

Stakeholder engagement for responsible innovation in the private sector: critical issues and management practices

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RESEARCH ARTICLE

Abstract

Although both EU policy makers and researchers acknowledge that public or stakeholder engagement is important for responsible innovation (RI), empirical evidence in this field is still scarce. In this article, we explore to what extent companies with a disposition to innovate in a more responsible way are moving towards the ideal of mutual responsiveness among stakeholders, as it is presented in the RI literature. Based on interviews with companies and non-economic stakeholders in the Dutch Food industry, it can be concluded that innovative food companies are still far from implementing the ideal of mutual responsiveness in a significant way. The tension between the call for the active involvement of stakeholders in the literature and actual stakeholder engagement practices is explained by identifying a number of critical issues regarding stakeholder engagement, which are specific to actors involved in RI in the private sector. Finally, management practices designed to deal with these critical issues regarding stakeholder engagement are identified.

Keywords: business ethics, innovation ethics, responsible innovation, innovation management, stakeholder engagement

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1. Introduction

Both EU policy makers and researchers in the field of responsible innovation (RI) acknowledge the importance of public or stakeholder¹ engagement for stimulating RI. Von Schomberg for instance defines RI as a 'transparent, interactive process by which societal actors and innovators become mutually responsive to each other with a view to the (ethical) acceptability, sustainability and societal desirability of the innovation process and its marketable products in order to allow a proper embedding of scientific and technological advances in our society'

¹ The concepts of public and stakeholder engagement are used interchangeably in this article, although we acknowledge the differences between the two concepts; while a specific and fixed stake or interest is characteristic of stakeholders, the interest of the public may be less fixed (Lezaun and Soneryd, 2007) and related to more general values like the values of the EU (cf. Von Schomberg, 2013). In the discourse on innovation management, however, the concept of stakeholder engagement is used more frequently (cf. Blok and Lemmens 2015; Gould, 2012).

(Von Schomberg, 2013: 19 (emphasis added)). From a policy perspective, it is assumed that stakeholders should be involved in order to incorporate relevant ethical and societal aspects into innovation practices and to achieve desirable goals (European Commission, 2013; Matter, 2011). EU commissioner Geoghegan-Quinn for instance argues 'we can only find the right answers to the challenges we face by involving as many stakeholders as possible in the research and innovation process' (Geoghegan-Quinn, 2012 (emphasis added)). Also in the scientific literature, it is widely acknowledged that stakeholder engagement is an important approach to discussing and assessing the directions, implications and consequences of innovations and setting priorities in this field (cf. Blok, 2014a; Chilvers, 2008; Delgado *et al.*, 2010; Jackson *et al.*, 2005; Owen and Goldberg, 2010).

At the same time, it is clear that stakeholders have different ideas about these ethical and societal aspects of innovation practices and the societal goals it should achieve. These differences between stakeholders can be due to differences with regard to the content of the societal

goals that should be achieved by RI practices, but also to different agendas and divergent motives of profit and non-profit organizations for instance, and can be seen as potential bottlenecks in RI. These bottlenecks at least indicate that it is not so easy to incorporate relevant ethical and societal aspects (Blok and Lemmens, 2015), and this raises the question how stakeholder engagement should be managed and implemented in RI (cf. Pavie *et al.*, 2014; Von Schomberg, 2013).

A second problem with the emerging field of RI is that empirical evidence regarding Stakeholder Engagement in Responsible Innovation (SEiRI) is still scarce. In an influential volume on RI, Richard Owen and colleagues observe that 'there are currently few, if any, examples of a systematic and institutionally-embedded [RI] framework' in operation (Owen *et al.*, 2013, 29). Moreover, most research on RI focuses on academic research and development (R&D) while most innovations take place in commercial or industrial settings and in the private sector. Although innovations in the private sector have often a more prominent and immediate effect in society than academic R&D, R&D and innovation in the private sector has remained largely unexplored till now (Flipse, 2012). It can be questioned to what extent the ideal of mutual responsiveness and shared responsibility among stakeholders is feasible in commercial settings, in which the investor alone is responsible for the risk-reward assessment of risky innovations with high investment costs (Blok and Lemmens, 2015). From the perspective of the private sector, several concerns regarding stakeholder engagement in innovation processes can be identified, like the risk of knowledge leakage and as a consequence, the decrease of competitive advantage of companies. In short, while empirical evidence on stakeholder engagement in RI is already scarce, the limitations of stakeholder engagement in RI in the private sector are not sufficiently being taken into account in current research.

