Protecting Critical Infrastructures – A Seven Step Identification Process

Guidance tool for use in civil protection
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Foreword
In the protection of critical infrastructures, the Federal Office of Civil Protection and Disaster Assistance (BBK) works closely together with numerous other stakeholders who are associated with this task. Our goal in this process is not only to create comprehensive protection concepts but also to ensure they can be practically applied. Infrastructures are considered to be critical if their failure or functional impairment could cause sustained disruption to the population. Yet how do we differentiate in civil protection between critical infrastructures and other, perhaps also very important, “non-critical” infrastructures? Why has there not been – at least up to now – any register of critical infrastructures that designates the same facilities as critical infrastructures at all administrative levels whether federal, state or local authority? Why is it necessary to clearly define the administrative level at which something has been identified as a critical infrastructure? As simple as these questions appear, answering them is a challenge. The BBK has provided this guidance tool to help solve this problem. The guidance tool is based on a method for identifying critical infrastructures that was developed at the BBK in cooperation with the German Federal Office for Information Security (BSI). This method utilises already existing approaches and combines them in an intelligent manner. We have not reinvented the wheel in this process but rather combined and harmonised past and current developments with one another. Approaches and practices for determining critical infrastructures exist at a local authority level through to the level of the EU, which has issued a European directive in which the identification of European critical infrastructures is one component (2008/114/EC). This allows defined criteria to be used to identify European critical infrastructure in the areas of transport and energy. The process for determining nationally important critical infrastructures will deliberately deviate from this procedure due to the high level of complexity in the EU approach. Although critical infrastructures will also be identified using a criteria-based procedure in Germany, the criteria used in the method for identifying critical infrastructures will be deliberately kept lean and above all individually adaptable to the specific collection framework. Incidentally, our method was already used for the first time for the BSI-KRITIS Ordinance in accordance with the IT Security Act. The identification process was adapted here to the specific framework of the act and has already been implemented by the ordinance. In the area of civil protection, it is, however, nec-
necessary to depart from and significantly expand upon the narrowly defined framework of the IT Security Act. The IT Security Act places too little focus on critical infrastructures, especially in the “public administration” and “culture and media” sectors, as well as on emergency systems for emergency prevention, civil protection or those infrastructures at a regional and local level. Especially at a local authority level, risk analyses for civil protection, contingency plans for emergency protection and fundamental crisis management plans are developed that also contain knowledge about critical infrastructures within the respective scope of responsibility, as well as their spatial locations. The identification and collection of these critical infrastructures needs to be carried out individually and in accordance with different threshold values in each case. It is thus not possible to develop a universally valid list – which answers one of the previously raised questions. However, what the BBK can offer is a guidance tool for the application of the method that will help you to identify important critical infrastructures at your particular level. This document provides a solid basis for providing concrete example applications in the form of so-called best practices, which we will develop and supplement successively in the future on our website.

Bonn, August 2017

Dr. Wolfram Geier
Head of Risk Management and International Affairs at the BBK
Introduction
Critical infrastructures (KRITIS) are organisations or institutions of special importance for general life whose failure could lead to severe supply bottlenecks, significant disruption to public safety or other dramatic consequences. In order to protect the population, their functionality should be maintained as far as possible in the event of an emergency. This requires the targeted application of measures in risk management and emergency planning. One fundamental requirement here is knowledge of the essential components of KRITIS.

The recommendation presented here takes the form of a guidance tool for identifying the components of KRITIS whose failure could significantly impair the ability of the infrastructure to provide services from a state or local authority perspective. It is based on a method for identifying critical infrastructures that was developed at the Federal Office of Civil Protection and Disaster Assistance (BBK) in cooperation with the German Federal Office for Information Security (BSI). The identification method was developed to enable those involved in civil protection to identify the following KRITIS components where necessary:

- **Critical services** (= essential supply services)
- **Critical processes** (= targeted activities; processes are identified that take place at the higher or highest levels and are indispensable for the supply of the service)
- **Critical facilities** (= concrete physical elements such as a hospital that are required for the critical processes)
- **Operator** (= runs organisations or institutions with critical facilities)

The guidance tool “A Seven Step Identification Process” presented here was developed from this method. It can be used for the purposes of civil protection. We have produced this guidance tool to give end users, especially in the federal states and local authorities, the opportunity to complete their own identification process (see Figure 1).

The guidance tool is intended for users with responsibility for KRITIS protection as part of state control and the provision of public services, as well as for other employees that are entrusted with corresponding tasks. This means representatives of authorities that analyse the region under their jurisdiction from a holistic perspective in relation to civil protection and thus place a focus on social interrelationships.

It provides a basic framework that should be applied to the individual goal and specific reference area and for which suitable values should be defined. Using the guidance tool for the identification process can enable a finer granularity and, in some cases, supplement existing approaches such as analyses for the protection of assets and those related to district or town surveys. Existing disaster protection and safety strategies at a state and local authority level could also be expanded to include the aspect of KRITIS protection where required. If other criteria and thresholds – such as e.g. population density, geographical distribution or conservation areas – are required from a regional perspective, these can be integrated into the “seven step identification process”. The guidance tool provides the required connection points for this purpose.

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1. BMI. 2009.
2. The method was originally developed to meet the legal requirements according to the responsibilities in §§17 and 18 Civil Protection and Disaster Assistance Act, taking into account the regulations in Article 19.6 (3) of the Framework Guidelines for Overall Defence. It is also used as the basis for the identification process in accordance with the IT Security Act (IT-SiG).
The method in its fundamental form has already been applied at a federal level. Its application has led to the definition of critical infrastructures in the sense of the IT Security Act. Authorities considered to be critical infrastructures and the culture and media sector, including their role as a warning system for the population, and other emergency systems in civil protection are not components of the IT Security Act, nor are critical infrastructures at a state or local authority level. This guidance tool is particularly intended for users from this area.

Guidance Tool → A Seven Step Identification Process

<table>
<thead>
<tr>
<th>Goal of Identification</th>
<th>To identify components of infrastructures whose failure or functional impairment could have serious effects on the population, as well as naming their operators.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Compulsion of the Guidance Tool</td>
<td>Recommendation</td>
</tr>
<tr>
<td>Area to be Investigated</td>
<td>Variable; with focus on municipalities</td>
</tr>
<tr>
<td>Users</td>
<td>Administrative Authorities</td>
</tr>
<tr>
<td>Focus</td>
<td>Local Critical Infrastructure</td>
</tr>
<tr>
<td>Prioritisation</td>
<td>Optional prioritisation based on time criticality</td>
</tr>
<tr>
<td>Assessed by the user</td>
<td>Services, processes, facilities and level of threshold value – dependent on the area under investigation</td>
</tr>
</tbody>
</table>

Figure 1 The “seven step identification process” is a recommended method. It is based on a method of identification developed by the BBK and is intended for users from above all federal states and local authorities.

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*This guidance tool is not intended as a recommendation for the implementation of the IT Security Act. The identification process for the IT Security Act is implemented in the BSI-KRITIS Ordinance.*
Method – explanation of the identification process

- **Quality**
  - Danger to "Life and Limb" of people?
  - Severe disruption of "Public Order and Safety"?
  - Serious disruption of "Social Life"?
  - Impairment of other "Critical Services" due to interdependencies?

- **Quantity**
  - Would the failure of the facility under investigation cause a direct or indirect impact on more people than is defined in the threshold value?

