powerful developments would be faced with enthusiasm mixed with concern for human values and agency.

Technology and innovation would drive prosperity. A lack of such capabilities is a major hurdle for developing countries to level with developed countries. The progression of Artificial Intelligence<sup>48</sup> (AI) capabilities would be expected to be near limitless, intelligent machines would accomplish more and more ambitious tasks. In 2026 AI – would write an essay for a high school history class that would receive high grades and pass plagiarism detectors. In 2034 AI would defeat the best Go players (a game, AI would get the same training as humans), training only on as many games as the best Go players have played. In 2049 AI – would write New York Times Bestseller; write a novel or short story good enough to make it to the New York Times bestseller list.<sup>49</sup>

AI experts expect that - with a probability of 50% - around 2060 unaided machines will be able to accomplish every task better and more cheaply than human workers will. Around 2140 all occupations will be fully automatable.<sup>50</sup> (Figure 13.)

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<sup>47</sup> Roland-Berger Trend Compendium 2050 Six megatrends that will shape the world, p.45-51.

<https://www.rolandberger.com/en/Insights/Publications/Roland-Berger-Trend-Compendium-2050-Population-and-Society.html> (Accessed on 24 September 2022)

<sup>48</sup> Artificial Intelligence (AI), the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings. The term is frequently applied to the project of developing systems endowed with the intellectual processes characteristic of humans, such as the ability to reason, discover meaning, generalize, or learn from past experience. <https://www.britannica.com/technology/artificial-intelligence> (Accessed on 21 September 2022)

<sup>49</sup> Colonel István JUHÁSZ, National security and international environment at 2050, building future resilience - in what direction diplomacy is changing until 2050 and beyond, National Security Review 2022/1. p. 12.

[https://www.knbsz.gov.hu/hu/letoltes/szsz/2022\\_1\\_NSR.pdf](https://www.knbsz.gov.hu/hu/letoltes/szsz/2022_1_NSR.pdf) (Accessed on 23 september 2022)

<sup>50</sup> Roland-Berger Trend Compendium 2050 Six megatrends that will shape the world <https://www.rolandberger.com/en/Insights/Publications/Roland-Berger-Trend-Compendium-2050-Population-and-Society.html> (Accessed on 24 September 2022)

