Civilian and Private Actors' Support of Ukrainian National Resistance

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Summary
Civilian and private actors play an important role in Ukrainian national resistance efforts and are likely to be a feature of future conflicts. Studying their role in national resistance is therefore relevant. By identifying the different actors who support Ukrainian military forces, this study has found that resistance contributions are emerging from a broad part of civil society. Pre-existing networks are important. However, initiatives may be effective also when taking place spontaneous and undirected. A comprehensive whole of society approach will need to consider the informal and undirected channels through which support of national resistance may take place. This study seeks to strengthen the general knowledge of non-governmental support of national resistance. The findings are worth considering as part of Norwegian long-term defence planning.

Contents

1 Introduction

The war in Ukraine illustrates how civilians and private actors play a role in national resistance efforts by complementing national military forces. There has been a shift towards decreasing government control of military power, where contributions to military forces are sourced from broader parts of the private sector and civil society. Civilian and private initiatives are likely to be a feature of future conflicts, and studying their role in national resistance is therefore relevant. It is important to take advantage of potential synergies between the military, civil society and the private sector, and consider these actors when forming long-term plans for the Norwegian defence sector. An overview of the broad range of actors engaging in activities that contribute to national resistance capabilities, can give insight into how to plan for such activities in a Norwegian context. This can improve their complementarity to the national military forces in order to produce the strongest synergies between the military, civil society and the private sector.

This study applies a broad understanding of civilian and private support to resistance efforts in Ukraine, which allows for a better overview of the different nuances of involvement. Small-scale initiatives of individuals, such as donation of drones and knitting masked nets, are included to highlight the different nodes of resistance networks and the value such activities can have as part of a network. Furthermore, removing and altering road signs or sending an off-the-shelf drone to Ukraine, may not be the efforts that the tip the balance and secure victory to Ukraine. Yet, they are worth noting because they illustrate the will to engage in coordinated action and come up with innovative, low-threshold contributions to support national resistance.

1.1 Background

In 2014, the Ukrainian Armed Forces (UAF) was in a weak state after years of neglect and unprepared for the Russian annexation of Crimea and intervention in Donbas. According to the Ukrainian Minister of Defence at the time, Ihor Teniuk, only 6,000 out of the 134,000 troops of the military were ready for combat.[1] With an unstructured, underequipped and demoralised army, the then Deputy Minister of the Interior, Anton Heraschenko, expressed how "the state had no choice but to rely on private activists".[2] As the unpreparedness of the UAF became clear, civilian volunteers sought to provide support normally expected from the government. Volunteer battalions fought alongside Ukrainian troops, and Ukrainian civilians organised supply of equipment, ranging from ammunition to clothing and food, in addition to countering Russian propaganda. Whilst Ukrainians were known to have little confidence in authorities, their trust in civilian support was high. A survey on trust in Ukrainian institutions by Kyiv International Institute of Sociology, from 2016, showed that 53.5% of respondents trusted volunteer initiatives, making it one of the three most trusted institutions in Ukraine, together

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[1] Bukkvoll, 'Fighting on Behalf of the State—the Issue of pro-Government Militia Autonomy in the Donbas War'.
[2] Hladka et al., 'Dobrobaty — Istoriya Podvyhu Batalioniv Shcho Vriatuvaly Kraiynu / The Volunteer Battalions – the Victorious History of the Battalions That Saved the Country'.

with the church and the military. The trust in the national government and the President was in contrast low.[3]

Since 2014, there has been a significant reorganisation and modernisation of the UAF. This organisational transformation to strengthen the overall defence capabilities entailed structural reforms in command and control, training and infrastructural improvements. Efforts were made to bring the armed forces up to NATO standards, and Ukraine received millions of dollars' worth of military aid from Western countries.[45] Additionally, the volunteer battalions that emerged in response to the Russian intervention in 2014 were gradually integrated into the official structures of the military, and a large civilian reserve component was established.[6] Yet, when President Putin launched the full-scale invasion of Ukraine on the 24 February 2022, there was no consensus of whether the Ukrainian forces would be able to withstand the Russian forces for long. Chief of the British Defence Intelligence, General Hockenhull, told BBC in August 2022 that the "strength of Western unity and Ukrainian resistance have surpassed expectations".[7] The invasion of a sovereign country by a foreign power galvanised support by national governments in the West, who committed to sending military in-kind aid.

Support to Ukraine has however not only come from national governments, but also from a broad range of actors from civil society and the private sector. The years between 2014 and 2022 saw increased civilian mobilisation in Ukraine. Despite the signing of the Minsk I and II ceasefires, fighting in eastern Ukraine never ended completely.[8] The persistence of a possible new Russian intervention meant that many of the initiatives and organisations which emerged to support Ukrainian resistance in 2014, continued their activities. These pre-existing networks and groups contributed to an efficient mobilisation of volunteers in February 2022.[9] A strong Ukrainian culture of bottom-up efforts has manifested itself over the past six months in civilian and private initiatives at various scales. However, Ukrainians are not the only supporters of the defence forces, also private and civilian actors across the world have mobilised. This study looks further at all these actors currently supporting national resistance efforts in Ukraine.

The following section presents the historical context of civilian and private actor engagement and the intended contribution of this study. Section two describes the processes of conceptualisation and data collection. As a number of civilian initiatives have been integrated and absorbed into the official military defence structure, the third section presents this integration of volunteer battalions and the organisation of the territorial and volunteer defence units, and international foreign legions. This section attempts to illustrate how bottom-up initiatives have been absorbed into the structures of the Ukrainian army in the past. Section four

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[3] Oleinik, 'Volunteers in Ukraine', 365.

[4] The US has been a leading provider of security assistance (training, equipment and advisory services) both before and after the full-scale invasion in 2022. As of the 24 August 2022, the US had provided over $15.5 billion in security assistance to Ukraine, according to reports by Congressional Research Service.

[5] Arabia, Bowen, and Welt, 'U.S. Security Assistance to Ukraine'; Collins, 'In 2014, the "decrepit" Ukrainian Army Hit the Refresh Button. Eight Years Later, It's Paying Off'.

[6] Mevlutoglu, 'Ukraine's Military Transformation between 2014 and 2022'.

[7] Beale, 'Ukraine War'.

[8] Sullivan, 'Russia's at War with Ukraine. Here's How We Got Here'.

[9] Stepaniuk, 'Wartime Civilian Mobilization'.

presents the role and activities of the different civilian and private actors identified in this study. Complementing the dataset, which provides more details on each individual actor, this section presents findings and examples within the five overarching categories of the actors' primary role in Ukrainian resistance (Appendix A).[10] The fifth section presents the main findings of this study. Reflecting on the context and generalisability of these findings, this section includes a couple of aspects to remember when planning for the future defence of Norway. The note then concludes in section six by assessing the most important aspects of this study.

2   Methodology

2.1   Conceptualisation

This study looks at the involvement of civilian and private actors in supporting national resistance in Ukraine. Although technological developments, hybrid warfare and globalisation challenge the distinction between civilians and combatants in International Humanitarian Law (IHL), this report does not seek to engage in a conceptual discussion.[11] Civilians are defined as non-governmental actors who are not integrated in the structure of the armed forces. This includes "hacktivist" engagement in the cyber domain by actors such as the IT Army of Ukraine and the operation of weaponised drones by individuals at the frontline. By avoiding a too narrow definition of "civil resistance" and "civil society", the study seeks to illustrate how support from civil society can be anarchic and spontaneous, emerging in response to a crisis.

In the years following 2014, the majority of volunteer battalions such as the Azov battalion, were integrated into the UAF. This means that they per definition are considered combatants. Still, the Azov battalion's shift from a civilian initiative to an official part of the armed forces illustrates potential future pathways of current initiatives. Including these battalions in the research on private and civilian support for Ukraine remains therefore relevant in order to describe the context and development of civilian engagement over the past eight years.

