

**Trust and communication in policy networks:  
The politics of transparency in the food chain**

Agni Kalfagianni and Doris Fuchs

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**Westfälische Wilhelms-Universität**

**Scharnhorststr. 100**

**48151 Münster, Germany**

**<http://www.uni-muenster.de/fuchs/en>**

## **Contact**

**Prof. Doris Fuchs, Ph.D.**

**E-Mail: [doris.fuchs@uni-muenster.de](mailto:doris.fuchs@uni-muenster.de)**

## Abstract

We explore the relevance of structural characteristics of policy networks for policy outcomes, thereby highlighting the continuing relevance of the policy network approach for policy analysis. Focusing on networks for transparency in the food chain in the Netherlands and the EU, we examine the proposition that network interactions in the form of communication and trust make a substantial difference in the estimation and explanation of transparency policy. Thereby, we identify existing obstacles to a successful transformation of the norm of transparency into appropriate political frameworks and governance mechanisms as well as potential steps for improvement. Data were gathered in structured interviews with the network actors in the Netherlands and at the EU level and are employed in a mathematical model allowing us to highlight the impact of communication and trust relationships on policy output.

**Keywords:** transparency, policy networks, food chain.

# 1. Introduction

This paper aims to contribute to the understanding of the relevance of the policy network approach for policy analysis. This issue is as significant today as it had been at the sparks of the policy network scholarly debate. The reason is quite simple: despite hundreds of network studies, the empirical evidence about whether or not policy networks are critical explanatory variables of policy outputs remains inconclusive.

In the past, the policy network approach has attracted criticism for lacking explanatory power (see Dowding 1995), particularly because it did not fit any theory in the “minimalistic” meaning of the term (Evans 2001: 548). Scholars have argued that network analysis lacks testable hypotheses which systematically link the nature of a policy network with the outcome and character of the policy process (Rudner 1996: 10). Indeed, for a long time scholars produced extended and often conflicting typologies of “ideal” network types such as policy community, issue network, or state corporatism that failed to prove anything more than the mere existence of networks (Bressers, O’Toole and Richardson 1994).

Nevertheless, a second strand of network analysis has been developed in parallel, which did not focus on the identification of ideal network types but investigated directly how networks intervene in actors’ actions.<sup>1</sup> The main advantage of this approach is that it requires fewer assumptions since the characteristics of the relationships among the actors in the network are an empirical question and do not have to be fit in fixed categories. Based on such formal network analyses, scholars have found, for instance, that networks differ in their emphasis on flows of information and communication on the one side (Stokman and Zeggelink 1996) and the exchange of resources among actors on the other (Cook and Yamagishi 1992; Willer, 1999). This second, methodologically oriented strand of network analysis has proven more fruitful and remains much more prominent today. Scholars have successfully explained policy developments on the basis of empirical assessments of networks and their characteristics at a variety of decision-making levels and in a range of fields, including municipal policy, social and labor policy in the US and Germany or environmental and infrastructure policy in the EU (Laumann and Knoke 1987; Pappi, König, and Knoke 1995; Stokman and Bervelling 1998; Stokman and Van Oosten 1994).

This paper aims to add to this second strand of policy network research. It elaborates a model that explains policy formation on the basis of the core theoretical contribution of the network

approach: the identification role of (informal) structural variables in the policy process. At the same time, the model incorporates a focus on the role of individual actors in network analysis. Specifically, actors are assumed to be constrained and facilitated by the network structure in their efforts to influence policy outputs for transparency. In elaborating the model, we build on the work of other scholars who have successfully employed similar conceptualisations of the role of networks in explanations of policy outputs, in particular Laumann and Knoke 1987; Stokman and Zeggelink 1996; Stokman and Van den Bos 1992).

As an empirical application, we focus on networks for transparency in the food, and more specifically pork chain, in the Netherlands and the European Union (EU). While transparency is an intuitively desirable norm, actually designing and implementing policies that will provide transparency is a complex and highly political task. The question we are pursuing in this paper is whether a methodologically based policy network analysis can explain the feasibility of policy initiatives for transparency in the chains under study.

The paper is structured as follows. The next section discusses the need for transparency in the food chain and provides a brief overview on related policy initiatives in the Netherlands and the EU. Section three presents our approach. It first develops the objectives, assumptions, and argument in some detail. It then describes the study's research design in terms of model, data sources and evaluation strategies. Section four then, presents and discusses the findings of the empirical analyses. Section five concludes the paper highlighting the implications of the findings for network analysis as well as for transparency and sustainability related policy and politics in the food sector.

## **2. Transparency in the food chain**

### *2.1 The need for transparency*

In recent years, a shift in policy objectives regarding agriculture and food has taken place. In particular, the concept of sustainable development has gained prominence as a core element of national and regional (EU) policies. Today, agricultural and food policies have to consider environmental and social consequences, in particular food safety, besides economic ones and

food security.<sup>1</sup> Moreover, politicians as well as the public demand that food chain actors need to be held accountable for their decisions.

However, food is currently produced in extremely complex product chains as a result of globalization with the associated liberalization of trade and capital mobility as well as the global production, marketing, and distribution networks created by transnational corporations (TNCs). Currently, much information is lost between the various stages of production and consumption. Knowledge and responsibility is so diffused among the food chain actors that it frequently is impossible to assign from the outside (Heiskanen and Pantzar 1997).

The combination of the rise of sustainability as a pivotal objective for agricultural and food policy and the globalization of food production and consumption highlight the urgent need for transparency in the food chain. Transparency can help fill the informational distance created by globalization and create options for sustainable food choices along the supply chain.

## *2.2 Transparency related policy initiatives*

Transparency, the openness and communication of information on food products and processes, became an objective of the EU (and national policies) after the BSE crisis in 1996 with the Green Paper on Food Law (1997) and the White Paper on Food Safety (2000). The Regulation on Food Law (178/2002/EC) adopted by the EU in 2002 further defined requirements for the provision of product information, which food chain actors now have to fulfill. However, the current notion of transparency in the Regulation is limited to “traceability,” i.e. the aim of a rapid identification and withdrawal of products found to pose a threat to human health from the market (Article 18).<sup>2</sup> It does not cover communication on the broader sustainability attributes of products and processes. Moreover, the current provisions require food chain actors merely to trace product information one step back and one step forward in the food chain rather than through the whole chain. Consequently, the provision and distribution of product and process information is not only limited to food chain actors – thus, excluding consumers – but also limited to actors’ direct

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<sup>1</sup> In the EU, this was illustrated, for instance, by two reforms of the CAP (1992, 2000) and the adoption of a number of Directives in the area of environmental policy, such as Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources, which aims to limit the spreading of fertilizer containing nitrogen and to set the limits for the spreading of livestock effluent; the water framework (1999), which sets the aim to achieve good quality status for all waters by 2015; or the IPPC (Integrated Pollution Prevention and Control) Directive with the aim to prevent or minimize emissions to air, water and soil, as well as waste from industrial and agricultural installations in the community.

