

To what extent do actors' individual values and preferences matter in policy processes?

The case of micropollution in the Netherlands

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Abstract

The phenomenon of micropollution increasingly challenges modern societies. This thesis contributes to understand the policy process about the reduction of micropollutants in the Netherlands. The policy process is analyzed from an actor perspective as the applied theory, the Advocacy Coalition Framework, regards actors and their individual belief systems as the main driving force of policy processes. Data collected within a questionnaire from the actors involved are evaluated by conducting a cluster analysis enabling the identification of actors' beliefs and a subsequent Social Network Analysis depicting collaboration-behavior among the actors. The results show that because of the non-advanced stage of the policy process, contrarily to the predicted outcome by the theory, one core coalition only was found containing almost all actors involved. The lack of opposite competing coalitions which usually push policy processes is causing the stagnation in reducing micropollution. The Netherlands play a laggard role in tackling the problem of micropollution not having implemented legally binding measures yet. Besides, there is a need for international cooperation in the field of micropollution to effectively counteract the problem since waters transport micropollution from country to country.

1: Introduction

In modern society plenty of chemicals are utilized to facilitate life as for example fertilizers and pesticides in the agricultural sector, cleaning agents in everyone's households or pharmaceuticals as antibiotics and contraceptive pills. Unfortunately, those substances operate besides their intended place of activity in natural cycles as well (Bundesamt für Umwelt BAFU, 2012). This phenomenon is called 'micropollution' and means concentrations of soiling substances soluted in water about a billionth per gram. Due to these midget potencies, the concentration of micropollutants was under the limit of detection so that the problem of micropollution has not been discovered for a long time although it must exist already for a much longer than its detection 20 years ago (Metz, 2013). Micropollution of surface waters is an explosive topic affecting society as a whole. Especially in the Netherlands, clean surface waters are essential for the abstraction of drinking water. The two main consequences of micropollutants entered into water are persistence and endocrinic effects. Problematic substances stay in the water cycle without any possible withdrawal and at the same time, constantly additional micropollutants enter. Endocrinic effects on organisms' hormone systems have led to stagnation in reproduction of fish caused by feminization of the male fish caused by micropollution e.g. by residues of female hormones contained in contraceptive pills (Oekotoxzentrum, 2012).

Although the problem of micropollution has been recognized for more than ten years now in the Netherlands, no legislative measures are implemented so far in the country to reduce the problem. Therefore, the political process in the Netherlands needs to be analyzed and this thesis aims at understanding actors regarding their positions, activity, importance and participation. Possibly, their behaviour e.g. coalition-forming composes the explaining variable for the lagging role of the Netherlands compared to countries as for example Switzerland and Germany. There are enormous differences in progress between European countries in tackling micropollution. My research will contribute to understand the status quo in the Netherlands and to what extent this is explainable by the country-specific constellation of actors.

It is aimed at understanding the Dutch political process to reduce the problem of micropollution of surface waters from its initiation to the final policy decision. Of special interest are the actors involved in this political process, their individual values and preferences as well as their influence on the process as a whole. Since actor characteristics are regarded as being a possible explaining variable for the shape of a political process or a resulting policy, the guiding research questions throughout the paper are

'In which way can the policy-outcome of the policy process about micropollution in the Netherlands be explained by beliefs of actors involved? And to what extent do actors form coalitions according to their beliefs?'

In order to answer the stated questions, data, collected by a questionnaire and interviews, from the actors involved are analyzed in terms of the actors' individual belief systems and concerning their collaboration behavior with other actors.

This research project is particularly of social relevance. Since the problem of micropollution affects society as a whole, it is in everyone's interest that an effective policy process is going on in order to successfully reduce micropollutants soluted in surface waters. There is a need to tackle the problem of micropollutants as they have several negative consequences e.g. endocrinic effects reducing reproduction of fish already and potentially of humans as well. Therefore, research on this topic and especially on the political aspect contributes to ensure a vital society. Further, the topic of micropollution is not very well known in public and people are not familiar with this problem. Doing research on the political aspect of the topic might help to attract attention of the public being also able to increase awareness of politicians. Regarding the scientific relevance of my thesis, it helps to bridge the gap between the scientific world having clearly indicated the urgency of the problem on the one side and the political world having problems to immediately implement measures in line with the clear scientific advice to tackle the issue. Also an additional case application of the Advocacy

Coalition Framework theory is provided by my research which will demonstrate the possibilities of this framework.

At the beginning, the theory of the Advocacy Coalition Framework composing the theoretical argument of the thesis is described and different policy instruments are presented. In the methodological part the actor identification procedure as well as the methods clusters analysis and social network analysis are introduced. Thereafter, the data set obtained from a questionnaire and composing the empirical side of the research is introduced. Within the subsequent chapters, the case of the policy process to reduce micropollution in the Netherlands is described and the data set is analyzed in terms of actor' belief systems and their collaboration behavior. At the end, observations and findings are discussed and a conclusion is drawn.

2: Theoretical Considerations

2.1: The Advocacy Coalition Framework

The 'Advocacy Coalition Framework' (ACF) developed by Sabatier and Jenkins-Smith is having policy processes as the main aspect of interest (Sabatier & Weible, 2007b). As the policy process of micropollution in the Netherlands is the topic of interest, this theory is consulted to build up a theoretical argument and to understand the process. The approach to which the ACF belongs believes in value differences as the main driving force in policy controversies rather than technical deficiencies (Weible, 2007). The ACF is usually used in order to analyze complex political problems characterized by the involvement of a variety of actors from many different political levels and with existing substantial conflicts or differing beliefs from each other (Sabatier & Weible, 2007a).

It is assumed that political processes are no normalized or standardized procedures. Instead, they are regarded as adjustable and changeable by the influence as for example moral values and priorities of the different actors involved. This clearly indicates a bottom-up approach being used by the ACF. Another assumption made is that because of high complexity of modern policy-making actors need to specialize to be influential to a process. This mentioned specialization takes place within policy subsystems being composed of actors trying to impinge on the policy (Weible, 2007).

Since it is stated that actors matter in policy processes, their beliefs and values are of crucial interest for the ACF. It is supposed that actors have firmly fixed 'deep core beliefs' which are decisive for their individual position-taking. These are ontological and normative values being valid also outside the subsystem. Deep core beliefs of an actor are highly consistent and are consequentially the basis for decisions an actor takes. At a less profound level, 'policy core beliefs' influence an actors' position as well being valid only for one subsystem. They can be normative obligations as e.g. imposed by society

an actor seeks to act in line with (Sabatier & Weible, 2007a). The third component of an actors' belief system are 'secondary aspects'; they apply to a specific issue within the subsystem, as for example mainly the choice of policy instruments. At this belief level, actors are less intransigent than at deep core belief level.

It is their belief system which makes them cooperating and forming an advocacy coalition to achieve their policy objectives. The idea behind coalition-forming is to pool the resources of a group of actors sharing goals and beliefs in order to reach a higher probability to influence the policy outcome (Sabatier, 2011). The policy process itself is mainly regarded as a competition between coalitions which each represent an opinion on the pertaining policy problem. Usually, there are two to four coalitions per subsystem trying to convert actors for their point of view (Ingold, 2007).

From the foregoing, the following assumption can be formulated:

Basic assumption 1: 'Actors involved in a policy process form coalitions based on their beliefs in order to influence the process into the direction they prefer.'

The critical aspect on whether coalitions hold together is the share of similar individual belief systems. Especially similarities on policy core level are determinative on the cohesion of a coalition. Actors belonging to the same coalition are expected to have intersections concerning their convergence/divergence profile meaning that coalition partners mutually agree or disagree with the positions of other actors. Consequentially, actors of the same coalition prefer to cooperate with each other more than with actors from outside the coalition. Besides, there is competition between different coalitions of a policy subsystem. They compete with each other in terms of exertion of influence on the policy process and in terms of membership of important actors (Ingold, 2007).

Based on the previous paragraph, a second assumption can be stated:

Basic assumption 2: 'Actors are more likely willing to cooperate within their coalition than outside of this coalition.'

'Policy-oriented Learning' results from experiences of an actor or new information an actor gets. Within the framework of the ACF, merely secondary aspects are expected to change by Policy-oriented Learning whereas deep-core beliefs and policy-core beliefs are highly resistant to change. However, external perturbations or shocks can result in change of parts of actors' policy core beliefs. The cause of a perturbation might be e.g. a regime change or in case of a shock e.g. a financial crisis. In case of a state of emergency or a completely altered initial position, actors might even change their Deep Core Beliefs (Sabatier & Weible, 2007a). The ACF stresses the importance of Policy-

oriented Learning as an important aspect of policy-change rather than pure competition of interests in which financial resources and institutional rules are crucial (Sabatier, 2011).

Applying the ACF as the main theoretical argument of my thesis, this theory stresses two crucial aspects which I have to find out about my case 'the policy process about micropollution in the Netherlands'. The first is the individual belief systems of the actors involved in the process since the ACF emphasizes the importance of actors' beliefs in decision-making processes. And the second aspect is indicating possible coalitions among a group of actors sharing belief systems. According to the theory of the ACF I can expect to find about two to four coalitions within the subsystem 'micropollution'.

2.2: Policy instruments

'Policy instruments' belong to secondary aspects, according to the ACF. In this thesis they are part of my *dependent variable* 'policy-outcome'. Generally spoken, 'policy instruments' are tools used in order to reach a particular political aim. In other words, they function as a vehicle towards another deliberated situation or state. In case that a policy instrument is applied, one single interference is done by the state rather than accomplishing a longitudinal policy programme or the like. Policy instruments clearly determine rights and duties of all actors and recipients involved (Metz, 2013). They can be classified into categories as follows; the first group consists of regulative instruments, the second contains market-base measures, the third group is comprised of voluntary instruments and the fourth one of structural actions. Regulative instruments can be prohibitions preventing undesired behaviour, standards constituting criteria, norms defining thresholds or licenses providing rights (Mickwitz, 2003). In the field of micropollution, defining a threshold for the usage of problematic pesticidal agents utilized in the agricultural sector or imposing a ban of toxic substances contained in cleaning agents are examples of regulative instruments. Within the category of market-based instruments there are charges breaking even, levies being disincentives, taxes generally generating state revenues or subsidies supporting financially. A charge levied on problematic substances of cosmetics could be imposed as a market-based instrument in the policy field of reducing micropollution making the usage of such ingredients economically unattractive. The category of voluntary instruments consists of public programs providing information, public-private partnerships self-committing to fulfill obligations or completely voluntary measures of actors from the private sector or civil society (Metz, 2013). Concerning the reduction of micropollution, voluntary instruments are for example the set-up of an information campaign for farmers on the correct and efficient use of fertilizers enabling a minimization of utilizing such substances or a self-commitment of cosmetic-producing companies to forgo polluting substances in the production of cosmetics. The

group of structural instruments contains structuring/re-structuring to accomplish requirements for the actual modification or process control by imposing a certain procedure. The formation of expert groups or water agencies dealing with micropollution as well as the obligation of river basin plans or the registration of polluting products are possible structural instruments in the field of micropollution.

An environmental policy instrument needs to fulfill the following criteria of effectivity; relevance, impact, effectiveness, persistence, flexibility and predictability (Mickwitz, 2003). The implementing actors of a policy need to make sure that the instrument used tackles a relevant problem, that it has a significant effect which should hold on over a certain period of time, that it is capable to adapt to changing conditions and that its effects and consequences can be predicted and directed (Mickwitz, 2003).

3: Methods

3.1: Way of Proceeding

First of all, the Dutch policy process about micropollution from agenda-setting to the current situation needs to be understood. Getting the policy process as a whole is crucial for any further analysis. Secondly, in line with the applied theory of the ACF in the thesis, the actors involved in the Dutch policy process about micropollution of surface waters need to be identified. The ACF states that actors and their beliefs are central in policy processes and determine the shape of resulting policies. In order to do so, there are three different approaches used the positional, the decisional and the reputational one.

After having indicated the actors involved in the studied policy process, information about their individual belief systems are needed. For this purpose, I worked on a dataset about the actors' belief systems and their opinions on different policy instruments being collected by semi-structured questionnaires and partially by in-person interviews. I was very much involved in the administration and construction of the questionnaires, while another researcher did the in-person interviews. Actors separately are asked about their individual values concerning micropollution and their preferred policy instrument to tackle the problem. According to the answers given, a cluster analysis is carried out arranging the actors according to their standpoints in a coordinate system. On this basis, possible actors' coalitions can be indicated.