When considering private actors, this study understand these actors as non-governmental actors who do not have a contractual agreement with the government. The latter is important in order to distinguish the private actors of this study from Private Military Companies (PMCs). There is a fine line between establishing a clear-cut definition of private actors and ensuring inclusivity of the various types of non-governmental actors, making sure that relevant actors do not fall in-between categories. Private actors include private companies and non-governmental organisations (NGOs). Whilst Microsoft and Come Back Alive fit into this understanding, it is

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[10] The five categories are: Organisation and coordination of civilian engagement, provision of equipment, provision of tech advice and software services, and debunking disinformation.
[11] Crawford, *Identifying the Enemy*.

less clear how to define the well-established, yet informal group Anonymous Collective. Since the goal of this study is to map the variety of actors complementing and supporting the efforts of the Ukrainian government and Armed Forces, it does not apply a too rigid conceptualisation and thus includes organisations that are more informal.

2.1.1 Categories

As part of this research, the individual actors are categorised according to their primary role in Ukrainian resistance. This refers to their primary activities of support and engagement.[12] Additionally, within the concept of civilian and private, the actors are categorised according to their type of organisation. Besides defining them as private and civilian, they are grouped in ten categories. Such a categorisation is not perfect but strengthens the functionality of the dataset, as it allows for filtering the data based on the categories of interest.[13] Furthermore, by categorising along two different parameters (role and type), it is easier to distinguish between different type of actors who perform the same role. For example, both Revengefor.com and the IT Army of Ukraine organise and/or coordinate resistance efforts, yet the former is a crowdfunding platform created by a NGO, whilst the latter is a hacktivist group.

Developing categories is an iterative process and consequently, no categorisation will be perfect. It should also be noted that the categories attributed to the various actors are not mutually exclusive. Actors may fit into more than one category, both when considering their primary role and type. However, this research does not seek to build a theory or model on actor participation in resistance but rather create an overview of the civilian and private actors who are contributing to Ukrainian resilience. Overall, the findings and observations are considered persistent, independent of how the empirical data is categorised.

2.1.2 Delimitation

This research only considers Ukrainian resistance efforts. Engagement by civilian and private actors in sustaining Russian war efforts have not been included. Furthermore, the focus is exclusively on actors who are providing support to military efforts in Ukraine. Such support is not limited to the provision of military equipment or services, but includes organisation and coordination of resistance efforts, debunking disinformation and provision of non-lethal equipment and software systems. Actors focused on providing humanitarian assistance are not included in the dataset. However, it may be that actors listed also provide humanitarian aid to the frontline in addition to their support of military efforts. A question to consider when conducting the research was how to define participation and support of national resistance. Since this study is an initial step in mapping the private and civilian actors who support the national resistance in Ukraine, it did not include private actors who have terminated their

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[12] Categories of the primary role of in Ukrainian resistance: Direct participation at the frontline, Organisation and coordination of civilian engagement, Provision of equipment (non-lethal, weapons, technology, drones), Provision of access to services, and Debunking disinformation.

[13] Type of actor includes the following categories: Charity/NGO, Civilian volunteer/volunteer group, Crowdfunding platform, Foreign Legion, Hacktivist group, Independent Initiative, Private company, State-owned company, Tech company and Volunteer battalion.

operations in Russia or blocked Russian use of their services. Including these actors would have expanded the scope of the research significantly. Furthermore, the ongoing nature of the war makes it difficult to conclude on the effects of the civilian and private sector participation in the Ukrainian resistance efforts. However, this would be valuable to consider at a later point, when the impact of the first six months become more evident and when more data is collected.

2.2   Data collection

Data was collected from open sources in the period start-June until mid-August 2022. These sources include news articles, intelligence updates from defence ministries, reports from think tanks and social media accounts. The specific sources from which the empirical data is collected are found in the dataset (Appendix A). Due to the nature of the research, i.e. studying the engagement of actors in an ongoing war, it is not possible to make systematic calculations on the representativeness of the data collected. In the process of collecting data, an understanding of engagement in resistance efforts was first established. Second, a list of potentially relevant key words was created to improve the coverage of data identified via search engines. This list was adapted throughout the search process based on the findings.

There was limited academic literature focusing on the topic of civilian and private actor engagement in Ukrainian resistance efforts, which was published at the time of data collection. The Kiel Working Paper is in the process of tracking government-to-government support, but excludes contributions made through private donations and non-governmental organisations (NGOs) because of a lack of systematic data.[14] To improve the validity of the data collected, a comparison was made between the information on actors presented by different news and social media channels. Furthermore, where relevant, information was compared to statements by the British Defence Intelligence, the Institute for Study of War and Bellingcat, who are commonly considered credible information sources.

Since news articles are the primary source of information on non-military actors engaging on the ground, the study is vulnerable to the shifting and temporary attention of the media and public. It can be difficult to assess whether initiatives by civilians and private actors are new or whether it is because they have caught the attention of media. It is also important to note the extensive flow of disinformation from both Russia and Ukraine, which may influence the data collected. Furthermore, because of the intention to include small civilian initiatives in addition to the larger organisations, information was at times only available through "homemade" websites and social media platforms. The constantly evolving situation in Ukraine also influences the data collection. The role and function of actors may for instance change without there being updated or available sources on this. This study is conducted, well aware that it will not be possible to provide a full picture of the situation in Ukraine, yet the empirical data is

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[14] Antezza et al., 'The Ukraine Support Tracker: Which Countries Help Ukraine and How?', 59.

valuable in the sense that it strengthens our general knowledge of who supports the national resistance efforts and how.

3   The Ukrainian Armed Forces

The Ukrainian Armed Forces (UAF) are Ukraine's military forces and the backbone of its national defence. The UAF consists of the Ukrainian Ground Forces, the Ukrainian Air Force, the Ukrainian Navy, the Ukrainian Air Assault Forces and the Special Operations Forces, in addition to the Territorial Defence Forces (TDF) of the Armed Forces of Ukraine, which were created during the reorganisation of the UAF after 2014. This reorganisation culminated in the enforcement of the Law "On the Fundamentals of National Resistance" on the 1 January 2022. The Law outlines the three levels of the Ukrainian national resistance consisting of The UAF, the TDF units and the Volunteer Defence Forces (VDF) of Territorial Communities. Additionally, it defines national resistance as "a set of measures for the widest possible involvement of citizens of Ukraine in ensuring military security, sovereignty and territorial integrity of the country, deterring and repelling aggression".[15] The following chapter examines the evolving role of the volunteer battalions, the territorial and volunteer defence units, and the International Legion of Territorial Defence.

