

BSc-THESIS

THE EXPERIENCES OF GOAT FARMERS ABOUT THE COMMUNICATION OF Q-FEVER IN THE NETHERLANDS



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Preface

This study is written as final research for the Bachelor International Development Studies at Wageningen University. The chair group Communication Sciences guided this study under supervision of Prof. Dr. Cees van Woerkum and later Dr. Anne Marike Lokhorst.

The purpose of a BSc-thesis is to show the capability of :

- applying knowledge
- finding and selecting relevant literature
- analyzing and interpreting data
- writing a clear and good structured text
- planning

My personal purpose was to improve my English by writing the research in English and to improve my writing skills. These skills still seem to be difficult for me, but it is improving. I also find it difficult to focus on my research questions, but that is maybe because I really liked to analyse the whole process of Q-fever. I lost myself sometimes in all the information because there were many things also very interesting but not related to my research questions. Related to the content, it was difficult for me to select theories since Q-fever turned out to be a specific type of crisis where not much specific theories are available for.

I would like to thank my supervisors Cees van Woerkum and Anne Marike Lokhorst for all their time, effort and patience they put in me. Also I would like to thank the goat farmers I interviewed for their information. For the sometimes emotional and confronting conversations, which gave me insight in the desperation farmers have had and still have to deal with. The interviews with the ministry of LNV, Division Communication, and LTO were very helpful for completing the information about the process.

I truly hope that my report can contribute to the improvement of the communication during crises when both human and veterinarian sectors are involved.

Baukje Kruize

January 2012

Abstract

In this study the communication of the Q-fever crisis in the Netherlands of 2007-2010 will be analyzed. There are three questions that will be answered throughout this study. First which characteristics of Q-fever, the goat farmers and the government affected the communication. Second the important theoretical aspects that are useful to analyse this type of crisis. Third how the goat farmers experienced this crisis. In Chapter 1 an introduction to the subject will be given. In Chapter 2 the methodology will be explained. In Chapter 3 the theoretical framework is elaborated. In Chapter 5 the results will be discussed. And finally in Chapter 6 this study will be concluded with the discussion. This research is based on scientific literature, public information and interviews with goat farmers, ministry of LNV and LTO.

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1. Introduction

In 2007 a major outbreak of human patients of Q-fever were reported (RIVM, 2008). Only in 2009 this became widely public because of the exponential increase of human patients. In that year there was a lot of commotion about the development of the Q-fever crisis and response of the government to it. A broadcast of Zembra caused much unrest in the media and public and the government felt pressure to act. Late 2009 the government decided to kill many goats which caused many critical reactions (NOS, 2010). Early 2010 the government established an evaluation committee under supervision of Prof. dr. ir. G. Van Dijk to evaluate the process and actions of the government with respect to the Q-fever crisis. In November 2010 the report of the Evaluation Committee of Van Dijk was published. This committee had access to more information than the information that was publicly available at that time. This report gives more insight in how the Q-fever crisis went and what actually happened (MinLNV and MinVWS, 2010b). However, the report does not give insight in how goat farmers experienced the crisis, while goat farmers are the most affected stakeholder.

This thesis will explore how farmers experienced the crisis and the accompanying communication. More specifically this thesis will focus on the communication of the ministry of Agriculture, Nature and Food Quality (LNV) and the ministry of Public Health, Welfare and Sports (VWS) with the goat farmers.

1.1 Problem statement

The communication of a crisis is linked with the development of a crisis (Heath, 2009). Therefore it was likely that specific characteristics of the Q-fever crisis affected the communication of the government (ministries of Agriculture, Nature and Food quality (LNV), Health Welfare and Sports (VWS)) to goat farmers. Especially the point of view of goat farmers is here interesting, since they were the most affected by the crisis and therefore the communication had much influence on them. Gaining more insight into the experiences of goat farmers helps to understand how the communication is perceived by goat farmers. This can lead to improvements in the future.

1.2 Purpose

The purpose of this thesis to gain more insight into how goat farmers experienced the crisis and the communication of the government with respect to the crisis.

This research contributes to knowledge about how the communication is experienced by an affected stakeholder. This thesis also gives knowledge about the perception goat farmers had about the communication strategy and what could be done differently according to the theory. On this basis, I would like to make recommendations for improvements in future similar situations.

1.3 Research questions

To analyze this problem there are a few questions to be answered. First it is useful to know what the characteristics are of Q-fever, government and goat farmers and how these characteristics affected the communication. To know more about how the communication should be during crisis we should know more about the theoretical aspects. And finally the experiences of goat farmers will tell us how the crisis and the communication of the crisis is experienced by the most affected group. This leads to the following research questions:

- What characteristics of this particular crisis affected the communication and how? I will focus on the characteristics of Q-fever, goat farmers and the Dutch government.
- What are according to the theory important communicative aspects during crisis?
- How did goat farmers experience the crisis and the communication of Q-fever?

2. Methodology

In this research several sources were used to answer the research questions. Scientific literature was used for answering the question about theoretical aspects of communication during crisis. Public information was used for explaining the Q-fever crisis itself. This will give partly an answer to the question about what characteristics of Q-fever and government the communication affected. For analyzing the question about how the goat farmers experienced the crisis, interviews were held.

2.1 Literature search

For the characterization of Q-fever and analyzing the development of Q-fever were written sources like letters to the House of Representatives and websites of the ministry of LNV and RIVM very important. This analysis was purely based on facts as presented by governmental organizations, so this was more or less their story about Q-fever.

Then in the theoretical part scientific research about risk and crisis communication was used. It was quite difficult to find relevant literature because Q-fever was a rare crisis as will be explained later on more deeply. In literature most articles were about acute crises and therefore not useful in this specific case. These articles I found by using the search terms: 'crisis response/communication animal/infectious disease', 'slow developing crisis' and 'environmental/toxic/pollution crisis'. More general theories were more usable but restricted a good structured analysis later because now I had to compose a theoretical framework myself without knowing any specific theoretical aspects that were important for analyzing a zoonosis. That made it harder to select relevant theories. I found the more general theories with search terms as 'crisis communication', 'risk communication' and 'crisis response'. Finally I found one article of Moreira that seemed a very usable framework. However, later on this turned out not well funded and also not completely suitable so I removed and added concepts. I noticed that Coombs was a very much cited author, unfortunately almost none of his articles were free accessible. Luckily the only but excellent book in the library of the WUR about crisis and risk communication became available after a couple of months.

For the analysis of how goat farmers experienced the Q-fever is the official report of the Van Dijk's Evaluation Committee of Q-fever used. Besides this are several interviews kept as will be explained in next subchapter.

2.2 Interviews

For the experiences of goat farmers about the communication, interviews with fifteen goat farmers were necessary. These interviews were lasting one hour and were taken by phone, because the farmers preferred this over visiting. The interviews were semi-structured, so with leading topics and question but with space for further questioning. To break the ice I asked a very open question to get more insight in what first came up if I asked about the Q-fever. The question was: how did you feel the approach of the government to Q-fever was? This question was also meant to know more about how they experienced the prevention and preparation of the government. I continued with asking how they felt they were represented by LTO, so the concept of deliberation. I did not had to ask about the analysis, because they all told me on own initiative. Then I asked specific questions about the information they (did not) receive. From whom, was it on time, clear, reliable and complete, so the concepts of form, instructing and adjusting information. Because this information was mostly only related to the measures I continued to question the Protection Motivation Theory by asking questions about usefulness, effectiveness and difficulties by following up. Still in the context of all

measures, I asked if these measures were proportional and if there should have been taken more precautionary measures. In other words, were more heavier measures earlier in time desirable. Because most answers were about the killings, I could asked about how they experienced this and how they dealt with this lost (aftercare). Then I asked how they felt about the reliability of the government. At the end of the interview I asked farmers to mention their own concerns and what they found important.

The farmers were selected on area and then at random chosen. They had to live in an area where multiple goat farms were infected. This because it probably gave the most reliable reflection of how the crisis happened how it is experienced, since in these areas were more experiences available.

During telephoning I found out that some farmers had trouble with an interview due several reasons. Some were asking for prove that I was not a journalist or they did want to know the questions first. Some did not want to cooperate because in the week I did the interviews there were two other telephonic interviews done by probably RIVM and GGD about Q-fever as well. Maybe therefore it was hard to question more deeply because they already told them the same story. Other farmers appreciated it and were happy to tell their story. Unfortunately farmers did not remember much from before 2009. Besides the interview with the goat farmers I also interviewed the communication division of LNV and the goat sector representative of LTO. These interviews last half an hour and were also taken by phone. Since the interviews were taken at the end of 2010 and at the beginning of 2011, it might be that respondents remembered things differently or realized things after the crisis which they did not realize during crisis.

The interviewed farmers were quite diverse. It varied in age from young and older, in gender about half man and half woman, some were active in agricultural representation and some not, and the range of infected farms was from 2007 up to 2010. You can find an overview of the interviewed farmers in the first attachment.

3. General background

For analyzing the communication about Q-fever, it is necessary to know the background of this crisis since both were interrelated with each other. In this chapter the crisis will be described by using public information provided by the RIVM and LNV only, so that this will be the story of the government. In Chapter 5 it will become clear that this was just half the story. There were many content related facts which were not communicated to the public and therefore influenced the experience of goat farmers about the communication during the crisis. First the disease and development of Q-fever in the Netherlands will be explained. Then the taken general measures are chronologically enumerated, followed by an elaboration of tank milk monitoring, vaccination and the killings because of the importance of these measures. Finally all main stakeholders involved will be described shortly to give a better view of the context. A chronological overview of all measures with exact dates can be found in the second attachment.

3.1 Development of Q-fever disease by human

Q-fever was a zoonotic disease, which means that it was a disease which can be transmitted from animals to humans. It is not transferable from human to human. The disease was caused by the bacteria *Coxiella burnetii* (RIVM, 2010a). In the Netherlands the bacteria was mostly found in dairy goats and dairy sheep, but also other animals like cows, dogs, cats, rodents and birds can be sources of infection. An increase in number of abortions by sheep and goat might indicate the presence of Q-fever (RIVM, 2010b). Mostly the bacteria is released into the environment when goats and sheep gave birth. Especially amniotic fluid and placenta of infected animals contained a huge amount of bacteria, but also milk (not pasteurized), manure and urine contained bacteria. Meat of sheep or goats did not contain the bacteria. *Coxiella burnetii* survived in the environment for months or even years. The bacteria is spread by air and could be inhaled by people who might get infected then by the bacteria (RIVM, 2010a).

The main symptom by human was high fever and because the pathogen (bacteria that causes a disease) was initially unknown, it was referred to as 'Q-fever' where the Q stands for "question mark". However, half of the infected people had no symptoms. Others had symptoms similar to influenza, like heavy headache, high fever and pneumonia with pain on the chest or hepatitis. These symptoms were similar to other diseases. The symptoms appeared after infection within two to six weeks. Everyone could get infected, but the chance of infection was higher in areas around infected farms and during the period of giving birth (February until May). The longer one was exposed or how more direct contact one had with animals, the larger the risk of infection was. Q-fever had been identified more often in men than in women and also more smokers were infected (RIVM, 2010a). Generally people with a weak health were more susceptible to more complicated Q-fever (RIVM, 2010b). Not everyone who was infected got sick, but for pregnant women and cardiac patients the consequences could be heavier (RIVM, 2010a). Most people had acute Q-fever, which passed over in two weeks. In one to three percent of the cases, it was chronically and the symptoms remained for a long time (sometimes for ten years). In the Netherlands about 25 percent of the infected people had fatigue symptoms for more than a year after sickness (RIVM, 2010b). If Q-fever was determined, the person was treated with antibiotics.

