

# REALISATION OF THE MEANS OF COMMUNICATION IN CARIBBEAN NETHERLANDS ; EXECUTIVE SUMMARY

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## EXECUTIVE SUMMARY

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This report is the outcome of a research that looks into the technical and operational possibilities for improvement of communication and information exchange between civilians, first responders<sup>1</sup>, local authorities and administration of the Caribbean Netherlands<sup>2</sup>. The focus of this report is primarily on the use and effectiveness of available means of communication, such as emergency numbers, mobile phones and land phones, portable radio-telephones, VHF maritime radio-telephone, satellite phone, television, radio and social media. These are used for:

- a. The operational communication and information-exchange by and between first responders and local authorities under regular conditions, and in emergency, disaster or crisis situations, on the basis of 24/7 availability;
- b. The communication- and information exchange between the administrations of the Caribbean Netherlands and European Netherlands under regular conditions and in emergency, disaster or crisis situations;
- c. The emergency communication from civilians to the first responders under regular conditions and in emergency, disaster or crisis situations;
- d. The public warning system and means to alert the population in case of emergency, disaster or crisis situations.

Crisis is defined as “a situation in which a vital interest of the society is at stake or at risk” (Veiligheidswet BES, 2010, article 1).

### ***Background***

Various evaluation reports (Inspectie Veiligheid en Justitie, 2014; Ministerie van Veiligheid en Justitie, 2015; Peak Valley 2013) refer to problems in the communication and information exchange between the first responder units and local authorities of Bonaire, Saba and St. Eustatius. Policy makers have expressed the “need for more knowledge and understanding of the current state of affairs and the possibilities (from a technical, organizational, financial perspective) to improve this situation” (Startnotitie, 2016, p. 1-20).

### ***Problem definition and research objective***

The available means of communication are, at present, not adequate for effective communication and information-exchange during disasters or in crisis situations (Startnotitie, 2016). The objective of this research is therefore to provide more detail on the means of communication, and the quality of the communication- and public warning system in the Caribbean Netherlands, both under regular conditions and in emergency, disaster or crisis situations.

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<sup>1</sup> While the term ‘first responder’ or ‘first responder organization’ will vary according its geographic context, in this report, when we refer to ‘first responders’, we use this term as synonym to emergency or rescue services, with – in this report - particular attention to the police, the fire brigade, ambulance services and the incident room.

<sup>2</sup> These are municipalities that are part of the Netherlands having a special status: Bonaire, Saba and St. Eustatius.

## **Research question and sub-questions**

The main research question is:

*“To what extent are the means of communication currently available at Bonaire, St. Eustatius and Saba adequate for communication and public warning under regular conditions and in emergency, disaster or crisis situations? What practical solutions or technological developments can be identified that will contribute to the effectiveness of the means of communication and the means for public warning?”*

The main research question is divided in four sub-questions:

1. What are the requirements that follow from legislation, regulation, or the policy context, for the performance of the means of communication under regular conditions and in emergency, disaster or crisis situations, in particular with regard to:
  - a. The operational communication- and information exchange of, and between, first responders and local authorities;
  - b. The communication and information exchange between the administrations of the Caribbean and European Netherlands;
  - c. The emergency communication from civilians to first responders; and
  - d. The public warning system and means to alert the population?
2. To what extent are the means of communication adequate for communication and public warning under regular conditions and in emergency, disaster or crisis situations? What are the underlying causes for the problems identified? The following indicators are used to answer this: (a) coverage and service; (b) access; (c) reliability; (d) availability; (e) back-up / redundancy and (f) capacity.
3. Which practical solutions and/or new technological developments can be identified on the basis of interviews and literature, to increase the quality of communication and information exchange (2a – 2f) and to reduce the problems as identified?
4. Do the practical solutions and/or does the use of new technology require adjustments to be made to the policy context, regulatory or supervisory framework for Caribbean Netherlands? If so, which adjustments are required?

## ***Methodology***

The methodology of this research encompasses literature research (of scientific literature, policy documents, legislation and regulation), interviews, a heat map, and historical information with regard to tropical storms and hurricanes. Interviews were conducted (n = 32) in addition to the literature research, for two reasons. On the one hand, the interviews were necessary to develop an overview of the problems as experienced by supervisors of different emergency services, first responders, professionals in the telecom sector, policy makers and administrators. On the other hand, the interviews were used to discuss whether the measures would indeed be adequate in terms of their contribution to the effectiveness of the means of communication. The semi-structured and in-depth interviews have been conducted by senior researchers from the Netherlands and Curacao. The full list of respondents can be found in annex 1. During several interviews on Saba, St. Eustatius and Bonaire, a heat map was used. The heat map lists criteria 2a – 2f, which were drafted based on earlier research. We contacted the Royal Netherlands Meteorological Institute (KNMI) to collect data on tropical storms and hurricanes, specific for Bonaire, Saba and St. Eustatius.