3.1   Volunteer battalions

As part of the reorganisation of the UAF, the Ukrainian government integrated the volunteer battalions into the structures of the Ministry of Internal Affairs (MoIA) and the Ministry of Defence (MoD). In 2014, these volunteer battalions enjoyed large support from civil society and as a result they were often better equipped than regular units. Integrating them into the official military structures was therefore important in order to avoid domestic disorder resulting from tensions between volunteer battalions and government forces. Of the battalions that did not dismantle completely, some became part of the territorial defence battalions of the MoD, whilst others became part of police battalions and National Guard, under the MoIA.[16] Amongst the volunteer battalions integrated were the Azov battalion, the Aidar battalion, the Dnipro-1 battalion and the Kraken unit. Their integration meant that they became subject to rights and obligations, yet the formal organisation and membership structure of the battalions often remained ambiguous.[17] One of the latest battalions integrated in the official armed forces was the Ukrainian Volunteer Corps.[18] This group was likely absorbed as a special force unit in 2022,

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[15] UATV (uatv.ua), 'Law on Foundations of National Resistance Enters into Force in Ukraine'.
[16] Käihkö, 'A Nation-in-the-Making, in Arms'.
[17] Käihkö.
[18] Also known as the Right Sector Ukrainian Volunteer Corps. The paramilitary wing of the far-right Ukrainian nationalist organization Right Sector founded in 2013.

yet its exact affiliations with the Armed Forces remain unclear.[19] Note that the list of volunteer battalions included in the dataset is not exhaustive. Instead they serve as examples of groups that have originated from civilian volunteers and bottom-up initiatives and later been integrated in the formal defence structure.[20]

3.2 Territorial Defence Forces of the Armed Forces of Ukraine

The Territorial Defence Forces (TDF) of the Armed Forces of Ukraine is the military reserve component. In wartime, the TDF can be expanded to include civilian volunteers for local defence. It is under the command of the MoD and contains the Volunteer Defence Forces (VDF) of Territorial Communities and the International Legion of Territorial Defence in Ukraine (see more under 3.2.2 and 3.2.3). The adopted law on national resistance defines the requirements for preparing civilians for national resistance, enabling anyone aged between 18 and 60 to enlist in the Territorial Defence Forces. Civilians wanting to enlist in the force first have to pass medical and psychological examinations.[21] The Territorial Defence Forces are intended to serve as auxiliary units, i.e. to assist the military units within their respective territories. However, following the outbreak of the war in February, the mandate of these forces became increasingly blurred and units were transported to assist at the frontline.[22]

3.2.1 Volunteer Defence Forces of Territorial Communities

The Volunteer Defence Forces of Territorial Communities (VDF) is the civil-military component of Ukraine's national resistance. Relying on civilian volunteers, the volunteer defence units are equivalent to the territorial defence units, which mostly recruit military experienced personnel.[23] The contractual agreement entails that they serve under the command of a locally appointed commander, whilst remaining subject to the statutes of the UAF.[24] According to the official website of the Lviv Regional Military Administration, the VDF units "are formed by patriotic and motivated people at the local level, ensuring "grassroots" movement that is known, trusted, and supported by their communities".[25]

3.2.2 The International Legion of Territorial Defence

The International Legion of Territorial Defence is the international component of the Territorial Defence Forces. It was established by President Zelenskyy shortly after the Russians started their full-scale invasion, with the goal of integrating foreign volunteer soldiers into the formal

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[19] Roussinos, 'On the Frontline with the Right Sector Militia'.
[20] A full overview of volunteer battalions was not found. There is limited information on the volunteer battalions from the Ukrainian government, who argues that this is due to strategic ambiguity vis-à-vis Russia.
[21] Ponomarenko, 'Who Can and Can't Join Ukraine's Territorial Defense Force'.
[22] Butchenko, 'Ukraine's Territorial Defence on a War Footing'.
[23] An exact distinction between the VDF units and the TDF units proved difficult to find. Few sources, apart from the Lviv regional unit, described the role and structure of the VDF. However, from the sources available, VDF appears to be the volunteer component of the TDF.
[24] Contract found via Ministry of Defence of Ukraine, 'Про Затвердження Форми Контракту Добровольця Територіальної Оборони Та Посвідчення Добровольця Територіальної Оборони | LIGA'.
[25] Lviv Regional Military Administration, 'Volunteer Defence Forces of Territorial Communities'.

structures of the Ukrainian national resistance. With the help of IT volunteers, the government created a website to assist foreign volunteers wanting to come to Ukraine and the Ukrainian foreign ministry claimed that over 20,000 foreign volunteers had applied by the 6 March 2022. Although government officials have stated that volunteers from more than 50 countries have signed up, they have refrained from providing a detailed overview.[26] The International Legion has stated that a military background by itself is not good enough, but that they seek volunteers with live combat experience.[27]

Amongst the foreign legions who are officially part of the International Legion are the Georgian National Legion, the Crimea Battalion, the Kastus Kalonsky Battalion from Belarus, the Canadian-Ukrainian Brigade and the Chechen Dzokhar Dudayev Battalion, to mention some. The Georgian National Legion and the Crimea Battalion emerged in response to the invasion in 2014 and were later integrated into the Armed Forces.[28] Others such as the Belarusian Kastus Kalonsky Battalion and the Canadian-Ukrainian Brigade were formed shortly after the full-scale invasion in 2022. They are all examples of the foreign engagement, which President Zelenskyy wanted to encourage and control by creating the International Legion of Territorial Defence. There is no official list of the foreign legion units that make up the International Legion.

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[26] Ministry of Foreign Affairs of Ukraine, 'Cabinet of Ministers of Ukraine - Operational Situation at the Diplomatic Front as of 19'.

[27] Paladino and Deen, 'Liberators or Liabilities?'

[28] Lomsadze, 'Georgians Take up Arms against Russia in Ukraine | Eurasianet'; Hammer, 'Ukraine's Last-Chance Brigade'; Musaeva and Buderatskyi, 'Mamuka Mamulashvili, Commander of the Georgian Legion'.

Box 3.1: Georgian National Legion

The Georgian National Legion is one of the more well-known units of foreign volunteers engaging in the war in Ukraine. It was created in 2014, by Georgian nationals participating in the fights in Donbas. Historical grievances between Georgia and Russia provided fertile ground for anti-Russian sentiments and a willingness to fight in Ukraine. In an interview with Ukrainska Pravda (10. July 2022), Mamuk Mamulashvili, commander of the legion, emphasised how these grievances were not limited to the Russo-Georgian war in 2008, but also the Abkhazian war in the early 1990s.

In 2016, the Georgian National Legion became integrated into the Kyiv Rus 25th Mechanised Infantry Battalion of the UAF. It is the largest unit of foreign volunteers within the Armed Forces. Georgian nationals are not the only members of the legion, which includes volunteers from the United States (US) and Europe. Whilst not confirmed by official sources, there are claims that Mamulashvili is responsible for leading the International Legion of Territorial Defence.

"Members of the Georgian National Legion at their base in Kyiv".
Source: Timothy Fadek / GQ

The Georgian Legion has been among the more outspoken units in public. Consequently, media have better documented its activities and member composition. Amongst its members are both military veterans and students. British veteran Matthew Robinson, who participated in the war in Iraq, came out of retirement to participate in the Ukrainian resistance efforts. In an interview with GQ he told that he was "looking for redemption to make up for my time in an unjust war in Iraq". The student newspaper Youth Journalism International shared the story about a British student of International Relations who left to join one of the Georgian training camps for volunteer fighters in March 2022. Despite lacking the combat experience required at the frontline, he helped organise English-speaking factions within the unit. Due to the relatively high level of English language skills in the Georgian legion, it has assisted the UAF with training the foreign volunteers arriving to fight.

4 Private and civilian contribution to resistance

The following part presents the main findings in each category of civilian and private actors' primary roles in Ukrainian resistance efforts. Whilst a detailed description of each actor is found in the dataset (Appendix A), it can be useful to look at the common characteristics of the actors performing similar roles. As previously mentioned, this is not a flawless categorisation. However, this section describes activities that fall into the different categories and provide examples of the diverse type of actors involved. Subsequently, section five assesses the overall findings and their generalisability.