In this article, we explore how far companies with the intention and disposition to innovate in a more responsible way are moving in the direction of this ideal of mutual responsiveness among stakeholders, as it is presented in the RI literature. The main research question of this article is to what extent companies engage stakeholders in each phase of the innovation process, what are their concerns regarding stakeholder engagement and how they deal with the risks of stakeholder engagement in their innovation processes. By exploring the level and scope of stakeholder engagement in RI in the private sector, we are able to identify critical issues regarding stakeholder engagement that are specific to RI in

the private sector, as well as management practices which may help to deal with these concerns.

Based on a literature review in the field of RI, stakeholder engagement and open innovation, in Section 2 we develop a theoretical framework that was subsequently explored during interviews with companies in the Dutch Food industry and non-economic stakeholder like NGOs and research institutes involved in food innovations in the Netherlands. We have chosen the Dutch food industry for this research, because innovative food companies increasingly acknowledge their role in the prevention and mitigation of lifestyle related diseases like obesity, heart diseases and diabetes type 2, and are currently involved in all kinds of innovations for public health. Based on the analysis of the primary data in Section 4, we are able to draw conclusions regarding the critical issues in stakeholder engagement in RI in the private sector and management practices for dealing with these concerns in Section 5. In Section 3, the research methods will be explained.

2. Literature review

Responsible innovation

Because innovation is not automatically 'good' but may have unintended and irreversible socio-ethical or environmental consequences, these possible consequences of innovations over time should be considered in innovation processes (Matter, 2011). Reflection on its potential and real effects in terms of quality of life, well-being and sustainability is necessary to determine whether an innovation is 'good' or 'responsible' (Van den Hoven *et al.*, 2012). In this study, we use the leading definition of RI which is developed by Von Schomberg: RI is a 'transparent, interactive process by which societal actors and innovators become mutually responsive to each other with a view to the (ethical) acceptability, sustainability and societal desirability of the innovation process and its marketable products in order to allow a proper embedding of scientific and technological advances in our society' (Von Schomberg, 2013: 19).

Owen and colleagues developed three distinct and emergent features of RI (Owen *et al.*, 2013). The first feature concerns the emphasis on science and innovation for society. In RI, the purpose of science and innovation and the right impact are stressed, i.e. the contribution to societal goals. In the European context, there are several so-called 'grand challenges' like the aging of people, life style diseases like obesity, and climate change, and RI contributes at least partly to the solution of these problems. The second feature of RI concerns science and innovation with society.

Actors should be responsive to society concerning the direction and trajectory of innovations. This feature is supported by Von Schomberg (2013), who argues that societal actors and innovators have to become mutually responsive to each other. The third feature concerns the responsibility of actors involved in innovation as an uncertain, often complex and always collective endeavour in which companies, scientists, NGO's, etc. are involved. As a collective endeavour, all actors involved in the innovation process share responsibility and are co-responsible (Owen *et al.*, 2013; Von Schomberg, 2013).

The three features of RI already make clear that SEiRI is important. In the next section, we will therefore explore the concept of stakeholder engagement first.

Stakeholder engagement

Stakeholders are groups or individuals who can affect or be affected by an organization (Freeman, 1984). Companies have to deal with a broad range of stakeholders, both internal such as suppliers, customers, employees, and external such as governments and NGOs (Freeman, 2010). We can distinguish between economic stakeholders like employees and suppliers, and non-economic stakeholders like NGOs and research institutes. It is an open ended debate who counts as a legitimate stakeholder and why, and there are various theoretical perspectives on stakeholder engagement, like the instrumental, the normative and the descriptive perspective (Donaldson and Preston, 1995).

According to the normative approach, stakeholders have a legitimate interest in the processes and products of the company and the company has to take these interests into account (Donaldson and Preston, 1995). Stakeholder engagement can therefore be defined as 'practices that an organization undertakes to involve stakeholders in organizational activities in a positive way' (Greenwood, 2007). It gives access to information (Sharma, 2005), stimulates mutual understanding (Gao and Zhang, 2006) and promotes the development of collaboration and shared objectives among key stakeholders (Andriof and Waddock, 2002). In this paper, we focus on the engagement of non-economic stakeholders in RI in the private sector only.

