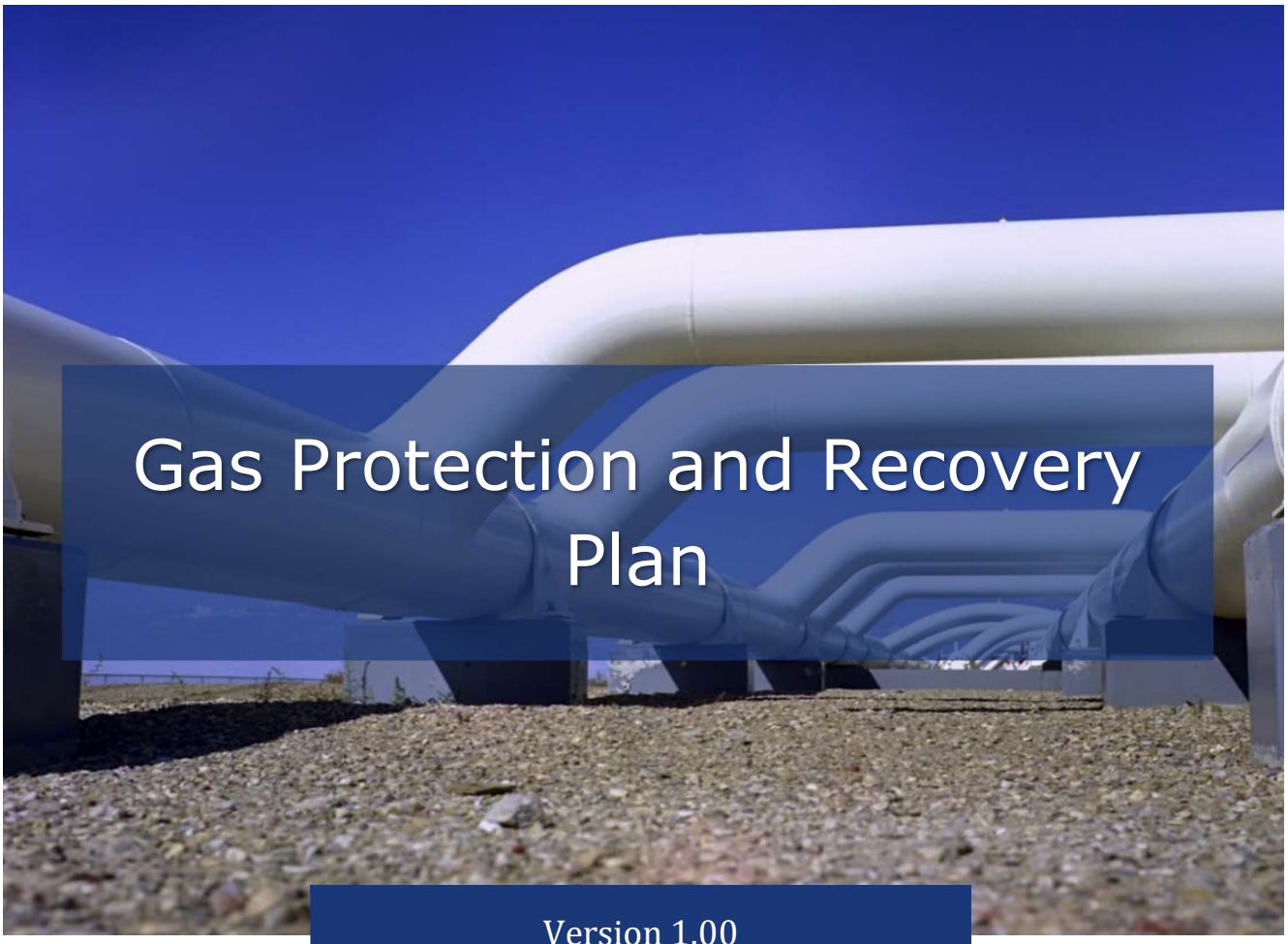

Gas Protection and Recovery Plan

Version 1.00

Ministry of Economic Affairs and Climate Policy
Directorate-General for Climate and Energy

Gas Protection and Recovery Plan

Version 1.0

11 September 2019

Quick-read

1. Introduction

This quick-read is intended as a handy and practical summary of the Gas Protection and Recovery Plan (BH-G), which is intended for use in the event of an (imminent) significant deterioration of the gas supply situation. The quick-read provides a brief overview of the components of the plan that are relevant at that time. You can find a comprehensive explanation in the main body of the BH-G, to which we refer often.

The BH-G has been established by the Minister of Economic Affairs and Climate Policy (hereinafter: the Minister), being responsible for the security of the gas supply in the Netherlands, in close cooperation with the national network operator, Gasunie Transport Services (GTS), and following consultation with stakeholders.

2. Crisis levels

Article 11(1) of EU Regulation 2017/1938[1] distinguishes three crisis levels: early warning, alert and emergency[2]. The levels are used to designate three types of situations (and to describe the information structures and measures linked to that situation). National crisis management also distinguishes gas interruptions, gas incidents and gas crises – analogous to other crisis types. The figure below clarifies how both sets of classifications relate to each other. You will find an explanation of this in Chapter 3.

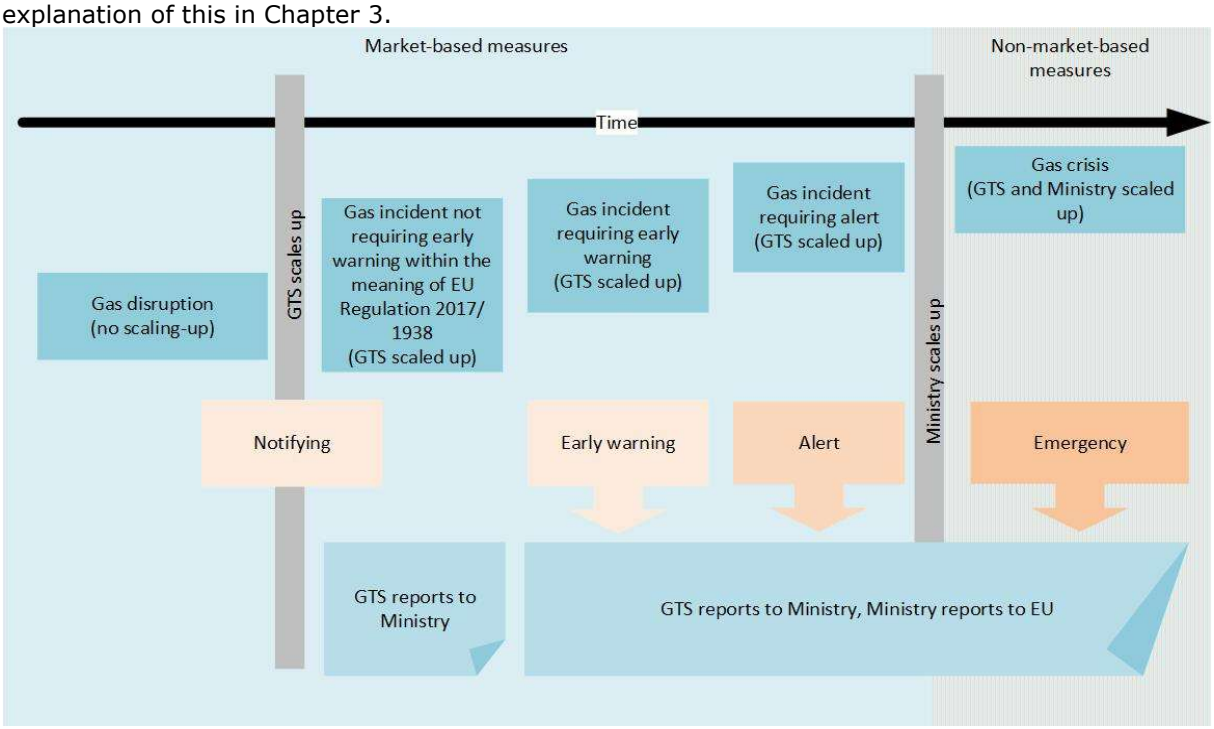

Figure 1. Crisis levels and related types of measures and types of reports to the EU

[1] Regulation (EU) No 2017/1938 of the European Parliament and of the Council of 25 October 2017 concerning measures to safeguard the security of the gas supply and repealing Regulation (EU) No 994/2010 (OJEU 2017, L 280/30)

[2] In the context of the BH-G, 'emergency' refers to the emergency level as referred to in Article 11(1)(c) of the EU Regulation. This is distinct from an emergency as referred in to Article 4.1.4.4 of the LNB Gas transport code, which can be declared by GTS itself. Where necessary, the distinction will be made explicit.

3. Early warning, alert and declaration of emergency

To allow action to be taken quickly at the correct level, the EU Regulation stipulates that Member States must elaborate how they will inform the European Union of the aforementioned situations. Chapter 6 of the BH-G provides this elaboration. It also elaborates the national notification process which may be pertinent in situations that (still) fall outside of the scope of the EU Regulation. The lines of contact for each process are depicted schematically below. For clarification, please see paragraphs 6.2 to 6.5 inclusive.

a) Notifying

In the case of (imminent) disruptions of the gas supply that are serious enough to scale up for as national network operator (gas incident), but cannot result in an alert or emergency, the notification process comes into operation:

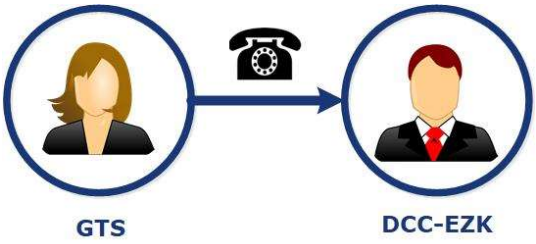

Figure 2. Schematic depiction of notifying

b) Early warning

If concrete, serious and reliable information from GTS or another body indicates that an event that is likely to cause significant deterioration of the gas supply and which could lead to the creation of an alert or emergency level may occur, the early warning process comes into operation[3]:

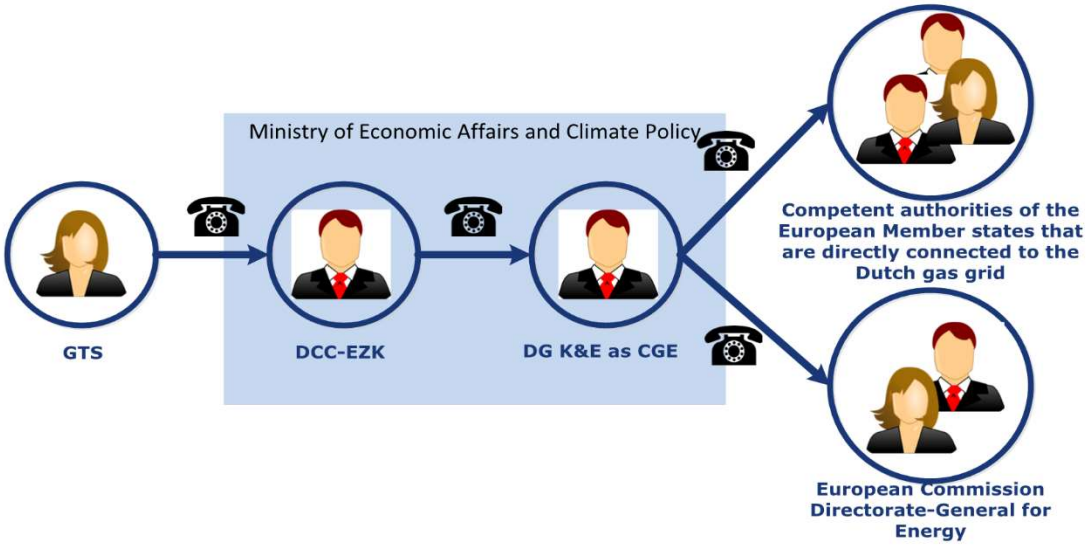

Figure 3. Schematic depiction of early warning

[3] If low-calorific gas is involved, the competent authority in France is also informed by the Director-General for Climate and Energy in his or her role as Gas and Electricity Crisis Manager. This also applies to the alert/alerting and declaration of emergency processes.

c) *Alert/alerting*

If the gas supply is actually disrupted, or there is an exceptionally high demand for gas, that causes significant deterioration of the gas supply situation but the market is still able to manage this disruption or demand, the alert/alerting process comes into operation:

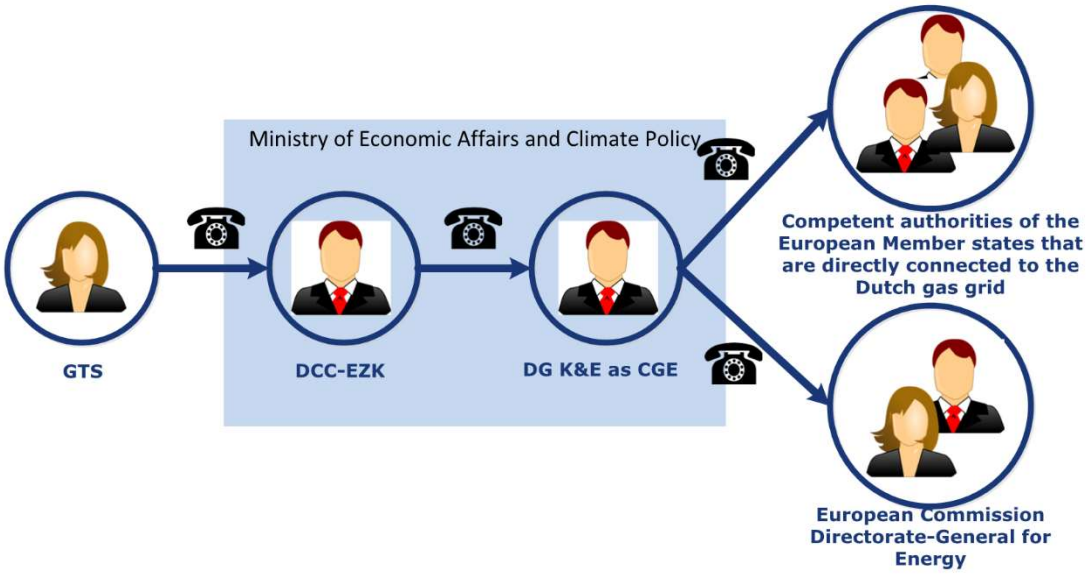

Figure 4. Schematic depiction of alert/alerting

d) *Declaration of a gas crisis/emergency*

In a situation where there is exceptionally high gas demand, significant disruption of the gas supply or other significant deterioration of the gas supply situation and all relevant market-based measures have been implemented, but the gas supply is insufficient to meet the remaining gas demand so that non-market-based measures have to be additionally introduced, the Director-General for Climate and Energy in his or her role as Gas and Electricity Crisis Manager declares a gas crisis/emergency and informs the European Commission. The complete process for declaring a gas crisis/emergency is as follows:

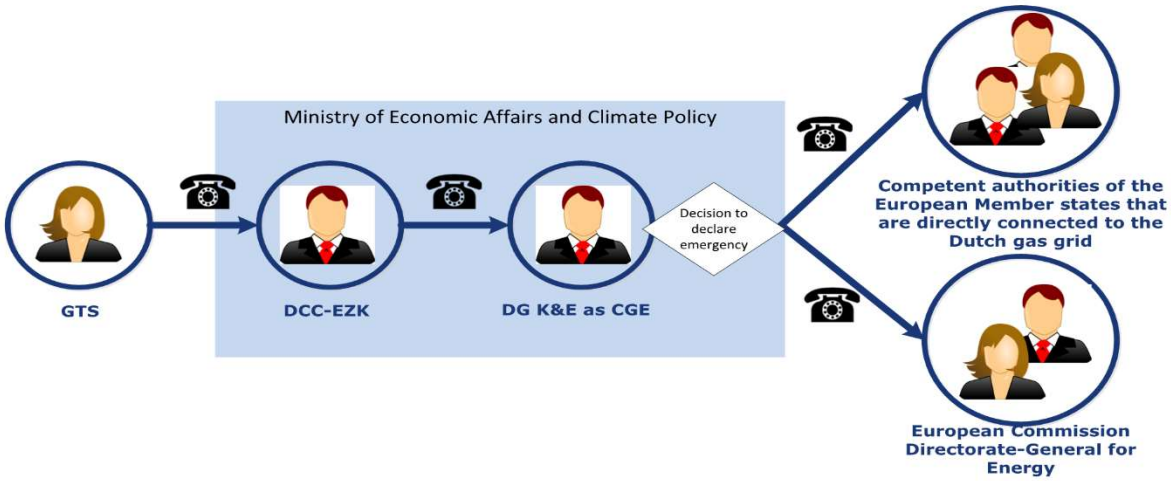

Figure 5. Schematic depiction of declaration of a gas crisis/emergency

4. Organisation

Scaling up occurs in the event of a gas crisis/emergency. This means that an event structure (incident or crisis organisation) is assembled. This event structure has a modular design. The summary below depicts the teams involved from the Ministry of Economic Affairs and Climate Policy and GTS as well as the interdepartmental crisis structure and the other crisis partners involved and their mutual relationships. The blocks enclosed by a solid line show teams specially formed for the situation; the blocks enclosed by a dashed line are permanent structures.

Please see Chapter 4 for clarification of the roles of the various parties involved. Please see Chapter 5 and paragraph 6.6 respectively for clarification of the composition of the crisis organisation and method of up-scaling.

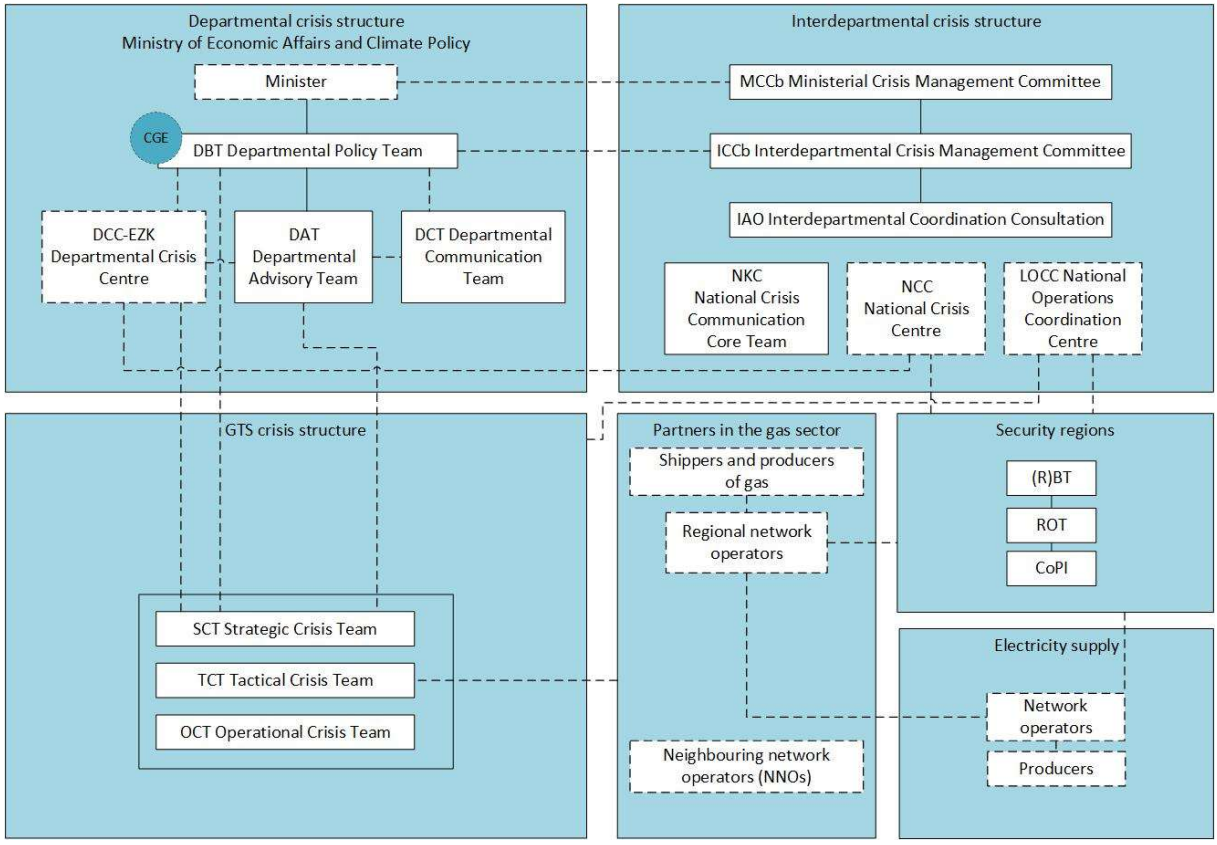

Figure 6. Organisation

5. Measures

In the event of an early warning or an alert, market-based measures are possible. Descriptions and clarification of these measures are included in paragraph 8.2 (gas disruption), 8.3 (gas incident requiring early warning) and 8.4 (gas incident requiring alert). In the event of an emergency in the sense of the EU Regulation (gas crisis), non-market-based measures are considered in accordance with the ladder of measures to be adopted shown below.

The ladder of measures to be adopted shows a fixed order in which measures are considered starting with the first measure. However, not every measure will be possible for all types of deterioration of the gas supply situation. This could be due to the urgency of the situation, among other things. In practice, this has consequences for how quickly progress can be made up the

ladder. A comprehensive explanation of the ladder of measures to be adopted is included in paragraph 8.5. An explanation of every measure in this ladder is included in paragraph 8.6 and in Annex 1.

Ladder of measures to be adopted		Type of measure	Type of customer targeted
1	Call to reduce natural gas consumption	Social	All customers
2	a. Non-binding request to neighbouring countries (government to government) to reduce gas consumption b. Ask European Commission to declare a regional emergency	International	Customers who are not protected
3	Institute a savings tender 'reduced consumption'	Economic	Customers who are not protected
4	Impose an additional tax on natural gas	Economic	Customers who are not protected
5	Enforced fuel switching for industries	Legal	Customers who are not protected
6	Enforced fuel switching for the generation of electricity	Legal	Customers who are not protected
7	Disconnect customers who are not protected (administrative and/or technical disconnection)	Legal/technical	Customers who are not protected
8	Disconnect customers other than solidarity-protected customers (administrative and/or technical disconnection)	Legal/technical	Customers other than solidarity-protected customers
9	Invoke mutual solidarity among EU Member States	International	Customers other than solidarity-protected customers
10	Administratively disconnect solidarity-protected customers	Legal	Solidarity-protected customers
11	Technically disconnect regions, including export	Technical	Solidarity-protected customers

Table 1. Ladder of measures to be adopted in a gas crisis/emergency

Although emergency laws such as the Dutch Rationing Act can be enforced in the case of large-scale gas shortages that lead to a gas crisis/emergency, some of the aforementioned measures will require the amendment of existing regulations. This will also need to address the question of compensation and establish the roles and responsibilities of the various actors, including but not limited to GTS, the regional network operators and the regulator.

6. Exchange of information

The figure below shows how information is shared between the crisis teams and the parties involved. Please see paragraph 6.8 for an explanation of the exchange of information.

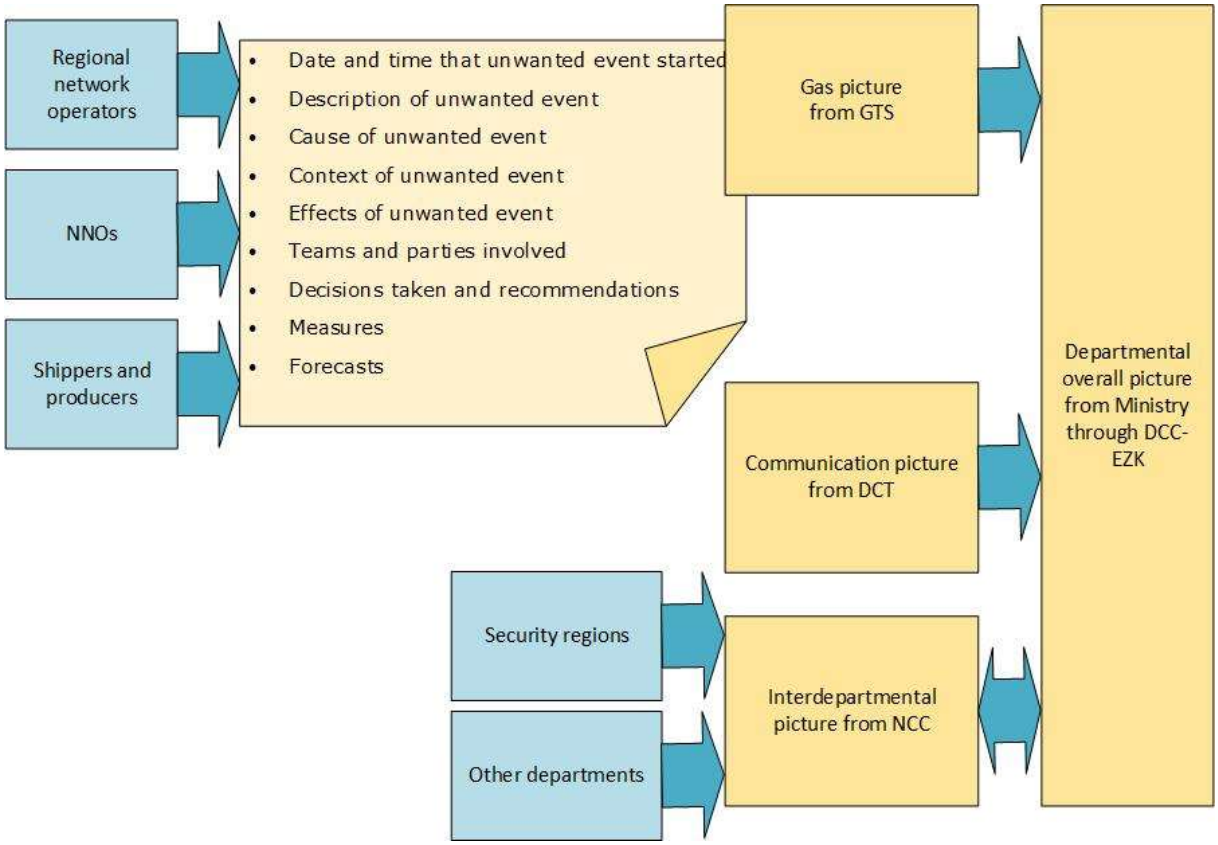

Figure 7. Schematic depiction of exchange of information (creating the departmental picture)

Contents

1. Introduction

1.1 Introduction

Problems in the field of gas supply in the Netherlands can have major consequences: society is highly dependent on gas for a major part of the energy supply. A shortage of (the correct type of) gas, resulting in a severe deterioration of the gas supply situation therefore requires a well-considered, appropriate approach[4].