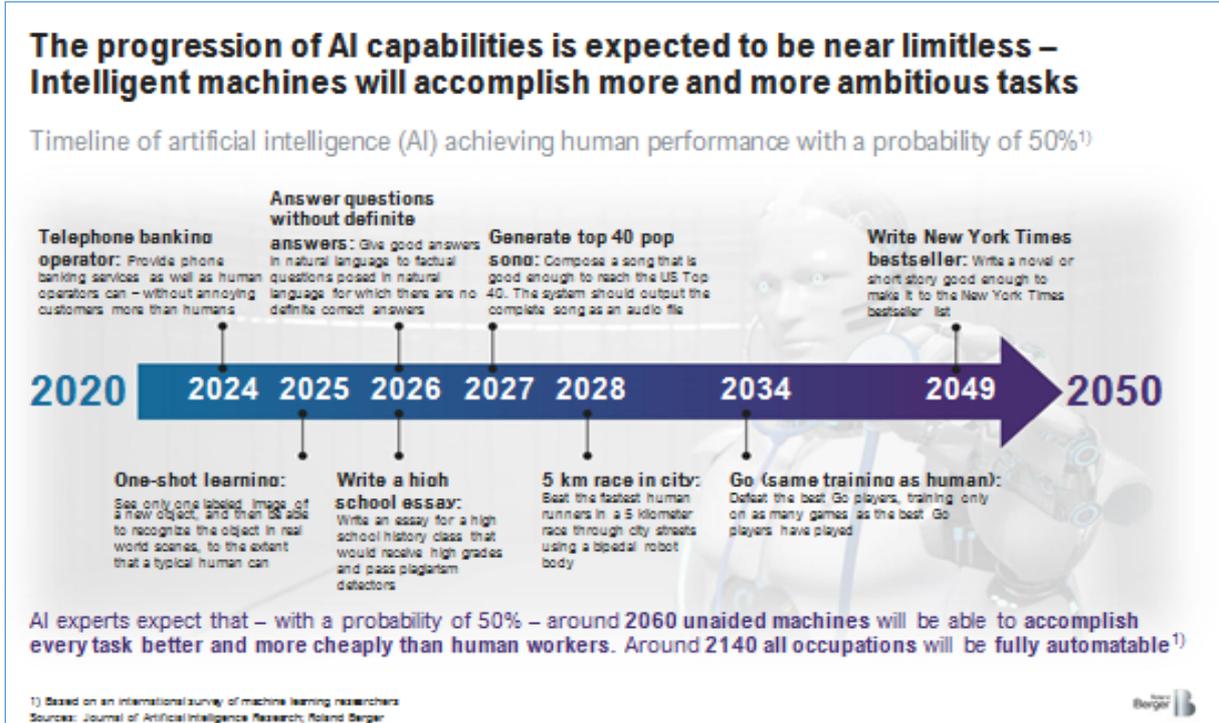


Figure 13.

**Progression of AI capabilities 2050**

(Sources: Journal of AI Research, Roland-Berger TC. Megatrend 5. 2050. p. 68.)

The 6G technology<sup>51</sup> market is expected to facilitate large improvements in the areas of imaging, presence technology and location awareness. Working in conjunction with artificial intelligence (AI), the 6G computational infrastructure will be able to identify the best place for computing to occur, this includes decisions about data storage, processing and sharing. New communications technologies are being developed faster supporting fundamental innovation over the long term. Future 6G rollout is the next step. 6G commercialization is within reach supporting data-hungry applications.

According to the research, in the past, commercialization of communication technologies was protracted: Research on the 3G standard started in 1990 while its commercial phase will only come to an end in the mid-2020s. Frontier communication technologies are important since their enduring qualities support fundamental innovation. Driven by the capability of reliable and low-latency communication via 5G, there are trends for creating stand-alone networks in automated industries. Under 6G, this trend will continue for applications in more special purpose networks and smaller sub-networks, e.g. in networks of drone swarms.

The higher data rate technology paves the way for more innovations. Instant volumetric sensing (scanning and virtualizing 3D objects instantly), requires 6G's data transfer

<sup>51</sup> 6G (sixth-generation wireless) is the successor to 5G cellular technology. 6G networks will be able to use higher frequencies than 5G networks and provide substantially higher capacity and much lower latency. One of the goals of the 6G internet is to support one microsecond latency communications. This is 1,000 times faster - or 1/1000th the latency - than one millisecond throughput. <https://www.techtarget.com/searchnetworking/definition/6G> (Accessed on 24 September 2022)

capabilities. Equally, fully autonomous vehicles or smart interconnected infrastructure<sup>52</sup> are data-hungry areas where 6G is essential. Selected use cases benefitting most from 6G technology are Remote healthcare, Smart environments, Industrial automation, Precision agriculture, Instant volumetric sensing, Lighter than Air drones, Space connectivity, Fully autonomous vehicles and Smart infrastructure.<sup>53</sup> (Figure 14.)