- **Time**
  - Could a failure lead to a disruption of critical services within a short amount of time?
  - Could a failure lead to a long-time disruption of critical services?
a. The identification framework

The method presented here is designed to support the process of identifying those areas that require particular attention from a civil protection perspective and allows the user to analyse the region under investigation from a holistic perspective. This identification process should be headed by public authorities. This is because knowledge about KRITIS and locating them within the respective scope of responsibility are fundamental aspects of the planning tasks and measures taken for risk and emergency management by public authorities. The BBK recommends that operators are integrated into the identification process at an early stage.

The identification process is used to determine the significance of KRITIS in the event of a failure in advance and to identify key aspects for further investigation as part of the risk and emergency management process. It is embedded in a framework that is outlined below:

- The identification process is an ex-ante tool for risk and emergency management by public authorities.
- The identification process acts as the basis for the targeted identification of measures and for cooperation with operators and other parties involved.
- By selecting the most significant components of the infrastructure, it reduces the overall work involved in risk and emergency planning.
- Potential negative consequences of a failure for the population are evaluated.
- The “all or nothing” principle is used here.

What would be the consequences if a service, process or facility completely failed?

- The analysis is based neither on risks nor vulnerabilities but rather on all hypothetically possible disruptions or failures.
- The analysis always takes into account the relevant or maximum performance of the service in its respective environment.

This means that the consequences of a failure of the heating supply are estimated for cold winter days. The consequences of a failure of firefighting and rescue services are described in the event of a fire or accident, etc.

- The analysis needs to be repeated at regular intervals.
- The identification process in civil protection is carried out in a process-oriented manner. It is only in this way that interrelationships between different critical infrastructures can be identified.
- A high criticality does not necessarily mean a high risk but rather indicates a high level of significance for civil protection.

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1 The identification of critical infrastructures can meaningfully augment, for example, a further risk analysis carried out by the local authority for the purposes of civil protection by defining at an early stage which critical services need to be focussed on in the municipality and which representatives from public agencies and industry need to be invited to a round table discussion. Further information on risk analyses in civil protection can be found in BBK, 2015.

2 Processes are understood here to mean targeted actions, i.e. processes/functions, that contribute to the provision of a service.
b. Elements of critical infrastructure

The term infrastructure describes all of the state and private sector institutions that are deemed necessary to provide public services and economic growth. An infrastructure is considered to be critical if a failure or disruption results in a serious negative impact on the provision of services to the population or on public order and safety in Germany. Sport and leisure facilities are a good example of infrastructure that, although important, is not deemed critical in the sense of civil protection.

Just as all infrastructure in Germany is not deemed to be critical infrastructure, it is not absolutely necessary to maintain the functionality of all elements of KRITIS in a crisis situation. This approach forms the basis of the identification phase. In the collection of such information for KRITIS, it is necessary to take into account the fact that infrastructure consists of various elements. This is also referred to as the “KRITIS system”. At a federal level, this system was firstly subdivided into so-called KRITIS sectors and branches. An example of a sector is the energy supply system. This can be broken down into the following branches: electricity supply, gas supply and petroleum supply. There are a total of nine sectors with 29 branches within KRITIS from a federal perspective. When the focus is placed on local authorities, it makes sense to supplement these particularly at a branch level – e.g. in the areas of waste disposal and care provision.

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Figure 2 Schematic diagram of the critical infrastructure system. Highly simplified.

Definition from Duden according to the Business Lexicon from the Federal Agency for Civic Education
A diverse range of services are provided within these sectors and branches. Critical services primarily reflect the mandate to supply services for the purposes of civil protection; these are thus primarily essential public services. A critical service for the electricity supply is, for example, the transmission of electricity.

If necessary, critical services can be subdivided further from the overall perspective of civil protection. Critical processes are immanently important for the provision of critical services in a crisis situation. The provision of interconnectors could, for example, be considered a critical process within the critical service that is the transmission of electricity.

Emergency planning and also protective measures primarily focus on the physical elements of KRITIS. In this document, the (major) physical elements of infrastructure are described as facilities. In accordance with the BSI-KRITIS Ordinance, critical facilities in the sense of this guidance tool are specific physical elements such as

a) production or operating facilities and other stationary facilities,

b) as well as machines or pieces of equipment that are connected to each other in a technical sense and thus exist in the same spatial context,

that are also required for the provision of a critical service. Critical facilities could be hospitals, ports or control centres.

Whether a facility is deemed critical within the KRITIS system is based on threshold values. These threshold values are key performance figures or quantities and are based on the size of the population being supplied. At a federal level, the IT Security Act defines the basic threshold as 500,000 directly or indirectly affected people. The threshold values have been based on this figure as far as possible. Different types of threshold value could be, for example, case numbers in hospitals, performance figures in a power plant or the amount of food produced in a factory.

The threshold value at a federal level is related to the basic threshold of 500,000 people defined in the IT Security Act and thus cannot be transferred to other areas such as federal states and local authorities. The development and definition of the type and above all the level of the threshold values during the identification phase can represent a great deal of work for those involved. Figure 2 provides a schematic and highly simplified representation of the KRITIS system.

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8 In other publications, a “critical service” is also often described using similar terms and is understood to be a synonym for terms such as “key processes relevant to the provision of services”, “vital infrastructure services”, “vital services and goods” or “essential public services”.
c. The criteria of quality, quantity and time

The fundamental framework for the identification process in civil protection and the relevant components and threshold values in the KRITIS system have already been explained previously in this chapter. The methodological process will now be briefly described below. This will then be translated into the seven step identification process.

The identification method is based on three criteria that are utilised to determine and, where necessary, prioritise the essential infrastructure components (see Figure 3):

- **QUALITY**,
- **QUANTITY** and
- **TIME**

The **QUALITY** and **QUANTITY** criteria act as filters to distinguish between critical and non-critical services, processes and facilities. The **TIME** criterion can be used, where necessary, to prioritise the critical facilities in terms of their relative importance to one another.

![Image of Figure 3: Identification based on the criteria of quality, quantity and time.](image-url)

**Goal:**
To identify components of infrastructures whose failure or functional impairment could have serious effects on the population, as well as naming their operators.

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9 A comprehensive description of the derivation of these three criteria can be found in Fekete, 2011. Fekete, 2012 provides a summary of the criteria, as well as explanations of the protection goals.
1. The criterion QUALITY

The core task of state and local authority security provision is to guarantee the provision of critical services (CS). These critical services are determined using the quality criterion and recorded together with the most important processes required for providing them. This criterion is broken down into two stages.

QUALITY I: Services are firstly selected based on their **importance for the population**. The following question should be answered:

“What supply services are absolutely essential for the population?”

The focus is thus placed on the higher or highest level supply processes: the critical services. Services are considered critical when their failure would:

- endanger the "life and limb" of people
- severely disrupt “public order and safety”
- seriously disrupt social life
- impair other critical services due to interdependencies

If services meet one of these conditions than they should be evaluated as critical. This means by implication that those services identified as non-critical (including their subordinate processes and facilities) are not considered in the subsequent steps. The first selection is thus made here.

QUALITY II: The second stage evaluates the **importance of subordinate processes for the critical services** (system relevance). The following question should be answered:

“What processes are required for the provision of the critical service?”

All processes that are absolutely essential for the supply of those services identified as critical are added. This is a further filtering stage. All of those processes that are not essential for the service are thus not analysed further.

All services and processes identified in the stages **QUALITY I and QUALITY II** are classified as critical. This criterion thus delivers a list of all critical services and their most important processes in the area under investigation.
2. The criterion QUANTITY

The QUANTITY criterion is used to identify those facilities that are indispensable for carrying out the critical processes in the region under investigation. This criterion thus also has a filtering function. Identification is based on threshold values. They define the extent of a failure that can still be tolerated and at which point the failure becomes unacceptable. As this evaluation is carried out from the perspective of civil protection, the threshold values relate to the impact of the failure on people\(^{10}\). If the failure of a facility or a type of facility could cause a disruption to critical services and processes that would directly or indirectly impact many people then the facility is classified as critical. The level of the threshold value is dependent on the level at which the identification process is being carried out and therefore needs to be defined individually for each area under investigation.