Stakeholder engagement requires information sharing and interaction among stakeholders. It concerns information flows in both directions, namely both information from stakeholders into the organization and information out of the organization to the stakeholders (Gould, 2012). One way information sharing and two-way interaction can be achieved is through dialogue (Blok, 2014a; Burchell and

Cook, 2006). Dialogue among stakeholders gives insight into the needs of the stakeholders, enhances mutual understanding and enables the creation of a win-win situation. Sharing information and knowledge is also a way to build trust among stakeholders. Andriof and Waddock (2002) describe stakeholder engagement as trust-based collaborations, in which trust-building activities like communication and interaction are a prerequisite.

Stakeholder engagement in responsible innovation

It is clear that the literature on SEiRI has a normative perspective on stakeholder engagement. Science and innovation for society means that society has interests, which should be taken into account in RI, and science and innovation with society means that these interests of stakeholders should be involved in the innovation process in order to achieve more RI.

Despite this importance of SEiRI, research on the way stakeholders can be engaged and managed in RI is lacking. This may be explained by the fact that the field of RI is emergent and therefore, that empirical evidence is still scarce in this field of research. Based on the findings in previous sections on RI and on stakeholder engagement, four characteristics of SEiRI can be defined:

Transparency. Von Schomberg's definition of RI as a 'transparent, interactive process by which societal actors and innovators become mutually responsive to each other' makes clear that transparency is a characteristic of SEiRI (Von Schomberg, 2013). The importance of transparency is also confirmed in the literature on stakeholder engagement, namely the importance of two-way information sharing for successful collaborations (Bryson *et al.*, 2006). Transparency concerns the opening up of the innovation process by sharing knowledge and information among multiple stakeholders. Shared information and knowledge enables companies to assess the societal needs, for instance, while it enables stakeholders to assess the risks and future impact of innovations.

Interaction. Von Schomberg's definition already refers to a transparent and interactive innovation process. One of the features of RI was found in science for society, and interaction with multiple stakeholders enables actors to develop such a shared objective and purpose of innovation processes (cf. Owen *et al.*, 2013). The importance of interaction is also confirmed in the stakeholder engagement literature, namely the crucial role of dialogue in establishing consensus regarding shared objectives and purposes (Andriof and Waddock, 2002). Interaction concerns the

dialogue among multiple stakeholders about the purposes of innovation processes and the risks and uncertainties involved, which can be stimulated by transparency among stakeholders (Ayuso *et al.*, 2006).

Responsiveness. Von Schomberg's definition of RI refers to transparency toward and interaction with stakeholders in order to become mutually responsive to each other. Stakeholder engagement does not end with sharing information and interaction, but should result in action and behaviour, i.e. an institutionalized responsiveness of the company toward society concerning the direction and trajectory of the innovation process, given the risks and uncertainties involved. Responsiveness to stakeholders shows that actors are really engaged in innovation with society and for society.

Co-responsibility. According to Von Schomberg (2013) and Owen *et al.* (2013), mutual responsiveness toward stakeholders ends up in co-responsibility among stakeholders. According to Von Schomberg, 'co-responsibility implies [...] that actors have to become mutually responsive, thus companies adopting a perspective going beyond immediate market competitiveness and NGOs reflecting on the constructive role of new technologies for sustainable product development' (Von Schomberg, 2013: 70-71). And according to Owen *et al.* (2013), RI is a collective endeavour in which the purposes of the innovation are defined in an inclusive and democratic way. Also in the literature on stakeholder engagement, co-responsibility is recognized. According to Waddock, active stakeholder engagement involves mutual responsibility (cited in Burchcell and Cook, 2006). In RI, therefore, stakeholder engagement does not end with the mutual responsiveness of stakeholders toward each other, but involves co-responsibility among multiple stakeholders as well.

In short, transparency about information and knowledge among multiple stakeholders is crucial to assessing the social-ethical and environmental risks related to innovation processes. This information and knowledge can be used during the interaction among stakeholders in order to achieve consensus regarding the goals and purposes of innovation trajectories. In fact, RI trajectories are responsive to the societal needs and concerns which came up during the interaction with multiple stakeholders. In their mutual responsiveness to each other, stakeholders are co-responsible for this innovation trajectory.

Stakeholder engagement in responsible innovation processes

One way to embed SEiRI can be found in the concept of an open innovation (Bessant, 2013). Open innovation is defined as 'a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as they look to advance their technology' (Chesbrough, 2003, 2006). In both open innovation and stakeholder engagement, actors reach outside their boundaries and make an explicit effort to access external information (Gould, 2012), i.e. engage stakeholders in their innovation processes. In open innovation, the focus is on economic stakeholders like suppliers and sometimes even competitors who try to innovate collectively, while in RI, the focus is on non-economic stakeholders like NGOs as well in order to assess the socio-ethical dimensions of the innovation.