<sup>2</sup> The Regulation contains two further articles (Articles 9 and 10) that refer to principles of transparency, namely public consultation and public information.

relationships with one another (supplier-buyer). Finally, the requirements provided by the Regulation currently lack specificity and allow actors considerable leeway in interpretation.

Even though the EU Regulation's provisions on transparency are weak and vague, the regulation itself proved to be an important stimulus for the development of a number of private initiatives at the EU and national levels. As sectoral initiatives, the European Feed Manufacturers' Code (EFMC) and the International Feed Ingredients' Standard (IFIS) both aiming at securing traceability and feed safety have been created, for instance, at the EU level. Similarly, the "Early Warning System" (EWS) and the quality assurance system GMP+ have been initiated in the Netherlands, for example. As chain wide initiatives, the Global Food Safety Initiative, FOODTRACE and EUREP-GAP have been created at the EU level and IKB in the Netherlands.<sup>3</sup>

However, despite the laudable objectives of these initiatives, they do have substantial shortcomings in the eyes of critical observers. First, most of them focus primarily if not exclusively on food safety, i.e. on issues "proven" to involve direct threats to human health.<sup>4</sup> In the EUREP-GAP, all criteria required for certification ("major musts") focus on traceability and food safety, while most criteria on the provision of information on environmental performance and animal welfare are recommended but not required ("shoulds"), for instance.

Initiatives addressing animal welfare and environmental aspects in conventional chains do exist at the national level, such as the PVE-IKB label on pig welfare or the *milienkeur* and EKO labels on environmental aspects. However, these initiatives suffer from the second shortcoming critical observers tend to point out; their voluntary nature. Actors who do not want to comply with the initiatives' requirements can choose to stay out. While about 80% of Dutch pig farmers participate in the IKB traceability scheme, only 0.6% of Dutch pork production is covered by labels addressing animal welfare or the environment (LTO 2004).

In the meantime, more stringent and comprehensive proposals for mandatory national regulation on transparency in the food chain developed by consumer organizations, specifically

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<sup>3</sup> The Global Food Safety Initiative was initiated by a group of international retailers in 2000 to ensure consumer protection, strengthen consumer confidence, set requirements for food safety, and improve cost efficiency. FOODTRACE is a project initiated by the EU retail association EUROCOMMERCE seeking to promote concerted action on a *traceability* framework for the whole food chain. EUREP-GAP is a certification scheme covering primarily traceability and food safety (see below), which was initiated in 1997 by a group of retailers belonging to the Euro-retailers Produce Working Group. The IKB (*Integrale Keten Beheersing* or Integrated Chain Management) was introduced in 1992 to identify animal origin, but today also includes information on hygiene, animal feed, the use of prohibited growth substances, drugs, and to some extent animal welfare.

<sup>4</sup> If one were to define human health broadly, environmental and animal welfare concerns would also be aspects of food safety. The currently accepted definition is much more narrow, however, as indicated above.

Consumentenbond, have been rejected.<sup>5</sup> The failure of the associated negotiation process to achieve a compromise on any kind of regulation that goes beyond the traceability required by the EU Regulation highlights the difficulties of expanding mandatory requirements on transparency beyond the limited goal of food safety. From a sustainable development perspective, traceability and a focus on issues “proven” to have negative health consequences cannot suffice, however. The present analysis, therefore, explores opportunities and obstacles for a broadening of this goal to the provision and distribution of all sustainability related information within the food chain and towards the consumer.

### 3. Explaining transparency policies

Our explanation of transparency policy starts from the assumption that policy outputs today are decided by the interaction of public and private actors in issue-specific policy networks. On this basis, we argue that policy outputs depend on the characteristics of actors in terms of policy preferences (positions), the salience of the issue, and the resources they can bring to bear in the negotiation process and the relationships between the actors in the relevant policy network in terms of patterns of communication and trust.

#### 3.1 *The policy process*

The policy process, illustrated in Figure 1, is perceived to begin with actors holding certain policy positions on a particular issue and end in a common policy output. Actors have different preferences concerning decisions over a particular issue as well as different means to foster the adoption of those decisions. In consequence, policy output is determined by the *ability* of each actor to influence the output either directly or through attracting support from other actors by pushing for positional shifts or compromises. This ability, in turn, is a function of the characteristics of each actor. Specifically, actors’ abilities to successfully promote their positions are determined by the resources they hold relative to the resources of other actors.<sup>6</sup> Moreover, their influence depends on their willingness to invest these resources to influence a decision for a particular issue. As negotiation processes on a particular issue always take place parallel to similar processes on many other issues, actors have to prioritize and decide where to invest their

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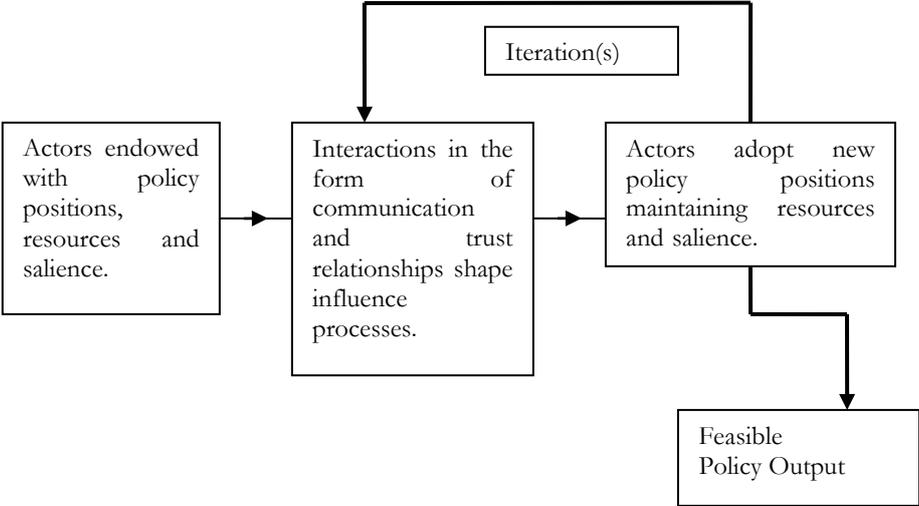
<sup>5</sup> The Proposal was named “Weet wat je koopt (Wok)” or “Know what you are buying.”

<sup>6</sup> Powerful *resources* in political activities can include financial resources, political authority and legal rights, expertise and legitimacy.

resources in order to obtain influence. *Saliency*, then, weighs actors’ potential influence by their motivation and commitment.

Next to the individual characteristics of actors in terms of resources and saliency, their location in the network also influences their ability to exert influence on other actors. Relevant network characteristics, in this context, are communication and trust relationships among the actors.<sup>7</sup> Actors communicate with each other to exchange information but more importantly to expand pressure (Warren 1999). Indeed, we argue that communication is a condition for influence among actors with different policy positions (Stokman and Van den Bos 1992; Stokman and Zeggelink, 1996). As such, communication aims to promote one’s policy position by transforming other actors’ positions and persuading potential allies to maintain their positions.<sup>8</sup> The promotion of actors’ policy positions, in the end, depends both on their ability to exert pressure and resist pressure.