\(^{10}\) However, there are exceptions. In some areas, especially the ICT sector, it is not possible to relate the extent of the failure to a number of people. Alternative threshold values need to be defined in this case.

The result after applying the QUANTITY criterion is a list of critical facilities/types of facilities for the area under investigation.

All critical services, processes and facilities within the respective scope of responsibility have been identified using the QUALITY and QUANTITY criteria and these can now be allocated to their respective operators. This acts as a basis for a collaborative discussion of the required measures.

From the perspective of public authorities responsible for civil protection, these measures could otherwise only be roughly defined due to a lack of detailed knowledge about the critical infrastructures.
3. The criterion TIME – optional prioritisation

Depending on the defined goal and especially in the event of limited availability of resources, it can be useful to sort the critical facilities based on how time critical their failure would be. The need for action is greater the quicker the failure of a facility would impair the critical service – and thus impact the population – and/or would disrupt the critical service for a predictably long period of time.

Facilities whose failure is classified as less time critical could be examined further at a later point in time. There is NO further filtering at this stage but rather a prioritisation to support any possible discussion of the required measures.

The TIME criterion makes it possible to define the relative criticality of the identified facilities in the area under investigation with respect to one another.11

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11 The time criterion is thus exclusively applied for prioritising already identified critical facilities. This is not always necessary or desired. Therefore, the application of this criterion is optional. Local authorities that want to use the identification process as the basis for a concept to deal with power cuts would be advised to carry out a prioritisation and thus apply the time criterion. The specific use of the process in accordance with BSI-KRITIS-V does not, for example, apply the time criterion.
Guidance tool for identification – notes on application
a. Overview of the process

The BBK recommends applying the identification method presented here in civil protection on the basis of a seven step process. This will be explained below. Taking into account regional and other aspects and the desired level of detail in each case, the user can apply this basic framework to identify the critical components of infrastructures within their respective scope of responsibility and also prioritise them with respect to one another.

Figure 4 gives a schematic overview of the process steps.

<table>
<thead>
<tr>
<th>Steps of Identification</th>
<th>Selection</th>
<th>(Interim) Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preliminary Planning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Defining the goal, organisational framework</td>
<td>What is the goal of the identification process and how is it organised?</td>
<td>Organisational Framework</td>
</tr>
<tr>
<td>2. Services:</td>
<td>What services supply the population in the area under investigation?</td>
<td>List of services supplying the population</td>
</tr>
<tr>
<td>3. Critical services:</td>
<td>What services are essential for supplying the population?</td>
<td>Identification of critical services</td>
</tr>
<tr>
<td>4. Critical processes:</td>
<td>What processes are essential for the provision of critical services?</td>
<td>Identification of critical processes</td>
</tr>
<tr>
<td>5. Critical facilities:</td>
<td>The failure of which facilities or types of facilities in the critical processes would cause effects to a significant extent?</td>
<td>Identification of critical facilities</td>
</tr>
<tr>
<td></td>
<td>Concrete threshold values are to be determined</td>
<td></td>
</tr>
<tr>
<td>6. Prioritisation based on time criticality:</td>
<td>How quickly would the failure of critical facilities have an impact on the population?</td>
<td>Prioritising facilities based on time criticality</td>
</tr>
<tr>
<td>7. Critical operators:</td>
<td>Who operates critical facilities in the area under investigation?</td>
<td>List of operators of critical facilities</td>
</tr>
</tbody>
</table>

Figure 4 An overview of the seven step identification process.
b. Notes on application (form sheets)

The consecutive steps guide the user through the identification process. All steps are represented in form sheets to ensure they can be understood as well as possible.

(1) **Header:**

The header contains the area of analysis and the specific process step. These are presented together with the question being answered and the goal of the relevant step.

(2) **Input:**

The preliminary work required for the completion of this step is defined in the section “Input”. This information is usually generated in the preceding steps.

(3) **Procedure:**

The “Procedure” describes how it is possible to complete this analysis step. Examples are often given here.

(4) **Results:**

The results of this process step are recorded at the end.

(5) **Comments and hints:**

The seven step identification process is a recommended tool that has been kept generic enough for use in a broad range of applications. Possible alternatives, additions and further notes dealing with specific issues in the identification process are given in the section “Comments and hints” – without claiming to be exhaustive in any way.
Application of the seven step identification process
Goal: To identify components of infrastructures whose failure or functional impairment could have serious effects on the population, as well as naming their operators.

Result: List of Critical Facilities and their Operators

1. Preliminary planning
2. Identification of services
3. Identification of critical services – the criterion quality I
4. Identification of critical processes – the criterion quality II
5. Extent of the effects – the quantity criterion
6. Prioritising the critical facilities according to time – the time criterion
7. Identification of the operators of critical facilities
Goal: To identify components of infrastructures whose failure or functional impairment could have serious effects on the population, as well as naming their operators.

Result: List of Critical Facilities and their Operators

1. Preliminary planning
2. Identification of services
3. Identification of critical services – the criterion quality I
4. Identification of critical processes – the criterion quality II
5. Extent of the effects – the quantity criterion
6. Prioritising the critical facilities according to time – the time criterion
7. Identification of the operators of critical facilities
Step 1: Preliminary planning

Input:

Procedure:

The identification of critical services, their most important processes and facilities, as well as their allocation to their respective operators, serves in particular for the transfer of the knowledge gained to risk analyses and emergency management planning. Even if the identification process needs to be repeated at regular intervals, it is expedient to organise it in the form of a project.

In general, it is possible to both limit the work involved in the project to a reasonable amount and to improve the prospects of completion and success through careful preliminary planning, the early involvement of parties responsible or those possessing the relevant knowledge and the clear communication and documentation of decisions.

Naturally, the prerequisites for the successful completion of the identification process should be established before starting work. In addition, it is necessary for the goal of the identification process and the organisational framework for its implementation to be approved or defined by the superior/manager responsible.

Defining the goal:

The goal of the identification process in civil protection is:

To identify components of infrastructures whose failure or functional impairment could have serious effects on the population, as well as naming their operators.\(^\text{12}\)

Approval of the goal confirms, on the one hand, the fundamental commitment of the public authority to carrying out the project and also to the provision of the required resources for the identification process. On the other hand, the goal forms the basis for measuring success later on. The following thus applies: Defining the goal of the analysis is a management level responsibility!

\(^\text{12}\) This goal can naturally be defined in more detail where required.
Organisational framework for the identification process:

Although the analysis work involved in the process described here is manageable, the following organisational issues, amongst other things, should be clarified before getting started:

- What legal/organisational obligations and responsibilities exist?
- What area should be investigated? (e.g. district, municipality) The area being investigated should be clearly designated and defined.
- Which employees will be tasked with carrying out the analysis? How much of their working time will it account for? In what organisational form? (e.g. in the form of a project group)
- What is the time schedule for its implementation?
- Which other employees/roles, bodies and external institutions should be informed of the analysis? Should external parties be involved? Which ones?
- What costs are involved and should be estimated (personnel, travel, events, etc.)?
- How should the procedure and the results be documented? Who will be responsible for this?
- How should the results of the identification process be handled? What will the results be used for?

These specifications should also be approved or defined by management. Defining the goal and the organisational framework provides a rough concept for the subsequent work and for the assignment of those designated to implement it.