3.2 Development of Q-fever crisis by animals

In 1937 Q-fever was first seen in Australia at slaughterhouse staff. Until 1980 Q-fever is uncommon in the Netherlands, there were about five cases per year indicated by the Medical Head Inspection. Since 1978 it became a duty to report Q-fever (MinLNV, 2009a). This should made the number of cases visible, but showed also the differences in information of different stakeholders. In 1983 there were 272 cases of Q-fever identified according to RIVM (RIVM, 2010b), but according to LNV there were only 29 (MinLNV, 2009a). This shows the uncertainty about the information, which is typical for Q-fever. Eventually the number of cases stabilized around twenty cases per year. In the Netherlands but also in the rest of the world, a peak of the disease took no longer than one year, after which the peak disappears (MinLNV, 2009a).

In 2007 there was a first major outbreak of Q-fever by humans in Herpen. This was seen by experts as a one-time peak that happened frequently. In August 2007, after investigation of the RIVM, it was made clear that the cause could not be determined. However, many sick people were living in an agricultural environment where Q-fever is identified in a number of goat farms in that area. Probably the bacteria spread by air in favorable dry weather conditions (RIVM, 2008). In total, this year 168 cases of Q-fever by humans had been reported to the RIVM (2010b). The government started in 2007 with targeted communication towards veterinary and medical professionals. The communication aimed to increase awareness of Q-fever in a timely manner so that it was recognized and treated in a short time (MinLNV, 2009a).

In early 2008 goat and sheep farmers in the risk area Northern-Brabant and Southern Gelderland, (risk area because of number of infected farms) (RIVM, 2010b) got a leaflet to inform them about the huge number of the bacteria released by abortion, which might result into Q-fever. The research of the RIVM to determine the cause of the outbreak in Herpen came in March. There was no causal link arguable but only a possible indication that people had been infected through an infected goat farm. Contact with agricultural products such as straw and manure seemed to be a risk factor. When in the spring people got sick again, the goat and sheep farmers in the whole of the Netherlands got informed about Q-fever and about preventive measures against spreading (MinLNV, 2009a). In June the Minister of LNV (Agriculture, Nature and Food Quality) set a duty to report for holders of dairy goats and sheep to the VWA (Food and Consumer Safety Authority) on basis of increased number of abortions (more than five percent) (MinLNV, 2009b). From June there were precautionary measures taken on infected farms such as a visitor ban and hygiene and manure measures. But all measures should had been proportional since it was still unknown how people became infected and how contamination took place according to the Ministry of LNV (MinLNV, 2009a). However, LNV wrote a letter to the House of Representatives in June 2008, wherein they said that one of the ways people got infected was by inhaling infected air (MinLNV and MinVWS, 2008). From October a vaccine became available. The French vaccine was not yet registered in the Netherlands and little was known about the effectiveness. That was why goats were vaccinated on a voluntary basis only. The number of cases increased to 1000 patients in 2008. About twenty percent of this was included in the hospital and one person who also had other diseases, had died. The possible link between the number of infections and the places where manure was spread was called into question. Now there was another theory of the bacteria blowing away from stables. The ministries of VWS (Health, Welfare and Sport) and LNV started a new research (MinLNV, 2009a).

In January 2009 the Minister of LNV decided that vaccination became compulsory for all (including non-infected) (dairy) goats and sheep. Given the limited number of vaccines, it was necessary to designate an area in which vaccination started. This was the area where goats were the highest risk for public health (Northern-Brabant, Southern Gelderland) because of the high number of infected farms. Outside that area was a voluntary vaccination. In February, hygiene measures were imposed for all farms with dairy goats and dairy sheep (including non-infected farms). From now on the main hypothesis was that the longer manure in the deep litter is kept the less *C. burnetii* is spread in the environment during spreading or mucking out. It remained unclear whether the moments of spreading manure on land, mucking out or blowing away from the stables were primarily risky (MinLNV, 2009a). In 2009, the number of sick people increased again. There had been 2,368 Q-fever patients reported in 2009 (RIVM, 2010b). Also this year about 20 percent was included in the hospital and five people died who had, in addition to Q-fever, other diseases as well. In the summer of 2009 announcement were made that it was possible to grow *C. burnetii* and to typify the strain in the Netherlands. This offered new opportunities for laboratory diagnosis, for example, a PCR test for tank milk. This will be further explained in the paragraph below. From October the tank milk monitoring was used to screen farms for the presence of *C. burnetii* in the tank milk of farm with dairy goats and sheep. Infected farms got movement restrictions, hygiene and manure measures imposed on them. The ministries of VWS and LNV had a total of three million Euros invested in research. The ministry of LNV claimed that new research resulted directly into new policy where possible (MinLNV, 2009a). From December 21st the killings of pregnant goats started on large scale (RIVM, 2010b). There was a committee established to check on animal welfare during the clearing of the stable (Vaarkamp and Ohl, 2009).

In January 2010 a committee under supervision of Van Dijk was established to evaluate the process and decision making, ordered by the ministers of LNV and VWS (MinLNV and MinVWS, 2010b). This year the vaccine manufacturer delivered 1.5 million vaccines in the whole of the Netherlands and there was a compulsory vaccination for all dairy goats and sheep on holdings with more than 50 animals (professional farms) and all sheep and goats on children's farms, care farms and zoos (MinLNV, 2009a). From July on the restrictions of transports to farms and the general breeding ban were withdrawn. For animals with a lifelong breeding ban it was still not allowed to breed. All other measures were maintained (MinLNV, 2010a). In June the ministers of LNV and VWS reported to the House of Representatives that since May no more farms had been infected. In total there were 88 farms infected (included two dairy sheep farms). On these farms 50,319 pregnant animals were killed and 54,293 female animals got a lifelong breeding ban. Also 1,530 males had been killed (MinLNV and MinVWS, 2010a). This is a total number of 51,849 killed animals.

3.2.1 Tank milk monitoring

The Polymerase Chain Reaction-test (PCR) or tank milk monitoring system was introduced in October 2009 (for farms with more than 50 dairy goats or sheep). The purpose of this system was to check by frequent research if farms were infected or not. In the beginning the frequency of testing was one sample every two months, but starting from December the frequency increased to once every two weeks. From July 2010 the frequency for non-infected farms increased to once a month. For infected farms and during the period of lambing the frequency stayed once every two weeks (MinLNV, 2010a). The GD tested the samples on *C. burnetii*. In 2009 it was allowed for farmers to send their own samples, but in 2010 it was only possible to collect samples by Qlip N.V. or GD (MinLNV, 2009h). If a sample tests positive by the GD, another sample was send for confirmation to the CVI. The CVI

informed the VWA when the sample was also there tested positive. The VWA declared the farm suspicious and got then a new sample of the farm. If this sample was also positive for the Q-fever bacteria, the farm was marked as infected and received a letter of infection from the VWA. If the sample was negative, the status of suspicious was neutralized (MinLNV, 2010b). The reason the test was done twice and the CVI tested a sample from the same farm but another time was because the excretion of the bacteria differed from time to time. Sometimes an animal was infected but there was no excretion. The outcome of the test varied between positive, low positive or negative. Because it was not a simple binominal value and animals excreted not always, it was possible that the first test was positive and the second negative. The moment of pregnancy the bacteria multiplied in the placenta and was present in the milk, but after giving birth the presence reduced. Research of GD and CVI proved that vaccination had no influence on the outcome of the PCR test. So farmers should not be afraid that through vaccination the tests were positive (MinLNV, 2009h).

3.2.2 Vaccination

The most important measure to protect people from infection with the Q-fever bacteria was vaccinating sheep and goats. Vaccination reduced the chance of infection. If an animal still got infected, vaccination led to less secretion of the Q-fever bacteria. The vaccine was only suitable for animals from the age of three months and may not be used for pregnant animals because the reduced effect. Vaccination should happen at least two weeks before covering. The first time of vaccinating had to happen two times with an interval of three weeks. The vaccination had to be repeated every year. The second time an animal had to be vaccinated only once (MinLNV, 2010c).

It should be said that there were not much vaccines left after vaccination of the priority groups. The delivery of vaccines was per month, so some farms could not be vaccinated before the birth giving period. Farmers who were obliged to vaccinate their animals received a letter of the GD in February 2010. This letter informed them when the vaccines were available. Within three days after every day of vaccination, the farmer should inform the GD about the number of vaccinated animals. Some farmers did not received a letter but were obliged to vaccinate, they had to report their farms to the GD. The vaccination of every single animal should be reported to the I&R (Identification and Registration) system of LNV (MinLNV, 2010c).

3.2.3 Killings

The minister of LNV established a committee to check animal welfare during killing in the scope of Q-fever. This committee Vaarkamp / Ohl is established in December 2009. The VWA was responsible for the coordination of the killings. They organized a briefing for the involved employees. Animal welfare was a prominent subject, besides respect to animals and farmers, hygiene and practiced logistic. Protocols were discussed and attention for psychosocial care was central arranged. It was allowed for farmers to ask their own veterinarian to work with the team of the VWA. They could also bring in a colleague for support. The fact that the own veterinarian worked with the VWA team was of technical and psychological advantage, because the vet knew the farmer and the animals and was more like a confidential advisor (Vaarkamp and Ohl, 2009).

The killings went as protocol described. A group of maximum 25 goats were separated from the whole group. They were collected in a pen big enough for all animals to lay down, but not much bigger. If goats were standing close to each other, they had less stress then when they stand alone. The pen was placed in a way that it was possible to got the tractor next to the pen for removing the

goats. First the vets give all the goats a sleep-inducing injection. After every injection, an animal is dead goats. When all the goats were asleep the vets started to give the lethal injection. All the animals were checked if they were really dead. According to the committee the two phases of first anaesthetize and then euthanize prevented unrest and pain of the animals that had to be killed but also the other animals (Vaarkamp and Ohl, 2009).

3.3 Stakeholders involved

There were many stakeholders involved in the Q-fever crisis, but here the most important:

- Government: Ministries (LNV and VWS), GGD, VWA
- Agricultural actors (LTO, farmers, veterinaries)
- Health care actors (hospitals, physician, laboratories)
- Experts: Research centres (RIVM, CVI, GD)
- Citizens
- Media (Agrarisch Dagblad (Agricultural Daily newspaper) / Boerderij and newspapers)

In this thesis the communication and interaction between the government and goat farmers is central. All other actors influence this communication, but the focus of influencing actors is on agricultural actors and experts because other sides of the crisis are already evaluated. The communication to citizens is evaluated by order of the ministries of LNV and VWS. The human health side of the Q-fever is evaluated by the GD. The agricultural side is also evaluated by Van Dijk, but focused only on the factual analysis of the process on governmental side and did not take into account the experiences of the goat farmers. Therefore this thesis will focus on this.