Figure 1. The general model



Next to communication, trust relationships in the network are an important determinant of actors’ abilities to influence other actors. Specifically, we argue that actors are more resistant to “persuasive efforts” by actors whom they do not trust. As such, trust relationships act as

<sup>7</sup> We focus on *communication* rather than *exchange* relationships, because exchange models have been found to work better when issues are highly polarised (Arregui, Stokman and Thomson 2004). As we will later see, transparency does not induce polarised positions, rather actors’ policy positions exist on a continuum.

<sup>8</sup> Influence also occurs through indirect communication taking place within the network. Two actors may indirectly influence one another by sharing direct communication with a third network actor, for example. Thus, some actors may be unable to find supporters even though local patterns would suggest otherwise. Influence flows at the macro level bind actors’ capabilities at the local level.

powerful enablers or constraints on an actor's ability to exert influence.<sup>9</sup> Note, however, that although the absence of trust from ego to alter diminishes the influence of alter over ego, this is not necessarily always good for ego. This absence of trust could increase rather than decrease ego's susceptibility to influence, when alter is a potential ally or could act as weight against unidirectional influence.

The policy process as such can be viewed as a repeated iteration of negotiation rounds in the network, with the actor and network characteristics influencing developments at each state. At the beginning of negotiations, actors hold certain positions on the transparency continuum. Actors' resources and salience filtered through communication and trust relationships then allow them to exercise influence in the network. In consequence, new positions are formed. These new positions along with actors' original resources and salience are filtered again through the communication and trust patterns, until positions no longer change. This output, then, is the *feasible* policy output under the conditions (i.e. actor and network characteristics) that are present at the time.

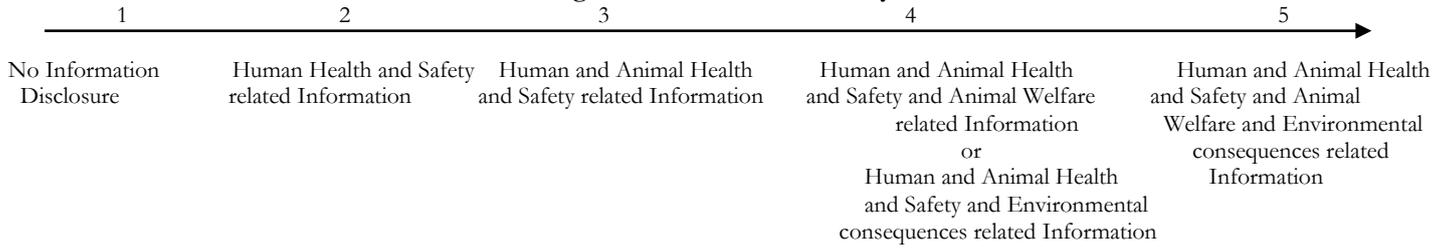
The feasible policy output in our case is the range of transparency requirements on sustainability a policy covers. Among the information aspects relevant for sustainability are impacts on human health and safety, animal health and safety, animal welfare and the environment caused by the various activities performed in each of the links that form the food chain. We view the dependent variable as the *horizontal scope* of transparency to distinguish it from traceability, which reflects the *vertical scope* of transparency.

The question regarding the horizontal scope of transparency is how many subjects related to sustainability a policy will demand to be covered. These subjects are cumulative – a view that has also been supported by the interviews – which allows us to treat the horizontal scope of transparency as a continuous variable. The highest horizontal scope is achieved when all the subjects (impacts on human health and safety, animal health and safety, animal welfare and the environment) are covered by a policy. On the other hand, the lowest horizontal scope is achieved when only the subject of human health and safety is covered by a policy, as is the current status quo. Figure 2 provides a graphical representation of the continuum of policy positions.

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<sup>9</sup> Trust occupies an important role in the literature on management, where it is usually distinguished in two forms; one based on the other party's intentions and the other based on the other party's abilities (Dooley and Fryxell, 1999). Trust in someone's abilities determines whether or not that person or organization will be assigned a certain task. From the perspective of influencing policy outputs, trust in other actors' abilities plays a less important role (apart from the selection of instruments perhaps). Moreover, actors' ability to implement and enforce policy output is at least partly covered by estimates of actors' resources. In contrast, trust in someone's intentions plays a pivotal role for our analysis, as it pertains to the risk of facing opportunistic behavior (Bradach and Eccles, 1989).

**Figure 2. Continuum of Policy Positions**



### 3.2 *Operationalisation and Measurement Identification of the network*

Following Laumann and Knoke (1987), we assume that corporate entities, such as trade associations, professional societies, labor unions, public interest groups, government bureaus and congressional committees, are the key policy-domain actors.<sup>10</sup> Political actors in our study, therefore, include business actors, state actors, and civil society organizations that have a potential to influence decisions concerning transparency in the protein food chain. We have identified these actors (and thereby the boundaries of the network) using a nominalist approach (Wasserman and Faust, 1994; Laumann, Marsden and Prensky, 1989) combined with a snowball method (Goodman 1949, 1961; Erickson 1987).<sup>11</sup> Data on the actors identified by this combination of methods were collected in the form of structured interviews with the relevant actors in the period 2003-2004.

#### 3.2.1 Actor characteristics

In order to identify actors' positions on the presence of sustainability related information in the chain we asked them to indicate what kind of information they want included in the system of tracking and tracing in the chain. The kind of information we asked actors to choose from involved information on human health and safety, animal health and safety, animal welfare and the environment. As mentioned before actors' answers were cumulative thus allowing us to treat their positions as a continuous variable.

<sup>10</sup> We define actors as "those acting units which are concerned with formulating, advocating and selecting courses of action that are intended to resolve the substantive problem in question," (Kennis and Schneider, 1991; Laumann and Knoke, 1987).

<sup>11</sup> The nominalist approach by itself is unreliable in cases in which the network boundary is unknown. This applies to our case as well, because transparency is a new issue and negotiations concerning transparency are mostly of an informal nature. Hence, the selection of actors through their participation in formal meetings might be insufficient. For that reason, we have employed the snowball method as well, asking the actors identified with the nominalist approach to name actors with whom they interact on issues of transparency.

We used the “influence reputation” method to assess actors’ resources. In other words, we asked each actor to indicate which actors (including themselves) they considered the most influential based on a list of all network actors (see also Jordana and Sancho, 2005; Laumann and Knoke 1987).<sup>12</sup> Studies have found that the subjective perception of influence is often more “real” than influence assessments based on more “objective” criteria. Following Stokman and Van den Bos (1992) we assigned a score to each actor based on a quintile distribution. If an actor was mentioned often enough to be in the top 20 percent of actors it received a score of 100, whereas if not mentioned at all it received a score of 20.

Salience measures the willingness of each actor to devote resources to a particular issue. Following Abdollahian and Kugler (2003) and Stokman et al. (2000), we assessed the salience of transparency issues to each actor on the basis of her willingness to devote resources to advance her position when the issue arises. Specifically, we provided actors with a list of statements indicating different scales of issue importance. The statements ranged from “being aware about the issue but not caring enough to get involved” to “being absolutely committed to the issue because it is number one priority”. Based on actors’ responses we assigned a value to their salience that ranged from 0 to 100.