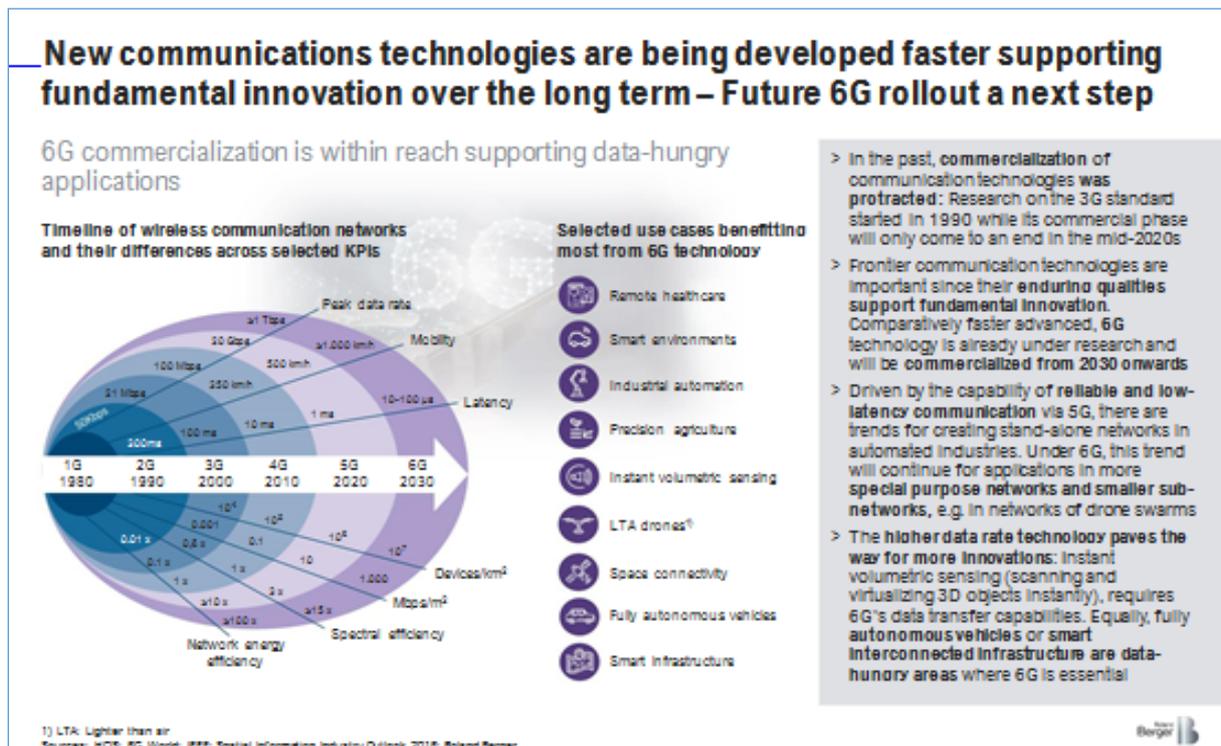


Figure 14.

### New communications technologies, Future 6G rollout

(Sources: HCIS; 6G World; IEEE; Spatial Information Industry Outlook 2016; RBTC 2050. Megatrend 5. p. 34.)

## 6. POLITICS AND GOVERNANCE

Due to the global nature and complexity of the threats, a wider range of actors will need to be involved in addressing transnational and trans-regional challenges in the future, both inside and outside the Euro-Atlantic area. Because instability spans state borders, no nation or organization can deal with future challenges or crises alone.

Approached from a national perspective, mentioning only some of the more important challenges and risks, political and economic pressures that are not military threats, demographic challenges, migration, information/disinformation and cyber operations, as well

<sup>52</sup> The attainment of technical interoperability can be achieved by using modular, loosely coupled service components which are interconnected through an infrastructure layer. (Accessed on 18 September 2022) <https://joinup.ec.europa.eu/collection/access-base-registries/interconnection-infrastructure>

<sup>53</sup> Roland-Berger Trend Compendium 2050 Six megatrends, Megatrend 5. p. 34. <https://www.rolandberger.com/en/Insights/Publications/Roland-Berger-Trend-Compendium-2050-Technology-Innovation.html> (Accessed on 18 September 2022)

as for natural resources (drinking water, food, energy, raw materials) is putting a lot of pressure on the security stability of nations.<sup>54</sup> (Figure 15.)