4.1 Direct participation at the frontline

In addition to the regular armed forces and volunteer defence units, civilian groups are supporting military resistance efforts at the frontline. Aerorozvidka is an elite drone unit, founded by volunteer IT experts in response to the Russian military intervention in 2014. Today, the group has expanded to include volunteers with background from the military, IT sector and other parts of Ukrainian civil society. Since February 2022, Aerorozvidka's drone team has participated as drone operators alongside the Armed Forces at the Ukrainian front. Simultaneously, the group works on adapting in-store drones and building drones from scratch for aerial reconnaissance and attack operations. One of their developments is the Octocopter R-18, a drone that uses old Soviet RKG-3 grenades or RKG-1600 bombs, and costs around $20,000.[29] The group relies on crowdfunding and donations for purchasing essential components for their drones.[30]

Non-violent resistance by Ukrainian civilians emerged immediately in response to the Russian invasion in 2022, complementing the military and diplomatic resistance efforts. Ukrainian civilians took to the street in non-violent resistance, preventing Russian tanks from entering cities with makeshift blockades. For instance, hundreds of Ukrainians came out into the streets to prevent Russian soldiers from reaching the Zaporizhzhia power plant in March 2022.[31] In Demydiv, a village close to Kyiv, civilians and military troops cooperated in flooding the village to delay the advances of Russian tanks towards the capital.[32] Civilians caught in areas of fighting have contributed to surveillance and aerial reconnaissance work by using small off-the-shelf drones to provide information about the location of Russian troops to the UAF.[33]

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[29] Danylov, 'R18 Octocopter from Aerorozvidka - Ukrainian Drone Destroying the Enemy • Mezha.Media'.
[30] Shoaib, 'Inside the Elite Ukrainian Drone Unit Founded by Volunteer IT Experts'.
[31] Bird, 'Ukrainians Block Roads Leading to Europe's Largest Nuclear Power Plant'.
[32] Epstein, 'Ukrainians Say They Have No Regrets after Intentionally Flooding Their Village to Stop Russian Tanks from Reaching Kyiv'.
[33] Politico, 'Ukraine's Teen Drone Hero "Happy That We Destroyed Someone"'.

4.2   Organisation and coordination of civilian engagement

Since the initial invasion of eastern Ukraine by Russian in 2014, there appears to have been a common focus on coordinating and organising efforts amongst both the Ukrainian government and citizens. Such coordination efforts are taking place in the cyber domain as well as on the ground. The examples highlighted below illustrate the value of this existing focus on coordination, and of the pre-established networks of IT entrepreneurs, tech companies, and other civilians.

4.2.1   Cyber domain

Ukrainian resistance efforts in the cyber domain are strengthened by the massive mobilisation of a willing, global IT community. The IT Army of Ukraine was created by a well known IT entrepreneur and founder of several tech companies (e.g. Hacken.io), Yegor Aushev, in February 2022.[34] Its stated goal is two-fold; to mobilise the global IT community and coordinate their participation in Distributed Denial of Service (DDoS) attacks, and to experiment and develop more complex cyber operations against Russia. The coordination of volunteers is primarily taking place through Telegram and guidelines are reportedly found in a publicly accessible document on Google Docs.[35] There has been no official count of members, but the number of subscription to the group's Telegram channel was 250,000-300,000 in June 2022.[36] According to one source, the IT Army also includes social media influencers amongst its members.[37] The IT Army works in collaboration with the MoD and the Ministry of Digital Transformation, but the Ministry has been reluctant to acknowledging this collaboration on its websites and social media channels.

In addition to the IT Army of Ukraine, there are several communities of hackers coordinating their efforts and attacks against Russia. The Anonymous Collective has been active in Ukraine since 2014. In February 2022, they declared war on Russia and the beginning of Operation Russia (#OpRussia) consisting of coordinated DDoS attacks and hacking operations against Russian public and private sector.[38] The group has no distinct leadership and its "members" conduct their own operations, which are recognised by the Collective if it fits into their overarching ideology and mission. This makes the group accessible to hacktivists across the world who wish to participate in coordinated attacks against Russia. Another group of hacktivists is the Ukrainian Cyber Alliance. Information on the group is limited, but according to its own Facebook page it is "a community of Ukrainian hacktivists from different parts of Ukraine and the World".[39]

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[34] Discussions on creating an IT Army had been ongoing in the years prior to the Russian invasion in February. The activities of Estonian Defence League's Cyber Unit served as inspiration for such discussions.

[35] The IT Army coordination document is located on Google Docs and shared through a link in the Telegram channel (according to the report *The IT Army of Ukraine*, Soesanto (2022).

[36] Soesanto, 'The IT Army of Ukraine', 7.

[37] Davies, 'Ukraine Is Inventing a New Way to Fight on the Digital Battlefield'.

[38] Soesanto, 'The IT Army of Ukraine'.

[39] Ukrainian Cyber Alliance, 'Ukrainian Cyber Alliance - Facebook page'. Note that the Facebook page was created in 2017, but articles mention the alliance already in 2016.

Social networks such as Telegram and Twitter strengthen the ability of IT entrepreneurs and hacktivists in Ukraine and across the world to come together and coordinate efforts to support Ukraine. The IT Army of Ukraine illustrates the potential of leveraging on an established and capable Ukrainian IT sector, with developers, cyber specialists and designers. It is however not only professionals who engage in the ongoing hacktivist efforts, which also includes community-driven DDoS efforts by common users across the world. Husák et al. (2022) describes for instance, how using the campus network at a Czech university enabled a large group of common users to engage in DDoS attacks against Russian websites.[40] Whilst this can help boost the Ukrainian defence capabilities in the cyber domain, the participation of "anyone" can risk the credibility of the different groups.[41]

4.2.2   Other areas of coordination

Coordination and organisation of resistance efforts are not limited to cyber-attacks and hacktivism. Efforts by civilians and private companies range from campaigns and crowdfunding websites to volunteer centres and road agencies. Softjourn, an American tech company seeks to push for action from the global tech community through its campaign #SupportUkrainTech.[42] Crowdfunding websites, such as RevengeFor and the People's Project, aim to provide platforms for activism and funding to the UAF.[43] RevengeFor was created by an IT company and appeals to foreigners "with historical grievances against Russia", proposing that they support the UAF as a proxy of their own cause. The People's Project allows individuals to create military, healthcare and social projects in order to fund equipment for the Ukrainian troops. Besides providing a crowdfunding platform, the Project seeks to direct attention and support to the initiatives, considered most urgent.

Similar to The People's Project, Ukrainian Volunteer Service (UVS) seeks to match the needs of Ukrainian resistance and citizens with volunteer capacity. Prior to February 2022, the organisation located in Odesa, worked on promoting a culture of volunteering. After the invasion, they shifted their focus to mobilising civilians in support of resistance. Ukravtodor, the Ukrainian road agency, managed to coordinate the actions of hundreds of civilians in the days following the announcement of a full-scale Russian invasion. They encouraged Ukrainians across the country to remove and alter road signs, in order to confuse Russian troops of the direction to the main cities and centres.[44] Additionally, they created a bot-system via Google Maps, which tracked Russian forces and provided information about their location.

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[40] Husák, Laštovička, and Plesník, 'Handling Internet Activism during the Russian Invasion of Ukraine'.
[41] Lewis, 'Cyber War and Ukraine'.
[42] Lewis, 'Ukraine's Tech Sector 100 Days In'.
[43] Other crowdfunding platforms identified are included in the dataset under the category "Provision of equipment". RevengeFor and The People's Project have been included under "Organise and coordinate resistance" because of their stated goal of uniting and coordinating donations by individuals.
[44] Bella, 'Ukrainian Agency, Urging Removal of Road Signs, Posts Fake Photo with a Colorful Message for Russia'.