Additionally, a Social Network Analysis is accomplished illustrating relations between the actors as well as their positions within the social fabric of Dutch actors in water management. To carry out the

analysis of the network, data about the actors' coalition behavior from the questionnaire are interpreted. In the questionnaire the respondents are asked to indicate all actors they collaborate with; based on their answers, a network is modeled illustrating interactions between the actors of the network. The SNA enables a comparison between the values of the actors and their actual relations and cooperation behaviour in practice.

The main threat to my research project is that actors could not tell their 'real' beliefs. This bias might occur either by misinterpretation of the questions or that by strategic reasons actors do not want to surrender their convictions. Besides, important values playing a crucial role in an actor's belief system might not be mentioned and controlled for in the questionnaire which could distort the findings of my research. However, the questionnaire is constructed in line with the listed values of Paul Sabatier, the founder of the ACF theory.

3.2: Actor identification

In order to identify the actors involved, there are three different approaches to do so; the positional, decisional and reputational one. Each of them helpful to recognize a particular group of actors (Varvasovszky & Brugha, 2000). The *positional approach* is based on structures given by the political system and its institutions, organizations and procedures. When applying this method, the system and structures constitute the initial point from which the analysis is accomplished. The main idea behind this approach is that structures do impose an actor's role and relevance within a certain area of interest. This way of analyzing actors is appropriate to indicate actors with authority (Pappi & Henning, 1998). Other actors being influential within a policy process as well can be covered by applying the *decisional method*. The decisional approach has the actual policy process at its core. By analyzing and pursuing the policy process of interest, actors playing an active and influential role are identified. This method covers actors of importance not being defined by political structures imposing relevance per se to certain actors. The third strategy of analyzing actors is the *reputational approach*; its way to identify actors is their system participation. When applying this approach, actors involved in the policy process are asked about which other actors they would regard as being important or influential to the process (Pappi & Henning, 1998).

All three approaches of actor identification are used in this thesis. The positional is applied by analyzing Dutch water management structures. Actors are identified having competences within the field of water administration in the Netherlands. The decisional method is adapted by thoroughly tracing the Dutch policy process against micropollution from its initiation to the final policy decision. Organizations playing a role within the process are regarded as being relevant actors for the analysis

of this thesis. The reputational approach is firstly applied by a preliminary interview with the Union of Waterboards (UvW) and as well within the framework of the questionnaire sent to the actors identified by the two other identification approaches. The questionnaire asks the respondents to name the organizations they regard as being essential to the policy process.

3.3: Cluster analysis

The method of cluster analysis originates from the 1930s and was developed for theory classification in psychology research. Cluster analysis aims at indicating groups out of many data objects. Such groups shall be as similar as possible to each other and as distinctive as possible to data belonging to other groups. The classification into groups is called 'clustering' and done by using variables differing among the data and thus distinguishing different data groups. Cluster analysis can either be used to indicate an already existing structure within the data or to split up a rather homogenous set of data imposing a certain structure on it (Kaufman & Rousseeuw, 2009).

Up to three-dimensional analysis, clustering can be done in a subjective manner using the human eye to distinct data groups plot in a coordinate system. In case of multi-dimensional analysis, objectivity standards need to be applied called automatic classification standards being adopted by automatic classification procedures. There are several different cluster models for each of them different algorithms can be given. The most adopted ones are connectivity models, centroid models, distribution models or density models (Kaufman & Rousseeuw, 2009).

In this thesis, the cluster analysis is used in order to position the actors according to their statements concerning certain beliefs of the topic of micropollution within a coordinate system. Actors are asked about their positions concerning various different dimensions and characteristics of policy instruments to reduce micropollution. In my case, firstly the beliefs source-directed versus end-of pipe are opposed to each other. While 'source-directed' means trying to basically avoid pollution of water, 'end-of-pipe' considers the extraction of pollutants from the water (Metz, 2013). Believing in source-directed measures can signify a ban of substances to change the composition of chemicals or a so-called 'best environmental practice' advising how to use problematic substances in the most environment-friendly way. Also particular substances or products can be charged following the principle of the-polluter-pays, besides, 'good/green' behaviour can be subsidized or information campaigns can be run to reduce pollution. Believing in end-of-pipe measures can signify the usage of the best available technique to filter wastewater, introducing a fee on wastewater to cover costs for the purification of water or to subsidize costly improvements of wastewater treatment and to charge effluents aiming at behavioural changes. (Metz, 2013).

Secondly, the beliefs 'environmental relevance' and 'cost efficiency' are opposed to each other. This rather classic combination is already known from other cases besides micropollution. It enables to weigh the relevance of the environment up against the economic aspect of cost-efficiency. Thirdly, the beliefs 'non-preventive/tentative strategy' signifying the opinion to wait with policy measures until the impact of micropollution is fully understood and 'cost-efficiency' are combined. This combination of beliefs matches in such a way that favoring a tentative strategy is at the same time cost efficient as no action-taking does not cost any money.

The actors' positions on the different beliefs, listed previously, are the distinctive factors to indicate and distinguish different groups of actors. Technically, the cluster analysis will be carried out by drawing two-dimensional graphs in the excel program plotting one dimension on the x-axis and the other one on the y-axis.

3.4: Social Network Analysis

Social Network Analysis (SNA) is a methodological tool to quantitatively examine relationships and interactions of social units (Serdült, 2002). Understanding the construct of society and the structures or types of interactions is the main aim of Social Network Analysis. Concerning policy networks, SNA enables the identification of actor coalitions by analyzing interactions among the actors involved. By providing detailed information about the kind of relationships, boundaries of coalitions can be identified and actors can be assigned to coalitions.

Determining the reputational power of different actors is one way of distinguishing important actors from those playing a rather marginal role within the topic of interest. The identification of an actors' influence reputation is also called 'reputational approach' in actor identification. Actors receive a preliminary list of all actors known within a certain field of interest and are asked to identify those they regard as being important or influential. By this procedure, boundaries of the network can be defined in a subjective manner by the researcher.

Social Network Analysis provides centrality measures to identify powerful and influential actors. Centrality is represented by the measurements of degree and betweenness. Degree centrality regards the most active actor of a network as being central and indicates the number of direct relationships of this actor to all other actors of the network. Degree can be divided into outdegree centrality indicating the activity of an actor illustrated by outgoing arrows from the actor and indegree centrality indicating the power of an actor visualized by incoming arrows to the actor. Studying betweenness centrality, an actor being positioned between actors is of special importance

since he is able to control the relationship of other actors. Therefore, betweenness centrality measures how often an actor is positioned between others (Lang & Leitfeld, 2008).

Besides, Social Network Analysis provides the density indicator comparing all theoretically possible relations among a network's nodes with the actual relations within a network. The degree of density can vary between 0 and 100%, meaning that there are no interactions at all at a density of 0% and that all actors do have a direct relationship with each other at a density of 100% (Serdült, 2002). While density is an indicator referring to the whole network, centrality refers to a single node within a network.

3.5: Data collection

3.5.1: Questionnaire

The questionnaire about the policy process concerning micropollution in the Netherlands is the central instrument of the research project. Technically, the questionnaire consists of 12 main questions with additional sub questions. The answer possibilities per question compose Likert Scales with four different answer possibilities excluding a middle category. These four different answer possibilities force the respondent to take a stand and prevent undeliberated neutral answers. This procedure is appropriate since exclusively actors are responding to the questionnaires that were indicated as participants of the policy process. Therefore, it can be assumed that every respondent is familiar with the topic and has formed an opinion. Additionally, the questionnaire provides space for comments or further remarks of the respondents enabling actors to unambiguously point out their positions. By applying Likert Scales, it is possible to get quantitative data out of qualitative statements enabling an uncomplicated comparison of the different actors. The respondents of the questionnaire are organizations meaning that no individual persons are considered by the research project. Among the respondents, different groups of actors can be indicated representing different parts of society and being affected by the problem of micropollution or vice versa by measures against it. Actors are divided into the following categories: public actors at national level, provinces, municipalities and waterboards, parliament and political parties, agricultural, economic, health, water, environmental and consumer associations as well as research and consultancy¹.

¹ See also chapter 6.1 about Actor Categories.

To operationalize the independent variable 'actors' beliefs', a question containing five statements concerning characteristics of different policy instruments is considered. The respondents are asked to give their level of agreement with the following four statements:

Measures should address the sources of pollution,

Measures should be end-of-pipe,

Preventive measures should be taken to reduce potential risks for humans and the environment,

It is reasonable to wait with policy measures until the impact of micropollution is fully understood,

The financial burden for adopting measures to reduce pharmaceutical micropollution in waters is too high.

When evaluating the questionnaires, the levels of agreement with the statements code several beliefs; the first is directing the *source of pollution* implicating the conviction that micropollution as such is not acceptable and should be averted at all. The second belief is *end-of-pipe* stating that micropollution itself is not condemnable and a phenomenon of modern society but micropollutants should be extracted subsequently from waters. Besides, both statements code the actors' preferences about the *level of state intervention* in the field of micropollution since the implementation of such policy instruments would be conducted by the state. The third statement indicates the belief and the relevance of *environmental aspects* to the actors responding to the questionnaire indicating to what extent actors regard the environment as worth protecting. The fourth belief is the *non-preventive/tentative strategy* reflecting the opinion that action is not urgently needed or that consequences and effects known so far are bearable and that hasty action-taking might lead to making mistakes. The fifth belief is *cost-efficiency* reflecting the relevance of minimizing costs to the actors and illustrating pragmatism in dealing with micropollution.

To operationalize 'coalitions' a question from the questionnaire is used indicating the actors' cooperation behavior. The respondents are asked about other actors they cooperate with. A pre-defined list of actors is provided listing all identified actors playing a role in the policy process thus far. In addition it is also possible to add other actors. The respondents are requested by: *Your collaboration with others, please check all the actors with whom your organization has closely collaborated during the policy process on pharmaceutical micropollution.* The data obtained by this question provide sufficiently information in order to carry out the Social Network Analysis afterwards.

Using both data collection methods of interviewing and surveying is appropriate in the case of the policy process to reduce micropollutants since these successfully can identify the convictions and preferences of the actors being relevant in the policy process. For pragmatic reasons, only the expected ten most important actors were interviewed while all other actors' opinions were

requested by the questionnaire. Actors were individually asked about their beliefs without other players being present who could interfere and influence the answers given by the actor of interest. The combination of both-, interviewing and surveying, reduces the probability of misinterpreting answers.

3.5.2: Data set

It is worked with a data set consisting of 13 answered questionnaires. 10 of those were filled in within the framework of in-person interviews; the other three are returned questionnaires from contacted actors. The response rate of the overall 49 identified and contacted actors is 50.5% calculated by applying the criteria of the American Association for Public Opinion Research (The American Association For Public Opinion Research, 2011). In order to receive answered questionnaires from the actors not being interviewed in-person, questionnaires were sent by post for the first time and subsequently via email. In regular time intervals they got two email reminders as well as two telephonic reminders.

4: Case: The policy process about micropollution in the Netherlands

The policy process about micropollution in the Netherlands that has taken place so far evinces several phases: a very first trigger phase, a concept phase and a parliamentary phase. According to Pappi, König and Knoke, policy processes can be divided into sub phases as previously stated differing slightly from country to country due to individual national legislative procedures (Pappi, König, & Knoke, 1995). The trigger phase (1997-2002), is the starting point of the policy process. During this phase, the problem of micropollution is identified and recognized. However, at this stage many uncertainties about the phenomenon of micropollution exist and there is no common strategy against micropollution known yet. During the trigger phase, the parliament (Tweede Kamer) concerned a request to the minister of environment about possible risks of hormone active substances in the environment in 1997 (RIZA Institute for Inland Water Management and Waste Water Treatment, 2002). As a reaction, hormonal active substances were added to the strategy 'Strategienota Omgaan met Stoffen' aiming at correct and safe usage of chemical substances to protect humans and the environment in 1999 (RIZA Institute for Inland Water Management and Waste Water Treatment, 2002). Central within the trigger phase was a report by the Dutch health council "Milieurisico's van geneesmiddelen" in 2001 pointing out problematic effects of pharmaceuticals on the environment (Gezondheidsraad Nederland, 2001). The report of the health

council was followed in 2002 by a report of RIZA institute (Rijksinstituut voor Integraal Zoetwaterbeheer en Afvalwaterbehandeling) about estrogens entering the water cycle (RIZA Institute for Inland Water Management and Waste Water Treatment, 2002).