This chapter gives partly answer to the research question about what characteristics of Q-fever affect the communication. The description of the crisis shows two main characteristics: a slowly developing crisis and uncertainty. It is a slowly developing crisis because it took two years since the first sign of an emerging crisis to the point of a starting crisis. And the crisis self took another three years. This is not comparable with most crises, which develop in a short timeline. Maybe the long timeline made space for uncertainty. Uncertainty became visible in many ways. There was no unambiguous information about the source, way of spreading and contamination. This uncertainty was for the ministry of LNV reason to wait for taken measures, so that more scientific evidence could be found. Since it took a while before measures were really taken, the killings came out of the blue. The influence of the uncertainty will be discussed from the theoretical point of view within the next chapter.

4. Theoretical background

In Chapter 3 is the development of Q-fever described. With this knowledge it is possible to search literature that helps to understand and analyze this crisis. In the description it becomes clear that Q-fever was a slowly developing crisis and not an acute crisis like terroristic attacks. Therefore that kind of theories that are specific for this type of crises are not used here. So this literature review is based on more general risk and crisis theories. Several theories are put here together and integrated to form a theoretic framework that finally helps to analyze the crisis from communicative perspective.

A crisis can be divided in three stages: pre-crisis, crisis and post-crisis. The first stage, pre-crisis, is about preventing and preparing the crisis and what are influences that determine how the crisis can develop. The second stage, the crisis, starts mostly with a recognizable event (Heath, 2009). However, some crises are more slumbering and therefore harder to point out a real starting point. The crisis stage has three dimensions: *risk characterization*, *risk perception* and *crisis and risk communication*. With risk characterization are meant the risks analyzed by experts, the discussion about this analysis with different stakeholders and how the government reacts on this analysis on the abstract level of principles. The risk perception is here restricted to the perception of goat farmers. The crisis and risk communication is build on different concepts. The first concept is the form. This is the way communication is presented; transparent or not and a quick or slow response. The form refers to how the government should communicating with involved stakeholders. The second concept is instructing information, which tells affected stakeholders how to protect themselves against the crisis and what they should do to minimize the effects of crisis to them. The third concept is adjusting information which helps affected stakeholders to cope with the psychological effects of the crisis. Except from the tangible loss, the stakeholders are also confronted with emotional damage. They lost what they build up in their farm all these years, what they worked for. And of course their animals are more than their work, they have a relation with them, and then they have to be killed. This has of course consequences for the farmers emotional wellbeing. The final stage, post-crisis, is about the finalizing of the consequences of the crisis, like aftercare, reputational repair and evaluation. Reputational repair is a crisis response strategy used to build up or repair the reputation. This is necessary because a crisis mostly will affect the reputation. If it is not affected, it is possible to use the situation as example of how good the government can cope with these situations. So it can be used as positive promotion and improve the reputation. See Figure 4.1 for the overview of used theories in this chapter.

Pre-crisis	4.1	Crisis Management Plan (Heath, 2009) <ul style="list-style-type: none"> ○ Driving forces (Moreira, 2007) ○ Prevention (Heath, 2009) ○ Preparation (Heath, 2009)
Crisis	4.2	Risk Characterization (Moreira, 2007) <ul style="list-style-type: none"> ○ Analysis (Moreira, 2007) ○ Deliberation (Moreira, 2007) ○ Precautionary and Proportionality Principle (Heath, 2009)
	4.3	Risk Perception (Moreira, 2007) <ul style="list-style-type: none"> ○ Protection Motivation Theory (Rippetoe and Rogers, 1987)
	4.4	Crisis and Risk Communication <ul style="list-style-type: none"> ○ Form, Instructing information and Adjusting information (Coombs, 1999) ○ Legitimacy and power (Heath, 2009)

Post-crisis	4.5	Finalizing <ul style="list-style-type: none"> ○ Aftercare ○ Trust / Reputation repair (Moreira, 2007) ○ Evaluation
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Figure 4.1: Three stages of crises (based on Coombs in Heath, 2009, Moreira, 2007 and this study)

4.1 Pre-crisis: crisis management plan

A crisis is a situation that disturbs the normal functioning of a system. In basic a crisis is not positive or negative, but a moment of possibilities for change. There are different types of crises: product related crises which can be linked to a food or production chain, natural and environmental disasters, terroristic attacks, infectious diseases by human or animals and so on (Heath, 2009).

Prevention is the most effective way to manage a crisis according to Heath (2009). It identifies and reduces risks that can develop into a crisis. Most crises have warning signs that indicate that a risk is beginning to manifest. For successfully reducing risks a good infrastructure for effective communication is needed. Therefore communication networks are essential in the preventive stage. Communication networks collect risk-related information and create a network of knowledge and management. Wider networks collect more information and make a more effective and accurate evaluation of risks. Considering these risks, there are risks that can be managed effectively and are worth the efforts. For these risks the government will make a crisis management plan (CMP) to be *prepared* for a possible crisis so that they can act quick and effective. CMP has as primary goal to protect all stakeholders, and secondary to protect reputational and financial assets. This plan roughly describes how to respond to a crisis. In this plan tasks and responsibilities are pre-assigned. Also contact information of key persons and organizations, and key actions and messages are defined. So the plan involves measures and communication (Heath, 2009).

4.2 Crisis: risk characterization

Risk characterization has two linked processes: a factual *analysis* made by experts and *deliberation* through discussion and reflection to increase understanding and substantive decisions. Moreira (2007) state: "analysis informs deliberation; deliberation frames analysis". In other words, the facts feed the discussion, and the discussion determines the interpret of the facts. However, the consideration of the principles of precautionary or proportionality influences this discussion as well (Heath, 2009). During deliberation it is important to protect all stakeholders against private interests. Not only during crises, but constantly serious attention for participation will lead in the long run to more successful communication management (Moreira, 2007).

The consideration of what information will be communicated is influenced by the deliberative process. This is influenced by the precautionary and proportional principles. The *precautionary principle* is mostly used by health problems, economic arguments are not leading here. However, for some stakeholders economic reasons are very important, they make a different consideration with mostly a different outcome for taking action or not. They reason based on *proportionality*, the impact of a measure should be in the right proportion to the economic consequences. Decisions made on proportionality are mostly based on experts while the precautionary principle is more a social process in which all stakeholders involved could speak (Maguire and Ellis in Heath, 2009: chapter 6).

There are many intensities of the precautionary principle, they differ between 'modest' and 'aggressive'. Modest means 'uncertainty does not justify inaction' and aggressive means 'uncertainty

justifies action'. The paradox here is that although mostly modest precaution is implemented in policymaking and the law, it is aggressive precaution that dominates the debates (Maguire and Ellis in Heath, 2009: chapter 6). Supporters of the modest precautions conceptualize uncertainty in formal terms based on science and risk analyses. Supporters of the aggressive precaution interpret it in broader and less formal terms. Invoking the precautionary principle is the trigger of precautionary deliberations and is justified by the evidence of harm. Compared with modest precautions, aggressive precautions are associated with a lower level of evidence which deliberations triggered. There are no clear guidelines for the weight of evidence to trigger the principle. Summarized "Invoking the precautionary principle triggers precautionary deliberations" (Heath, 2009: p.121). The differences here are related to the impact on the burden of proof and the role of cost-benefit analysis. Deliberations are triggered before scientific certainty of harm is proofed. Precautionary actions of the modest precautions require cost-effectiveness, this is not necessary for the actions of the aggressive precautions (Heath, 2009). So the modest principles is the closest to proportionality.

Thus, "the direct impact of the precautionary principle is to trigger a deliberative process which may result in action" (Maquire and Ellis in Heath, 2009: p.122). When the situation faces scientific uncertainty, the precautionary principle facilitates the process through putting questions about the measures on the policy making agenda.

4.3 Crisis: Risk Perception

Risk perception is here the perception of all stakeholders who are directly affected by a crisis. One of the concepts Moreira used to understand the different perceptions of a crisis is 'ambiguity'. Moreira (2007) described 'ambiguity' as that people react in different ways to risks and crises. Culture is one of the factors which are of influence to the response. It can be analyzed with a social constructionist approach, which means that risk, environment and media are constructed through interaction and discourse. And are thus dependent on interpretation by sender and receiver. Another approach is by social networks, like family relations or professional relations. Social networks affect the view of risk and reaction to the communication. If the network is strong by frequent interactions, the more likely is a cohesive reaction to the message. The selection and interpretation of messages are influenced by culture. So culture has much influence on the construction of meanings, beliefs and actions. The perceptions of risks are always biased because the perception is a reflection of cultural meanings and systems, and the culture of stakeholders are mostly different. Through communication social networks construct what is legitimate within the culture (Aldoory in Heath, 2009: chapter 11).

The Protection Motivation Theory from Rippetoe and Rogers (1987) as is shown in Figure 4.3 is an addition to this and is broader than the perception of the receiver only. It describes the whole consideration of deciding to take action or not. The risk perception of Moreira and the further description of the impact of culture are both only influencing the information a person receives. Based on information and experiences of others and individual emotions, a person will make his own consideration (Rippetoe and Rogers, 1987).

The Protection Motivation Theory describes the factors affecting the response probability. Protection motivation itself is the motivation to engage in some kind of health-protecting behavior (Stroebe and Stroebe, 1995). Sources of information influence the cognitive process. The result of the process is action or inhibition of action. Maladaptive responses are responses on which an individual has little influence, adaptive responses are more impressionable.

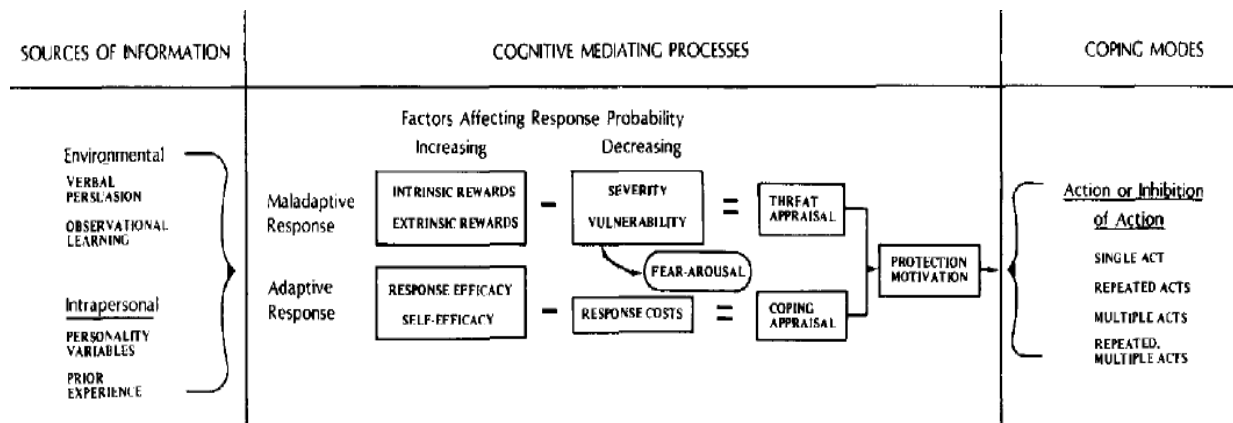


Figure 4.3: Protection Motivation Theory (Rippetoe and Rogers, 1987)

After consideration of threat appraisals and coping appraisals an individual decides how to react on the fear appeal. Intrinsic rewards are motivations for satisfaction and extrinsic rewards are motivations for consequents. Self-efficacy is the convincing of being able to perform the behavior that is necessary for the desired outcome. Response efficacy is the efficiency of this behavior. Self-efficacy is the most important predictor of behavior (Maddux and Rogers, 1982). The revised model of Rippetoe and Rogers assumes that the motivation to protect oneself from harm is a positive linear function of four believes:

1. the threat is severe
2. one is personally vulnerable
3. one has the ability to perform the coping response
4. the copings response is effective in reducing the threat (Stroebe and Stroebe, 1995).