### **3.2.2 Network characteristics**

In order to identify the patterns of communication among the actors, we asked them to identify other actors with whom they regularly communicate on the issue of transparency. Regularity was emphasized because incidental communication does not imply a stable (network) relationship. Likewise, we examined trust relationships by asking actors to indicate which other actors in the network they trusted. Actors could pick their communication and trust counterparts from a list of the network actors. Actors were assigned a value of “1” if the respondent mentioned a communication relation with them and a value of “0” if not. For the measurement of trust, actors were assigned a value of “1” if the respondent mentioned a trust relationship with them, and a value of “0.5” if not. We used “0.5” to account for the weakening effect of distrust on power and cooperation. As explained earlier, actors are reluctant to join forces either due to coercion or persuasion with actors they believe might betray them in the process. However, actors are not

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<sup>12</sup> A possible critique of this method concerns the meaningfulness of ranking actors’ reputations along a single dimension. Critics argue that applying this method requires the assumption that all actors are using similar criteria when making their judgments. Knoke (1998) has tested this concern in labor policy networks in the US and Germany. The results of this study indicated that while informants use different criteria in making their choices, the aggregate rankings provide robust consensus regarding the influence reputation of organizations.

immune to other actors' power. Distrust does not completely prevent influence from other actors.<sup>13</sup>

### *The Formal Model*

We use a mathematical model to predict actors' influence on each other in negotiations, which is based on Stokman's work on the effects of network communication patterns on actors' policy positions. The model is encapsulated in the following formula:

$$P_i^{t+1} = \frac{\sum_{j=1}^n I_{ji} P_j^t a_{ij}^t}{\sum_{j=1}^n I_{ji} a_{ij}^t} \quad (1) \quad \text{where} \quad a_{ij}^t = 1 - |P_j^t - P_i^t| \quad (2)$$

The formula shows that the position of actor  $i$ ,  $P_i$ , at time  $(t+1)$  is a weighted sum of her own policy position and that of other actors who interact with  $i$  at time  $t$ . The weights are determined by her own and the other actors' incoming influence relations,  $I_{ji}$ , as well as the normalized distance between  $i$ 's and other actors' policy positions at time  $t$ ,  $a_{ij}^t$ . Factor  $a_{ij}^t$  is employed in order to account for the fact that an actor's inclination to move towards other actors' policy positions diminishes with the distance between their policy positions.

The specification of the influence  $j$  can exert on  $i$ ,  $I_{ji}$ , is denoted by the following formula (based on Stokman and Van den Bos 1992):

$$I_{ji} = \frac{r_j s_j (C_{ji} T_{ij})}{r_i s_i + \sum_{k=1}^n r_k s_k (C_{ki} T_{ik})} \quad (3)$$

The formula shows that in a network of  $n$  actors, the ability of one actor  $j$  to influence another actor  $i$  depends on the resources  $j$  can mobilize to determine decisions on the issue at hand discounted by the salience  $j$  attaches to that issue  $(r_j s_j)$ , relative to the resources and salience  $i$

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<sup>13</sup> Different degrees of weakness could be used but in the absence of any previous effort to account for such effect (at least to our knowledge), we felt that weakening influence by half would provide a fair account. As trust and distrust are expected to play a primary role in determining actors' position shifts and policy outputs, future research on this issue is necessary.

$(r_i s_i)$  and all the other actors who interact with  $i$  can mobilise to determine decisions on the same issue ( $\sum_{k=1}^n r_k s_k$ ).

The interaction variables are given by  $C_{ji}$  and  $T_{ij}$ , as well as  $\sum_{k=1}^n C_{ki} T_{ik}$ . The variable  $C_{ji}$  denotes the communication from  $j$  to  $i$ , while  $\sum_{k=1}^n C_{ki}$  denotes the communication from actors  $k$  in the network towards  $i$ . The formula shows that the influence of  $j$  over  $i$  increases the less actors  $k$  communicate with  $i$ , especially when  $i$ 's ability to determine decisions on the issue at hand ( $r_i s_i$ ) is small and  $j$ 's ( $r_j s_j$ ) large. In contrast, the larger the number of actors  $k$  communicating with  $i$ , the smaller the relative influence of  $j$  over  $i$ . This is especially advantageous for  $i$ 's policy position when the actors  $k$  share the same position as  $i$  and/or have policy positions close to  $i$  and distant to  $j$ .

The variable  $T_{ij}$  denotes the trust relationship from  $i$  to  $j$ , and  $\sum_{k=1}^n T_{ik}$  the trust relationship from  $i$  to other actors  $k$  in the network. The combination of communication and trust variables shows that an actor's capacity to induce position shifts on other actors' policy positions depends not only on the establishment of a communication relationship from  $j$  to  $i$  but also on the presence of trust from  $i$  to  $j$ . In other words, actors resist pressure from actors whom they do not trust. In the same vein, actors are reluctant to form coalitions with similar minded actors (at similar policy positions) if they do not trust their potential allies.

Finally, the network policy output is predicted by the weighted sum of the policy positions of all actors after a number of influence rounds ( $t+m$ ):

$$P_n^{t+m} = \frac{\sum_{i=1}^n P_i^{t+m} r_i s_i}{\sum_{i=1}^n r_i s_i} \quad (4)$$

This formula shows that in determining the policy output the positions of all actors as they have been shaped in time  $t+m$ ,  $P_i^{t+m}$  are taken into account but the positions of less influential actors (in terms of resources and salience) carry a relatively smaller weight.

### 3.2.3 Case Selection

We focus our attention on the pork sector in the Netherlands and the EU. The Dutch pork sector is particularly intensive with 12.6 million pigs producing approximately 20.3 million piglets

annually (PVE 2002). Pig farming is concentrated in the southern and eastern parts of the country, which have been characterized as two of the most concentrated pig farming areas in the world (Pluimers, De Leeuw, Smak, Elbers and Stegeman 1999). As such, environmental pressures, the risk of the spreading of diseases, and concerns about animal welfare are high. Hence, the Dutch pork sector is an ideal case for the purposes of this study.

Decisions taken at the national level are also shaped by decisions (or non-decisions) taken at the EU level in EU member countries today, however. Thus, a lack of movement on transparency issues at the national level, for instance, may well prove to be short-lived if relevant initiatives develop at the EU level. Consequently, this study also analyzes the EU policy network that has formed around transparency related decisions in the pork sector.

### **3.2.4 Evaluation**

Usually, researchers study processes that have taken place in the past and have been concluded during the period of the research. In those cases, evaluation of the results is a rather straightforward task. Researchers compare the results of their model with actual outcomes of specific policy proposals and evaluate how frequently they managed to successfully predict the outcome. In this research, however, we study present-day-phenomena. Transparency related proposals and initiatives have been initiated only very recently and although first-round outcomes have been reached for some of them, stable outcomes have yet to be reached.