During the concept phase (2001-2013), the search for appropriate measures against the problem of micropollution is central and awareness of the problem increases continuously. In 2001, an interdepartmental working group (Interdepartementale Werkgroep (Dier)Geneesmiddelen in het Watermilieu) was formed to develop measures reducing emissions from pharmaceuticals into Dutch surface waters. The working group consisted of the ministries VROM, V&W (both today IenM) and LNV (these days Economische Zaken), the research institutes RIVM (Rijksinstituut voor Volksgezondheid en Milieu, Rijkswaterstaat these days), RIZA and RIKZ (Rijksinstituut voor Kust en Zee, Rijkswaterstaat these days) and the College Beoordeling Geneesmiddelen (College for the assessment of pharmaceuticals) (Tweede Kamer, 2005). In 2007, the results and measures developed by the working group on pharmaceuticals are reported to the parliament (Staatssecretaris van VROM, 2007). Among other recommendations, for example are: the usage of pharmaceuticals shall be more purposefully, doctors shall consider the environmental impacts when prescribing a medicine or highly burdened urine and wastewater of hospitals shall be collected and disposed separately. Further, the working group advises the pharmaceutical industry to invest in Green Pharmacy, biodegradable medicines.

In 2010, Vewin, an association of actors being involved in Dutch water management, published position papers calling for progress and increasing efforts in reducing micropollution (Vereniging van Waterbedrijven in Nederland (VEWIN), 2010). The first motion of the policy process was handed in at March 25, 2010 by the green party (Groenlinks) promoting end-of-pipe measures to filter wastewater (Staatssecretaris van Infrastructuur en Milieu, 2012). In September 2012 and June 2013 letters to the Parliament were sent by the State Secretary of infrastructure and environment (Infrastructuur en Milieu). The first letter presents three different strategies to reduce pharmaceuticals in waste water: *the burden approach* (Vrachtenbenadering) implies an additional cleaning process within the purification water treatment, *the concentration approach* (Concentratiebenadering) limiting the additional cleaning step to purification plants discharging into small surface waters and *the separate collection of waste water* being highly contaminated with pharmaceuticals from for example hospitals or special-care homes (Staatssecretaris van Infrastructuur en Milieu, 2012). The second letter reported the reduction of pharmaceuticals entering the water cycle of about 49% by applying measures developed by the working group on pharmaceutical reduction in 2007 as outlined previously. However, the letter also called for additional measures against micropollution and

pointed out that there are far more micropollutants than exclusively pharmaceuticals (Staatssecretaris van Infrastructuur en Milieu, 2013).

In 2013, the policy process against micropollution entered the parliamentary phase. At this stage, the topic is of such an interest, that the parliament gets involved and elaborates the topic. Continuously, also position papers of expert organizations are published at this stage. On June 27 2013, micropollution was firstly discussed within the context of a parliamentary meeting of the committee for infrastructure and environment; the assessment of pilot measures against micropollution of surface waters was part of the agenda (Tweede Kamer, 2013b). Besides, two motions concerning micropollution from the party 'ChristenUnie' were discussed at this meeting calling for environmental quality standards setting limits on the concentration of pharmaceuticals in surface waters and the need for progress in the implementation of the European Water Framework Directive (2000/60/EC) (Tweede Kamer, 2013a). On January 30 2014, a first parliamentary hearing within the framework of a round-table conference took place. There were politicians as well as state actors and experts present at this meeting (Tweede Kamer, 2014). Both, source-directed measures (brongerichte aanpak) as well as end-of-pipe measures (maatregelen in de afvalfase) were discussed at the conference.

Since the opening of the policy process more than ten years ago, the process went on continuously. However, no legally binding measures are implemented by now; but parliamentary actors are still working on problem definition characterizing the early stage of development of the policy process.

5: Analysis

5.1: Actor Categories

There are 12 actors in total that responded to the questionnaire and whose answers are the basis on which conclusion can be drawn. Those actors can be classified into different actor groups as demonstrated in the table below.

Table 1: Actor Categories

Actor Category	Number	Actors			
National	4	Gezondheidsraad	IenM	RIVM	RWS
Waterbords	1	UvW			
Parliament, Parties	0				
Agricultural Associations	0				
Pharmaceutical/Economic Sector	2	BOGIN	Nefarma		
Water Associations	3	RIWA	VEWIN	Vitens	
Environmental Associations	1	WWF			
Consumer Associations	0				
Research, Consultancy	2	KWR	STOWA		

(The official/complete names of the actors are listed in the attachment.)

However, respondents are not equally divided among the different groups of actors. Whereas there are several actors representing the actor categories of national actors, the pharmaceutical sector, water associations and the research and consultancy group, there is only one actor representing the environmental associations and the subnational waterboards which are represented by their national association the UvW. Further, actors belonging to the parliamentary group, agricultural associations, economic associations and consumer associations are not represented at all among the respondent group. By applying all three approaches of actor identification, all 49 indicated actors within the policy process of interest belonging to the listed actor groups were contacted and asked to fill in the questionnaire. Due to the limited response rate, not all actor groups can be considered. Especially in the case of the parliamentary group it is awkward that there is no respondent representing the group as a policy process is crucially shaped by parliamentary actors. However, other key actors did respond as for example state actors as the IenM or waterboards as the UvW and the pharmaceutical sector.

5.2: Participation in the Policy Process

The following table shows in which phase of the policy process the different actors participated thus far. The table is created on the basis of the actors' individual statements about their participation in the questionnaire. The respondents are asked to indicate the phases in which their organization participated during the policy process to reduce micropollution. Besides crossing different listed

phases of the policy process, actors could declare their involvement and contribution to the reduction of pharmaceuticals in any other way as well. Another answer possibility was to state that the responding organization was not involved at all.

Literally, the respondents were requested as follows; „*The following table summarizes the ongoing policy process since 1997 during which measures for the reduction of pharmaceutical micropollution have been developed. In which phases of the process did your organization participate? Please check all phases in which your organization participated. Participation is defined as: being actively involved in and contributing to research or implementation; participating in working groups, workshops or informal consultations.*”.

Table 2: Participation in the Policy Process

Trigger P.	Concept P.	Parliamentary P.	Research	Other steps	No Participation
-	-	BOGIN	BOGIN	BOGIN	-
Gezondheidsraad	-	Gezondheidsraad	-	-	-
IenM	IenM	IenM	-	-	-
KWR	KWR	KWR	KWR	-	-
-	Nefarma	Nefarma	-	-	-
-	RIVM	-	RIVM	-	-
RIWA	RIWA	RIWA	RIWA	RIWA	-
RWS	RWS	RWS	RWS	RWS	-
-	STOWA	-	-	-	-
-	VEWIN	VEWIN	VEWIN	-	-
-	-	-	-	WWF	-
Not Answered: UvW, Vitens					

(The official/complete names of the actors are listed in the attachment.)

Besides participating in one of the stages of the policy process, actors could also declare that they contributed to further knowledge about micropollution, that they participated in other steps than listed in the questionnaire or that they did not participate at all. There are two actors, UvW and Vitens, which did not answer this question. This is especially awkward in the case of the association of Dutch water boards UvW as this is one of the key actors having important competences in the field of water pollution. However, the document analysis about the policy process has shown that the UvW was involved during the concept phase as well as during the parliamentary phase.

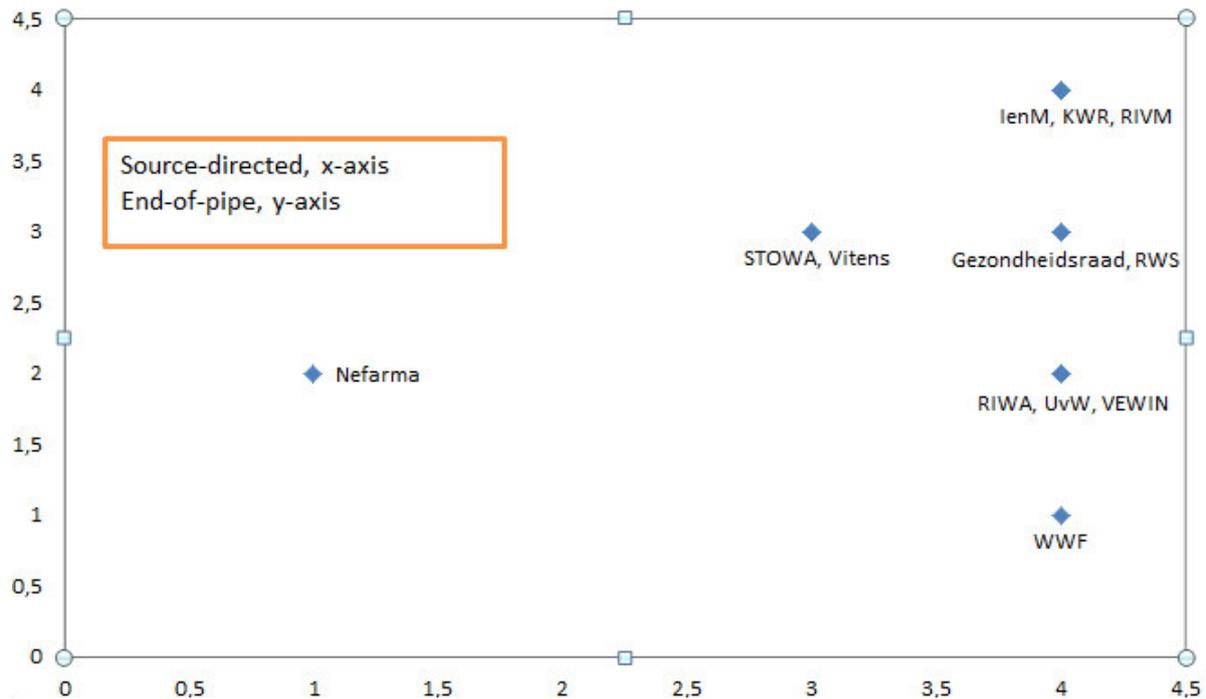
The group of national actors is represented during all stages of the process, mainly by the ministry IenM and RWS. The participation of this actor group is important since the belonging institutions already have experiences with the treatment of environmental problems and its actors are closely connected with the parliament where acts and laws are passed. Also the water sector participated continuously in the process represented by RIWA and VEWIN. The actor group doing research on the topic of micropollution was represented at all stages of the process as well. Consequentially, it can be assumed that scientific knowledge about the problem was accessible for all participating actors

during the process. The pharmaceutical sector did not participate during the trigger phase of the policy process implying that putting the topic on the agenda was not of the group's interest. Further, none of the respondents declared that he did not participate at all which approves the previous actor identification.