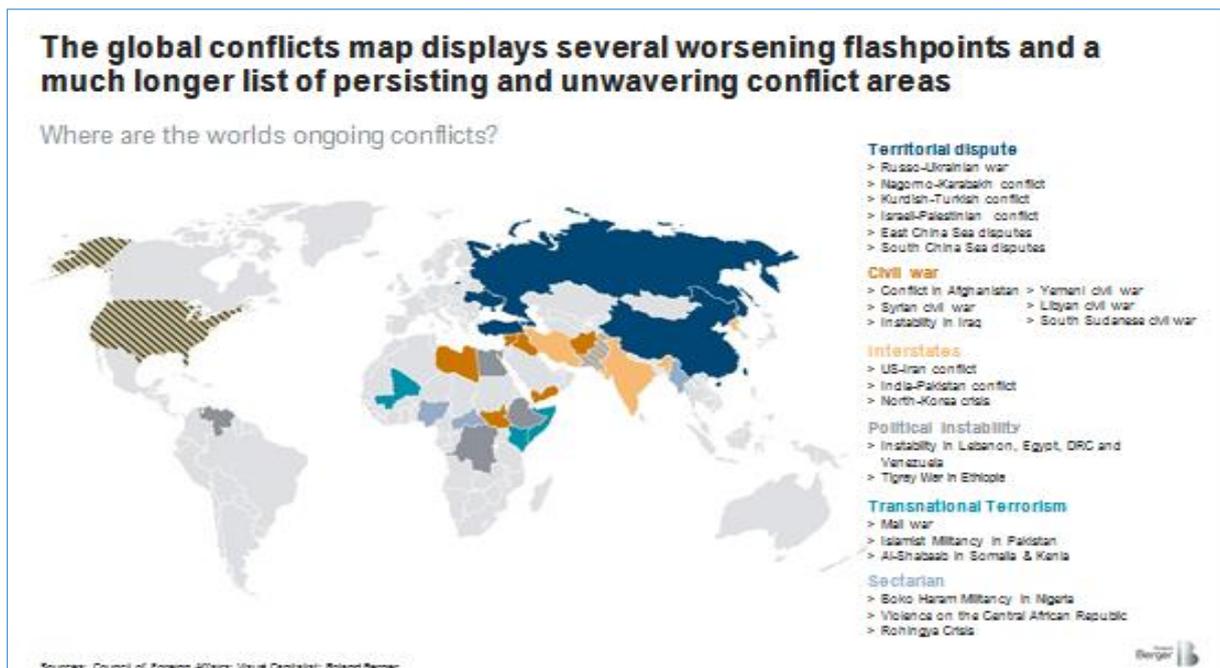


Figure 15.

### Global conflicts Map

(Sources: Roland-Berger Trend Compendium 2050. Megatrend 6. p. 46.)

In the coming decades, it will presumably be a strategic objective to protect, if necessary, to protect and retain our natural treasures, our fresh water reserves, our raw materials, and the fossil energy carriers in our land with armed forces.

Regarding of climate change, the protection of agricultural lands and the maintenance of their productivity will be of particular importance, and food and water safety will become a major security risk. (as a result of warming, the current grain crops zones will be greatly damaged, the cereals produced in today's Mediterranean belt will no longer be able to be grown on the current farmlands, the cropping areas will be forced to the North.)

The lack of crops land leads to a drastic reduction of grain crops, and warming and overpopulation lead to a large increase in impoverishment and famine. Mass development of alternative food<sup>55</sup> and their distribution and use is a necessary and urgent challenge in the near future.

The global warming will have a similar harmful effect on the earth's population, a new type, so-called a massive climatic migration, is to be expected from the southern continents to the north. Most of the people will populate megacities and more energy will have to be used for

<sup>54</sup> Colonel István JUHÁSZ, National security and international environment at 2050, building future resilience - in what direction diplomacy is changing until 2050 and beyond, National Security Review 2022/1. p. 14. [https://www.knbsz.gov.hu/hu/letoltes/szsz/2022\\_1\\_NSR.pdf](https://www.knbsz.gov.hu/hu/letoltes/szsz/2022_1_NSR.pdf) (Accessed on 24 september 2022)

<sup>55</sup> Alternative Food: a food that is regarded as a healthier alternative to food that is prepared or produced by conventional methods <https://www.merriam-webster.com/dictionary/alternative%20food> (25 Sept 2022)

cooling rather than for heating. The living space of humanity will be reduced. Fossil fuels are running out drastically, according to some reports, natural gas will still be sufficient for another 52 years, the situation is slightly more favorable with regard to petroleum. The population of the earth will increase from the current 7.8 billion to around 9.7 billion by 2050.