Requirements for this approach have been set at the European level. Pursuant to Article 8(2)(b) of the Regulation (EU) No 2017/1938 of the European Parliament and of the Council of 25 October 2017 concerning measures to safeguard the security of the gas supply and repealing Regulation (EU) No 994/2010 (OJEU 2017, L 280/30) (hereinafter: the EU Regulation), the competent authority of each Member State has the obligation to establish an emergency plan containing the measures to be taken to remove or mitigate the impact of a disruption of the gas supply in accordance with the rules for emergency plans in Article 10. The Minister of Economic Affairs and Climate Policy (hereinafter: the Minister) is the competent authority in the sense of Article 3(2) of the EU Regulation and is responsible for establishing the emergency plan. Annex VII of the EU Regulation contains a template for an emergency plan.

In addition to this European obligation to establish an emergency plan, it is also necessary to formulate a crisis plan for the situation in which the gas supply situation deteriorates significantly. A crisis plan sets out the crisis structure, working method and distribution of roles and responsibilities relating to the security of the gas supply during a structural shortage of gas from a national perspective as a result of which the measures formulated within the framework of the emergency plan can be put into operation in the Dutch context. The Gas Protection and Recovery Plan (hereinafter: BH-G) in front of you has been established by the Minister, being responsible for the security of the gas supply in the Netherlands, in close cooperation with the national network operator, Gasunie Transport Services (GTS), and following consultation with stakeholders.

The BH-G addresses the responsibilities of the Minister in the event of an (imminent) disruption of the gas supply. It specifies the measures that must be considered in the event of an (imminent) significant deterioration of the gas supply situation in order to protect the gas transport and distribution network, thereby safeguarding the security of the gas supply.

As the ramifications on society of a disruption of the gas supply exceed the Minister's responsibilities, these must be addressed in accordance with the BH-G and in close cooperation with the parties involved. The BH-G is intended to serve as a building block for this broader perspective.

The emergency plan in the sense of the EU Regulation is an integral part of the BH-G. This plan has been compiled from the mandatory components of the template for the emergency plan to which has been added a description of the Dutch crisis organisation and management structure. The mandatory components of the emergency plan in accordance with Annex VII of the EU Regulation are included in paragraphs 2.2, 4.4–4.8, 5.2, 5.7, 6, 8.3–8.5, 8.7, 9 and 10 and in Annexes 1 and 3. Annex 6 contains a correlation table for the summary.

[4] The BH-G addresses an (imminent) gas shortage. In all other types of crisis (such as explosions and accidents), the Directorate-General for Climate and Energy Manual on Decision-making in Crisis Situations is used. The network operators have their own emergency plans.

1.2 Purpose and target group

The BH-G shows the action to be taken during preparations for and the combating and management of a significant deterioration of the gas supply situation. It achieves this by:

1. ***Providing an insight into*** the parties involved in combating a significant deterioration of the gas supply situation, the distribution of roles, tasks, responsibilities and powers between those parties, the crisis structure during a gas incident or gas crisis, and how the countermeasures and implementation processes should work in the event of a significant deterioration of the gas supply situation.
2. ***Providing a method*** for making choices and implementing measures during a significant deterioration of the gas supply situation.

The BH-G is mainly intended for 'decision-makers' within the Ministry of Economic Affairs and Climate Policy (hereinafter: the Ministry) and at the GTS in the event of a significant deterioration of the gas supply situation. Secondary to this, the other parties involved and society as a whole are part of the target group.

1.3 Relationship to other manuals and contingency plans

The Ministry recognises three levels of documentation which focus on being prepared for crises:

1. At the Ministry level, the *Ministry of Economic Affairs and Climate Policy Manual on Decision-making in Crisis Situations* applies. This sets out the structure and working method at the departmental level and links the Ministry's crisis structure to the interdepartmental crisis structure.
2. All Directorates-General, staff directorates and operational services have drawn up a *generic manual* which elaborates how they, as departments, deal with crises in their own policy field.
3. The departmental generic manuals are followed up by *specific manuals and contingency plans*. They further elaborate the policy approach for a specific theme, domain or type of crisis. This BH-G is an elaboration of a part of the Directorate-General for Climate & Energy's generic manual.

Figure 8 shows how the various manuals and contingency plans relate to each other.

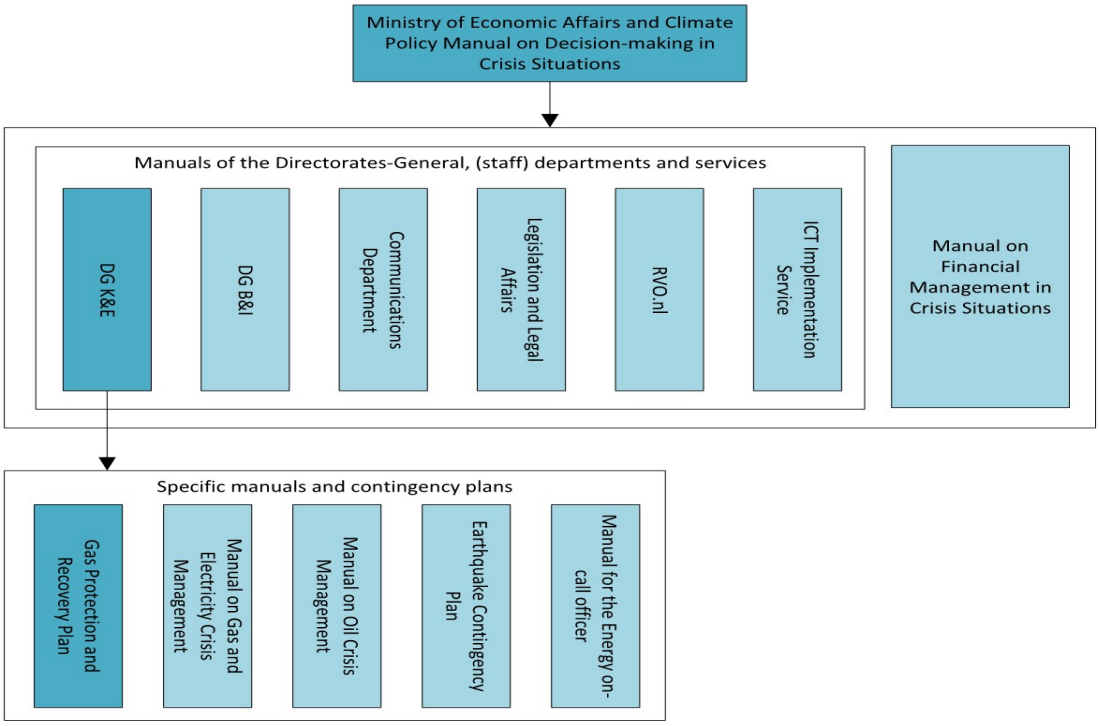

Figure 8. Relationship between manuals and contingency plans

The Earthquake Contingency Plan is of special significance to the BH-G, because it sets out how the crisis organisation is shaped to be prepared for an induced earthquake resulting from gas extraction.

1.4 Status and maintenance

The Ministry is responsible for managing the BH-G. As an emergency plan in the sense of Article 8(2) of the EU Regulation, it should be updated every four years as per 1 March 2019, or more regularly if required by circumstances or requested by the Commission.

Partly against this background, the Ministry checks if the BH-G requires amendment annually. It does this in consultation with the National Coordinator for Security and Counterterrorism and GTS and (for the regional network operators) in consultation with Netbeheer Nederland.

1.5 Version management

All changes made to this BH-G and the annexes are recorded in this paragraph, so that you can see at a glance which changes were made in a specific period. The initial version of all documents is version 1.00.

If small changes are made to a chapter or annex, we will use a revision line in the margin. This will clearly indicate what has been changed without needing to go through the entire chapter or entire annex.

Date	Chapter/annex	Description of change	Version

1.6 Structure of the document

This plan has the following structure:

Chapter 2 considers the content of the EU Regulation as a legal framework for the approach to an (imminent) significant disruption of the gas supply.

Chapter 3 links the European terms early warning, alert and emergency to the customary Dutch classification of gas disruptions, gas incidents and gas crises.

Chapter 4 provides an insight into the roles and duties of the parties involved during an (imminent) significant disruption of the gas supply.

Chapter 5 provides an insight into the composition of the crisis structure that should come into being when the various parties involved scale up their crisis organisations.

Chapter 6 sets out the main processes for combating a significant deterioration of the gas supply situation.

Chapter 7 sets out the main implementation processes during a significant deterioration of the gas supply situation.

Chapter 8 provides a summary of the possible measures to be adopted in a significant deterioration of the gas supply situation and then links them to each other in a ladder of measures to be adopted which shows the order in which the measures are implemented, thereby providing a guide when making choices.

Chapter 9 describes the assurance of the BH-G.

Chapter 10 describes the EU regional dimension.

Annex 1 sets out the measures to be adopted in accordance with Annex VII of the EU Regulation.

Annex 2 sets out scenario drivers for differentiating and designating situations of significant deterioration of the gas supply situation.

Annex 3 sets out a number of example scenarios to illustrate the operation of the measures.

1.7 Follow-up steps

Although emergency laws such as the Dutch Rationing Act can be enforced in the event of large-scale gas shortages that lead to a gas crisis/emergency, some of the measures in this BH-G will require the amendment of existing regulations. This will also need to address the question of compensation and establish the roles and responsibilities of the various actors, including but not limited to GTS, the regional network operators and the energy regulator.

2. EU Regulation 2017/1938

2.1 General

The aim of the EU Regulation is to safeguard the security of the gas supply. From that perspective, this Regulation serves as the main framework for this BH-G. The Regulation introduces various measures to ensure the proper and continuous working of the internal market for gas. This Regulation also arranges the setting up of a number of mechanisms – including a solidarity measure – which oblige Member States to harmonise arrangements in the field of security of the gas supply.

For instance, the EU Regulation mandates that, among other things, the competent authorities in the Member States establish an emergency plan to remove or mitigate the impact of a disruption of the gas supply (Article 8(2)(b))[5]. Article 10 summarises the topics that should be addressed by the emergency plan per crisis level ('early warning', 'alert' and 'emergency'). This includes the:

- roles and responsibilities of those involved and interested parties;
- the technical and legal arrangements to prevent undue gas consumption by customers who are connected to a gas distribution or transport network but not protected customers;
- the measures and actions that will be taken to mitigate the potential impact of a disruption of the gas supply;
- cooperation with other Member States (regional chapters per risk group) and the implementation of the solidarity mechanism; and the accessibility of information, information flows and reporting obligations.

2.2 Crisis levels

Article 11(1) of the EU Regulation distinguishes the following three crisis levels:

a. early warning level ('early warning'): where there is concrete, serious and reliable information that an event which is likely to result in significant deterioration of the gas supply situation may occur and is likely to lead to the alert or the emergency level being triggered; the early warning level may be activated by an early warning mechanism;
b. alert level ('alert'): where a disruption of the gas supply or exceptionally high gas demand which results in significant deterioration of the gas supply situation occurs but the market is still able to manage that disruption or demand without the need to resort to non-market-based measures;
c. emergency level ('emergency'): where there is exceptionally high gas demand, significant disruption of the gas supply or other significant deterioration of the gas supply situation and all relevant market-based measures have been implemented but the gas supply is insufficient to meet the remaining gas demand so that non-market-based measures have to be additionally introduced with a view, in particular, to safeguarding gas supplies to protected customers in accordance with Article 6 of the EU Regulation.

[5] In addition, the Regulation mandates a national risk assessment and a preventive action plan. For risk groups, it also specifies 'regional' risk assessments and regional chapters for the preventive action plans and emergency plans.

2.3 Market-based and non-market-based measures

The measures to ensure the security of the gas supply contained in a preventive action plan and an emergency plan shall be clearly defined, transparent, proportionate, non-discriminatory and verifiable, shall not unduly distort competition or the effective functioning of the internal market in gas and shall not endanger the security of the gas supply of other Member States or of the Union (Article 8(1)).

In addition to distinguishing the three levels (early warning, alert and gas crisis/emergency), the difference between the market-based and non-market-based measures is important. Market-based measures are based on the customary market mechanisms in the gas market, such as drawing on gas storage facilities. Market parties, such as GTS, can decide whether to take these measures and can implement these measures themselves.

Non-market-based measures are measures that are based exclusively on decisions by the Minister. These measures have an impact on the market. Non-market-based measures are only implemented if there is an emergency situation in the sense of the EU Regulation, because in such a situation market mechanisms alone can no longer guarantee the security of supply.

All three crisis levels involve an (imminent) significant deterioration of the gas supply situation. At the early warning level, there are *indications* of this significant deterioration. At the alert level, there is an actual significant deterioration that can be managed using *market-based measures*. In the case of a gas crisis/emergency, *non-market-based measures* are needed to manage the significant deterioration.

The levels as set out in the EU Regulation can follow one another in time, for example when an early warning is followed by an alert and then a gas crisis/emergency. When this is the case, the various levels could follow each other very quickly, as a result of which not all levels will be passed through distinguishably.

2.4 Protected customers and solidarity-protected customers

An important element is that the emergency plan pays particular attention to the protection of certain groups of customers, including households and customers providing essential social services. This is defined in Article 2(5) of the EU Regulation:

5. 'protected customer' means a household customer who is connected to a gas distribution network and, in addition, where the Member State concerned so decides, may also mean one or more of the following, provided that enterprises or services as referred to in points (a) and (b) do not, jointly, represent more than 20% of the total annual final gas consumption in that Member State:
   a. a small or medium-sized enterprise, provided that it is connected to a gas distribution network;
   b. an essential social service, provided that it is connected to a gas distribution or transmission network;
   c. a district heating installation to the extent that it delivers heating to household customers, small or medium-sized enterprises, or essential social services, provided that such installation is not able to switch to other fuels than gas.

In addition, it concerns solidarity-protected customers, i.e. customers that a Member State has defined as protected and for whom the Member State can rely on solidarity from other Member States for the supply of gas. According to the definition in Article 2(6):

6. 'solidarity-protected customer' means a household customer who is connected to a gas distribution network, and, in addition, may include one or both of the following:
   a. a district heating installation if it is a protected customer in the relevant Member State and only insofar as it delivers heating to households or essential social services other than educational and public administration services;
   b. an essential social service if it is a protected customer in the relevant Member State, other than educational and public administration services.

2.5 Power plants

In addition to the aforementioned, Article 11(7) of the EU Regulation allows measures to be implemented to maintain the supply to critical gas-fired power plants in the event of a gas crisis/emergency:

7. During an emergency and on reasonable grounds, upon a request of the relevant electricity or gas transmission system operator a Member State may decide to prioritise the gas supply to certain critical gas-fired power plants over the gas supply to certain categories of protected customers, if the lack of gas supply to such critical gas-fired power plants either:
   a. could result in severe damage in the functioning of the electricity system; or
   b. would hamper the production and/or transport of gas.

Which gas-fired power plants are considered critical for the Netherlands is to be determined in consultation with TenneT and GTS.

2.6 Critical infrastructure

The BH-G is predicated upon the systems described in the EU Regulation. These systems do not offer any scope for the inclusion of critical infrastructure in the BH-G. However, the explanatory notes for the implementation of measure 11 (technically disconnect regions, including export) state that regions containing critical infrastructure should be spared as much as possible in the order of disconnection (see Annex 1).

3. The European crisis levels in Dutch crisis management

Dutch crisis management within Dutch central government uses a definition framework that is different to the European approach as set out in the EU Regulation. This chapter considers the relationship between both definition frameworks and indicates which situations in Dutch crisis management correspond to which crisis levels designated in the EU Regulation. Dutch crisis management makes a distinction between *gas disruptions, gas incidents* and *gas crises.* The box below gives the definitions of these three terms.

A *gas disruption* is an unwanted reduction or interruption of the supply of gas that cannot be rectified by the network operator's normal measures. Dealing with and resolving a gas disruption is part of normal operations, including at the network operator GTS. In this situation, the supply of gas does deteriorate but not significantly, as a result of which the EU Regulation is not applicable.

A *gas incident* is an unwanted reduction or interruption of the supply of gas that requires a reorganisation of manpower and activities (scaling up of the emergency organisation) at one or more network operators involved. It is conceivable for a gas incident to lead to an (imminent) significant deterioration, in other words a structural shortage of gas of the correct composition in the system. In that case, a gas incident will give rise to an early warning or alert in the sense of the EU Regulation.

A *gas crisis* is an unwanted physical shortage of gas (gas shortage) or an imminent shortage, which requires a reorganisation of manpower and activities (scaling up of the crisis organisation) at both the network operators and the regulator responsible for the system (the Minister) with the objective of mitigating the consequences of this (imminent) shortage as far as possible. This is equivalent to an emergency in the sense of the EU Regulation.

The figure below shows a schematic depiction:

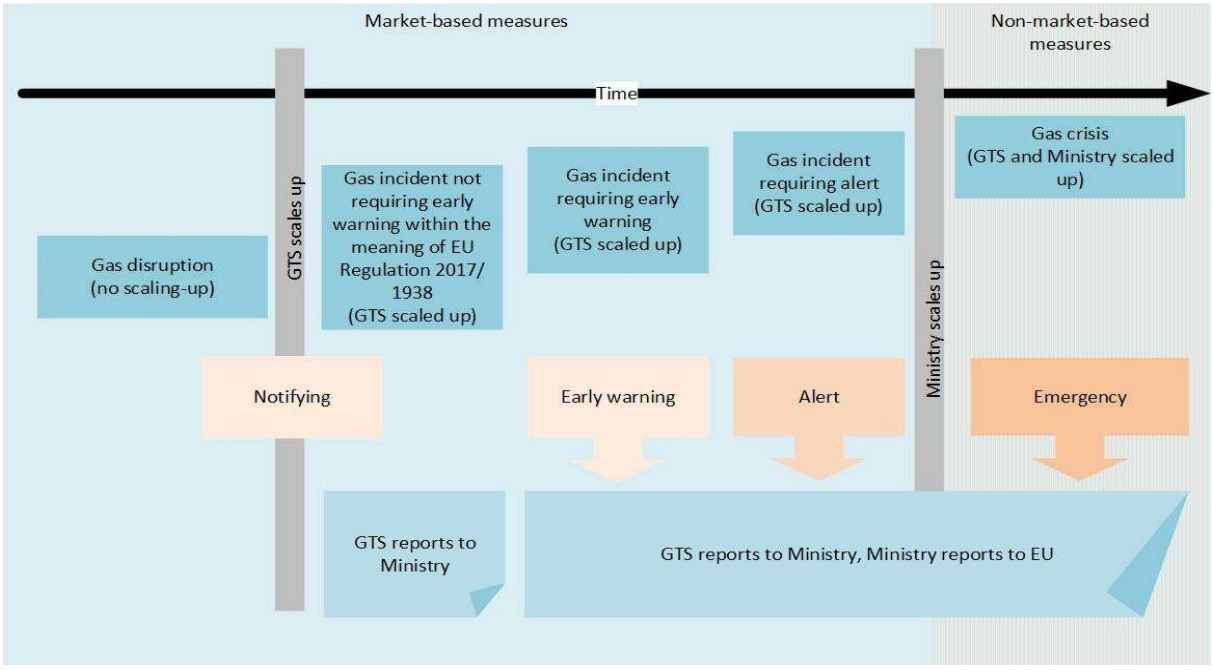

Figure 9. Crisis levels and related types of measures and types of reports to the EU

The paragraphs that follow always refer to the European crisis level as well as the corresponding national crisis level.

The EU Regulation is not applicable to a gas disruption, because at that time no significant deterioration of the supply exists or is expected. The resolution of gas disruptions by a regional network operator falls outside of the primary focus of this document. However, the EU Regulation does apply to a gas incident or gas crisis. A gas incident can occur at the early warning or alert level. In both cases, GTS will scale up, but the situation can be managed by implementing market-based measures. Non-market-based measures will only be used in a gas crisis.

A gas incident or gas crisis/emergency can arise, for instance, as a result of an accident in the gas transport network, problems with the conversion of gas, large-scale failure of the Groningen field, a temporary shortage of high-calorific gas from abroad or a power failure ('blackout'). Important characteristics of a gas incident or gas crisis are:

- A gas incident or gas crisis/emergency potentially has a major impact on society, critical sectors and other crisis domains, as gas plays an essential role in the Dutch energy supply.
- In the event of a rapid-onset disruption, a maximum of only a few hours are available for making decisions with the objective of mitigating the consequences as far as possible.
- In the event of an expected disruption (e.g. as a consequence of political or geopolitical events), there is more time for making decisions, but it may still have severe consequences for customers, neighbouring networks, manufacturers etc.
- Decisions during disruptions sometimes require that choices be made from several possibilities. In that case, the decision-maker[6] decides who will or will not be affected. These are often (very) painful political, social, financial and/or economic choices.
- Failing to make choices early enough magnifies the effect of the situation.
- Decisions that interfere with the supply of gas can have far-reaching chain effects and are therefore complex by definition.
- It is difficult for the network operator to estimate the recovery time, as a result of which it is difficult for the government to estimate the subsequent effects; the impact depends in part on the duration of the disruption.
- It cannot be excluded that the effects of a gas incident or gas crisis/emergency will be felt for a very long time.
- It could strain relationships with neighbouring countries.

The factors above necessitate proper preparation, particularly in relation to the decision process.

[6] In a gas crisis (emergency), this is primarily the Director-General for Climate and Energy, under the political responsibility of the Minister.

4. Parties involved

4.1 Introduction

In the paragraphs that follow we describe the roles, tasks and powers of the main parties involved in a gas shortage, namely the European Commission, the Member States of the European Union, the Minister, the national network operator GTS, the regional network operators and other crisis partners within and outside the gas chain.

This description relates to the desired situation. Where roles, tasks and powers have not yet been laid down in laws and regulations, this is indicated.

4.2 European Commission

The primary role of the European Union outside of the crisis period is that of legislator. As set out in the previous chapter, there is European legislation on gas supply and the security of the gas supply.

Among other things, this legislation stipulates that Member States must ensure that in the event of a significant deterioration of the gas supply situation no measures are introduced that unduly restrict the flow of gas within the internal market at any time or that could seriously endanger the gas supply situation in another Member State and that cross-border access to infrastructure is maintained as far as technically and safely possible, in accordance with the emergency plan. The Commission verifies whether the declaration of an emergency is justified and if the measures follow the emergency plan as closely as possible, do not impose any undue burdens on natural gas companies and do not distort the internal European market.

Then, the Commission can request that the measures be changed when they contravene the aforementioned conditions. The Commission can also request the declaration of an end to the gas crisis/emergency if it concludes that the declaration of an emergency is not or is no longer justified.

The Commission cannot dispose of the gas supplies on the territory of individual Member States. Because of the increasing dependence on the import of gas, the Commission has developed a European approach to gas crises together with the Member States. Under this approach, agreements have been made concerning the maintenance of the gas flow within the internal market and not adopting measures that would seriously endanger the gas supply situation in another Member State. Under the solidarity mechanism, Member States are obliged to comply with a request from a Member State for an emergency supply of gas for the benefit of solidarity-protected customers when the gas networks of these Member States are connected to each other either directly or through a third country.

4.3 Member States of the European Union

An uninterrupted supply of gas within the EU is in the interests of both the Netherlands and the other EU Member States. Therefore, the EU Regulation focuses on increasing the solidarity and trust between the Member States, on maintaining the operation of the internal gas market as long as possible and on measures for safeguarding the gas supply. Pursuant to the Regulation, every Member State should designate a competent authority. Agreements with neighbouring countries and with countries in the same risk groups are of particular importance to the Netherlands. The various risk groups of Member states are specified in Article 3(7) and Annex I of the EU Regulation.

These risk groups form the basis for cooperation in relation to risks. For the Netherlands, it concerns the following risk groups:

1. Eastern gas supply risk groups:
   - Belarus: Belgium, Czech Republic, Germany, Estonia, Latvia, Lithuania, Luxembourg, Netherlands, Poland, Slovakia;
   - Baltic Sea: Austria, Belgium, Czech Republic, Denmark, Germany, France, Luxembourg, Netherlands, Slovakia, Sweden.
2. North Sea gas supply risk groups
   - Norway: Belgium, Denmark, Germany, Ireland, Spain, France, Italy, Luxembourg, Netherlands, Portugal, Sweden, United Kingdom;
   - Denmark: Denmark, Germany, Luxembourg, Netherlands, Sweden;
   - United Kingdom: Belgium, Germany, Ireland, Luxembourg, Netherlands, United Kingdom;
   - Low-calorific gas: Belgium, Germany, France, Netherlands.

This means that in the event of problems with the Eastern gas supply, the Netherlands will be involved with the Member States mentioned under (1), namely the 'Belarus' and 'Baltic' groups. In the event of problems with the North Sea gas supply, the Netherlands will be involved with the Member States mentioned under (2), namely the 'Norway', 'Denmark', 'United Kingdom' and 'Low-calorific gas' groups. Agreements between the Netherlands and other Member States in the various risk groups form part of the emergency plan and are included in Chapter 10.

Further to the EU Regulation, the European Commission formulated a recommendation for the way in which Member States can implement the solidarity mechanism (EC Recommendation 2018/177). The solidarity mechanism ensures uninterrupted supply of gas to households and essential social services and means that if a Member State requests solidarity, the other directly connected Member States are required, with the framework of the solidarity mechanism, to prioritise the supply of solidarity-protected customers in the requesting Member State over domestic customers who are not protected by solidarity. This is only necessary if the market is not able to supply the necessary gas volumes.

The assistance that a Member State provides is subject to various limitations, such as being able to supply its own domestic customers who are solidarity-protected customers if the supply of gas to them is under threat.

A Member State can only invoke this solidarity as a last resort, if the market is not capable of providing the necessary gas volumes to the solidarity-protected customers and if all measures in the requesting Member State's emergency plan have been exhausted.

4.4 Minister of Economic Affairs and Climate Policy

The Minister is the competent authority for the national gas supply and is responsible for the declaration of each of the crisis levels as referred to in Article 11 of EU Regulation and for the procedures to be followed for every level of those declarations. Pursuant to Article 11(2) of the EU Regulation, the Minister has the authority to declare a gas crisis/emergency. If he or she does so, he or she must then inform the Commission, the immediately neighbouring Member States and the National Crisis Centre (NCC).

The Minister must be able to provide direction to GTS on the basis of statutory powers, for example on how to act in the event of crises in the gas supply. The Minister can order a network operator to implement a non-marked-based measure.