5.3: Assessment of Measures

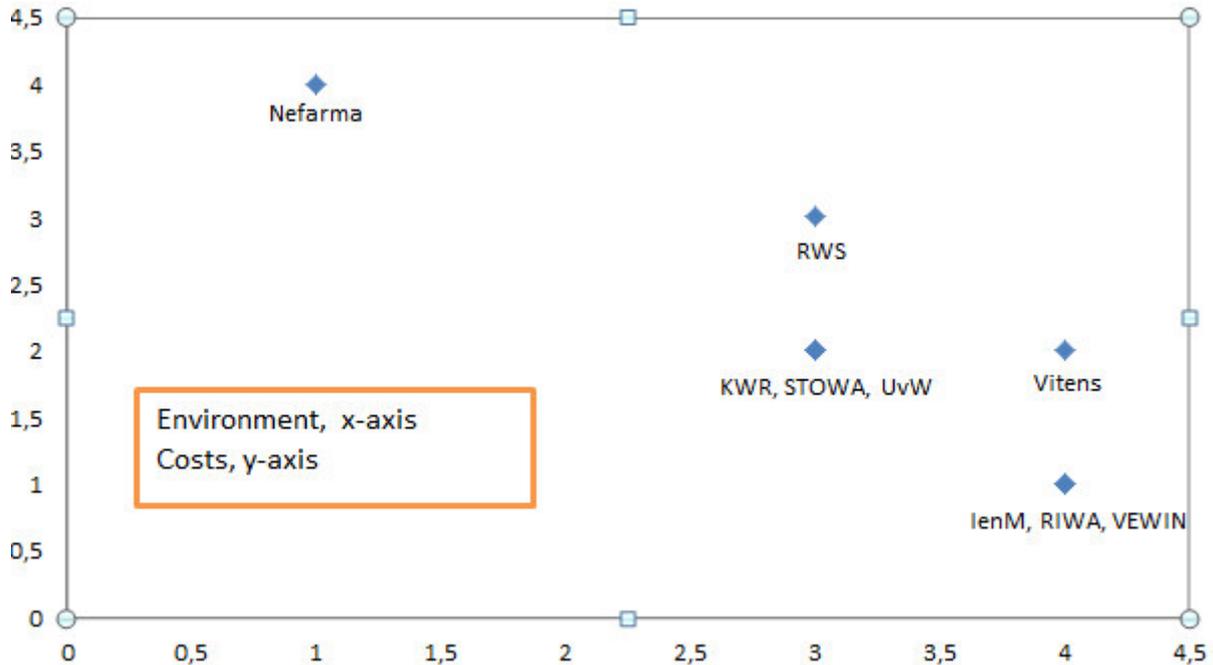
One of the questions in the questionnaire concerned different kinds of measures against micropollution and their characteristics correlating with the actors' beliefs in this case. Actors were asked to what extent they believe in source-directed instruments and to what extent they believe in end-of-pipe instruments. Reaching a decision about appropriate instruments is fundamental in tackling the problem.

The *first graph* below shows the actors' assessment of source-directed measures on the x-axis and their assessment of end-of pipe measures on the y-axis. One outlier, Nefarma, can be identified ranking both end-of-pipe and source-directed instruments relatively low. Other actors stated that both ways of reducing micropollution are valuable as IenM, KWR and RIVM. These actors are willing to apply all measures at disposal against the problem of micropollution. Additionally, the interviews have shown that those actors support both approaches source-directed and end-of-pipe; which of the two is best applicable depends from their point of view on the concerned substance group. Further, there are actors preferring source-directed strategies as the WWF and UvW. Actors taking this position might either think that implementing both measures against micropollution is not feasible or that end-of-pipe measures are not effective compared to source-directed ones.

Graph 1: Source-directed versus end-of pipe measures

Not answered: BOGIN

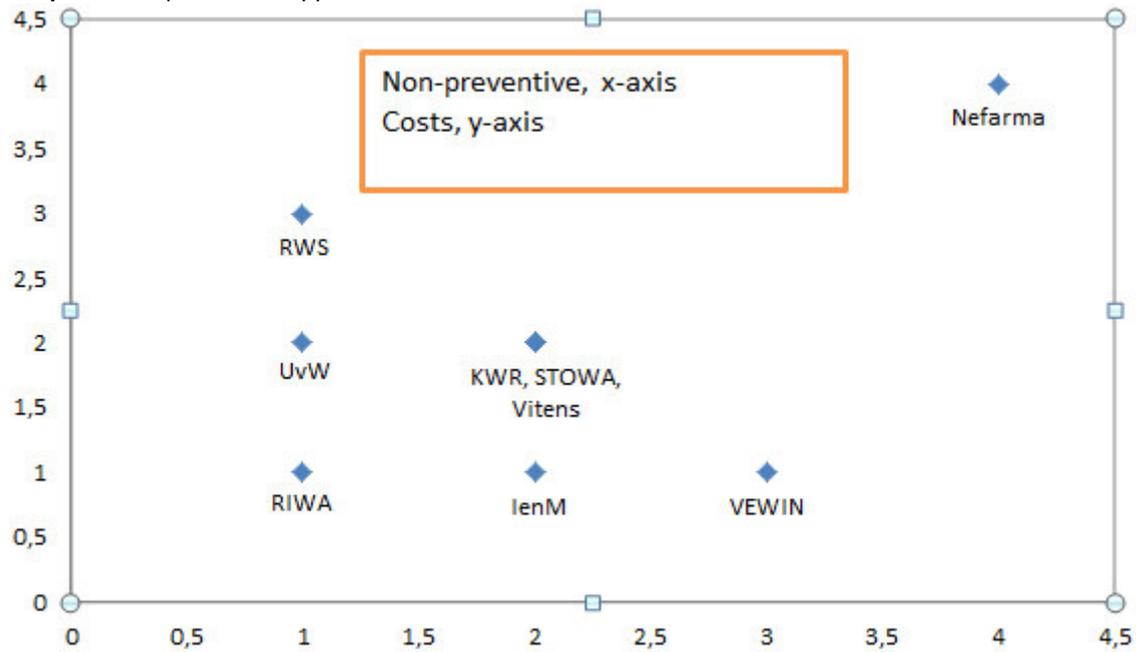
The *second graph* opposes the actors' positions on environmental aspects on the one hand side and their positions on cost efficiency on the other. In the questionnaire, actors were asked about the relevance of those two aspects concerning possible measures against micropollution. There are two very opposite positions among the actors: Nefarma representing the pharmaceutical sector ranking environmental aspects low (strongly disagree) and cost efficiency high (strongly agree) and IenM, RIWA and VEWIN representing the group of state actors and water associations ranking environmental aspects high (strongly agree) and cost efficiency low (strongly disagree). Another distinctive position is taken by RWS from the group of state actors ranking environment and costs equally. Besides the two opposite positions, most actors consider both aspects as being relevant. According to this position, a policy instrument needs to cope with both demands. Consequentially, micropollution cannot be debated without considering financial aspects.

Graph 2: Environmental aspects versus costs

Not answered: BOGIN, Gezondheidsraad, RIVM, WWF

The *third graph* shows actors' opinions on two rather similar dimensions: non-preventive or tentative strategy on the x-axis versus cost efficiency on the y-axis. Actors were asked about whether it is reasonable to wait with the implementation of measures and about the relevance of cost efficiency concerning policy instruments against micropollution. Again, Nefarma as being part of the pharmaceutical sector takes an outlier position ranking waiting and costs efficiency high (strongly agree). Actors representing the actor group of water associations take quite various positions: RIWA ranks both dimensions low (strongly disagree) stating that neither costs nor imperfect knowledge about the problem are reasons against action-taking, VEWIN on the contrary ranks a tentative strategy rather high (agrees somewhat) and costs low (strongly disagree) as well, Vitens takes a position in between. Also the group of state actors is divided over the rating of the two dimensions: RWS ranks the aspect of cost efficiency quite high (agrees somewhat) and the aspect of imperfect knowledge low (strongly disagree), IenM however, believes that adopting measures at reasonable costs is possible (strongly disagree) and the aspect of imperfect knowledge as slightly important (disagrees somewhat).

Graph 3: Non-preventive approach versus costs



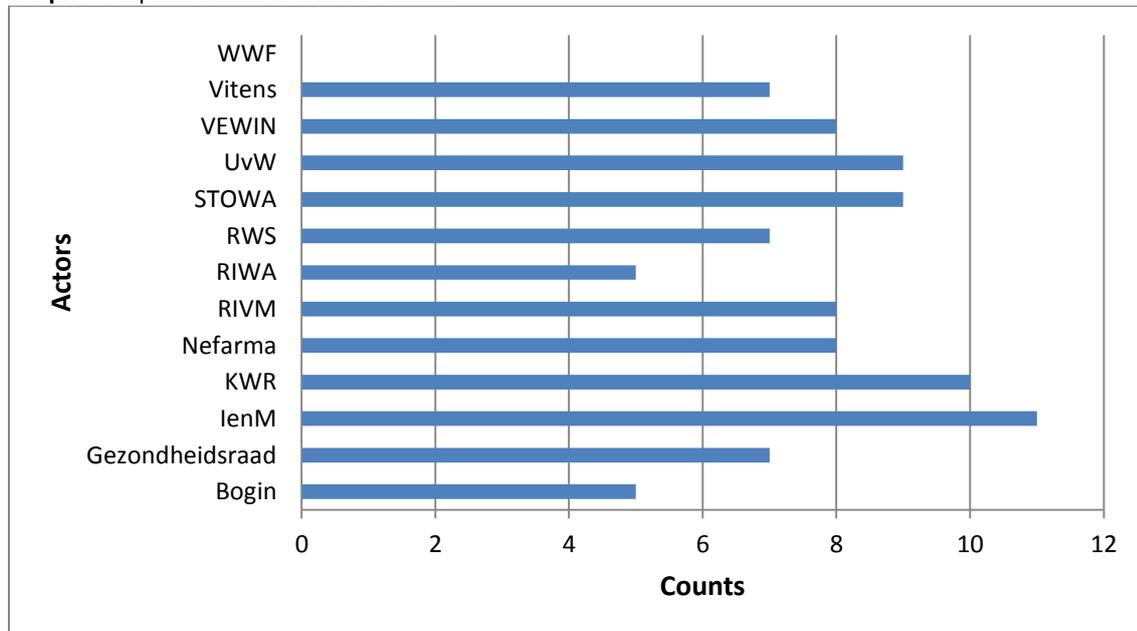
Not answered: BOGIN, Gezondheidsraad, RIVM, WWF

Altogether, the actors from the pharmaceutical and economic sector represented by Nefarma clearly take an opposite position to the rest of the actors from the groups of national actors, water associations, research and consultancy and environmental organizations. Besides, also actors belonging to the same group of actors differ in beliefs and values.

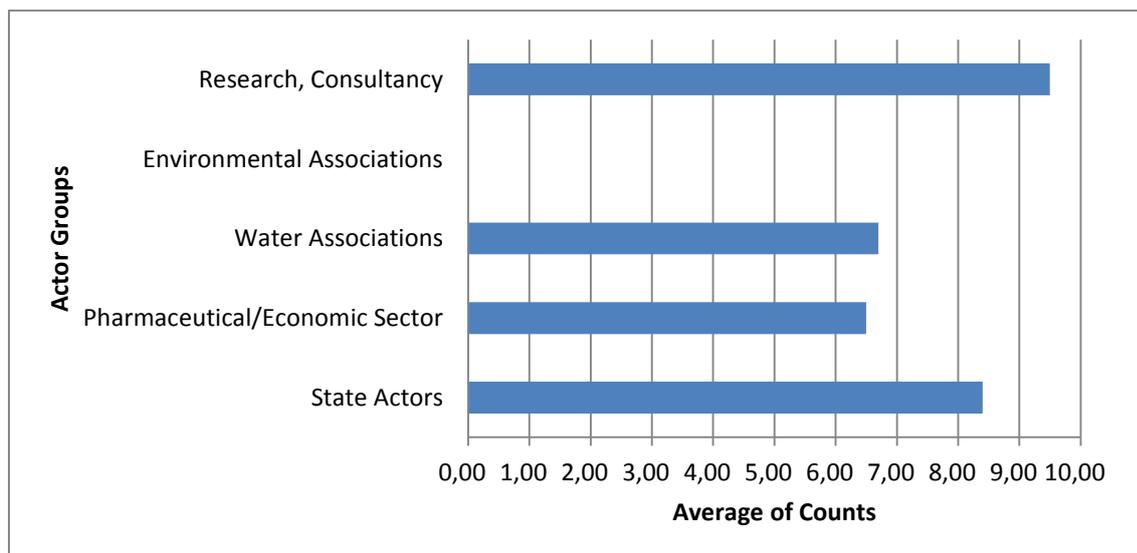
5.4: Importance of Actors

The graph below illustrates the importance of actors measured by asking respondents of the questionnaire to mark listed actors they regard as being important within the policy process about micropollution. Consequently, the reputation of an actor is indicated by the quantity of marks he got from other respondents.