The motivation to protect oneself is negative influenced by:

1. the costs of the response
2. potential rewards associated with maladaptive responses (Stoebe and Stroebe, 1995).

Critics on this model can be that it assumes that the variables of threat appraisal and coping appraisal are distinguished, but there is also interaction between these variables. Also could some variables weight heavier than others, dependent on the situation.

4.4 Crisis: Crisis and Risk Communication

There are many types of crises and there are many different ways to respond to a crisis situation. The way the government responses depends on available knowledge, characterization of crisis, perception of stakeholders and the possibilities to manage the communication (Moreira, 2007).

According to Coombs (1999) the *form* and content of communication are important. The form is the way the communication is presented. This should be quick, consistent and open. A quick response should be proactive; a lack of information should be mentioned. Speculation will start if the response is slow or incomplete. Stakeholders also want to know what is going on and are willing to listen to anyone who has answers; even if this means that they are listening to someone with other interests than the government itself. The message should be consistent and free of contradictions; otherwise it makes the message and therefore the government incredible. Openness means that the

government is willing and available to disclose information to stakeholders. If the government is restricted in their openness, stakeholders will think they have something to hide. However, the more specified the information is, the stronger the perception of stakeholders will be that the government is in control. This means, the more the detailed information is, the more stakeholders feel the government could have prevented the crisis (Coombs, 1999). So, release enough detailed information as possible to let stakeholders think that the government is in control, but not that much that stakeholders think that the government already had enough information to prevent a crisis if they took the right measures. By releasing information it should be well-founded on forehand, because otherwise other stakeholders could refute the information and with that contest the taken measures into question. Both government as stakeholders can be proactive or reactive to the crisis, that is the difference between “learn than act” and “act than learn” Moreira (2007). Since the focus in this report is on the communication of governmental organizations the communication strategy also depends on their action. If they are proactive they have much more of the perception under control than if they are reactive. In the last case the perception has already started to form and the deliberative process has also formed direction.

The two main components of the content of communication are (instructed) information and adjusting information (compassion). *Instructed information* consists of three components:

- 1) What, why, when, where and how;
- 2) Any preventive actions stakeholders need to take for reducing the effects of the crisis;
- 3) Actions to correct the problem or effects of the crisis (Coombs, 1999).

In other words the practical information contains actions stakeholder should take to prevent the crisis or to prevent the effects of the crisis will affect them, and actions should taken when the crisis or effects of the crisis already affect them. Stakeholders believe an organization is in control of a crisis when it can answer these questions (Coombs, 1999). All information is meant to help involved stakeholders to cope with the tangible loss but also with the psychological effect of a crisis. The uncertainty surrounding a crisis gives stress to stakeholders. *Adjusting information* about future protection and an outline of corrective actions, helps to reduce psychological stress (Heath, 2009: Chapter 5). Expressing compassion to stakeholders builds credibility and makes the government more trustworthy. However, it depends on the chosen response strategy of the government. The response strategy can be differ between ‘accommodative’ with much compassion and ‘defensive’ with no compassion to the stakeholders. The accommodative strategies are more effective in scandals than in accidents, whereas the defensive strategies are more effective in accidents than in scandals. Defensive strategies are used when financial or economic interests are the primary concern. A so called mismatch between the strategy and government will be when the government has primary financial or economic interests and respond to an accident with a compassion strategy. Here an accident is when it could not be prevent and a scandal when it could been prevent (Coombs, 1999).

The difference between economic and political stakeholders becomes visible in the strategy. Political stakeholders relate consequences to all stakeholders and prefer solutions on national level with state intervention like regulation. Economic stakeholders prefer economical solutions on company level. These strategies are chosen in order to keep control over the situation and control eventual changes of policy and responsibilities (Schultz and Raupp, 2010). For example: entrepreneurs prefer to adapt measures to their own situations instead of a standard measure, because they can adapt it in a way it is the most effective (with the least costs) for them. But someone who does not share this interest

and have only interest in the effect of the measure, for example politicians, prefer national legislation so they can be certain the measure is clear to everyone and it is easier to control.

Uncertainty starts with unpredictability within the environment. Change in the environment does not always cause uncertainty, it is the unpredictability of change that makes preparing difficult and thus the situation uncertain (Chess and Johnson in Heath, 2009: chapter 16). During crises, the government tries not to lose their legitimacy because the uncertainty will increase. Legitimacy is more apparent by its absence than presence. Chess and Johnson quote Dowling and Pfeffer: "Legitimacy can also be framed in terms of the congruence between social values associated with or implied by their activities and norms of acceptable behavior in the larger social system in which they are a part. In so far as the two value systems are congruent, we can speak of organizational legitimacy. When an actual or potential disparity exists between the two value systems, there will exist a threat to organizational legitimacy" (p. 327 Heath, 2009). To limit the disparity and thus the decreasing of legitimacy the government should be anticipating and communicating. By keeping information exclusively, it does not seem very transparent and will lead to decreasing legitimacy (Heath, 2009). For example, if a company produce environmental friendly products because of the climate change, consumers could think that because a big company acts so, it is really necessary and legitimate sustainable investments. On the other side, if consumers think companies should produce more environmental friendly products, it legitimate investments of the company in sustainable products.

The response to crises is also determined by power. Aldoory described in Heath (2009) p. 238 "Traditionally, risk communication has been produced by knowledgeable experts... If trust is lacking due to personal and historical experiences, then perceived power differentials between the source of risk messages and the audience members will discourage productive relationships and preventive outcomes". This imbalance should be minimized by empowerment of all involved stakeholders. It is a process as well as an outcome with the purpose of gaining power by being responsible, accountable, increasing capacity and social justice due decision making. Through identification with the message, both sender and receiver feel empowered (Heath, 2009).

Because of the transparency, cooperation and coordination between stakeholders is very important. Effective interaction and cooperation with media is crucial for spreading correct information and preventing disruptive intrusion. This argues for careful planning of the relationship with media (Moreira, 2007). It is helpful if the media communicate information that would not harm the system but helps to reduce the effects of the crisis with the least lost of trust. Building trust with stakeholders is in this framework very important, especially in the role of communication. Moreira mentioned the example of the BSE crisis. Trust is fragile, and lost trust can create a gap between 'rational' risk policies of experts and expectations of the public. This means that building a constructive dialogue between authorities and the public (including corporations) needs that all stakeholders should feel their concerns are legitimate and receive attention in the decision making process. To generate trust, risk assessments should have solid grounds and no link with policy decisions. Institutional arrangements like independent committees help establish this credibility. They should not mask the responsibilities of the policymakers. And it also should be clear that scientific assessment is only one of the inputs for decision making, so it is no excuse for delay of action. Building trust by paying explicit attention to the range of views and release information in a timely and effective manner. Avoiding panic is no excuse for lack of transparency or adopting

paternalistic attitudes towards the public. Withholding information will cost public confidence. It is important to keep in mind how information can be framed and used by specific stakeholders (Moreira, 2007).

4.5 Post-crisis

When the measures are effective and it becomes more clear or there are reasonable suspicions about the cause and solving of the problem and the attention of media and indirect involved stakeholders decrease, it is time for evaluation. In the stage post-crisis there should be at least analyzed what actually happened, was the response to the crisis effective and defensible to all stakeholders, what went right and wrong and how could the process pre-crisis and during crisis improve.

By communicating during crises reputation is very important. According the Crisis Communication Standards reputational threat is assessed by crisis type and history of similar crises. Type of crisis is the frame for interpret a crisis. The type of crisis can be grouped by responsibility. How more one is responsible for the crisis or how more often a similar crisis happened, how more damaged the reputation. Response strategies are based upon reputational threat, to limited the damage (Moreira, 2007). Also important by limiting the damage is to organize good aftercare for the involved people and to finalize the material administration as soon as possible.

In this chapter we learned important theoretical aspects of each stage to have a complete framework to analyze a zoonotic crisis. In the first stage the government plays an important role in coordinating a CMP but all stakeholders should be involved. In the second stage both goat farmers as government have a great role. The risk characterization will be mostly determined by the interaction between goat farmers and government and in contributing their knowledge and experiences in the analysis and deliberative process. This is quite influenced by the principles the government has. The risk perception is only from the point of view of goat farmers. We see here that their social network is very important to their risk perception and that the PMT can help to analyze the possibility that people will take action. The crisis and risk communication is typical about how the communication of the government should look like. The importance of complete, clear and open communication is here emphasized, this contributes to the legitimacy of the measures. The final stage is about the finalizing of the crisis, included aftercare. In Chapter 5 this theoretical framework will be applied to the Q-fever crisis. Then we will see how the different theoretical aspects become visible in practice.

5. Results

In this chapter the results will be analyzed. The results are based on the response of 15 interviews with goat farmers from Brabant and Gelderland, an interview with the communication department of the ministry of LNV and an interview with LTO. During these interviews questions were asked to find out how the theoretical aspects became noticeable in reality. The answers showed the experiences of goat farmers but also practical and technical details that were for the goat farmers important. To understand the results of the interviews much background information was necessary. Most important was the official evaluation report of Van Dijk, but also reports of the GGD and websites of for example RIVM are used to clarify answers and support arguments. So, a variety of sources has been used. In each subchapter the case of Q-fever in the Netherlands will be linked to the theory of previous chapter by using the same scheme (Figure 5.1). Each subchapter will start with a paragraph of what happened in the Q-fever crisis in practice linked with theoretical aspects. Then the results of the interviews are presented and will show the experiences of the goat farmers, ministry of LNV or ZLTO. This might be combined with other information as well. The final paragraph will be a short conclusion. Throughout the chapter two research questions will be answered. First the characteristics of government and goat farmers that affect the communication will be explored. Second, I will investigate how the goat farmers experienced the crisis and the accompanying communication. The crisis is divided in pre-crisis, crisis and post-crisis. The first stage describes the situation before the crisis really started so before 2007, this contains the crisis management plan. The second stage of the crisis is subdivided in risk characterization, risk perception and crisis and risk communication. The division is based on the theory of previous chapter.