If the gas shortage is sufficiently severe (or threatens to become so) that it constitutes an emergency in the sense of the EU Regulation and warrants the implementation of serious non-market-based measures, a limited or general state of emergency may be declared by Royal Decree at the instigation of the Prime Minister. It will then be determined which additional amendments to legislation and regulations are required in order to implement the measures proposed in the BH-G.

4.5 National network operator GTS

The operator of the national gas transport network, GTS, is an independent subsidiary of Gasunie. GTS is responsible for the management, functioning and development of the national gas transport network in the Netherlands.

In the event of gas disruptions and incidents concerning the gas supply, GTS implements its own recovery measures when necessary and possible. If there are indications that a significant deterioration of the gas supply situation could occur, or if that significant deterioration already exists, GTS is obliged to make contact with the Ministry (see Chapter 5). If a significant deterioration of the gas supply situation occurs and market-based measures do not suffice to manage the gas shortage, GTS is obliged to remain in close contact with the Gas and Electricity Crisis Manager (see Chapter 5).

Pursuant to Article 51 of the Gas Act, GTS must submit an emergency plan to the Minister for approval every five years.

The national network operator GTS is a member of the international cooperation platform for Transmission System Operators (TSOs), the European Network of Transmission System Operators for Gas (ENTSOG). The European TSOs have jointly agreed an informal communication protocol to guarantee the reliability of the gas supply in their common area. This platform provides the opportunity for GTS to switch quickly if capacity is lost.

4.6 Regional network operators

The regional network operators are responsible for the distribution of gas in an area, for maintaining their network infrastructure and for the disconnection and recovery plans, including communication about this. Pursuant to Article 51 of the Gas Act, regional network operators must also submit an emergency plan to the Minister for approval every five years. Together with Netbeheer Nederland, the Minister will assess how to embed these emergency plans within the structure and measures that are the result of this BH-G.

A network operator is independent, and not associated with a gas supplier. If necessary, a regional network operator implements its own recovery measures in the event of an interruption of supply. In addition to the normal roles and responsibilities, all network operators should work together to ensure the supply of gas under extraordinary circumstances.

Figure 10 shows the network operators and their supply areas in relation to gas.

Figure 10. Regional network operators

4.7 Other crisis partners in the gas chain

Within gas chain, there are a number of parties who could have a role as causing party, affected party or crisis partner. These parties and their primary role/responsibility are set out below.

- ***Programme responsible parties***, whose primary role is to maintain balance in the gas market. The total net balance stemming from this is the result of the way in which all programme responsible parties work together. If the gas balance is disrupted outside of the operating band communicated to programme responsible parties, the national network operator GTS will implement measures to restore the balance.
- ***Natural gas producers***, whose primary role is feeding gas into the main transport network.
- ***Nitrogen producers***, insofar as they supply nitrogen to the mixing stations in Pernis and Wieringermeer.
- ***Those directly connected to the national network operator GTS***; these are the major consumers who are not supplied via a regional network operator. These are major industrial customers and gas-fired power plants.
- ***Those directly connected to regional network operators***; these are the major consumers who are supplied via a regional network operator. These are major industrial customers and gas-fired power plants.
- ***Storage System Operators (SSOs) and other parties who own the gas in the storage systems***, where gas is stored underground. This gas can be used on a commercial basis to address the imbalance during the day or the season.
- ***Neighbouring Network Operators (NNOs)***, which play a key role in the international gas supply and consumption and in agreements to address serious shortages.

- ***Electricity grid operators***; these are important because the production and transport of natural gas largely depends on the availability of electricity. In addition, the production of gas is, in turn, important to the production of electricity (approximately 50% of Dutch electricity is generated in gas-fired power plants). This is therefore a state of mutual dependency.
- ***The Authority for Consumers & Markets (ACM)***, in its capacity as regulator, can impose a binding course of action on network operators to comply with legislation, guidelines or regulations, pursuant to Article 1b of the Gas Act. Pursuant to Article 12b of the Gas Act, the ACM can also impose network codes to address exceptional circumstances and ensure the security of the gas supply and the production reserve capacity, among other things.
- ***State Supervision of Mines (Staatstoezicht op de Mijnen, SodM)***, is the independent regulator for minerals and energy production, including gas, in the Netherlands. The SodM supervises safety and environmental protection in the gas network, among other things. If necessary, the SodM can enforce compliance with relevant legislation and regulations. In addition, the SodM is tasked with providing the Minister with solicited and unsolicited advice on gas extraction. The tasks of the SodM are laid down in the Mining Act and the Gas Act.
- ***The operator of the GATE LNG terminal and parties who own the gas in the terminal.***

4.8 Crisis partners outside of the gas chain

During a gas crisis, there will also be cooperation with parties outside of the gas chain:

- ***Ministry of Justice and Security/National Crisis Centre (NCC)/National Operations Coordination Centre (LOCC).*** The Minister of Justice and Security is the coordinating Minister in the field of crisis management. He or she has politically responsibility for the setting up, functioning and cohesion of the crisis management policy and system. He or she, in close cooperation with other Ministers, also has control over reinforcement of national security. In addition, the Ministry of Justice and Security also incorporates the National Crisis Centre (NCC) and the National Operations Coordination Centre (LOCC), among other departments.
  - The NCC supports decision-making by the interdepartmental crisis structure, including by acting as an information hub.
  - The task of the National Operations Coordination Centre (LOCC) is to promote the efficient and coherent deployment of human and other resources as well as expertise by the operational support departments, the fire services, the police, the Regional Medical Assistance Organisation, the military and local authorities.

  In the event of large-scale emergencies that affect or damage gas transport, the national network operator GTS can send a liaison officer to both the NCC and the LOCC.
- ***Other Ministries.*** A gas shortage very quickly has a disruptive effect in the (policy) domains of other Ministries. In the event of a gas crisis/emergency, it is therefore possible that Ministries other than Economic Affairs and Climate Policy and Justice and Security scale up to mitigate the consequences for their own policy domains as far as possible. Cooperation between the Ministries involved is coordinated within the structure for national decision-making in crisis situations.
- ***Mayors/security region chairs.*** The 25 security regions in the Netherlands have laid down cooperation with the national network operator GTS in covenants. The security regions focus on the consequences that a gas incident or gas crisis/emergency has on the public sphere. This therefore involves carrying out tasks in the field of firefighting, emergency and crisis management, medical assistance and public order and safety. In accordance with the covenants, liaison officers from the regional network operator(s) and, if necessary, the national network operator become members of the (Regional) Policy Team if requested. This may be

arranged differently per security region (it may also be the case that a liaison officer from the security region is a member of the national or regional network operator's crisis team).
The mayor or security region chair is responsible for the approach to the effects of a gas shortage on public order and safety in his or her municipality or security region. The mayor or security region chair has no influence on the functioning of the gas sector itself (the continuity of supply): government intervention in the gas sector is centralised and vested with the Minister of Economic Affairs and Climate Policy/European Commission. The mayor or security region chair (or the Minister of Justice and Security at the national level) does have the power to (temporarily) stay preventive disconnection by a network operator if this would severely jeopardise public order or safety, e.g. during an evacuation.

4.9 Protected customers and solidarity-protected customers

For a number of measures, the definitions of 'protected customers' and 'solidarity-protected customers' determine which customers the measures apply to. In addition to this, the size of customers is leading for various measures. During the cold phase, the network operators should perform a data analysis of all customers using at least the following categories:

1. **Category I:** Customers who are not protected, in annual gas consumption order;
2. **Category II:** Protected customers, not being solidarity-protected customers (no call on solidarity between Member States is possible) in annual gas consumption order;
3. **Category III:** Solidarity-protected customers, in annual gas consumption order.

These categories are further defined in the figure below. The categorisation is further elaborated in paragraphs 4.9.1 and 4.9.2, with an explanation of the crisis measures in paragraph 8.7.

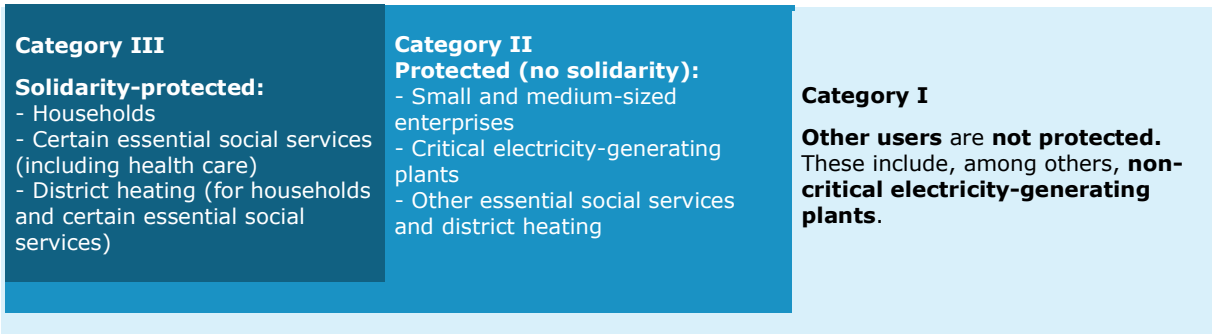

Figure 11. Degree of protection for various natural gas customers

4.9.1 Protected customers

The customers to whom a measure applies is determined by the question of whether they have 'protected' status. In accordance with Article 2(5) of the EU Regulation, domestic customers connected to the gas distribution network are protected customers. Moreover, the European legislation provides freedom to designate district heating installations as protected customers (in part). In addition to this, a Member State can designate essential social services and small or medium-sized enterprises as protected customers, insofar as together they do not represent more than 20% of the total annual final gas consumption in that Member State. Because solidarity-protected customers (see paragraph 4.9.2) may not use the available gas in the event of loss of the critical gas-fired electricity generation, the critical gas-fired power plants may be prioritised over certain groups of protected customers (Article 11(7) of the EU Regulation). The Ministry will work with TenneT and GTS to assess which power plants should be deemed critical. Solidarity from abroad cannot be invoked for the critical power plants (Article 11(7) of the EU Regulation).

Protected customers within the framework of this plan are shown below.

A protected customer is:

- a household customer[7];
- a district heating installation to the extent that it delivers heating to household customers, small or medium-sized enterprises, or essential social services, provided that such installation is not able to switch to other fuels than gas;
- an essential social service, which includes at least health care (hospitals[8] and approved care establishments[9]);
- a small or medium-sized enterprise[10].

In addition, priority is given to maintaining critical electricity generation, where 'critical' means that the operation of the electricity grid would be severely restricted or the generation and/or transmission would be hindered.

4.9.2 Solidarity-protected customers

The EU Regulation defines some protected customers as 'solidarity-protected customer'. Article 2(6) of the EU Regulation defines the meaning of 'solidarity-protected customers'.

A solidarity-protected customer is:

- a household customer;
- a district heating installation if it is a protected customer in the relevant Member State and only insofar as it delivers heating to households or essential social services other than educational and public administration services;
- an essential social service if it is a protected customer in the relevant Member State, other than educational and public administration services. (This includes at least health care (hospitals and approved care establishments.)

The difference between 'protected customers' and 'solidarity-protected customers' is that small and medium-sized enterprises are not solidarity-protected, nor are educational and public administration services.

[7] This includes all addresses that are recorded in the Key Register of Addresses and Buildings as dwellings, including buildings with a residential function such as prisons (because some people have this as their permanent address for a limited time).

8 https://www.zorgkaartnederland.nl/ziekenhuis

9 Health care providers that are funded through the Health Care Insurance Act or the Long-Term Care Act and that are confirmed as meeting the requirements in the Care Institutions (Accreditation) Act: https://www.wtzi.nl/toegelaten-instellingen.

[10] This includes all addresses that are recorded in the Key Register of Addresses and Buildings as having an intended use indicative of a small or medium-sized enterprise, e.g. 'shop function'.

5. Crisis structure

5.1 Introduction

In the event of a gas incident or gas crisis/emergency, various organisations operate through their emergency or crisis organisations. Figure 12 provides an insight into the structure during a significant deterioration of the gas supply situation (gas crisis/emergency). The blocks enclosed by a solid line are teams that are only scaled up during a crisis. The blocks enclosed by a dashed line are permanent structures. The various components of the crisis structure are explained in brief in the figure below.

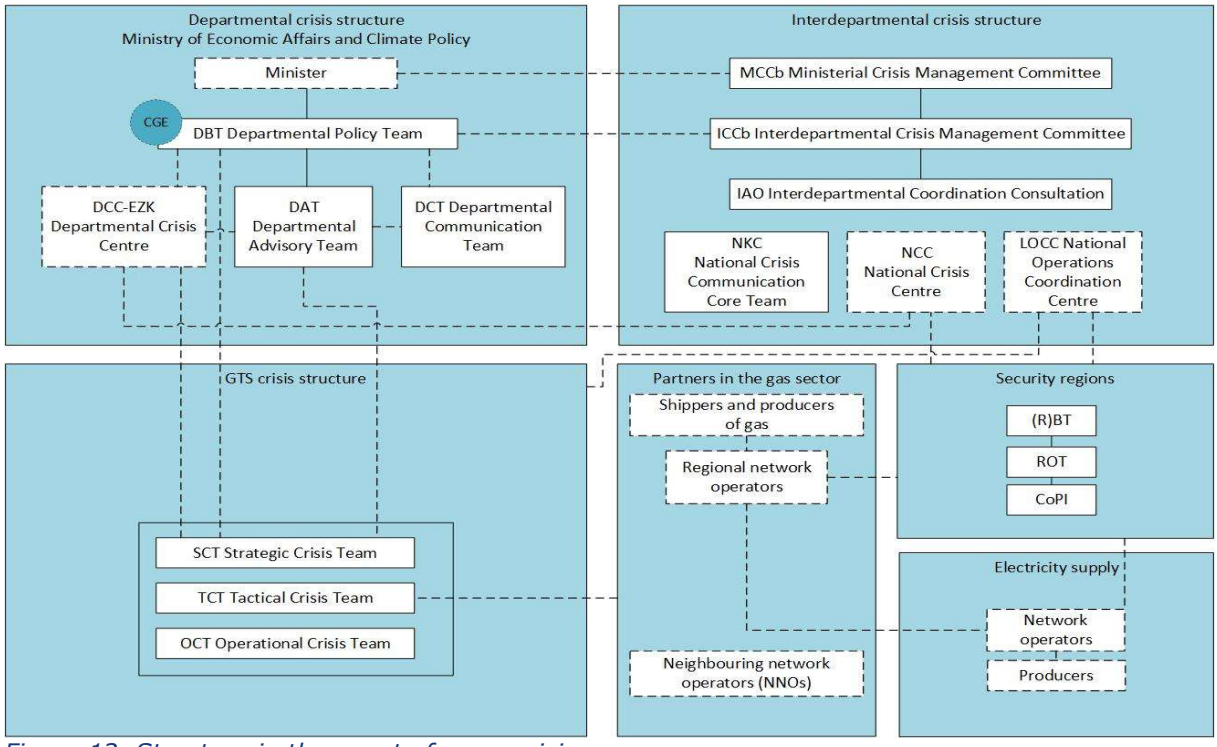

Figure 12. Structure in the event of a gas crisis

The preceding figure illustrates how the departmental crisis structure and the GTS crisis structure are linked: the Strategic Crisis Team (SCT) informs the departmental crisis structure through the Ministry's Departmental Crisis Centre (DCC-EZK) and advises the Departmental Advisory Team (DAT) and the Departmental Policy Team (DBT). The departmental crisis structure and the interdepartmental crisis structure are also linked (see the Ministry of Economic Affairs and Climate Policy Manual on Decision-making in Crisis Situations). GTS advises the National Operational Coordination Centre (LOCC) and consults with the gas network and electricity grid operators involved. GTS and the regional network operators advise the security regions via the Regional Operational Team (ROT). The Gas and Electricity Crisis Manager coordinates the outlined cohesion (see the following paragraph as well).

5.2 Gas and Electricity Crisis Manager

The EU Regulation stipulates that each Member State must designate a crisis manager who, in the event of a gas crisis, coordinates the approach within and on behalf of the Member State and, where appropriate, is a member of the European Union crisis management group[11].

Due to the intimate correlation between gas and electricity, the Netherlands has elected to combine this role with the coordination role for electricity[12]. The role of Gas and Electricity Crisis Manager is filled by the Director-General for Climate and Energy at the Ministry. As chair of the Departmental Policy Team at the Ministry, he or she prepares the (strategic) decisions on the approach to a gas crisis. In any event, the Departmental Policy Team includes the usual members and liaison officer(s) from GTS. Liaison officers from the regional gas network and electricity grid operators involved can also be invited on the chair's initiative.

The scope of the formal role of the Gas and Electricity Crisis Manager makes it impossible for a single person to fill this role in practice; however, a Gas and Electricity Crisis Team should be activated. The Crisis Team is supported by the DCC-EZK. In the event of a significant deterioration of the gas supply situation for which non-market-based measures must be employed, i.e. a gas crisis/emergency, this Crisis Team must perform the following tasks in any event:

- Coordination of the overall cohesion within the Ministry in the crisis structure (departmental, interdepartmental, GTS crisis structure, with partners in the gas sector, with the electricity supply and with the security regions).
- Coordination of the provision of information within the Ministry's crisis structure.
- Participation in the European Union's crisis management group.
- Chairing the Departmental Policy Team.
- Representing the chair of the Departmental Policy Team on the Interdepartmental Crisis Management Committee (ICCb).
- Notifying the Minister of Economic Affairs and Climate Policy.
- Supporting the Minister on the Ministerial Crisis Management Committee (MCCb).

The Gas and Electricity Crisis Manager directs the Crisis Team. Within the Crisis Team, coordination of the cohesion is delegated to a crisis coordinator, coordination of the provision of information to an information coordinator, preparation of participation in the EU crisis management group to a policy officer for international affairs, and preparation of the provision of information to and support for the Minister to a management advisor.

5.3 Ministry of Economic Affairs and Climate Policy

The Ministry's crisis organisation in the event of a gas crisis/emergency comprises the usual teams as mentioned below. A brief explanation of each team follows. For a more comprehensive explanation, please refer to the Directorate-General for Climate and Energy Manual on Decision-making in Crisis Situations[13]:

[11] See Articles 10(1) and 11(4) of the EU Regulation.
[12] The Netherlands has to designate a 'crisis coordinator' for the electricity supply as a contact person for the EU and to coordinate the provision of information during an electricity crisis. This is pursuant to EU Regulation 2019/941 on risk-preparedness in the electricity sector.
[13] Ministry of Economic Affairs and Climate Policy, Directorate-General for Climate and Energy Manual on Decision-making in Crisis Situations, October 2018.

- ***Departmental Policy Team.*** Acting on the Minister's behalf, The Departmental Policy Team makes strategic decisions on the approach to a gas crisis, determines the communication strategy, notifies and advises the Minister and handles the provision of information to the European Union. The substantive measures upon which the Departmental Policy Team can make decisions are elaborated in this plan in a ladder of measures to be adopted.
- ***Departmental Advisory Team.*** The Departmental Advisory Team prepares the crisis decision-making for the Departmental Policy Team and then coordinates its implementation. The departmental advisory team has the further task of drawing up the most reliable and complete possible picture of the situation.
- ***Departmental Communication Team.*** The Departmental Communication Team shapes the press and public information in the event of a gas crisis and advises the Departmental Advisory Team and Departmental Policy Team of the communication strategy that is to be followed.

In the event of a gas crisis/emergency, liaison officers from GTS join the members of the Departmental Policy Team and Departmental Advisory Team[14]. The CEO of GTS is represented in the Departmental Policy Team, the Management Team of GTS is represented in the Departmental Advisory Team. At the initiative of the chair of the Departmental Policy Team and Departmental Advisory Team, liaison officers can be invited from regional network operators, gas producers or gas customers. The departmental teams are supported by the Departmental Crisis Centre.

5.4 National network operator

There are three teams in GTS's crisis organisation:

- ***Strategic Crisis Team.*** The Strategic Crisis Team sets priorities and directs the approach within GTS's operations. The strategic decisions on the distribution of gas (ladder of measures to be adopted) in the event of a gas crisis as defined in this plan are not prepared by the Strategic Crisis Team, but by the Departmental Policy Team at the Ministry for formal decision-making by the Minister. The Strategic Crisis Team advises the Departmental Advisory Team and the Departmental Policy Team through the GTS liaison officers in both departmental teams.
- ***Tactical Crisis Team.*** The Tactical Crisis Team is tasked with effecting a coordinated approach by GTS and Gasunie. The Tactical Crisis Team is responsible for general management at the operational level during a gas crisis/emergency. In addition, the Tactical Crisis Team is in contact with and consults with internal and external crisis partners in the gas sector, including customers and other network operators, on gas supply and measures to be taken.
- ***Operational Crisis Team.*** The Operational Crisis Team is responsible for the implementation of the GTS/Gasunie approach to the crisis.

Unlike the Strategic Crisis Team, the Tactical Crisis Team is formed based on the nature of the gas crisis/emergency: only relevant functions are called up and activated. The chair of the Tactical Crisis Team decides who joins the team on a case-by-case basis. The Operational Crisis Team comprises representatives of several departments and disciplines in GTS/Gasunie.

5.5 Interdepartmental crisis organisation

A crisis in the gas supply will usually also impact the domains of other departments. Therefore, in the event of a gas crisis/emergency the DCC-EZK will inform the National Crisis Centre (NCC) by default. In consultation with the DCC-EZK, the NCC decides whether the crisis teams from the

[14] As set out in the Directorate-General for Climate and Energy Manual on Decision-making in Crisis Situations.

interdepartmental crisis structure should be activated. A brief explanation of each team is given below. For a more comprehensive explanation, please see the National Manual on Decision-making in Crisis Situations[15].

- ***Ministerial Crisis Management Committee.*** The Ministerial Crisis Management Committee is tasked with coordination and decision-making regarding all measures and provisions, with the aim of arriving at an interdepartmental and coherent approach to the gas crisis/emergency. Here, the decisions by the Minister on the approach to the gas crisis/emergency are coordinated at the political and administrative level with the decisions that other Ministers take to prevent and mitigate, to the greatest possible extent, the consequences of the gas crisis/emergency within their own domains. The Ministerial Crisis Management Committee decisions form the frameworks within which all departments – including the Ministry of Economic Affairs and Climate Policy – implement their crisis responsibility.
- ***Interdepartmental Crisis Management Committee.*** The Interdepartmental Crisis Management Committee coordinates and makes decisions at senior official level. The Interdepartmental Crisis Management Committee prepares the decision-making of the Ministerial Crisis Management Committee.
- ***Interdepartmental Coordination Consultation.*** The Interdepartmental Coordination Consultation plays an advisory and supporting role with regard to the decision-making by the Interdepartmental Crisis Management Committee and the Ministerial Crisis Management Committee.
- ***National Crisis Communication Core Team.*** The National Crisis Communication Core Team advises the Interdepartmental Crisis Management Committee and Ministerial Crisis Management Committee on the nationwide communication strategy that is to be followed and coordinates its implementation. In the event of a gas crisis/emergency, the National Crisis Communication Core Team works closely together with the Ministry of Economic Affairs and Climate Policy's Departmental Communication Team.
- ***National Operations Coordination Centre.*** The National Operations Coordination Centre coordinates requests for support in the area of public order and safety and advises on operational challenges.

The composition of the teams mentioned above is set out in the National Manual on Decision-making in Crisis Situations. Liaison officers can be invited on the chair's initiative.

5.6 Other crisis teams

Chapter 3 sets out which parties are or could be involved in combating the effects of a gas incident or gas crisis/emergency. Many of the parties mentioned will scale up their own crisis organisation in a gas crisis/emergency. In addition to parties in the energy domain, security regions could scale up to tackle the urgent consequences of the gas crisis on public order, safety and health.

Pursuant to the national covenant for cooperation agreements between security regions, the police and gas network/electricity grid operators, liaison officers representing the gas network/electricity grid operators involved join the security region teams (i.e. the (Regional) Policy Team, Regional Operational Team and Incident Location Command) on request. In the case of an incident involving a number of security regions, the source region will organise a single point of contact and coordination for the various security regions for the benefit of the network operator(s), if desired.

[15] National Manual on Decision-making in Crisis Situations, September 2016.

The Ministry will, as a rule, not be in direct contact with the security region teams. This contact will occur via the National Crisis Centre, the National Operational Coordination Centre and the network operator(s) (or their crisis teams).

5.7 Roles and responsibilities of the various actors

The roles and responsibilities, including interaction with the European Commission, the competent authorities in neighbouring countries and, where appropriate, with the national regulatory body, as well as with gas companies, industrial customers and relevant electricity generators, are discussed in brief below.

- European Union: primary role of legislator. In addition, the European Commission is notified immediately when an early warning, alert or emergency is declared. The European Commission verifies whether the declaration is justified and the measures that have been implemented are proportional.
- Competent authorities in neighbouring countries: if solidarity is invoked, it will be implemented by the competent authorities in neighbouring countries. These competent authorities are notified when an early warning, alert or emergency is declared.
- Gas companies (natural gas production, gas transport, gas supply) must comply with contract conditions. Where there is a deterioration of the gas supply situation, they must follow the instructions from the GTS and supply information (see paragraph 6.8); where there is a significant deterioration of the gas supply situation, they must follow the instructions from the Gas and Electricity Crisis Manager (issued through GTS or the regional network operators) and comply with obligations to report.
- Industrial customers (gas customers) must comply with contract conditions. Where there is a deterioration of the gas supply situation, they must follow the instructions from GTS and/or regional network operators; where there is a significant deterioration of the gas supply situation, they must follow the instructions from the Gas and Electricity Crisis Manager (may be issued through GTS or the regional network operators).
- Electricity generators: generate electricity based on gas and/or alternative sources of energy. Where there is a deterioration of the gas supply situation, they must follow the instructions from GTS or regional network operators; where there is a significant deterioration of the gas supply situation, they must follow the instructions from the Gas and Electricity Crisis Manager (may be issued through GTS or the regional network operators).

The roles and responsibilities of the competent authority and of the entities to which tasks have been delegated in the various crisis levels defined pursuant to the EU Regulation are discussed in brief below.

Early warning:

- The Minister, as the competent authority, is responsible for proper preparation for a significant deterioration of the gas supply situation and issues an early warning to the European Commission Directorate-General for Energy and to the competent authorities of Member States directly connected to the Dutch gas network, which also includes France if an L-gas situation is involved.
- GTS is scaled up and reports the gas supply situation to the Minister (through the DCC-EZK).

Alert:

- The Minister makes preparations for possible scaling up of the gas crisis organisation and issues an alert to the European Commission Directorate-General for Energy and to the

competent authorities of Member States directly connected to the Dutch gas network, which also includes France if an L-gas situation is involved.

- GTS is scaled up and reports the gas supply situation to the Minister (through the DCC-EZK). If necessary, it provides instructions to programme responsible parties.

