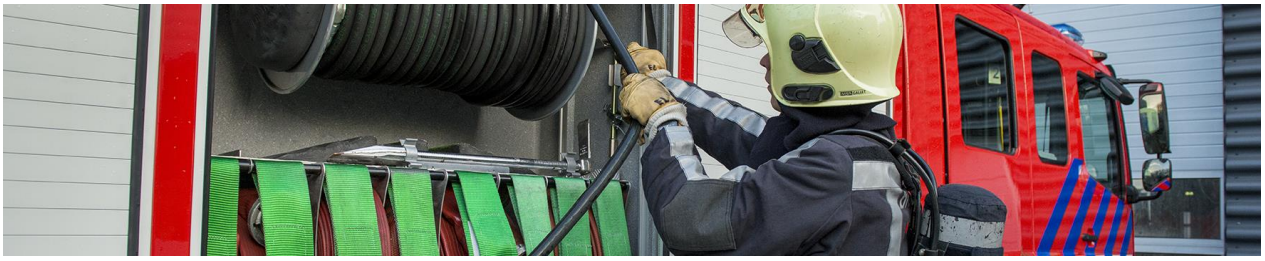
Kosten en bereik van het waarschuwings- en alarmeringssysteem

een analyse van het WAS vanuit het denkkader van een MKBA



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S Management summary

crisis communication in the Netherlands

In the event of a disaster or crisis, the government has a duty to provide information to citizens about the origin, extent and consequences of the disaster or crisis threatening or affecting an area, as well as the course of action to be followed. This duty lies with the mayor or, in case of a scaled-up situation, the chairman of the safety region. To meet this obligation, it is necessary to alert and inform as many citizens as possible. Currently, two national systems can be deployed in case of a disaster or crisis: the WAS (Emergency Alert and Warning System) and NL-Alert. In addition, the local/regional authority has other crisis communication resources at its disposal, such as local/regional disaster channels on radio and TV, the public information number 0800-1351, www.crisis.nl, own websites, social media and/or sound trucks.

The WAS was put into operation in 1998 and consists of 4,278 sirens throughout the Netherlands. In the event of a disaster or crisis, the sirens can be turned on from the emergency centre of the regional fire department. When they hear the siren, citizens are expected to go inside, close windows and doors, and turn on their radio or television to the regional emergency channel. The WAS is tested at noon on the first Monday of every month so that citizens are familiar with the means of alarm. In a test, the siren only sounds once, unlike in an actual disaster or crisis when it sounds heard several times.

NL-Alert has been operational since 2012. In the event of a disaster or crisis, a message can be broadcast by all masts of Dutch telecom providers that have coverage within the area in question. NL-Alert can also be broadcast by masts if the network is overloaded. Citizens receive the message on their cell phone, and the phone makes a loud, piercing sound and/or gives a vibrating alert. The message contains information about the crisis situation, what citizens should do and where information or updates on the situation can be found. NL-Alert is also distributed through other channels, such as digital advertising columns and displays in public transport. Twice a year, an NL-Alert test message is broadcast to increase awareness of (receiving) NL-Alert among citizens and to make citizens aware that NL-Alert is personally relevant to them as a means of alarm in the event of a disaster or crisis.

Since 2014, the Minister of Justice and Security has planned to phase out the WAS. The minister has given two reasons for this[1]. First, the operational value of the WAS is limited, as no information about the situation or alternative action perspective[2] can be provided. Second, the range of NL-Alert is higher than the range of the WAS. The WAS is deployed less often by safety regions because of the possibility to deploy NL-Alert. The minister indicated that because of this, the WAS has little added value. In 2014, the policy was initiated to phase out the WAS and replace it with NL-Alert from 1 January 2018. The phasing out was postponed several times. In April 2021, the Minister of Justice and Security indicated that the WAS would not be phased out by 1 January 2022, and that the decision on phasing out would be left to the next cabinet.[3]

1 Second Chamber, parliamentary year 2016–2017, 29 517, no 117, letter of 25 October 2016.

2 A standard action perspective applies to the WAS ('go inside, close windows and doors, listen to the emergency channel'). The WAS cannot be used in situations where a different action perspective is required (such as 'leave the area' or 'do not drink tap water').

3 Second Chamber, parliamentary year 2020-2021, 30 821, no 129, letter of 30 April 2021.

purpose of the study

The purpose of the study is to provide insight into the added value of the WAS within the set of crisis communication tools. This includes the financial consequences of the intended phasing out of the WAS and the consequences for the provision of information concerning disasters and crises.

The central research question is:
What is the added value of the WAS in relation to its costs and in comparison with the benefits and costs of other crisis communication tools?

