



# A PRIMER ON CYBER SECURITY IN TURKEY

# AND THE CASE OF NUCLEAR POWER



The Centre for Economics and Foreign Policy Studies



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The Centre for Economics and Foreign Policy Studies (EDAM) is an Istanbul based independent think-tank. EDAM's main areas of research are:

- Foreign policy and security,
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- Energy and climate change policies,
- Economics and globalization,
- Arms control & non-proliferation,
- Cyber policy.

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EDAM brings together a network of members from multiple sectors of Turkish society including academia, civil society, media and business. This diversified representation enables EDAM to create a productive and effective platform through which different visions and perspectives can interact.

EDAM's Executive and Supervisory Board consists of members from the academia, business community, civil society and media. Board members are assigned to supervise research projects in order to ensure their academic and editorial quality. While EDAM staffs a small number of permanent researchers, it also reaches out to select Turkish and international researchers to form ad hoc research teams based on the projects that it undertakes.

EDAM relies on project-based funding, matching grants and institutional donations in order to carry out its projects, and hence maintains its editorial independence. Additionally, EDAM undertakes joint projects and research with various civil society and international organizations on the basis of the principle of shared funding.

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# INTRODUCTION

Rising threats in cyber security motivated EDAM to prepare this report that covers the basics of cyber security with a focus on critical infrastructure and especially nuclear power plants. This collection includes four complementary chapters to help the reader understand Turkey's cyber security challenges with a focus on nuclear power plants as components of the country's critical infrastructure.

The first chapter by Can Kasapoğlu introduces the concept of cyberwarfare as the next Revolution in Military Affairs (RMA). The chapter sets out current and potential hostile cyber trends and emerging state capabilities. It analyzes cyberspace as the fifth domain of fighting wars with a special focus on network-centric warfare. It also identifies non-state threats from Turkey's perspective.

The second chapter by Salih Bıçakçı, Doruk Ergun and Mitat Çelikpala examines the cyber security scene in Turkey. It investigates local actors that are currently "active" in the cyber space. Some of these actors include political hacker organizations, such as Redhack and Ayyıldız Team, and the organizations that the Turkish state has put in charge of cyber defense, such as the cyber divisions under the Turkish National Intelligence Organization (MIT) and the Turkish Armed Forces.

The third chapter by Ahmet Han and Mitat Çelikpala provides a conceptual introduction to cyber space, cyber attackers and cyber security, and their place in the context of critical infrastructure and nuclear power plants. It then focuses on the international aspect of nuclear power plant cyber security by exploring the cases of the United States, as one of the countries with the most matured organizational and regulatory structure on the field, and the International Atomic Energy Agency, as the key international organization on nuclear safety and security. The chapter concludes by drawing lessons and suggestions for Turkey.

The fourth chapter and final chapter by Salih Bıçakçı clarifies the concept of cyber-security and its relevance to nuclear power plants and facilities. It examines cyber incidents that have affected nuclear power plants and efforts on the international level to protect these critical infrastructures. Since most of the nuclear power plants are functioning over the industrial control and supervisory control and data acquisition (SCADA) systems, the interaction of the workforce with SCADAs and computers are critical for the safety and security of nuclear power plants. After covering the challenges of managing a nuclear power plant's security, the chapter evaluates Turkey's cyber defense capabilities from this perspective. It analyzes the country's current capabilities in terms of ensuring cyber security resilience. It summarizes Ankara's current cyber policies by assessing the organizations responsible for dealing with cyber security and cyber defense.

We hope that this compilation of original research will provide a useful and much needed background to the emerging discussion on cyber security, critical infrastructure and nuclear power in the Turkish context.



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