When studying stakeholder engagement in innovation processes, it is important to conceptualize the innovation process. A stage gate model of innovation helps to conceptualize the RI process, since it highlights the 'gates' in which decisions regarding the actual work on innovations – the stages – are made from idea generation to launch-to-market (Cooper, 1990) and RI has an impact on decision-making processes during the innovation process. Lots of companies have implemented an implicit or explicit innovation process based on an idea-to-launch system (Cooper, 2008). In the field of RI, only a limited amount of (research-based) cases worked with the stage-gate model (Macnaghten and Owen, 2011) while no such cases of RI were found in the private sector. In this research, the most commonly described stage-gate model is used (Cooper, 1990; Cooper *et al.*, 2002), which involves the following stages: the discovery stage in which new opportunities for new products are identified, the scoping stage in which the technical and marketplace benefits of the innovation are determined, the business case stage, which is the last stage before investing in the innovation, the development stage, in which the business case is translated into concrete deliverables, the testing and validation stage, in which the product and consumer acceptance is assessed, and finally the launch stage, in which the innovation is implemented in marketing activities (Cooper, 1990, 2001).

Critical issues regarding stakeholder engagement in responsible innovation

On the one hand, it is expected that the four characteristics of stakeholder engagement, which are distinguished in a previous section, can be found in the innovation

process, for instance transparency toward stakeholders and interaction with stakeholders in all phases of the RI process. Without transparency and interaction with stakeholders, actors cannot develop shared objectives and cannot share responsibility for the innovation for instance. At the same time, it is argued that the application of stakeholder engagement in innovation processes is highly naïve, as companies encounter several critical issues when involving stakeholders in their innovation processes (Blok and Lemmens, 2015). In this section, the critical issues in each characteristic of SEiRI will be identified, as well as management practices regarding how to deal with these concerns.

Transparency

In the current economy, innovation is primarily seen as a source of competitive advantage, which is mainly based on information asymmetries. From an economic perspective, information asymmetries mean that in a transaction at least one actor has additional information whereas the other actor(s) do not, and this relevant or additional information can be seen as a source of competitive advantage (Blok and Lemmens, 2015).

Information asymmetry can, first, be developed based on imperfect knowledge of market participants with regard to existing information. Business opportunities then arise from an entrepreneur's alertness to the information asymmetries in the market (Dutta and Crossan, 2005). The second kind of information asymmetry is created by the development of new information or new and innovative knowledge. This innovative information creates opportunities for new or alternative solutions for existing market needs. Information asymmetries therefore create new business opportunities, which could lead to the competitive advantage of a company over its competitors. Sharing this information in favour of transparency toward stakeholders might create vulnerability by revealing the company's core competences to other actors (Bigliardi and Galati, 2013). This can directly or indirectly affect the company's ability to compete and could have a negative impact on its competitive advantage (Islam, 2012). Bigliardi and Galati (2013) argue therefore that knowledge sharing is considered the main risk of open innovation processes.

From the perspective of innovation in the private sector, the desire to benefit from stakeholder engagement in open innovation practices conflicts with concerns over the risk of misappropriation of information and knowledge sharing by other actors (Bogers, 2011). It creates an inherent feeling of lack of control over the processes and the potential

results of the innovation (Bigliardi and Galati, 2013; Gould, 2012). Furthermore, companies fear knowledge leakage to competitors when engaging in open innovation (Annansingh and Nunes, 2005; Mohamed *et al.*, 2006). The risk of this negative knowledge leakage is that 'sole ownership of knowledge leaks away from the origin and may lead to a loss of competitive advantage' (Gould, 2012: 3). This creates the paradox of open innovation (Bogers, 2011), which consists in the conflict between the potential benefits of collaboration and the prospects of knowledge leakage and misappropriation of the results of the process (Gould, 2012). It is expected that the fear of knowledge leakage will be highest in the early phase of innovation, as sensitive information concerning the product design will be discussed in this phase. Acknowledging all these critical issues makes transparency in RI far less self-evident.

