Promoting science during wartime

The challenging work of FirEUrisk's Ukrainian partners

The FirEUrisk project started in April 2021 with the idea of finding a novel approach to **wildfires in Europe**. **Ukraine** was included in the project to provide a unique perspective on the **Chornobyl* Exclusion Zone**, one of the world's most radiation-contaminated areas. However, what seemed a difficult task became even more tangled. “Initially, affecting all of us and limiting our mobility, was **COVID**. This was then **followed by war**, inflicted upon Ukraine by **Russia’s invasion** on the 24th of February 2022,” points out the project coordinator, Professor Domingos Viegas, in a statement.

Sergiy Zibtsev, Head of the Regional Eastern Europe Fire Monitoring Center (REEFMC) and a project partner, is straightforward about the area’s difficulty: “The Chornobyl Exclusion Zone is **the worst place for fire management**. It’s completely contaminated by radionuclides, and there is also unexploded ordnance…”. And after the war started it was even worse. “Fire management faced **huge limitations** of all kinds,” he notes.

In the beginning, the Ukrainian team had a **Fire Control Centre** to support decision-making for response and suppression of fire in the Chornobyl Exclusion Zone, but all of this was **destroyed**. “Many engines and much equipment were **taken,** and now we face a huge **lack of resources** in an area of 260.000 hectares, with a pretty **flammable forest**, lots of **fuel**, **radionuclides**, and the contamination from **unexploded ordnance**,” Zibtsev points out. So, they had to change the initial plan and build a **platform**, similar to the one before the war, but entirely online this time. And, like other partners in the European project, they are now collecting datasets and images, applying **FirEUrisk products** to the area, and developing a **Fire Management Plan**. However, their situation is far removed from what the other partners are experiencing.

Vadim Bogomolov, a programmer on the Ukrainian team, is based in **Kharkiv**, one of the most heavily attacked cities in this war, and he has been working under the most difficult conditions for the last three years. “First year [of the invasion] we were under **artillery attacks** and then under **missile attacks.** […] A lot of people **suffered and died even.** Our power plants were destroyed, so there were periods when electricity was not available in Kharkiv,” he says.

He also mentioned that they have to “start from the very beginning because most of the firefighting equipment was **damaged** or **stolen**.” **Power outages** were frequent, with 68% of the electrical infrastructure destroyed since the war started. Unfortunately, these attacks and bombs were so common that people just learned how to live under these circumstances, like Bogomolov did. “Window frames have been **covered with cardboard.** We still have medical assistance despite the risk of repetitive attacks.”

Many **firefighters** are also being mobilized into the **army** because they are highly valuable assets. “It's what we call the **indirect impact of war**,” Zibtsev clarifies. “We are losing the most important resource, which is human capacity.” This is why the Ukrainian team is now focusing on **training** people to assist during the **wildfire season**, which can be particularly dangerous given Europe's severe fire conditions and the risk of unmanageable **radioactive wildfires** during the summer.

And it’s not just the firefighters they have lost. They used to have **lookout cameras** to detect fires, but these are no longer allowed because they could be used for spying. Additionally, **maps** are not distributed by the government when they cover **war zones**, further complicating the situation. Nonetheless, the Ukrainian partners are working side by side with **local communities** to impart knowledge gained from other fires in Greece, Spain, California, and Australia over the

last few years. “Work on your **resilience to big fires**,” is Zibtsev's message, urging citizens to **protect their villages** since, unfortunately, there is no human capacity to come and rescue them.

“We do trainings for **rural communities** and tell them: please, **be prepared before the fire.** This is an approach with limited resources, but the more people become involved, the better,” Sergiy states. Moreover, they are sharing their knowledge about fires to encourage **young people to become scientists** and assist with this challenging task.

So it seems that even with all those difficulties, the Ukrainian partners have managed to continue their work, delivering all necessary documents to combat fires in Europe and refining more precise **predictions and propagation models**, as confirmed by Professor Viegas in the same statement: “Despite the harsh and unpredictable conditions they have faced over the past two years, they have not only attempted but **successfully achieved** their research goals and objectives.”

The next steps for Zibtsev and his teammates involve extending the use of FirEUrisk products to a larger area of pine forest along the border with Belarus. They will also continue to prioritise **prevention** and **preparedness** measures, given that the country's top priority is currently the war, with fire management not being as urgent at this point or anytime soon.

Both Zibtsev and Bogomolov agree that what makes this situation even more challenging is witnessing the **suffering** of every citizen of Ukraine. “**Fatalities** on the front line, soldiers, young boys, their relatives, their wives, their mothers, their fathers...,” Sergiy laments. But when asked if it’s still worth studying fires in a country already ablaze from all sides, their answer is clear: “We are trying to **promote science**, and **science is helpful during wartime**. We know it's complicated, but we'll keep trying our best to **help our country and our people**.”

* In Ukrainian, the spelling is 'Chornobyl,' which we ’ll use from now on.