## ***Conclusions***

The main research question is divided in a number of sub-questions. Chapter 2 addresses the first sub-question:

1. *What are the requirements that follow from legislation, regulation, or the policy context, for the means of communication, in particular with regard to:*
  - a. *the operational communication- and information exchange of, and between, first responders and local authorities;*
  - b. *the communication and information exchange between the administrations of the Caribbean and European Netherlands;*
  - c. *the emergency communication from civilians to first responders; and*
  - d. *the public warning system and means to alert the population?*

Chapter two provides an overview of relevant legislation, the policy context and the attribution of responsibilities in relation to communication in emergency, disaster or crisis situations. Very few specific requirements were found in the legislative framework and policy context in relation to the means of communication, with the exception of particular quality requirements, e.g. for mobile telephone coverage and service, reliability, back up or capacity (annex 4). A number of problem were listed, in particular in relation to the communication from civilians to the first responders (through the incident room) and the public warning system. The current means of communication for alerting the population are fragmented which results in the risk of not being able to reach the population in time.

Sub-question two is addressed in chapter three:

2. *To what extent are the means of communication adequate for communication and public warning under regular conditions and in emergency, disaster or crisis situations? What are the underlying causes for the problems identified?*

The following indicators were used: (a) coverage and service; (b) access; (c) reliability; (d) availability; (e) back-up / redundancy and (f) capacity.

Chapter three shows a varied and diverse picture. The adequacy of, and satisfaction with, the available means of communication is differentiated according to the means of communication, across the islands, and depending on the emergency service(s). The effectiveness of the operational communication and information-exchange between and across first responders and local authorities is sufficient in regular circumstances, but cannot be guaranteed for all locations and under all conditions. During an emergency, disaster or crisis, it is likely that some problems arise, in terms of the operational communication and information exchange. This results in a higher risk of victims and injuries, in particular when a fast response is required, as in the case of fire, medical emergencies, disasters and crisis situations. Risk is defined by the Ministry of Security and Justice as "an uncertain event that can result in an aberration of the objectives and requirements" (Ministerie van Veiligheid en Justitie, 2014, p. 16).

The operational communication and information exchange of, and between first responders and local authorities is, in regular situations, complemented with the use of mobile telephone services of commercial providers. While acknowledging the disadvantages of being - at least to some extent - dependent on these services, the operational communication and information exchange would not be as adequate and fast when the first responders would not use these services. If the mission-critical communication and communication services from commercial providers would both fail, then the communication and information exchange between first responders, local authorities and others, becomes critical, given the fact that satellite telephones are only available with a few key-actors.

Sub-question three is addressed in chapter four:

3. *Which practical solutions and/or new technological developments can be identified on the basis of interviews and literature, to increase the quality of communication and information exchange (2a – 2f) and to reduce the problems as identified?*

A number of problems relating to the communication and information exchange of, and between, first responders can be solved in a practical way, e.g. by opening up the Emergency Service Function (ESF) groups for the different emergency services (police, fire brigade, ambulance services), or by attaching base stations to vehicles of first responders. Apart from implementing these and other practical solutions, it is also recommended to anticipate future developments in relation to communication and information exchange in regular conditions, and in emergencies, disaster and crisis situations.

Sub-question four is addressed in chapter five:

4. *Do the practical solutions and/or does the use of new technology require adjustments to be made to the policy context, regulatory or supervisory framework for Caribbean Netherlands? If so, which adjustments are required?*

In chapter three, we already mentioned a number of practical solutions, such as generating an overview of the use of communication towers and antenna's; supervision on the state of maintenance and insight in the risks of failure of communication towers; adjustment of current requirements with regard to the duration of emergency power supply and (supervision on the) compliance with these requirements; compliance with regard to the replacement of outdated equipment; and the engagement of the joint inspections through the 'Inspection table BES'.

The problems as identified (in particular with regard to coverage, services, access, reliability, availability, back-up and redundancy and capacity) are partly due to mere technical problems, partly due to the geographic conditions (mountainous area); and partly related to the dilemma's in the sphere of decision making, legislation and regulation, and cooperation between public and private sector. Therefore, at those moments when adjustments are considered in the policy context, regulatory or supervisory context, it is important to investigate whether particular policy instruments (depending on the situation) can be used more strategically to safeguard the public interest of safety and security.