In order to manage these concerns regarding transparency, companies look for ways to protect their innovations by intellectual property (IP) management (Bigliardi and Galati, 2013). However, as patenting is an expensive and time-consuming process it is not very likely that patents will be obtained in the very early phase of the product development process, like the discovery and scoping stage. The anticipated outcome of the invention is too uncertain in this phase and patents will only be acquired if the company expects the benefits of this innovation to exceed the costs of patenting. This can be seen as problematic in RI, since it stresses openness toward stakeholders in the early phase of the innovation process. Other options to protect innovations while sharing knowledge and information are semi-formal protection methods such as confidentiality agreements (Luoma *et al.*, 2010), a collaboration or partnership agreement at the beginning of the collaboration (Islam, 2012) or a contract with clear collaboration rules (Seitanidi and Crane, 2008). Finally, one can think of first mover advantages (West, 2006) or design complexity (Gould, 2012) as possible ways to deal with the negative impacts of transparency. Another way to manage transparency in the innovation process is by building trust with stakeholders (Burchell and Cook, 2008).

Interaction

The achievement of consensus among stakeholders about the purpose of an innovation can be seen as a challenge because of the diverging visions, goals, motives and values of multiple stakeholders (Blok and Lemmens, 2015). NGOs and companies have different organizational cultures and values (Holmes and Smart, 2009) and they are characterized by sectoral differences (Waddell, 2000), which makes it difficult to understand other stakeholders from other sectors

and to formulate shared objectives (Googins and Rochlin, 2000). Another critical issue with regard to stakeholder engagement is the existence of power imbalances among stakeholders. Power imbalances are an important reason for conflicts among stakeholders. Some actors are even unwilling to interact when they have the feeling that they have less or no power compared with other actors involved (Holmes and Smart, 2009).

In order to overcome these critical issues with regard to stakeholder engagement, companies and stakeholders could interact by engaging in stakeholder dialogue. Kaptein and Van Tulder (2003) developed a concept of stakeholder dialogue, which is characterized by cooperation in order to achieve collective goals, openness towards other viewpoints and mutual understanding and respect (cf. Blok, 2014a; Burchell and Cook, 2006). Another management practice in dealing with these concerns is found in commitment, which is defined as the willingness of actors to make an effort on behalf of the relationship (Mohr and Spekman, 1994). Only in case stakeholders are prepared and willing to bridge the gap between their differences can they overcome these differences and find a shared objective for instance (Bstieler, 2006; Flipse, 2012). Relationship building among stakeholders can also be enhanced by informal socialization mechanisms like communication guidelines and the organization of social events, and by formal social mechanisms like cross-functional teams and matrix reporting structures (Lawson *et al.*, 2009).

Responsiveness

The same concerns with regard to stakeholder interaction – power-, vision-, goal-, sector- and motive- differences among multiple stakeholders – also limit the responsiveness toward stakeholders. These differences may result in ongoing debates and conflicts about the purposes of the innovation and the risks and uncertainties involved. This is especially true in the case of grand challenges, exactly because of the different value frames of the different stakeholders (Blok, 2014b). These debates and conflicts may lead to the exclusion of radically different stakeholders (cf. Lezaun and Soneryd, 2007).

Management practices for dealing with these concerns can be found in efforts to align stakeholders’ expectations, experiences with stakeholders during previous collaborations (Selksky and Parker, 2010), the identity of actors (Brickson, 2007), and the acceptance of conflict (agree to disagree) (GEMI, 2008; Seitanidi and Crane, 2008).

Co-responsibility

An important concern with regard to co-responsibility during the innovation process is related to the risks and high investments involved in innovation processes. The societal and ethical acceptability of an innovation can be seen as an investment criterion, but the investor alone is responsible for the investment decision. This critical issue with regard to the mutual responsiveness of actors is even agreed upon

Table 1. Theoretical framework: critical issues with regard to stakeholder engagement in responsible innovation (SEiRI) and management practices for dealing with these concerns, based on the existing literature.

Characteristics of SEiRI	Critical issues with regard to stakeholder engagement	Management practices for dealing with these concerns
Transparency	Decrease of competitive advantage Lack of control Fear of knowledge leakage	Intellectual property management Semi-formal protection methods First mover advantage Design complexity Building trust
Interaction	Different visions, goals, motives, sectors and values Power imbalances	Dialogue and relationship building Commitment Formal socialization mechanisms Informal socialization mechanisms
Responsiveness	Different visions, goals, motives, sectors and values	Aligning partners’ expectations, experience and identity Acceptance of conflict
Co-responsibility	Investment decision responsibility of the investor alone Co-responsibility may result in legitimacy losses of NGOs	

http://www.wageningenacademic.com/doi/pdf/10.3920/JCNS2015.x003 - Wednesday, December 09, 2015 4:00:50 AM - Wageningen UR Library IP Address: 137.224.252.10

by non-economic stakeholders, because it is expected that NGOs will never take responsibility for innovations whose outcomes are uncertain (Blok and Lemmens, 2015). Stakeholders who share responsibility with companies can also be accused of collaborating with the 'enemy' instead of putting them under pressure, which may result in legitimacy losses (Van Huijstee *et al.*, 2007). Regarding this critical issue regarding co-responsibility, no management practices were found in the literature.

