

Geography of the "Death Zone" in Hungary

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"Will this land still be our country, Mr. Ensign?"

My father fought in 1944-45 in the 1st Hungarian Army in World War II, in the Carpathians, at the thousand-year old border in the Transcarpathia region and in Transylvania, at the heavy Battle of Torda against the Soviet-Russian Red Army. What was left of their company crossed the River Tisza and, they marched back in disorder across the Mátra Mountains towards Budapest, the Hungarian capital. One night they watched from the slopes of the Mátra Mountains the almost surreal scene of the Great Hungarian Plain, illuminated from time to time by flashing blue-purple lights and rumbling with the sound of continuous, distant metal explosions. The noise of the explosions was mixed with the sound of sharp, closer cracks as the Germans blew up the tracks of the Budapest-Miskolc railway line in sections near Gyöngyös. High up in the sky, American-British planes rumbled to bomb the towns of Gyöngyös, Hatvan and Szolnok. "Will this land still be our country, Mr. Ensign?" asked his fellow soldier, Lajos Bóbics².

Today, there are hardly any people living in Hungary who have lived through the war as adults, at least 18 years old. They are all over the age of 96 and no longer form a significant demographic group; only a few thousand can still live with a lasting memory. Those who were 12 to 17 years old during World War II are the Veteran Generation, numbering around half a million. The only members of the BB generation, born between 1946 and 1964 – and now dwindling fast – are those who have known what it is like to see a war sweep across a country at first hand, through the stories of their parents and grandparents who lived through the war. Those who, in the 1960s and 1970s, were constantly being taught in their primary school years what the terrible effects of an atomic bomb were, what an "atomic winter" was, making the whole earth uninhabitable, or how terrible the Vietnam War was. At the time, the democratic West did not try to economically ostracise the aggressor United States, even though the civilian (!) death toll of the US military is put at between 800,000 and 3 million!

Table 1. Generations' war "experiences" in Hungary in 2023

Generations	When were you born?	How old are they?	How many are there?	War experience
Veteran	1945 - before	78 - over	0.5 million	strong / direct
BB (<i>Baby Boom</i>) ³	1946 - 1964	59 - 77	2.0 million	medium / indirect
X	1965 - 1980	43 - 58	2.2 million people	weak / missing
Y	1981 - 1994	29 - 42	2.0 million	completely missing
Z	1995 - 2009	14 - 28	1.6 million people	completely missing
Alfa	2010 - after	under 13 - under 13	1.3 million people	completely missing

Source: own editing based on KSH 2023

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² The father of the Author, István Tózsza (1920-1999) had to enlist in the Hungarian Army in 1941 from Miskolc Hungary to Kolozsvár /today Cluj in Romania/ in Transylvania. In 1944, he was sent to the front as a platoon leader in the 1st Hungarian Army, where he was twice company commander until the end of March 1945 due to the losses of the officers.

³ *Baby boom* = an explosion in the number of children born, usually after wars, when natural reproduction increases as a reaction of society to self-defence or a strict ban on abortion. Such was the case in Hungary during the so-called Rátkó era, when Anna Rátkó, as Minister of Welfare and Health, introduced a childlessness tax between 1949 and 1953, in addition to a strict ban on abortion. Moreover, this coincided with a natural population increase after war losses.

This historical ignorance on a social level, which characterises today's economically and politically active generations X, Y and – to some extent – Z, has led to a situation where wars are only informed about through movies and video games, where gamers can have more than one "life". Even the horrors of the recent local wars in Africa, Iraq, Afghanistan, and Syria have generally only reached them, if at all, through frames and footage posted on the news.

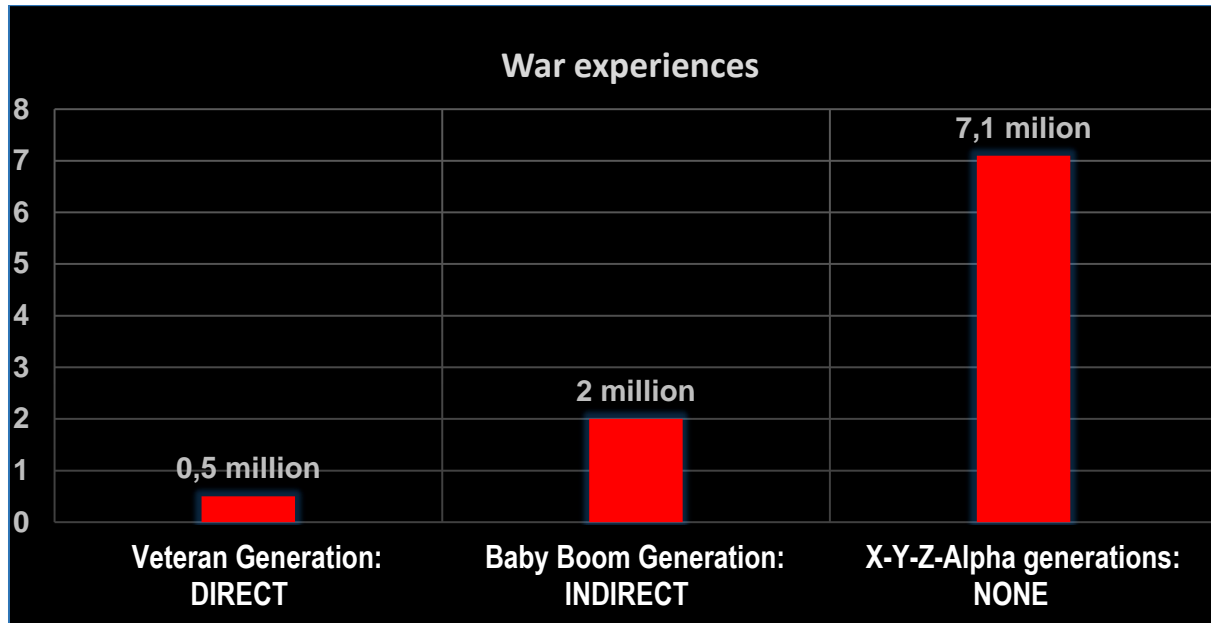


Figure 1. Hungarian society's war experiences in 2023 from the period 1944 - 1945 in the order of millions

Source: own editing based on KSH 2023

At the moment, the military conflict in Ukraine is causing a stir, and the generations who have not experienced the real war second-hand, even indirectly, through family stories, are reacting strongly. I mention a military clash because the real war begins when the Internet service in the war-torn country – in the whole country – is cut off, paralysing almost all services. The young, digitally caught up, or indigenous generations Y, Z, and Alpha lose a significant part of their living space. In addition, during total war, all air, rail, and road transport will cease. Electricity, drinking water and food supplies will be cut off, not to mention health and social services. Property and public safety will disappear.

The members of the BB generation know from their parents' and grandparents' stories what it is like to lack basic services, adding that this was really felt during the siege of Budapest in the first two months of 1945, while in rural Hungary, in areas less affected by the war or not, the population was still fully self-sufficient. In the villages, all foodstuffs and even the fabric for clothing were produced by the people themselves. The author of these lines knows from his deceased village relatives that in the tiny villages of Szőlősárdó, Égerszög and Tereszténye in northern Hungary in 1944-45, when the front was moving through Hungary, not a single German or Russian-Soviet soldier, or even a Hungarian soldier, was seen. They did not even hear the distant sound of cannon fire, and if they had not read the newspapers, listened to the radio, or received a military draft, the young men would not even have known that there was a war.

But today, the self-sufficiency of the countryside has largely disappeared. The loss of the Internet and electricity alone would be enough to paralyse or eliminate almost all services, transport, and production across the country.⁴

The chaos that a real war would mean in today's Hungary is unimaginable for the young generations. Not because of the rocket explosions and deaths, but because of the complete destruction or shutdown of the service infrastructure. When there is no power to charge mobile devices, when signal transmission systems, wires, roads, and railways are destroyed, when there is no fuel, heating, medical care, drinking water, food.

The saying is true: those who do not know their own history, their own past, are forced to relive it. Frivolous political declarations will lead to the inevitable transformation of the whole of Ukraine into a theatre of war, and then to the deployment of nuclear weapons. Not to mention that as Ukraine's defences run out of living strength, of soldiers, first volunteers will come from the west of Europe, as in Spain during the Spanish Civil War, 1936-1939; then armies will have to be sent to Ukraine to stop, according to some political declarations, "the Russian threat to the advanced democracies of Western Europe." Obviously, generations X, Y and Z cannot remember that such a thing has happened before: in a Western alliance, the Hungarians sent an army to the East against the Russians. It was called the 2nd Hungarian Army and it left in 1942 for the Don River Bend.⁵

In 2024, the total war is knocking on the door of our neighbour, Ukraine. Already in 2020, experts who can interpret global economic trends clearly saw the imminent prospect of a new cold or world war: past patterns are also very important for finding paths to the future. We are living in a new Renaissance era, where technological and scientific discoveries of all kinds are fundamentally reshaping our vision and our environment. We are also living in a new era of a global "30-year war"⁶ in the face of a massive 400-year cycle of the world economy (Matolcsy, 2022). It was in 1620, the last time when the *Mayflower* landed in America that the 80-year institutional and 50-year socio-economic development cycle coincided; as in 2020 (Friedman, 2021).

The patterns of the 1940s return. World economic trends show convincing evidence of the return, repetition, and parallels of the 1940s (Sharma, 2022). György Matolcsy's book *The Patterns of Time* (2022), in 257 short analyses in the context of history, economics, financial policy and geography, demonstrates that today we are witnessing a necessarily occurring, conflict-laden revival of the 1940s and 1970s which a society no longer able to recall and interpret the

⁴ If war were to hit Hungary, few people would know what to do, what can be done; there is a lack of civil protection preparedness. In the school education of the BB generation in the 1960s, when nuclear war was still a real threat, the effects of a nuclear explosion and protection against nuclear radiation were regularly discussed. The BB generation also had direct experience of the radiation contamination of Europe during the Chernobyl nuclear power plant disaster in Ukraine in 1986. What kind of vegetables accumulate the radioactive isotopes caesium and strontium, how many iodine tablets to take, what is containment, what is closed-system washing ... (the youngest members of Generation X who followed them were only 6 years old at the time).

⁵ The BB generation author's uncle, Béla Galambos, participated as a lieutenant in the 2nd Hungarian Army's operations in Ukraine in 1942-1943. The army was struck in what is now the Ukrainian theatre of operations, about 150 kilometres east of Luhansk and 1600 kilometres from Hungary. It was from there that those who survived for more than a month in -40 degrees Celsius, without food or equipment, had to rush home. At least 120,000 (!) Hungarian soldiers died or were taken as prisoners of war. Why did they go there? At that time, they were not in an American alliance, but in a German alliance. They went there to stop the Soviet-Russian army that was pushing west. And to defeat Soviet Russia.