Emergency:

- The Minister scales up the gas organisation and reports the emergency to the European Commission Directorate-General for Energy and to the competent authorities of Member States directly connected to the Dutch gas network, which also includes France if an L-gas situation is involved.
- GTS is scaled up, reports the gas supply situation to the Minister (through the DCC-EZK) and provides instructions to programme responsible parties.
- Based on the ladder of measures to be adopted (paragraph 8.5), the Minister decides which non-market-based measures are implemented and orders GTS and the regional network operators involved to act accordingly.
- If a proper implementation of the measures requires the assistance of neighbouring countries, the Minister will contact the competent authorities in these countries. GTS will contact the network operators in these countries, as well as ENTSOG if required.
- If the situation calls for it, the Minister will ask the European Commission to declare a regional emergency.

6. Crisis processes

6.1 Introduction

A number of processes can be distinguished in the combating of a significant deterioration of the gas supply situation (gas incident or gas crisis/emergency). The processes for notifying, early warning, alerting and declaring a gas crisis/emergency, scaling up and scaling down, decision-making, information provision and crisis communication are set out below.

6.2 Notifying

Because the gas supply is a component of the critical infrastructure, GTS informs the DCC-EZK of (imminent) disruptions of the gas supply that are serious enough (gas incidents) for the national network operator to scale up, even if they cannot result in an alert or gas crisis/emergency. GTS does not notify the DCC-EZK if the situation is estimated to be small-scale or manageable (normal gas disruptions). The measures that are taken by GTS are market-based measures. Reporting to the European Commission Directorate-General for Energy is not required during the notification phase.

During this phase, the Ministry is aware of what is going on and can react quickly if the situation deteriorates.

Contact during the notification phase is depicted schematically in the figure below.

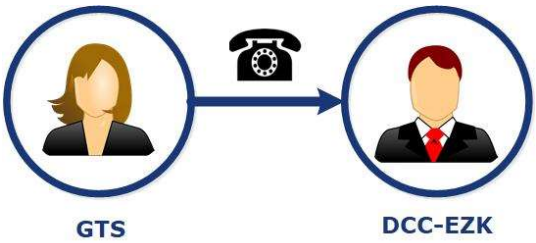

Figure 13. Schematic depiction of notifying

6.3 Early warning

According to Article 11 of the EU Regulation, early warning is necessary where *there is concrete, serious and reliable information that an event which is likely to result in significant deterioration of the gas supply situation may occur and is likely to lead to the alert or the emergency level being triggered*.

In the situation outlined above, i.e. in the event of an (imminent) gas incident, GTS passes a warning to the DCC-EZK as quickly as possible and, through them, to the Director-General for Climate and Energy in his or her role as Gas and Electricity Crisis Manager.

Through the Gas and Electricity Crisis Manager, the European Commission Directorate-General for Energy immediately receives an early warning in the event of an (imminent) gas incident, as do the competent authorities in the European Member States that are directly connected to the Dutch gas network. If low-calorific gas is involved, the competent authority in France is also informed.

Contact during the early warning phase is depicted schematically in the figure below.

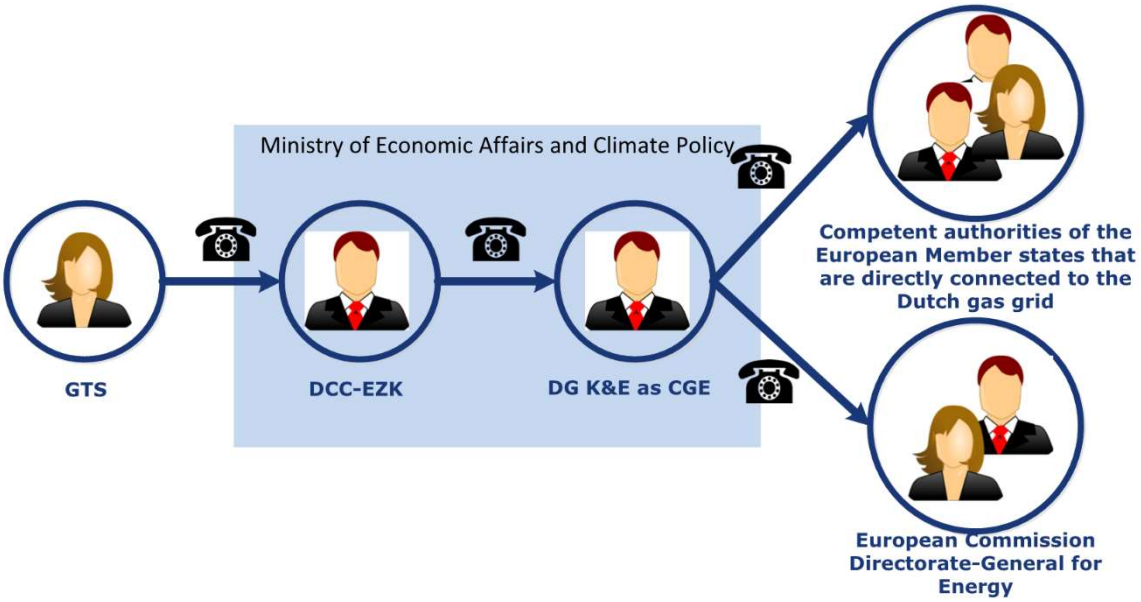

Figure 14. Schematic depiction of early warning

Early warning means that the European Commission Directorate-General for Energy is brought up to speed as quickly as possible and the exchange of information about the approach to the gas incident can be shaped at the European level. Member States are also aware at an early stage and can implement their own measures to prepare for a significant deterioration of the gas supply situation.

6.4 Alerting

An alert phase is applicable where a disruption of the gas supply or exceptionally high gas demand which results in significant deterioration of the gas supply situation occurs, but the market is still able to manage that disruption or demand (Article 11 of the EU Regulation).

In the situation outlined above, i.e. in the event of an alert phase, GTS passes a warning to the DCC-EZK as quickly as possible and, through them, to the Director-General for Climate and Energy in his or her role as Gas and Electricity Crisis Manager.

In this situation, the Gas and Electricity Crisis Manager immediately informs the European Commission Directorate-General for Energy and the competent authorities in the European Member States directly connected to the Dutch gas network (Germany, Belgium and the United Kingdom). Through its dispatch centre, GTS notifies the dispatch centres of network operators in neighbouring countries. If low-calorific gas is involved, the competent authority in France is also informed.

Contact during the alert phase is depicted schematically in the figure below:

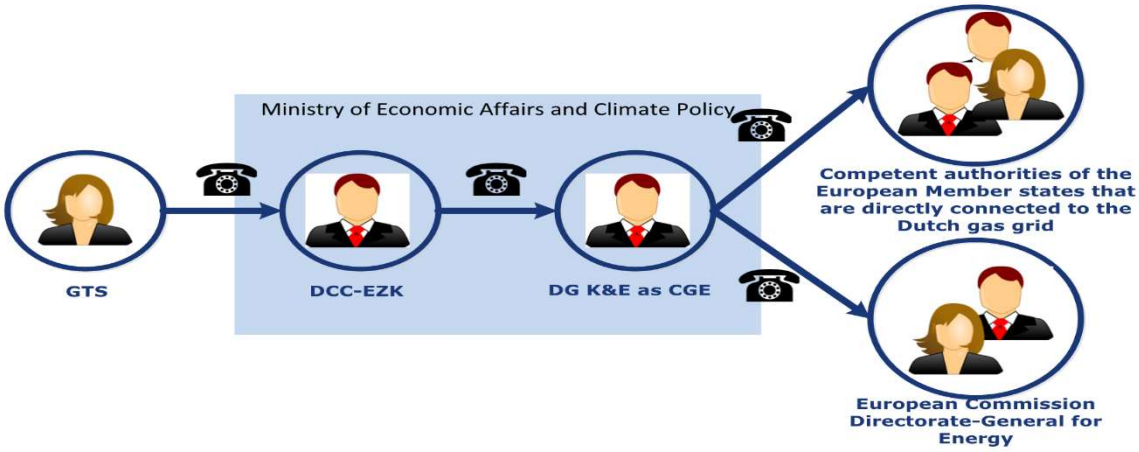

Figure 15. Schematic depiction of alert/alerting

6.5 Declaration of a gas crisis/emergency

A situation where there is exceptionally high gas demand, significant disruption of the gas supply or other significant deterioration of the gas supply situation and all relevant market-based measures have been implemented, but the gas supply is insufficient to meet the remaining gas demand so that non-market-based measures have to be additionally introduced, is a gas crisis, i.e. an **emergency** in the sense of the EU Regulation.

GTS will inform the DCC-EZK of the situation and, through them, the Director-General for Climate and Energy. In accordance with his or her role as Gas and Electricity Crisis Manager pursuant to the EU Regulation, the Director-General for Climate and Energy declares an emergency to the European Commission Directorate-General for Energy.

Next, the Director-General for Climate and Energy also informs the competent authorities in the European Member States directly connected to the Dutch gas network without delay. Through its dispatch centre, GTS notifies the dispatch centres of network operators in neighbouring countries. If low-calorific gas is involved, the competent authority in France is also informed. If the declaration is likely to result in a call for assistance from the European Union, the Director-General for Climate and Energy also informs the ERCC[16].

Contact during the phase of declaring a gas crisis/emergency is depicted schematically in the figure below:

[16] Emergency Response Coordination Centre, see Article 11(2) of the EU Regulation.

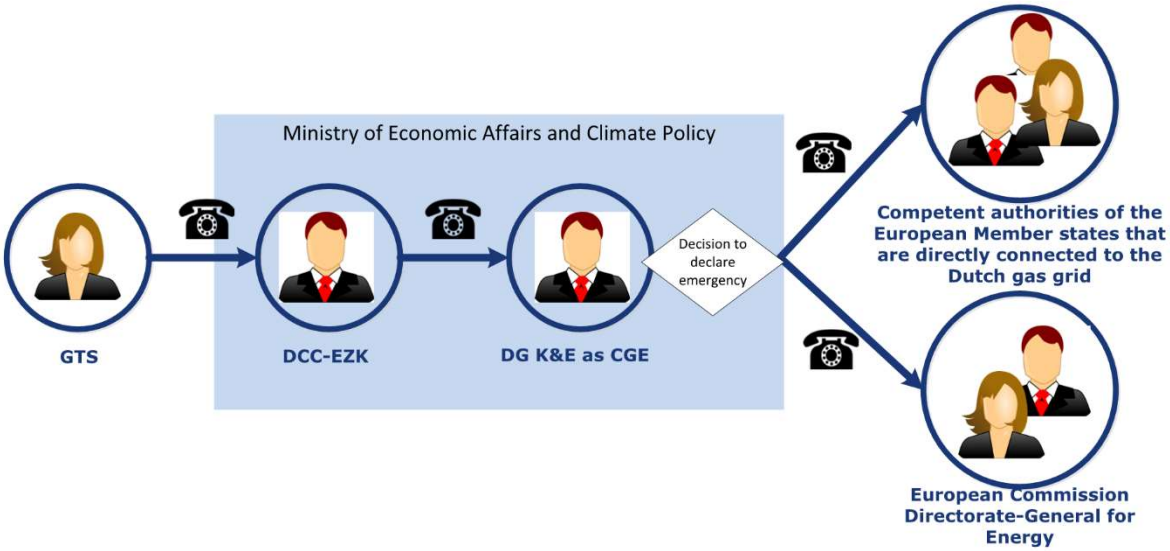

Figure 16. Schematic depiction of declaration of a gas crisis/emergency

6.6 Scaling up and scaling down

The situations described above could be a reason to scale up the crisis structures as set out in Chapter 5. In principle, when doing so the usual scaling-up and scaling-down procedures of the organisations concerned (as elaborated in their manuals) are used.

The basic principle for scaling up and scaling down is that the organisations concerned are aware of each other's scaling-up level and that scaling up occurs synchronously where necessary.

In the event of a gas incident, only GTS is scaled up. In the event of a gas crisis/emergency, both GTS and the Ministry always scale up.

6.6.1 Scaling up and scaling down of GTS

GTS has stipulated when scaling up and scaling down occurs in the manuals for the Strategic Crisis Team and the Tactical Crisis Team. The Strategic Crisis Team and Tactical Crisis Team can be scaled up from a gas disruption (notification situation).

The chair of the Tactical Crisis Team can conclude that scaling up to the Strategic Crisis Team is necessary. In that case, the chair of the Tactical Crisis Team contacts the chair of the Strategic Crisis Team. They make a joint decision on whether the Strategic Crisis Team should be activated.[17]

If the Ministry scales up (when there is an (imminent) gas crisis/emergency – see below), GTS always 'scales along', so that scaling up is synchronous. In practice, this will usually have already happened.

6.6.2 Scaling up and scaling down of the Ministry

Departmental scaling up of the Ministry can occur in the early warning phase and alert phase and will certainly occur in the event of an (imminent) gas crisis/emergency as set out above.

[17] Also see the GTS manuals.

The chairs of the Departmental Advisory Team, Departmental Policy Team and Departmental Communication Team make their own decisions on whether their team scales up. If the Departmental Policy Team scales up, then the Departmental Advisory Team and the Departmental Communication Team also scale up by default. There could be a Departmental Advisory Team without a Departmental Policy Team (already) being in existence. The Departmental Advisory Team considers whether scaling up is necessary or if decisions can be taken under its own responsibility. If only the Departmental Advisory Team is convened, the chair of the Departmental Advisory Team keeps the Director-General for Climate and Energy informed about the progress of the crisis/emergency and how it is being combated.

The event of an early warning, immediate scaling up of the Ministry is not necessary, but the chair of the Departmental Advisory Team can decide to scale up.

In the event of an alert, the Departmental Policy Team scales up and consideration can be given to whether scaling up to a Departmental Policy Team is necessary.

In the event of a gas crisis/emergency, the Departmental Advisory Team, the Departmental Communication Team and the Departmental Policy Team scale up.

When the gas crisis/emergency has passed and suitable crisis measures have been implemented, the chair of the Departmental Advisory Team or the Departmental Policy Team decides to scale down (depending on which teams were scaled up).

6.6.3 Scaling up and scaling down of the interdepartmental crisis structure

Scaling up and scaling down within the national crisis structure is set out in the National Manual on Decision-making in Crisis Situations. The interdepartmental crisis structure will be scaled up in practice when there is a gas crisis.

6.6.4 Scaling up and scaling down of other crisis organisations

Scaling up of other organisations such as regional network operators is not considered in this plan, but will occur in practice. If the gas crisis impacts the policy domain of other Ministries, then the interdepartmental crisis structure (Interdepartmental Coordination Consultation, Interdepartmental Crisis Management Committee and Ministerial Crisis Management Committee) will be activated under the coordination of the Ministry of Justice and Security.

6.7 Decision-making

Decision-making focuses on different aspects for each component of the crisis structure. In short, GTS is responsible for decision-making about market-based measures. Decision-making about non-market-based measures is the responsibility of the Ministry.

Decision-making within the **GTS** crisis structure focuses on making decisions about market-based measures to achieve a reasonable distribution of the gas shortage, implementing the distribution decisions and other non-market-based measures from the Minister, and all matters associated with its own responsibilities and operations (including the quickest possible recovery of the gas supply).

In the event of a gas crisis/emergency, decision-making within the **Ministry's departmental crisis structure** focuses in the first instance on implementing non-market-based measures to

achieve a reasonable *distribution of the gas shortage*, whereby protected customers[18] are spared as much as possible. This involves the use of the ladder of measures to be adopted, which is described in Chapter 8 of this plan. Secondly, decision-making focuses on the consequences of the significant deterioration of the gas supply situation in the Ministry's policy domains (including the business sector, telecoms, electricity etc.).

Decision-making in the **interdepartmental crisis structure** focuses on settling interdepartmental dilemmas and providing inter-sectoral coordination.

The various teams employ their usual working methods when it comes to decision-making.

6.8 Information provision

Information is essential during an incident or crisis/emergency to allow the correct choices to be made. In principle, the information required is the same for all crisis teams, but it can differ in the level of abstraction and the level of detail. Where the **situation** itself is concerned, the following information is needed:

- Date and time that the unwanted event started
  - Season
  - Time of day
- Description of the unwanted event
  - Location and situation on site
  - Type of natural gas (high-calorific or low-calorific)
  - Type of unwanted event: relationship to import, transport, conversion or production
  - Volume of the shortage
- Cause of the unwanted event
  - Domestic or foreign
  - Intentional or unintentional
- Context of the unwanted event
  - Current gas demand (volume, type) from protected customers
  - Current gas demand (volume, type) from industries and other customers that are not protected
  - Current gas demand (volume, type) from abroad
  - Any special circumstances, such as limitations in transport capacity, with a cause outside of the unwanted event
  - Status of the electricity supply
- Effects of the unwanted event
  - Direct effects (location of effects, type of customers that are impacted, damage, nuisance, effects on the transport and distribution networks)
  - Effects of measures already implemented (location of effects, type of customers that are impacted, damage, nuisance, effects on the transport and distribution networks)
  - Anticipated effects of measures (location of effects, type of customers that are impacted, damage, nuisance, effects on the transport and distribution networks)

In the event of a gas incident or gas crisis/emergency, GTS itself will know most of the information about the incident. GTS will share this information with the Ministry (through the liaison officer).

[18] See paragraph 4.9.

Where **combating the situation** is concerned, the following information is needed:

- Teams and parties involved
  - Which parties are involved?
  - Which of these parties' teams have been scaled up? To what scaling-up level?
- Decisions taken and recommendations. What decisions have already been taken by the active teams?
- Measures
  - What measures have been put into action as a result of the decisions that have been taken?
  - What stage is implementation of the measures in?

Finally, **forecasts and recommendations** can add valuable information to the decision-making process. These mainly concern forecasts regarding the development and combating of the incident and recommendations that follow from these forecasts. Examples include the urgency, the anticipated duration of the deterioration of the gas supply situation and the anticipated use of manpower and resources.

Forecasts

- Anticipated duration of the unwanted situation
- Anticipated duration and development of the volume shortage
- Anticipated duration of the effects
- Anticipated effects of decisions and measures
- Anticipated duration of the recovery from the situation
- Anticipated requirement for deployment of manpower and resources
- Anticipated problems relating to availability of manpower and resources

In general, the information provision in a gas incident or gas crisis/emergency is largely dependent on the image that GTS portrays of the situation, because only this network operator has the information that is needed to provide an estimate of the scale, severity and the anticipated duration of the situation. In addition to the information that is gathered by GTS, the Departmental Communication Team forms a communication picture and the NCC forms a national picture (Ministries, security region, critical infrastructure). These two pictures are also used to form the departmental overall picture. This is shown in Figure 17:

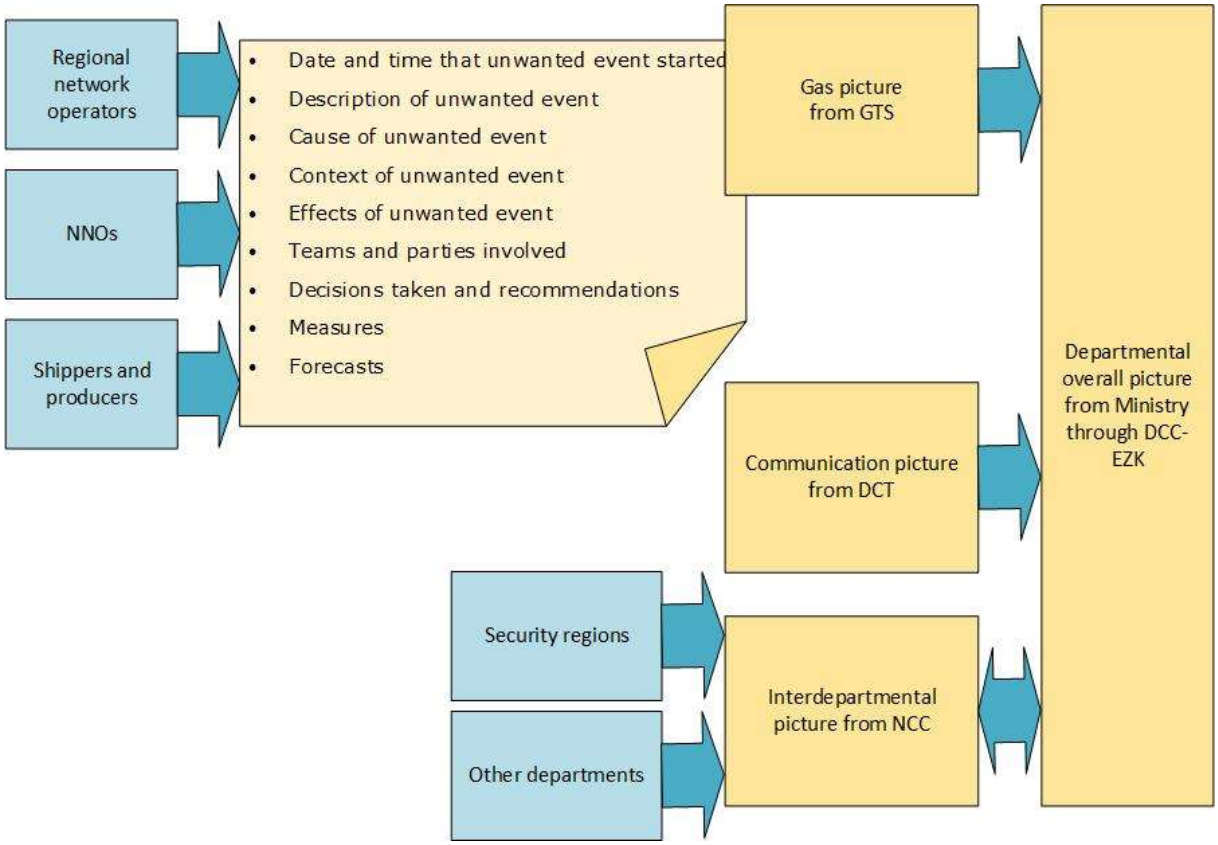

Figure 17. Forming the overall departmental picture

The provision of information from GTS to the Ministry takes place regardless of the situation (early warning, alert or emergency).

The information will be passed to the DCC-EZK via GTS's crisis organisation and, through them, to the Director-General for Climate and Energy. In its role as information coordinator, the Departmental Crisis Centre gathers information from GTS and the various sections of the Ministry and processes it into a departmental overall picture of the situation. On the one hand, this overall picture supports departmental decision-making and on the other hand it serves as input for interdepartmental decision-making in the Interdepartmental Coordination Consultation, the Interdepartmental Crisis Management Committee and at the Ministerial Crisis Management Committee. The departmental overall picture comprises the types of information shown above.

Article 14 of the EU Regulation specifies which information is exchanged between the natural gas companies involved (regional network operators, programme responsible parties and producers) and the competent authority of the Member State involved in crisis situations. In practice, this will be via GTS and then the DCC-EZK (see above). In particular, the natural gas companies involved will provide the following information on a daily basis:

1. The daily gas demand and gas supply forecasts for the following three days
2. The daily gas flow at all cross-border entry and exit points as well as at all points connecting a production facility, a storage facility or an LNG terminal to the network
3. The period for which it is expected that the supply of gas to protected customers can be ensured

6.9 Emergency communication

Substantive crisis communication during a significant deterioration of the gas supply situation provides at least the following information to the relevant audience:

- Cause or reason for the significant deterioration of the gas supply situation
- Scale of the significant deterioration of the gas supply situation
- Estimated duration of the significant deterioration of the gas supply situation
- Actions to be taken by parties involved (GTS, regional network operators, the Ministry)
- Action framework for the public

The Ministry is responsible for crisis communication, unless the National Crisis Communication Core Team scales up. In that case, responsibility shifts to the National Crisis Communication Core Team.

Following coordination with all organisations involved, the coordinator decides who communicates what.

In a significant deterioration of the gas supply situation, the network operator(s) and gas companies concerned inform the general public in consultation with the Ministry.

7. Implementation processes

7.1 Regulation of the gas supply

GTS's Central Command Post (CCP)[19] continuously monitors (24/7) the balance between demand and supply. To avoid disruption of the balance, the market aligns demand and supply through the CCP.

In the event of an unusual disruption of the balance, the head of department at GTS, operating from the CCP, notifies the Gas Transport Manager. Under this internal alerting, a decision is made on whether the Tactical Crisis Team should be activated at GTS. The chair of the Tactical Crisis Team is the Gas Transport Manager at GTS. Other participants from GTS depend on the nature and scale of the disruption. For example, national asset management and/or network planning can participate in the Tactical Crisis Team to investigate what gas volumes have to be supplied and how much (more) can be supplied, for instance by asking programme responsible parties to import more high-calorific gas or by asking natural gas producers to increase their gas production. In addition, they draft possible measures for rebalancing demand and supply and identify the anticipated consequences of these measures.

The Tactical Crisis Team has the following roles:
- Determine the anticipated shortages.
- Take stock of resources to rectify the disruption of the balance.
- Advise the Strategic Crisis Team at GTS.

If the chair of the Tactical Crisis Team concludes that the disruption requires specific measures within the operations or outside of normal operations, they inform the chair of the Strategic Crisis Team of this immediately. The chair of the Strategic Crisis Team can then convene the Strategic Crisis Team (see paragraph 5.6).

The possible actions[20] available to GTS for regulating the gas supply are stated in paragraphs 8.2–8.4. These are measures that are both market-based and non-market-based according to the EU Regulation.

7.2 Disconnecting customers

In the event of a gas crisis/emergency, the measures are implemented by GTS, or by the regional network operators on behalf of the Minister. This could involve the administrative or technical disconnection of customers.

Administrative disconnection is done through a decision by the Minister. Technical disconnection involves both automatic technical disconnection by the CCP and the manual technical disconnection of specific customers, transfer points to the networks of regional network operators, NNOs, pipeline sections or parts of the GTS gas transport network.

The order for administrative and /or technical disconnection during a crisis is issued by the Minister in consultation with the Interdepartmental Crisis Management Committee and Ministerial Crisis Management Committee. Implementation is by GTS, the regional network operators and the gas

[19] GTS's national operations centre.
[20] Defined Gas Transport Conditions – LNB, paragraph 4.1.4.4: Actions to be taken in relation to an emergency.

suppliers. The Authority for Consumers & Markets is responsible for supervision. A further elaboration of specific measures can be found in Chapter 8.

7.3 Notifying customers and chain partners

In the event of a gas incident, GTS informs customers and chain partners involved about the disruption as regards the duration (if possible), possible consequences and measures. Customers and chain partners are programme responsible parties, regional network operators, those directly connected to GTS, NNOs and electricity grid operators. GTS has a file containing emergency contacts for customers connected directly to the national gas transport network. The regional network operators provide information to customers connected to their own networks.