4.3 Provision of equipment

Civilian and private actors have contributed with equipment to strengthen the capabilities of the UAF in both the kinetic and cyber domain. The primary role and contribution of 39 out of the 78 actors included in the dataset is the provision of equipment. Based on the data collected, four sub-categories have been established; non-lethal military equipment (e.g. bulletproof vests, night vision devices (NVDs) and camouflage nets), weapons, technology and drones. These sub-categories are not mutually exclusive and several actors provide equipment, across multiple categories. For instance, Serhiy Prytula Foundation, Mir & Co Foundation and Phoenix Volunteer Centre provide both non-lethal and lethal military equipment. Furthermore, the provision of drones includes both surveillance drones (non-lethal) and armed drones (lethal). Despite potential overlaps, this study sorts civilians and private companies based on an assessment of their primary focus and priorities in relation to resistance efforts.

4.3.1 Non-lethal military equipment

Ukrainian forces are receiving non-lethal military equipment from NGOs, individuals and private companies located in Ukraine and abroad. Popular donations include NVDs, bulletproof vests, tactical medicines and uniforms. However, there appears to be a trend of shifting from only providing non-lethal equipment to include ammunition and armed drones. This was the case for Come Back Alive and Serhiy Prytula; the two largest NGOs in Ukraine (see section 4.3.2).

In February and March 2022, Ukrainian civilians gathered to knit camouflage nets for soldiers and vehicles, as well as prepare Molotov Cocktails and sort through available equipment.[45] Communal action of support emerged spontaneously and undirected in numerous Ukrainian cities, characterised by improvised use of available resources and adaptation of existing production activities. Pravda Brewery illustrates how production of beer in peacetime quickly was adapted to production of Molotov cocktails in wartime. Similar repurposing of production capacities was seen at CMS Race, a private company specialised in the construction of racing cars before the war, has assisted the Armed Forces with camouflage and modernisation of vehicles. Reva Foundation, an American art foundation originally working to develop the cultural sector in Odesa, shifted its funding activities to medical assistance to the armed forces. It has been included in the database due to its focus on providing individual first-aid kits for military personnel and its engagement of veterans from military operations in the Middle East help train volunteers and soldiers in tactical medicine. A small group of Latvian volunteers have produced homemade stabilising fins for various types of ordnance, using simple 3D printers previously acquired for hobby purposes.[46] These examples reflect a tendency, beyond individual instances, of an ability to repurpose existing production capacities and apply acquired knowledge to serve the purpose of national resistance.

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[45] Kirby, 'The Other Members of Ukraine's Resistance'.
[46] An English version of the news article (originally in Latvian) used the term "grenade tails", however from the available video and picture material it appears to be stabilising or guidance fins that the volunteers are 3D-printing.

Box 4.1: Knitting squads and Molotov cocktails

In February 2022, when men age 18 to 60 were drafted to the army, groups of mostly female volunteers gathered material to knit masked camouflage nets for soldiers and vehicles. Transforming public spaces, such as art museums and libraries, into coordination centres for volunteers, they found their own way of contributing and showing their support for the national resistance efforts. By the beginning of March 2022, more than 25 centres were established in Lviv. One volunteer, who in peacetime worked at Kyiv School of Economics, explained to VOX News that whilst she originally planned to join the territorial defence forces, she had soon realised that her skills and competencies were more valuable elsewhere. Another volunteer in Kyiv explained to Washington Post how women had come together in a basement in Kyiv to weave and knit camouflage nets since October 2014.

Women in Khmelnytskyi tie together fabrics for camouflage nets.
Credit: Heathcliff O'Malley for The Telegraph

In response to the Russian invasion, volunteers also gathered in the street, basements and in bars to produce Molotov cocktails. Recipes on how to make them, or information on where to donate empty glass bottles were shared via social media channels. Pravda Brewery in Lviv stopped its production of beer on the day of the invasion to produce Molotov cocktails instead. By 1 March, they had produced over 2,000 Molotov cocktails, which were then sent to the areas of fighting and distributed to the territorial defence units in the Lviv oblast. Overall, whether it is transforming strips of clothing to military camouflage nets, or empty bottles into hand thrown incendiary weapons, Ukrainian citizens found ways to support the armed forces with the skills and resources available in the local community.

4.3.2   Weapons

Even though national governments provide the majority of ammunition and artillery to Ukraine, Ukrainian volunteer forces and the UAF are also receiving support from private actors. Serhiy Prytula, a Ukrainian public and political figure, established the Serhiy Prytula Charitable Fund in 2020. Prytula had already been organising support for the Ukrainian army since 2014, which

in the beginning consisted of food and non-lethal equipment before later expanding to include ammunition. In response to the invasion in 2022, the Serhiy Prytula foundation made a clear division between its humanitarian aid and military support by establishing two headquarters for each purpose. Through their online platform, military units can fill out request forms and indicate what type of assistance they need. Parallel with his foundation, Prytula has arranged crowdfunding initiatives. In May 2022, he initiated and succeeded with a crowdfunding campaign to purchase three Bayraktar TB2 drones, which cost between US$5-5.5 million per unit.[47][48] The Lithuanian journalist Andrius Tapinas experienced similar success in his campaign to fund a Bayraktar drone. In both cases, the result was the decision of the Turkish Bayraktar manufacturer, Baykar Defense, to donate the drones.

KOLO and Signmyrocket.com are noteworthy due to their crowdfunding marketing strategies, which openly focus on securing finances for a variety of armaments. Both platforms offer donors the opportunity to have their name, company logo or personal message printed on the ammunition used against Russian soldiers. Signmyrocket has created an Amazon wish list to communicate the equipment most needed by the Ukrainian forces, whilst KOLO have a service allowing military personnel and volunteers to submit their needs. They were both created in 2022 by Ukrainians and are pursuing fundraising strategies, which involve providing donors with tangible evidence of their contribution. Guaranteeing that the equipment donated is used on Russian soldiers; they promise photo and video evidence of the impact. On its website, KOLO states the following, "Imagine: an IFV or a tank with your company logo on the cover of Times magazine with the inscription "Moscow Has Fallen"."[49] It thus apparently pleas to potential donors by presenting the opportunity to be part of a potential victory over KOLO is also offering companies who donate more than $10,000 every month a membership in the KOLO Closed Club.

4.3.3   Technology

The Russian disruption of the KA-SAT satellite of the American company Viasat Inc. was followed by the engagement of Elon Musk and SpaceX, who shortly after the invasion sent Starlink terminals to Ukraine. Through a public-private partnership with USAID, SpaceX delivered 5,000 Starlink terminals.[50] By the beginning of April, more than 10,000 terminals were in service in Ukraine, proving robust against Russian jamming attempts.[51] As the manufacturer of the Starlink terminals, SpaceX has been the largest donor, but smaller companies and individuals have also donated their terminals. Amongst them is the Ukrainian software company N-iX who donated its terminals to the units at the frontline when the war

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[47] Baykar has not publicly stated the exact cost of a Bayraktar TB2 drone, but refers to crowdfunding initiatives on its webpage which aim to collect between US$5-5.5 million per drone.
[48] BaykarTech, 'Norway, Canada Start Fundraising to Buy Bayraktar TB2s for Ukraine'.
[49] Koloua.com, 'KOLO, Help Ukraine prevent another Bucha'.
[50] SpaceX donated 3,667 terminals whilst 1,333 terminals were purchased by USAID. The United States Agency for International Development (USAID), 'USAID Safeguards Internet Access in Ukraine through Public-Private-Partnership with SpaceX | Press Release'.
[51] Joshi, 'The Russia–Ukraine War'.

started. Donations of Starlink terminals have been important for Ukrainian forces to remain connected to each other, and to drones, and allowing for continued information sharing.