In order to evaluate the explanatory power of our model then, we use the following procedure. First, we determine the weighted mean of the positions of the network actors on transparency. In a second step, we assign a value to the status quo in terms of existing legislation and initiatives for transparency in the Dutch and the EU case respectively. We then compare the two values. If there is a significant difference, this difference needs to be explained. In a third step, we therefore calculate the predicted policy outcome with the help of our model and data. If our results are significantly different from the weighted mean of the policy positions of the network actors and substantially closer to the status quo value, then the model provides a good predictive tool for the estimation of the relevant policy outputs.<sup>14</sup> In other words, network characteristics in terms of communication and trust can be shown to have an important influence on these policy outputs.

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<sup>14</sup> Many scholars compare the prediction of their models with the prediction of base models, such as the weighted median or mean. Both models assume no interaction among the actors and no shifts in policy positions, and as such they have been described as “a-theoretical” (Schneider et al, 2006). The weighted median takes into account actors’

## 4. Findings

### 4.1 *The Dutch Case*

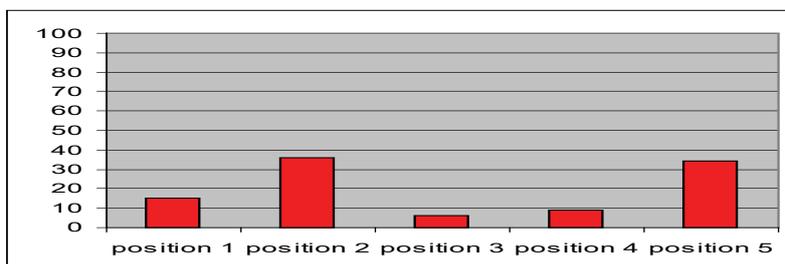
In total, we identified 14 actors active in Dutch food policy making concerning transparency in the pork chain. Their positions actors on the horizontal scope of transparency are very diverse, highlighting the controversy the issue of sustainability related information provokes among the relevant actors. More specifically, meat processors and their organizations (NUT, DUM, PVE and COV) have low preferences (position 2: human health and safety related information) regarding the inclusion of sustainability related information in the traceability systems. The feed organizations (PDV and NEV) have even lower preferences (position 1: no information disclosure). On the other hand, consumer and environmental organizations as well as retailers and the Ministry of Agriculture have high preferences regarding the inclusion of sustainability related information in the traceability systems. Specifically, the environmental organization Stichting Natuur and Milieu (SNM) and the organization for animal welfare, Dierenbescherming (DB), advocate position 4 (human and animal health and safety and environmental consequences related information/ human and animal health and safety and animal welfare information), while Consumentenbond (CB), Platform Biologica (PB), the Ministry of Agriculture (LNV), and the umbrella organization for retailers (CBL) advocate position 5 (human and animal health and safety and animal welfare and environmental consequences related information). Finally, the farmers' organizations (NVV and LTO) are situated in the middle advocating position 3 (human and animal health and safety related information).

Figure 3 graphically represents actors' alignment on policy positions. Based on this alignment of actors along the continuum, one should expect a policy output at 3.11, which would mean an agreement on the provision of information related to human health and safety and animal health and safety, plus steps towards including information on ethical issues such as animal welfare. In contrast, the outcome of the negotiations on the Wok, which was an agreement on the provision of information on human health and safety and on first steps to prepare the inclusion of other sustainability related information, can be interpreted as position 2-plus.

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utility functions as well as their influence in order to make a prediction. The weighted mean is calculated solely on the basis of actors' influence and their preferences towards other actors' policy positions are not reflected. As such, the weighted mean reflects a compromise value (Van den Bos, 1991) of actors' initial policy positions. The aim of comparing the results of the sophisticated model with those of the base models is to test whether the theory behind the sophisticated model makes any difference to the prediction of the policy outputs. If it does then the sophisticated model is a superior predictive tool.

**Figure 3. The Distribution of Positions on Transparency in the Dutch Case**



This difference between the actual policy situation and the one that one would expect from the alignment of the actors can be understood, if one takes into account the communication and trust relationships between the actors and their impact on the negotiation dynamics. Based on these dynamics in the network, our analysis suggests a policy outcome at 2.5, which is close to the current decisions concerning transparency in the pork sector and significantly different from what an analysis without consideration of communication and trust relationships would suggest. Table 1 summarizes actors' position shifts over time (or negotiation rounds) in the pork network in the Netherlands calculated by our model.

**Table 1. Position shifts on the horizontal scope (PHS) of transparency**

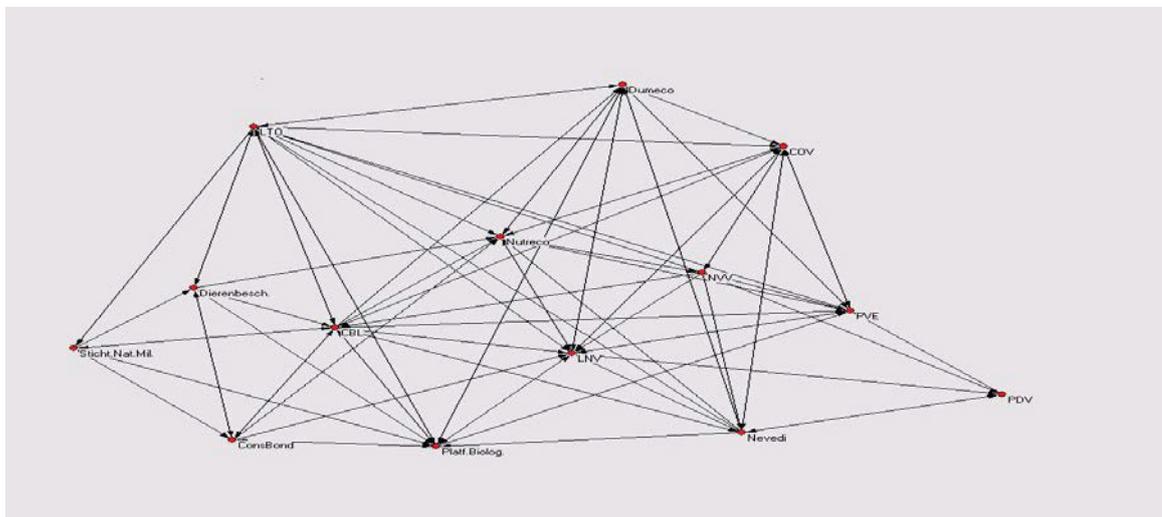
**in the Dutch pork network <sup>14</sup>**

Actors	PHS (t)	PHS (t+1)	PHS (t+2)	PHS (t+3)	PHS (t+4)
NEV	1	1	2	2	2
PDV	1	1	2	2	2
PVE	2	2	2	2	2
COV	2	2	2	2	2
DUM	2	2	2	2	2
NUT	2	2	2	2	2
NVV	3	3	3	3	3
LTO	3	3	3	3	3
SNM	4	4	4	4	4
DB	4	4	4	4	4
CB	5	5	5	4	4
PB	5	5	4	4	3
CBL	5	5	4	3	3
LNV	5	4	3	3	3
<b>Network position</b>	<b>3.1</b>	<b>2.9</b>	<b>2.8</b>	<b>2.6</b>	<b>2.5</b>

Table 1 shows, in particular, that the ministry quickly abandons its ambitious policy position (5) and settles after three negotiation rounds on position 3. The retailer organization (CBL) also follows a declining trend in its position, but not as quickly as the ministry. Finally, the more radical NGOs also reveal some willingness to compromise, but remain at position 4.