7.4 Recovery of the gas supply

Recovery of the gas supply after a gas incident or gas crisis/emergency depends of the type of measures that have been implemented. If the measures did not affect the pressure in the pipes, damage to or contamination of the pipes is unlikely. In that case, the recovery will be straightforward from a technical standpoint and focus on the financial settlement of any losses.

Recovery of the gas supply after a technical disconnection is not without risk: the integrity of the gas pipelines cannot be guaranteed because of possible consequences of the technical disconnection of certain customers or parts of the gas network. Before the pressure in the gas network can be restored, its integrity should be checked and any damage repaired. There is a greater risk of this having occurred in the gas networks of the regional network operators than in the national gas transport network. The regional network operators have indicated that their working methods in this regard are based on the manual *Gas geven in de praktijk* (Gas supply in practice). This manual also describes how regional network managers can restore the gas pressure safely.

In addition, there are risks for users when restoring gas pressure in these networks after technical disconnection of networks. There is a possibility of the free flow of gas taking place in particular and that an explosive mixture could form because gas-fired equipment (such as a gas cooker) is still switched on. This mixture could ignite on the release of energy (for example, a small spark from operating a light switch). Following this disconnection, a strict procedure should therefore be followed to re-pressurise the networks where there may be a need to check that all gas connections are closed before they are reconnected once again[21]. Seen from this point of view, it is therefore advisable to leave all networks pressurised for as long as possible.

The Safety Department at GTS provides advice when restarting the national gas transport network. When doing so, account is taken of the effects of reduced pressure in the gas pipelines.

The order for restoring the gas supply depends on the technical capacity for re-pressurising the gas pipelines. This allows an order for the recovery to be determined in advance. Factors that play a role in this include:

- Scale or location of the gas incident or gas crisis/emergency.
- Duration of the gas incident or gas crisis/emergency.
- Type of gas that the gas incident or gas crisis/emergency relates to (high-calorific or low-calorific).
- Measures implemented during the gas incident or gas crisis/emergency.

[21] See the report *Gas geven in de praktijk* issued by Netbeheer Nederland.

- Level of integrity of the gas network.
- Degree to which metering and pressure control facilities and/or nitrogen mixing stations are involved.

8. Measures

8.1 General

This chapter sets out the measures to be adopted in the event of a deterioration of the gas supply situation. The cause of the situation is separate from the measures to be considered. The cause could have its origin abroad, in the form of a request for solidarity from a neighbouring country for example.

In the event of a gas disruption or gas incident, GTS implements measures based on market mechanisms (paragraphs 8.2, 8.3 and 8.4). These measures do not have a set order.

In the event of a gas crisis/emergency the measures that were applicable to a gas disruption or gas incident may still be applicable. In addition, in a gas crisis/emergency the measures are used in accordance with the ladder of measures to be adopted (paragraph 8.5). This ladder of measures to be adopted dictates the sequence in which they are considered, from the first to the last measure. However, not every measure will prove possible for all types of gas shortages. This could be due to the urgency of the situation, among other things. In practice, this has consequences for how quickly progress can be made up the ladder. The ladder of measures to be adopted has been used in various example scenarios in Annex 3. This provides an insight into which measures are possible and in which situations.

8.2 Measures to be adopted in the event of a gas disruption

In the event of a gas disruption, measures may be implemented within the customary market mechanisms. These measures are the responsibility of GTS and are used to align demand and supply. It should be borne in mind that these mechanisms result in price increases in the event of shortage. In the EU Regulation, these measures are designated as 'market-based measures' that are defined in preventive action plans.

8.3 Early warning/gas incident requiring 'early warning'

8.3.1 Introduction

According to Article 11 of the EU Regulation, early warning is necessary where there is concrete, serious and reliable information that an event which is likely to result in significant deterioration of the gas supply situation may occur and which could result in the need for a European alert or could lead to the triggering of the emergency level and the national crisis level.

In this situation, GTS (or other parties having relevant information) issues a warning to the DCC-EZK as quickly as possible and via them to the Gas and Electricity Crisis Manager.

Based on a notification from the Gas and Electricity Crisis Manager, the Minister declares the 'early warning' phase and immediately issues an early warning to the European Commission Directorate-General for Energy in the event of an (imminent) significant deterioration of the gas supply situation, in accordance with the EU Regulation. The competent authorities in the European Member States directly connected to the Dutch gas network are then also informed without delay. This concerns the competent authorities in Germany, Belgium and the United Kingdom. In addition, the competent authority in France is informed if the warning relates to low-calorific gas.

The early warning means that the European Commission Directorate-General for Energy is brought up to speed as quickly as possible and the exchange of information about the significant deterioration of the gas supply situation can be shaped at the European level. Member States are

also aware at an early stage and can implement their own measures to prepare for a significant deterioration of the gas supply situation.

8.3.2 Measures

Measure	Share information
Description	In accordance with Article 14(1) of the EU Regulation, the gas companies involved should provide the following information to the competent authority daily: • The daily gas demand and gas supply forecasts for the following three days, in millions of cubic metres per day (mcm/d). • The daily flow of gas at all cross-border entry and exit points as well as at all points connecting a production facility, a storage facility or an LNG terminal to the network, in millions of cubic metres per day (mcm/d). • The period, expressed in days, for which it is expected that the supply of gas to protected customers can be ensured.
Main actors involved	• GTS • DCC-EZK • Director-General for Climate and Energy/Gas and Electricity Crisis Manager • Gas companies involved
Procedures to be followed	In the situation outlined above, i.e. in the event of an (imminent) gas incident, GTS passes the information mentioned above to the DCC-EZK and, through them, to the Director-General for Climate and Energy in his or her role as Gas and Electricity Crisis Manager. To this end, the gas companies involved provide GTS with information.
Anticipated contribution	This measure means that the Gas and Electricity Crisis Manager is aware of the relevant information as quickly as possible and the exchange of information about the gas incident can be shaped at the European level.
Information flows	• Information from the gas companies involved to GTS. • Information from GTS to DCC-EZK. • DCC-EZK passes information to the Gas and Electricity Crisis Manager.

8.4 Alerting/gas incident requiring 'alert'

8.4.1 Introduction

In accordance with Article 11(1)(b) of the EU Regulation, an alert level exists where a disruption of the gas supply or exceptionally high gas demand which results in significant deterioration of the gas supply situation occurs, but the market is still able to manage that disruption or demand without the need to resort to non-market-based measures. In this type of situation, the national network operator GTS can introduce market-based measures[22] within its regulatory role for the national gas supply.

[22] Gas Transport Conditions – LNB, paragraph 4.1.4.4: Actions to be taken in relation to an emergency.

In this situation, GTS issues a warning to the DCC-EZK as quickly as possible, which the DCC-EZK passes on to the Gas and Electricity Crisis Manager. Based on a notification from the Gas and Electricity Crisis Manager, the Minister declares the 'early warning' phase and immediately notifies the European Commission Directorate-General for Energy of the declaration of the alert in accordance with the EU Regulation. The competent authorities in the European Member States directly connected to the Dutch gas network are then also informed without delay. This concerns the competent authorities in Germany, Belgium and the United Kingdom. In addition, the competent authority in France is informed if the alert relates to low-calorific gas.

8.4.2 Measures

A number of measures are possible at the alert level, as shown below. These measures are not shown in order of priority, but can be implemented in any order. All of these measures are market-based measures, which are implemented before the Minister declares an emergency in the sense of the EU Regulation.

The problems could occur in sub-markets (e.g. high-calorific gas or low-calorific gas). Measures will only be implemented insofar as they provide solutions to the (sub-) problem. If, for example, there is a problem in the market for low-calorific gas, introducing additional high-calorific gas is only worthwhile if sufficient conversion capacity still exists to convert this high-calorific gas to low-calorific gas by adding nitrogen.

GTS will make all possible efforts to prevent (in other words: only use them in the case of utmost need) measures that are or have to be implemented in this phase resulting in restrictions being imposed on the supply to market parties (both end users and export, excluding the use of storage systems by market parties). Where possible, such restrictions will be delayed until the 'emergency' phase and will only be used by GTS in the 'alert' phase if there is a need for rapid intervention.

If GTS uses measures where parties receive an instruction to supply more gas to the extent that these parties suffer imbalance, GTS will suspend the balancing system (using balancing actions via the WDM (Within Day Market)). The amounts of gas supplied in addition or not supplied by order of GTS are settled using what is known as the 'neutral gas price'. This is the price that GTS sets daily as the average price of trading transactions.

Measure	Use of own resources or resources contracted by GTS
Description	GTS supplies gas from its own resources or from resources that are contracted from third parties.
Main actors involved	• GTS • Natural gas supplier(s)
Procedures to be followed	• GTS uses its own resources or uses resources contracted from third parties (such as a contract with a storage system).
Anticipated contribution	GTS's own resources can be used insofar as a natural gas stock is available. Natural gas suppliers are obliged (insofar as this is set out in their contracts with GTS) to follow the instruction(s). GTS uses these measures to maintain the physical balance in the gas network as much as possible. The resources contracted by GTS are not always guaranteed to deliver the result, because they are not always of a binding nature.
Information flows	Instruction from GTS to natural gas supplier(s).

Measure	Non-binding request to Neighbouring Network Operators (NNOs) to voluntarily supply additional gas to or purchase less gas from the Netherlands
Description	GTS submits a non-binding request to Neighbouring Network Operators (NNOs) to voluntarily supply additional gas to or purchase less gas from the Netherlands.
Main actors involved	• GTS • Natural gas supplier(s) • NNOs
Procedures to be followed	• GTS asks NNOs to temporarily supply additional gas (loan) to or purchase less from the Netherlands. • If the balancing system can no longer function normally, the balancing mechanism is suspended.
Anticipated contribution	NNOs may want to temporarily supply additional gas (loan) or purchase less gas voluntarily. GTS uses this measure to try to maintain the physical balance in the gas network as much as possible.
Information flows	Non-binding request to NNOs by GTS.

Measure	Non-binding request to programme responsible parties to voluntarily feed in more gas
Description	GTS asks programme responsible parties to feed in more (high-calorific) gas. This can be done when GTS sees that programme responsible parties are not yet using their maximum contracted transport capacity and the possibility of feeding in additional gas is feasible. The balancing regime continues to function in this case. This measure is based on voluntary contributions from programme responsible parties.
Main actors involved	• GTS • Programme responsible parties with contracts on physical entry points
Procedures to be followed	• GTS asks one or more programme responsible parties to feed in additional gas from storage systems, border points, production points or LNG and to market this gas.
Anticipated contribution	Given that this is a request for additional supply/marketing, the contribution depends on the willingness and capability of parties to feed in additional gas. This contribution will probably be small, given that parties will have already started using their maximum capacity of their own volition because of the high market prices.
Information flows	Non-binding request from GTS to programme responsible parties at storage systems, border points, production points or LNG installations.

Measure	Instructions relating to installations for storing gas or LNG and to domestic entry points on the national gas transport network
Description	GTS issues an instruction to cease filling or supplying from stocks in gas storage systems or to supply from production sources that are not yet supplying at maximum capacity. This instruction is issued to programme responsible parties who have stored gas or can supply additional gas from the domestic production sources.
Main actors involved	• GTS • Programme responsible parties who have stored gas in gas storage systems • Programme responsible parties who can still supply additional gas from domestic production sources
Procedures to be followed	• GTS suspends the balancing process via the WDM (Within Day Market). • GTS instructs one or more programme responsible parties to additionally supply a specific quantity of gas (or to cease filling from gas storage systems)

Measure	Instructions relating to installations for storing gas or LNG and to domestic entry points on the national gas transport network
Anticipated contribution	The programme responsible parties are obliged to follow the instruction(s). This can restore the balance during a gas incident.
Information flows	Instruction from GTS to programme responsible parties.

Pursuant to Article 14(1) of the EU Regulation, the gas companies and GTS are obliged to report the following to the Gas and Electricity Crisis Manager:

- The daily gas demand and gas supply forecasts for the following three days, in millions of cubic metres per day (mcm/d).
- The daily flow of gas at all cross-border entry and exit points as well as at all points connecting a production facility, a storage facility or an LNG terminal to the network, in millions of cubic metres per day (mcm/d).

The period, expressed in days, for which it is expected that the supply of gas to protected customers can be ensured.

8.5 Ladder of measures to be adopted in a gas crisis/emergency

According to Article 11(1)(c) of the EU Regulation, an emergency exists where there is exceptionally high gas demand, significant disruption of the gas supply or other significant deterioration of the gas supply situation and all relevant market-based measures have been implemented but the gas supply is insufficient to meet the remaining gas demand, so that non-market-based measures have to be additionally introduced with a view to safeguarding gas supplies to protected customers in particular. The consideration of these measures inherently implies an (imminent) gas crisis.

During a gas crisis, natural gas companies should provide information to the competent authorities daily on the basis of Article 1(1) of the EU Regulation. Various measures can then be implemented. These measures are called 'non-market-based measures' in the EU Regulation. They intervene in the normal customer and market mechanisms, because the gas crisis cannot (or can no longer) be managed by the market itself.

Table 2 contains the ladder of measures to be adopted: the order in which the measures are to be considered, ranked from least to most severe measure in terms of the social impact of the measure itself and taking account of the practical feasibility of the measures and preconditions in the EU Regulation.

This ladder of measures to be adopted dictates the order in which they will be considered, from the first to the last measure. However, not every measure will prove possible for all types of shortages. This could be due to the urgency of the crisis/emergency, among other things.

The Minister decides on the measures mentioned below when this is necessary and appropriate. The Gas and Electricity Crisis Manager prepares decisions by the Minister in this regard. All of the measures mentioned are implemented outside of the normal market mechanism.

The crisis measures that are used depend in part on aspects such as the nature of the gas shortage (high-calorific or low-calorific gas) and the scale. This is further elaborated in scenario drivers in Annex 2. The ladder of measures to be adopted has been used in various example scenarios in Annex 3.

Ladder of measures to be adopted		Type of measure	Type of customer targeted
1	Call to reduce natural gas consumption	Social	All customers
2	a. Non-binding request to neighbouring countries (government to government) to reduce gas consumption b. Ask European Commission to declare a regional emergency	International	Customers who are not protected
3	Institute a savings tender 'reduced consumption'	Economic	Customers who are not protected
4	Impose an additional tax on natural gas	Economic	Customers who are not protected
5	Enforced fuel switching for industries	Legal	Customers who are not protected
6	Enforced fuel switching for the generation of electricity	Legal	Customers who are not protected
7	Disconnect customers who are not protected (administrative and/or technical disconnection)	Legal/technical	Customers who are not protected
8	Disconnect customers other than solidarity-protected customers (administrative and/or technical disconnection)	Legal/technical	Customers other than solidarity-protected customers
9	Invoke mutual solidarity among EU Member States	International	Customers other than solidarity-protected customers
10	Administratively disconnect solidarity-protected customers	Legal	Solidarity-protected customers
11	Technically disconnect regions, including export	Technical	Solidarity-protected customers

Table 2. Ladder of measures to be adopted in a gas crisis/emergency

Pursuant to Article 14(1) of the EU Regulation, the gas companies and GTS are obliged to report the following to the Gas and Electricity Crisis Manager:

- The daily gas demand and gas supply forecasts for the following three days, in millions of cubic metres per day (mcm/d).
- The daily flow of gas at all cross-border entry and exit points as well as at all points connecting a production facility, a storage facility or an LNG terminal to the network, in millions of cubic metres per day (mcm/d).
- The period, expressed in days, for which it is expected that the supply of gas to protected customers can be ensured.

8.5.1 Measures regarding reduction of consumption by domestic customers who are not protected

Measures that reduce the consumption by customers who are not protected without forcing these customers to cease their consumption (see paragraphs 8.5.2, 8.5.4, and 8.5.5):

- Measure 1: Call to reduce natural gas consumption The probable result is unclear and depends in particular on the willingness of customers to limit consumption.

- Measure 3: Institute a savings tender 'reduced consumption'. The probable result is that customers who are not protected who subscribed to the tender before the emergency and therefore have entered into a contract with GTS will consume less.
- Measure 4: Impose an additional tax on natural gas. The probable result is that customers will consume less gas because of the higher costs. The effect is probably limited.

The measures above are administrative measures. The associated main actors and procedures to be followed are included in Annex 1.

Measures regarding restriction of undue consumption by customers who are not protected (see paragraphs 8.5.6–8.5.8):

- Measure 5: Enforced fuel switching for industries. This is an administrative measure. The probable result and effect are not known.
- Measure 6: Enforced fuel switching for the generation of electricity. This is an administrative measure. The probable result and effect are not known.
- Measure 7: Disconnect users who are not protected (administrative and/or technical disconnection). The probable result is that customers who are not protected will consume no/less gas and the anticipated effect is major, particularly as a result of technical disconnection.

The associated main actors and procedures to be followed for the measures above are included in Annex 1.

8.5.2 Measure 1: Call to reduce natural gas consumption

During a gas crisis/emergency, the initial measures focus on voluntary actions by society. This is why the Minister can issue a call to consume less natural gas to both households (for example by turning down the heating and by cooking one-pan meals) and companies. With these measures, the Ministry should be able to mobilise the population and companies through communication.

This measure is prepared with standard messages in the cold phase, so that it can be implemented quickly in a crisis/emergency. The precise effect of this social measure is uncertain, but a major effect cannot be guaranteed.

8.5.3 Measure 2: Call on neighbouring countries and ask European Commission to declare a regional emergency

If the previous measure is not sufficiently effective to manage the gas shortage, the Minister can decide to issue a non-binding request to neighbouring countries to reduce their consumption of gas from the Netherlands. In addition, the Minister can decide to ask the European Commission to declare a regional emergency (Article 12 of the EU Regulation). This could reduce the export of natural gas. A regional emergency can be declared, particularly when a significant deterioration in the supply of L-gas is involved.

The EU Regulation stipulates that neighbouring countries are obliged to assist each other during a gas shortage, if a country has employed all of its own measures against customers who are not protected (solidarity). This is not appropriate at this stage because Dutch customers who are not protected have not yet been compulsorily disconnected (administrative or technical disconnection).

However, neighbouring countries will be asked to implement measures at this point. To this end, the Netherlands will enter into discussions with the objective of restricting exports abroad. As long as a regional emergency has not been declared by the European Commission, the willingness of neighbouring countries to assist at this point on the ladder is voluntary and does not provide a

guarantee that neighbouring countries will purchase less gas. This remains the case even after the European Commission has declared a regional emergency. However, the European Commission will assume a coordinating role in that case, which is likely to make offering assistance less of a voluntary matter.

8.5.4 Measure 3: Institute a savings tender 'reduced consumption'

If the previous measures are not sufficiently effective to manage the gas shortage, the savings tender will be put into effect. In this tender, companies have previously indicated the conditions under which they will stop using natural gas in the event of a gas shortage. Examples include at least at what price, what volume, what response time and for what maximum period. This tender is an instrument that has already been prepared and implemented during the cold phase. By organising the tender in advance, it can be used to quickly agree with customers that they will (temporarily) consume no natural gas or less natural gas in the event of a crisis.

As with all measures in the ladder, the Minister (following preparation by the Gas and Electricity Crisis Manager) makes the decision on calling off the offers that have been received on the tender. GTS can then commence the actual implementation, starting with the lowest price and rising until the quantity of gas that is 'bought off' in this way reaches the size of the shortage. Protected customers are not subject to this measure (see also measure 4).

The tender is organised by GTS on an annual basis.

8.5.5 Measure 4: Impose an additional tax on natural gas

If the previous measures are still not sufficiently effective to manage the gas shortage, economic measures may be considered. The institution of a tax which leads to a significant increase in the price of natural gas, ten times the natural gas price for example, can work for industry if the market response time is long enough to feel the increased natural gas price. The implementation of such a price rise is prepared in the cold phase.

This measure, which constitutes an intervention in the market, is taken by the Minister. This means that this measure is a non-market-based measure in the sense of the EU Regulation.

It has been decided to exclude households from a tax for a number of reasons. Firstly, households are protected customers. Secondly, economic measures will probably have a very limited effect, because households usually (depending on the contract) pay annually in arrears and the effect cannot therefore be felt immediately enough. In addition, the feasibility is disputable because not all customers have a smart meter, as a result of which it is not possible to verify how much gas they have consumed during the gas crisis/emergency. How great the effect of this measure will be is uncertain.

8.5.6 Measure 5: Enforced fuel switching for industries

If the previous measures are still not sufficiently effective to manage the gas shortage, companies that are capable of doing so can be forced to switch to a different fuel, such as oil products or biomass. This could reduce the demand for natural gas from the industrial sector without the need to disconnect an industry.

This measure can be implemented based on the list of industries for which this type of fuel switching is possible[23]. Such a list is still to be compiled, in consultation with parties including GTS and the regional network operators.

8.5.7 Measure 6: Enforced fuel switching for the generation of electricity

If the previous measures are still not sufficiently effective to manage the gas shortage, power plants that are capable of doing so can be forced to switch to a different fuel, such as oil products or biomass. The objective is to limit the gas demand from power plants as much as possible. To this end, all other possibilities for providing electricity will be employed in the first instance before gas-fired power stations are used. Examples to be considered here include power plants using a different fuel such as biomass and the import of electricity from abroad.

It will not be possible to avoid the use of gas-fired power plants at all times. The capacity of sources that do not depend on natural gas is, after all, limited by the capacity of power plants and interconnection with other countries. In practice, this measure will be implemented on the Minister's behalf by GTS and TenneT, who are able to give instructions to power plants.

In order to obtain a good picture of the potential impact of this measure, the Minister will consult with TenneT and GTS to determine which power plants are capable of switching either wholly or in part to another fuel temporarily, and subject to which requirements and conditions.

8.5.8 Measure 7: Disconnect customers who are not protected (administrative and/or technical disconnection)

If the previous measures are still not sufficiently effective to manage the gas shortage, customers who are not protected are disconnected. In theory, it would appear worthwhile to take account of social and/or economic consequences of disconnection on the individual customer who is not protected in the order of disconnection. In practice, however, social and economic consequences prove to be ambiguous criteria, as a result of which no clear order can be determined.

Because this measure focuses on the protection of the gas supply to protected customers, the consumption volume of the customers who are not protected is leading in this plan. In other words: the (individual) highest consuming customer who is not protected is disconnected first and the lowest consumer last. The Category I list mentioned in paragraph 4.9 (Figure 11) is therefore leading in the implementation of this measure.

Companies with a high safety risk factor are given sufficient time to disconnect safely. These are companies that fall within the category of 'large-scale generation/processing and/or storage of (petro)chemical substances' (Major Accidents (Risks) Decree and Industrial Emissions Directive Cat. 4 companies). The emergency plans for safe disconnection of these companies are leading for the period that is given before having to disconnect. Other customers who are not protected will therefore be disconnected sooner in the meanwhile.

There are two options for disconnecting. First, disconnection will be made administratively. Here, customers who have to disconnect are given a binding instruction to cease using natural gas. After

[23] This list of industries should be compiled in the cold phase. The completion of this list requires specialist knowledge of industrial processes. In view of this, it would seem that an approach via the industrial sector associations would be expedient.

this, customers can be disconnected technically. When this is done, physical measures make it impossible for customers to continue to consume natural gas.

The options for technical disconnection differ by type of customer. It can only be done remotely in a number of cases, i.e. for major industries that are directly connected to the national gas transport network. For smaller industries connected to the national gas transport network, it can be done manually by closing the shut-off valves at the companies. Manual disconnection takes considerable time/manpower. The shut-off valves are usually owned by the network operator, but are usually located on site with the customer.

Up-to-date measured data from GTS and regional network operators could reveal the companies at which administrative disconnection has already resulted in the envisaged gas reduction. This provides the possibility to only opt for technical disconnection where this is not the case. This is the preferred approach, considering the manpower that is required. For technical disconnection, work is carried out in order of volume of gas consumption wherever possible.

8.5.9 Measure 8: Disconnect customers other than solidarity-protected customers (administrative and/or technical disconnection)

If the previous measures are still not sufficiently effective to manage the gas shortage, individual customers other than solidarity-protected customers are disconnected. These customers fall under the definition of 'protected customers', but not under the definition of 'solidarity-protected customers'. In practice, this only concerns small and medium-sized enterprises, as set out in paragraph 4.9.2. The Category II list mentioned in paragraph 4.9 (Figure 11) it is therefore leading in the implementation of this measure.

The manual disconnection of this group of customers takes considerable time/manpower. This is why the combination of both administrative and technical disconnection, as set out in Measure 7, is applicable here.

In addition, this measure involves the disconnection of critical gas-fired power plants.

8.5.10 Measure 9: Invoke mutual solidarity among EU Member States

If the measures above have been implemented and have not achieved sufficient effect to manage the gas shortage, everything possible has been done in the Netherlands to disconnect customers other than solidarity-protected customers from the gas supply. If the gas crisis/emergency is of such a magnitude that the gas demand from solidarity-protected customers is still not covered by the supply, then mutual solidarity among countries within the EU can be invoked based on Article 13 of the EU Regulation to maintain the gas supply to solidarity-protected customers.

This invocation of mutual solidarity has been prepared through contacts between the Minister and foreign governments, supported by the Transmission System Operators involved. The actual request for solidarity is down to the Minister. To bring about mutual solidarity, the Minister makes contact with the competent authorities in EU countries to which the Dutch gas transport network is directly connected (Belgium, Germany and the United Kingdom) and potentially also with France to ask them not to purchase gas from the Netherlands for their own customers who are not protected.

The EU Regulation also provides for a request to EU countries to which the Dutch gas transport network is directly connected to supply gas to the Netherlands for the benefit of Dutch solidarity-protected customers. In practice, however, this facility cannot be used. This is because Dutch solidarity-protected customers use low-calorific gas, which is not available elsewhere.

8.5.11 Measure 10: Administratively disconnect solidarity-protected customers

Once the measures above have been implemented, everything possible has been done in the Netherlands and the EU to maintain the supply of gas to solidarity-protected customers. However, should the crisis be of such a magnitude that the gas demand for these solidarity-protected customers is still not yet covered by the supply, measures are required that target solidarity-protected customers. In this phase, solidarity-protected customers will receive an instruction to consume no gas or less gas (administrative disconnection). The Category III list mentioned in paragraph 4.9 (Figure 11) is therefore leading in the implementation of this measure.

If such an instruction is given, it means that there is a severe shortage of gas. This will have major disruptive consequences for society. The solidarity-protected customers will be ordered to disconnect in the following order:

- Household customers and district heating installations
- Essential social services, including health care

The argument in favour of this order is that it maintains the supply of gas to health care for as long as possible, so that the most vulnerable population groups remain protected the longest.