Pre-crisis (before 2007)	5.1 Crisis Management Plan (Heath, 2009) <ul style="list-style-type: none"> ○ Prevention (Heath, 2009) ○ Preparation (Heath, 2009)
Crisis (2007-mid 2010)	5.2 Risk Characterization (Moreira, 2007) <ul style="list-style-type: none"> ○ Analysis (Moreira, 2007) ○ Deliberation (Moreira, 2007) ○ Precautionary and Proportionality Principle (Heath, 2009) 5.3 Risk Perception (Moreira, 2007) <ul style="list-style-type: none"> ○ Protection Motivation Theory (Rippetoe and Rogers, 1987) 5.4 Crisis and Risk Communication <ul style="list-style-type: none"> ○ Form, Instructing information and Adjusting information (Coombs, 1999) ○ Legitimacy and power (Heath, 2009)
Post-crisis (after mid 2010)	5.5 Finalizing <ul style="list-style-type: none"> ○ Aftercare ○ Trust / Reputation repair (Moreira, 2007) ○ Evaluation

Figure 5.1: Three stages of the crisis of Q-fever with the theories as explained in Chapter 4

5.1 Pre-crisis: crisis management plan

This subchapter will start with describing some characteristics and the practice of the Q-fever crisis. Then the implications of these characteristics are discussed related to prevention and preparation possibilities. When we know how the prevention and preparation of Q-fever looked like, it can help to understand more about the characteristics of the Q-fever and government and the experiences of goat farmers and how this influenced the communication.

There is a very clear distinction between the knowledge and policies of human and veterinary problems. For human issues the ministry of VWS is responsible and for veterinary issues the ministry of LNV. The lack of experience to work with these two disciplines together when there is also a lack of knowledge influenced the pre-crisis stage in my opinion because there will be time lost finding out each other's working methods and building collaboration. To improve the prevention of a zoonotic crisis, the Health Council advised in 2004 in an advisory report to the ministry of VWS about emerging zoonoses. The Health Council found that the struggle between the public health sector and the veterinary sector led to many monodisciplinary arrangements and not much collaboration. Without measures to correct this problem, the response to an outbreak will be too fragmented and therefore not effective. This could lead to unnecessarily high damage to both public health and economy (Health Council, 2004).

Another remark made by the Health Council is that the two responsible ministries have both different interests and therefore different approaches for responding. This is observed by the Dutch Health Council in 2004: "veterinary professionals primarily think in terms of populations and they are good at working with command structures; by contrast, medical professionals are more concerned with individual patients and their professional autonomy seems to be priority" (p. 26 Health Council, 2004). To prevent indistinctness, they argued that indicating risks and signals should be better communicated between the different sectors. However, the point of better communicating risk signals between the different disciplines is insufficient improved concluding (Chapter 7 of Van Dijk *et al.*, 2010). This is exactly as what the theory of Heath (2009) says about improving communication networks. In a Crisis Management Plan (CMP) should be defined who is responsible for making an inventory of the signals, who is responsible for deciding about the measures, who is involved in the decision making process and which communication is necessary to which stakeholders (RIVM, 2010c).

In the case of Q-fever it is discussable if a CMP could have been made. There were according to LNV (interview with division Communication) not enough indications and knowledge to expect this outbreak because it was seen as an endemic bacteria and as professional disease. However, already a couple of times there were signals that action was needed. In 2003 the GD started an investigation into abortion problems of goats and suggested further research to Q-fever. Nevertheless, in 2006 the ministry of LNV reject a research proposal from RIVM, CVI and GD for more research to Q-fever. Even when in 2006 the GD finds six other farms with Q-fever and a visited family was ill due to Q-fever (the GGD was involved in this case) no further action was taken (Van Dijk *et al.*, 2010). However, if there is a lack of knowledge about possible zoonoses, the government and the sector are responsible for gaining more information (VWA, 2011). In my opinion a CMP would have contributed to more clearness about responsibilities, decision making, collecting signals, involvement and influence of other stakeholders, and what to communicate. A stronger communication network might have

picked up the signals earlier and might have communicated to the right persons and institutions so that earlier action could have been taken as also is suggested by the Van Dijk report.

From the interview it shows that not all goat farmers were aware of cases of Q-fever before 2007. However, goat farmers who did remember a case in 2005 wondered why there was no further research done while the GD this requested. One of the reactions was “I know there was an infected farm in 2005 and I know the GD reported this to the ministry of LNV with a request for further research but this was rejected. As far as I understood the GD had enough arguments to request further research, so why was it rejected? I don’t know.”

This stage Q-fever is characterized by uncertainties about due a lack of knowledge which probably caused the lack of reacting properly on alerts. The lack of a CMP is a characteristic of the government and probably caused a lack of communicating signals. If Q-fever was acknowledged by all stakeholders as a potential threat, further research was done and a CMP was composed, it is likely that then the response to Q-fever could be more adequate. Not all goat farmers knew something about the situation before 2007, the ones who knew said that in that period more research should have been done.

5.2 Crisis response: risk characterization

In Chapter 4.2 the stage *risk characterization* is described from theoretical point of view. In this subchapter the risk characterization will be viewed from the perspective of goat farmers and government, by applying the concepts analysis, deliberation and the proportional and precautionary principles. This analysis will give more insight to the research questions about the characteristics of government, goat farmers and their experiences.

The stage of risk characterization can be characterized by uncertainties. In the beginning of the crisis it was very important to find the source of the outbreaks of Q-fever under humans to make a proper analysis (MinLNV, 2009a). Nevertheless many requests, the minister of LNV refused to label Q-fever as disease with duty to report. This made it hard to release information about infected farms and therefore to monitor the spread of the disease. Without monitoring it is more difficult to find the source and to take specific measures (Van Dijk *et al.*, 2010). The duty to report is finally arranged in June 2008, when immediately measures were taken (MinLNV, 2009b). Until then the GD refused to give the locations of infected farms because of privacy, which led to delay in research. According to LNV it was for a long time unsure what the exact source of the outbreak of Q-fever was, while others like the GD and RIVM were from the beginning more certain that goats were the source. Although there was much literature about Q-fever which indicates small ruminants as source, the confirmation was only made in 2008. It could have helped if experts have had a looked abroad to knowledge, experiences and possibilities there, especially in France (Van Dijk *et al.*, 2010).

The factual *analysis* is made by experts and should inform the deliberation of all stakeholders (the deliberative process). The deliberative process frames the factual analysis again, by steering the experts through formulating ‘framed’ research questions (Moreira, 2007). In the case of Q-fever experts deliver information to the involved stakeholders about for example the source. What information they choose to deliver and what not, influences the way stakeholders look at the problem (Heath, 2009). This perception leads mostly to discussions and further research questions within this frame. So the experts can be steering with their information and the stakeholders can be steering with their questions (Moreira, 2007). In the Q-fever crisis the veterinary experts had a

influential role in this by emphasizing the uncertainties and the need for more scientific proof (Van Dijk *et al.*, 2010).

However it seems that the source has been established, there is still much discussion about this between farmers as can be concluded from the interviews. “No one ever explained why goats are the only source while it is well-known that the bacteria are everywhere”, “if you only investigate goats as source, it is highly unlikely that other sources are revealed” and “I am wondering what furthermore is infected (animals, land etc.)”. According to farmers there were possibilities of individual testing and vaccination abroad, in France. Farmers said they knew farmers who did get their goats individually tested in France, and killed only the infected goats. In this way their farm tested negative. Interesting was the addition that they did not do it by their self, but if they had the opportunity they would have done that. As a goat farmer said “I would definitely spend some time and money in individual testing if that could have prevented the killings of all those uninfected goats”. About the uncertainty of vaccination farmers are divided. “It was already proven that the vaccines wouldn’t harm and most likely they would be effective, so there was no reason for not ordering” but also “the effect of the vaccination was still unknown, you can’t take the risk that the animals will be ill of this”. Besides this farmers had practical remarks “The voluntary vaccination was for a small group of farmers and only in late 2008. If the government needed a practical experiment, why wait so long?” and “It annoys me, that if you use such experiment for prove, the vaccines were for some goats too late. They should have known that at the end of the year goats are covered. Vaccination should have been done before two weeks before covering and pregnant goats cannot be vaccinated at all”. This was only known after the vaccination campaign in 2008. Most farmers vaccinated also pregnant goats and became later aware that there is no use for vaccinating pregnant goats, because it is not effective (also acknowledged by Van Dijk *et al.*, 2010). So the vaccines on pregnant goats were wasted, but from the farmers’ point of view many vaccines were wasted in 2008 since all vaccinated animals on infected farms were killed in 2009 and 2010. There was no explanation given for this by the government.

Farmers were of the opinion that the ministry and experts did know about the possibilities abroad but had their own reasons for denying or not using it. As explanation they said during interviews: “I don’t believe that they (LNV) have so much contact on European and international level about all kind of issues, and then, when there is a new disease they accidentally forget to look abroad?” and also “they knew but were not sure due lack of knowledge maybe but I think it is more a case of a lack of decisiveness. Politicians are too scared to make decisions” and “afraid for losing their position or votes”. So goat farmers experienced the expert analysis as quite searched with a tunnel vision if they did not look abroad, and if the experts did look abroad goat farmers criticized the lack of action.

Within the *deliberative process* an unequally representation leads to a different framing of the analysis then if they were correct represented (Moreira, 2007). It can be indicated that the farmers were not fully represented in the deliberative process since they were not involved from the beginning (Van Dijk *et al.*, 2010). Besides that there were other interests involved. The goat sector is small in size and in turnover comparing to the dairy cattle sector (CBS, 2009). Although the goat sector is growing and more and more professional and organized, the representation is not comparable with the dairy sector as LTO explained in the interview.

Goat farmers said in the interviews that they feel that LTO represented them as best as they could have done. Nevertheless, most farmers preferred that LTO took a hard line by using firm words and contact the media for more pressure to force the government to take action. Unfortunately they did not and farmers thought that a reason could be that the goat sector is a small sector and therefore an easy shape goat. "If the source is only linked to goats, other sectors will be out of danger. It is more profitable for the Dutch government and LTO to sacrifice a small part to save the rest. For the greater interest, so to say". Goat farmers see the deliberative process as not fully representative in the way that they were not adequately involved and think maybe therefore that the interests are not equally considered.

The difference in framing by LNV and VWS of the risk characterization is in my opinion caused by the basic difference in approach: *pre-cautionary principle* or *proportionality*. These principles are leading in the deliberative process for taken measures. The principle of proportionality is the basic for the approach of LNV. As explained in Chapter 4.1 proportional policy needs scientific evidence before measures could be taken. So from this approach it is quite logical to wait until there is sufficient scientific evidence that can legitimate the measures (Heath, 2009). However, it can be discussed how much evidence is sufficient. The ministry of VWS based their approach on the pre-cautionary principle, what makes that in their opinion all measures are legitimate to restrict the damage to humans. Scientific proof is not necessary, a logical reasoning is sufficient to take measures. When a crisis is assessed differently by the two main stakeholders, this becomes also visible in the communication. From a proportional perspective it seems more logical to communicate only if there is relevant or new information. What is relevant or new is than decided by the sender. From a pre-cautionary perspective it seems more logical to warn people about potential risks (Heath, 2009).