At the start of the study, it appeared that a lot of information about the phasing out of the WAS and its positive and negative effects was already available. What was missing was a coherent analysis in which different costs and benefits of the WAS are described in relation to alternatives in one single report. This gap is filled with the present report by means of a social cost-benefit analysis (SCBA). In consultation with the supervisory committee, it was decided to use the social cost-benefit analysis mainly as a frame of reference. This choice is related to the fact that the benefits are difficult to monetise unambiguously. We will deal with this separately. The research findings are based on extensive desk research, supplemented by targeted interviews with various experts from safety regions, the scientific community and interest groups.

base case: phasing out the WAS

In the base case[4] of the study, the WAS is extended until 2025, after which the installations will be dismantled. It is possible – if politicians decide so – to start dismantling earlier. This has not been considered in the study and the starting point is 2025. This is in line with the current maintenance contracts, which run until 2025. In addition to the base case, two policy alternatives have been examined.

policy alternative: full maintenance from 2025 onwards

In the first policy alternative, the WAS is fully maintained from 2025 to (at least) 2040. Maintenance requires new investments. This is because the current equipment is reaching the end of its technical lifetime. On top of that, fewer spare parts are available. Some parts of the current WAS are no longer available on the market.

policy alternative: maintenance at risk locations from 2025 onwards

In the second policy alternative, the WAS is only maintained at risk locations from 2025 to (at least) 2040. The WAS is then mainly deployed at risk locations where there are large industrial complexes and/or where hazardous substances are transported. In interviews with safety regions that have an above-average number of these risk locations, it is urged to maintain the WAS at these locations.

[4] In an SCBA, the base case outlines the (economic) development if the project is not carried out. This is compared with one or more policy alternatives. In this case, 'not carrying out the project' means not continuing with the WAS, or dismantling (all) WAS installations from 2025.

Table S1: Overview of costs and benefits of the WAS

base case and policy alternatives	*costs (x million euros)*				*benefits*
	inci-dental	*struc-tural*	*total*	*NCW*	*reach (autumn 2020)*
Base case: *phasing out by 2025*	37	21	58	53 à 54	-/- 8%*
Policy alternatives: *full maintenance from 2025 to 2040*	58 + PM	109 à 111	166 à 169 + PM	145 à 147 + PM	
difference in relation to base case	21 + PM	88 à 90	109 à 111 + PM	92 à 93 + PM	8%*
maintenance at risk locations from 2025 to 2040	32	45 à 46	78 à 79	70 à 71	
difference in relation to base case	-/- 5	25	20	17	PM
**this percentage involves 1.2 million inhabitants of 12 years or older and is decreasing. In the autumn of 2018 this percentage was still 19%; in the autumn of 2019 it was 10%. ** the costs of the base case and the policy alternatives include the costs until 2025.*					

phasing out by 2025

The costs of the WAS when phased out by 2025 are €58 million. This corresponds with a present value of €53-54 million[5]. These costs consist for the most part of incidental costs for dismantling the installations (about 64%). The remaining costs are related to the structural operating costs of the WAS from 2020 to 2024. These include maintenance, rental, relocations, safety region activities, et cetera.

Phasing out the WAS means that the potential reach decreases by approximately 8% (of inhabitants aged 12 and older). This corresponds to approximately 1.2 million inhabitants aged 12 and older who in test situations are currently only alerted by the WAS (see range measurements by Kantar).

full maintenance

The total costs of maintaining the WAS (until 2040) amount to at least €166-169 million. This corresponds with a present value of at least 145 to 147 million euros. About 35% of the quantified costs are related to incidental costs for performing an upgrade (replacing obsolete technology) of the facilities and increasing the number of WAS facilities due to increased building developments. The remaining costs are related to structural operating costs. With this, the costs for full maintenance are at least 109 to 111 million euros (present value of at least 92 to 93 million euros) higher than when phasing out by 2025.

This cost estimate does not include incidental costs for safety regions during the transition from old to new; this is indicated by a PM in the table.

Maintaining the WAS leads to a higher (potential) coverage (8%). It is expected that this percentage will further decrease in the future, partly due to higher future coverage of NL-Alert.

[5] In an SCBA, the base case outlines the (economic) development if the project is not carried out. This is compared with one or more policy alternatives. In this case, 'not carrying out the project' means not continuing with the WAS, or dismantling (all) WAS installations from 2025.

maintenance at high-risk locations

The total costs of maintaining the WAS (until 2040) only at high-risk locations amount to between 78 and 79 million euros. This corresponds with a present value of €70-€71 million. Over 40% of these costs consist of incidental costs due to the dismantling of WAS sites that are not located in risk areas. Additional investments in the WAS installations that are continued are not necessary in this case, because sufficient spare parts remain available from dismantling installations in non-risk areas. This means that the costs for maintenance at risk locations are about €20 million (present value of €17 million) higher than when phasing out by 2025.

