

PERFORMANCE CRITERIA FOR AUDITING OF CRITICAL INFRASTRUCTURE FACILITIES

VII Meeting of the EUROSAI Working Group on the Audit of Funds Allocated to Disasters and Catastrophes

November 16, 2021



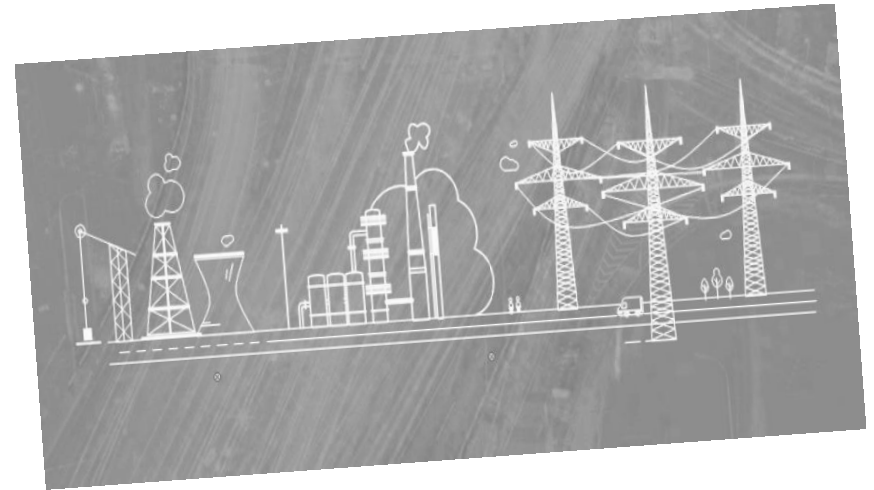
RELEVANCE

- **Institute for Problems of Mathematical Machines and Systems of the National Academy of Sciences of Ukraine:** currently an extremely dangerous challenge for humanity is the global problem of climate change, which causes large-scale forest fires that have arisen over the past few years in the USA, Europe, South America, other countries of the world and in Ukraine, and which quite often turned into a natural disaster



- Climate change has other side: people, societies, economics and especially the **crisis response system**, should be ready for storms, large-scale downpours, catastrophic floods, hurricanes, tornadoes, etc., the likelihood of which increases due to the mentioned climate changes

□ Creation an effective management system for the critical infrastructure protection aimed at effective counteraction and prevention of terrorist attacks, acts of cybercrime and consequences elimination of man-caused and natural emergencies, is needed



- **Definition** of critical infrastructure (CI) facilities
- **Possible threats**, the specifics of **assessing the impact of these threats** on CI facilities
- **Tasks that SAIs face when planning and conducting audits** related to CI facilities



DEFINITION OF CI FACILITIES

- **Critical Infrastructure** - objects and systems that are so important for ensuring the population and economic state that destabilization of their work will lead to negative or catastrophic consequences
- Especially hazardous production facilities, where accidents caused by any reasons (natural or man-made emergencies, or malicious actions) can also result in catastrophic consequences, are also referred to as CI



Cascade effects: when disturbances in the operation of one CI object lead to disturbances in the operation of other objects and systems due to their interdependence ("**domino effect**")



DEFINITION OF CI FACILITIES

The lists of sectors related to critical infrastructure (USA's experience):



- *Chemical;*
- *Commercial facilities;*
- *Communication;*
- *Critical manufacturing;*
- *Dams;*
- *Defense industrial base;*
- *Emergency service;*
- *Energy;*
- *Banking and finance;*
- *Food and agriculture;*
- *Government facilities;*
- *Healthcare and public health;*
- *Information technology;*
- *Nuclear reactors, materials and waste;*
- *Transportation system;*
- *Water and wastewater systems*

DEFINITION OF CI FACILITIES

Following characteristics can be taken into account when **determining** the list of CI elements:

- **Scale** (geographical coverage of the area for which the loss of a CI element causes significant damage);
- **Interconnection** between CI elements;
- **Duration of the impact** (how and when the damage associated with the failure, decommissioning or disruption of the functioning of CI facilities will be determined);
- **Vulnerability** to the hazardous factors;
- **Severity of possible consequences** for the:
 - ✓ *economic security;*
 - ✓ *safety of life and health of the population;*
 - ✓ *internal political and state security, defense capability;*
 - ✓ *environmental safety (impact on the natural environment)*

THREATS TO THE PROPER FUNCTIONING OF CI FACILITIES

When assessing events and factors that may pose a threat to such facilities, it is necessary to:

□ Use a **risk-oriented approach**

□ Take into account **2 aspects:**

- *How to secure the CI facility;*

- *How to ensure the fulfillment of their specific functions*





THREATS TO THE PROPER FUNCTIONING OF CI FACILITIES

- At the **EU level**, in November **2005**, the **Green Paper on a European Program for Critical Infrastructure Protection** was promulgated, and in **2006**, the **European Program for Critical Infrastructure Protection** was introduced