The number of the Muslim population will exceed the number of the Christian population of the earth by 2050, which may pose security challenges. In addition to all this, it is expected that differences of interest may arise within the currently well-functioning regional and federal systems, which can turn the former, well-functioning relationship system into a hostile environment. During the settlement of the differences of interests, it is assumed that the stronger and more powerful nations will assert their will and impose it on the weaker nations.

The increasing emphasis on non-military challenges requires increased flexibility and adaptability and a comprehensive approach by nations, states and national defense forces. The rapid development of innovation and technology can also offer an opportunity to solve global challenges. The rapidly changing, complex security environment will continue to be an accelerator of NATO's adaptation efforts. These efforts are focused on the transformation of NATO's military capabilities, to ensure that the Alliance remains relevant, credible, and able to fulfill its basic tasks, including in the areas of collective defense, cooperation-based security and crisis management.<sup>56</sup>

In another approach, the aforementioned climate change (global warming) and impoverishment represent an additional source of danger at the borders of Europe, which is formed due to the effects of explosive African and Asian demographic processes, overpopulation, urbanization challenges, unpredictable natural phenomena, and extreme weather conditions. As a result, the danger of climate migration (climatic migration) increases, which acts as a catalyst for the governance and functioning of individual weak states in Africa.

All of these circumstances have an increasing effect on the capacity and capabilities of the national forces at the borders of Europe, and also have an impact on the expected operational frameworks of the future. Masses of unemployed young people immigrating from the Middle East and South are also exerting increasing pressure on Europe, contributing to the rise of organized crime and extremist, jihadist groups, as well as contributing to the strengthening of extreme right and radical nationalist ideologies in our region. That is why civil and military crisis management operations and peace operations in the Western Balkans, the Middle East, and Africa can still make a significant contribution to the security of Europe, our region and our country.<sup>57</sup>

It can be proven that many new challenges await and an extremely heavy burden is placed on the future of the factors of the defense sector. Meeting the new challenges can only be achieved by developing skills and capacities and maintaining national competitiveness.

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<sup>56</sup> Colonel István JUHÁSZ: Professional Review, Challenges, Risks, Threats – Transforming Military Capabilities in the Operational Environment of the Future - Szakmai Szemle, kihívások, kockázatok, fenyegetések - a katonai képességek transzformációja a jövő műveleti környezetében, XIX. évfolyam 2. szám p.14. 2021. Budapest, [https://www.knbsz.gov.hu/hu/letoltes/szsz/2021\\_2\\_szam.pdf](https://www.knbsz.gov.hu/hu/letoltes/szsz/2021_2_szam.pdf) (Accessed on 24 September 2022)

<sup>57</sup> Ibid. p. 15.

Focusing on the results of researches we can see the trend that is showing for the decade ahead, risk related to climate change dominate while geoeconomics confirmation poses the most severe geopolitical risk.

According to the analyses, the 10 most severe risk over the next 10 years are the following: climate action failure (environmental), extreme weather (environmental), biodiversity loss (environmental), social cohesion erosion (political), livelihood crises (political and economical), infectious diseases (health and care), human environmental damage (environmental), natural resource crises (environmental), debt crises and geoeconomic confrontation (political and economical).<sup>58</sup> (Figure 16.)