➔ Results:

The results of this step are the definition of the goal and the organisational framework for the identification process.

The rough concept approved by management defines the goal, responsibilities and the resource and process planning. These act as the basis for the subsequent stages of the process and for measuring the results later on.

➔ Comments and hints:

Involving the operators

Contact should be made with operators of supply services in the area being examined at an early stage. The earlier they are involved in the process, the easier it is to collect information in a targeted manner. Information and ideas could be exchanged, for example, in the form of a round table discussion. This could thus be used as an element for structuring the communication between the government or local authority and operators and also be used in cooperative measures within risk and emergency management at a later date.
Goal: To identify components of infrastructures whose failure or functional impairment could have serious effects on the population, as well as naming their operators.
Step 2: Identification of services

➔ **Input:**

- Information determined during the preliminary planning (rough concept for implementation, resource planning, participation)
- If already available from previous work: Overview of the supply processes

➔ **Procedure:**

A list of services supplying the population in the region is created in this step. Examples of services are “waste water disposal” or also “geriatric care”. The list should be as complete as possible because only the services identified here will be examined for their criticality in the next step and, if relevant, included in subsequent planning.

It is possible that a list of services already exists for the respective scope of responsibility. Otherwise, the list can be compiled using existing, general inventories and lists and then individually adapted. One option for compiling the list is to consider the three points described below. This is merely an example and makes no claim to completeness.

1. **KRITIS sectors and branches**

A **uniform sector classification** to describe the system of critical infrastructures has been in force at a federal and state level since 2009. These sectors include, for example, “energy”, “water” and “information and telecommunication technologies”. The total of nine sectors are then subdivided at a federal level into 29 branches. “Energy” has, for example, the branches “electricity”, “gas” and “petroleum” (see Table 2). Services are provided by infrastructures and thus it is relatively easy to derive them from the sectors and branches. For example, the service “waste water disposal” is provided in the “water” sector and the “waste water” branch.

2. **Public services**

It is sensible at a local authority level to also add any public services that have not already been included via the KRITIS sectors and branches. This includes things such as “child care”, “geriatric care” and also “provision of assembly areas”. These services are typically found at a local authority level and could be considered essential from this perspective. Not all of these services would be classified as KRI-
TIS. Table 1 provides an example list of possible services that exist at a local authority level from the areas of “food”, “potentially hazardous facilities” and “other”.

<table>
<thead>
<tr>
<th>Areas</th>
<th>Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food</td>
<td>- Supply of food</td>
</tr>
<tr>
<td></td>
<td>- Storage of food</td>
</tr>
<tr>
<td></td>
<td>- Housing animals in sheds</td>
</tr>
<tr>
<td></td>
<td>- Veterinary food control</td>
</tr>
<tr>
<td></td>
<td>- Animal disease control</td>
</tr>
<tr>
<td>Other</td>
<td>- Child care</td>
</tr>
<tr>
<td></td>
<td>- Providing assembly areas</td>
</tr>
<tr>
<td></td>
<td>- Providing facilities for emergency care</td>
</tr>
<tr>
<td></td>
<td>- Waste disposal</td>
</tr>
<tr>
<td>Protection against hazardous incidents and</td>
<td>- Operation of a potentially hazardous facility</td>
</tr>
<tr>
<td>radiation (not KRITIS)</td>
<td>- Operation of a facility according to the Radiation Protection Ordinance</td>
</tr>
<tr>
<td></td>
<td>- Trades related to protecting against potential hazards/radiation</td>
</tr>
</tbody>
</table>

Table 1  Designation of possible critical services at a local authority level in the areas of food, other and protection against hazardous incidents and radiation. The list is also not conclusive for the example areas. However, it clearly demonstrates how the focus of the identification process at a local authority level can differ from that at a federal level.

3. Economic sectors

Another aid that can be used for identification is the “Classification of Economic Activities”\(^\text{13}\) from the Federal Statistics Office. This outlines the different economic activities. They are already described as processes and can thus be directly added as services at the desired level of classification. Services that are not found within the respective scope of responsibility (e.g. in an industrial estate) are simply omitted.

A list of services in the region collected together from the three previously described sources is certain to be very comprehensive already. As the analysis focuses on the companies and authorities located in the relevant region, it can, however, be useful to supplement the list with information from e.g. the commercial register.

In order to ensure that all services have been identified, we recommend that the list is reviewed at this stage by other project members, other employees at the authority and also – in the best case scenario – by the operators.

➔ Results:

Services for supplying the population are recorded in a list.

➔ Comments and hints:

**Governmental and administrative services**

A link is often made between KRITIS and their commercially organised operators. Yet many services for the population are not provided by commercial enterprises but rather by the government or local authority. It is thus also necessary and particularly important to keep services provided by the government and local authorities in mind during the identification of services. These are highly diverse and range from measures for disaster protection and the disposal of animal carcasses through to the issuing of important personal documentation or general police measures.
Goal: To identify components of infrastructures whose failure or functional impairment could have serious effects on the population, as well as naming their operators.

Result: List of Critical Facilities and their Operators

- 7: Identification of the operators of critical facilities
- 6: Prioritising the critical facilities according to time – the time criterion
- 5: Extent of the effects – the quantity criterion
- 4: Identification of critical processes – the criterion quality II
- 3: Identification of critical services – the criterion quality I
- 2: Identification of services
- 1: Preliminary planning
Step 3: Identification of critical services – the criterion quality I

> **Input:**

- List of services in the region under investigation from step 2

> **Procedure:**

**Critical services**\(^{14}\) reflect the mandate to supply services for the purposes of civil protection and are provided within the infrastructures. In order to be able to determine the critical services from the previously created list of services, the first criterion “quality I” needs to be applied. A service is considered to be critical if at least one of the following key questions can be answered with “yes”.

**Key questions for determining the significance of a service for the population based on the performance of the service**

**KRITIS supply aspect**

- Could a failure of the service endanger the “life and limb” of the population?
- Could a failure of the service endanger “public order and safety”?
- Could a failure of the service seriously disrupt “social life”?
- Is the service being investigated essential for the provision of other services whose failure would endanger “life and limb”, “public safety” or “economic performance”? (dependency)

A critical service could be e.g. “waste water disposal”. A failure of this service could cause an epidemic/hygiene problems and have wide-ranging negative effects on the population.

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\(^{14}\) In other publications, a “critical service” is also often described using similar terms and is understood to be a synonym for terms such as “key processes relevant to the provision of services”, “vital infrastructure services”, “vital services and goods” or “essential public services”.
Optional addition of the risk aspect

With a view to subsequent measures in risk management and emergency planning, it can be useful at a local authority level, as well as during the process for identifying assets to handle disasters and the requirements for international cooperation, to identify areas where failure or manipulation will result in danger for the population and environment. This is not an aspect of KRITIS protection and thus not a focus of this guidance tool but the process nevertheless enables such services to be added in order to sensibly pool work resources. A fifth question can thus be added where required:

- Risk aspect
  Could the failure of or disruption to the service result in a serious danger for people or the environment?

An example list of all key questions can be found in the Annex.

➔ Results:

This step delivers a list of all supply services that are essential for the population in the area under investigation. The critical services have thus been identified.

➔ Comments and hints:

Examples of critical services

The BSI-KRITIS Ordinance designates critical services at a federal level in accordance with the IT Security Act. Another example of sectors that have been identified can be found in Table 2 below. This could be used as a first method for reviewing your own identification process but should not be considered conclusive especially at a local authority level.