Provision of technology includes providing the forces at the frontline with software systems and technological equipment.[52] The Ukrainian NGO, Army SOS, was founded by Euromaidan protesters in 2014 and has supported the UAF with technology related to antenna systems, signals intelligence and solar power platforms. Their defence mapping software Kropyva, seeks to strengthen the "planning, calculation and orientation" of Ukrainian forces.[53] Throughout the war, the NGO has gradually narrowed its focus from initially serving the National Guard, Armed forces and VDF units to mainly focusing on the units at the frontline. Another software system assisting the Ukrainian resistance efforts is GIS Arta, sometimes called "Ukraine's Uber for artillery" because it is based on Uber software. The system was developed by a group of Ukrainian entrepreneurs in 2014. By combining collected target information from drones and intelligence feeds, with information provided by observers on the ground, GIS Arta converts this input into precise coordinates for Ukrainian artillery.

4.3.4 Drones

Volunteers are supporting the armed forces with drones through different channels. Whilst some individuals, such as Serhiy Prytula, have initiated crowdfunding campaigns to purchase drones, others have found alternative ways to keep the drones up and running. [54] Drone Lab is an example of a volunteer group working on powering drones using batteries from electronic cigarettes. As lithium batteries became more limited and costly, the group explored the potential of vape batteries as substitutes to power the drones. Drone Lab was started by an engineering PhD student shortly after the Russian invasion began and in addition to sourcing alternative batteries, their activities involve adapting consumer drones for military usage.

Drones for Ukraine Fund and Kolo Charitable Foundation are examples of actors who are sourcing funding for purchasing necessary equipment and drones for the Ukrainian forces. The two foundations rely on donations and donors receive a key chain made out of the scraps from downed Russian aviation when they donate a certain sum. Ukrainian Eurovision winner, Kalush Orchestra, on the other hand, decided to auction its Eurovision trophy for $900,000 to fund the purchase of three Ukrainian PD-2 drones for the Armed Forces.

Ukraine is also receiving drones from donors abroad. Eyes on Ukraine is a Dutch group of volunteers who drive from the Netherlands to Ukraine with loads of drones that are financed by donations made through their website. In Denmark, a Ukrainian who for years had drones as his hobby, has been collecting and sending off-the-shelf drones to Ukraine to support the forces

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[52] There are a number of larger tech companies providing Ukraine with free access to their software systems and services (see chapter 4.5). Actors included in this sub-section are volunteers whose normal activities do not involve software development and who have developed systems specifically for use by Ukrainian forces.

[53] 'Defense Mapping Software "Kropyva". You Can Help!'

[54] Some of the actors in the other "Provision of equipment" categories also provide and adapt drones to the armed forces. The actors included in the category "Provision of equipment; drones" are the actors which only provide drones, or who has drones as their main contribution.

with their surveillance activities at the frontline. Both of these actors state that their motives are to help document the atrocities conducted by Russian forces at the frontline.

Box 4.2: Fundraising of drones on Spleis.no

Whilst the crowdfunding platforms KOLO and Signmyrocket.com openly campaign for donations to purchase weapons, other fundraising initiators experienced that their campaigns were closed down. In July 2022, Norwegian lawyer Bengt Erik Waldow initiated a fundraising campaign on spleis.no for purchasing a Bayraktar TB2 drone. More than NOK 500,000 had been collected for the drone, which costs around 50 million NOK, before Spleis.no closed down the initiative. Since the Bayraktar can be equipped with ammunition, Spleis.no claimed they had not received evidence that the drone would be used for surveillance purposes.

Screenshot spleis.no 18.07.2022   Credit: Giulia Trosi, Vårt Land

The platforms Gofundme.com and Spleis.no have expressed that they do not want to support warfare and developed guidelines requiring proof that the fundraising is not for combat purposes. Despite these restrictions and closing down of the crowdfunding initiative for the Bayraktar drone, a number of other crowdfunding initiatives for drone purchases could be found on spleis.no in August. Stand With Ukraine in Norway started an initiative to purchase the DJI Matrice 300 RTK drone, whilst another initiative was inviting for donors to support the purchase of NDVs, drones and medical equipment.

4.4   Provision of tech advice and software services

Global leading tech companies are leveraging their services and capabilities to assist Ukrainian resistance efforts. Their efforts include countering misinformation and Russian propaganda (see section 4.5), and blocking or limiting the use of services in Russia. However, they are also

providing direct assistance to Ukraine by allowing free access to various software services as well as offering their competencies and advice in the cyber domain.

4.4.1　Technical advice and free access services

With the help of global tech companies, Ukraine has increased its resilience against Russian cyber-attacks. Tech companies are providing AI based solutions to the Ukrainian government and Armed Forces. Clearview AI is offering free access to its AI services, which involve matching face recognition with social media accounts of Russian soldiers, enabling officials to inform their families. Primer has modified its AI enabled voice transcription and translation service, enabling Ukrainian forces to detect key information in Russian communication.

The large tech companies have also taken on advisory roles, providing free use of services and threat intelligence. Google expanded the eligibility of its Project Shield, helping protect government websites and supporting governments and embassies with staying online. Amazon Web Services collaborated with the Ukrainian IT community to offer assistance to government and armed forces to counter cyber-attacks and share real time intelligence. Ukrainian MacPaw is offering one-year free use of their antivirus program, CleanMyMac, to media personnel working to cover the war. The company also developed a free app that checks for Russian hacks. Microsoft, on its side, has been central in advising the Ukrainian government on malware and cybersecurity threats since the day of invasion in February.

4.4.2　Improving existing services

Private companies are not only offering free access to their services, but some are also increasing their production output to support the Ukrainian resistance efforts. This type of support is evident amongst actors providing satellite imagery services, such as Maxar Technologies and MDA Ltd. Maxar Technologies responded to the Russian military invasion by increasing its production of 3D maps of cities in Ukraine. Because of Maxar's capabilities within precision 3D georegistration, the Ukrainian government is able to better assess the infrastructural damages. MDA Ltd., a Canadian satellite builder and operator, received approval from the Canadian government to increase its satellite images to provide Ukraine with real-time information on the movement of Russian troops and equipment. This allowed Ukrainian forces to track the movement of Russian troops regardless of weather conditions.

4.5　Debunking disinformation

The national resistance efforts by civilians are also taking place in the information sphere. Ukrainian civilians were quick at identifying fake videos and false evidence of Russian success in the first weeks of invasion by looking at the embedded geolocation and time data on videos.[55] Stopfake.org is a fact-checking site created by volunteers at the Media Reforms Center of the

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[55] Courtney, 'Ukraine and the Global Whole-of-Society Response'.

Mohyla Journalism School in Kyiv in 2014. The platform seeks to verify and refute disinformation and propaganda about the war in Ukraine. Bellingcat, InformNapalm and Forensic Architecture have also been important in revealing the activities and engagement of Russian forces.[56] However, as their activities neither emerged in response to the war in Ukraine, nor are Ukraine-specific they are not included as separate actors in the dataset.

Whilst Russia succeeded in creating confusion and uncertainty regarding its involvement back in 2014, groups like the North Atlantic Fellas Organisation (NAFO) have not allowed Russia "to run wild across the info-warfare landscape the way they used to", according to author Peter W. Singer.[57] Using memes as an element of information warfare is not new. In October 2020, Pentagon's Cyber Command published a meme of a bear, attempting to ridicule Russian hackers. However, with less than 200 retweets following a three week-long design process, its impact was limited. Singer and Nick Waters of Bellingcat, both emphasise that virtual communities are more effective when they emerge impromptu.[58]

Large tech companies such as Meta and Twitter have offered services that seek to reduce the spread of Russian disinformation campaigns and targeted attacks on Ukrainian media. In addition to labelling content from Russian state-controlled media, Meta started offering encrypted direct messages on Instagram in Russia and Ukraine. This limited the possibility to map the followers of the individual users. Twitter has launched the Search and Home Timeline to make it easier to find reliable information and updates, whilst providing digital safety and security resources in English, Ukrainian and Russian.[59] These initiatives by Meta and Twitter may be in the grey zone of what is considered support of national resistance, but has been included to illustrate how also Big Tech is adapting their services in response the ongoing war in Ukraine.