8.5.12 Measure 11: Technically disconnect regions, including export

In the event of a major gas crisis/emergency, it could be necessary, subsequent to the aforementioned measures, to cease the gas supply to certain regions and to countries abroad, even if this affects protected or solidarity-protected customers.

Such a measure is prudent, for example, for maintaining the pressure in the national gas transport network – a condition for the timely restart of gas extraction and gas supply – during a major gas shortage.

The options for disconnecting regions are closing shut-off valves in through pipelines or closing them at the level of metering and pressure control facilities. The preferred option is disconnection at the metering and pressure control facilities level, provided there is sufficient time for this. The choice of which regions to disconnect depends on possible effects on national security. The leading criterion is therefore the relative quantity of gas that is consumed by the critical infrastructure in accordance with the ranking in the vitality assessment of the region. A region with a relatively large supply of gas to the critical infrastructure is therefore disconnected later than other areas. The termination of export is also a possibility when selecting regions to be disconnected.

In a very pressing gas shortage, through pipelines can also be closed. When this is done, the rule of thumb is that the further the through pipeline is closed from the source of the gas supply (usually Groningen), the smaller the area that is disconnected.

8.6 Effect of the ladder of measures to be adopted on the gas supply situation

The effect of a measure cannot be predicted precisely in advance, because it depends on the actual gas demand, the type of shortage and the way in which customers respond to measures. This paragraph therefore only provides an indication of the order of magnitude of the anticipated effect.

The anticipated effect is highly dependent on the time at which a gas shortage occurs. For the purpose of indicating the effect of measures, a distinction is made between a winter day and a summer day, and maximum and minimum demand on a winter day and summer day. The total gas

supply of high-calorific and low-calorific gas on this kind of winter day and summer day together is shown in Table 3.

	Winter day				Summer day			
	maximum		minimum		maximum		minimum	
	millions of m^3/hour	%	millions of m^3/hour	%	millions of m^3/hour	%	millions of m^3/hour	%
Small-scale consumption	6.1	29%	2.2	15%	0.4	6%	0.1	2%
Industry (via regional network operators)	2.4	11%	1.7	12%	0.8	11%	0.3	6%
Industry (via GTS)	3	14%	2.4	17%	2.1	30%	1.7	33%
Export	9.7	46%	8.1	56%	3.8	54%	3.1	60%
Total	21.2		14.4		7.1		5.2	

Table 3. Typical consumption by the market at different times

The categorisation in Table 3 differs from the ladder of measures to be adopted described in paragraph 8.5 on one point. Given the data available from GTS, Table 3 aligns with the criteria of small-scale consumption in the Gas Act – consumption via a connection with a capacity of <40 m^3/hour – which deviates slightly from the protected customers in paragraph 2.4. Despite this limitation, this consumption provides an order of magnitude for the anticipated effect of the measures:

	Ladder of measures to be adopted	Share of gas demand on typical winter day	Share of gas demand on typical summer day	Likelihood of achieving reduction
1	Call to reduce natural gas consumption	++++	+++	Uncertain
2	a. Non-binding request to neighbouring countries (government to government) to reduce gas consumption b. Ask European Commission to declare a regional emergency	+++	+++	Limited
3	Institute a savings tender 'reduced consumption'	+	++	Limited
4	Impose an additional tax on natural gas	+	++	Limited
5	Enforced fuel switching for industries	Unknown	Unknown	Unknown
6	Enforced use of electricity that is generated from sources other than gas	Unknown	Unknown	Unknown
7	Disconnect customers who are not protected (administrative and/or technical disconnection)	+	++	Large

Ladder of measures to be adopted		Share of gas demand on typical winter day	Share of gas demand on typical summer day	Likelihood of achieving reduction
8	Disconnect customers other than solidarity-protected customers (administrative and/or technical disconnection)	+	++	Large
9	Invoke mutual solidarity among EU Member States	+++	+++	Large
10	Administratively disconnect solidarity-protected customers	++++	++	Uncertain
11	Technically disconnect regions, including export	+++++	+++++	Large

Table 4. Effects of the measures

8.7 Specific measures for electricity and district heating

8.7.1 District heating

The measures and actions to mitigate the possible consequences of a disruption of the gas supply on district heating are the same as the measures and actions that are taken for protected and solidarity-protected customers.

Some Dutch households are heated by district heating. This involves large numbers of households in towns in particular. The probable consequences of disruption of the gas supply in the district heating sector will depend on the nature and severity of the disruption of the supply. At the early warning or alert stage, the measures may prevent the district heating sector being affected. In a gas crisis/emergency, measures will be implemented to avoid the district heating sector being affected but this cannot be excluded. In an extreme case, this could mean that households that have district heating can no longer be heated.

Because households are protected customers, the district heating sector (only insofar as it delivers heating to households or essential social services and cannot switch to other energy sources) is also labelled as protected customer and is a solidarity-protected customer in this emergency plan. The sequencing of measures in a gas crisis/emergency is such that protected and solidarity-protected customers are protected as long as possible.

8.7.2 Gas-fired electricity generation

The consequences for the electricity sector are related to the nature and severity of a disruption. There will be no consequences for the electricity sector in an early warning or alert situation. In a gas crisis/emergency, there are two measures that have an impact on the electricity sector (see also paragraph 8.5):

- Measure 6: Enforced fuel switching for the generation of electricity. The probable consequence is that the price of electricity will rise but the security of supply of electricity will not be endangered.
- Measure 8: Disconnect customers other than solidarity-protected customers (administrative and/or technical disconnection). As a consequence, critical gas-fired power plants will also be

disconnected. These power plants will therefore no longer be able to meet the demand for electricity, either wholly or in part. A potential consequence is a complete or partial blackout of the electricity system. TenneT endeavours to avoid a blackout at all times, even if the electricity supply from gas-fired plants is reduced or dries up entirely.

Pursuant to the EU Regulation, priority may be given to critical gas-fired power plants to prevent serious damage to the electricity system. The sequencing of measures in an emergency is such that a blackout of the electricity system is avoided for as long as possible. This is in line with the spirit of the EU Regulation; electricity is required to deliver heat to small-scale consumers (through district heating systems), for extracting and transporting gas and to power the heating installations of small-scale consumers.

If a significant deterioration of the gas supply situation could have an impact on the electricity sector, TenneT will scale up within the usual crisis structure. One of their liaison officers will join the Departmental Policy Team at the Ministry. The Minister bears responsibility for both the gas and the electricity supply. On behalf of the Minister, the Gas and Electricity Crisis Manager will implement measures to prevent the gas crisis/emergency from spreading to the electricity system as much as possible.

9. Assurance of the crisis management

Real-time response simulations of emergencies take place once every two years.

The actors involved are the Ministries of Economic Affairs and Climate Policy and Justice and Security, GTS, and (depending on the scenario) other natural gas companies, electricity companies, other Ministries, security regions, the industrial sector etc.

The procedures that are tested are the crisis manuals of GTS and the Ministry, and the crisis manuals and crisis procedures of the participating actors.

For each test, a scenario with medium or major consequences, that is not known in advance, is simulated.

Note that when emergency plans are being updated, the EU Regulation calls for a brief description of the tests that have been conducted since the presentation of the last emergency plan and the main results of the tests. Furthermore, it calls for a report on which measures have been established as a result of those test.

10. Regional dimension

The texts that follow have been developed with and by the regional risk groups of which the Netherlands is a member pursuant to the EU Regulation, namely:

1. Eastern gas supply risk groups:
   a) Belarus: Belgium, Czech Republic, Germany, Estonia, Latvia, Lithuania, Luxembourg, Netherlands, Poland, Slovakia (coordinator: Poland);
   b) Baltic Sea: Belgium, Czech Republic, Denmark, Germany, France, Luxembourg, Netherlands, Austria, Slovakia, Sweden (coordinator: Germany);
2. North Sea gas supply risk groups:
   a) Norway: Belgium, Denmark, Germany, Ireland, Spain, France, Italy, Luxembourg, Netherlands, Portugal, Sweden, United Kingdom (coordinator: France);
   b) Denmark: Denmark, Germany, Luxembourg, Netherlands, Sweden (coordinator: Denmark);
   c) United Kingdom: Belgium, Germany, Ireland, Luxembourg, Netherlands, United Kingdom (coordinator: United Kingdom);
   d) Low-calorific gas: Belgium, Germany, France, Netherlands (coordinator: Netherlands).

The coordinators of the various groups have the lead here and the working language is English.

10.1 Measures to be adopted per crisis level

10.1.1 Measures within the low calorific gas risk group

General measures at all crisis levels

In case the situation within one of the low calorific gas risk group Member States gives ground to raise one of the crisis levels the competent authority of that Member State will inform the Directorate-General for Energy of the European Commission as well the competent authorities of the risk group Member States. This will allow the Commission as well as the members of the L-gas risk group to prepare for a situation in which the supply of low calorific gas may/will significantly deteriorate.

In such a situation article 14(1) of EU Regulation 2017/1938 obliges natural gas undertakings to provide on a daily basis information to their competent authority and the Commission may request to be provided with this information as soon as possible. Given the central role of the Netherlands in the supply of low calorific gas, it has been agreed that the Netherlands will collect this information from the competent authorities of the other involved Member States. The Netherlands will subsequently group this information and make it available to all the involved competent authorities and, if so requested, to the Commission.

Early warning level

Within the low calorific gas risk group no specific measures are foreseen at the early warning level.

Alert level

Within the low calorific gas risk group no specific measures are foreseen at the alert level as the market is still able to manage the situation. Nevertheless the involved competent authorities as well as their TSOs may ask shippers and gas consumers to voluntarily increase their inflow of gas or reduce their off-take of gas. The expected impact will however most likely be limited (see section 8.4.2)

Emergency level

The measures that will be taken within the low calorific gas risk group at the emergency level are basically the same as the measures described in section 8.5 and annex 1 for the Netherlands, although their impact is expected to be larger.

In order to ensure that there is proper coordination between the competent authorities the Commission will be asked to declare a regional emergency for the low calorific gas region.

10.1.2 Measures within the United Kingdom risk group

Risk group actions on declaring a crisis level

- On the declaration of a crisis level, the relevant group Member State will undertake to immediately contact all other Member States within the United Kingdom Risk Group and other neighbouring Member States if appropriate. It will also contact the Commission. As the crisis is managed it will stay in regular contact with the Member States and update them and the Commission whenever the crisis level changes.
- The Member State undertakes to provide the information listed below:
- The Member state will identify the crisis level (Early Warning, Alert Level or Emergency Level).
- The Member State will provide a description of the incident or information leading to the declaration of the crisis level, covering:
  (i) The date, time and duration of the incident;
  (ii) The nature of the incident or threat;
  (iii) The location of the incident;
  (iv) The gas volumes affected;
  (v) The origin of the incident;
- As set out in Regulation 2017/1938, for the Early Warning and Alert levels, details will set out the market-based measures being adopted including:
  (i) A brief description of the measure and main actors involved;
  (ii) An indication whether these measure are sufficient to deal with the crisis and if not, a brief description of the additional measures that can be taken; and
  (iii) An indication whether cross border effects are to be expected in the other group Member States (For example increased imports from that Member State).

For Emergency level, the details will include:

- The actions being taken on the supply and demand side to make gas available, including commercial agreements between the parties involved and any compensation mechanisms for natural gas undertakings where appropriate;
- A brief description of the market-based measures still being applied at this stage and the main actors involved, indicating the expected contribution of the measures to mitigate the situation at emergency level and the contribution still needing to be covered by non-market-base measures.,
- The non-market-based measures planned or to be implemented for the emergency level, indicating, per measure:
  (i) A brief description of the measure and main actors involved.
  (ii) The preferred order in which they should be implemented, taking into account the circumstances of the crisis.
  (iii) Indicate the expected contribution of the measures to mitigate the situation at emergency level as a complement to market-based measures.
  (iv) Assess other effects of the measure, with a particular attention to possible cross-border effects in other group Member States.

10.1.3 Measures within the other risk groups

1. Eastern gas supply risk groups:
   a) Belarus: to be develop by Poland;
   b) Baltic Sea: to be develop by Germany.
2. North Sea gas supply risk groups:
   c) Norway: to be developed by France;
   d) Denmark: to be developed by Denmark.

10.2 Cooperation mechanisms

10.2.1 The cooperation mechanism in the low calorific gas risk group

The cooperation mechanism in the low calorific gas risk group in an emergency situation is based on appropriate and effective coordination between different stakeholders and competent authorities in the Member States. First, this means that the dispatching centres from the TSOs have frequent contacts in an emergency situation to analyse and control the situation. TSOs are challenged to run their networks as efficiently as possible either through incentives or other mechanisms, and as such solving constraints on cross-border points is part of the day-to-day operational business of TSOs. Neighbouring dispatching centres work closely together, where required, optimising gas flows and operation of the network in the region. The neighbouring TSOs have a history of cooperation and experience in the past years, following the situation of dwindling indigenous production and frequent interaction on infrastructure projects, transit and storage capacity.

Secondly, in case of a constraint at an interconnection point (whether this is due to maintenance, climatic conditions or interruption of supply) NNOs inform each other and relevant shippers immediately through bilateral contacts and through publication on the respective websites. Various actions can be taken to overcome or minimize the constraint. Either through the balancing regimes, or by re-routing gas via other entry/exit points in case the preferred route is constrained.

In addition, article 14(1) of Regulation 2017/1938 obliges natural gas undertakings to provide on a daily basis information to their competent authority in case one of the crisis levels referred to in article 11(1) has been declared. The Commission may request to be provided with this information as soon as possible. Given the central role of the Netherlands in the supply of low calorific gas, it has been agreed between the risk group Member States that in case one of crisis levels has been declared, the Netherlands will collect the information mentioned in article 14(1) from the competent authorities of the other involved Member States. The Netherlands will subsequently group this information and make it available to all the involved competent authorities and, if so requested, to the Commission.

The Netherlands will also coordinate the establishment of the assessment mentioned in article 14(3) and will provide this to the Commission as soon as possible and at the latest six weeks after the lifting of the low calorific gas emergency. The other involved competent authorities will provide the Netherlands timely with all the information necessary for the assessment.

Finally, and related to the coordination activities as described above regional issues related to the security of supply emergency situation are addressed and discussed in the low calorific gas risk group. The low calorific gas risk group activities have been and will be conducted within the framework of the Pentalateral Gas Platform. The Netherlands currently acts as the group's coordinator. The Benelux Secretariat provides logistic support. National Regulatory Authorities (when not the Competent Authority), TSOs (including ENTSOG) and the Commission are also

invited. The members of the low calorific gas risk group, in particular the competent authorities, meet each other regularly, either within the framework of the risk group or within the broader Pentalateral Gas Platform. Meetings and calls can be organized upon need very fast.

If necessary these arrangements make it possible to scale up rapidly to the political level if needed. The earthquake in Zeeriip in 2018 illustrates this. Directly after this earthquake there has been meeting of the responsible directors-general of the low calorific gas countries to discuss the situation, followed by bilateral phone calls between the Dutch Minister of Economic Affairs and Climate Policy and his colleagues.

10.2.2 The cooperation mechanism in the United Kingdom risk group

The Regional Coordination (ReCo) System for Gas has been established by ENTSOG (European Network of Transmission System Operators for Gas) as a means for the Member States' Transmission System Operators to share information when one of the three levels is activated. The aim of the ReCo is to provide a wide view and provide information around the situation.
Information which group Member States undertake to share during an incident will comprise:

- information about the incident level according to the ICS;
- existing or possible consequences of the incident;
- short description of the situation.

The group Member States participating in the telephone conference will undertake to provide the following information as part of that conference:

- Restrictions
- Pressure in the system
- Capacity utilisation (focused on relevant points or system)
- Underground gas storage information
- LNG utilization
- Level of demand
- Crisis Level
- Trend of prices for balancing gas
- Availability of balancing gas
- Maintenance
- Additional available flows from production

Using the ReCo system the group Member States undertake to participate in regular telephone conferences which enable sharing information around best practice and lessons learned.

The Member State within which the incident has occurred has the responsibility for first activating the ReCo team.

10.2.3 The cooperation mechanisms in the other risk groups

1. Eastern gas supply risk groups:
   a) Belarus: to be develop by Poland;
   b) Baltic Sea: to be develop by Germany.
2. North Sea gas supply risk groups:
   c) Norway: to be developed by France;
   d) Denmark: to be developed by Denmark.

10.3 Solidarity among Member States

Following the provision of EU-regulation 2017/1938 the Netherlands has to conclude solidarity arrangements with Belgium, Germany and the United Kingdom as the Dutch gas network is directly connected within the gas network of those the L-gas risk group. However, according to article 13 (11) of EU-regulation 2017/1938 the Netherlands is exempted from this obligation for the purpose of receiving solidarity for as long as it can cover the gas consumption of its solidarity protected customers from its own production.

The gas demand of the Dutch solidarity protected customers fluctuates between 10 and 14 bcm per year (see also table 2), depending on the temperature, while the current Dutch gas production lies in the order of 35 bcm per year (2018 figures: 18.8 bcm from the Groningen field and 16.9 bcm from the small fields). Moreover, all Dutch solidarity protected customers use low calorific gas which cannot be obtained from elsewhere. The only measure that be taken in this respect is that the Netherlands requests other low calorific gas consuming countries (Belgium, France and Germany) to reduce their off take of Dutch low calorific gas (measures 2 and 9). Ultimately the exports may have to be blocked (measure 11).

The Netherlands is however obliged to conclude solidarity arrangements with the afore mentioned Member States in order to provide solidarity to those countries if needed and if so requested. Proposals from those Member States with regard to the solidarity arrangements are to be awaited.

Annex 1. Non-market-based measures

Measure 1	Call to reduce natural gas consumption
Description of the measure	During a gas crisis/emergency, the initial non-market-based measures focus on voluntary actions by society. This end, the Minister will issue a call to consume less natural gas to both households (for example by turning down the heating and by cooking one-pan meals) and companies. With these measures, the Ministry should be able to mobilise the population and companies through communication.
Main actors involved	• Minister of Economic Affairs and Climate Policy • National Crisis Centre (NCC) • National Crisis Communication Core Team (NKC) • National network operator GTS • Regional network operators • TenneT • Natural gas producers • National Operations Coordination Centre (LOCC) • Security regions
Assessment of the need	This measure is always considered in a gas crisis/emergency and could be included more than once.
Implementation procedure	**Implementation** The Ministry's Communications Department (DC) is responsible for implementing this measure, in cooperation with the National Crisis Communication Core Team. Part of this is the coordination of the communications of all parties involved including, in any case, GTS, regional network operators, TenneT, natural gas producers and security regions. The Gas and Electricity Crisis Manager will decide who is best placed to issue the call to reduce natural gas consumption. Given the national interest, it is probable that this will either be the Minister or the Prime Minster. **Decision** The decision on this measure is made by the Minister, prepared by the chair of the Ministry's Departmental Policy Team in his or her role as Gas and Electricity Crisis Manager.
Anticipated contribution	**Scale of the effect** The effect of the measure cannot be predicted in advance. The measure will only have an effect when the response time for the customers is long enough to process the call, so if the deterioration of the gas supply situation is relatively slow for example. This measure will affect all domestic gas demand. Its share could be considerable, certainly as a result of the gas demand from small-scale users on a winter day. **Certainty of the effect** The effect that this measure has on the gas demand is uncertain because no such call has ever been made. The effect that such a call would have is therefore unclear.

Measure 1	Call to reduce natural gas consumption
Other effects	Because it is a measure on a voluntary basis, significant negative effects are unlikely. One risk is a temporary increase in natural gas consumption because companies and small-scale users quickly start to consume additional gas. Although this has not been quantified, the likelihood of such an increase appears to be small. Unlike drinking water, for example, heating (from natural gas) is volatile and customers cannot lay down a store of natural gas.
Relationship to Article 11(6) of the EU Regulation	Given the voluntary nature of the measure, the measure does not unduly restrict the internal market. This measure has no effect on the supply of gas in another Member State or cross-border access to infrastructure.
Information flows	This measure is implemented based on information about the date and time of the start of the unwanted event, the description, cause, context and effects of the unwanted event, the teams and parties involved, the decisions taken, measures and recommendations, and on the forecasts. These details are supplied to GTS by regional network operators, NNOs, programme responsible parties and producers. In addition, GTS uses its own information. This information will be passed to the DCC-EZK via GTS's crisis organisation and, through them, to the Director-General for Climate and Energy. In its role as information coordinator, the Departmental Crisis Centre gathers information from GTS and the various sections of the Ministry and processes it into a departmental overall picture of the situation. On the one hand, this overall picture supports departmental decision-making and on the other hand it serves as input for interdepartmental decision-making in the Interdepartmental Coordination Consultation, the Interdepartmental Crisis Management Committee and at the Ministerial Crisis Management Committee.

Measure 2	a. Non-binding request to neighbouring countries (government to government) to reduce gas consumption b. Ask European Commission to declare a regional emergency
Description of the measure	If the previous measure is still not sufficiently effective to manage the gas shortage, the Minister can decide to ask the European Commission to declare a regional emergency (Article 12 of the EU Regulation). This could reduce the export of natural gas and also result in the consequences of the disruption being compensated for together with other Member States rendering them less drastic. A regional emergency situation can be declared, particularly when a significant deterioration in the supply of low-calorific gas is involved. This measure also provides the opportunity to make agreements with other Member States on reducing their import of natural gas from the Netherlands that are concrete and specifically tailored to the situation. This measure can be preceded by the measure of asking other Member States to limit the import of gas from the Netherlands on a voluntary basis. In this way, this measure could be the prelude to organising a joint request with other Member States to the Commission to declare a regional emergency.
Main actors involved	• European Commission • Minister of Economic Affairs and Climate Policy • Member States of the European Union • Neighbouring Network Operators (NNOs) • National network operator GTS • NCC • NKC

Measure 2	a. Non-binding request to neighbouring countries (government to government) to reduce gas consumption b. Ask European Commission to declare a regional emergency
Assessment of the need	This measure is always considered as the second rung of the ladder of measures to be adopted, but it can be considered at several moments in the process if the Commission has not (yet) declared this regional emergency. The EU Regulation stipulates that neighbouring countries are obliged to assist each other during a gas shortage, if a country has employed all of its own measures against customers who are not solidarity-protected. This is not appropriate at this stage, because Dutch customers other than solidarity-protected customers have not been compulsorily disconnected (legal or technical disconnection). However, neighbouring countries will be asked to implement measures at this point. To this end, the Netherlands will enter into discussions with the objective of restricting exports abroad. As long as a regional emergency has not been declared by the European Commission, the willingness of neighbouring countries to assist at this point on the ladder is voluntary and does not provide a guarantee that neighbouring countries will purchase less gas. This measure targets customers abroad who are not protected.
Implementation procedure	**Implementation** The Minister is responsible for implementing this measure, the Departmental Advisory Team is responsible for coordination in particular. The request to other Member States to implement measures to reduce Dutch export will be made on behalf of the Minister and via the existing contacts with the relevant Ministries in the neighbouring Member States. In addition, it is the Minister who will ask the European Commission to declare a regional emergency. The Departmental Communication Team is responsible for communication regarding this measure. **Decision** The decision on this measure is made by the Minister and prepared by the chair of the Ministry's Departmental Policy Team in his or her role as Gas and Electricity Crisis Manager.
Anticipated contribution	**Scale of the effect** Export can involve a significant portion of the gas demand. **Certainty of the effect** Without the existence of a regional emergency, this measure will achieve a limited reduction. Without formal declaration of the regional emergency, this is a non-binding appeal for a voluntary contribution to gas reduction measures. In a formally declared regional emergency, the Member States are more obliged to implement gas reduction measures and the certainty of the effect is greater.
Other effects	The reduction of the consumption of natural gas by customers abroad who are not protected will, in many cases, boil down to shutting down business processes. This will result in economic losses. Because companies have freedom of choice, given measures that other Member States implement, the total anticipated economic losses resulting from this measure are limited.

Measure 2	a. Non-binding request to neighbouring countries (government to government) to reduce gas consumption b. Ask European Commission to declare a regional emergency
Relationship to Article 11(6) of the EU Regulation	Given the nature of the measure (cooperation with other Member States) and the involvement of the European Commission in a regional emergency, the supply of gas will not be unduly restricted in another Member State. This measure has no effect on the internal market or cross-border access to infrastructure.
Information flows	This measure is implemented based on information about the date and time of the start of the unwanted event, the description, cause, context and effects of the unwanted event, the teams and parties involved, the decisions taken, measures and recommendations, and on the forecasts. These details are supplied to GTS by regional network operators, NNOs, programme responsible parties and producers. This information will be passed to the DCC-EZK via GTS's crisis organisation and, through them, to the Gas and Electricity Crisis Manager. In its role as information coordinator, the Departmental Crisis Centre gathers information from GTS and the various sections of the Ministry and processes it into a departmental overall picture of the situation. On the one hand, this overall picture supports departmental decision-making and on the other hand it serves as input for interdepartmental decision-making in the Interdepartmental Coordination Consultation, the Interdepartmental Crisis Management Committee and at the Ministerial Crisis Management Committee.

Measure 3	Institute a savings tender 'reduced consumption'
Description of the measure	If the previous measures are not sufficiently effective to manage the deterioration of the gas supply situation, then the Gas and Electricity Crisis Manager will decide to call in the annual 'reduced consumption' tender, to be implemented by GTS. In this savings tender, which is organised annually by GTS, companies state in advance the price at which they will cease consuming a quantity of gas that is to be stated for a period that is to be stated. This savings tender is an instrument that has already been prepared and implemented in a non-crisis situation. It allows for the non-consumption of natural gas to be quickly bought off in the event of a crisis.
Main actors involved	• Minister of Economic Affairs and Climate Policy • National network operator GTS • Those directly connected
Assessment of the need	This measure is only implemented when all previous measures (market-based and non-market-based) have not had sufficient impact on the deterioration of the gas supply situation. This means that the nature of the gas crisis/emergency is such that this measure should be implemented. This measure only targets customers who are not protected (protected customers are household customers, district heating installations, essential social services and small and medium-sized enterprises). In addition to the above, the Ministry gives priority to the critical infrastructure in accordance with the ranking in the vitality assessment, taking categories A and B into account.