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15 The term “serious danger” is used in the sense of §2 (4) of the Hazardous Incident Ordinance.
<table>
<thead>
<tr>
<th>Sectors</th>
<th>Branches</th>
<th>Critical services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy</td>
<td>- Electricity</td>
<td>- Electricity supply</td>
</tr>
<tr>
<td></td>
<td>- Gas</td>
<td>- Gas supply</td>
</tr>
<tr>
<td></td>
<td>- Petroleum</td>
<td>- Fuel and heating oil supply</td>
</tr>
<tr>
<td></td>
<td>- District heating</td>
<td>- District heating supply</td>
</tr>
<tr>
<td></td>
<td>- Gas supply</td>
<td>- Fuel and heating oil supply</td>
</tr>
<tr>
<td></td>
<td>- Petroleum</td>
<td>- Petroleum supply</td>
</tr>
<tr>
<td></td>
<td>- District heating</td>
<td>- District heating supply</td>
</tr>
<tr>
<td></td>
<td>- Electricity supply</td>
<td>- Electricity supply</td>
</tr>
<tr>
<td></td>
<td>- Gas supply</td>
<td>- Gas supply</td>
</tr>
<tr>
<td></td>
<td>- Fuel and heating oil supply</td>
<td>- Fuel and heating oil supply</td>
</tr>
<tr>
<td></td>
<td>- District heating supply</td>
<td>- District heating supply</td>
</tr>
<tr>
<td>Food</td>
<td>- Food industry</td>
<td>- Food supply</td>
</tr>
<tr>
<td></td>
<td>- Food retail trade</td>
<td>- Food supply</td>
</tr>
<tr>
<td>Financial and insurance</td>
<td>- Banks</td>
<td>- Monetary transactions</td>
</tr>
<tr>
<td>industries</td>
<td>- Stock exchanges</td>
<td>- Cash supply</td>
</tr>
<tr>
<td></td>
<td>- Financial service providers</td>
<td>- Bank lending</td>
</tr>
<tr>
<td></td>
<td>- Insurance</td>
<td>- Trading in securities and derivatives</td>
</tr>
<tr>
<td></td>
<td>- Medical care</td>
<td>- Insurance services</td>
</tr>
<tr>
<td>Health</td>
<td>- Medicines and medical products</td>
<td>- Medical care</td>
</tr>
<tr>
<td></td>
<td>- Laboratories</td>
<td>- Supply of medicines (including vaccinations and protective materials according to radiation protection law)</td>
</tr>
<tr>
<td></td>
<td>- Medical care</td>
<td>- Supply of medical products</td>
</tr>
<tr>
<td></td>
<td>- Laboratory diagnostics</td>
<td>- Laboratory diagnostics</td>
</tr>
<tr>
<td></td>
<td>- Laboratory diagnostics</td>
<td>- Laboratory diagnostics</td>
</tr>
<tr>
<td>Information technology and</td>
<td>- Telecommunications</td>
<td>- Cable-based and wireless (also space-based) language and data transmission</td>
</tr>
<tr>
<td>telecommunications</td>
<td>- Information technology</td>
<td>- Data storage and data processing</td>
</tr>
<tr>
<td>Media and culture</td>
<td>- Broadcasting (television and radio)</td>
<td>- Warnings and alarms</td>
</tr>
<tr>
<td></td>
<td>- Printed and electronic media</td>
<td>- Supply of information</td>
</tr>
<tr>
<td></td>
<td>- Archives, museums and libraries</td>
<td>- Establishing a public sphere</td>
</tr>
<tr>
<td></td>
<td>- Cultural monuments and historic sites</td>
<td>- Storing cultural objects and documents that provide a common identity</td>
</tr>
<tr>
<td></td>
<td>- Warnings and alarms</td>
<td>- Conveying a cultural identity</td>
</tr>
<tr>
<td></td>
<td>- Supply of information</td>
<td>- Archiving and storage of micro-filmed documents from German history in accordance with the Hague Convention for the Protection of Cultural Property</td>
</tr>
<tr>
<td></td>
<td>- Establishing a public sphere</td>
<td>- Storing cultural objects and documents that provide a common identity</td>
</tr>
<tr>
<td></td>
<td>- Storing cultural objects and documents that provide a common identity</td>
<td>- Conveying a cultural identity</td>
</tr>
<tr>
<td></td>
<td>- Conveying a cultural identity</td>
<td>- Archiving and storage of micro-filmed documents from German history in accordance with the Hague Convention for the Protection of Cultural Property</td>
</tr>
<tr>
<td></td>
<td>- Defining a cultural identity</td>
<td>- Storing cultural objects and documents that provide a common identity</td>
</tr>
<tr>
<td></td>
<td>- Dispensing of justice and its execution</td>
<td>- Storing cultural objects and documents that provide a common identity</td>
</tr>
<tr>
<td>Government and administration</td>
<td>- Governance and administration (executive)</td>
<td>- Implementation of law as part of the administration of regulations and services</td>
</tr>
<tr>
<td></td>
<td>- Parliament (legislative)</td>
<td>- (Police and non-police) emergency prevention</td>
</tr>
<tr>
<td></td>
<td>- Judiciary and judicial institutions</td>
<td>- Defence</td>
</tr>
<tr>
<td></td>
<td>- Emergency and rescue services</td>
<td>- Legislation</td>
</tr>
<tr>
<td></td>
<td>- Implementation of law as part of the administration of regulations and services</td>
<td>- Control of the government</td>
</tr>
<tr>
<td></td>
<td>- Implementation of law as part of the administration of regulations and services</td>
<td>- Dispensing of justice and its execution</td>
</tr>
<tr>
<td>Traffic and transport</td>
<td>- Air transport</td>
<td>- Services for transporting people</td>
</tr>
<tr>
<td></td>
<td>- Maritime transport</td>
<td>- Services for transporting goods</td>
</tr>
<tr>
<td></td>
<td>- Inland waterway transport</td>
<td>- Satellite navigation systems and satellite-based positioning, navigation, time and meteorological services</td>
</tr>
<tr>
<td></td>
<td>- Rail transport</td>
<td>- Satellite navigation systems and satellite-based positioning, navigation, time and meteorological services</td>
</tr>
<tr>
<td></td>
<td>- Road transport</td>
<td>- Satellite navigation systems and satellite-based positioning, navigation, time and meteorological services</td>
</tr>
<tr>
<td></td>
<td>- Logistics</td>
<td>- Satellite navigation systems and satellite-based positioning, navigation, time and meteorological services</td>
</tr>
<tr>
<td>Water</td>
<td>- Public water supply</td>
<td>- Drinking water supply</td>
</tr>
<tr>
<td></td>
<td>- Public waste water disposal</td>
<td>- Waste water disposal</td>
</tr>
</tbody>
</table>

Table 2 Overview of sectors, branches and critical services from a federal perspective. The sequence in which the items are listed does not imply any weighting. This table merely serves to provide readers with an overview and information on potentially critical branches and does not contain predeterminations based on laws or ordinances that affect KRITIS.
Goal: To identify components of infrastructures whose failure or functional impairment could have serious effects on the population, as well as naming their operators.

Result: List of Critical Facilities and their Operators

1. Preliminary planning
2. Identification of services
3. Identification of critical services – the criterion quality I
4. Identification of critical processes – the criterion quality II
5. Extent of the effects – the quantity criterion
6. Prioritising the critical facilities according to time – the time criterion
7. Identification of the operators of critical facilities
Step 4: Identification of critical processes – the criterion quality II

➔ Input:

- List of critical services from step 3.
- If available: Overview of the main processes for the critical services.