- In Ukraine, in **2016**, the National Institute for Strategic Studies (NISS) prepared a **Green Paper On Critical Infrastructure Protection In Ukraine**



THREATS TO THE PROPER FUNCTIONING OF CI FACILITIES

- National Institute for Strategic Studies of Ukraine: recently in the developed countries the format of activities related to ensuring the CI functioning is expanding
 - More and **more attention** is paid to the issues of **ensuring sustainability** in comparison with issues of direct protection, since the modern environment is characterized by the new threats and transformation of existing ones



- **None of the created protection (security) systems can fully provide protection against all threats and dangers:** while the development of a defense system designed for certain threats is continuing, new threats and dangers are already appearing

THREATS TO THE PROPER FUNCTIONING OF CI FACILITIES

Approaches to CI terminology differ slightly from country to country

In most cases, the **sustainability** of CI is understood as its *ability to function reliably in a normal mode, be ready for changing conditions, adapt to such conditions, as well as withstand changes and quickly recover from operational disruptions (accidents and technical failures, malicious actions, natural disasters, dangerous natural phenomena)*



Threats to CI:

- *Malicious acts;*
- *Natural hazards* (hurricanes, tornadoes, earthquakes, tsunamis, floods, extreme weather conditions, etc.);
- *Man-caused emergencies* (aircraft accidents, nuclear accidents, fires, accidents in power supply systems, emissions of hazardous substances, etc.)





THREATS TO THE PROPER FUNCTIONING OF CI FACILITIES

Assessment of the impact of threats on CI facilities:

Analytical report of the **National Institute for Strategic Studies of Ukraine** “**Threats to Critical Infrastructure and their Impact on the National Security** (monitoring the implementation of the National Security Strategy)”:

According to the data of State Statistics Committee, depreciation of fixed assets of industrial enterprises in Ukraine averages 60.3%

When considering accidents and technical failures, should be taken into account the degree of depreciation of fixed assets

Кількісні показники класифікованих НС, які сталися на території України у 2011 – 2020 роках

Дані про названі ситуації	2011 рік	2012 рік	2013 рік	2014 рік	2015 рік	2016 рік	2017 рік	2018 рік	2019 рік	2020 рік	Всього НС за 10 років
Всього НС	221	212	144	143	148	149	166	129	148	116	1573
В тому числі:											
техногенного характеру	134	120	76	74	63	56	50	49	60	47	728
природного характеру	77	74	56	59	77	89	107	77	81	64	791
соціального характеру	10	18	12	10	8	4	9	3	5	5	64
В тому числі:											
Державного рівня	4	1	1	5	2	1	2	2	2	2	26
Регіонального рівня	3	13	12	9	9	9	8	6	7	4	89
Місцевого рівня	89	83	58	59	62	64	70	64	63	5	617
С/П оптового рівня	125	115	73	70	75	75	86	56	74	56	805
Загинуло людей	355	301	253	287	242	183	172	169	206	170	2391
Постраждало людей	885	891	854	690	662	1005	892	839	1492	305	9675
Матеріальний збиток, млн. грн.	182,75	240,79	396,33	198,83	532,72	585,31	696,80	498,97	1629,73	8916,66	14682,93

The level of risks of natural and man-caused emergencies and the risks of damage from them remain quite high for most regions of Ukraine, which is confirmed by the huge amount of losses caused by emergency situations in 2020

THREATS TO THE PROPER FUNCTIONING OF CI FACILITIES

- ❑ The main reasons for the largest man-caused disasters that have occurred in Ukraine since 2000 are: the deterioration of the material base and equipment, violation of safety rules and human carelessness



- ❑ The strategic goals of the policy for managing CI facilities should include not only ensuring the sustainability of the national CI, but also building a system for CI protecting and increasing its sustainability based on a risk-oriented approach for all types of threats

According to experts, in the process of risk management related CI it is advisable to provide the following measures:

- *Increasing* the sustainability of CI to identified threats and hazards;
- *Preventing* malicious threats (terrorism, crime, etc.);
- *Planning* a timely response to failures in the functioning of CI in order to reduce their negative impact on the health and safety of the population, economy etc.;
- *Planning* to quickly repair and restore the functioning of CI in case of emergencies that could not be prevented



When planning audit activities, SAIs have to determine:

- Are there any CI facilities among the audited objects?
- Whether the assessment of risks/threats to the proper functioning of the CI facilities has been carried out?
- Whether certain measures have been taken to ensure efficient and safe functioning of CI?





When **conducting audits**, auditors should received answers about:

- formally adopted **strategy/policy** to ensure the protection and sustainability of CI;
 - relevant **authority** charged with ensuring the **protection and sustainability** of CI;
 - state **body responsible for informing and processing information** about incidents (crises) related to CI (may include a network of situational and information-analytical centers);
 - **state program of interdepartmental cooperation** in the field of protection and sustainability of CI;
 - officially adopted program of **public-private cooperation** to ensure the protection and sustainability of CI

*«The system is so reliable how reliable its
weakest link is»*





THANK YOU for ATTENTION!