⁶ The Thirty Years' War: 1618-1648, when an estimated 8-11 million Europeans – mostly Germans – lost their lives.

past could not have foreseen. This society could not have foreseen it, because the last members of the generation that lived through the last crisis in the 1940s, are now passing away. The last members of the generation that lived through the 1940s as adults are now over 90 years old; and most of the members of the BB generation are over 60 years old, who received first-hand knowledge from them. They are no longer active; their numbers are also rapidly declining.

Death Zone

This paper, however, does not intend to analyse a geopolitical position, but a geographical, disaster-geography analysis. What happens if Hungary stays out of the war for the time being, but the surrounding countries do not; or what happens if Hungary becomes a target, if a neutral buffer zone with a nuclear back-up radiation separating the two new world orders (the American - Western European and the Russian-Chinese - Eastern European) is created? Can Hungary be left out of it in a geographical context?

If, as is currently the case (in early 2024), the war in Ukraine escalates into an open NATO-Russia war, the whole of Ukraine could become a theatre of war. Belarus, because of its geographical location, cannot escape this. Moldova, on the other hand, is inevitably drawn into the fighting because of the Russian breakaway Transnistria (Transnistria) state on the Moldovan-Ukrainian border. In this case, the destruction of the enclave of Kaliningrad (formerly Königsberg, originally Prussian, since 1946 Soviet, now Russian), surrounded by NATO member states, is inevitable. If Ukraine is completely returned to the Russian sphere of interest, a hermetically sealed, bipolar world order will be established. This new "Iron Curtain" will no longer be a strict border control system, as in the Cold War era, but a physical danger zone separating the western and eastern halves of Europe; a "Death Zone" covering entire countries, contaminated by nuclear fallout from nuclear strikes (see Figure 2).

In the author's opinion, in the event of an escalation of the war into a nuclear war, these Central and Eastern European countries will serve as a buffer zone between the armed centres of power in the West and the East. Given that the bulk of NATO's nuclear arsenal is separated from East-Central Europe by the Atlantic and Pacific Oceans, while Russia's nuclear arsenal is in place, a Russian nuclear war would, unfortunately, be more destructive in Eastern Central Europe than anywhere else in the world.

Not to mention that in such a situation, the Transatlantic US will also focus more on missile and radiation defence of its own territory, understandably. It is obvious that in such a confused situation, for strategic reasons, the direct NATO supply lines to the primary theatre of operations – Ukraine – military airfields, military industrial facilities, warehouses, and weapons factories will be hit by a Russian nuclear attack of "limited" scope. In countries directly bordering the Ukrainian - Belarusian theatre of operations. Thus, at the end of the war, these countries (from Finland, which has given up its neutrality, through the small Baltic States, the understandably particularly anti-Russian Poland, and Slovakia, Hungary, Romania, to Bulgaria) will be transformed into a dense, point-contaminated, dangerous, quasi 'Death Zone'. This zone hermetically separates the remaining Russian empire from its Western NATO allies, who are assisting the Central and Eastern European world war from the 'coastline'. They can be more reassured about direct radiation contamination because in Europe, generally speaking, the prevailing winds are westerly from the Atlantic, so the radiation plume from nuclear explosions over a few hundred kilometres from East-Central Europe is more likely to be directed eastwards, towards Eastern Europe and Russia. Of the NATO member states, Turkey would be the only one exposed to the radiation contamination from nuclear strikes in East-Central Europe, especially Bulgaria and Romania.

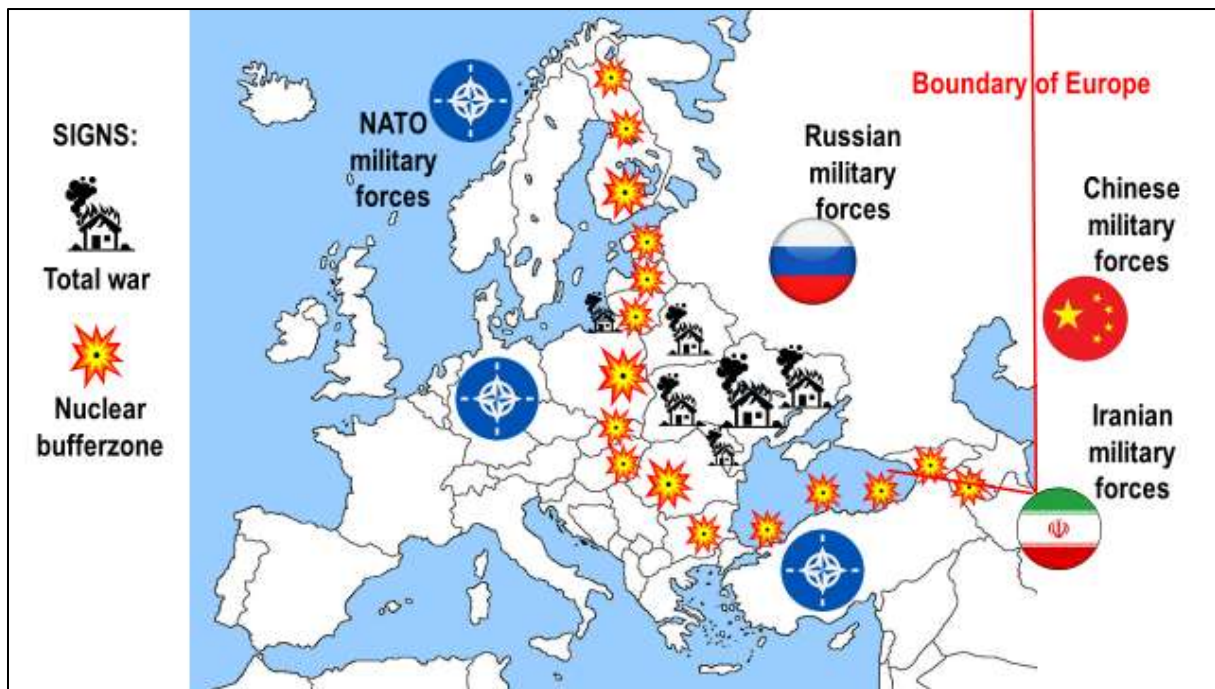


Figure 2. A possible buffer zone in the event of a Russian-Ukrainian war escalating into a world war. Limited nuclear strikes on military infrastructure adjacent to the immediate theatre of operations would create an unliveable zone between the two major emerging world orders, West and East, in Northern and Eastern Central Europe from Finland as far as Bulgaria and the Black Sea borders of Turkey and Georgia

Source: own editing

One can recall the 1986 Chernobyl (Ukraine) nuclear power plant disaster, when on 30 April, unlike the weather in Eastern Europe, which is usually characterised by a westerly flow, cyclones in Eastern Europe drifted the radiological material in a south-easterly - north-westerly direction towards Hungary. However, Hungary was fortunately protected by the Carpathian mountain ranges. This is illustrated in Figure 3a, with the remark that the representation of the measurement results does not provide information on the contamination of the eastern part of Ukraine and the territory of present-day Russia. The spatial distribution of the hazardous substance radioactive isotope strontium 137 (Figure 3b) shows the spread of the contamination eastwards from the explosion of the nuclear power plant, in a direction more in line with the prevailing wind direction.

This potential "Death Zone" in Central and Eastern Europe would not come into being if the NATO, with Chinese and Iranian military passivity, were to launch an attack on Russia so powerful that it would be unable to deploy its nuclear arsenal in Central and Eastern Europe. Historical knowledge does not justify rapid and successful military attacks against Russia, simply because of the country's infinitely vast size; think of the rapid successes of the Napoleonic *Grande Armée* or Hitler's *Wehrmacht* on Russian land and their consequences. Both were the most modern and capable armies of their time – as is the US or NATO Army today.

The buffer zone shown in Figure 2 extends through the now non-neutral Finland, Estonia, Latvia, Lithuania, Poland, Slovakia, Hungary, Romania, Latvia, Lithuania, Poland, Slovakia, Hungary and Bulgaria. In the south it runs along the northern coastline of Asia Minor. Georgia, with its very mixed ethnic make-up and current secessionist Abkhazia and South Ossetia, and its border with the NATO member Turkey, will inevitably be drifting into the world war. Likewise, Armenia, one of Europe's oldest Christian countries, will be part of the buffer zone. Azerbaijan, also a European country (!) in geographical terms, is fortunately questionable for its nuclear

buffer zone status, bordering Iran (Persia), a NATO and anti-American and potentially Russian ally country.