➔ Procedure:

The previously identified critical services only describe the supply processes in the region under investigation in a very abstract way. Therefore, these processes should be broken down further depending on the requirements. This means that the critical services will be described in terms of their constituent processes; a process chart should be created as far as possible. The two lists used in step 2 and other specialist literature could be utilised for this purpose. We recommend that these processes are identified in cooperation with the infrastructure operators and/or other experts.

What subordinate processes are essential for the supply of the critical service? Processes are considered to be critical if the following question can be answered with a “yes”.

**Key question for determining the significance of a process for the supply of the critical service (system relevance)**

- Would the failure of the process disrupt the critical service to such an extent that it would endanger “life and limb”, “public order and safety” or “social life”, impair another critical service or result in a “serious danger”?

Always check here whether the failure of a process would disrupt a superordinate process to such an extent that it will ultimately cause a disruption to the service.

*Example:* The critical service “manufacturing food and animal feed” can be broken down into many further processes to a high level of detail. The “manufacture of baked and pasta products” is a process within the critical service. It can be subdivided in turn into subordinate processes such as the “manufacture of pasta products” and also “manufacture of confectionery”, etc. The process “manufacture of pasta products” would be a critical process. The process “manufacture of confectionery” would not necessarily be considered critical in the sense of civil protection. A reference point for the identification of the processes in this example could be the recommendations for private food provision issued by the federal...
government and the food reserves of the federal government: A stockpile of pasta is recommended. If there was a breakdown of confectionery production this would restrict people’s diets but would not endanger the “life and limb” of the population or “public order and safety”. The process “manufacture of confectionery” does not have a high degree of relevance for the critical service “manufacturing of food and animal feed” (which is also reflected in the fact that the stockpiling of confectionery is not taken into account in food supply planning).

➔ Results:

This process step identifies the critical process for the critical services.

➔ Comments and hints:

Note on information management:

This and the subsequent process steps will probably identify infrastructure components that are:

a) critical for the region being investigated but outside of the respective scope of responsibility.

b) probably critical for other/superordinate regions (e.g. probably critical on a federal level but not for the state being analysed) but are within the respective scope of responsibility.

➔ The relevant regional authorities and federal authorities should be informed and, if necessary, this should initiate an exchange of information on any measures to be taken.

Significance for the service:

Whether a process is essential for the critical service can also be verified with the aid of the key questions from step 3. These key questions are described in more detail in Annex 6a.

Note on the level of detail:

Depending on the goal, availability of resources and the local conditions, the division of the critical service into subordinate processes is carried out at various levels of detail.

It may be expedient in some cases to remain at the level of services for the identification process and any subsequent planning. This level of detail will also already deliver useful findings. It is thus possible to skip step 4 – the identification of critical processes. It could also be delayed and completed at a later point in time (when e.g. more time resources are available).

All services and process that were identified using the criterion quality – meaning those identified in process steps 3 and 4 – are critical and thus flow into the subsequent steps of the identification process.
**Result:** List of Critical Facilities and their Operators

1. Preliminary planning
2. Identification of services
3. Identification of critical services – the criterion quality I
4. Identification of critical processes – the criterion quality II
5. **Extent of the effects – the quantity criterion**
6. Prioritising the critical facilities according to time – the time criterion
7. Identification of the operators of critical facilities

**Goal:** To identify components of infrastructures whose failure or functional impairment could have serious effects on the population, as well as naming their operators.
Step 5: Extent of the effects – the quantity criterion

➔ Input:

- List of all critical services and their critical processes from step 4.
- Information on facilities in the area under investigation (e.g. lists from commercial inspections, district surveys, assets identified in the course of asset protection).

➔ Procedure:

The critical services were broken down in the previous steps into subordinate critical processes. Physical facilities (see Figure 2) are now added to these processes. Facilities are e.g. a “port” or a “control centre”. Facilities are considered to be critical if their failure would disrupt the critical processes to such an extent that a large number of people are directly or indirectly impacted by the failure of a critical service. In order to be able to differentiate between critical (many people impacted) and non-critical (no or few people impacted) facilities, it is necessary to define specific threshold values. A threshold value indicates the scale of a potential failure.

All facilities required for carrying out a relevant critical process are listed for this purpose. The level of detail may differ depending on the goal and the administrative level.\(^{16}\)

Example: While it would be sufficient at a federal level to identify a large water supply plant as a critical type of facility for the critical service of “supplying drinking water”, it could be broken down further at local authority level into waterworks, flood containers, catch basins, etc.

The criticality of the facilities is then tested using the threshold values. The following key question is used for this purpose:

**Key question for determining the extent of the failure:**

- Would the failure of the facility under investigation cause a direct or indirect impact on more people than is defined in the threshold value?

If the answer to the question is “yes”, the facility is considered to be critical.

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\(^{16}\) Note: The BBK produces a comprehensive list of different types of facilities at a local authority level. This can be requested by users.
The threshold values could be defined based on the number of inhabitants in the region under investigation. The larger the region, the higher the threshold value as a general rule. In addition, it is possible for the threshold values to vary between different processes and also facilities.

**Example:** The only hospital in an autonomous town with 50,000 inhabitants has 250 beds. It also serves the surrounding areas. Case numbers could represent the threshold value. From a local perspective, this hospital would be evaluated by the user at a local authority level as critical for their area under investigation because the locally defined threshold value for case numbers is sure to be exceeded. From a national perspective for a user carrying out an analysis at a federal level, the national threshold value (in this example: case numbers) would probably not be exceeded. The hospital would still be important from a federal perspective but not considered critical in the sense of civil protection at a federal level.

In the case of a maximum care hospital (e.g. a university clinic), it is possible on the other hand that both threshold values will be exceeded due to the high case numbers. This means that a university clinic in this purely fictitious example would be considered critical at both a local authority and federal level.

It is important when defining the threshold values that figures for the non-supplied population are indirectly considered in some circumstances, e.g. via the catchment area. In other cases, it is not possible to define the impact on people at all e.g. for computer centres. A different variable is required here e.g. processing power.

The type of threshold value can also be individually defined. However, there are survey data and also definitions at a federal level that are transferable and we recommend that they are used. The level of the threshold value must be defined for each respective identification process and can thus not be given by the BBK.

If the facilities exhibit special features, these should be documented and the facilities should also be considered to be critical in the case of doubt even if the defined threshold value is not exceeded. Examples of these special features could be “hidden champions”, geographical concentrations, potentially hazardous facilities or facilities highlighted in the identification of assets.

➔ **Results:**

The result of this process step is a list of critical facilities.

➔ **Comments and hints:**

Hidden champions, etc.:

Also pay attention during the identification process to unique facilities that are run by operators who could be described as so-called hidden champions. These are small and medium-sized companies who

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37 See BSI-KRITIS Ordinance. Note: The Ordinance includes threshold values for facilities associated with critical services at a federal level according to the IT Security Act. For these services, it is possible to use the same types of threshold values as a basis. However, the level of the threshold value should be individually defined depending on the region under investigation (e.g. municipality).
often provide unremarkable products at first glance. These products are, however, significant for processes in critical services. It is also important at this point to focus on suppliers, special service providers, etc.

Example: A medium-sized company produces the precursor to an antibiotic and is the only producer of this product in Europe. A failure of the production site would have significant effects on the critical service “health care provision”. All of the people in the examined region (as well as millions more) would be impacted by the failure.

Emergency systems:

Have you also included facilities for emergency systems?

Emergency systems are absolutely vital for the carrying out crisis management. In a preliminary analysis, these types of facilities could possibly fall below the defined threshold value and may need to be individually classified as “critical”.