5   Reflections

5.1   Key findings

A substantial part of Ukrainian resistance in 2022 builds on civilian initiatives and networks that emerged already in 2014.

The continuation or revival of activities that initially emerged in response to the Russian annexation of Crimea and intervention in Donbas in 2014, characterise a large part of the private and civilian resistance efforts taking place from February 2022. "Toloka" is an old Ukrainian,

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[56] Nilsson, 'De-Hybridization and Conflict Narration'.
[57] The Economist, 'A Virtual Army of Impish Cartoon Pooches Is Waging War on Russia'.
[58] The Economist.
[59] Twitter Safety, 'Digital Security on Twitter'.

Russian and Baltic word, which refers to spontaneous community projects building on a sense solidarity.[60] This solidarity and willingness to initiate bottom-up activities to strengthen the resilience of the defence forces seems to permeate the Ukrainian civil society. Furthermore, it appears that the networks and initiatives stemming from the initial military engagement by Russia in 2014 have enabled a more effective mobilisation of volunteers in 2022. This is supported by political scientist Stepaniuk (2022), who found that pre-war networks improved the effectiveness of civilian mobilisation in cyber operations against Russia in 2014.[61]

The Ukrainian IT and entrepreneurial communities are notably present amongst the private and civilian actors supporting national resistance efforts.

Defence and resistance against a military invasion requires the ability to protect the digital infrastructure, and tech companies are valuable contributors of knowledge. IT services was a large part of Ukrainian export prior to the war and several of the companies offering their assistance have Ukrainian employees.[62] To support the military forces, Ukrainian IT employees and entrepreneurs created charitable foundations, crowdfunding platforms and coordination. The IT Army of Ukraine is an example of valuable synergies resulting from cooperation between the military and the IT sector. In addition to a culture of "Toloka", civilian engagement appears flexible and inventive. Many of the civilian initiative entail innovative use of existing and easily available resources. Stepaniuk highlights the benefits of hyper-flexible entrepreneurs often having a lead role in volunteer initiatives in 2014.[63] Considering the number of civilian and private actors with a background from the IT sector or as entrepreneurs, this same hyper-flexibility and adaptation readiness appears present in 2022.

Crowdfunding is a key method for sourcing finances for purchasing and delivering equipment to the military forces. Private actors take innovative approaches to incentivise contributions from potential donors, such as personalised messages and key chains.

Many of the actors providing equipment, both lethal and non-lethal, to the UAF are dependent on crowdfunding initiatives and donations. Crowdfunding of military equipment for military forces is not a new phenomenon. Technological advances have however improved the reach of campaigns, making donations possible for civilians and companies independent of geolocation and social network. Crowdfunding thus becomes an inclusive way for participation in national defence, because it allows citizens who are not apt for serving in the military to contribute.

Gofundme.com and Spleis.no, have established guidelines that regulate the fundraising initiatives on their platforms in order to ensure that they are not intended for warfare. Consequently, this affects campaigns for the purchase of drones, which could potentially be used for attack purposes. In contrast, KOLO (koloua.com) and Signmyrocket.com were created to purchase military equipment specifically, including weapons and armed drones, for the

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[60] «Toloka» used to be a form of mutual assistance among villagers in Ukraine, Russia, Belarus, and the Baltic countries. It can be compared to the Norwegian word "dugnad".
[61] Stepaniuk, 'Wartime Civilian Mobilization'.
[62] Soesanto, 'The IT Army of Ukraine'.
[63] Stepaniuk, 'Wartime Civilian Mobilization'.

Ukrainian forces. The idea of contributing to national resistance against an invading foreign nation is apparently not always a sufficient incentive to donate. Both platforms' incentivise donors to increase their donations by offering them their name or signature on vehicles and equipment used in the war, or membership in exclusive donor clubs. Their marketing strategies reflect what appears to be a general tendency, where private companies promote, rather than conceal, their support to war efforts. Lastly, it is worth noting that amongst the payment options listed on funding websites of NGOs and private companies, cryptocurrency is a recurring option.

Provision of non-lethal equipment and drones are popular method of support to national resistance by foreign actors. These foreign civilians and private companies tend to have pre-existing affiliations to Ukraine.

Whilst governments across the world have committed to support Ukrainian forces with ammunition and artillery, private companies and civilians have mostly focused on non-lethal equipment and off-the shelf drones. Many have engaged by facilitating funding for equipment, whereas others collect in-kind equipment sent directly to military units at the frontline. Foreign individuals and companies who support resistance efforts tend to have pre-existing ties to Ukraine. These ties can be familial, e.g. Ukrainian diaspora, or professional, e.g. companies with headquarters or activities in Ukraine. The actors with established Ukrainian ties were quick in readjusting their practices as well as taking on a coordinating role of support for resistance activities. Whether activities involved establishing funding mechanisms for purchase of equipment, gather expertise within specific areas or reorganising production facilities to cater the needs of the armed forces, it appeared to happen spontaneously and automatically in a short period of time.

5.2   Context and generalisability

Three aspects of the Ukrainian context appear to influence the type and role of the actors supporting Ukrainian forces: a general mistrust of government, the experience of Russia's military engagement in Donbas and Crimea since 2014 and a well-established IT sector. These context-specific elements are important to consider when drawing lessons from the ongoing war in Ukraine.

First, Ukrainians have traditionally had very little trust in authorities. According to the National Democratic Institute (NDI), the trust in the President decreased from 54% to 19% between 2019 and 2021.[64] A parallel decline was seen in the trust in national government. The historically high levels of distrust is tightly connected with the country's high corruption levels. According to Transparency International's 2021 ranking, Ukraine is the second most corrupt country in Europe, with Russia being the most corrupt. However, following the Russian invasion in

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[64] National Democratic Institute (NDI), 'Opportunities and Challenges Facing Ukraine's Democratic Transition'.

February 2022, it appears that Ukrainians gained trust in the UAF and the leadership of President Zelenskyy. An updated polling by NDI from June 2022 showed that of the respondents 97% trust the UAF, 85% have confidence in President Zelenskyy, whilst 56% trust the national government.[65] Regardless of this surge, historically high levels of distrust in the capabilities of national authorities could help explain the willingness for civilian mobilisation in resistance efforts. For instance, the weak military forces of Ukraine in 2014 incentivised the organisation of volunteer battalions as alternatives to the national armed forces.

Second, the annexation of Crimea and war in Eastern Ukraine since 2014 have seemingly created a momentum in civilian resistance efforts. In addition to foreign legions and volunteer battalions, networks of civilians and private companies were already in place prior to the invasion in February 2022. These eight years leading up to the full-scale invasion may have contributed to an environment and common sentiment that helped mobilise civilians and companies in Ukraine and abroad. Furthermore, Ukraine has benefitted from its role as an "obvious" victim, defending its sovereignty against an invading foreign nation. National governments and global tech giants could thus more easily justify their support of the Ukrainian government and armed forces.

Third, the well-established and well-connected IT community is an important contextual factor that influences Ukrainian resistance efforts, reflecting a strong entrepreneurial culture. The sector has been the fastest growing sector in Ukraine, contributing to 4% of Ukraine's GDP and 25% of exported services.[66] Furthermore, the Ukrainian IT sector has in general had lower corruption levels compared to the public sector and has been a cheap source of IT competencies for Western European countries.[67] The Ukrainian IT community is therefore well-embedded in a larger global IT network.