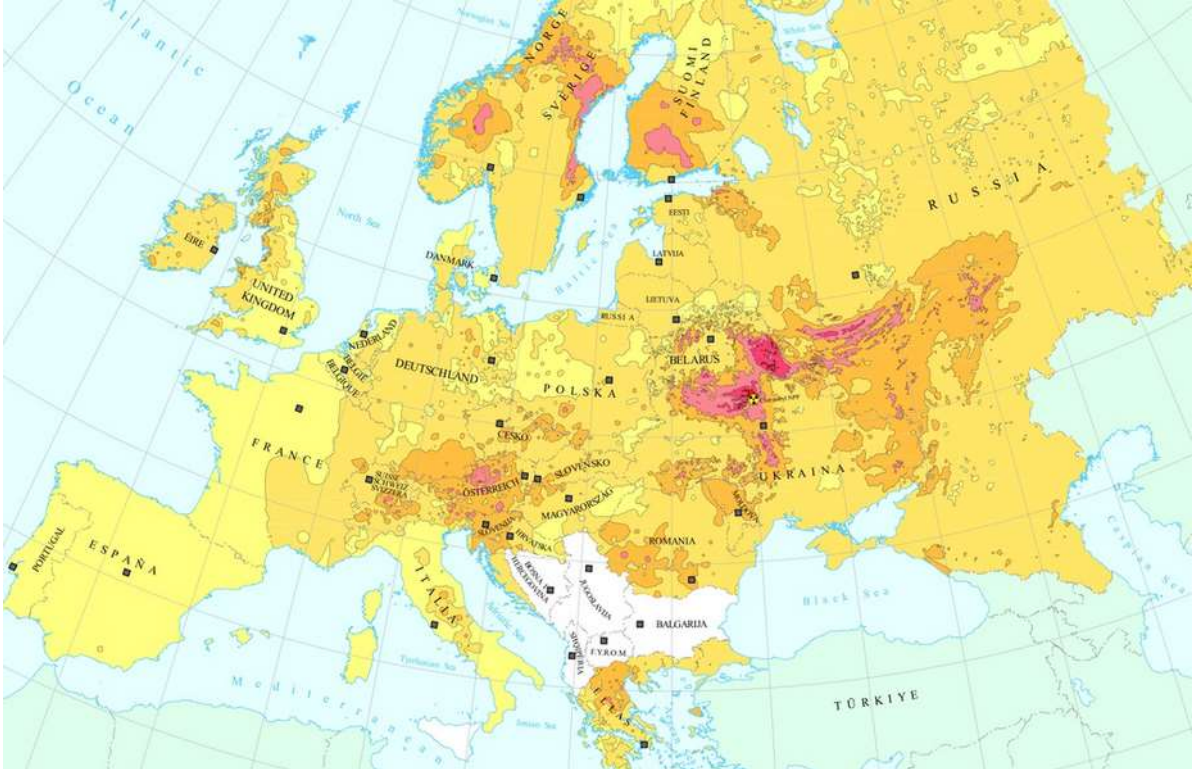
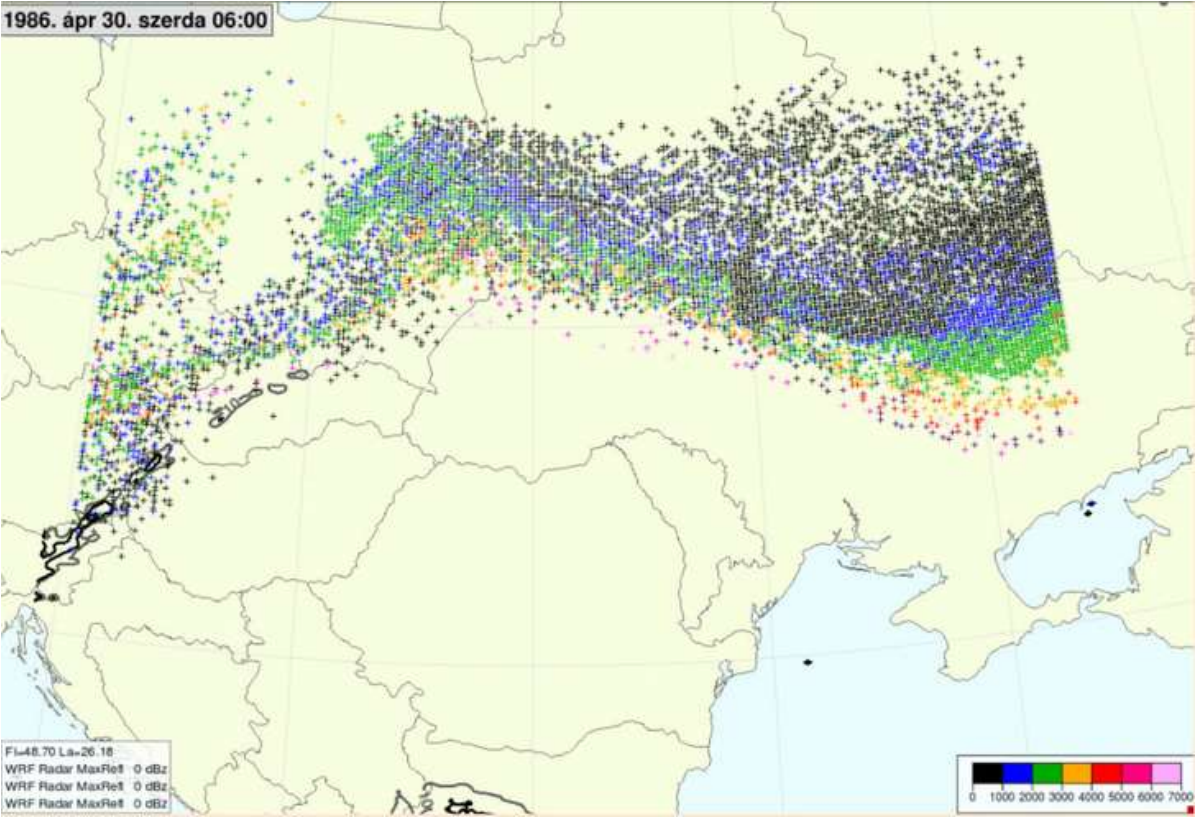


Figure 3a - 3b. Extent of the radiation zone of the 1986 Chernobyl nuclear disaster (top) and the intensity of the radioactive strontium 137 isotope deposition from the disaster (bottom)

Source: Kovács 2021

It is obvious that the Russians have a military plan for what military targets they should strike in the event of a new world war. Just as the US military had such a plan during the Cold War. Secret military documents were released in 2016, revealing the former nuclear strike targets; see Figures 4-5.

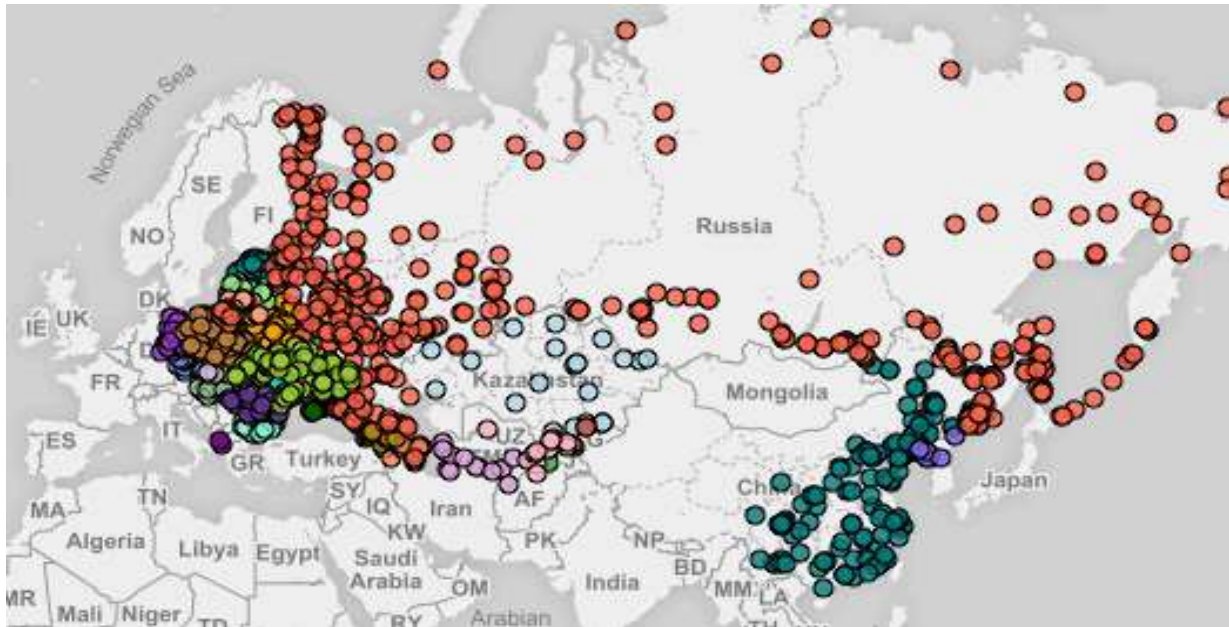


Figure 4. Some 1,100 clandestine US nuclear targets from 1956, concentrated mainly on the Soviet Union, East-Central Europe, China, and North Korea (15 of which would have involved Hungary)

Source: FLI Team. Future of Life, 2016,05,12

The US Cold War plans would have spared Hungary's civilian targets (in contrast to the strikes on Moscow and Beijing): only the airports and their urban surroundings (such as Kecskemét, Székesfehérvár, Debrecen, Szolnok, Pápa and Szombathely), which were military or could have been used for military purposes at the time, would have been victims (see Figure 5.)

But despite the sparing intention, for example, the death toll of the atomic bomb intended for Ferihegy Airport (equivalent to a single W80-type explosion of 150 kilotons of TNT⁷) would have caused 80,000 death tolls, and up to 300,000 wounded, within the Gyál, Üllő, Maglód, Rákosliget, Kispest, Pestszentimre circle area. From Rákoshegy to Vecsés, no stone would have been left unturned (see Figure 6).

⁷ TNT = Traditional explosive, widely used for both military and industrial purposes since World War I; trinitrotoluene, or "trotyl" for short.



Figure 5. Former military airfields designated by the USA in 1956 for nuclear strike targets in Hungary in the event of a world war

Source: based on Huszák D. Portfolio 2021,10,09



Figure 6. The range of a hypothetical nuclear attack on Ferihegy Airport (today's Liszt Ferenc Airport) with a 15 kt "Hiroshima" type bomb, as envisaged in the 1950s US military plan

Source: based on Huszák D. Portfolio 2021,10,09

The "conventional" bombs of World War II had a yield of 10 tonnes of TNT. By comparison, the "*Little Boy*" dropped on Hiroshima in 1945 was 1,500 times more powerful, with the equivalent of 15,000 tonnes or 15 kilotonnes of TNT. The range of an atomic attack, with different diameters depending on the intensity of the explosion in kilotonnes, creates the following zones on flat ground: the inner zone is the *fireball*, where everything is destroyed, surrounded by the *radiation* zone, where, in addition to the collapse of buildings, half of the occupants are exposed to lethal doses of radiation. The concentric circle that follows is the *airblast* zone, where some of the buildings will also collapse and those not in shelters will have their eardrums ruptured. The outermost direct destruction zone, which can be up to 5 to 20 km in diameter depending on the strength of the bomb, is the *thermal radiation* zone, where people in the open air suffer third-degree burns. Depending on the prevailing wind direction, a long plume (*radioactive fallout*) is formed up to several hundred kilometres from the centre of the explosion, from which harmful, cancer-causing radioactive dust is deposited in decreasing concentrations with distance.

In military planning, there are presumably quite accurate impact assessments of the effects of nuclear bombs, whether in the field or in the experimental phase, and the extent of their zones of destruction, in the world's nuclear-armed armies. It is important to know that the extent and intensity of the destruction zone and the radiation plume are influenced by several geographic factors. The first of them is topography. The 15 kiloton atomic bomb that hit Hiroshima in 1945 resulted in 90,000 civilian deaths immediately and a further 160,000 later radiation contamination. On the other hand, the atomic bomb dropped on Nagasaki, the "*Fat Man*", was much more powerful, 20 kilotonnes, equivalent to 20,000 tonnes of TNT. Yet, the immediate civilian death toll was "only" 60,000, with a further 80,000 deaths from radiation and burns later. The difference was because in the case of Nagasaki the nuclear explosion was cushioned by the mountain ranges, acting as a quasi-protective wall, a natural bunker, and despite the higher explosive yield, caused fewer casualties ("only" 140,000). Hiroshima, on the other hand, was in the middle of a relief depression, a large basin, so the destructive force was total; despite the smaller bomb, it killed 250,000. It should also be added, also from a geographical point of view, that both cities were extremely densely populated before the atomic attack in 1945. The population density of Hiroshima was between 4,600 and 14,000 per square kilometre; that of Nagasaki was between 5,700 and 19,000 (French, 2018).

Another geographic factor is the direction and strength of the wind at the time of the explosion, which determines the distance and concentration of the post-explosion fallout. Humidity also affects the extent of the contaminated area. For example, if it is raining at the time of the explosion, or immediately afterwards, in the wind direction, the effect of the radioactive plume is shortened, and the dust particles contaminated with radioactive material are washed out of the plume of the explosion sooner.