Graph 4: Importance of Individual Actors



Graph 5: Importance of Actor Groups



From the graphs it can be seen that the environment department IenM (11 marks out of 12) is regarded as the most important actor within the Policy Process. Other state actors got relatively high estimations as well; RIVM (8), RWS (7), Gezondheidsraad (7). Also the estimation of the water boards' importance is in line with these values, UvW (9). Besides, the actor group doing research and

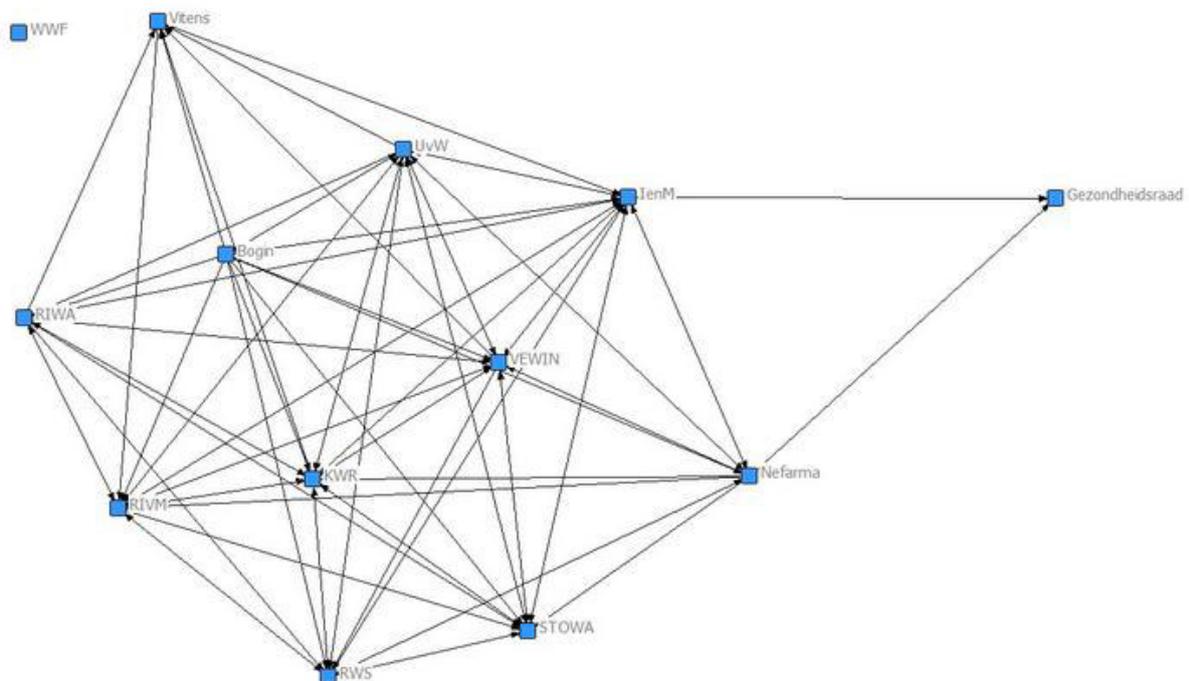
consultancy is rated highly; KWR got the second highest value (10) and STOWA was marked nine times. The actor group of water associations got the lowest results; RIWA (5), VEWIN (8) and Vitens (7) signifying little influence on the process. When regarding actor groups, actors belonging to the research and consultancy group are regarded as being the most important followed by actors from the group of state actors.

There can be no clear correlation indicated between intensity of participation within the policy process and the reputation of an actor as it is demonstrated in the case of RIWA ranked as the least important actor but participating in all stages of the policy process and in the case of RIVM scoring high in terms of importance but participated during the Concept Phase only.

5.5: Collaboration of Actors

The following graph illustrates the collaboration between different actors of the policy network. It can be seen that the WWF is the only actor not having any connections with other actors of the network. And also Gezondheidsraad is an outstanding actor having very few interactions with others. This means that those two actors, Gezondheidsraad and WWF, are not integrated in the network.

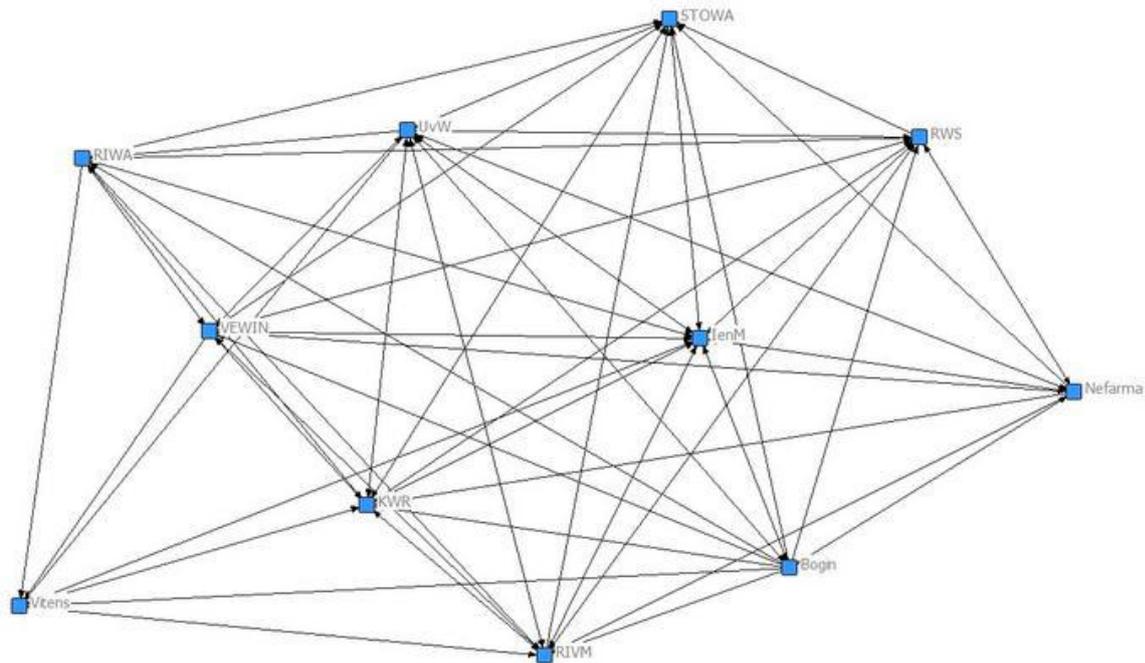
Graph 6: Collaboration within the Network



When excluding the two non-integrated actors, a core network remains demonstrated by graph 6. Within this network, all actors are densely related with each other. The illustration of the core network only enables the identification of possible different opposed actor coalitions. However, in the case of the policy network about micropollution there is rather one big coalition containing all

actors than predicted by the ACF two to four smaller differing coalitions. Regarded as a whole, all actors within the core network are densely related with each other either directly or via another actor in between. However, two actors do have a special role Vitens and IenM; the environment department is very central in the network staying directly in contact with many actors and acting as intermediary between other actors as well and Vitens is the most outstanding actor of the network having least connections.

Graph 7: Collaboration within the Core Network



The table below shows the actors' values of centralities within the policy network. The first column lists the actors' betweenness centralities being an indicator of the importance of an actor (see chapter 2.2.3.). The protruding actor within this category is IenM, the environment department having a betweenness centrality of 27, 66. This means that IenM is the most important mediator between other actors and has most opportunities to influence relationships between other actors. All other actors besides IenM score relatively low implying that they rarely function as intermediate actors between others.

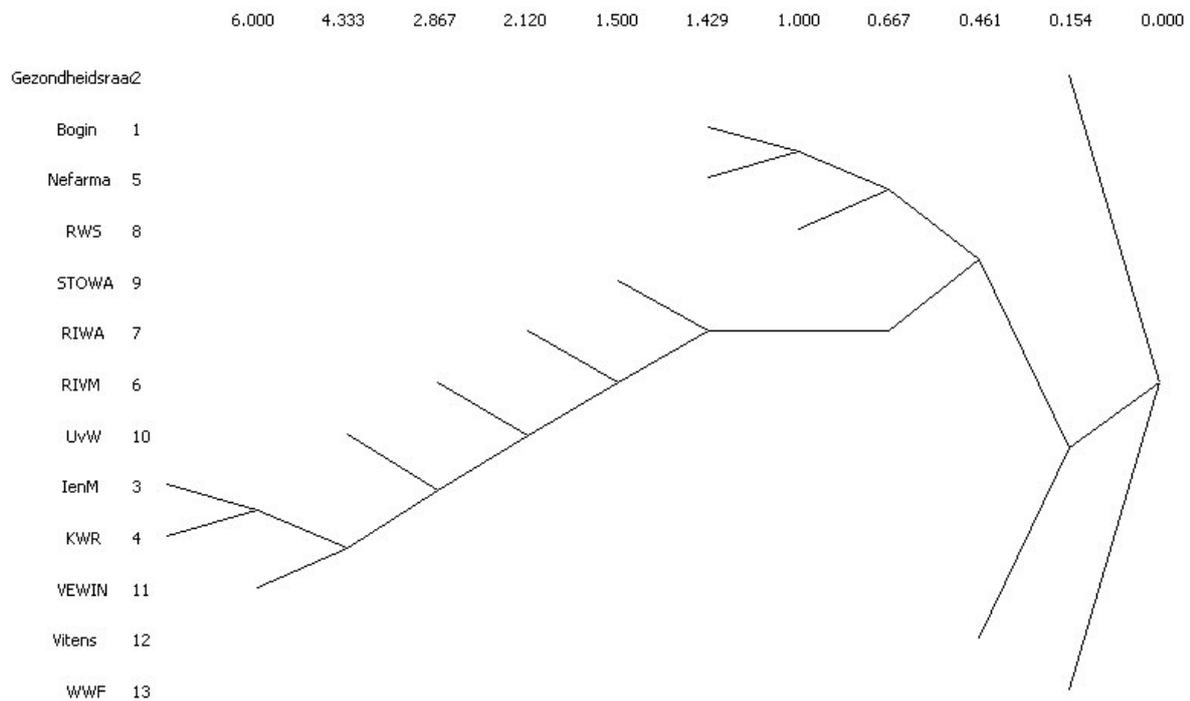
The second column describes the actors' outdegree centrality reflecting an actor's activity within the policy network. Generally, there are less huge differences among the group of actors than in terms of their betweenness centrality; the four most active actors are IenM, UvW, BOGIN and Nefarma two state actors and two actors representing the pharmaceutical sector. The most inactive actors within the network are WWF, Gezondheidsraad and Vitens.

Within the third column the actors' indegree centralities are listed reflecting their power within the network. The most powerful actors are IenM and RIVM two state actors and KWR and STOWA from actor group of research and consultancy. The least powerful actors are again WWF and Gezondheidsraad and Vitens as well.

Table 3: Overview Centralities

	Betweenness Centrality	Outdegree Centrality	Indegree Centrality
BOGIN	0,343	10	3
Gezondheidsraad	0	1	2
IenM	27,66	11	11
KWR	4,16	8	10
Nefarma	3,233	9	5
RIVM	2,66	7	9
RIWA	0,8	7	7
RWS	0,833	5	8
STOWA	0,993	5	9
UvW	3,81	10	7
VEWIN	2,51	9	8
Vitens	0	3	6
WWF	0	0	0

The graph below is another way of presenting the findings from the network. It is composed as a pedigree and shows the closeness of collaboration between the actors of the network. IenM and KWR are at the very beginning of the pedigree since they have the most common relations. The most remotely positioned actors of the network are located at the end of the pedigree. The pedigree mainly has two different branches with two different actor groups; the first consists of the state actors IenM, UvW and RIVM, the actors from the research group KWR and STOWA and from the group of water associations VEWIN and RIWA, the second group consists of actors from the pharmaceutical sector BOGIN and Nefarma and RWS from the state actor group.

Graph 8: Cluster Depiction of the Network

6: Discussion and Interpretation of the findings

The results from the analyzing part have given various insights into the actors' opinions and their collaboration behavior within the policy process. Comparing these results with the theory of the ACF about the relevance of actors' beliefs and the resulting coalition-forming, analogies can be merely partly found. When linking both results from the cluster analysis about the actors' beliefs or attitudes and the results from the Social Network Analysis about their collaboration behavior it can be examined whether the actors act in line with the theory of the ACF.