Geographic concentration:

If there is a significantly high geographical concentration of facilities in the area under investigation, it may be expedient to view these facilities as a “group”. The threshold value would thus not be evaluated for individual facilities but rather for all of them together.

Example: The two waterworks in a local authority are within walking distance of one another. It is thus necessary to evaluate how many people would be impacted in the event of a failure of supply when both fail at the same time.

Facilities with a risk aspect

If the risk aspect is also being considered during the identification of critical services and processes, facilities whose failure or manipulation would endanger the population or environment are now also identified as a consequence.

Facilities subject to the Hazardous Incident Ordinance and those subject to the Radiation Protection Ordinance are already known at a local authority level due to the applicable ordinances. No threshold values are defined as part of the KRITIS identification process for these facilities. The threshold values can be found in the respective ordinance and adopted. It may be useful for subsequent work in risk management and emergency planning to also include these facilities – already identified via the respective ordinance – and to add a corresponding reference in the documentation.

Especially at a local authority level, it may be important for the user to also include facilities (risk aspect) that are not otherwise identified. These facilities should be correspondingly documented in the list because the relevant threshold value will then also take into account the risk aspect.
Facilities from the identification of assets

If facilities have already been defined as part of an identification of assets in the federal state, they should also be identified using this method. Any deviations should be checked.

All facilities that were identified using the criterion quantity – meaning those identified in process step 5 – are critical. The overall result of steps 3-5 is now a sorted list of all critical infrastructure components in the region under investigation.
Result: List of Critical Facilities and their Operators

Goal: To identify components of infrastructures whose failure or functional impairment could have serious effects on the population, as well as naming their operators.

1. Preliminary planning
2. Identification of services
3. Identification of critical services – the criterion quality I
4. Identification of critical processes – the criterion quality II
5. Extent of the effects – the quantity criterion
6. Prioritising the critical facilities according to time – the time criterion
7. Identification of the operators of critical facilities
Step 6: Prioritising the critical facilities according to time – the time criterion

➔ Input:

- List of all critical processes (services and subordinate processes) and their critical facilities from the previous steps.

➔ Procedure:

This optional step enables you to sort the critical facilities with respect to one another and thus allows the prioritisation of the measures to be taken later on. This is carried out based on the time period until a failure disrupts critical services to such an extent that it would have an impact on the population. The shorter the time, the more critical the facility.

It is useful to carry out this step, for example, when it is not possible to analyse all critical facilities in the current risk and emergency planning cycle due to limited resources. Facilities whose failure is classified as being less time critical should thus be examined at a later point in time18.

The user estimates (ideally with the support of the operators and also other experts where necessary) how quickly the failure of each facility would cause a disruption to the critical processes and thus have a negative impact on the population. The shorter this time period, the more time critical the facility is in comparison to the other facilities. The facilities are thus sorted with respect to one another based on their time criticality (“benchmark”).

➔ Results:

The result of this process step is a sorted list: The critical facilities are listed in relation to one another based on their time criticality (“benchmark”).

18 If the prioritisation of the critical facilities is not necessary, it is possible to leave out this step. In the identification process according to the BSI-KRI-TIS Ordinance, for example, the criterion time is not considered.
Comments and hints:

Length of the effects:

Knowledge sometimes already exists about a special system-inherent characteristic of facilities that is likely to result in longer downtimes. This includes, for example, a long restoration time. These special characteristics should be documented. In cases of doubt, these facilities should also be prioritised.

Example list of priorities:

While preparing recommendations for the supply of fuel in the event of a power cut, the working group has created an example list of priorities for possible types of facilities (Figure 5). This was consciously done at a general level and thus does not “save” a local authority user the task of carrying out their own identification and prioritisation process. However, it offers a good comparison and can also be used as the basis for evaluating the completeness of the results.

The following institutions and facilities should be especially considered, evaluated and accordingly taken into account when prioritising the distribution of fuel:

- Authorities and organisations responsible for safety (BOS) (fire service, rescue service, police, aid organisations, technical relief agency (THW), disaster protection agencies, other operative services)
- Digital emergency service communications providers (BOS communications)
- Hospitals, retirement homes and care facilities
- Supply and disposal companies (electricity, gas, water, waste water)
- Telecommunication network operators
- Regionally specific service providers/infrastructures (e.g. livestock companies, ports, pilotage)
- Medical infrastructure services (care services, health care by doctors under the statutory health care system, dialysis centres)
- Operations and institutions to supply the population (food, etc.)
- Emergency shelters for disaster protection, collective accommodation
- (Primarily) public traffic and transport
- (Primarily) public service broadcasters (informing the population)
- Correctional facilities
- Potentially hazardous operations (Seveso Facilities)

Figure 5 General list of priorities from the Fuel Supply in the Event of a Power Cut Working Group. BBK, 2017.

The result of process step 6 is now a sorted list of all critical facilities in the region under investigation.

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19 Risks have not yet been taken into account in the identification process. It is thus usually not possible to determine the downtime because the type of disruption often has a direct impact on the measures to be taken and thus on the restoration time. However, there are sometimes inherent “points of no return” in some systems. These are known and should be taken into account. Example: In the case of a gas supply connected to the grid, after a certain period of time restoring the supply will cause massive delays, even when there is no physical damage, because empty pipelines firstly need to undergo an extensive testing and approval process. In the case of an electricity supply also connected to the grid, there is no such point of no return.
Result: List of Critical Facilities and their Operators

Goal: To identify components of infrastructures whose failure or functional impairment could have serious effects on the population, as well as naming their operators.

1. Preliminary planning
2. Identification of services
3. Identification of critical services – the criterion quality I
4. Identification of critical processes – the criterion quality II
5. Extent of the effects – the quantity criterion
6. Prioritising the critical facilities according to time – the time criterion
7. Identification of the operators of critical facilities
Step 7: Identification of the operators of critical facilities

➔ **Input:**

- List of critical facilities sorted according to time criticality if applicable. Results from the previous steps.

➔ **Procedure:**

The critical facilities are allocated to their operators. This acts as the basis for cooperation for the protection of critical infrastructures. Ultimately, knowledge about the relevant responsibilities is required for agreeing possible measures and setting up projects.

This is certainly the quickest of all the steps. This is because operators of the respective facilities are usually already known due to existing cooperations with the operators as part of the analysis and the already existing knowledge of the user. This step involves the creation of a full list and depicting it e.g. in table or map form. The spatial localisation of the facilities is advisable. This is required for further measures within risk and crisis management.

➔ **Results:**

The operators of the relevant critical facilities are designated. This is carried out in a table, on a map, etc.

➔ **Comments and hints:**

**Note for users from local authorities:**

Knowledge about the most important facilities and their operators now allows possible protective measures to be defined in more detail as part of crisis and emergency management. The “seven step identification process” can be used as a component of further civil protection planning.

One fundamental requirement for all planning is knowledge of the location of the critical facilities within the local authority.
Outlook
This guidance tool acts as a set of instructions for identification and prioritisation in civil protection. The generally described procedure is not a completely new methodology. Instead, this recommendation is an amalgamation of the various approaches used for identification and thus represents a harmonised approach.

The BBK plans to add specific practical examples to this guidance tool. The aim here is to enable the exchange of best practice examples, especially at a local authority level.

By using the search terms “identification process applications”, you can find a generic example for the identification process at a local authority level on the BBK website. Real examples will be added successively.

If you would also like to provide us with your implementation of the identification process or parts thereof as a best practice example, we would be pleased to receive them. Please contact Department II.4 at the BBK in this case. These examples may be provided with your agreement either for public use (on the BBK website) or partial public uses (only for local authorities, e.g. via training courses held by the Academy For Crisis Management, Emergency Planning And Civil Protection (AKNZ)).
Glossary
Asset

Used as a synonym for facility in this guidance tool.