Alex Wellerstein (2022) has created an interesting civic application called *Nukemap*, an interactive map. On it you can select the type of nuclear weapon and place it on a world map with the cursor. It can be set to simulate an airborne or a ground-based detonation either. The radioactive fallout plume can be positioned by placing a flag indicating the wind direction. The detonator button can be pressed to simulate the extent of the blast destruction zones, the radioactive fallout plume and, as the map contains population density data, the estimated number of fatalities and injuries. Thanks to the zoom function, it is possible to pinpoint exactly which neighbourhoods and settlements would be affected by the devastating effects. This ingenious interactive map application should be enough of a deterrent to dissuade politicians and military

leaders from even the risk of nuclear war. The weakness of the application, as Wellerstein himself acknowledges, due to the lack of available data at his disposal, is the forced negation of the effects of topography and humidity (rain). The wind direction can be adjusted in the *Nukemap* application, but what is equally important is that the wind strength is not, just as in the case of precipitation, the intensity of the precipitation is important for the rapid washout of radiative material. The topography, the presence of ridges, hills, and valleys, even in the inner zones of destruction, can significantly differentiate the impact of the destruction – as was unfortunately demonstrated in practice in the case of Hiroshima and Nagasaki. So, the *Nukemap* data are clearly not accurate, they are of approximate order of magnitude – they are suitable for model-like illustration.

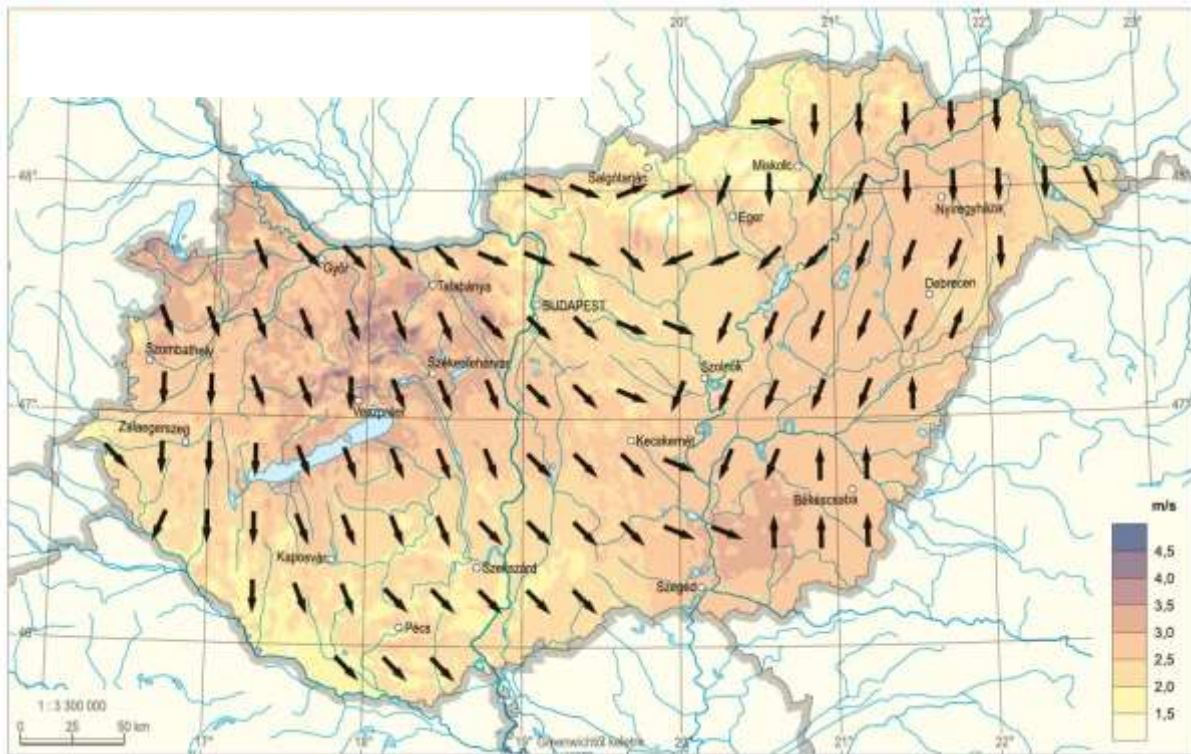


Figure 7. The annual wind direction-frequency map of Hungary⁸ showing the dominating wind directions and wind strengths (from 1 to over 4,5 m/sec)

Source: National Atlas of Hungary (MTA 2018)

The wind direction frequency map of Hungary (Figure 7) helps to set the direction of the radioactive deposition plume in the *Nukemap* application. Where there are darker (purple) tones, i.e. stronger winds, the plume is longer than the model, and where there are lighter (yellow) tones, it is shorter because the prevailing winds are weaker. Of course, the prediction of such a model is of no use if the prevailing wind at the time of the nuclear attack is not, for example, north-westerly, but, say, south-easterly, because the plume will then be spreading in the opposite direction – even over several hundred kilometres.

⁸ Note: the cost-effectiveness of wind power requires a minimum of 12 m/sec constant wind speed; the average in Hungary is nowhere above 5 m/sec – so much for the replacement of nuclear power with wind power (XForest, 2020).

The other cardinal geographical factor is topography (Figure 8). Hungary is in a fortunate position in the middle of the Carpathian Basin. In the event of a nuclear strike east of Hungary, the Transdanubian and North Central Mountains would provide some protection depending on the wind direction and strength. In the event of a nuclear attack on Slovakia and/or Transylvania in Romania, the mountain-valley terrain would limit the extent of the destructive impact compared to the impact in the model for a completely flat plain.

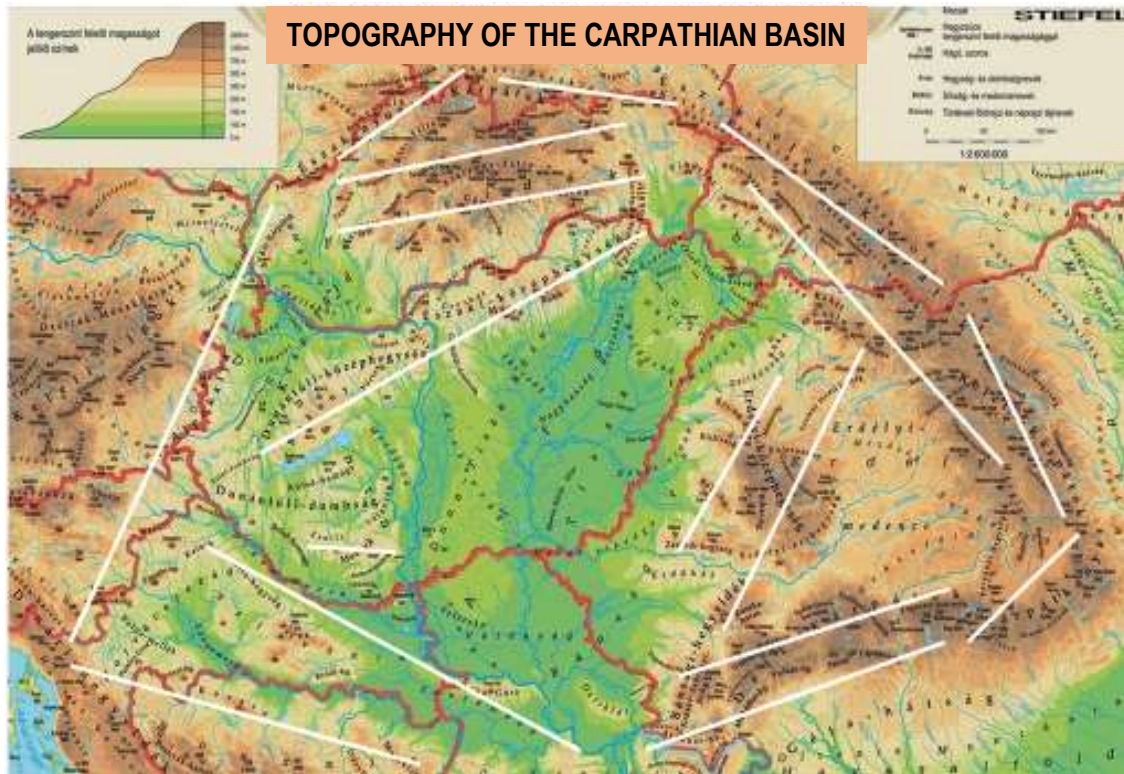


Figure 8. Topographic map of the Carpathian Basin, where the white lines can provide a natural barrier to wind-borne radioactive fallout

Source: <https://mindentudasboltja.hu/Magyarorszag-topography-karpat-basin-topography-konyvoklo>

What does the future hold? Reflected in history

"Those who forget the past are condemned to repeat it" as the saying goes by George Santayana⁹. If we look at the peaceful and destructive war periods in the history of Hungary from the foundation of the state to the present day, we see that with one exception – which lasted almost 200 years – the wars that destroyed the country lasted "only" two or three years.

Between **1000-1240**, during the first two and a half centuries of the reign of the Árpád House kings, who began with the founding king Saint Stephen, the country was not devastated by warfare, apart from occasional German or Byzantine military raids.

However, the Mongol invasion between **1241-1242**, known as the Tatar Invasion, was so genocidal that its impact has been preserved in social memory for no less than 40 generations – to this day.

⁹ Spanish - American writer, philosopher (1863-1952)

The longest period of peace in Hungarian history, lasting for some 270 years, occurred between **1243 and 1513**: until 1301 under the kings of the House of Árpád, and then for almost a century under the kings of the House of the Anjou and the Jagellos. Hungarian Kingdom then became a major European power during the reign of Louis the Great. This was crowned by the reign of Matthias Hunyadi, which marked the heyday of Hungary to this day.

Between **1515 and 1711**, for almost two centuries, the country was ravaged by constant warfare and fighting. The 'ruin' of Hungary came with the Dózsa Peasants' War and the subsequent defeat of Mohács in 1526 by the Ottoman Turks and the loss of Buda Castle in 1541. Until the 1600s, it was mainly wars against the Turks that devastated the country as it lost its independence. In the following century, often in alliance with the Turks, the anti-Austrian and anti-German campaigns of the Transylvanian princes and their wars of independence against the Austrian Habsburg Monarchy, as well as their defeats, resulted in a constant state of war. The military campaigns of István Bocskai, Gábor Bethlen, György Rákóczi, Imre Thököly, and the war of independence led by Ferenc Rákóczi in the early 1700s.