No (potential) range figures are available for high-risk locations only.

considerations when measuring the reach of the WAS

Measuring the benefits of crisis communication tools in terms of the prevention of casualties (deaths, injuries, traumatised persons, etc.) is very difficult due to the lack of statistics on (prevented) numbers of casualties and the diversity of situations in which the deployment of crisis communication tools is desirable. In this study it was decided not to express the benefits in euros (to monetise them), contrary to what is usual in a social cost-benefit analysis. The monetisation of benefits would unnecessarily lead to much discussion about the assumptions made for the calculation of the benefits and would make the decision whether or not to (partially) phase out the WAS too dependent on these assumptions, which often cannot be scientifically substantiated. For this reason, an estimate of the range was chosen based on tests carried out.

In determining the potential (additional) reach of the WAS, four comments can be made:

- the range indicates how many people were reached, but not what they subsequently did or how quickly they acted;
- the range has no bearing on the speed with which the WAS can be deployed. Safety regions indicate that the WAS can be deployed more quickly than NL-Alert, especially around high-risk areas, which can also prevent casualties and damage;
- the reach is not the same for each population group; from the figures, the elderly group emerges as a group that is less reached by NL-Alert; in the interviews other vulnerable groups are mentioned that may be more dependent on the WAS. However, no figures are available on this;
- the potential reach changes over time: there is an increasing trend in the reach of NL-Alert and therefore a decrease in the number of people reached by the siren alone (in 2018 this was 19% and in 2020 it is 8%).

costs per additional inhabitant reached and an estimate of the willingness to pay

In order to enable a more economic assessment in terms of an SCBA, the costs per inhabitant reached and the willingness to pay for (healthy) years of life have been examined. Based on the most recent range measurement by Kantar, the group that is reached in a test situation only with the WAS is estimated at about 1,2 million people.

The reach of the siren varies between 74-80% (and is slightly increasing) in the period 2018-2020. Situations in which people may be reached by the siren and not by NL-Alert cannot be determined unequivocally. Various factors are important, such as the time of day (day, evening, or night), specific target groups that are less inclined to use mobile phones, or are less able to do things independently, and the effect on reach when a combination of communication tools is used. The WAS and NL-Alert reinforce each other in a crisis situation. Assuming an additional range of the WAS of about 1.2 million people, the approximate

costs per extra inhabitant reached by the WAS can be estimated. These costs are about 120 euros per additionally reached inhabitant (until 2040)[6]. This equals about 6 euros per reached inhabitant per year.

In health research, QALYs are often used to determine what an extra year of life may cost. The willingness to pay that is calculated varies between 3.3 and 6.6 million euros (the value of a 'statistical human life'). This would mean that the WAS would have to prevent at least 22 fatalities or result in about 1,750 years of life for it to be economically viable[7]. Apart from the prevention of fatalities and lost years of life, other forms of economic damage, such as damage to movable property, buildings, nature, and business failure, but possibly also a faster action perspective, are not considered in such analyses.

added value of the WAS is limited

In practice, the threshold to deploy the WAS is high. In many cases, incidents do not involve an immediate life-threatening situation, but rather an increased health risk. For this reason, the use of the WAS is seen as too heavy a means to alarm the population. The authorities do not want to cause panic and neither do they want to detract from the seriousness of sounding the sirens. This creates a vicious circle in which the threshold to use the WAS gets higher and higher because it is not used[8].

This study shows that within the set of crisis communication tools, the added value of the WAS is limited. Since 2019, the siren was deployed once, and the group of people reached by the WAS alone is also limited (8%). Finally, many people do not immediately know what to do when the siren goes off. The siren has limited operational value partly due to limited action perspective.

6 146 million euros divided by approximately 1.2 million people (of 12 years and older) is about 120 euros.

7 146 million euros divided by 6.6 million is approximately 22 victims. 146 million euros divided by 84,000 (value of year of life) euros is approximately 1,750 years of life.

8 The present study and data collection took place in the period January-June 2021. In July 2021, South Limburg was ravaged by extreme high water and declared a disaster area. On 16 July 2021, the sirens went off after a hole was discovered in the dike of the Juliana Canal. This case has not been included in the study. The use of a siren when a 'hole in the dike' occurs is new. This could lead to an evaluation of what a risk location is and what action perspective is desired when sirens go off.