During crisis the principles changed. In the beginning of the crisis the principle of proportionality was dominant. This might explain why in this stage the vaccines were late ordered, due lack of scientific proof on the consequences and effectiveness. However, at the same time it can be questioned why the vaccines were so late if you act according the principle of proportionality. Since the economic consequences are very important, it seems that the possible consequences of not acting are not balanced with the relative small disadvantages of vaccination. A reason for this can be that the consequences of not acting are not considered as high. This shows that at this moment the government was not aware of the possible consequences. However, other stakeholders asked for more measures (Van Dijk *et al.*, 2010) which could mean that other stakeholders had seen other possible consequences or they wanted to act based on another principle: the precautionary principle. The human sector gets more and more influence during time (Van Dijk *et al.*, 2010) and the government acts more based on precautionary principle, it can be concluded that the different stakeholders with different principles are struggling and the proportionality is being questioned. Early 2009 the proportionality principle was dominant since there were no measures taken with huge economic consequences as is also stated by the ministry of LNV: "constantly the public health is leading in our choices. With that, we always look to the expected effectiveness and proportionality of the measures" (MinLNV, 2009i). Then the precautionary principle came up and was in the beginning modest, which means that uncertainty did no longer justify inaction. The modest level of the precautionary principle is between the proportionality principle and the aggressive precautionary principle (Heath, 2009). Late 2009 the precautionary principle got more aggressive. The turning point was the announcement of the killings. From that moment the precautionary principle became dominant as is stated by the ministry of LNV as well: "The reason for indicating Q-fever as severe

danger for the public health is primarily based on the precautionary principle” (MinLNV, 2009g). The killings can be seen as an aggressive form of the precautionary principle since the consequences are huge and the evidence of the effectiveness is small.

This use of double standards is not received well by farmers as turned out from the interviews. A farmer said: “First they wouldn’t do anything (vaccines) because they were not absolutely sure it would help, and then suddenly, they just decide to kill all goats. And that gross measure is only taken because of the pressure of media and the ministry of VWS” also suggested (but as influence of media and human sector) by Van Dijk (2010).

In the beginning of a crisis the response strategy is mostly determined. Of course the strategy can be changed over time, but the first strategy is mostly leading in the process (Coombs, 1999). From the beginning the experts did not look abroad for knowledge and possibilities, what characterized the analysis and the tunnel vision in possible solutions. The deliberative process was influenced by lack of leadership and the lack of action of the ministry of LNV. According to the farmers they were prejudiced because they have a small sector and are therefore an easy shape goat. The feeling that they were not taken seriously and that other interests prevailed, gave negative emotions. The change of principles by the government was for farmers hard to understand since in for vaccination (with not big consequences) scientific proof was necessary and for the killings (with big consequences) no scientific proof was necessary.

5.3 Crisis response: risk perception

This subchapter will elaborate on the risk perception which is about the different responses of goat farmers and the government to the crisis. This will be explained by the concepts of ambiguity and the Protection Motivation Theory related to the measures. This whole subchapter is only based on the interviews with goat farmers and will give insight in the characteristics of goat farmers and how they experienced the crisis and the communication.

In short an enumeration of the measures. In 2008 a manure measure was taken and the duty to report was obliged. In early 2009 hygiene measures were taken and research is done to other measures regarding manure and breeding. In mid 2009 measures on these areas were taken as well. Late 2009 transport measures were taken and tank milk monitoring is introduced since the number of infected people is not reduced. At the end of 2009 the minister of LNV decided to kill all pregnant goats.

That people respond in a different way to crises is natural. Moreira (2007) calls this *ambiguity*. The interviews with goat farmers showed that goat farmers spoke much about Q-fever with colleagues, veterinarians, food suppliers and LTO. These were also the people farmers said they got the most information from and were therefore most likely influenced by this network in their opinion. If people have much contact with each other, they have mostly a more cohesive reaction to a crisis (Heath, 2009). To be clear, this does not mean that every farmer within the same network must have the same opinion. But farmers said that there were no big differences in opinions about the Q-fever crisis within their network. They find their network was strong because of the support during hard times. Colleagues, veterinarians and food suppliers are mentioned by farmers as people from their network who stopped by more often. Even in their spare time, which is really appreciated by farmers. The difference between farmers became visible during the interviews through some farmers needed more information than others. These findings are based on the question “did you received

sufficient information or did you need to find out more by yourself?" Most farmers were critical on the received information and looked up more information on the internet or talked with colleagues. Some did not and were satisfied with the received information. Maybe this difference also caused that not all farmers had the same opinion about the possibility to prevent and to prepare for the crisis. Some goat farmers believed that it was impossible to prevent the crisis. Others believed that earlier intervention could have prevent the killings and prohibition for breeding. The ministries and goat farmers have both different networks, since it is not very likely that the ministries got their information from veterinarian practitioners, food suppliers and goat farmers. There is also not much direct contact between goat farmers and the ministries as showed in subchapter 5.2, and therefore the possibility to reduce the information gap is limited. The differences between both stakeholders made it also likely that there are also differences in their perception of what measures are legitimate to reduce the crisis. This explanation of differences is contributing to understand the different answers of farmers regarding how they experienced the measures and the crisis.

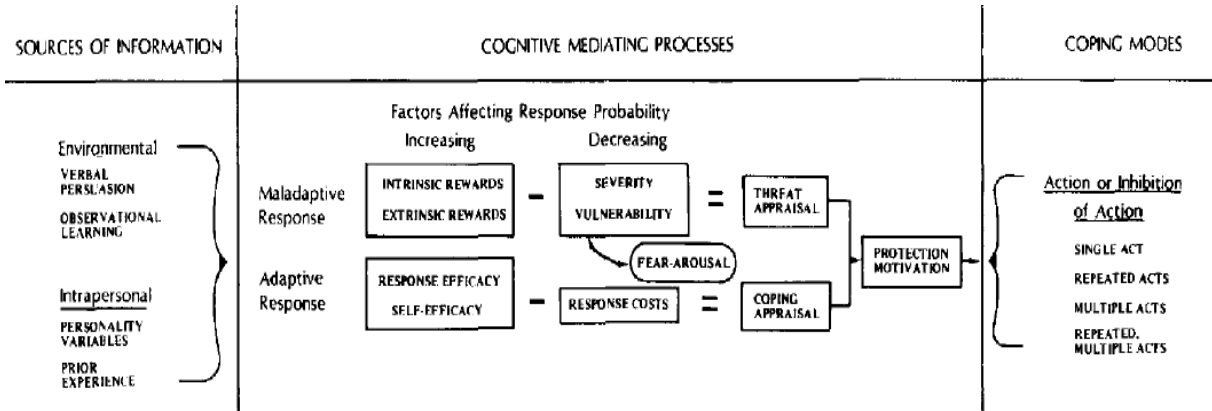


Figure 5.3: Protection Motivation Theory (Rippetoe and Rogers, 1987)

In Chapter 4.3 the Protection Motivation Theory (see Figure 5.3) is discussed. With this model it becomes more clear how goat farmers made a consideration of deciding to act or not. First they are pre-influenced by their sources of information, described above. The threat appraisal is determined by personal rewards and the severity of the threat and the vulnerability of the person. The coping appraisal is determined by self-efficacy, response efficacy and the response costs.

The threat appraisal is considered to be high by goat farmers. They pointed out that they would do anything to limit the number of ill people, because it would harm the sector and their family personally and because they get a fine if they do not keep them to the rules. Farmers were especially sensitive for the fact that neighbours addressed them personally about the severity of Q-fever like it was their fault. The farmers were aware of the severity of the disease and their own vulnerability as family who were much more in contact with the bacteria.

The coping appraisal is considered to be low, because the response efficacy is considered to be low and the response costs high. The response efficacy is considered to be low since farmers believed that not all measures were helpful to limit the spread of the bacteria. Hygiene measures were mostly seen as helpful and were followed up. However, there was a discussion about the manure measures, because some farmers were convinced that this was nonsense and others thought that it might help. The farmers against this measure argued that the bacteria is killed at 40 degrees. When the manure was not covered oxygen had access which led to faster composting and so faster a higher

temperature. Others argued that covering for one or three weeks was enough and three months was too long. One farmer lived in a village and was therefore forced to keep his manure very close to people which was in his opinion not more save then spreading on land. The killing of vaccinated and non-infected animals was seen as an ineffective measure since it was according to the farmers proved that vaccinated animals are rarely infected. However, there were farmers who agreed with the killings because they thought it would help to reduce the spread. The killing of high infected animals was not a problem for the interviewed farmers because sick animals are dangerous to their environment. The breeding ban was seen as pointless since vaccinated animals were rarely infected, so after vaccination farmers think that it is possible to breed again without extra risks. These discussion showed that also for the risk perception complete and grounded information affects the willingness to cope. The self-efficacy was high, because for most farmers it was not much trouble to perform the measures. The direct response costs of the measures were low according to the interviewed farmers. All interviewed goat farmers said that it did not take much trouble to comply with the rules. Unfortunately the indirect costs of getting compensation, administrative burden and emotional damage are extremely high. It takes much time to complete all administrative forms, but especially the consequences of the killings are emotional heavy since living creatures are killed. And for those farmers who did not believed in killing as solution, it was even harder. Finally the considered outcome of the positive threat appraisal and negative coping appraisal is slightly positive, because farmers complied with the measures at the end. Analyzing this consideration, the compliance is mainly caused because farmers had to, the force of law and the emotional consequences of being personal addressed were too strong to ignore.

So the risk perception was influenced by the network goat farmers have and colleagues, the veterinarian, food supplier and LTO played an important role in this. Farmers experienced mostly the threat appraisal as high and the coping appraisal as low because of the high indirect costs and the lower expected effectiveness.

5.4 Crisis response: crisis and risk communication

In this subchapter the communication of Q-fever will be discussed by using the concepts of form, instructing information and legitimacy. But first a short elaboration of the communication will be given. This subchapter will give answer to the question how communication is affected by characteristics of the crisis, government and goat farmers and how goat farmers experienced the communication.

The first explanation of how the government wanted to communicate and what their strategy was, was written in a letter to the House of Representatives in December 2009. Within this letter LNV and VWS explained who was responsible for which communication. The purpose of the communication strategy was 'to be transparent, to prevent unrest and to create support' (MinLNV and MinVWS, 2009c). Division Communication of LNV explained in the interview that the communication strategy was changed by de decision to kill pregnant goats. First they wanted only to inform people with the purpose of reassuring and inform how people could got more information. Within this first strategy (developed in the summer of 2009) the communication should be organized at local level by the GGD. The stakeholders involved in writing this communication strategy were mostly people from the human health sector like physicians, heart and lung specialists and policy makers. The second strategy (the one which is described in the letter) made LNV central information centre and responsible for the communication. Stakeholders like GGD, VNG (Association of Dutch Municipals),

RIVM and VWA were involved (MinLNV and MinVWS, 2009c). Note here, LTO (the representatives of farmers) was not involved.

The Committee Evaluation Q-fever concluded that it took too long before the communication was centralized and recognizable (Van Dijk *et al.*, 2010). Maybe besides the principle of proportionality also the late central organization caused that the communication strategy chosen by the ministry of LNV was reactive, learn than act. When it was earlier central organized, the ministry was possible forced to communicate earlier instead of waiting until they know all the facts, because then more stakeholders together could have put more pressure on LNV. This communication strategy fit in my perception to the principle of proportionality. First gaining knowledge and find things out by themselves and then communicating extern if you are absolutely sure.