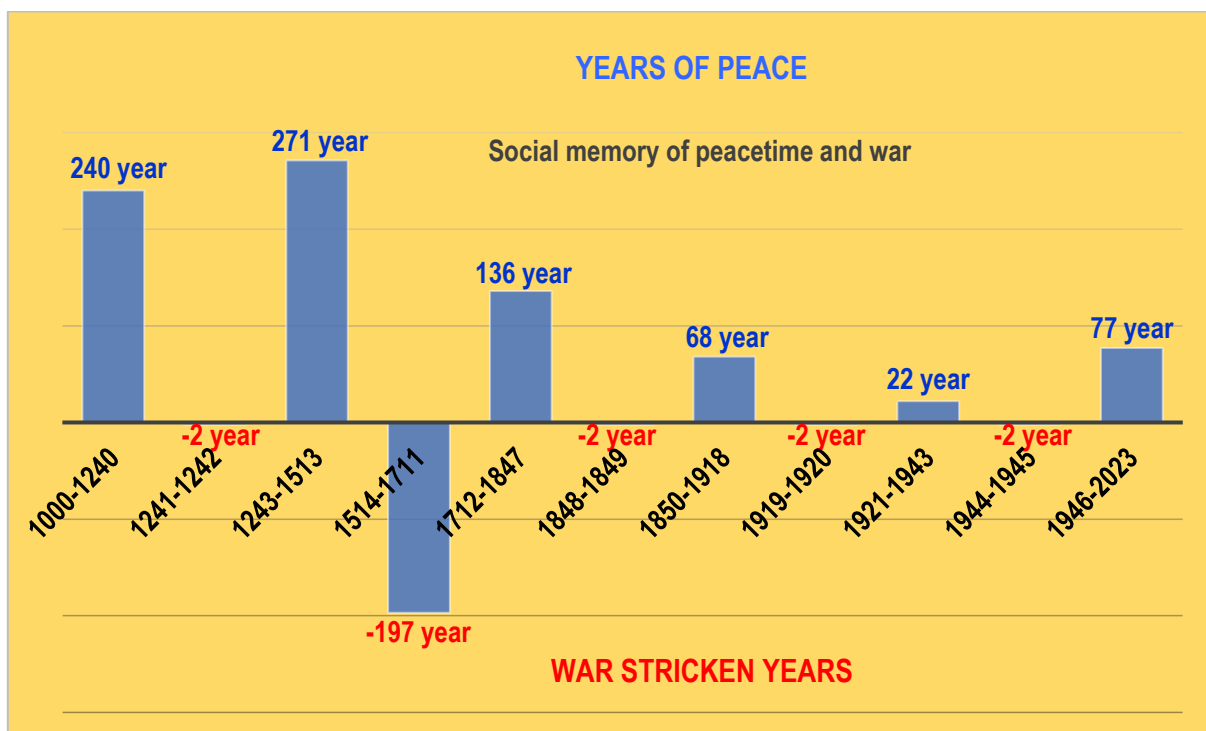


Figure 9. The duration of the peace years (blue numbers) and the war years (red, negative numbers) in Hungary from the founding of the state to 2023

Source: own editing

Between **1712 and 1847**, the continuous wars of the previous two centuries, the 16th and 17th centuries, were followed by a long 136-year peace within the territory of Habsburg Hungary, marked mainly by the so-called "enlightened" Habsburg rulers Maria Theresa and Joseph II.

Between **1848 and 1849**, the War of Independence led by Lajos Kossuth and its defeat brought another war to the country.

Between **1850 and 1918**, an **unprecedented** economic prosperity in Hungarian history was achieved thanks to the Austrian-Hungarian Compromise of 1867, which was the brainchild of Ferenc Deák. Since the First World War, this period has been called the "Happy Peacetime". In

the period 1867-1914, Hungary was a rapidly developing and capitalising country, economically and socially, under the reign of the Habsburg 'Franz Josef', although not politically independent, but again it was in its golden years for the first time since King Matthias.

Between **1919 and 1920**, the Hungarian catastrophe that ended the First World War occurred: the Trianon Treaty of 1920. The Hungarian Soviet Republic of 1919 and its defeat meant national chaos, economic and social collapse and fighting.

Between **1921 and 1943**, the so-called Horthy era brought political and economic consolidation, as well as Hungarian national independence, which had been lost for a long time, just 379 years before. Moreover, part of the territories lost under Trianon was also recovered: the southern part of the Hungarian Uplands (today's Slovakia), the whole of Transcarpathia (today in Ukraine), northern Transylvania (today in Romania) and in the south Vojvodina (today the northern part of Serbia).

Between **1944-1945**, World War II reached and swept through the country in the form of the Soviet-Russian Red Army. This is the war that the half a million Veteran generation in Hungary today can still have direct memories of.

Between **1946 and 2023**, there is once again a long, 77-year peace, interrupted only for a few days by the fighting of the 1956 revolution in Budapest and the larger cities. The country lost its political independence again: for some 45 years under the Soviet-led communist dictatorship. This took place in two parts: from 1948, in the form of the Rákosi era, and after 1956, in the form of the consolidated, so-called "Goulash Communist" Kádár era. In 1990, thanks to Gorbachev, the then Soviet party leader, there was a regime change without armed struggle and bloodshed. Since then, Hungary has been independent again for 32 years.

A war, a nuclear war, would find the peoples of Europe totally unprepared. The 4 - 4.5 generations of the last 45 plus 32 years of peace, including leading politicians and parliamentarians of the European Union, know the horrors of war in Hungary only by reputation, or worse, mostly from movies and video games. This is the case all over Europe – except in the Caucasus countries, especially Georgia, and now Ukraine. Perhaps this explains why European Union policy, in conjunction with American policy, is on a path, with arms supplies to Ukraine, that will inevitably lead to a state of war with the Russians, with the inevitable result of military assistance from the US. The direct consequence of this is that supply routes will have to be cut off from the Russian point of view. Since the supply routes run through a north-south corridor of NATO member states from Finland to Bulgaria, an attack on their military, transport and energy infrastructure is also inevitable. Since Russia cannot take on the entire NATO force, it is also inevitable that it will have to deploy a weapon, the nuclear weapon, in which Russia alone can take on the nuclear arsenal of the United States of America. The deployment of nuclear weapons will also inevitably create a "Death Zone" (see Figure 2) as a physically inviable area separating the two world systems, a buffer zone between the western (American) and eastern (Russian/Chinese) halves of Europe.

The big question is whether Hungary – which is unfortunately part of this "Death Zone" – can stay out of the European East-West nuclear confrontation towards which the US, the European Union and Russia are marching inexorably today, in 2024. If the Hungarian government can prevent:

- Hungary from sending weapons and soldiers to the Ukrainian theatre of war,
- Western arms shipments and soldiers from passing through Hungary,

the country can avoid direct nuclear strikes for the time being. In that case, we would have to expect "only" economic collapse and "only" the radiation risk from nuclear strikes on neighbouring countries, namely on Slovakia and Romania.

If Hungary is put under such strong American and Western European pressure that, as a member of the NATO, it is forced to participate in the nuclear war, it will lead to the direct or indirect destruction of the country's population – whether they sympathize with the government or not – because a "Death Zone" will be created. The primary targets of nuclear strikes are the airports in Hungary that are used or can be used for military purposes (mainly at Pápa and Kecskemét), the railway hubs, mainly the southern railway bridge in Budapest, Hegyeshalom, Záhony, Gyékényes and Kelebia, and the energy centres of Százhalombatta and Paks.



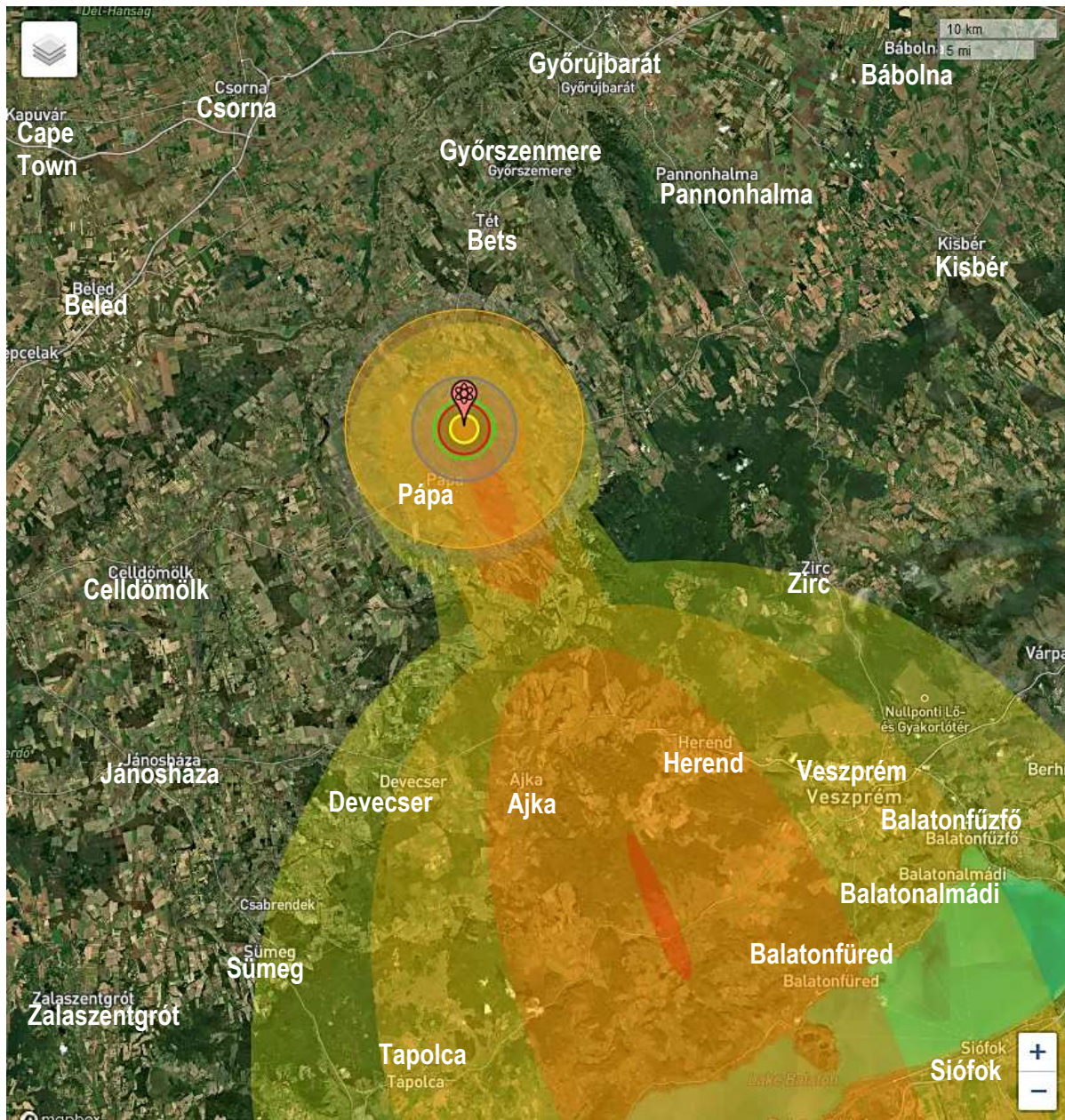
*Figure 10. Nukemap application:
a Topol SS-25, a regular Russian army missile, striking the military airfield at Pápa;
with modelling the effects of an 800 kt TNT nuclear bomb*

Source: Wellerstein, 2022

If, for example, the Pápa military airbase was to be attacked by a Topol nuclear weapon (see Figure 10.) that has 54 times more destructive than the bomb that was used at Hiroshima, in principle, if the prevailing north-north-west wind were to blow, its radioactive plume could contaminate the entire Balaton Region, the entire southern Danube region between Kaposvár and Szekszárd, Osijek in Croatia and even the north-eastern tip of Bosnia. However, the Bakony hill ranges would strongly filter this radiation plume, so the indirect effect of the explosion would probably be less than that.