These shifts in actors' policy positions can be explained by the patterns of communication and trust relationships in the network. Figure 4 illustrates the communication patterns.<sup>15</sup> The figure shows that all actors communicate with one another and hence influence takes place among all network actors.

**Figure 4. Patterns of Communication in the Dutch Case**



Further analysis of the patterns of communication in the network, however, reveals certain clusters or factions of communication (see Table 2).<sup>16</sup> More specifically, the ministry is part of a cluster with the large economic actors and the Product Board, who predominantly advocate low transparency positions. In contrast, environmental and animal welfare organizations, as well as the consumer association and organic producers are marginalized in the network and less able to exert influence.<sup>17</sup>

<sup>15</sup> The figures and tables illustrating actor grouping have been developed with the help of the network program UCINET (Borgatti, Everett, and Freeman, 2002).

<sup>16</sup> These clusters can be identified on the basis of similarity in communication with other actors.

<sup>17</sup> This clustering of actors also is reflected in the Ministry's initiation of a Platform for Transparency, in which the large meat and fish companies in the Netherlands are to develop proposals for establishing transparency in the chain, while environmental and consumer organizations as well as retailers only receive a consultative status.

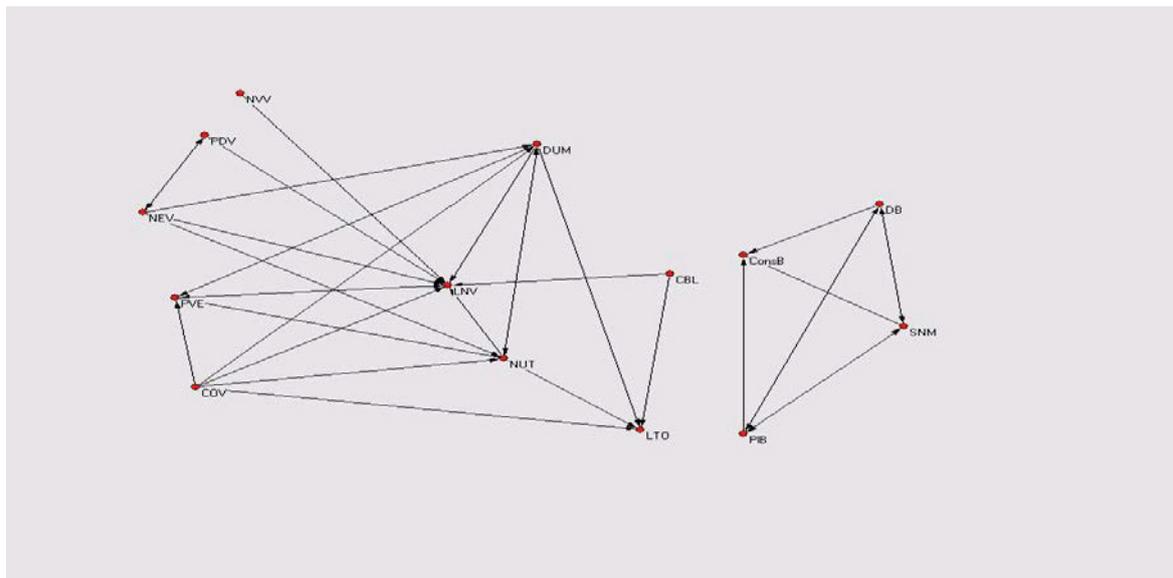
Table 2. Communication Clusters in the Dutch Case

	NP	PD	CC	CS	LL	PD	CN	N
Nevedi	1					1		
PDV	1				1			
Platf.Biolog.			1	1	1	1	1	
Dierenbesch.			1	1		1		
CBL		1	1	1	1	1	1	
ConsBond		1	1	1	1			
Sticht.Nat.Mil.		1	1	1				
LTO		1	1	1		1	1	1
LNV	1	1	1			1	1	1
PVE			1			1	1	1
Dumeco						1	1	1
COV	1		1			1	1	1
Nutreco						1	1	1
NVV					1			

Apart from the communication patterns, trust relations in the network also turn out to play a fundamental role. These trust relationships further emphasize the marginalization of NGOs in the network (see Figure 5) and their inability to effectively exert influence on other actors. Most significantly, the mutual distrust between the NGOs and the other pro-transparency actors, specifically retailers and the ministry, prevents them from expressing a unified voice. The potentially powerful coalition at 5 proves not to be a coalition at all, but quickly dissipates in the negotiations. At the same time, the distrust of NGOs and organic producers towards business' intentions also significantly weakens the latter's influence on the NGOs' positions, however, reflecting the inability of the potentially powerful business actors to shift the NGOs and organic producers in a position lower than position 4, even though NGOs and organic producers are the weakest actors in the network..

**Figure 5. Patterns of Trust Relationships in the Dutch Case**

In sum, patterns of communication and trust play a crucial role in the network. They allow us to explain a policy outcome that is significantly below what the weighted mean of the actors' original policy positions on transparency would suggest, revealing hidden groupings among the actors as well as the illusive nature of potentially powerful coalitions. How can the patterns of communication and trust be explained, in turn? We can only speculate here, since the interviews did not inquire into the sources of trust, for instance. But a few intuitive explanations suggest themselves. With respect to the Ministry, the cause for this lack of trust may result from the fact



that retailers and civil society organizations are not part of the traditional constituency of the Ministry. With respect to the retailers, the lack of a trust relationship with environmental and consumer organizations may be the result of the existence of different fundamental organizational values. Retailers are business companies. On many political issues, their interests are likely to be closer to those of the meat producers than to environmental and consumer organizations. In this particular case, therefore, they may want to avoid an open conflict with the other business actors that could involve significant costs on future interaction.