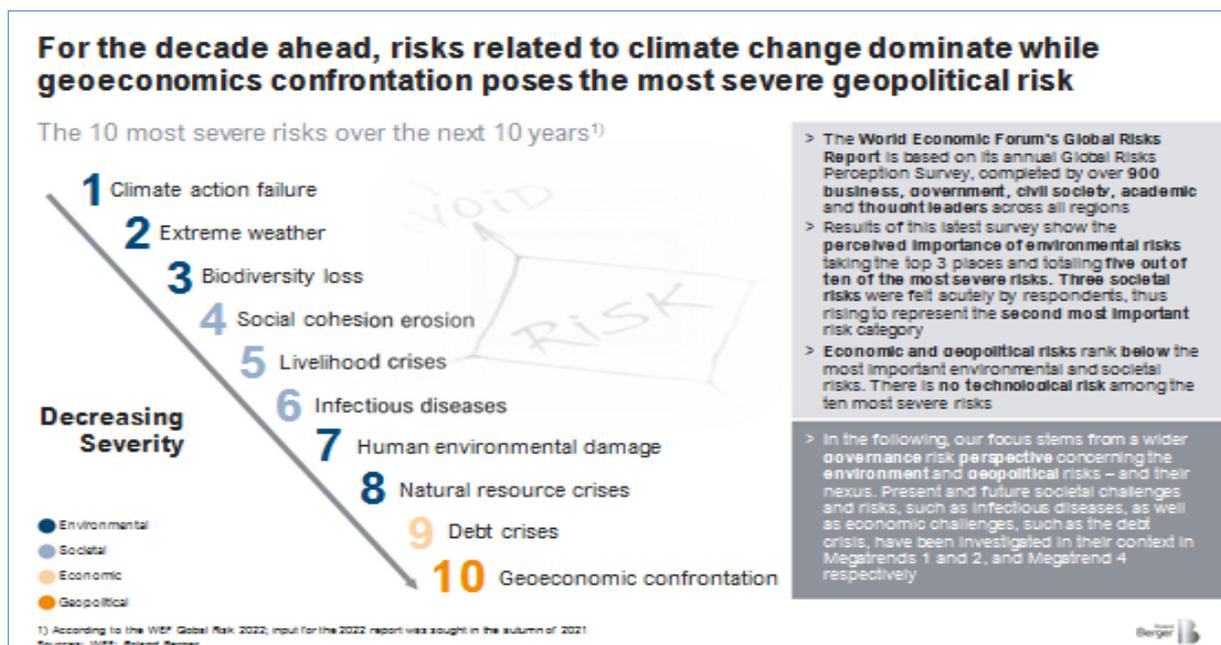


Figure 16.

### The 10 most severe risk over the next 10 years

(WEF Global Risk 2022; for the 2022 report was sought in the autumn of 2021, RBCT Megatrend 6. 2050. p. 54.)

Based on the results of the World Economic Forum 2022 research, our nation Hungary has joined these “Executive Opinion Survey” titled “National Risk Perceptions”. According to the survey Hungary presented and provided the top five usual risks<sup>59</sup>, what are “1. Failure to stabilize price trajectories (economical) 2. Extreme weather events (environmental)

3. Climate action failure (environmental) 4. Infectious diseases (health and care) and 5. Fracture of interstate relations (economical)” It can be detected that the HUN results of the research is different like are the results of WEF 2022 report.

### FUTURE OF RESILIENCE, CONCLUSIONS

<sup>58</sup> Roland-Berger Trend Compendium 2050 Six megatrends, Megatrend 6. p. 54.

<https://www.rolandberger.com/en/Insights/Publications/Roland-Berger-Trend-Compendium-2050-Technology-Innovation.html> (Accessed on 18 September 2022)

<sup>59</sup> WEF\_The\_Global\_Risks\_Report\_2022.pdf (Accessed on 24 September 2022)

[https://www3.weforum.org/docs/WEF\\_The\\_Global\\_Risks\\_Report\\_2022.pdf](https://www3.weforum.org/docs/WEF_The_Global_Risks_Report_2022.pdf) p. 101. (Accessed on 18 September 2022)

It is a main goal to improve our own ability to prevent, prepare for, respond to and recover from risks, as well as that of our allies and partners, recognising the closely interconnected nature of our world. Furthermore, it is necessary to prioritise efforts to mitigate climate change and biodiversity loss, long-term challenges that if left unchecked threaten the future of humanity - moreover to building global health resilience.<sup>60</sup> The priority and crucial aim is building and developing resilience in our national and regional level.