In cases, the cluster analysis and the SNA (however on the basis of an imperfect data set) clusters or coalitions cannot be distinctively identified. Regarding the results of the cluster analysis of chapter 4.3, in all three graphs Nefarma representing the pharmaceutical sector is positioned contrary and distanced from all other actors. In the first graph (source-directed measures versus end-of-pipe measures) state-actors and actors from the research and consultancy group share the same opinion favoring both types of measures and at the same time a high degree of state-intervention as such policy instruments would be implemented by the state. In the second graph (environmental aspects versus cost efficiency) actors representing the group of water associations and the environment department IenM share the same position. In the third graph (non-preventive/tentative strategy versus cost efficiency) again Nefarma is distanced and all other actors are equally spread on the opposite of the position of Nefarma. According to these observations and in line with the first

hypothesis from the ACF theory, one would expect two opposite coalitions within the network illustrated by the SNA. One big coalition consisting of the state actors, the group of water associations and the research and consultancy actor group and a second coalition consisting of actors of the pharmaceutical sector Nefarma and BOGIN. However, when regarding the actor network of the SNA, there is rather one big core of actors than two opposed coalitions (see chapter 5.5.). Consequentially, in the case of the policy process about micropollution it cannot be clearly stated that actors sharing the same beliefs do coercively form coalitions with each other.

There are two non-integrated actors Gezondheidsraad and WWF, all other actors are densely related within the core network. The WWF representing the actor group of environmental organizations seems to be uninformed about the topic as for example it did not answer all questions about policy measures against micropollution and it does not have an opinion about the relevance of other actors in the process. Also during the data gathering process, many contacted actors I expected to be involved in the topic of micropollution refused to answer the questionnaire as they stated to be not working on the topic of micropollution at all. Gezondheidsraad is the second outstanding actor from the core network; in the interview it explained its self-conception as an independent and purely advisory organization. Its function is to advise the national government moreover, the Gezondheidsraad has stopped to work on ecotoxicology which is another reason for its outsider position in the network.

Within the core network, the environment department IenM seems to be the core actor in terms of importance (betweenness centrality), activity (outdegree centrality) and power (indegree centrality). In the case of the two actors from the pharmaceutical sector Nefarma and BOGIN, the value of activity is distinctively higher than their value of power distinguishing this actor group from for example the state actors having quite equal degrees of activity and power. Nefarma and BOGIN try to lobby the process by being very active spreading their views among other actors.

Still the question remains why there are no opposed coalitions among the actors of the policy process. One reason is probably the early stage of development of this policy process about micropollution. Even though the process lasts already for more than ten years, the parliamentary phase has just started in 2013 and consultation procedures have not taken place thus far. According to the ACF, naturally there are peripheral actors in a policy process. Another explanation for the little progress made thus far in the policy process is that the actors Nefarma and BOGIN from the pharmaceutical sector having differing beliefs and interests compared to the others (see chapter 5.3 and graph 7) seem to block the process from inside the core coalition as they are very well integrated in the core network.

Especially remarkable is the important role actors from the research actor group play within the process in terms of participation, importance, activity and power. The important role of actors doing research and consultancy also demonstrates the early stage of development of the policy process and the complexity of the topic at stake. Problem recognition is still central within the process and to this stage actors as KWR and STOWA can substantially contribute. The phenomenon of policy-oriented learning being part of the ACF theory contributes to the special role of the research and consultancy group as well; additional information about an issue can have an influence on secondary aspects of an actor's belief system. Besides, politicians being no experts in the topic of micropollution have to take decisions on how to tackle the complex problem in the best way. This additionally increases the importance of actors from the research group.

Another explanation of the ACF untypical findings might be provided by the extension of the scope of the theory by the aspect of possible interdependencies between actors influencing their coalition behaviour (Fenger & Klok, 2001). Interdependencies function as an additional independent variable and are expected to be determinant for the behavior of an actor besides the conventional determining 'beliefs'. It is assumed that interferences of different actors' goal achievements in an either negative or positive way have an influence on their collaboration behavior. A new term is introduced in this context; 'coalition of convenience' describing a coalition of shared interests and less of shared beliefs (Fenger & Klok, 2001). In the case of the policy process to reduce micropollution, interdependencies among the actors might have led to the identified core network involving densely related nodes (see graph 7). Possible overlapping goal achievements hinder the division of actors into separate coalition and the identified core coalition can be rather characterized by a coalition of convenience than by sharing core beliefs.

Furthermore, the theory of the ACF might not be an ideal framework for neo-corporatist states like the Netherlands. The indication of coalitions by the degree of interactions between actors might not be appropriate for neo-corporatist political cultures as actors do not necessarily limit their cooperation behavior to actors having similar convictions and beliefs. Probably, the findings of the analysis would have been clearer in states having more adversarial political cultures than the Netherlands.

7: Conclusion

Analyzing the Dutch policy process to reduce micropollution from an actor's perspective by applying the theory of the ACF has shown that reality is deviating from the predicted course the theory provides. Both hypotheses about coalition-forming and intense cooperation within coalitions (see chapter 2.1) cannot be clearly confirmed. There are three different ways to interpret this result; it

can be either concluded that the ACF theory is refuted by the case of micropollution in the Netherlands, that the characteristics of the analyzed policy process do not fit to policy processes the ACF is referring to or that the little progress made thus far in reducing micropollution is because of a lack of opposed coalitions necessary to push policy processes forward. The first, radical reasoning seems to be rather incongruous as the ACF is already applied to plenty of cases by various researchers and as the data set that is worked with is imperfect. The second and third reasoning seem to be more promising in this case.

Following the second reasoning, it can be concluded that the ACF theory is not appropriate for processes in early stages and less suitable for neo-corporatist political cultures. Nevertheless, individual core beliefs are assumed to hold steadily over a long period of time, according to Sabatier. Therefore, the indicated actor positions compiled by the cluster analysis can be regarded as valuable for further cooperation behavior in advanced stages of the policy process. According to the third reasoning, the ACF theory is appropriate for the studied policy process and rather explains why no final policy outcome has been reached yet. The lack of competition between opposed coalitions trying to influence the process is causing stagnation in the process to reduce micropollution in the Netherlands.

In order to answer the research questions leading throughout the thesis *'In which way can the policy-outcome of the policy process about micropollution in the Netherlands be explained by beliefs of actors involved? And to what extent do actors form coalitions according to their beliefs?'* the cluster analysis has shown that the majority of the actors favor further measures to reduce the problem; both, source-directed as well as end-of-pipe measures are supported by most actors with. Therefore, a collective decision to implement effective measures against micropollution is very likely during further stages of the policy process. The current 'intermediate' policy outcome of stagnation can be explained by the beliefs of actors from the pharmaceutical and economic sector interacting within the core coalition and successfully blocking progress in the policy field of micropollution. However, coalition-forming as such was not as much influenced by beliefs as expected and as predicted by the applied theory since actors having differing belief systems nevertheless belong to the same core coalition.

Furthermore, the policy process to reduce micropollution in the Netherlands was limited to one type of micropollutants only until 2013: micropollution caused by pharmaceuticals. Up to now, the pharmaceutical sector successfully hampered progress in implementing a legally binding measure. This might have been a reason for extending the scope to other polluting substances apart from pharmaceuticals and to consider an upgrade of the Dutch waste water plants (see chapter 4). Actors from the waste water sector might be expected to be less resistant and consequentially, progress in

implementing end-of-pipe-measures is more likely. Besides strategic considerations, it is urgently required to progress in the reduction of all kinds of micropollutants to minimize risks for human health and the environment. Since rivers do not stop streaming at national borders, a common international attempt is needed to tackle the problem of micropollution properly and sharing the burden fairly among the states.

As the application of the ACF theory to the case of the policy process about micropollution in the Netherlands has shown, the theoretical framework does not consider actor constellations lacking opposed coalitions. Since this thesis has shown that in reality not in all cases opposed coalitions can be clearly identified there is scope for extending the framework. Future research can further concern the behavior of actors having opposed beliefs but do not form adverse coalitions according to their beliefs.

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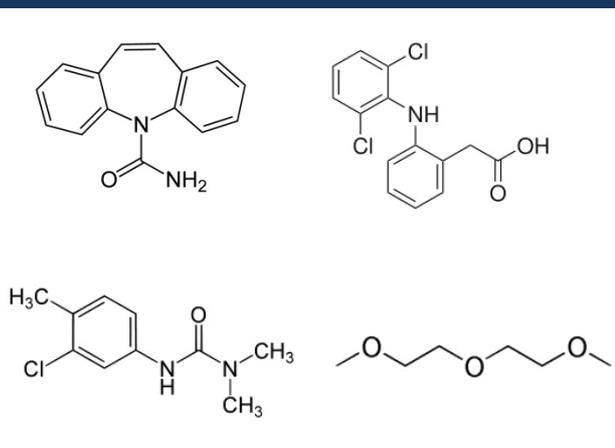
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9: Attachments9.1: List of actors

Abbreviation	Complete Actor Name
BOGIN	Bond van de Generieke Geneesmiddelenindustrie Nederland
	Gezondheidsraad
IenM	Ministerie van Infrastructuur en Milieu
KWR	Watercycle Research Institute
Nefarma	Vereniging innovatieve geneesmiddelen Nederland
RIVM	Rijksinstituut voor Volksgezondheid en Milieu
RIWA	Vereniging van Rivierwaterbedrijven
RWS	Rijkswaterstaat
STOWA	Stichting Toegepast Onderzoek Waterbeheer
UvW	Unie van Waterschappen
VEWIN	Vereniging van waterbedrijven in Nederland
	Vitens
WWF	Wereld Natuur Fonds

9.2: Questionnaire

Your Views Regarding and Participation in Aquatic Micropollution Policies 2014 Survey of Policy Actors



General Instructions

This questionnaire is part of a research project of the University of Twente in collaboration with the University of Berne and the Swiss Water Research Institute Eawag. The aim is to understand the process of developing policy measures for the reduction of pharmaceutical micropollution in Dutch waters that began in 1997. As your organization has a central position in the policy process under study, we need your help and practitioner's expertise to succeed in our research.

This questionnaire contains 12 questions in total and will allow you to express the views and experiences of your organization on:

- Part A: Participation of your organization in the policy process on pharmaceutical micropollution
- Part B: Collaboration of your organization with other actors in the policy process
- Part C: Views of your organization on the various policy options to reduce pharmaceutical micropollution
- Part D: Responsibilities of your organization in water protection

We kindly ask you to participate in the survey and *respond to the questions from the perspective of your organization*. **It will take no longer than 30 minutes** to complete the questionnaire. In return for sharing your views we will be happy to inform you of the results of the study.

To fill out the questionnaire, **please save this file on your computer** and then write your answers into the active elements. Don't forget to save the final version of the document. Please return the completed questionnaire by email as soon as possible. Thank you in advance for sharing your thoughts and for your support.

The research project is part of a PhD dissertation supported by the Swiss National Science Foundations. The information will be used exclusively for research purposes and will not be shared with any third parties.

Project Director:

Prof. Dr. Karin Ingold
Institute for Political Science University of Berne, Eawag

Project Partner and Sponsors:

u^b

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ZUR FÖRDERUNG DER WISSENSCHAFTLICHEN FORSCHUNG

If you have questions, please don't hesitate to contact:

Florence Metz (PhD)

University of Berne, Institute for Political Science, Fabrikstrasse 8, CH-3012 Berne
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Tel. 0049 (0)163 60 77 689

Name of the person completing the questionnaire:

Name of your organization:

Phone: Email:

Would you like to receive information about the results of the study? Yes No

Part A: The Policy Process on Measures for the Reduction of Pharmaceutical Micropollution

1. The following table summarizes the ongoing policy process since 1997 during which measures for the reduction of pharmaceutical micropollution have been developed. In which phases of the process did your organization participate?

Please check all phases in which your organization participated.

Participation is defined as: being actively involved in and contributing to research or implementation; participating in working groups, workshops or informal consultations.