The explosion would occur north-east of Pápa, in a radius of about 20 km, causing the immediate deaths of 9420 people and bringing the number of injured to 16 810. In addition to Pápa, the zone of dispersion of the radiation would reach the Devecser - Ajka - Herend - Zirc semi-circle in the Bakony and the Tapolca - Balatonfüred - Veszprém line, but the contamination of Lake Balaton would be less than the model shows in Figure 11. Of course, neither Lake Balaton nor Lake Bakony would be affected at all by the detonation jet stream in the case of southerly, easterly or westerly winds. In the case of westerly winds, however, the capital would be reached in any case, despite the filtering effect of the Vértes, Gerecse and Buda Hills.

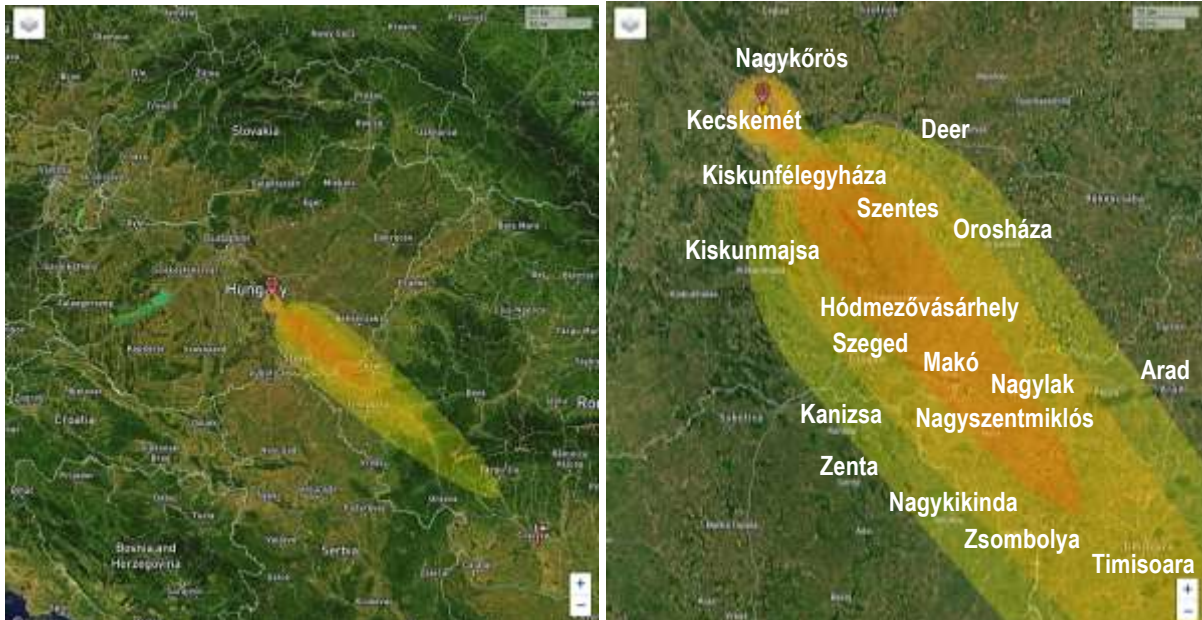
A strike on Pápa, in the event of southerly winds, would pose a serious threat in the form of radioactive fallout to both the Austrian and Slovakian capitals – Vienna and Bratislava.



*Figure 11. Nukemap application:
a Topol SS-25, a regular Russian army missile, striking the Pápa military airbase,
with modelling the effects of a 800 kt TNT nuclear bomb*

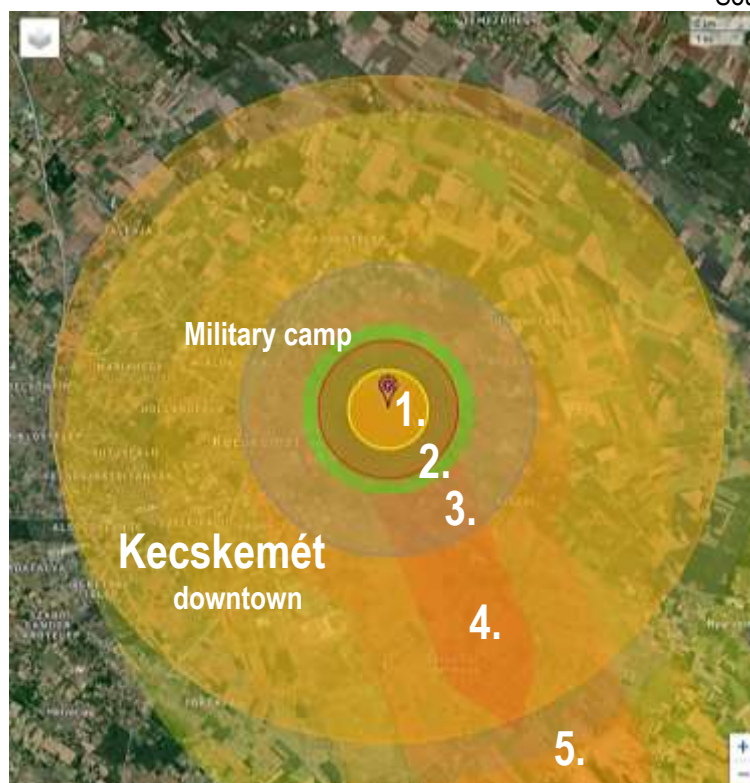
Source: Wellerstein, 2022

Another key strategic target could be the military airport of Kecskemét, also to the north-east of Kecskemét (Figures 12-14). Given the prevailing north-west wind direction here, the radioactive jet will reach Kiskunfélegyháza, Szentes, Hódmezővásárhely, Szeged, Makó, the western edge of Arad and Temesvár in Romania, as there is nothing in its way. However, south-east of that, the extent shown in the model is unlikely to reach the Southern Carpathians.



Figures 12-13-14. Nukemap application: modelling the impact of a Topol SS-25 800 kt TNT nuclear bomb of the Russian army on the Kecskemét military airport. Bottom: the five destruction zones in Kecskemét and its immediate vicinity, from the inside out: 1. fireball, 2. radiation, 3. airblast, 4. thermal radiation 5. radioactive fallout.¹⁰

Source: Wellerstein, 2022



¹⁰ 1: fireball, 2: lethal radiation, 3: airburst, 4: thermal radiation, 5: radioactive dust deposition

Such an attack, given the proximity of Kecskemét, would result in a much higher death toll: 25,010 people, while the number of injured is estimated at 37,530.

The greatest possible disaster that could befall Hungary is if the NATO supply lines are to be destroyed in a crippling blow to the country's administration and governance. In this case, the logistical target could be the southern connecting railway bridge (Figure 15).

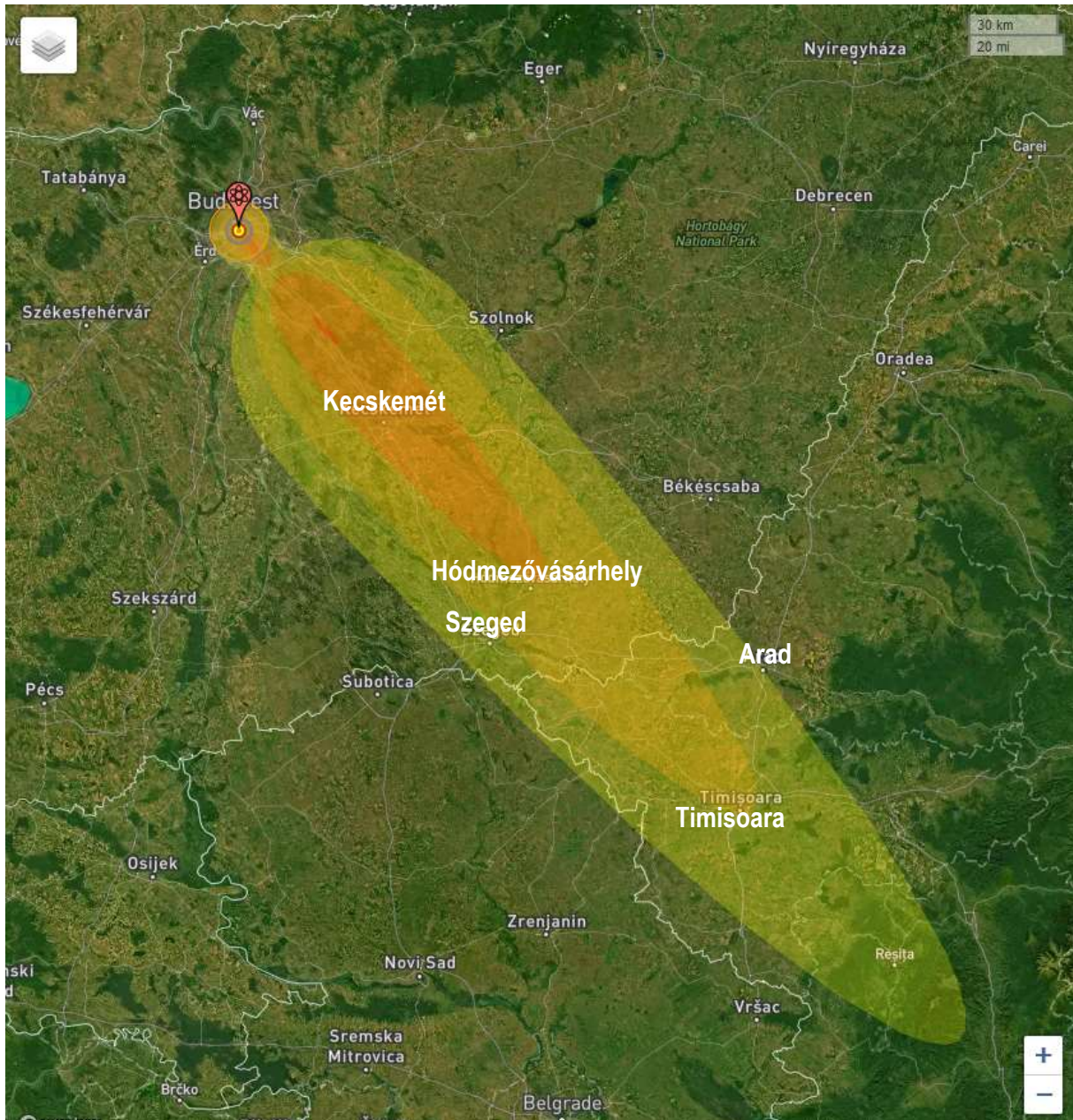


Figure 15. Nukemap application: a strike on the southern railway bridge linking Budapest with the capital city by the Topol SS-25 800 kt TNT nuclear bomb, a regular Russian army weapon with modelling the impact of the impact of a Topol SS-25 800 kt TNT nuclear bomb

Source: Wellerstein, 2022

The radioactive fallout plume from a nuclear strike on the capital, with the prevailing north-westerly winds, would freely reach the Southern Carpathians in the Kecskemét - Hódmezővásárhely - Temesvár band. In the case of westerly and northerly winds, the radiation plume would also freely reach Eger, Nyíregyháza, Debrecen, Szolnok, Oradea, Békéscsaba, Arad, Szeged, Subotica, Novi Sad, Osijek, Szekszárd, Dunaújváros and Érd. Salgótarján, Miskolc, Tatabánya, Győr, Veszprém, Szombathely, Sopron, Zalaegerszeg, Kaposvár and Pécs would be protected from radiation by the mountain and hill areas. Székesfehérvár would be affected, but even the small Velence Hills would mitigate the risk.