The *form* (the way the message is presented) is also of influence on the support of a policy and therefore the communication should be transparent, complete, clear, reliable and on time (Coombs, 1999). There is an argument pro releasing information only if it is well-founded, because otherwise one can refute the information and questioning the taken measures. However, communicating about uncertainties can be more useful since the more (detailed) information is communicated, the more others might think the crisis is under control, since it seems at least that the authority is aware of the lacks and uncertainties (Coombs, 1999).

From the interviews it became clear that most farmers received a letter of LNV with the change of measures and mostly (except the killings) were seen as complete, clear and on time. Still, on the whole the communication is experienced by farmers as not totally open, because there were mostly no arguments given for the measures. However there were some differences in the experiences. The communication about the killings was interpreted differently and was dependent on when the farm was tested positive. The farms which were tested positive in 2009 did not expect the killings, but the farms tested positive after the announcement of the killings, knew what was coming. Most farmers were surprised that such heavy measure with such consequences could be taken with no arguments. Also when they announced the killings, most farmers thought they only would kill the non-vaccinated goats, but later on it turned out that also vaccinated pregnant goats had to be killed. Sometimes the day of the announcement was just one or two days before the killings. These farmers were a bit surprised and some preferred to had just a few days more. From the point of view of the ministry of LNV, giving farmers a few days more, gave them space to remove goats which had to be killed. The farmers who had the killings as one of the first had no idea what they had to do, and had to ask colleagues, veterinaries and food supplier or LTO what they had to do to be prepared for the killings.

Because of the transparency of the government, cooperation and coordination between the government and private actors like physicians and goat farmers is very important. By not fully involve these stakeholders, the farmers feel the process is not transparent (Moreira, 2007). This was confirmed by the way there was dealt with the media. The interviewed goat farmers agreed that the media were against them and published incorrect and colored messages. Also because of the media citizens got a wrong view about the crisis and the Lower House was influenced by the pressure with an one-sided biased story of the situation according to the farmers. There should have been a response to this from LTO or LNV with a complete story as farmers agreed on. Now, there were according to the division Communication not active corrections of media but only a twitter with a link to the true information. With this passive reaction it was impossible to correct the public opinion and

the media. Also LTO lacked a great public action to get a podium for the other side of the story. As representatives of the affected farmers they should have done this, according to the farmers.

An indirect consequence of the passive communication policy of both government and goat sector was that the neighbours and fellow-villagers only heard the incomplete and colored story of the media. Farmers felt personally offended by this, because other people addressed them to their lack of action while they did not have all opportunities to act. Especially when their children were addressed, they were emotionally affected.

Instructed information is practical information to farmers that helps to reduce the crisis. Infected farms received a letter from the GGD when they were tested twice positive. However, in the letter itself was no information about what to do on farm level, but only on personal health. Later two texts (RIVM, 2010d) were formulated by the government, for infected and non-infected farms, which should be used to inform people who also work on the farm. The letter contains general measures and an explanation of three levels of risks, and which actions should be taken to minimize the risks on each level. The description of what, where and when farmers should act in formulated way was clear, but why was not explained. Of course the measures are to minimize the risk of infection and spreading of the bacteria, but the text stresses only the responsibility of the farmer and that he was obliged to do this. Further practical information was given by the government in newsletters, which appeared in September 2009, March, April and June 2010. The purpose of these newsletters was besides publishing new research results and background information, also publishing policy changes (RIVM, 2010d). This was not obvious in layout or text, which makes it time-consuming to look it up.

As became obvious in the above text the killings had a huge impact on how farmers experienced the Q-fever crisis and therefore needed it special attention. Now the aversion against killings will be more explained related to legitimacy.

The *legitimacy* of the ministry of LNV was according to the interviewed goat farmers the most in discredit when they announced the killings. This was a very heavy measure with huge consequences. Trust, which is needed to act legitimately (Moreira, 2007), was damaged over time. By the history of previous killings and more and more there were discussions about the acting of the ministries in the media. In previous animal diseases like BSE and swine fever, there was much protest by farmers and the public against the killings. So also for the killings in the scope of Q-fever was not much support under farmers, although, more because human health was in more danger than previous times. Critical publications in the media that argues that the ministry was not transparent and holding back information and did not acknowledge the available information (NOS, 2010), was not good for the reputation and legitimacy of the ministry.

The killings were for farmer not legitimate in this way. The interviewed farmers believed that the killings were absolutely unnecessary if the government had taken earlier measures and made earlier vaccination or individual testing possible. In their believe it is unbelievable that goats had to be killed which has never giving birth before, so there was no way that their milk was in the tank at the moment that the PCR-test was taken. Another frustration was because goats which gave milk on the moment of testing and were tested positive, could stay on the farm after the killing because they were not pregnant then. The sum of these arguments made the killings illegitimate for the interviewed farmers. This was stressed by the change in strategy which will be explained below and the lack of communication of explanations of these changes.

To increase the legitimacy of the government, the government should have anticipated and communicated more. Of course this measure will call for fierce resistance, especially when there are no arguments given in the phone call. Just the message that the farm was infected and had to be cleaned out. The letter of confirmation and further explanation, is written down nothing more than it was an order of the minister. So there was a huge difference between the social values of government and goat farmers and there was not put much energy to decrease this disparity. This disparity was even stressed by external driving forces. The change of attitude of the public towards Q-fever due to the growth of consciousness of the health problem and the increased attention of the media, put much pressure on the ministers and the Lower House to intervene. LNV should have anticipated more on this, because new findings of the affected public health changes norms of the public on what measures are acceptable to limit the Q-fever. Of course they argued with their available knowledge, and therefore LNV should have communicated more pro-actively to the public and to goat farmers. To the public because they could have had great influence on policymaking by using media and the Lower House. And to the goat farmers about the reasons of killing vaccinated animals and prohibition of individual testing, to get more support for the policy.

It can be concluded that farmers and government have different ideas about what measures were legitimate to solve the crisis. The use of the measures and why it was effective should have been communicated as well to get support for it. Otherwise a high penalty and often controls were necessary to enforce the rules. Farmers experienced the killings as illegitimate and were personally affected by the passive communication policy of government and sector.

5.5 Post-crisis: finalizing

In the stage of post-crisis there was an evaluation of some more practical issues as aftercare and finalizing will be discussed since also these parts were relevant for the communication of government to goat farmers. The aftercare was about the help given to deal with the emotional consequences of the killings. Finalizing is mostly administrative things about the compensation. Further a short look was given at the evaluation about the consequences of the Q-fever crisis for the reputation of LNV. And finally some information was released in 2010, which supported main feelings of farmers in this report. This elaboration will contribute to the knowledge of how goat farmers experienced the crisis and the communication.

The need for a proper organization of aftercare was acknowledged. The government acknowledged the psychological consequences of Q-fever and the killings for the farmers and the need for support to cope with this. So there was a possibility for professional help. The help and information was coordinated by the GGD (MinLNV and MinVWS, 2009c). Most goat farmers were called after the killings by the GGD to ask them if they needed any help. However, the interviewed farmers choose to receive support in an informal way from the direct environment, although they appreciated that professional help was offered. Farmers said they were pleased that the killings went very peaceful and without much stress for the animals, this helped them to cope with the emotional losses.

There were also some individual or small problems with the communication which annoyed farmers. Several farmers had only a few goats to be killed. When they were called for telling that the goats had to be killed and for making the appointments, the farmers said that for four goats there was no need for coming with many people and bring their own machines. But in this example they came with eight people to kill four goats and brought their own machine for moving the dead goats.

Another point was communication from goat farmers to LNV. Several goat farmers tried to call the ministry with specific questions. It took very long before they finally got someone on the phone and they got not a satisfying answer, because it was hard for a ministry to know and adapt to all different situations on farms. One farmer wrote a letter to the ministry about the reason for the killings ban did not get an answer back. Even after a few phone calls and promises that there will be an answer coming, they still did not receive one. The ministry also chooses to not communicate with farmers after the killings. Some had hoped and would appreciate it much, if the ministry send them a letter with some compassion or some would liked to have an apology. The whole process and small irritations led to frustration by farmers and there are interviewed farmers who lost their trust in the ministry, because they think the government will never learn.

The public and media saw a certain link between outbreaks of animal diseases and the enormous intensive livestock industry in the Netherlands. The reputation of this industry is determined by outbreaks in the history (Moreira, 2007). However, this was the first time that there were so many human patients. This was an extra argument for some people to bring it up for discussion and to frame the crisis within the perspective of intensive livestock industry. According to Moreira (2007), the more one is responsible for the crisis, the more the reputation is damaged. It is hard to conclude anything about the reputational damage of the government. On the one hand farmers think the government will never learn since they made almost the same mistakes as with the pig flue and BSE. On the other hand, farmers said that they look at the people, and in a new minister they had more confidence.

Finally, farmers mentioned that research of tank milk monitoring of cows showed that 50% of the tank milk was positive in 2006 (GGD, 2008). And even more important in the Spring of 2010 a research of Rendac was published. It turns out that 0,4% of all vaccinated cadavers was infected and about 25% of all non-vaccinated cadavers was infected. This upset farmers and support their conclusion that the killings were not legitimate, anyway not in this way. This research also supported the farmers in their belief that the PCR-test, tank milk monitoring, was not representative. If only one goat out of 250 was infected, the test would be positive and all pregnant goats had to be killed.

6. Discussion

This subchapter will start with a summary of the results and answering the research questions. Then the implications for research and practice are elaborated and the limitations of this study. The end of this thesis is the conclusion.

6.1 Summary of results

In this subchapter the results will be summarized and through this summary the research questions will be answered. First the characteristics that affected the communication will be discussed, then the important theoretical communication aspects and finally the experiences of goat farmers.

What characteristics of Q-fever, goat farmers and the Dutch government affected the communication and how?

One of the main characteristics of Q-fever as crisis was that it was hard to characterize this type of crisis. It was not a common crisis types like acute crises were or crises within a production chain. Q-fever can be characterized as a slumbering crisis, not directly linked to one production chain and since it was caused by a zoonosis it affected both the human and veterinary sector. These characteristics made it harder to organize the communication because it did not fit standard procedures. Also the uncertainty about the seriousness of the threat, the source and the possibilities of contamination and vaccination hampered the communication. It can be concluded that these specific characteristics of Q-fever negatively affected communication.

The sector of goat farmers can be characterized as a small sector compared to dairy cattle, but was professionalized the last years. However, the representation of this sector could have been better in the Q-fever crisis. The coordinating organization LTO and the ministry of LNV did not invite the specific representation of goat farmers from the beginning and when the media focused on one side of the story they did not organize a counter-campaign. The group of goat farmers can be typified as obedient. Despite the disagreement about the reaction to the crisis they did as was told. Furthermore can be concluded that the goat farmers other sources of information had than the formal communication of the government since farmers were aware of alternatives of which they were not formally informed of. I can conclude that the characteristics of goat farmers negatively affected the communication.

The most important characteristic on governmental level was the difference in principles between the two involved ministries. The ministry of VWS based their policy on the precautionary principle and the ministry of LNV on proportionality. These different basic principles led to different approaches to the crisis. Due to the severity of proportionality the government waited too long for proof before they took action. This struggle and the lack of a combined crisis management plan mainly caused the delayed action of the government. Likely due this, signals were not recognized or not effectively communicated, information from abroad not looked upon and not all stakeholders were involved from the beginning. From communicational perspective it was distinctive that the communication was not totally open about the possibilities of individual testing and no or not much background was given for explaining the measures and searched and rejected alternatives. The communication can be described as passive and reactive, so there is only communicated when necessary with a minimum of information. It can be concluded that the characteristics of the government negatively affected the communication.