The research team is further of the opinion that some measures can only be established and realized by joint consultation and cooperation between ministries, island authorities and concession holders, and encourages further consultations, informed by this report, to increase the use and effectiveness of available means of communication in emergency, disaster or crisis situations.

***General conclusion to the main research question:***

The effectiveness of the operational communication and information-exchange between and across first responders and local authorities is sufficient in regular circumstances, but cannot be guaranteed for all locations and under all conditions. During an emergency, disaster or crisis, it is likely that some problems arise, in terms of the operational communication and information exchange. Details with regard to specific problems are summarized in the heat map (par. 3.3, table 3) and in Annex 3.

## ***Recommendations***

The recommendations below, are a shorter version of the more detailed recommendations in the report. Three out of ten recommendations (nr. 2, 4, and 9) are addressed at the ministry of Economic Affairs; four are addressed at the ministry of Security and Justice (nr. 1,5, 7 and 8); one is addressed to the island administration and the 'Rijksdienst Caribisch Nederland' (nr. 6) and two are addressed to several ministries, in cooperation with other parties (nr. 3, 10). Some of the recommendations are further explained or more elaborate in chapter 6 (conclusions and recommendations). KT = short term; LT = long term.

Given the findings of this research, the research team recommends that:

### Chapter 2

1. the ministry of Security and Justice / the NCTV issues a research on the question whether NL-Alert could be a valuable addition to Caribbean Netherlands. (KT action; LT process)

### Chapter 3

2. The ministry of Economic Affairs/DgETM takes measures to increase the coverage and availability of the mobile network in emergency, disaster and crisis situations, for example by:
  - a. enabling preferent calls by first responders in Caribbean Netherlands (KT)
  - b. enable roaming for specific users that have higher coverage and availability needs than the population, due to the urgency of their work (in particular first responders) (KT)
  - c. establishment of a 'calamity option' when other means of communications fail (KT action, LT process)
3. The ministry of Economic Affairs, the ministry of Security and Justice (DG police) and the ministry of Interior Affairs and Kingdom Relations discuss jointly and together with operators, which measures can be taken to solve those problems that are related to sometimes incorrect routing of calls to emergency numbers and to the incident room (KT action, LT process)
4. The ministry of Economic Affairs/DgETM takes measures to increase the reliability of the network, for example by:
  - a. generating an (internal) overview of the use of communication towers and antennas by commercial parties;
  - b. notify the 'Inspectietafel BES' of the potential problems relating to the state of maintenance and the risks of outage of communication towers when an (intense) hurricane hits one or several of the islands; request them to put this on the agenda;
  - c. reconsidering the current requirements for emergency power supply for critical locations in such a way that the emergency power supply can be guaranteed for longer period of time (> 1 day).

5. The ministry of Security and Justice / DG Police takes measures to monitor the replacement of outdated portable radio phones for the police and fire brigades (KT action, LT process)
6. The island governments and the Rijksdienst Caribisch Nederland consider whether an increase of the number of satellite telephones for the Caribbean Netherlands is required (KT action).

#### Chapter 4

7. The ministry of Security and Justice / DG Police takes a number of measures, that can facilitate the communication between first responders in a relative easy way, in particular by:
  - a. optimizing the organizational classification of ESF groups (police, fire brigade and ambulances) to facilitate communication across first responders from different groups;
  - b. investigates the possibilities to attach base stations to some vehicles of police and fire brigades;
  - c. investigates whether and how the location of first responders can be visualized in the incident room, in order to increase the effectiveness of the operational deployment and to increase the safety and security of first responders.
8. The ministry of Security and Justice / DG Police formulates a plan to improve the (use of the) Tetra system. Topics that should be addressed in such a plan are:
  - a. the deployment of LTE-technology or a potential 5th generation technology that will be introduced gradually and that might replace the current technology in the future;
  - b. the consideration to introduce the same new system in CN, once C2000 will be replaced by a new system in the Netherlands.
9. the ministry of Economic Affairs / DgETM investigates whether the placement of femto- or pico cells is feasible in those areas where problems with the coverage and services of the 3G/4G network were identified.

#### Chapter 5

10. the ministry of Security and Justice (DG Police and NCTV), the ministry of Economic Affairs (Dg/ETM) and the island governments discuss whether, and how, arrangements can be made with concession holders in the telecom sector to further improve the deployment and effectiveness of available means of communication in emergencies, disasters and crisis situations in CN.