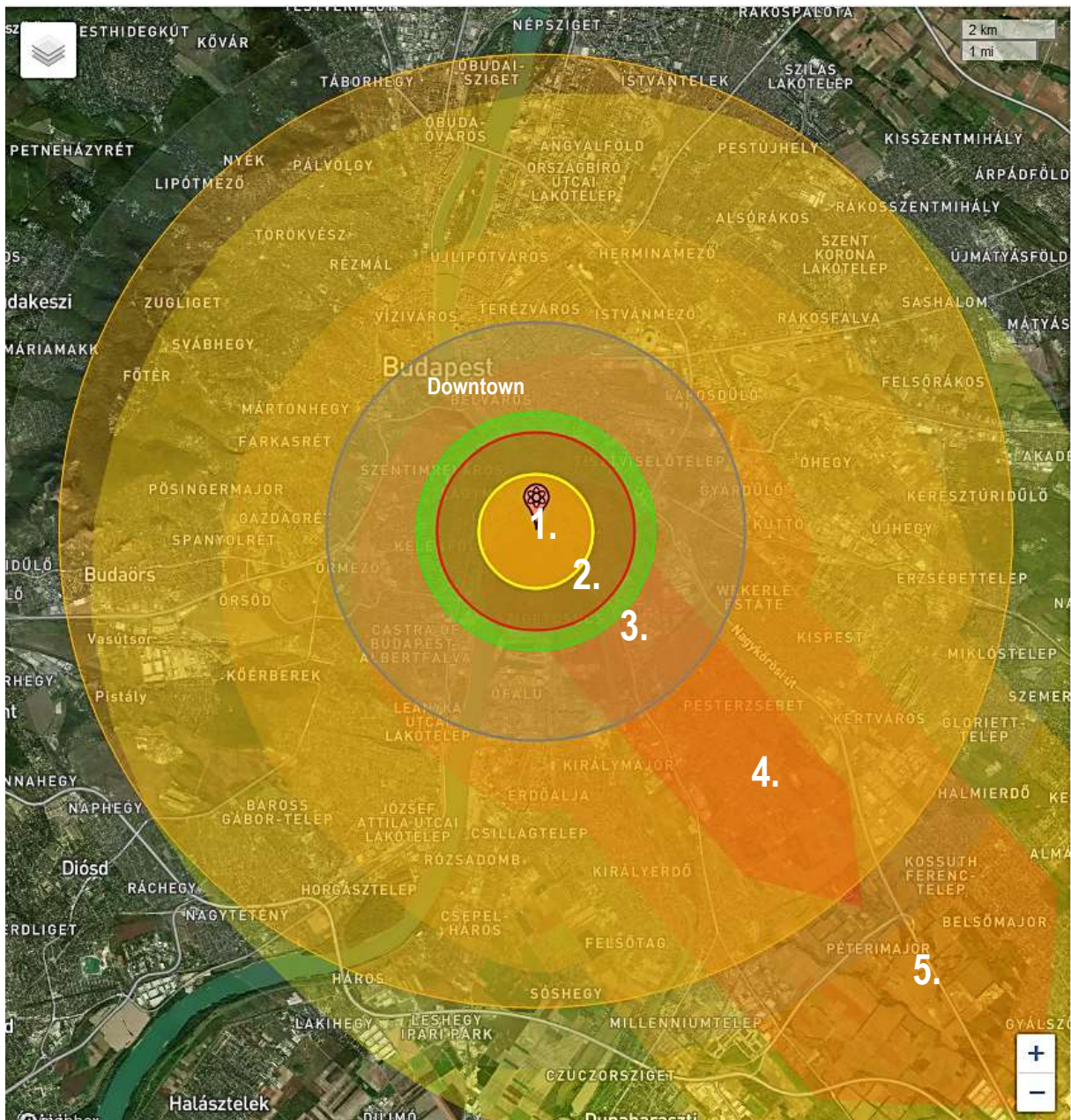


Figure 16. Nukemap application: a Russian Topol SS-25 nuclear bomb strike on the Budapest southern railway bridge industrial and service area, linking eastern and western Hungary, with modelling the impact of a 800 kt TNT explosion

Source: Wellerstein, 2022

In the history of total wars, it is possible that attacks are not just against military targets, but specifically against the civilian population as a deterrent. The two previous nuclear attacks on Hiroshima and Nagasaki were such; there was hardly any military presence in the two cities. And so was the carpet bombing of Dresden in February 1945, where the number of victims has still not been established, but a document unearthed in 2009 lists 200,000 Dresden inhabitants by name who disappeared between 13th and 15th February 1945. In the event of total war, massacres specifically targeting civilians have therefore occurred even in the 20th century.

The devastation of Budapest shown in Figure 16 would affect the huge semicircle of Nagytétény, Pesterzsébet, Kispest, Kőbánya, Cinkota, Zugló, Angyalföld, mainly on the Pest side, including the Belváros, Lipótváros, the government district, József- and Ferencváros, and the whole area of Csepel. On the Buda side, Sas-Hegy, Gellérthegy, Várhegy and Rózsadomb would act as a protective wall to mitigate the damage to the Buda neighbourhoods and human life. Thus, within the Budaörs, Zugliget, Pesthidegkút semicircle, the Buda side would remain more or less protected, contrary to the model's prediction!



Figure 17. Effects of the topography deflecting nuclear fallout (stars on the map) and radiation contamination (arrows on the map) "travelling" with the prevailing wind direction in Eastern Central Europe – if the inner parts of the Carpathian Basin are not affected by nuclear fallout.

Source: own editing based on https://www.nkp.hu/tankonyv/folddrawing_8/lecke_01_005

However, the immediate death toll in the event of an impact on the Southern Railway Link Bridge at the Közvágóhíd area would be 221,210 fatalities and almost half a million, 475,830 injured. Lágymányos, Kelenföld and Középső-Ferencváros would be razed to the ground. But buildings would collapse from Belvárost to Pesterzsébet; from Albertfalva to Erzsébetváros.

And such destruction would occur "only" with an 800-kiloton bomb, even though the Russian and the US armies have 20,000 (!) kiloton warhead missiles, too.

Contrary to this apocalyptic picture, the "good news" is that if the Hungarian government manages to stay out of the NATO military deliveries despite the NATO membership, we would "only" have to defend against the prevailing northerly, north-westerly winds from Poland and Slovakia, which bring less significant radiation pollution, and the much less frequent easterly winds from Romania, which bring radiation-contaminated dust.

Hungary has a favourable geographical position in Europe: it is the most geographically protected place. The Carpathian Basin is "protected" by the Alps to the west, the Carpathians to the north and east, and the Dinaric Mountains to the south (see Figure 8). The mountain ranges can provide more or less protection not only from weather extremes but also from wind-blown dust and pollutants. Thus, Hungary is somewhat protected even though it is surrounded by nuclear accidents in Poland, Slovakia, Romania and Bulgaria. Provided, of course, that Hungary can stay out of the strikes (see Figure 17).

After the 1986 nuclear power plant explosion in Chernobyl, Ukraine, only 0.02% of the hazardous particles released into the Ukrainian atmosphere reached Hungary, thanks to the Carpathian Mountains, which deflected the cyclones drifting north-west – see again Figures 2a and 2b. At that time, however, the prevailing air flow in Eastern Central Europe was not westerly or north-westerly as generally, but south-easterly.

War psychosis

Obviously, before the outbreak of both World Wars I and II in Europe, there were many sober voices, many warnings to avoid the war. On 2nd August 1914, a crowd of 10,000 people demonstrated for peace in London's Trafalgar Square to avoid war¹¹ two days before Britain declared war on Germany. From 1st -6th September 1939, a Gallup poll¹² found that 90% of Americans said the US should not intervene in the war against the Germans on the side of the British, French and Poles, and only 9% supported war. However, in France, Japan, and England, too, the overwhelming majority of public opinion was anti-war even in early 1940! Those generations remembered World War I. very well. But politics, political chess games and provocations inevitably dragged countries into war. Examples include the American intelligence neglect of the huge Japanese fleet deployed against Pearl Harbor, or the 1941, or the Soviet bombing of Kassa, Hungary in 1941, a Hungarian example, which led to Hungary declaring war on the Soviet Russia.

Obviously, in 1914 there were sober voices in the Hungarian social and political life who warned against the Kingdom of Hungary's involvement in the attack on Serbia after the assassination of the crown prince in Sarajevo, Bosnia which was a legitimate claim, and the *casus belli* on side of the Austro-Hungarian Monarchy.¹³ The fact that the consequence of this would

¹¹ Source : <https://player.bfi.org.uk/free/film/watch-stop-the-war-demonstration-in-traffic-square-1914-online>

¹² Source : https://en.wikipedia.org/wiki/Opposition_to_World_War_II

¹³ "Stop, stop dog Serbia! You'll never have Bosnia, because the Hungarian will not give in until their blood has boiled, no matter how much they suffer. No matter how the cannon thunders, they will not fear Serbia, they will storm the rampart, they will destroy the wild crab, until there is no herald left." The author's grandfather, András Tózsá, bravely fought on the Serbian, Russian and Italian fronts, and was awarded the Order of Golden Gallantry, and even took part in the Hungarian Soviet Republic's defensive battles in 1919. In 1914, when he enlisted in the

be the loss and crippling of the thousand-year-old Hungarian land under the Trianon Treaty of 1920 may not have occurred to the political decision-makers.