5.3   Moving forward: Considerations for future Norwegian defence planning

Even though certain aspects of the findings are specific to the Ukrainian context, the overall findings can provide more awareness of the engagement by civilian and private actors as a likely feature of future warfare. The research points to how in the Ukrainian resistance efforts, private and civilian sector have capabilities that can complement existing military capabilities in valuable ways.[68] Citizens have used their skills and social networks to support the efforts of the Ukrainian army and government. Their contributions that arise to fill the gaps of the official military forces and contribute to the national resistance are often informal, spontaneous and improvised. Some of the strength and effect of these initiatives lies in this spontaneous

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[65] National Democratic Institute (NDI), 'NDI Poll'.
[66] UkraineNow, 'Digital Country'.
[67] Segal, 'Inside Ukraine's Thriving Tech Sector'.
[68] A capability can be defined as "the ability to achieve a specified effect in military operations"
   Vatne et al., 'Norwegian Long-Term Defence Analysis – a Scenario- and Capability-Based Approach'.

emergence without direction, for example the efficiency and reach of the meme warfare by NAFO.

Although spontaneity and informality of efforts are important, it should be possible to plan for their contribution. For example by mapping the competencies that exist in the Norwegian civil society and private sector. This could give insights into what capabilities are necessary to develop within the defence sector and which can be sourced from civil society and private companies. Such planning would take place within the framework of total defence. A comprehensive whole of society approach, leveraging on the competences of the military and the civil society, will need to consider the informal and undirected channels through which support of national resistance may take place.[69] Another important consideration to include in the Norwegian long-term defence planning is the central role, which pre-existing networks and affiliations have played in Ukraine.

As private actors are currently offering their services to the government and armed forces in Ukraine, it is relevant to reflect on where these companies will go when the war in Ukraine is over. They may see market opportunities elsewhere and adapt their services to support parties to other conflicts. Crowdfunding platforms, for instance, do not require many resources to replace the focus of their campaigns from Ukraine to another country or actor. Additionally, when considering the global security environment today, it is likely that the initiators behind these platforms will find new market opportunities elsewhere. Whilst some platforms are trying to regulate the funding initiatives, alternative platforms emerge where anyone can financially contribute to warfare in an undisclosed manner.

A number of NGOs in Ukraine responded to the military forces' need for armaments by shifting from providing non-lethal equipment to focusing on the provision of lethal equipment. As the war in Ukraine continues to evolve, it will be interesting to see how the role of NGOs develop. One question arising from the development until now is whether, the shift of attitude towards providing lethal equipment is permanent, or whether the NGOs will go back to their initial focus. A second question is what value these actors can have in terms of providing logistical support to military forces, when included in the overall defence planning.

As the role of NGOs evolves to include provision of military equipment and services, there is an increasingly blurred distinction between these non-governmental actors and Private Military Contractors (PMCs). BBC reports how NGOs are hiring PMCs for protection in Ukraine. In addition, at NGOs support the government with whom they have vague and unspecified affiliations, the role of the NGOs may increasingly resemble the role of PMCs.[70] For instance, the drone unit Aerorozvidka, which supports the UAF and its special forces, started as a crowdfunding initiative, but later became part of Ukraine's defence services.[71] Its formal relation and contractual arrangements with the government and UAF appear however unclear.

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[69] Wither, 'Back to the Future?'
[70] Debusmann Jr, 'Private Military Firms See Demand in Ukraine War'.
[71] Wion News, 'Aerorozvidka'; Freund, 'Ukraine Is Using Elon Musk's Starlink for Drone Strikes'.

A final point worth reflecting on is the national governments' reliance on large tech companies for cyber defence services. During the war in Ukraine, tech giants such as Microsoft have provided important support to strengthen the national cyber defence. The support from big tech to the defence sector is neither new, nor unique for Ukraine. In the US, mounting geopolitical risks and technological advancements are drawing the Silicon Valley and Pentagon closer together.[72] Technology is increasingly sourced externally, becoming commercial and dual-use, as emphasised by Michael Brown, head of the Defence Innovation Unit at the Department of Defence (DoD).[73] European Defence Ministers have shown increasing interest in Palantir's data analytics following the outbreak of war in Ukraine. Furthermore, tech companies in Silicon Valley are desired for their machine-learning competences as AI plays an increasingly central role in weapons and command-and-control systems.[74] Yet, there is no guarantee of the sustained loyalty of big tech companies in the longer run, and such reliance thus comes with a risk. This leads to the question of how much national defence, in the cyber or kinetic domain, should rely on the specialised competencies of private actors such as tech companies.

6   Conclusion and Discussion

This study has explored the variety of civilian and private actors who, through various channels and with various means, help sustain Ukrainian resistance efforts against an invading Russian power. It is not possible to give a full picture of the network of actors engaging on the ground in Ukraine, in the cyber domain and abroad. Still, the overview of civilian and private actors gives an indication of the diversity of actors and activities initiated to strengthen the Ukrainian resilience. Availability of sources and updated reports from Ukraine are influenced by the constantly evolving situation on the ground. Yet, Starlink terminals, communication devices and social media channels help share information close to real-time. By ensuring a systematic and transparent process of data collection, the validity of the empirical analysis is strengthened. Overall the analysis and reflections based on the data collected, can contribute to the general knowledge of non-governmental contributions to national resistance.

Social networks strengthen the ability of communities to organise themselves and others, thus making it easier to leverage on valuable capabilities of different groups within the national population. Ukraine has for instance shown how drawing on the knowledge of its IT community is important. Social media platforms have expanded the reach of crowdfunding initiatives. Such platforms furthermore have transcended traditional obstacles, like geography or absence of social networks, for civilians to make donations, as payment links are posted and shared on social media. Anyone can contribute to the purchase of a Bayraktar TB2 drone, and

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[72] The Economist, 'Can Tech Reshape the Pentagon?'
[73] The Economist.
[74] The Economist.

cryptocurrency is presented as a monetary option equivalent to the Euro or to American Dollars. Even though social media channels are effective in spreading disinformation, they also prove effective in debunking disinformation, as seen through the "meme warfare" of NAFO.

As part of its efforts to strengthen the military capacities, the Ukrainian government has focused on integrating the different volunteer forces that emerged in response to the Russian intervention in Donbas in 2014. The Territorial Defence Forces, Volunteer Defence Forces and International Legions, such as the Georgian National, continue to play an important role at the frontline as part of the UAF. At the same time, civilians and private initiatives provide important support regardless of whether they are small-scale local initiatives or an IT army with members across the globe. Their support to the national resistance is visible through the contributions by local community groups knitting camouflage nets or making Molotov cocktails, drone operators fighting at the frontline and tech companies providing important support to national cyber defence. Such private initiatives are a central feature of the war in Ukraine, and it is likely that it will continue to be a feature in future wars.

The Ukrainian resistance efforts that have taken place since February 2022 reveal that the country has drawn lessons from the past eight years. It should be expected that other countries, including strategic competitors of the West, are taking note of the ongoing private actor engagement in Ukraine. Similarly, Norway and its allies should draw lessons from Ukraine. This includes looking at the member composition of the Ukrainian national resistance movement and the potential of private initiatives as force multipliers. For future research, it would be valuable to look further into the motives of the individual actors as well as the context in which their resistance initiatives emerge. This could provide better understanding of where and when to expect spontaneous and anarchic support of national resistance. Another aspect, which would benefit from further research, is the effect of the diverse source of national resistance. Whilst the actors identified in this research have been active in the first six months of the war, it will be interesting to see which initiatives sustain in the longer run and what path these initiative-makers take once the war in Ukraine is over.

A   Dataset

The dataset "Civilian and private actor support for Ukrainian national resistance" can be found in a separate excel sheet. This is for functional purposes.

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