Measure 3	Institute a savings tender 'reduced consumption'
Implementation procedure	**Implementation** GTS, the Tactical Crisis Team in particular, is responsible for implementing the savings tender. GTS can then call off this previously implemented tender, starting with the lowest price, and rising until the quantity of gas that is 'bought off' and disconnected in this way reaches the size of the shortage. **Coordination** The Ministry, the Departmental Advisory Team in particular, is responsible for coordinating the actions of GTS. The Departmental Communication Team is responsible for communication regarding this measure. **Decision** The decision on calling off this tender is made by the Minister and prepared by the chair of the Ministry's Departmental Policy Team in his or her role as Gas and Electricity Crisis Manager.
Anticipated contribution	**Scale of the effect** The anticipated effect on the deterioration of the gas supply situation is limited in terms of scale. **Certainty of the effect** The implementation of this measure results in the relatively certain reduction of the gas demand in accordance with the bids that have been submitted.
Other effects	The reduction of the consumption of natural gas by customers who are not protected will, in many cases, boil down to shutting down business processes. This will result in economic losses which will (in part) be taken into account through the tender. Because companies have freedom of choice, the total anticipated economic losses resulting from this measure are limited.
Relationship to Article 11(6) of the EU Regulation	Given the voluntary nature of the measure, the measure does not unduly restrict the internal market. This measure is likely to have limited or no effect on the supply of gas in another Member State or cross-border access to infrastructure.
Information flows	This measure is implemented based on information about the date and time of the start of the unwanted event, the description, cause, context and effects of the unwanted event, the teams and parties involved, the decisions taken, measures and recommendations, and on the forecasts. These details are supplied to GTS by regional network operators, NNOs, programme responsible parties and producers. This information will be passed to the DCC-EZK via GTS's crisis organisation and, through them, to the Director-General for Climate and Energy. In its role as information coordinator, the Departmental Crisis Centre gathers information from GTS and the various sections of the Ministry and processes it into a departmental overall picture of the situation. On the one hand, this overall picture supports departmental decision-making and on the other hand it serves as input for interdepartmental decision-making in the Interdepartmental Coordination Consultation, the Interdepartmental Crisis Management Committee and at the Ministerial Crisis Management Committee.

Measure 4	Impose an additional tax on natural gas
Description of the measure	If the previous measures are not sufficiently effective to manage the deterioration of the gas supply situation, an additional tax will be imposed which results in a significantly increased gas price for the industrial sector. This measure will only work if the response time for the market is long enough to feel the effects of a higher price for natural gas.
Main actors involved	• Minister of Economic Affairs and Climate Policy • National network operator GTS • Regional network operators
Assessment of the need	This measure is only implemented when all previous measures (market-based and non-market-based) have not had sufficient impact on the deterioration of the gas supply situation. This means that the nature of the gas crisis/emergency is such that this measure should be implemented. This measure only targets customers who are not protected (protected customers are household customers, district heating installations, essential social services and small and medium-sized enterprises). In addition to the above, the Ministry gives priority to the critical infrastructure in accordance with the ranking in the vitality assessment, taking categories A and B into account.
Implementation procedure	**Implementation** The Ministry, the Departmental Advisory Team in particular, is responsible for imposing this additional tax as well as deciding the tender method and the scope of any funding required. It will effect the correct channels within the Ministry to organise an additional tax, based on a pre-prepared method per network. Part of this is the coordination of the actions of all parties involved, including GTS and regional network operators in any event. The Departmental Communication Team is responsible for communication regarding this measure. **Decision** The decision on this measure is made by the Minister and prepared by the chair of the Ministry's Departmental Policy Team in his or her role as Gas and Electricity Crisis Manager.
Anticipated contribution	**Scale of the effect** The anticipated effect on the gas supply situation is limited. The gas demand from customers who are not protected is relatively limited. **Certainty of the effect** The anticipated certainty of the effect of a tax on this demand is also limited because shutting down processes of customers who are not protected is costly.
Other effects	The reduction of the consumption of natural gas by customers who are not protected will, in many cases, boil down to shutting down business processes. This will result in economic losses. Because companies have freedom of choice, and given the higher price of natural gas, the anticipated total economic losses resulting from this measure are limited.
Relationship to Article 11(6) of the EU Regulation	This measure has no effect on the supply of gas in another Member State or cross-border access to infrastructure.

Measure 4	Impose an additional tax on natural gas
Information flows	This measure is implemented based on information about the date and time of the start of the unwanted event, the description, cause, context and effects of the unwanted event, the teams and parties involved, the decisions taken, measures and recommendations, and on the forecasts. These details are supplied to GTS by regional network operators, NNOs, programme responsible parties and producers. This information will be passed to the DCC-EZK via GTS's crisis organisation and, through them, to the Director-General for Climate and Energy. In its role as information coordinator, the Departmental Crisis Centre gathers information from GTS and the various sections of the Ministry and processes it into a departmental overall picture of the situation. On the one hand, this overall picture supports departmental decision-making and on the other hand it serves as input for interdepartmental decision-making in the Interdepartmental Coordination Consultation, the Interdepartmental Crisis Management Committee and at the Ministerial Crisis Management Committee.

Measure 5	Enforced fuel switching for industries
Description of the measure and actors	If the previous measures are still not sufficiently effective to manage the gas shortage, companies that are capable of doing so will be forced to switch to a different fuel, such as oil products or biomass. This could reduce the demand natural gas from the industrial sector without the need to disconnect an industry.
Main actors involved	• Minister of Economic Affairs and Climate Policy • National network operator GTS • Regional network operators • Those directly connected to the national network operator GTS (industries) • NCC • NKC
Assessment of the need	This measure is only considered when all previous measures (market-based and non-market-based) have not had sufficient impact on the deterioration of the gas supply situation. This means that the nature of the gas crisis/emergency is such that this measure should be implemented. This measure only targets customers who are not protected (protected customers are household customers, district heating installations, essential social services and small and medium-sized enterprises). This measure spares critical gas-fired power plants as much as possible.

Measure 5	Enforced fuel switching for industries
Implementation procedure	**Implementation** GTS, the Tactical Crisis Team in particular, is responsible for implementing this measure. GTS can force the industries to make this fuel switch on the Minister's behalf. When doing so, GTS will start with the highest gas consumers, incrementing until the quantity of gas that has to be reduced in this way reaches the size of the shortage. GTS will communicate with the gas customers involved regarding the implementation of the measure. The Ministry's Departmental Communication Team is responsible for outside communication regarding this measure. **Decision** The decision on this measure is made by the Minister and prepared by the chair of the Ministry's Departmental Policy Team in his or her role as Gas and Electricity Crisis Manager. **Supervision** The way in which the regulatory role is implemented will be reviewed later.
Anticipated contribution	**Scale of the effect** Although the anticipated effect is small, the precise contribution is not known at this time. The gas demand is part of the total energy demand from industries that are not protected. There is currently insufficient insight into which companies have the capability to switch to a different fuel. **Certainty of the effect** Given the enforceable nature of this measure, the likelihood of an effect on the demand is high.
Other effects	The switching from natural gas to another fuel by customers who are not protected will, in many cases, come down to using a more expensive fuel. This will result in economic losses. Because companies do not have to be disconnected, the total anticipated economic losses resulting from this measure are limited.
Relationship to Article 11(6) of the EU Regulation	The internal market is not unduly restricted because market-based and voluntary measures have already been considered before this measure is implemented. This measure has no effect on the supply of gas in another Member State or cross-border access to infrastructure.
Information flows	This measure is implemented based on information about the date and time of the start of the unwanted event, the description, cause, context and effects of the unwanted event, the teams and parties involved, the decisions taken, measures and recommendations, and on the forecasts. These details are supplied to GTS by regional network operators, NNOs, programme responsible parties and producers. This information will be passed to the DCC-EZK via GTS's crisis organisation and, through them, to the Director-General for Climate and Energy. In its role as information coordinator, the Departmental Crisis Centre gathers information from GTS and the various sections of the Ministry and processes it into a departmental overall picture of the situation. On the one hand, this overall picture supports departmental decision-making and on the other hand it serves as input for interdepartmental decision-making in the Interdepartmental Coordination Consultation, the Interdepartmental Crisis Management Committee and at the Ministerial Crisis Management Committee.

Measure 6	Enforced fuel switching for the generation of electricity
Description of the measure	If the previous measures are still not sufficiently effective to manage the gas shortage, the gas demand from power plants will be limited as far as possible. To this end, all other possibilities for producing electricity will be used first, before the switching of gas-fired power stations is considered. Examples to be considered here include increasing electricity generation from power plants using a different fuel such as biomass and the import of electricity from abroad. It will not be possible to avoid the use of gas-fired power plants at all times. The capacity of sources that do not depend on natural gas is, after all, limited by the capacity of power plants and interconnection with other countries.
Main actors involved	• Minister of Economic Affairs and Climate Policy • Electricity generators/TenneT in cooperation with GTS • Regional network operators • NCC • NKC
Assessment of the need	This measure is only considered when all previous measures (market-based and non-market-based) have not had sufficient impact on the deterioration of the gas supply situation. This means that the nature of the gas crisis/emergency is such that this measure should be implemented. This measure only targets customers who are not protected (protected customers are household customers, district heating installations, essential social services and small and medium-sized enterprises). This measure spares critical gas-fired power plants (insofar as they cannot switch fuel) and critical infrastructure as much as possible, in accordance with the ranking in the vitality assessment taking categories A and B into account.
Implementation procedure	**Implementation** GTS is responsible for implementing the measure; it is coordinated by the Tactical Crisis Team. In practice, GTS will implement this measure by intervening in the electricity markets, such as the day-ahead and intra-day market on trading platforms, in cooperation with TenneT. Contrary to the normally applicable price mechanism, the gas-fired power plants will always be placed at the bottom of the order of merit. This guarantees that all other sources of electricity will be used first before gas-fired power plants are used. **Decision** The decision on this measure is made by the Minister and prepared by the chair of the Ministry's Departmental Policy Team in his or her role as Gas and Electricity Crisis Manager. **Supervision** The way in which the regulatory role is implemented will be reviewed later.
Anticipated contribution	**Scale of the effect** The size of the contribution will have to be determined at the time that the request is made to TenneT. **Certainty of the effect** There is a high likelihood of a reduction in the gas demand, once the scale has been estimated.

Measure 6	Enforced fuel switching for the generation of electricity
Other effects	This measure ensures that electricity in a power plant is generated at a higher marginal cost price. This ensures an increase in electricity prices, which in its turn again results in economic losses. Because companies do not have to be disconnected, the total anticipated economic losses resulting from this measure are limited.
Relationship to Article 11(6) of the EU Regulation	The internal market is not unduly restricted because market-based and voluntary measures have already been considered before this measure is implemented. This measure has no effect on the supply of gas in another Member State or cross-border access to infrastructure.
Information flows	This measure is implemented based on information about the date and time of the start of the unwanted event, the description, cause, context and effects of the unwanted event, the teams and parties involved, the decisions taken, measures and recommendations, and on the forecasts. These details are supplied to GTS by regional network operators, NNOs, programme responsible parties and producers. This information will be passed to the DCC-EZK via GTS's crisis organisation and, through them, to the Director-General for Climate and Energy. In its role as information coordinator, the Departmental Crisis Centre gathers information from GTS and the various sections of the Ministry and processes it into a departmental overall picture of the situation. On the one hand, this overall picture supports departmental decision-making and on the other hand it serves as input for interdepartmental decision-making in the Interdepartmental Coordination Consultation, the Interdepartmental Crisis Management Committee and at the Ministerial Crisis Management Committee.

Measure 7	Disconnect users who are not protected (administrative and/or technical disconnection)
Description of the measure	If the previous measures are still not sufficiently effective to manage the gas shortage, customers who are not protected are disconnected. This disconnection can be either technical disconnection or administrative disconnection. GTS can carry out the technical disconnection in the case of major industries that are connected to the national gas transport network. GTS issues an instruction for regulation of the gas delivery on exit points on the national gas transport network. In the case of industries that are connected to the regional networks, this can be done administratively or manually by shutting off the connections of the companies. Manual disconnection takes considerable time/manpower. Administrative disconnection can be achieved by issuing a legal instruction to a group of users. These users are then jointly and severally responsible for ceasing their gas consumption. Companies with a high safety risk factor are given sufficient time to disconnect safely. These are companies that fall within the category of 'large-scale generation/processing and/or storage of (petro)chemical substances' (Major Accidents (Risks) Decree and Industrial Emissions Directive Cat. 4 companies). The emergency plan for safe disconnection is leading for the period that is given before having to disconnect. Therefore, other, customers who are not protected will be disconnected sooner in the meanwhile.

Measure 7	Disconnect users who are not protected (administrative and/or technical disconnection)
Main actors involved	• Minister of Economic Affairs and Climate Policy • National network operator GTS • Regional network operators • Customers who are not protected • NCC • NKC
Assessment of the need	This measure only targets customers who are not protected. This measure spares critical gas-fired power plants as far as possible, in accordance with the ranking in the vitality assessment taking categories A and B into account.
Implementation procedure	**Implementation** GTS and the regional network operators are responsible for implementing the measure; it is coordinated by the Strategic Crisis Team. Measures that have to be implemented to regulate the supply of gas are implemented by the Gas Transport (CCP) and Operations departments of GTS and the regional network operators if necessary. On behalf of the Minister, GTS and the regional network operators will issue instructions to customers who are not protected to consume no/less gas from the exit points on the national gas transport network and the regional networks using prepared lists. GTS suspends the balancing process via the WDM (Within Day Market). **Decision** The decision on this measure is made by the Minister and prepared by the chair of the Ministry's Departmental Policy Team in his or her role as Gas and Electricity Crisis Manager. **Supervision** The way in which the regulatory role is implemented will be reviewed later.
Anticipated contribution	**Scale of the effect** The gas demand from customers who are not protected in the Netherlands is limited to very limited, depending on the season. The size of the gas demand that this measure affects therefore depends on the time. **Certainty of the effect** The certainty of the effect on this demand is however high given the enforceable nature of the measure.
Other effects	The reduction of the consumption of natural gas by customers who are not protected will, in many cases, boil down to shutting down business processes. This will result in economic losses. Given the enforceable nature, these economic losses could be considerable. In theory, it would therefore appear worthwhile to take account of the social and/or economic consequences of disconnection for the individual customer who is not protected in the order of disconnection. In practice, however, social and economic consequences prove to be ambiguous criteria, as a result of which no clear order can be determined. Because this measure focuses on the protection of the gas supply to protected customers, the consumption volume of the customers who are not protected is leading in this plan. In other words: the (individual) highest consuming customer who is not protected is disconnected first and the lowest consumer last.

Measure 7	Disconnect users who are not protected (administrative and/or technical disconnection)
Relationship to Article 11(6) of the EU Regulation	The internal market is not unduly restricted because market-based and voluntary measures have already been considered before this measure is implemented. This measure has no effect on the supply of gas in another Member State or cross-border access to infrastructure.
Information flows	This measure is implemented based on information about the date and time of the start of the unwanted event, the description, cause, context and effects of the unwanted event, the teams and parties involved, the decisions taken, measures and recommendations, and on the forecasts. These details are supplied to GTS by regional network operators, NNOs, programme responsible parties and producers. This information will be passed to the DCC-EZK via GTS's crisis organisation and, through them, to the Director-General for Climate and Energy. In its role as information coordinator, the Departmental Crisis Centre gathers information from GTS and the various sections of the Ministry and processes it into a departmental overall picture of the situation. On the one hand, this overall picture supports departmental decision-making and on the other hand it serves as input for interdepartmental decision-making in the Interdepartmental Coordination Consultation, the Interdepartmental Crisis Management Committee and at the Ministerial Crisis Management Committee.

Measure 8	Disconnect customers other than solidarity-protected customers (administrative and/or technical disconnection)
Description of the measure	If the previous measures are still not sufficiently effective to manage the gas shortage, individual customers other than solidarity-protected customers are disconnected. These customers fall under the definition of 'protected customers', but not under the definition of 'solidarity-protected customers'. In practice, these are small and medium-sized enterprises and specific segments of essential social services (such as educational services). Similar to the disconnection under Measure 7, this can be done either technically or administratively. Here too, the technical disconnection of this group of consumers takes considerable time/manpower. Moreover, critical gas-fired power plants will also be disconnected as a consequence of this measure.
Main actors involved	• Minister of Economic Affairs and Climate Policy • National network operator GTS • Customers other than solidarity-protected customers • Electricity generators/TenneT • Regional network operators • NCC • NKC
Assessment of the need	This measure is only considered when all previous measures (market-based and non-market-based) have not had sufficient impact on the gas shortage. This means that the nature of the gas crisis/emergency is such that this measure should be considered. This measure only targets customers who are not protected. This measure spares critical gas-fired power plants as far as possible, in accordance with the ranking in the vitality assessment taking categories A and B into account.

Measure 8	Disconnect customers other than solidarity-protected customers (administrative and/or technical disconnection)
Implementation procedure	**Implementation** GTS is responsible for implementing the measure; it is coordinated by the Strategic Crisis Team and by the regional network operators. Measures that have to be implemented to regulate the supply of gas are implemented by the Gas Transport and Operations departments of GTS and by the regional network operators. In the event of an emergency, the measures are implemented by GTS and the regional network operators on behalf of the Ministry. This involves both technical disconnection by the CCP and the manual technical disconnection of specific customers. The technical disconnection of customers other than solidarity-protected customers takes place based on prepared lists of customers other than solidarity-protected customers. The technical disconnection is carried out by employees of the regional network operators or by GTS. **Decision** The decision on this measure is made by the Minister and prepared by the chair of the Ministry's Departmental Policy Team in his or her role as Gas and Electricity Crisis Manager. **Supervision** The way in which the regulatory role is implemented will be reviewed later.
Anticipated contribution	**Scale of the effect** The gas demand from customers other than solidarity-protected customers (excluding the customers who were restricted in the previous measure) in the Netherlands is limited because the category of companies that are protected, although not by solidarity, is small. **Certainty of the effect** The anticipated effect on this demand is significant given the legally enforceable nature of the measure.
Other effects	The reduction of the consumption of natural gas by customers who are not protected will, in many cases, boil down to shutting down business processes. This will result in economic losses. Given the enforceable nature, the economic losses can be exceptionally high (see the previous measure also).
Relationship to Article 11(6) of the EU Regulation	The internal market is not unduly restricted because market-based and voluntary measures have already been considered before this measure is implemented. This measure has no effect on the supply of gas in another Member State or cross-border access to infrastructure.

Measure 8	Disconnect customers other than solidarity-protected customers (administrative and/or technical disconnection)
Information flows	This measure is implemented based on information about the date and time of the start of the unwanted event, the description, cause, context and effects of the unwanted event, the teams and parties involved, the decisions taken, measures and recommendations, and on the forecasts. These details are supplied to GTS by regional network operators, NNOs, programme responsible parties and producers. This information will be passed to the DCC-EZK via GTS's crisis organisation and, through them, to the Director-General for Climate and Energy. In its role as information coordinator, the Departmental Crisis Centre gathers information from GTS and the various sections of the Ministry and processes it into a departmental overall picture of the situation. On the one hand, this overall picture supports departmental decision-making and on the other hand it serves as input for interdepartmental decision-making in the Interdepartmental Coordination Consultation, the Interdepartmental Crisis Management Committee and at the Ministerial Crisis Management Committee.

Measure 9	Invoking mutual solidarity between EU Member States
Description of the measure	If the previous measures prove to be insufficient, the Ministry makes contact with the European Commission and with the competent authorities in the EU Member States to which the Netherlands gas transport network is directly connected (currently: Belgium, Germany and the United Kingdom; in the event of an emergency situation in the field of low-calorific gas contact will also be made with France) to ask them not to purchase gas from the Netherlands for their own customers who are not protected. Although the EU Regulation makes no provision for such a situation, it does implicitly state that other countries have a moral duty to comply with such a request.
Main actors involved	• Minister of Economic Affairs and Climate Policy • National network operator GTS • Neighbouring network operators (NNOs) • European Commission • Member States of the European Union • NKC
Assessment of the need	This measure is only considered when all previous measures (market-based and non-market-based) have not had sufficient impact on the gas supply situation. This means that the nature of the gas crisis/emergency is such that this measure should be implemented. If the measures above have been implemented and have not achieved sufficient effect to manage the gas shortage, everything possible has been done in the Netherlands to disconnect customers other than solidarity-protected customers from the gas supply. If the crisis is of such a magnitude that the gas demand from solidarity-protected customers is still not covered by the supply, then mutual solidarity among countries within the EU can be invoked to maintain the gas supply to solidarity-protected customers by asking them not to purchase gas from the Netherlands.

Measure 9	Invoking mutual solidarity between EU Member States
Implementation procedure	**Implementation** This invocation of mutual solidarity has been prepared through contacts between the Minister and foreign governments, supported by the Transmission System Operators involved. The actual request for solidarity is the responsibility of the Ministry in the person of the Gas and Electricity Crisis Manager. The Ministry, in the person of the Gas and Electricity Crisis Manager, contacts the European Commission and the relevant competent authorities in EU countries to bring about solidarity. The EU countries will then communicate their capabilities for solidarity and the further actions that are required. **Decision** The decision on this measure is made by the Minister and prepared by the chair of the Ministry's Departmental Policy Team in his or her role as Gas and Electricity Crisis Manager.
Anticipated contribution	**Scale of the effect** The contribution and size of this measure can be large. Export can involve a significant portion of the gas demand. **Certainty of the effect** The certainty of the anticipated effect on this demand is difficult to estimate. Formally speaking, a request to cease importing from the Netherlands does not fall under the solidarity arrangements in the EU Regulation.
Other effects	The reduction of the consumption of natural gas by customers abroad who are not protected will, in many cases, boil down to shutting down business processes. This will result in economic losses. Given the enforceable nature, these economic losses can be considerable (see the previous measures also).
Relationship to Article 11(6) of the EU Regulation	This measure, implemented in the spirit of the solidarity arrangements in the EU Regulation, does not have any undue effect on the internal market or cross-border access to infrastructure. The supply of gas in another Member State is not unduly restricted, because all measures against customers other than solidarity-protected customers have already been implemented in the Netherlands.
Information flows	This measure is implemented based on information about the date and time of the start of the unwanted event, the description, cause, context and effects of the unwanted event, the teams and parties involved, the decisions taken, measures and recommendations, and on the forecasts. These details are supplied to GTS by regional network operators, NNOs, programme responsible parties and producers. This information will be passed to the DCC-EZK via GTS's crisis organisation and, through them, to the Director-General for Climate and Energy. In its role as information coordinator, the Departmental Crisis Centre gathers information from GTS and the various sections of the Ministry and processes it into a departmental overall picture of the situation. On the one hand, this overall picture supports departmental decision-making and on the other hand it serves as input for interdepartmental decision-making in the Interdepartmental Coordination Consultation, the Interdepartmental Crisis Management Committee and at the Ministerial Crisis Management Committee.

Measure 10	Administratively disconnect solidarity-protected customers
Description of the measure	Once the measures above have been implemented, everything possible has been done in the Netherlands and the EU to maintain the supply of gas to solidarity-protected customers. Should the crisis be of such a magnitude that the gas demand for these solidarity-protected customers is not covered by the supply, measures that target solidarity-protected customers are required. In this phase, solidarity-protected customers will receive an instruction to consume no gas or less gas (administrative disconnection). The solidarity-protected customers will be ordered to disconnect in the following order: a. District heating, to the extent that it delivers heating to household customers and is not able to switch to other fuels than gas (all other district heating has already been disconnected) and household customers (and their equivalent: facilities with a residential function such as prisons) b. Health care c. Households: given the large number of small connections, the technical disconnection of solidarity-protected customers is only an option if entire areas can be disconnected technically (see Measure 11)
Main actors involved	• Minister of Economic Affairs and Climate Policy • National network operator GTS • Regional network operators • Protected customers • NCC • NKC
Assessment of the need	Solidarity-protected customers are household customers, specific essential social services and district heating installations to the extent that they deliver heating to household customers and specific social services. This measure is only considered when all previous measures (market-based and non-market-based) have not had sufficient impact on the gas supply situation. This means that the nature of the gas crisis/emergency is such that this measure should be considered. If such an instruction is given, it means that there is a severe shortage of gas. This will have major disruptive consequences for society. The argument in favour of this order is that it maintains the supply of gas to health care for as long as possible, so that vulnerable population groups remain protected the longest. In addition, this is the last resort to prevent part of the main gas network being disconnected, which shortens the recovery period after the gas/crisis emergency and thereby limits the consequences.
Implementation procedure	**Implementation** GTS is responsible for implementing the measure; it is coordinated by the Strategic Crisis Team and by the regional network operators. Instructions to protected customers are issued on behalf of the Minister based on categories of protected customers. Regional network operators will be closely involved in the implementation of this measure. **Decision** The decision on this measure is made by the Minister and prepared by the chair of the Ministry's Departmental Policy Team in his or her role as Gas and Electricity Crisis Manager. **Supervision** The way in which the regulatory role is implemented will be reviewed later.

Measure 10	Administratively disconnect solidarity-protected customers
Anticipated contribution	**Scale of the effect** The anticipated effect on the demand is uncertain. The demand for gas can be relatively high which is certainly the case when small-scale users demand gas for heating on a cold winter day. **Certainty of the effect** The consequences of disconnecting gas can be major and possibly life-threatening. How small-scale consumers will respond to an instruction to consume no gas or less gas is therefore uncertain.
Other effects	This type of gas shortage will have severely disrupting consequences for society. As a result of the gas shortage, companies will have to shut down, which will result in economic losses, and small-scale consumers will be without gas, which will result in risks to public health.
Relationship to Article 11(6) of the EU Regulation	The internal market is not unduly restricted, because market-based and non-market-based measures against protected customers (voluntary and enforced) have already been considered before this measure is implemented. This measure has no effect on the supply of gas in another Member State or cross-border access to infrastructure.
Information flows	This measure is implemented based on information about the date and time of the start of the unwanted event, the description, cause, context and effects of the unwanted event, the teams and parties involved, the decisions taken, measures and recommendations, and on the forecasts. These details are supplied to GTS by regional network operators, NNOs, programme responsible parties and producers. This information will be passed to the DCC-EZK via GTS's crisis organisation and, through them, to the Director-General for Climate and Energy. In its role as information coordinator, the Departmental Crisis Centre gathers information from GTS and the various sections of the Ministry and processes it into a departmental overall picture of the situation. On the one hand, this overall picture supports departmental decision-making and on the other hand it serves as input for interdepartmental decision-making in the Interdepartmental Coordination Consultation, the Interdepartmental Crisis Management Committee and at the Ministerial Crisis Management Committee.

Measure 11	Technically disconnect part of the main gas network, including export
Description of the measure and actors	In the event of a severe disruption of the gas supply, it will be necessary, subsequent to the aforementioned measures, to cease the gas supply to certain parts of the main gas network and to countries abroad, even if this affects all consumers (both protected and not protected). The options for disconnecting part of the main gas network are closing shut-off valves in through pipelines or closing them at the level of metering and pressure control facilities or gas distribution stations. The choice of which part of the main gas network is to be disconnected depends on possible effects on national security. A part of the main gas network with a relatively large supply of gas to the critical infrastructure is therefore disconnected later than other parts. This choice of region spreads the effect of disconnecting proportionally across the Netherlands as much as possible. The shutting-down of export is also a possibility when selecting parts of the main gas network to be disconnected.