What are according to the theory important communicative aspects during crisis?

In the stage of pre-crisis prevention and preparation for the crisis by composing a crisis management plan should had been organized. In this plan communicative networks, dividing responsibilities and the communication of signals were very important. In the stage of crisis response it was from the beginning necessary to involve all affected stakeholders to make a good risk characterization. In this way all stakeholders had the same information and therefore feel all taken seriously. The risk perception was determined by the network of the goat farmer and his benefits and efforts to act. During crisis response it was important to be transparent and clear in the communication so that this contributed to the legitimacy of the measures. In the stage of post-crisis aftercare should be well arranged and an evaluation should be held. It can be concluded that on some important theoretical aspects the practice was different than according to the theory desirable was.

How did goat farmers experienced the crisis and the communication of Q-fever?

In the opinion of goat farmers the killings were unnecessary in this way. So or the vaccination should had been on time or individual testing and killing should had been possible. Goat farmers felt not taken seriously and felt being used as scapegoat because it is a small sector. Indications of other sources should had been investigated as well. Goat farmers felt also affected by the public opinion because they did not know the whole story or at least the story from their perspective. It can be concluded that goat farmers experienced the communication negative.

6.2 Implications

In this subchapter the implications of this study are described for further research and for practice.

6.2.1 Future research

The current study showed the importance of considering the direct and indirect consequences of policy and communication to not only the direct affected or involved stakeholders but also to the indirect stakeholders since the indirect involved stakeholders can affect the direct stakeholders as is described above. The indirect involved citizens affect with their behavior the direct affected goat farmers. If the information supply was complete, the citizens might have another view on the reaction of farmers to the crisis and might have react differently to goat farmers. Therefore in future research should be realized that the communication is not only from government or another leading organization to the direct involved stakeholders, but stakeholders also have contact with indirect involved stakeholders who might have different information. If there is a discrepancy between the experiences of the affected stakeholders and what their should have experienced according to the practice of theory aspects, then it is useful to analyze indirect contacts as well. If the discrepancy is huge, you might consider to focus on that question so that you can discover the deep underlying problems. It would be interesting to compare several of these analyses to find out if there are comparable factors.

As stated several times, there was no theoretical framework for analyzing a slowly developing zoonosis. So for future research it might be interesting to develop a framework in which the characteristics of the development and the sector exceeding elements are funded. This framework can be helpful but further theoretical research is necessary to involve the specific characteristics in a more scientific way.

6.2.2 Implications for practice

It became clear that the government had a different view on the problems and solutions than the affected goat farmers. Therefore both perceptions and experiences are important to take into account in all three stages of crises. This implicates for practice two things. First that during composing a crisis management plan, expert analysis, deliberation and evaluation the direct affected stakeholders should be invited from the beginning, I am not saying constantly but they have to be kept up to date. This is necessary to keep in touch with practice and to be informed about their information sources and unintended consequences of the communication are revealed earlier, which makes it more easy to adapt to this situation. In this way it is better possible to tune the amount of information on the demand of the stakeholders to avoid that incorrect stories prevail. To be clear, with involving the direct affected stakeholders I did not mean that everyone has to sit on the table. It is also possible for example that a contact person is there who is responsible for multiple stakeholders. Second in this way stakeholders are more informed about the process and therefore know more about what actions are taken and what is tried to solve the problem. In this way there probably will be more respect to the leading organization and will stakeholders experience the process more transparent.

Furthermore it is recommended to have a more open and proactive communication strategy. This means that stakeholders do not feel information is withheld and there is not waited until communication is really necessary but there is also communication to inform people were is working on and what is known and what not. This can be accomplished by also communicating between times and find a balance between communicate decisive and the uncertainties like questions and doubts. Underpinning measures is also experienced as more open and helps to get more support and respect for the measures.

By a lack of a crisis management plan it should be kept in mind not to struggle too much but focus on the common interests instead of own interests. Otherwise valuable time will be lost by arguing. Related to this, the risk analysis should be made with an open view so alternatives have to be investigated. Also less common stakeholders have to be considered if they might have an added value, like foreign stakeholders. Less common stakeholders might have a different perspective on the problem and might therefore experience the problem differently or see other solutions.

6.3 Limitations

There are some disputable points regarding the research method of the current study. The farmers are interviewed by phone, because it was simply not possible to visit them all and the farmers which I could visit easily did not want that. It could have been an advantage to speak face to face, then people can see who is asking the questions and are probably more open. Many farmers were afraid that I was a journalist and asked me to prove I was not. But in the end, it turns out that farmers were quite open to me and there were not much problems in trust. A disadvantage was that at the same time I did interviews, LNV and VWS did an interview by phone about communication and the RIVM did also an interview by phone. This makes that not all farmers wanted to cooperate because it took too much time.

Since this study only focused on the communication between government and goat farmers, other communicational aspects that affected this relation are only analyzed slightly. For a proper view about the consequences of single story of the media an media analysis should be made.

A much used source of this study is the evaluation report of Van Dijk. This source is much used since this is an reliable overview about what happened during the Q-fever crisis since I found many things also in other sources. However, not everything is well underpinned, explained or mentioned. That is why I tried to uses other sources as well, but there still might be parts that are not well founded.

This research does not claim to describe how the Q-fever crisis really went and what exactly happened. This research will only give another perspective to the crisis. I want to emphasize this since I still find many contradictions in how stakeholders claim the crisis went and how and why they act.

6.4 Conclusion

Farmers feel personal affected by the response to the crisis and the communication. Due the lack of explaining why and on what ground measures were taken and also because of the late involvement of the representation of goat farmers in the decision making process goat farmers felt not been taken seriously. The government should organize themselves so they can cope with cooperating with different stakeholders and different interests. And more over they should broaden their view for stakeholders from both abroad as within the country, affected stakeholders should be at the table. That way, the communication will be experienced as more open and will improve the legitimacy and reliability of the government.

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Attachment I List of interviewed persons

- LNV, Division Communication: Drs. E.C. Ganzevoort
- LTO, Section dairy goats: M. Paauw
- Goat farmers:
 - o De Gouw, Vlijmen
 - o Van Roekel, Bennekom
 - o Van Rooij, Drunen
 - o Van Zon, Alphen
 - o Van den Broek, Baarle Nassau
 - o Schoenmakers-Vissenberg, Chaam
 - o Van de Ven, Herpen
 - o Van den Top, Lunteren
 - o Van Heesh, Sint-Oedenrode
 - o Overeem, Barneveld
 - o Beijer, Druten
 - o Van Loon, Vinkel
 - o Van Roessel, Tilburg
 - o Bouman / Olislagers, Esch
 - o Ploegmakers, Maren Kessel

Attachment II The measures chronological

The measures mentioned here are for farms with dairy goats and dairy sheep with more than 50 animals.

General measures

In 2008 the ministers of LNV and VWS wrote in a letter to the House of Representatives the measures they took to minimize the spreading of Q-fever to humans.

- Most farms have deep litter houses and are cleaned out twice every year. The stable are cleaned out before the offspring is born, so the manure can stay in the stable after that period for about three months, which will help to reduce spread of the bacteria.
- Prohibition to visits to farms, unless necessary.
- Veterinaries and farmers have a duty to report Q-fever within 30 days when identified on more than five percent of the abortions (MinLNV and MinVWS, 2008).

From 2nd of February 2009 there is hygiene protocol for all dairy goats and dairy sheep farms.

- A good pest control is mandatory.
- It is not allowed to remove manure from stables from the day the period of giving birth starts until a month afterwards, because of the large amount of bacteria in the manure during this period. For 90 days the manure must be kept covered on the farm.
- Manure must be covered over during storage and transport, so that infected particles cannot be spread by wind.
- When manure is spread on land, it must be directly processed or the manure must be composted for three months. After three months it is safe to spread the manure on the land.
- Within the stables the availability of destruction bins for animal by-products are mandatory (MinLNV, 2009c).

On advice of experts since the 10th of July 2009 the protocol has become more flexible. From now on it is allowed for non-infected farms to transport manure to compost companies and spread manure without covering or immediate processing on the lands (MinLNV, 2009d).

On August 28th of 2009 the minister of Agriculture and the minister of Welfare informed the Dutch House of Representatives by letter (MinLNV and MinVWS, 2009a) and continued in a letter on 28th of September about measures to restrict the spreading of Q-fever and to restrict the number of infections to humans (MinLNV and MinVWS, 2009b).

- The veterinary duty to report is from now on based on tank milk tests.
- Compulsory vaccination.

From 1st of October 2009 all farmers are obliged to participate in Q-fever monitoring. Every two months a sample of tank milk will be tested on Q-fever. The farm will be declared infected if the animals are also tested positive by CVI (Central Veterinarian Institute). The farm will lose the status "infected" when the tank milk is tested negative for a year. This period is quite long because of large uncertainties of the excretion pattern of the bacteria. Because this test makes it possible to

distinguish infected from non-infected farms, from now on measures are also distinguished for infected and non-infected farms (MinLNV, 2009e).

Measures infected farms

Measures for infected farms, purposed to limit spreading of the bacterium.

- Current hygiene measures
- Prohibition of animal transports off the farm and use them somewhere else for dairy or for breeding. It is allowed to bring them to the slaughterhouse.
- It is allowed to transport animals younger than four weeks to a fattening farm.
- Infected farms are only allowed to transport vaccinated animals of non-infected farms to their farm (MinLNV, 2009e). From 18th of December all transport of vaccinated and non-vaccinated animals to all farms is prohibited (MinLNV, 2009f)
- Prohibition to visit the farm
- Vaccination against Q-fever (MinLNV, 2009e)

Measures non-infected farms

- No manure or hygiene measures
- No restrictions for transporting animals off the farm
- Vaccination against Q-fever (MinLNV, 2009e)
- From 18th of December all transport of vaccinated and non-vaccinated animals to all farms is prohibited (MinLNV, 2009f)

- The killings of pregnant goats on infected farms started on 21st of December 2009. There is a committee established to check on animal welfare during the clearing of the stable (Vaarkamp and Ohl, 2009). On June 1st the ministers of LNV and VWS reported to the House of Representatives that since May no more farms have been infected. In total there were 88 farms infected (included two dairy sheep farms), 50.319 pregnant animals were killed and 54.293 female animals got a lifelong breeding prohibition. Also 1.530 males have been killed (MinLNV and MinVWS, 2010a).
- On January 19th a committee is formed to evaluate the process and decision-making, by order of the ministers of LNV and VWS (MinLNV and MinVWS, 2010b).
- On July 15th the restrictions of transport to farms and the general breeding prohibition were withdrawn. For animals with a lifelong breeding prohibition it is still not allowed to breed. This prohibition is recorded by the I&R system (MinLNV, 2010a).
- It is not allowed till 1st of June 2011 to have more animals than recorded on November 2009 (MinLNV, 2010a), so a prohibition to grow.
- All other measures are maintained.