Date	Phase	Participation
Reduction of pharmaceutical micropollution		
Trigger 1997 - 2002	1997 – 2001: Tweede Kamer inquiry to Minister of Environment about risks arising from endocrine substances in waters resulting in “Strategienota Omgaan Met Stoffen - SOMS”	
	Report “ Milieurisico’s van geneesmiddelen ”, Gezondheidsraad (no. 2001/17)	
	RIZA reports „Vergeeten stoffen in Nederlands oppervlaktewater“ (no. 2001-020) and „Estrogens in the aquatic environment“ (no. 2002-001)	<input type="checkbox"/>
Concept phase 2002 - 2013	Set up of “ Interdepartementale werkgroep (dier)geneesmiddelen en het watermilieu ” to discuss policy options (Kamerstuk nr. 28808-35)	
	Implementation of pilot measures (e.g. monitoring, wastewater treatment, elektronisch patiënten dossier) (30.9.2009 nr.30535 / 27625-19)	<input type="checkbox"/>
Parliamentary involvement 2007 - 2014	Environmental Ministry informs the Tweede Kamer of policy options and pilot measures (21.2.2007 nr. 28808-39; 30.9.2009 nr.30535; 4.9.2012 no. 27625-281; 25.6.2013 no. 27625-305)	
	Inquiry by Groenlinks about state of improved wastewater treatment (25.3.2010 no. 27625-281)	
	Meeting of Vaste Commissie voor Infrastructuur en Milieu (27.6.2013) to discuss results of pilot measures	<input type="checkbox"/>
	Motion 27625-299 and 27625-300 calling for regulation of pharmaceutical micropollution in waters	
Further research 2013	Parliamentary round-table conference “Geneesmiddelen en waterkwaliteit” (30.1.2014)	
	Report “Evaluatie screening RWS 2011-2012.Rapportage screeningsonderzoek van microverontreinigingen in de Nederlandse oppervlaktewateren van Rijkswaterstaat” (20.9.2013)	<input type="checkbox"/>
	BTO/KWR report “Vóórkomen en voorkómen van geneesmiddelen in bronnen van drinkwater” (Nov 2013)	

Have you been involved in measures for the reduction of pharmaceutical micropollution in waters in another way? If yes, please indicate with an “x” and describe your involvement below.

Further remarks:

My organization did not participate in the policy process on pharmaceutical micropollution in waters.

2. From the perspective of your organization, are you satisfied with the degree to which the positions, ideas or responsibilities of your organization have been taken into consideration in the policy process on pharmaceutical micropollution (1997 – present)?

The positions of my organization were			
Strongly taken into consideration	Somewhat taken into consideration	Not taken into consideration enough	Not taken into consideration at all
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Further remarks:

3. a) The policy process on pharmaceutical micropollution (1997 – present) aims to develop measures for the reduction of pharmaceutical micropollution in Dutch waters. Measures adopted so far include research about concentration levels of pharmaceuticals in waters as well as pilot measures to separately treat wastewater from hospitals or other healthcare facilities.

To what degree does your organization support this policy approach?

My organization supports this policy approach			
Strongly	Somewhat	Rather not	Not at all
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Further remarks:

b) From the perspective of your organization are the policy measures adopted so far comprehensive enough?

Policy measures taken so far are			
Far too comprehensive	Somewhat too comprehensive	Rather not comprehensive enough	Not at all comprehensive enough
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Further remarks:.....

Part B: Actors in the Policy Process

4. Importance of actors

A number of actors have been involved in the policy process on pharmaceutical micropollution (1997 – present). The following table attempts to comprehensively enumerate the involved actors.

In the first column, please check all the actors that have been particularly important in the policy process from the point of view of your organization.

*In the second column, please make **exactly three crosses for the whole list** to indicate which actors are the three most important in the policy process.*

If there are actors missing, please add them to the bottom of the list and evaluate their importance.

Actors	Particularly important	3 most important
National		
IenM Ministerie van Infrastructuur en Milieu	<input type="checkbox"/>	<input type="checkbox"/>
RWS Rijkswaterstaat	<input type="checkbox"/>	<input type="checkbox"/>
VWS Ministerie van Volksgezondheid, Welzijn en Sport	<input type="checkbox"/>	<input type="checkbox"/>
RIVM Rijksinstituut voor Volksgezondheid en Milieu	<input type="checkbox"/>	<input type="checkbox"/>
EZ Ministerie van Economische Zaken	<input type="checkbox"/>	<input type="checkbox"/>
RVO Rijksdienst voor Ondernemend Nederland	<input type="checkbox"/>	<input type="checkbox"/>
Voormalig LNV Ministerie van Landbouw, Natuurbeheer en Viesdskwaliteit	<input type="checkbox"/>	<input type="checkbox"/>
Voormalig V&W Ministerie van Verkeer en Waterstaat	<input type="checkbox"/>	<input type="checkbox"/>
Voormalig VROM Volkshuisvesting, Ruimtelijke Ordening en Milieubeheer	<input type="checkbox"/>	<input type="checkbox"/>
Gezondheidsraad	<input type="checkbox"/>	<input type="checkbox"/>
CBG / BD College ter Beoordeling van Geneesmiddelen / Bureau diegeneesmiddelen	<input type="checkbox"/>	<input type="checkbox"/>
Bestuurlijk Overleg Water	<input type="checkbox"/>	<input type="checkbox"/>
Adviescommissie Water	<input type="checkbox"/>	<input type="checkbox"/>
Voormalig RIKZ Rijksinstituut voor Kust en Zee	<input type="checkbox"/>	<input type="checkbox"/>
Provinces, municipalities and water boards		
IPO Interprovinciaal Overleg	<input type="checkbox"/>	<input type="checkbox"/>
UvW Unie van Waterschappen	<input type="checkbox"/>	<input type="checkbox"/>
VNG Vereniging van Nederlandse Gemeenten	<input type="checkbox"/>	<input type="checkbox"/>
Parliament and political parties		
Eerste Kamer der Staten-Generaal	<input type="checkbox"/>	<input type="checkbox"/>
Tweede Kamer der Staten-Generaal	<input type="checkbox"/>	<input type="checkbox"/>
Vaste commissie voor Infrastructuur en Milieu, Tweede Kamer	<input type="checkbox"/>	<input type="checkbox"/>
Vaste commissie voor Volksgezondheid, Welzijn en Sport, Tweede Kamer	<input type="checkbox"/>	<input type="checkbox"/>
Vaste commissie voor Economische Zaken, Tweede Kamer	<input type="checkbox"/>	<input type="checkbox"/>
Partij ChristenUnie	<input type="checkbox"/>	<input type="checkbox"/>
Partij GroenLinks	<input type="checkbox"/>	<input type="checkbox"/>
Agricultural associations		
LTO Land- en Tuinbouw Organisatie	<input type="checkbox"/>	<input type="checkbox"/>

Actors	Particularly important	3 most important
Economic associations		
Vereniging VNO-NCW	<input type="checkbox"/>	<input type="checkbox"/>
VNCI Vereniging van de Nederlandse Chemische Industrie	<input type="checkbox"/>	<input type="checkbox"/>
VEMW Vereniging voor Energie, Milieu en Water	<input type="checkbox"/>	<input type="checkbox"/>
Pharmaceutical and health sector		
BOGIN Bond van de Generieke Geneesmiddelenindustrie Nederland	<input type="checkbox"/>	<input type="checkbox"/>
Nefarma Vereniging Innovatieve Geneesmiddelen Nederland	<input type="checkbox"/>	<input type="checkbox"/>
KNMP Koninklijke Nederlandse Maatschappij ter Bevordering der Pharmacie	<input type="checkbox"/>	<input type="checkbox"/>
SFK Stichting Farmaceutische Kengetallen	<input type="checkbox"/>	<input type="checkbox"/>
SWAB Stichting Werkgroep Antibioticabeleid	<input type="checkbox"/>	<input type="checkbox"/>
Reinier de Graaf ziekenhuis	<input type="checkbox"/>	<input type="checkbox"/>
Water associations		
VEWIN Vereniging van waterbedrijven in Nederland	<input type="checkbox"/>	<input type="checkbox"/>
Vitens	<input type="checkbox"/>	<input type="checkbox"/>
RIWA Vereniging van Rivierwaterbedrijven	<input type="checkbox"/>	<input type="checkbox"/>
Stichting Rioned	<input type="checkbox"/>	<input type="checkbox"/>
Environmental associations		
Coöperatieve Visserij Organisatie	<input type="checkbox"/>	<input type="checkbox"/>
Stichting Huize Aarde	<input type="checkbox"/>	<input type="checkbox"/>
Vereniging tot Behoud van Natuurmonumenten	<input type="checkbox"/>	<input type="checkbox"/>
WWF/WNF Wereld Natuur Fonds	<input type="checkbox"/>	<input type="checkbox"/>
Consumer associations		
Consumentenbond	<input type="checkbox"/>	<input type="checkbox"/>
Research and consultancy		
KWR Watercycle Research Institute	<input type="checkbox"/>	<input type="checkbox"/>
Deltares / voormalig RIZA	<input type="checkbox"/>	<input type="checkbox"/>
STOWA Stichting Toegepast Onderzoek Waterbeheer	<input type="checkbox"/>	<input type="checkbox"/>
Other		
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>

5. Your collaboration with other actors

The following table shows the same actor list as previously shown in question 4.

Please check all the actors with whom your organization has closely collaborated during the policy process on pharmaceutical micropollution (1997 – present). Collaboration does not necessarily imply that you share the same views.

Close collaboration is defined as: discussing new findings, developing policy options, exchanging positions, evaluating alternatives.

This question is important for understanding how policy processes work. Your name will be kept confidential.

If there are actors missing, please add them to the bottom of the list and indicate with an “x” if you closely collaborate.

Actors	Close collaboration
National	
IenM Ministerie van Infrastructuur en Milieu	<input type="checkbox"/>
RWS Rijkswaterstaat	<input type="checkbox"/>
VWS Ministerie van Volksgezondheid, Welzijn en Sport	<input type="checkbox"/>
RIVM Rijksinstituut voor Volksgezondheid en Milieu	<input type="checkbox"/>
EZ Ministerie van Economische Zaken	<input type="checkbox"/>
RVO Rijksdienst voor Ondernemend Nederland	<input type="checkbox"/>
Voormalig LNV Ministerie van Landbouw, Natuurbeheer en Viesdskwaliteit	<input type="checkbox"/>
Voormalig V&W Ministerie van Verkeer en Waterstaat	<input type="checkbox"/>
Voormalig VROM Volkshuisvesting, Ruimtelijke Ordening en Milieubeheer	<input type="checkbox"/>
Gezondheidsraad	<input type="checkbox"/>
CBG / BD College ter Beoordeling van Geneesmiddelen / Bureau diergeneesmiddelen	<input type="checkbox"/>
Bestuurlijk Overleg Water	<input type="checkbox"/>
Adviescommissie Water	<input type="checkbox"/>
Voormalig RIKZ Rijksinstituut voor Kust en Zee	<input type="checkbox"/>
Provinces, municipalities and water boards	
IPO Interprovinciaal Overleg	<input type="checkbox"/>
UvW Unie van Waterschappen	<input type="checkbox"/>
VNG Vereniging van Nederlandse Gemeenten	<input type="checkbox"/>
Parliament and political parties	
Eerste Kamer der Staten-Generaal	<input type="checkbox"/>
Tweede Kamer der Staten-Generaal	<input type="checkbox"/>
Vaste commissie voor Infrastructuur en Milieu, Tweede Kamer	<input type="checkbox"/>
Vaste commissie voor Volksgezondheid, Welzijn en Sport, Tweede Kamer	<input type="checkbox"/>
Vaste commissie voor Economische Zaken, Tweede Kamer	<input type="checkbox"/>
Partij ChristenUnie	<input type="checkbox"/>
Partij GroenLinks	<input type="checkbox"/>
Agricultural associations	
LTO Land- en Tuinbouw Organisatie	<input type="checkbox"/>

Actors	Close collaboration
Economic associations	
Vereniging VNO-NCW	<input type="checkbox"/>
VNCI Vereniging van de Nederlandse Chemische Industrie	<input type="checkbox"/>
VEMW Vereniging voor Energie, Milieu en Water	<input type="checkbox"/>
Pharmaceutical and health sector	
BOGIN Bond van de Generieke Geneesmiddelenindustrie Nederland	<input type="checkbox"/>
Nefarma Vereniging Innovatieve Geneesmiddelen Nederland	<input type="checkbox"/>
KNMP Koninklijke Nederlandse Maatschappij ter Bevordering der Pharmacie	<input type="checkbox"/>
SFK Stichting Farmaceutische Kengetallen	<input type="checkbox"/>
SWAB Stichting Werkgroep Antibioticabeleid	<input type="checkbox"/>
Reinier de Graaf ziekenhuis	<input type="checkbox"/>
Water associations	
VEWIN Vereniging van waterbedrijven in Nederland	<input type="checkbox"/>
Vitens	<input type="checkbox"/>
RIWA Vereniging van Rivierwaterbedrijven	<input type="checkbox"/>
Stichting Rioned	<input type="checkbox"/>
Environmental associations	
Coöperatieve Visserij Organisatie	<input type="checkbox"/>
Stichting Huize Aarde	<input type="checkbox"/>
Vereniging tot Behoud van Natuurmonumenten	<input type="checkbox"/>
WWF/WNF Wereld Natuur Fonds	<input type="checkbox"/>
Consumer associations	
Consumentenbond	<input type="checkbox"/>
Research and consultancy	
KWR Watercycle Research Institute	<input type="checkbox"/>
Deltares / voormalig RIZA	<input type="checkbox"/>
STOWA Stichting Toegepast Onderzoek Waterbeheer	<input type="checkbox"/>
Other	
	<input type="checkbox"/>

6. Convergences and/or divergences with other actors

The following table shows the same actor list as previously shown in question 4 and 5.