Nations and organisations like NATO and the EU, can use this information and expertise to support the development of coordinated strategies to address potential risks and to make recommendations to address non-normal challenges using available capabilities and resources.<sup>61</sup> Furthermore, to the development of traditional military capabilities, resilience is a special area where planned and coordinated preparations are needed to guarantee the security of the nation and the Alliance. Accomplish resilience needs significant resources to be focused on both human and material development.<sup>62</sup>

This desires the design of an ecosystem consisting of a wide network of partners, including nations, international organizations, NGOs, the private sector and scientific actors. These copartners must provide a system with the capacity to exchange information, provide early warning and awareness, and able to make the most of existing expertise. A fundamental element of it is to create design and practice procedures of preparation of exercise, planning reserve resources and to organize wargaming event in peacetime, before the crisis.<sup>63</sup>

The “Big, Brutal and Clumsy Bear<sup>64</sup>” - Russia would remain the biggest threat to NATO, so the modernization of deterrence and defense capabilities, NATO's military structures, will be a high priority.

In the future, more attention will be placed on the security risks inherent in the Arctic, as well as the security challenges of China's rise. At the level of non-state factors, the proliferation of arms, the deteriorating European border situation, the migration and its possible consequences of organized crime and extremism remain threats. Our global security environment, the most important direction of our defense vision may be the strengthening of

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<sup>60</sup> Global Britain in a competitive age, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/975077/Global Britain in a Competitive Age- the Integrated Review of Security Defence Development and Foreign Policy.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/975077/Global_Britain_in_a_Competitive_Age_the_Integrated_Review_of_Security_Defence_Development_and_Foreign_Policy.pdf) (Accessed on 24 September 2022)

<sup>61</sup> Colonel István JUHÁSZ: Professional Review, Challenges, Risks, Threats - Transforming Military Capabilities in the Operational Environment of the Future - Szakmai Szemle, kihívások, kockázatok, fenyegetések - a katonai képességek transzformációja a jövő műveleti környezetében, XIX. évfolyam 2. szám p.35. 2021. Budapest, [https://www.knbsz.gov.hu/hu/letoltes/szsz/2021\\_2\\_szam.pdf](https://www.knbsz.gov.hu/hu/letoltes/szsz/2021_2_szam.pdf) (Accessed on 24 September 2022)

<sup>62</sup> Pál KÁDÁR: A pandémia kezelése, mint a nemzeti ellenálló képesség „tesztje” - Pandemic management as a “test” of national resilience - DOI: 10.35926/HSZ.2021.2.1, Honvédelmi Szemle p.12. [http://real-j.mtak.hu/15069/7/HSZ\\_2021\\_2.pdf](http://real-j.mtak.hu/15069/7/HSZ_2021_2.pdf) (Accessed on 24 September 2022)

<sup>63</sup> Colonel István JUHÁSZ, National security and international environment at 2050, building future resilience - in what direction diplomacy is changing until 2050 and beyond, National Security Review 2022/1. p. 13-14. [https://www.knbsz.gov.hu/hu/letoltes/szsz/2022\\_1\\_NSR.pdf](https://www.knbsz.gov.hu/hu/letoltes/szsz/2022_1_NSR.pdf) (Accessed on 23 september 2022)

<sup>64</sup> „Big Bear - Russia” [https://www.russianrail.com/news/bears\\_and\\_russia](https://www.russianrail.com/news/bears_and_russia) (Accessed on 23 Sept 2022)

innovation, modernization, information and technology-based methods of warfare. Unforeseen events or new types of security challenges are playing an increasing role. The increasing emphasis on non-military challenges would require increased flexibility and adaptability, as well as a comprehensive approach on the part of nations, states and national forces.

Non-military threats include political and economic pressures, demographic challenges, migration, information warfare, cyber operations, and the intensification of the struggle for natural resources (drinking water, food, energy). The rapid development of innovation and technology can also offer an opportunity to address global challenges. The rapidly changing, complex security environment will continue to be a key driver of NATO's adaptation efforts. These efforts focus on transforming NATO's military capabilities to ensure that the Alliance remains relevant and credible now and for the foreseeable future, and can perform its core tasks of collective defense, cooperative security and crisis management.<sup>65</sup>

Based on the results of the research, poverty would be an additional root of danger on the border of Europe. The threat that is close connection with demographic trends in Africa, overpopulation, urbanization challenges, unpredictable natural phenomena, increasing "climatical migration", will continue to weaken governance in some African states. These circumstances will affect and influence national forces at the borders of Europe and shape our operational capabilities.