Obviously, in 1941 there were few politicians in Hungary like Count Pál Teleki, who preferred to flee to suicide when it became clear to him that Governor Miklós Horthy was unable or unwilling to resist German pressure to enter the war in a German alliance. The majority accepted the attack on the Soviet Russia – because it seemed justified and the political decision-makers believed that Hungary owed it to the Italians and the Germans, to Mussolini and Hitler, for the return of parts of the historic Hungary. That the Hungarian army would suffer a disaster in eastern Ukraine in the Don River Bend; that the Hungarians would lose the parts of the country they had regained; that Hungary would be under a communist dictatorship for four and a half decades; or that the Germans could even be defeated – did not seem a reality in 1941.

In early March 1945, my father was still taking part in the last major German counterattack of the Hungarian troops south of Lake Balaton towards Simontornya. He was 24 years old at the time, and he watched the German soldiers in astonishment; the 15–16-year-old boys on their motorbikes, their uniforms and helmets flapping, but with burning eyes and machine guns cocked, they rode into the Soviet tanks. The parallel is inescapable, as I saw on a TV channel in March 2023: a young Ukrainian man with both legs blown off by a mine was learning to walk with two steel-tube prosthetic legs in the US: "I can't wait to go back to fight and kill orcs, glory to Ukraine", he said.¹⁴ From the older generation, the story of a 55-year-old man who also returned to the front with two prosthetic legs also hit the world press.¹⁵ International public opinion, when it sees and hears about truly honourable, heroic acts in defence of the homeland in the media, understandably demonises the aggressor and heroizes the patriotic side. The support of the US and Western Europe for Ukraine is justified, as they their homeland have been attacked and they are heroically defending their homeland. The fact that this will turn Northern Europe and the eastern half of Central Europe from Finland to Bulgaria (see Figure 2) into a buffer zone, an inhospitable nuclear desert, is not even on the minds of the political decision-makers.

The bad news is that by March 2024, the whole of Western Europe has been in a state of war fever for two years. The European Union politicians are so, because of their commitment to the US, and the young generations are in the state of war fever, because of their grandparents' and great-grandparents' long-forgotten war experiences. They say that the war will end when the Russians withdraw from Eastern Ukraine they have occupied. Considering the 8 million Russian ethnic inhabitants in Eastern Ukraine and the Ukrainian nationalist policy after the 2014 Maidan Square "revolution" in Kiev, a Russian fulfilment of this demand is as realistic as the Hungarian government asking the Romanians to withdraw from occupied Transylvania. (And an analogy for the Hungarian Highlands, that is today's Slovakia, the former Hungarian Kingdom for one thousand years, would be absurd.) The Russian minority citizens in Donetsk and Luhansk are fighting for their homeland just as much as the Ukrainians. And that war started in 2014 not in 2022. Only that war was ignored by international public opinion, just as the 38

34th Hungarian Infantry Regiment of the Emperor and King, he sang this song (banned in 1946) in a state of war psychosis – along with the whole country.

¹⁴ Sky News (2023.02.22): Ukraine War: Injured soldiers without limbs return to frontline.

<https://www.youtube.com/watch?v=0P79jCfwrV0> Hundreds, thousands of commentators praise this patriot and encourage him to go back to Ukraine - even with artificial legs - to kill /slay/ "orcs" /Russians/.

¹⁵ Daily Beast (28/06/2022) <https://www.thedailybeast.com/the-elite-ukrainian-fighter-battling-vladimir-putins-army-with-no-legs>

people burned alive in Odessa on 2nd May 2014 for being Russian – despite Russia's call to the UN Security Council (Herczeg, 2014, Index 2014).

Unfortunately, the situation in Ukraine in 2024, two years after the Russian invasion and ten years after the outbreak of armed ethnic conflicts in Eastern Ukraine, is one that is clearly pointing towards a world war. Even more so, because, in order to preserve the status of the US, or rather the international capital empire based in the US and the dollar as the world currency without backing, it is vital to prevent the world from being redivided. The only way to neutralise the economic challengers to the US superpower – China and the European Union in particular – is for the EU to weaken permanently, lose Russian energy and raw materials, and fail to fuse with the Chinese, Eurasian "new silk road" economy (Tózsza, 2022). This will be compounded by the Israeli-Palestinian war of October 2023, which risks losing the EU's access to Arab oil after the Russian one, following Iran's intervention, in the Strait of Hormuz or via the Red Sea. Consequently, the EU will become a completely vulnerable Eurasian periphery, a base of operations, for the USA, both in energy and economic terms and, above all, in military terms. In the new bipolar world, China will be on the "evil" side. The Americans will use the economic dwarf, but the military giant, Russia, for this. In the author's view, this will require the EU to lose its nation-state sovereignty, to become a single consumer market enriched with immigrants from Africa and South Asia, and to be economically immersed in the war in Ukraine. What the Russians do and do not do during the war, and whether the eastern half of Central Europe is destroyed in a nuclear war, do not matter much in the scenario of the survival of international capital as a world power concentrated in the USA.

If even a world war can avoid a new multipolar world order (with China, the EU, India, etc.) and at least a bipolar one can be achieved, as in the time of the Soviet Union – this will still help the US to survive as a superpower, and in the future, it will only have to concentrate on crushing China. Like the Soviet Union, during the Cold War. In the author's view, if the price of this is the creation of a nuclear-contaminated, uninhabitable buffer zone between the Sino-Russian world and the US European periphery in the strip from Finland to Bulgaria, then for the Americans, who remain at least 10.000 kilometres away from the nuclear incineration, it is worth it. Just as it was worth it to them to bomb, dismantle and destroy large parts of Europe with the Germans and Russians during both World War I and World War II – just so the Germans could not get their hands on the endless resources of Russian soil – which made the USA the global superpower.

In the knowledge of history and the past, the American expectation according to which Russia will be brought to its knees, disintegrate, and its infinite natural resources will be used by the USA to defeat China, and thus the survival of the American superpower is assured, is not very plausible. In the western half of Europe – because let us not forget that the much larger eastern half of Europe is overwhelmingly Russia – most countries, except for Hungary and the Vatican, have committed themselves and have surrendered to the United States of America in every respect. And our Polish friends, who are the most vociferous and, from their point of view, quite rightly demanding the defeat of the Russians, have the mirage of the EU hegemony that they can take over from the Germans with the help of the Americans.¹⁶ They are right. Just as the Hungarians were right in 1914 and 1941. Unfortunately, nobody remembers that anymore, the BB generation, who heard the war experience "first hand" from their parents, is rapidly dying out. What will happen to the Hungarians?

¹⁶ Stier G. 11.02.2023. Poland's role in the Russian-Ukrainian war.
<https://www.youtube.com/watch?v=MKqoheXVLbM>

Hungarians!

Hungarians! Hungarians! Where are you? – shouts Ábris Kondor (played by István O. Szabó), wandering alone in a nightmarish forest in Germany in Zoltán Fábri's great film *Hungarians*, released in 1978. In the struggle for domination of the world economy, forces now seem inevitably to be clashing in Ukraine – for the time being "only" using Ukrainians – which could very easily turn the Carpathian Basin, together with East-Central Europe, into a "Death zone". If the Hungarian government can maintain its sovereignty as a NATO ally, so that the NATO bases are not established and the NATO supply lines do not pass through the country, then the immediate threat to life – a nuclear strike on the territory of the country – can be avoided. And depending on the prevailing wind direction¹⁷, the Carpathian mountain ranges can also be protect Hungary to some extent from nuclear radiation from Poland. Economic collapse cannot be avoided in this case either, since in the event of a nuclear war neither the western nor the eastern transport routes can be used – neither for energy nor for raw materials. In such a "lucky" case, our country would remain a small island, and by reviving the agriculture and food industries that were once flourishing a few decades ago, famine could be avoided. But, as in the aforementioned Fábri film, we would remain alone in all respects, while "death zones" would be created to north and south of us alike.

It should be mentioned that in the *Nukemap* interactive application, I set the impact assessment with the 800 kiloton Topol warhead, whereas today both the US and Russian arsenals have warheads equivalent to 20 megatons of TNT, which is equivalent to no less than 20 million tons of TNT. In other words, instead of 800, I could have calculated 20,000 kilotonnes in the application, which is 25 times greater, meaning that a single bomb could destroy almost the entire Danube region. And it does not stop there. Russia's most powerful experimental nuclear bomb, the "Tsar", is 100 megatons, which is 100 million tonnes. One of these – a single warhead – is 100 times more powerful than Topol; and enough to destroy the entire Carpathian Basin.



Figure 18. Hungarians! Where are you!
(Zoltán Fábri: *Hungarians* 1978. based on the novel by József Balázs)

Source : <https://filmarchiv.hu/hu/alapfilmek/>

¹⁷ A nuclear strike in Romania, if not directly affecting Transylvania, would bring less contaminated dust to Hungary, thanks to the topography and the less frequent easterly winds.

In Zoltán Fábri's film *Hungarians*, a group of Hungarian peasants are hired to work in Germany. They are basically well-intentioned people and consider themselves independent of the "Germans' war." When they return home, however, they are immediately called up for military service in the storm of World War II, which also reaches Hungary, and from which their return and survival is in doubt. In my father's recollection, when the remnants of their division in the Balaton Highlands retreated with horse-drawn carts towards the German Reich, they were joined by many civilians – mostly old men, young women and bourgeois girls – who fled westwards to escape the disreputable, violent soldiers of the Soviet-Russian Red Army, which was said to plunder and rape women. At the time, the theme song of János Vaszary's famous 1944 film *The World Lasting One Day*, starring Antal Páger and Lili Muráti, the copy of which has unfortunately been lost to posterity, was popular among young people, and the young soldiers. During night rest stops, the gramophones that civilians brought with them would play this record as the guns thundered behind them and the night sky flashed red.

*"Our world lasts only one day, only one kiss is our life,
Who knows what awaits us, who knows what we will wake up to tomorrow."*

According to my father, the civilians fleeing did not really know where they were running to or why. For many of them, their original place of residence was in the Highlands, Transylvania, Bácska-Bánát, then occupied by Russians, Romanians, or Serb guerrillas. They were looking into the distance with no prospects for the future. Only painters could recreate this frenzied expression of human despair, my father wrote. Nor could they be consoled. Most of them were good-willed, innocent people, swept away by the storm like light, falling leaves in a cold wind. In the distance, like approaching, steady thunder, the guns rumbled, the trees flashed purple in the night and the gramophone played softly, *"Our world lasts only one day."*



Figure 19. The World lasting One Day (Lili Muráti and Antal Páger)

The legendary melodrama of the World War II era from 1944. Film by János Vaszary. (Lost.)

Source : <https://nfi.hu/filmarchivum/kutatasoktatas/>

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*Hungary, the night view of the Great Hungarian Plain
from the slopes of the Mátra Mountains, on 1st November 1944;
the night of the Day of the Dead. In November 1944 heavy fighting took place
in the Eger - Heves - Gyöngyös - Hatvan area
(Fantasy picture)*

Source: based on <https://www.moddb.com/mods/no-hope/>