Please check all the actors with whom your organization had convergences and/or divergences about policy content during the policy process on pharmaceutical micropollution (1997 – present).

Converging or diverging about policy content does not necessarily imply collaboration.

Convergence is defined as agreement on policy content; divergence as disagreement

If there are actors missing, please add them to the bottom of the list and indicate your convergences and divergences.

Actors	Convergence	Divergence
National		
IenM Ministerie van Infrastructuur en Milieu	<input type="checkbox"/>	<input type="checkbox"/>
RWS Rijkswaterstaat	<input type="checkbox"/>	<input type="checkbox"/>
VWS Ministerie van Volksgezondheid, Welzijn en Sport	<input type="checkbox"/>	<input type="checkbox"/>
RIVM Rijksinstituut voor Volksgezondheid en Milieu	<input type="checkbox"/>	<input type="checkbox"/>
EZ Ministerie van Economische Zaken	<input type="checkbox"/>	<input type="checkbox"/>
RVO Rijksdienst voor Ondernemend Nederland	<input type="checkbox"/>	<input type="checkbox"/>
Voormalig LNV Ministerie van Landbouw, Natuurbeheer en Viesdskwaliteit	<input type="checkbox"/>	<input type="checkbox"/>
Voormalig V&W Ministerie van Verkeer en Waterstaat	<input type="checkbox"/>	<input type="checkbox"/>
Voormalig VROM Volkshuisvesting, Ruimtelijke Ordening en Milieubeheer	<input type="checkbox"/>	<input type="checkbox"/>
Gezondheidsraad	<input type="checkbox"/>	<input type="checkbox"/>
CBG / BD College ter Beoordeling van Geneesmiddelen / Bureau diergeneesmiddelen	<input type="checkbox"/>	<input type="checkbox"/>
Bestuurlijk Overleg Water	<input type="checkbox"/>	<input type="checkbox"/>
Adviescommissie Water	<input type="checkbox"/>	<input type="checkbox"/>
Voormalig RIKZ Rijksinstituut voor Kust en Zee	<input type="checkbox"/>	<input type="checkbox"/>
Provinces, municipalities and water boards		
IPO Interprovinciaal Overleg	<input type="checkbox"/>	<input type="checkbox"/>
UvW Unie van Waterschappen	<input type="checkbox"/>	<input type="checkbox"/>
VNG Vereniging van Nederlandse Gemeenten	<input type="checkbox"/>	<input type="checkbox"/>
Parliament and political parties		
Eerste Kamer der Staten-Generaal	<input type="checkbox"/>	<input type="checkbox"/>
Tweede Kamer der Staten-Generaal	<input type="checkbox"/>	<input type="checkbox"/>
Vaste commissie voor Infrastructuur en Milieu, Tweede Kamer	<input type="checkbox"/>	<input type="checkbox"/>
Vaste commissie voor Volksgezondheid, Welzijn en Sport, Tweede Kamer	<input type="checkbox"/>	<input type="checkbox"/>
Vaste commissie voor Economische Zaken, Tweede Kamer	<input type="checkbox"/>	<input type="checkbox"/>
Partij ChristenUnie	<input type="checkbox"/>	<input type="checkbox"/>
Partij GroenLinks	<input type="checkbox"/>	<input type="checkbox"/>
Agricultural associations		
LTO Land- en Tuinbouw Organisatie	<input type="checkbox"/>	<input type="checkbox"/>

Actors	Convergence	Divergence
Economic associations		
Vereniging VNO-NCW	<input type="checkbox"/>	<input type="checkbox"/>
VNCI Vereniging van de Nederlandse Chemische Industrie	<input type="checkbox"/>	<input type="checkbox"/>
VEMW Vereniging voor Energie, Milieu en Water	<input type="checkbox"/>	<input type="checkbox"/>
Pharmaceutical and health sector		
BOGIN Bond van de Generieke Geneesmiddelenindustrie Nederland	<input type="checkbox"/>	<input type="checkbox"/>
Nefarma Vereniging Innovatieve Geneesmiddelen Nederland	<input type="checkbox"/>	<input type="checkbox"/>
KNMP Koninklijke Nederlandse Maatschappij ter Bevordering der Pharmacie	<input type="checkbox"/>	<input type="checkbox"/>
SFK Stichting Farmaceutische Kengetallen	<input type="checkbox"/>	<input type="checkbox"/>
SWAB Stichting Werkgroep Antibioticabeleid	<input type="checkbox"/>	<input type="checkbox"/>
Reinier de Graaf ziekenhuis	<input type="checkbox"/>	<input type="checkbox"/>
Water associations		
VEWIN Vereniging van waterbedrijven in Nederland	<input type="checkbox"/>	<input type="checkbox"/>
Vitens	<input type="checkbox"/>	<input type="checkbox"/>
RIWA Vereniging van Rivierwaterbedrijven	<input type="checkbox"/>	<input type="checkbox"/>
Stichting Rioned	<input type="checkbox"/>	<input type="checkbox"/>
Environmental associations		
Coöperatieve Visserij Organisatie	<input type="checkbox"/>	<input type="checkbox"/>
Stichting Huize Aarde	<input type="checkbox"/>	<input type="checkbox"/>
Vereniging tot Behoud van Natuurmonumenten	<input type="checkbox"/>	<input type="checkbox"/>
WWF/WNF Wereld Natuur Fonds	<input type="checkbox"/>	<input type="checkbox"/>
Consumer associations		
Consumentenbond	<input type="checkbox"/>	<input type="checkbox"/>
Research and consultancy		
KWR Watercycle Research Institute	<input type="checkbox"/>	<input type="checkbox"/>
Deltares / voormalig RIZA	<input type="checkbox"/>	<input type="checkbox"/>
STOWA Stichting Toegepast Onderzoek Waterbeheer	<input type="checkbox"/>	<input type="checkbox"/>
Other		
	<input type="checkbox"/>	<input type="checkbox"/>

9.2: Questionnaire

Part C: Positions of your Organization

7. Hereafter you find a list with different statements regarding the reduction of pharmaceutical micropollution in waters.

Please indicate your organization's level of agreement with the following statements.

Statements	My Organisation			
	Strongly agrees	Agrees somewhat	Disagrees somewhat	Strongly disagrees
Measures should address the sources of pollution.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Measures should be end-of-pipe (waste-water treatment).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Preventive measures should be taken to reduce potential risks for humans and the environment (precautionary principle).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It is reasonable to wait with policy measures until the impact of micropollution is fully understood.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Policy measures should aim at <i>completely</i> eliminating pharmaceutical micropollution in waters.	<input type="checkbox"/> (completely)	<input type="checkbox"/> (largely)	<input type="checkbox"/> (only a few substances)	<input type="checkbox"/> (not at all)
The financial burden for adopting measures to reduce pharmaceutical micropollution in waters is too high.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. Pharmaceutical micropollution can be reduced by adopting measures in diverse areas of policy responsibility and diverse levels (European to local level).

In which area(s) of responsibility and at which level(s) should measures for the reduction of micropollution mainly be adopted according to your organization?

Micropollution is the responsibility of:	My organization			
	Strongly agrees	Agrees somewhat	Disagrees somewhat	Strongly disagrees
Water Protection Policy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chemical Policy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Agricultural Policy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Drinking Water Policy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Health Policy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reducing pharmaceutical micropollution is a consumer responsibility.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
European level	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
National level	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Provincial level	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Water agency level	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Municipal level	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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9. Below is a list of policy instruments which may contribute to the reduction of pharmaceutical micropollution in waters.

Please indicate your organization's level of agreement with adopting each of the following policy instruments for the reduction of pharmaceutical micropollution, independently of what has been done in the Netherlands thus far.

If there are policy instruments missing, please add them to the bottom of the list and indicate your level of agreement.

Policy Instruments	My organization			
	Strongly agrees	Agrees somewhat	Disagrees somewhat	Strongly disagrees
Bans or authorization restrictions of single pharmaceutical substances	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use restrictions of single pharmaceutical substances	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Discharge requirements for products containing pharmaceutical substances	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use of best available technique (BAT) for the elimination of pharmaceutical micropollution (e.g. technically upgrading wastewater treatment plants, treatment of wastewater partial flows in companies or hospitals)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use of best environmental practice (BEP) for the reduction of micropollution inputs into waters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Establishment of environmental quality norms = immission limit for pharmaceutical micropollutants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Definition of emission limits for micropollutants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Product charge for pharmaceuticals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase of the wastewater charge to fund measures for the reduction of pharmaceutical micropollution	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Subsidies (e.g. for investments in filtering technology or monitoring technology, optimization of production processes)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Control measures (e.g. expanding monitoring programs, obligatory registries for pharmaceuticals)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Voluntary measures of companies and civil society (e.g. investments in filtering technology, optimize production processes, labeling, abdication)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Information campaigns, consulting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Research	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Private-public partnerships Public-public partnerships	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Part D: Responsibilities of your Organization

10. To what extent does your organization prioritize the reduction of micropollution in waters?

Please indicate if the reduction of micropollution has a higher priority, equal or lower priority in comparison to other water-related responsibilities.

If you add further responsibilities, please indicate its level of priority in comparison to the reduction of micropollution.

Water-related responsibilities	Higher priority to micropollution	Equal priority to micropollution	Lower priority to micropollution
Ecological status (when considering micropollution as part of the chemical status)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
“Macro”pollution such as nutrients, fertilizers, inorganic pollution	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sewage system/infrastructure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Drinking water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hydropower	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flood protection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Waterways	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11. Please indicate with whom your organization collaborates internationally on micropollution in the Rhine catchment area.

My organization collaborates internationally with:	Please specify:
<input type="checkbox"/> Working groups:	..... (Name of the working groups)
<input type="checkbox"/> Municipalities / cities outside of the Netherlands	..... (Name of the municipalities / cities)
<input type="checkbox"/> Regions or water agencies outside of the Netherlands	..... (Name of the regions / water agencies)
<input type="checkbox"/> Other countries:	..... (Name of the countries)
<input type="checkbox"/> European actors	..... (Name of the EU actors)
<input type="checkbox"/> International / foreign associations:	..... (Name of the associations)
<input type="checkbox"/> Foreign universities / research institutes / consultancies	..... (Name of the universities / institutes)
<input type="checkbox"/> Other:	.....

(Please specify)

12. a) Please indicate at which level your organization is formally responsible for water protection. Formally responsible is defined as: adopting or implementing policies, having a mandate to carry out research or other water-related responsibilities, etc.

Indicate as many levels as are applicable.

My organization is responsible for the following levels:	Please indicate
<input type="checkbox"/> Local	..... (Name of the municipality/city)
<input type="checkbox"/> Provincial	..... (Name of the province)
<input type="checkbox"/> Water Basin	..... (Name of the water agency)
<input type="checkbox"/> National	
<input type="checkbox"/> European	..... (Please describe)
<input type="checkbox"/> Other	..... (Please describe)

b) Water can flow across politically-defined borders, such as municipal, provincial, regional or state frontiers. Do the water-related activities of your organization extend beyond (or not encompass the entirety of) the area for which you are responsible as indicated under 11a)?

No, the politically-defined frontiers are well-adapted to the water-related activities of my organization.

Yes, water-related activities of my organization can extend beyond (or do not encompass the entirety of) the area indicated under 11a).

Please describe any discrepancies indicated above and explain their cause(s):

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Thank you for your valuable cooperation!

If you have further remarks or ideas about the topic of micropollution or about the questionnaire, please share them below.

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Please don't forget to save the completed questionnaire on your computer and return it via email as soon as possible to:

florence.metz@ipw.unibe.ch