Masses immigrating from the Middle East and the South would also putting pressure on Europe's borders, contributing to the replenishment of organized crime and jihadist groups, and contributing to the strengthening of extremeright and radical nationalist ideologies in our region. That is why civilian and military crisis management operations and peace operations in the Western Balkans, the Middle East and Africa can continue to make a major contribution to the security of Europe, and thus of our region and our country.<sup>66</sup>

In addition to the strategic shocks<sup>67</sup> that have emerged in recent years, we have to keep that in mind that technological developments are expected to further increase the challenges

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<sup>65</sup> Colonel István JUHÁSZ, National security and international environment at 2050, building future resilience - in what direction diplomacy is changing until 2050 and beyond, National Security Review 2022/1. p. 14-15. [https://www.knbsz.gov.hu/hu/letoltes/szsz/2022\\_1\\_NSR.pdf](https://www.knbsz.gov.hu/hu/letoltes/szsz/2022_1_NSR.pdf) (Accessed on 24 september 2022)

<sup>66</sup> Pál Bak, Gergely Németh, Diána Szőke, Foundations of hungarian defence policy, Hungarian DefenceReview Special Issue 2020, vol. 148, nr. 2, p. 15-17. <https://kiadvany.magyarhonvedseg.hu/index.php/honvszemle/issue/view/85> (Accessed on 24 September 2022)

<sup>67</sup> Pál BAK, Gergely NÉMETH, Diána SZŐKE, Foundations of hungarian defence policy, Hungarian Defence Review Special Issue 2020, vol. 148, nr. 2, p.17. „The three most pressing mediumterm defence policy related challenges Hungary is facing are the persistent pressures of illegal mass migration, the challenges of transnational terrorism, along with the activity of rising and great powers and the subsequent potential for peer conflicts. These challenges share several characteristics which make them especially demanding in the form of unanticipated strategic shocks’. <https://kiadvany.magyarhonvedseg.hu/index.php/honvszemle/issue/view/85> (Accessed on 24 September 2022)

posed by cyberspace and space. Furthermore, the challenges posed by the proliferation of dual-use technologies and the spread of emerging and disruptive technologies may pose an increased challenge in the future. It is expected that the organizations that define the security policy framework of Hungary, such as NATO and the EU, will be able to address them more decisively in the future. In order to guarantee national security against hybrid threats, the military sector must place great emphasis on national resilience and close cooperation with civil and law enforcement agencies.<sup>68</sup>

The geostrategic situation of Hungary is unique as it lies at an intersection. This intersection is singular in that both the “eastern” and “southern” borders would face security challenges. Hungary's strategic goal is to develop the national resilience, deterrence, defense, crisis management and coordination capabilities by 2030. The global security risk and threat level is increasingly higher, which will continue to influence the future of our nation. Protecting the future of our children, defending our national values and national independence, including the freedom of all Hungarians would remain vital and crucial requirements to ensure the national efficiency of governance at all levels. In order to reach the strategic goals and the most fruitful effects, it is vital to adapt a sophisticated Comprehensive National Resilience Plan that is fully synchronized with regional and EU, NATO allied plans, too.<sup>69</sup>

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<sup>68</sup> Colonel István JUHÁSZ, National security and international environment at 2050, building future resilience - in what direction diplomacy is changing until 2050 and beyond, National Security Review 2022/1. p. 13-15. [https://www.knbsz.gov.hu/hu/letoltes/szsz/2022\\_1\\_NSR.pdf](https://www.knbsz.gov.hu/hu/letoltes/szsz/2022_1_NSR.pdf) (Accessed on 23 september 2022)

<sup>69</sup> Ibid. p. 14-16.



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