Measure 11	Technically disconnect part of the main gas network, including export
Main actors involved	• Minister of Economic Affairs and Climate Policy • National network operator GTS • Regional network operators • NNOs • NCC • NKC • LOCC
Assessment of the need	This measure is only considered when all previous measures (market-based and non-market-based) have not had sufficient impact on the gas supply situation. This means that the nature of the gas crisis/emergency is such that this measure should be implemented. Such a measure is prudent, for example, for maintaining the pressure in the national gas transport network – a condition for the timely restart of gas extraction and gas supply – during a major gas shortage.
Implementation procedure	**Implementation** GTS is responsible for implementing the measure; it is coordinated by the Strategic Crisis Team. Measures that have to be implemented to regulate the supply of gas are implemented by GTS's Operations department. In the event of an emergency, the measures are implemented by GTS on behalf of the Ministry. This involves both technical disconnection by the CCP and the manual technical disconnection of specific customers, transfer points to the networks of regional network operators, NNOs, pipeline sections or parts of the GTS gas transport network. Technical disconnection of part of the main gas network in the Netherlands is done based on prepared lists (where possible). The technical disconnection is carried out by GTS at the level of metering and pressure control facilities or gas distribution stations. **Decision** The decision on this measure is made by the Minister and prepared by the chair of the Ministry's Departmental Policy Team in his or her role as Gas and Electricity Crisis Manager.
Anticipated contribution	**Scale of the effect** The size of the gas reduction depends on the area that is disconnected. **Certainty of the effect** As a result of the technical disconnection, the subsequent effects are then guaranteed.
Other effects	This type of gas shortage will have severely disrupting consequences for society. As a result of the gas shortage, companies will have to shut down, which will result in economic losses, and small-scale consumers will be without gas, which will result in risks to public health. Another possible consequence is the shifting of the gas demand as result of evacuation because people are taken to another location. These effects are currently unquantified.
Relationship to Article 11(6) of the EU Regulation	The internal market, the supply of gas to another Member State and cross-border access to infrastructure is not unduly restricted because all other measures have already been considered before this measure is implemented;

Measure 11	Technically disconnect part of the main gas network, including export
Information flows	This measure is implemented based on information about the date and time of the start of the unwanted event, the description, cause, context and effects of the unwanted event, the teams and parties involved, the decisions taken, measures and recommendations, and on the forecasts. These details are supplied to GTS by regional network operators, NNOs, programme responsible parties and producers. This information will be passed to the DCC-EZK via GTS's crisis organisation and, through them, to the Director-General for Climate and Energy. In its role as information coordinator, the Departmental Crisis Centre gathers information from GTS and the various sections of the Ministry and processes it into a departmental overall picture of the situation. On the one hand, this overall picture supports departmental decision-making and on the other hand it serves as input for interdepartmental decision-making in the Interdepartmental Coordination Consultation, the Interdepartmental Crisis Management Committee and at the Ministerial Crisis Management Committee.

Annex 2. Scenario drivers

B2.1 General

This annex provides a generic guide to classifying a gas crisis/emergency and for deciding on the action to be taken; this is because every gas crisis/emergency is unique. To nonetheless allow general statements to be made, this annex is written in terms of scenario drivers. These scenario drivers are elements that can be used as the basis for classifying a gas crisis/emergency.

First, this annex introduces the scenario drivers. Then, the effect of the drivers on a gas crisis is described per scenario driver. Finally, there is a conclusion of what effect the various drivers have on the actions to be taken during a gas crisis/emergency.

Gas disruptions and gas incidents fall outside of the scope of this annex. The identification and actions to be taken for these types of gas shortages is, after all, already embedded in the usual market mechanisms.

B2.2 Scenario drivers

Eight determinative scenario drivers have been identified to classify a gas crisis/emergency (Table 5).

Driver	Description of the driver	Typical scale
Volume	This driver indicates the magnitude of the natural gas shortage. It is the residual shortage, after all market-based mechanisms have been employed. The volume is affected by both the scale of the disruption and by the scale of the gas demand at that time.	A limited to total shortage of natural gas
Urgency	This driver indicates how much time is needed to implement measures before the gas crisis occurs.	Hours up to weeks until the shortage occurs
Type of disruption	This driver indicates which part of the supply chain causes a gas shortage to occur.	Production, import, conversion and/or transport
Type of natural gas	This driver indicates the quality of gas to which the disruption initially applies. There is a possibility of a disruption filtering through from one quality of gas to the other.	High-calorific and/or low-calorific gas
Duration	This driver indicates how long the gas crisis will continue. Here, the measurement is from the first to the last moment that a physical shortage of natural gas would continue if crisis measures are not implemented.	Hours up to the entire winter until the shortage no longer exists
Source	This driver indicates the origin of the gas crisis.	Domestic or foreign
Season	This driver indicates which season the gas crisis occurs in.	Spring, summer, autumn or winter
Timing	This driver indicates the time of day at which the gas crisis occurs.	During or outside of working hours

Table 5. Definition and typical scale of the scenario drivers

B2.3 Effect per driver

This paragraph considers the effect of the scenario drivers on a gas crisis/emergency. There are two ways in which scenario drivers can have an effect, namely on the consequential losses and/or on the actions taken during a gas crisis/emergency. Drivers that are determinative for the

consequential losses of a crisis result in a different economic and/or social impact of the crisis/emergency.

The precise impact of the gas crisis/emergency can, however, only be estimated in advance to a limited extent. This is why this chapter only describes the impact of a scenario qualitatively.

Drivers can also be determinative for the actions to be taken in the event of a gas crisis/emergency and form the basis for various measures being considered. This influence is described based on the measures within the ladder of measures to be adopted (paragraph 7.3). A scenario can have three possible effects on the actions to be taken in accordance with this ladder of measures to be adopted, namely:

1. Effect on the number of measures that are implemented,
2. Effect on the customers for whom the measure is implemented,
3. Effect on the sequence in which the measures are implemented.

In describing the drivers, we have chosen a selection of drivers that have an impact on the action to be taken. As a result of this, the eight drivers that are presented are not fully independent of each other. For instance, the season has an effect on the volume shortage that occurs. Only four drivers are in themselves determinative for the action to be taken, the other drivers can have an indirect effect on the action to be taken.

As far as action to be taken during a gas crisis/emergency is concerned, only four of the drivers are determinative for the actions, namely the **volume**, the **urgency**, the **type of disruption** and the **type of natural gas**. In the event of a gas crisis/emergency, the crisis measures that have to be implemented are determined based on these drivers. The other drivers are determinative for the impact of the gas crisis.

B2.3.1 Volume

This driver is determinative for the action to be taken in a gas crisis/emergency because it determines how many measures have to be implemented. After all, more measures from the ladder of measures to be adopted are required for a higher volume natural gas shortage than for a smaller volume natural gas shortage. As a result, this driver also has an effect on the consequential losses of a gas crisis/emergency. The layout of the ladder is, after all, such that measures with greater consequential losses are considered later than measures with a smaller impact.

The 'volume' driver has no effect on which customers are impacted or the order in which measures are implemented.

B2.3.2 Urgency

The urgency can have consequences for the actions to be taken in a gas crisis/emergency. This can be a reason to skip measures in the ladder of measures to be adopted, despite these measures being higher up the ladder. The following measures can be skipped if the urgency is very high:

- Measure 4 – Impose an additional tax on natural gas. After all, the market needs time to respond to this measure and it takes some time before this measure can have an impact.
- Measure 5 – Enforced fuel switching for industries. Implementing this measure requires both sufficient implementation time and time for the market to respond to it and it takes some time for this measure to have an impact.

- Measure 7 – Disconnect customers who are not protected. The technical disconnection of customers is extremely labour-intensive and therefore requires a long implementation period. The technical disconnection of customers takes weeks (order of magnitude). This is why this measure is limited to administrative disconnection only when the level of urgency is high.
- Measure 8 – Disconnect customers other than solidarity-protected customers (administrative and/or technical disconnection). The technical disconnection of customers is extremely labour-intensive and therefore requires a long implementation period. The technical disconnection of customers takes weeks (order of magnitude). This is why this measure is limited to administrative disconnection only when the level of urgency is high.
- Measure 10 – Administratively disconnect protected customers. It takes time to implement this measure and it therefore takes some time before this measure has an impact.

The other measures can be implemented quickly. A precondition for this is that preparations for these measures must have been made in the cold phase and that sufficient manpower and resources are available to put these measures into effect.

If certain measures are not possible, far-reaching measures are implemented relatively quickly. As a result of this, urgency can also have an effect on the consequential losses of a gas crisis/emergency.

B2.3.3 Type of disruption

The type of disruption is determinative in considering which customers to apply measures to. A general principle is that the measures that target specific customers are only considered if they contribute to resolving the gas crisis/emergency.

There are three types of disruption:

1. When production or import is disrupted there is a general shortage of gas. In this kind of disruption, measures targeting all customers are therefore considered.
2. When transport is disrupted, a geographically specific area will be affected. Measures will then only target customers in the area that is affected.
3. A disruption at a conversion station results in the possible occurrence of a shortage of low-calorific gas. This is covered in greater detail in paragraph B2.3.4, which describes how the type of gas has an effect on the measures targeting specific customers.

The type of disruption has no effect on the order in which measures are considered.

If there is a conversion or transport problem, there will be a very quick transition to measures with major consequences because measures can only be considered for some of the customers. Therefore, these types of gas crisis can have major effects.

B2.3.4 Type of natural gas

The type of natural gas is determinative for which customers are affected by a gas crisis/emergency. Two types of natural gas can be distinguished for this: high-calorific and low-calorific natural gas. Naturally, measures are only implemented if this has an impact on the gas shortage. Whether a measure has an effect is illustrated in Figure 18. For the rest, measures are implemented irrespective of the type of natural gas. For instance, there may be a situation in which during a shortage of low-calorific natural gas measures are implemented to restrict the demand for high-calorific gas so as to facilitate increased conversion of high-calorific to low-calorific natural gas.

		Type of natural gas shortage	
		Low-calorific gas	High-calorific gas
Type of measures	Low-calorific gas	Always has an effect	Only has an effect if it results in less conversion taking place *Limited by the time at which no conversion takes place*
	High-calorific gas	Only has an effect if it results in the possibility of increased conversion *Limited by the maximum conversion capacity*	Always has an effect

Figure 18. Limitation of measures in the event of a shortage of low-calorific or high-calorific gas

The type of gas has no effect on the order in which measures are considered. However, in a shortage of low-calorific natural gas, protected customers will be affected fairly quickly because this is the type of gas used by households in the Netherlands.

B2.3.5 Duration

The duration of a gas crisis/emergency has a major effect on the amount of consequential losses. In a short-lived shortage, the consequences of a gas crisis are less extensive than in a long-term shortage. For industrial customers, for example, the longer the crisis measures are in effect, the higher the economic losses will be. For households, the longer the crisis measures are in effect, the greater the social effects will be.

An exception to this is the loss of pressure in specific areas. After all, the risk of water penetration plays a role here: perforation of lower gas pressure pipes and therefore the inflow of groundwater. In view of this, there will be immediate severe consequences, even in a short-lived gas crisis/emergency. In addition to this, the loss of pressure in certain areas also leads to risks when customers are reconnected.

The duration of the gas crisis/emergency has no consequences for the actions to be taken in a gas crisis/emergency.

B2.3.6 Source

The location of the source has no effect on the actions to be taken in a gas crisis/emergency. If the crisis/emergency originates abroad, however, there will be a lower expectation of solidarity from abroad. As a result of this, the effect of the following measures will be limited:

- Measure 2 – Ask European Commission to declare a regional emergency
- Measure 9 – Invoke mutual solidarity among EU Member States

As a result of this, the source of a gas crisis/emergency can have an effect on the consequences of the gas crisis. The source has no effect on the customers that are affected or the order in which measures are considered.

B2.3.7 Season

The season in which the gas crisis/emergency occurs has an effect on the consequences of a gas crisis. After all, during a cold period a lot of natural gas is used to heat households which are protected under the EU Regulation. A shortage of natural gas during such a period of cold therefore has a greater social effect than the same shortage during the summer.

The season has no direct effect on the order in which measures are considered. The gas demand is higher in winter, consequently the volume of the gas shortage is higher. The 'volume' driver does have a determinative effect on the actions to be taken in a gas crisis/emergency.

B2.3.8 Timing

In a gas crisis/emergency outside of working hours, it will take longer for the crisis structure in Chapter 5 to be put in place. As a result of this, it will generally also take longer for measures to be implemented and/or have an impact. In a crisis/emergency where the urgency is very high, the timing can therefore be determinative for the consequential losses. The timing does not have a determinative effect on the actions to be taken during a gas crisis/emergency.

Annex 3. Example scenarios

This annex elaborates the crisis measures for a number of example scenarios. The aim of this is to illustrate how Chapters 7 and 8 work. No new crisis measures are elaborated in this chapter, nor are the considerations between them.

Five example scenarios are elaborated in this annex:

- Power failure in Groningen
- Import problems as a result of political-administrative unrest
- Major shortage at Ommen conversion station
- Low-calorific gas line rupture
- High-calorific gas line rupture

Example scenario 1
Power failure in Groningen

Description of scenario

There is a power failure in Groningen at 6 a.m. on Monday. This results in failure in Groningen, Norg and Zuidbroek. The duration of the power failure is estimated to be 48 to 72 hours and the time for responding is limited (estimated to be 30 minutes, disconnect the market within one hour).

It is a cold winter day (*-10 degrees Celsius*) and during the morning peak gas consumption is 12 million cubic metres per hour. The shortage is 6 million cubic metres per hour in Groningen and 3 million cubic metres per hour in Norg.

Classification into scenario drivers

Volume shortage	*Small*	*Medium*	*Large*
Urgency (handling time)	*High (no time)*	*Medium (~ hours)*	*Low (~ weeks)*
Type of disruption	*Production/import*	*Conversion*	*Transport*
Type of natural gas	*L-gas*	*H-gas*	
Duration	*Short-lived (<1 day)*	*Medium term (days/weeks)*	*Long term (~ one season)*
Source	*Domestic*	*Foreign*	
Season	*Summer/spring*	*Winter/autumn*	
Timing	*During office hours*	*Outside of office hours*	

Measures to be taken from ladder

Details of ladder of measures to be adopted

Order of using the ladder

- Urgency is very high. As a result of this, all measures with a relatively long implementation or putting-into-effect period are skipped in the ladder.
- Only administrative disconnections are carried out, and technical disconnections (where it is possible to do so remotely).

Type of customers

- In view of the urgency, measures are implemented at the regional level. This makes differentiation into types of customers impossible.
- The L-gas demand is reduced. It is therefore not worthwhile reducing the H-gas demand. After all, there is no need for more H-gas for conversion.

Example scenario 2
Import problems as a result of political-administrative unrest

Description of scenario

A limited quantity of natural gas is available from abroad due to political-administrative unrest. The urgency and duration have not yet been established, talks on this are still being held at the political level.

It is a cold winter day (*-10 degrees Celsius*). Gas consumption in the morning peak is 12 million cubic metres per hour.
A shortage of 3 million cubic metres per hour is expected within a few weeks.

Classification into scenario drivers

Volume shortage	*Small*	*Medium*	*Large*
Urgency (handling time)	*High (no time)*	*Medium (~ hours)*	*Low (~ weeks)*
Type of disruption	*Production/import*	*Conversion*	*Transport*
Type of natural gas	*L-gas*	*H-gas*	
Duration	*Short-lived (<1 day)*	*Medium term (days/weeks)*	*Long term (~ one season)*
Source	*Domestic*	*Foreign*	
Season	*Summer/spring*	*Winter/autumn*	
Timing	*During office hours*	*Outside of office hours*	

Measures to be taken from ladder

Details of ladder of measures to be adopted

Order of using the ladder

- The urgency is low, as a result of which the order on the ladder is leading.

Type of customers

- The primary objective is to reduce the H-gas demand, reduction of the L-gas demand occurs as long as this facilitates less conversion.

Example scenario 3
Major shortage at Ommen conversion station

Description of scenario

At 6 a.m. on Monday, a major shortage occurs at Ommen conversion station.
It is a cold winter day (-10 degrees Celsius). Gas consumption in the morning peak is 12 million cubic metres per hour.
The shortage is estimated to be 1.2 million cubic metres per hour in Groningen.
The situation is expected to last for six months and no estimate has been provided for the response time.

Classification into scenario drivers

Volume shortage	*Small*	*Medium*	*Large*
Urgency (handling time)	*High (no time)*	*Medium (~ hours)*	*Low (~ weeks)*
Type of disruption	*Production/import*	*Conversion*	*Transport*
Type of natural gas	*L-gas*	*H-gas*	
Duration	*Short-lived (<1 day)*	*Medium term (days/weeks)*	*Long term (~ one season)*
Source	*Domestic*	*Foreign*	
Season	*Summer/spring*	*Winter/autumn*	
Timing	*During office hours*	*Outside of office hours*	

Measures to be taken from ladder

Details of ladder of measures to be adopted

Order of using the ladder

- The urgency is high to medium-high. In view of this, the additional tax and bid steps on the ladder are skipped.
- Only administrative disconnections are carried out, and technical disconnections (where it is possible to do so remotely).
- Depending on the precise market situation, only Measure 7 is implemented, or this measure as well as Measures 8 and 9.

Type of customers

- The primary objective is to reduce the L-gas demand, reduction of the H-gas demand occurs as long as this facilitates more conversion.

Example scenario 4
L-gas line rupture

Description of scenario

At 6 a.m. on Monday, there is a major reduction of transport capacity for L-gas in the southern Netherlands due to a line rupture. The situation is urgent. The incident is expected to last for four days. The response time is estimated to be 30 minutes and disconnection is within one hour.

It is a cold winter day (*-10 degrees Celsius*) and during the morning peak gas consumption is 12 million cubic metres per hour. The shortage is 40% L-gas.

Classification into scenario drivers

Volume shortage	*Small*	*Medium*	*Large*
Urgency (handling time)	*High (no time)*	*Medium (~ hours)*	*Low (~ weeks)*
Type of disruption	*Production/import*	*Conversion*	*Transport*
Type of natural gas	*L-gas*	*H-gas*	
Duration	*Short-lived (<1 day)*	*Medium term (days/weeks)*	*Long term (~ one season)*
Source	*Domestic*	*Foreign*	
Season	*Summer/spring*	*Winter/autumn*	
Timing	*During office hours*	*Outside of office hours*	

Measures to be taken from ladder

Details of ladder of measures to be adopted

Order of using the ladder

- Urgency is very high. As a result of this, all measures with a certain implementation or putting-into-effect period are skipped in the ladder.
- Only administrative disconnections are carried out, and technical disconnections (where it is possible to do so remotely).

Type of customers

- Measures only affect customers 'downstream' of the line rupture.
- In view of the urgency, measures are implemented at the regional level. This means differentiation into types of customers is not possible.
- The primary objective is to reduce the L-gas demand, reduction of the H-gas demand occurs as long as this facilitates more conversion.

Example scenario 5
H-gas line rupture

Description of scenario

At 6 a.m. on Monday, there is a major reduction of transport capacity for H-gas in the southern Netherlands due to a line rupture. The situation is urgent.
The incident is expected to last for four days.
The response time is estimated to be 30 minutes and disconnection is within 45 minutes.
There is a high demand for H-gas.
The shortage is 40% H-gas.

Classification into scenario drivers

Volume shortage	*Small*	*Medium*	***Large***
Urgency (handling time)	***High (no time)***	*Medium (~ hours)*	*Low (~ weeks)*
Type of disruption	*Production/import*	*Conversion*	***Transport***
Type of natural gas	*L-gas*	***H-gas***	
Duration	*Short-lived (<1 day)*	***Medium term (days/weeks)***	*Long term (~ one season)*
Source	***Domestic***	*Foreign*	
Season	*Summer/spring*	***Winter/autumn***	
Timing	*During office hours*	***Outside of office hours***	

Measures to be taken from ladder

1. Call to reduce natural gas consumption
2. Ask European Commission to declare a regional emergency
3. Institute an annual savings tender 'reduced consumption'
4. Impose an additional tax on natural gas
5. Enforced fuel switching for industries
6. Enforced fuel switching for the generation of electricity
7. Disconnect customers who are not protected (administrative and/or technical disconnection)
8. Disconnect customers other than solidarity-protected customers (administrative and/or technical
9. Invoke mutual solidarity among EU Member States
10. Administratively disconnect solidarity-protected customers
11. Technically disconnect regions, including export

■ Measures to be implemented □ Measures not to be implemented

Details of ladder of measures to be adopted

Order of using the ladder

- Urgency is very high. As a result of this, all measures with a certain implementation or putting-into-effect period are skipped in the ladder.
- Only administrative disconnections are carried out, and technical disconnections (where it is possible to do so remotely).

Type of customers

- Measures only affect customers 'downstream' of the line rupture.
- In view of the urgency, measures are implemented at the regional level. This means differentiation into types of customers is not possible.
- The primary objective is to reduce the H-gas demand, reduction of the L-gas demand occurs as long as this facilitates less conversion.

Annex 4. Abbreviations

ACM	Authority for Consumers & Markets
bcm	billion cubic meters
BH-G	Gas Protection and Recovery Plan
BRZO	Major Accidents (Risks) Decree
CCP	GTS's Central Command Post, controls gas transport and monitors the balance between demand and supply.
CGE	Gas and Electricity Crisis Manager. This role is filled by the Director-General for Climate and Energy at the Ministry of Economic Affairs and Climate Policy.
CoPI	Incident Location Command. Part of the coordinated regional incident response procedure in which emergency services work together.
DAT	Departmental Advisory Team. Part of the departmental crisis structure at the Ministry of Economic Affairs and Climate Policy.
DBT-EZK	Departmental Policy Team. Part of the departmental crisis structure at the Ministry of Economic Affairs and Climate Policy.
DCC-EZK	Departmental Crisis Centre. Part of the departmental crisis structure at the Ministry of Economic Affairs and Climate Policy.
DCO	Communications Department
DCT	Departmental Communication Team. Part of the departmental crisis structure at the Ministry of Economic Affairs and Climate Policy.
DG B&I	Directorate-General for Enterprise & Innovation
DG K&E	Directorate-General for Climate & Energy
EU	European Union
EZK	Ministry of Economic Affairs and Climate Policy
GTS	Gasunie Transport Services
IAO	Interdepartmental Coordination Consultation Part of the national crisis structure.
ICCb	Interdepartmental Crisis Management Committee. Part of the national crisis structure.

JenV	Ministry of Justice and Security
LNG	Liquefied natural gas
LOCC	National Operations Coordination Centre
MCCb	Ministerial Crisis Management Committee. Part of the national crisis structure.
NCC	National Crisis Centre
NKC	National Crisis Communication Core Team
NNOs	Neighbouring Network Operators, network operators in (adjacent) neighbouring countries
OCT	Operational Crisis Team. Part of the GTS crisis structure.
(R)BT	(Regional) Policy Team. Part of the coordinated regional incident response procedure in which emergency services work together.
RIE	Industrial Emissions Directive
RNBs	Regional network operators within the Netherlands
ROT	Regional Operational Team Part of the coordinated regional incident response procedure in which emergency services work together.
SCT	Strategic Crisis Team. Part of the GTS crisis structure.
SodM	State Supervision of Mines
SSOs	Storage System Operators
TCT	Tactical Crisis Team. Part of the GTS crisis structure.
TSOs	Transmission System Operators

Annex 5. Definitions

Market-based measure	Measure that is decided by a market party.
Non-market-based measure	Measure that is decided by a non-market party (namely by the Minister of Economic Affairs and Climate Policy).
Protected customer	Household customers, essential social services, small and medium-sized enterprises and district heating installations to the extent that they deliver heating to the aforementioned customers and provided that such installation are not able to switch to other fuels than gas.
Solidarity-protected customer	Household customers, district heating installations, essential social services.
Customers who are not protected	All customers other than customers who are protected (either by default or by solidarity). This includes, for example, the industrial sector.
Programme responsible parties	The individuals responsible for a programme as set out in Article 17b of the Gas Act.

Annex 6. Emergency plan and BH-G correlation table template

The emergency plan template (Annex VII of EU Regulation 2017/1938) is used in the following locations in this protection and recovery plan:

Part of emergency plan template		**Where found in Gas Protection and Recovery Plan**
1 Definition of crisis levels		2.2 Crisis levels 4.4 Minister of Economic Affairs and Climate Policy 6 Crisis processes
2 Measures to be adopted per crisis level		8 Measures
	2.1 Early warning	6.3 Early warning 8.3 Early warning/gas incident requiring 'early warning'
	2.2 Alert level	6.4 Alerting 8.4 Alerting/gas incident requiring 'alert'
	2.3 Emergency	6.5 Declaration of emergency 8.5 Ladder of measures to be adopted in an emergency/gas crisis Annex 1. Non-market-based measures
3 Specific measures for electricity and district heating		8.7 Specific measures for electricity and district heating
4 Crisis manager or team		5.2 Gas and Electricity Crisis Manager
5 Roles and responsibilities of the various actors	a. Natural gas companies Industrial customers Relevant electricity generators	4.7 Other crisis partners in the gas chain 5.7 Roles and responsibilities of the various actors 6.8 Information provision 8.3 Early warning/gas incident requiring 'early warning' 8.4 Alerting/gas incident requiring 'alert' 8.5 Ladder of measures to be adopted in an emergency/gas crisis Annex 1. Non-market-based measures

	b. Roles and responsibilities of competent authority and entities to whom tasks have been delegated	4.4 Minister of Economic Affairs and Climate Policy 4.5 National network operator GTS 4.6 Regional network operators 4.8 Crisis partners outside of the gas chain 5.7 Roles and responsibilities of the various actors
6 Measures regarding restriction of undue consumption by customers who are not protected		8.5.1 Measures regarding reduction of consumption by customers who are not protected Annex 1, Measure 7
7 Emergency situation tests		9 Assurance of the crisis management Annex 3 Example scenarios
8 Regional dimension		10 Regional dimension
8.1 Measures to be adopted per crisis level	8.1.1 Early warning 8.1.2 Alert level 8.1.3 Emergency level	10.1 Measures to be adopted per crisis level
8.2 Cooperation mechanisms		10.2 Cooperation mechanisms
8.3 Solidarity among Member States		10.3 Solidarity among Member States