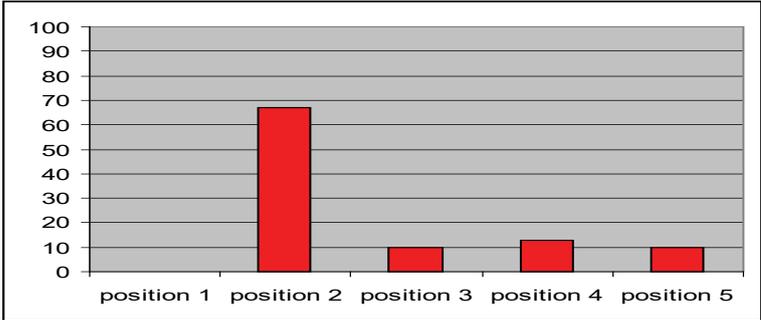
#### *4.2 The EU Case*

In total, we identified and interviewed 11 actors active in policy making concerning transparency in the pork chain in the EU. With respect to the horizontal scope of transparency, there is not much pressure at the moment among the actors interviewed. More specifically, the Agricultural Directorate General (DG-Agri) is the only actor who adopts position 5 (the highest horizontal scope of transparency). The association of retailers and consumers (EUROCOOP) and the European Animal Welfare Association (EGAW) adopt position 4, on the account that consumers

should also be able to choose food on the basis of ethical considerations, such as animal welfare. The European Consumer Association (BEUC) adopts position 3, stating that animal welfare and environmental consequences constitute legitimate consumer concerns, but remain secondary issues. Finally, the Directorate General of Consumer Health and Protection (DG-SANCO), the Farmers' Association (COPA-COGECA), the industry's associations (CIAA, CLITRAVI) as well as the retailers' association (EUROCOMMERCE) adopt position 2, arguing that only information on human health and safety should be distributed in the chain.<sup>18</sup>

Figure 6 graphically represents actors' alignment in policy positions. Based on this alignment of actors along the continuum, one should expect a policy output at 2.66 (close to 3), which would mean an agreement on the provision of information related to human health and safety, plus steps towards including information on animal health and safety as well. In contrast, the EU Regulation discussed above means an agreement on the provision of information on human health and safety, as its primary aim is the avoidance of future food scandals and the preservation of human health. Information on sustainability aspects of food production as a means to produce healthy and safe food is not requirement specified by the Regulation. Hence, the provisions of the EU Regulation regarding transparency can be interpreted as position 2.

**Figure 6. The Distribution of Positions on Transparency in the EU Case**



<sup>18</sup> A number of environmental NGOs also are active in agricultural and food issues at the EU level. They include EEB (European Environmental Bureau), WWF (World Wild Fund), FOE-Int (Friends of the Earth-International), GREENPEACE, Birdlife International and ECOS (European Environmental Citizens' Organization for Standardization). However, none of these NGOs is active on transparency in food chains (except for the WWF which is active in the EU farmed-fish sector). In addition, there is a public health NGO, namely the European Public Health Alliance, but this too is not active in transparency related issues. The main issue for those organizations as far as provision of information on food is concerned is the presence of GMOs and the labeling of those organisms when present in food.

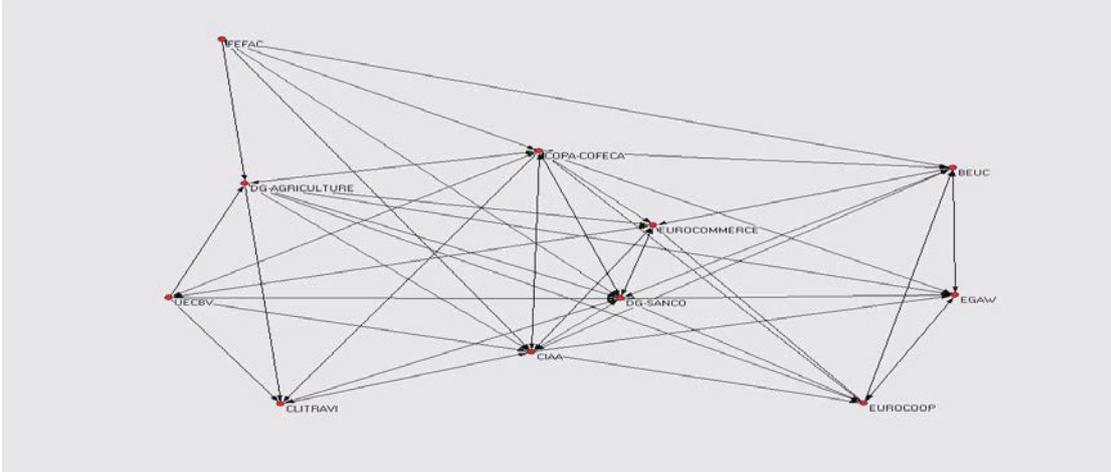
Our model, in turn, predicts a policy output very close to 2 (2.14). Taking into account the impact of communication and trust relationships on the negotiation process, then, results in superior explanations of policy output. Table 3 summarizes actors' position shifts over time. The most interesting feature in this table is the quick position shift of the DG-Agri from 5 to 3 and then to 2 which also represents the common position of the network. On the other hand, the business actors advocating position 2 manage to hold their position throughout the negotiation process. Finally, the NGOs compromise and settle down in position 3.

**Table 3. Position shifts on the horizontal scope (PHS) in the EU pork network**

Actor	PHS (t)	PHS (t+1)	PHS (t+2)	PHS (t+3)
EUROCOMMERCE	2	2	2	2
FEFAC	2	2	2	2
DG-SANCO	2	2	2	2
CIAA	2	2	2	2
CLITRAVI	2	2	2	2
COPA-COGECA	2	2	2	2
UECBV	2	2	2	2
BEUC	3	3	3	3
EGAW	4	4	3	3
EUROCOOP	4	3	3	2
DG-AGRI	5	3	2	2
<b>Network position</b>	<b>2.7</b>	<b>2.4</b>	<b>2.2</b>	<b>2.1</b>

These position shifts are crucially shaped by the patterns of communication and trust relationships in the network. Figure 7 illustrates the communication patterns. Similar to the Dutch case, the figure shows that all the actors communicate with one another, allowing influence to take place among all network actors.

**Figure 7. Communication Patterns in the EU Case**



In addition, similar to the Dutch case, clusters of communication among some of the network actors can be identified (see Table 4). More specifically, DG-Agri belongs to the same communication cluster with business actors who advocate a low position on transparency. In contrast, NGOs do not enjoy the degree of access. Although they too communicate with public actors, their position in the network again is much more marginal.<sup>19</sup>

**Table 4. Communication Clusters in the EU Case**

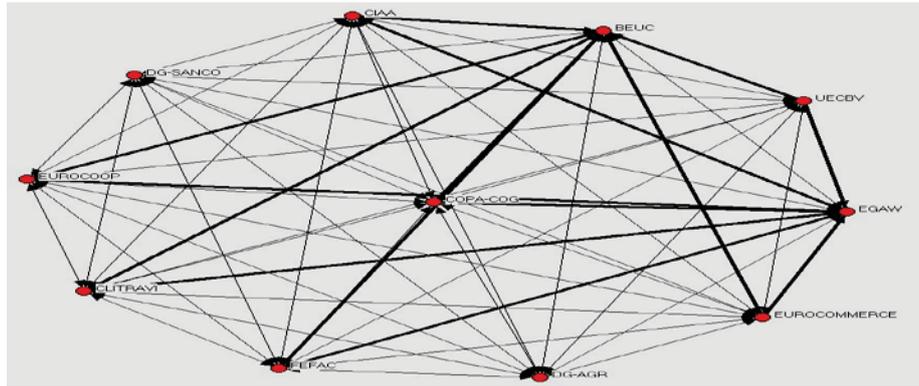
	E	B	E	F	C	U	D	C	C	D	E
EGAW		1	1			1	1				
BEUC		1			1	1	1				
EUROCOOP		1	1			1	1	1	1		
FEFAC		1			1	1	1				
COPA-COFECA		1	1		1		1	1	1	1	1
UECBV				1	1	1	1	1	1		
DG-SANCO		1	1		1		1	1	1		
CIAA		1	1	1		1	1	1	1	1	
CLITRAVI					1	1					
DG-AGRICULTURE		1			1	1	1	1			
EUROCOMMERCE					1	1	1	1	1		

The marginalization of NGOs is further stressed by the patterns of trust among the network actors. Although the level of trust among the EU network actors is much higher than in the Dutch case, NGOs appear to remain skeptical. In Figure 8, line thickness is used to distinguish mutual (thick) and unilateral trust relationships (thin) among the actors. The Figure shows that most of the relationships that involve NGOs are thin, and hence, trust is –reportedly- unilateral.