Asset protection

In the Framework Guidelines for Overall Defence. It is stipulated that asset protection should also be carried out in the event of a disaster or defence situation. Responsibilities for asset protection in the event of an incident need to be defined. In addition, the assets requiring protection need to be identified. The precise details for this process are explained in the relevant guidelines.

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Civil protection

Civil protection is an umbrella term used to describe all tasks and measures taken by local authorities and federal states for disaster protection and by the federal government for civil defence.

Note: Civil protection thus comprises all non-police and non-military measures for the protection of the population and the resources required for life against disasters and other serious emergencies, as well as against the effects of war and armed conflict. Civil protection also includes measures for avoiding, limiting or combating the named events.

BBK, 2011.

Criterion

A criterion is a distinguishing feature used as a condition for a fact, verdict or decision.

Duden (accessed on 28.09.2017)

Critical

The word “critical” can either refer to the word “criticism” or the word “criticality”.

Critical – in relation to criticism – is usually linked to a negative assessment in the general use of the word in English. Something described as “critical” suggests a negative turn of events and possibly a dangerous development. In relation to criticality, “critical” means that something has a prominent and especially important role in relation to an asset requiring protection owned by e.g. the population. This has neither a negative or positive connotation. “Critical” is exclusively used in this sense in this guidance tool.
**Critical infrastructure**

Infrastructure of special importance for general life whose failure could lead to severe supply bottlenecks, significant disturbances to public safety or other dramatic consequences.

*BMI, 2009.*

**Critical process**

Procedure/function that is indispensable for the provision of a critical service.

**Critical service**

A service supplying the general public whose failure or functional impairment would result in significant supply bottlenecks or endanger public safety or have comparable consequences.

*Based on §1 (3) BSI-KRITIS-V*

**Criticality**

In the sense of this guidance tool, criticality is a measurement of the importance of a service, process or a facility. Criticality is measured based on the consequences that a failure would have on the provision of the service to the population. This is carried out using three criteria: quality, quantity and time.

*Based on BMI, 2011.*

**Criticality analysis**

A criticality analysis is used to determine the critical internal processes and elements.

*Based on BMI, 2011.*

**Facility**

Facilities in the sense of this guide are specific physical elements such as

a) production or operating facilities and other stationary facilities,

b) as well as machines or pieces of equipment that are connected to each other in a technical sense and thus exist in the same spatial context,

and

that are also required for the provision of a critical service.

*Based on §1 (1) BSI-KRITIS-V*
**Hazardous incident**

An incident that would mean that the operation of the facility or an activity cannot be continued for reasons of safety and for which the facility should be appropriately designed or preventative safety precautions should be in place.

*Note:*
*Regulations for the chemical industry: Hazardous Incident Ordinances*
*Regulations for the nuclear power industry: Radiation Protection Ordinance*

§3(2) 28. Radiation Protection Ordinance

**Identification**

In the sense of this guidance tool, identification describes the naming of the components of KRITIS whose failure could significantly impair the ability of the infrastructure to provide services from a state or local authority perspective. Critical services, critical processes and critical facilities are identified.

**Infrastructure**

Infrastructure describes all state and private sector institutions that are deemed necessary to provide public services and economic growth. This infrastructure is usually broken down into technical infrastructure (e.g. traffic and communication institutions, energy and water supply or disposal) and social infrastructure (e.g. schools, hospitals, shopping outlets or cultural facilities).

*BSI, 2014.*

**Institution**

All companies, authorities and other institutions that operate an infrastructure.

*Based on BMI, 2011.*

**Operator**

A natural person or legal entity who has a certain influence on the condition and operation of a facility or parts thereof in accordance with legal, economic and actual circumstances.

§1 (2) *BSI-KRITIS-V*

**MIKI**

Method for identifying critical infrastructures from the BSI. Directly used in BSI-KRITIS-V. Its validity is limited to the IT Security Act.
**Process**

Procedure/function for the provision of a service.

*Based on BMI, 2011.*

**Serious danger**

A danger which

a) threatens human life or there is reason to fear serious impairment to human health,

b) can negatively impact the health of a large number of people or

c) could damage the environment, especially animals and plants, the soil, water, the atmosphere and cultural or other material assets, if a change in their stock or availability would negatively impact the common good.

*Hazardous Incident Ordinance §2 (4)*

**Service**

In the sense of this guidance tool, a service is defined as an action performed to supply the population. Services also describe here those services consumed by the population, which usually also covers the provision of material goods. Services include e.g. supplying drinking water and supplying food but also geriatric care and medical care. These services are generally supplied by operators. In the case of disaster or civil defence, it can be expanded to included civil protection services (e.g. supply of drinking water from emergency wells).

*Note: In contrast to economic teaching, the distinction between services and material goods is not as sharp.*

**Threshold value**

An incident that would mean that the operation of the facility or an activity cannot be continued for reasons of safety and for which the facility should be appropriately designed or preventative safety precautions should be in place.

*Note: The level of the threshold value is dependent on the level at which the identification process is being carried out and therefore needs to be defined individually for each area under investigation.*

*Based on BSI-KRITIS-V*
Town/district surveys

Town or district surveys are designed to act as a decision-making aid and provide senior administrative officials in a district or autonomous town with basic information for their work in the event of a disaster; they contain information on the structure of the district, the resources and possibilities for helping people in an emergency situation.

_Bundestag printed document 10/3949. District survey for the purposes of civil and disaster protection._
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eign policy-military crisis, defense and internal state of emergency.

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Annex
Key questions for identifying critical services – example application

Key questions for determining the significance of a service for the population

Supply aspect

Could a failure of the service endanger the “life and limb” of the population?

- The direct effects on basic human needs are recorded here.
- The following areas could be negatively impacted:
  - Drinking water (drinking, cooking, personal hygiene)
  - Food
  - Heat
  - Shelter (also emergency accommodation)
  - Fire protection
  - Rescue
  - Medical care including the supply of medicines

Could a failure of the service endanger “public order and safety”?

- The direct effects on law enforcement are recorded here.
- The following areas could be negatively impacted:
  - Executive
  - Judiciary
  - Legislative

Could a failure of the service seriously disrupt “social life”?  

- Primarily focuses on public services and economic services that are important for the function of a modern society but whose failure would not have any direct effect on the “life and limb” of the population.
The following areas could be negatively impacted:

- Information and communication
- Education and care (e.g. geriatric care, nurseries, schools, universities)\(^{20}\)
- Mobility
- Supply of money and payment systems (cash, wage and pension payments, savings)
- If necessary, others such as rubbish disposal, waste water disposal, assemblies (sports and assembly areas), recuperation

→ Is the service being investigated **essential** for the provision of other services whose failure would endanger “life and limb”, “public safety” or “economic performance”? (**dependency**)

→ Even if the service was not identified using the previous three questions, it should still be considered as critical if it would not be possible to provide critical services without it.

**Risk aspect (not KRITIS, also possible to collect this information but observe the Hazardous Incident Ordinance and Radiation Protection Ordinance in the process)**

→ Could the failure of or disruption to the service result in a serious danger for people or the environment?

- Services whose failure or disruption would not effect the supply to the population but instead would represent a danger for people and the environment are identified here.
  - Chemical industry
    - e.g. Risk of explosion, risk of poisoning
  - Nuclear technology

\(^{20}\) In the “KIBEX” project for example, which focusses on a local authority level, it is also recommended that nurseries and geriatric care homes are included in a KRITIS vulnerability analysis. BBK, 2013.