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<sup>19</sup> Again, this is also reflected in the creation of an advisory group for the clarification of Article 9 regarding public consultation, which was mentioned above. The advisory group will operate under the umbrella of DG-SANCO and will have 44 permanent members. The criteria for access are first of all, the representation of a general interest in the food chain, which according to the DG-SANCO’s definition of “general interest” as pertaining to food safety includes the food chain actors as well as consumer organizations (hence no access to environmental and animal welfare groups) and secondly, a permanent presence in Brussels.

Figure 8. Patterns of Trust Relationships in the EU



The NGO skepticism stems perhaps from the different functions they perceive actors to fulfill. NGOs may find it difficult to trust business actors whose function they perceive to be economic gain (which in their view frequently conflicts with sustainability objectives). Moreover, they may feel uneasy towards those public actors whom they perceive as business friendly. Interestingly, the same skepticism is not reported in reverse. In particular, the trust reported by business actors -and in particular business actors with different policy positions from those of the NGOs – may surprise observers. Thus, it seems that NGOs may give up on potential influence due to their unwillingness to return business' willingness to cooperate. A cynical explanation for business' reported trust in NGOs could link it to business's efforts to improve their moral legitimacy by showing their willingness to cooperate with NGOs, however. Such an explanation would perhaps also wonder whether the same openness would exist, if NGOs were influential indeed. Given that our interviews did not inquire into the sources of trust or distrust, however, we can only speculate here.

Overall, both communication and trust relationships can be shown to matter in determining policy output on transparency in the pork network at the EU. It is noteworthy that the general level of trust is much higher in the EU case than in the Dutch case. The NGOs still are not as integrated in the trust network as the other actors. The main relationship characteristic that explains the inability of pro-transparency actors to exert a stronger influence in the network is communication in this case, then, as the core governmental actors supporting a high level of transparency form a communication cluster with the major economic interests.

## 5. Implications

The above analysis has shown that the network characteristics play a crucial role in determining policy outputs. Even though the number of cases examined is not sufficient to issue a statistical verdict about the predictability and accuracy of the model, we show that network interactions make a substantial difference in the explanation of a given policy output. Only if we take into account structural network characteristics, can we explain the developments in policy formation that take place during the policy process.

Specifically, the analysis has documented that communication and trust relationships in policy networks act as filters on the influence actors can exercise on each other based on their resources and their willingness to invest these resources on a certain issue. Communication is a necessary condition for the exercise of influence in this context, both towards allies as well as towards opponents. Trust is not a necessary condition for influence, but nevertheless acts as a powerful enabler or constraint on an actor's ability to resist and move opponents or form powerful coalitions with allies.

Interestingly, patterns of communication and especially trust frequently receive little attention in scholarly and political debates on the formation of policy outputs. By identifying the crucial role such structural network characteristics play in the policy process, this analysis can redirect our focus. Thereby, it also allows us to identify strategies for inducing policy change that otherwise would tend to be overlooked. We illustrate such strategies for the case of transparency policy below.

Most fundamentally, however, the analysis has served to document the continued relevance of the network approach for policy analysis. Importantly, in making the case for the policy network approach we do not advocate relying on the identification of ideal network types. Rather we strongly recommend to follow the methodologically oriented strand of network analysis and to make the specific characteristics of relationships between actors in the network an empirical question. Thereby, we can reduce the number of assumptions we need to make and gain explanatory power at the same time.

On the issue of transparency itself, the above discussion gives a mixed message. Traceability is accepted as well as desired by all the network actors. At the same time, the analysis suggests that efforts to promote sustainability related information in the Dutch pork chain have stumbled across a strong coalition of actors situated around the Ministry of Agriculture and are likely to

continue to do so in the near and mid-term future. Moreover, no impetus for a broadening of transparency objectives to more aspects of sustainability can be expected from the EU level at this point. These findings indicate that despite new goals for agriculture and food, the structure of relationships has not changed. New actors have been added (civil society), but that has not fundamentally affected historically grown relationships.

Change could arise from closer communication between NGOs, retailers and the Ministry. Such a move could be initiated by government, which claims to be interested in fostering this type of sustainable information, after all. The Ministry's current positioning of itself in the network however, and its patterns of communication with the other network actors force us to question whether such claims are mere political rhetoric. Alternatively, this change could be initiated by retailers. To date however, these actors appear to shy away from building a coalition with environmental and consumer organizations against producer interests and prefer to pursue a cooperative approach based on bilateral negotiations with producers. This preference could change, if retailers felt they had no chance of success at that level. Moreover, retailers may perceive the Ministry as currently unwilling to truly support a strong push for sustainable information. It is possible that they would be willing to foster a pro-sustainability coalition with environmental and consumer organizations if they saw more potential of government support for such an objective.

Change could also arise from transformations in the pattern of trust relationships in the network. Altering patterns of trust is not that simple, however. Significant efforts from all sides would need to be made in order to improve the trust relations in the network. Business actors in the Netherlands, for instance, complain that NGOs are never satisfied and always ask for more. On the other hand NGOs do not see significant efforts from business to become more transparent. From their perspective, they also see a lack of significant efforts from the government to seriously pursue transparency. Such visible efforts would be necessary for actors to alter their collective memory and create new trustworthy relationships with one another.

Alternatively, the introduction of influential new actors, with more general interests for sustainability, such as the Ministry of the Environment and DG-Environment could also result in better outputs for transparency. The participation of a public actor with an environmental profile could counteract the predominance of economic actors by giving more access to pro-sustainability interests.

Other strategies, such as changing actors' values and perceptions, could also be pursued but would require a much longer time horizon. Public actors could try to reframe the networks by providing the "leadership to shape the debate" on transparency to move the outcomes closer to a "more socially desirable space" (Peters 1997: 57). Currently, the issue of transparency is framed in rather technocratic vocabulary which does not allow its broader sustainability dimension to flourish and thereby change actors' relative influence in the network as well.<sup>20</sup> Without such efforts or an intentional pursuit of changes in communication and trust patterns by the relevant actors, however, the political feasibility of improved policies for transparency in the Netherlands and the EU is rather low at the moment.

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<sup>20</sup> As with many network structuring strategies, however, there is the danger of inducing an unexpected effect opposite of the intended one. The danger in the present case would be the inducement of more polarized and segregated communication patterns among business actors and NGOs, making it more difficult for pro-sustainability actors in both sectors to form a stable and successful coalition.

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