Table 1 summarizes the critical issues with regard to stakeholder engagement and management practices for dealing with these concerns in the theoretical framework.

3. Methods

In this research an exploratory and qualitative approach was used in order to identify how far innovative companies that contribute to the solution of the grand challenges of our time and engage stakeholders to achieve their objectives (and therefore have the disposition to innovate in a more responsible way) are moving in the direction of the ideal of mutual responsiveness among stakeholders, the critical issues they experience and the management practices designed to deal with these concerns. Because research in this field is scarce, an exploratory and in depth, qualitative approach is justified. Qualitative interviewing gives participants the opportunity to share their experience, pass on their knowledge and provide their own perspective on a range of topics (Boeije, 2010).

The case selection focused on larger companies (>SMEs) in the Dutch Food industry. This sector was chosen because of its direct relation with some of the grand challenges of our time – lifestyle diseases like obesity, diabetes type 2, etc. – and the increased engagement of stakeholders in the agri-food sector in order to contribute to societal goals (Dentoni *et al.*, 2012). The Netherlands provides useful cases of food innovation, because it has a mature food industry with a recognized number of innovative companies.

Purposive sampling has been used to find suitable cases, based on expert interviews and desk research. Because

RI in general and in the private sector in particular is an emerging field, we selected cases that take responsibility for the solution of the grand challenges of our time and engage stakeholders to achieve their objectives, i.e. companies that show at least the disposition to innovate in a more responsible way. Eighteen companies and six non-economic stakeholders were approached for an interview. Four companies were selected, based on the following criteria: the company contributes directly or indirectly to the solution of the grand challenges of our time, the company involves stakeholders to achieve their objectives, the company has an R&D department in the Netherlands and the company is larger than an SME. Four companies did not meet the criterion of having an R&D department in the Netherlands, two companies were smaller than SMEs, four companies did not engage stakeholders in innovation processes, three companies were not interested in participating in the research and two companies never responded, despite several attempts to get in contact with them. Two non-economic stakeholders were selected, based on the following criteria: stakeholders have some influence on the innovation process of Dutch Food companies, stakeholders are actively involved in the solution of grand challenges. Stakeholder A collaborates with companies and allows them to use a front-of-pack logo of the stakeholder if the product meets the criteria for healthy food, which are developed and assessed by the stakeholder. The main objective of stakeholder B is the fight against heart diseases, by investing in research, education and the quality improvement of care. They sometimes collaborate with companies and allow them to use their logo on the package of food products, if the product contributes to the prevention of heart diseases. There is no direct relation between stakeholders and companies, although it turned out during the interviews that company 2 actively cooperates with stakeholder A.

For reasons of data sensitivity, the four companies and two stakeholders have been coded. Tables 2 gives an overview of the variability across the four companies involved in this research.

One of the researchers held four in-depth semi-structured interviews with the R&D manager or nutritionists of the

Table 2. Overview descriptives across the four companies.

	Parent company 1 (share of Dutch branch)	Company 2 global	Parent company 3 (share Dutch branch)	Company 4 national
Revenues (€ millions, 2012)	1,945 (600)	10,309	20,869 (4,257)	549
Employees (average FTEs, 2012)	3,396 (1,650)	19,946	101,885	2,600

company who are involved in stakeholder engagement in innovation processes. She also held two in-depth semi-structured interviews with representatives of the stakeholders who actually cooperate with companies. During the interviews, it turned out that company 1 does engage health organizations, although mainly via branch organizations, and that they do not involve them in their innovation process. They do, however, involve universities in their innovation process. In the case of company 1, the engagement of the university in the innovation process is therefore analysed. In all other cases, both stakeholder engagement with NGO's like health organizations and with research institutes is considered. Both non-economic stakeholders collaborate with companies in the Food industry on a regular basis.

Based on the literature review, a questionnaire with 30 open questions was developed for semi-structured interviews with the companies and the stakeholders. Because existing questionnaires and scales do not focus on non-economic stakeholder engagement in innovation processes, the researchers first operationalized the constructs from the literature into variables and then into questions (the interview questions are available upon request). An interview protocol was developed to safeguard non-biased and consistent data collection. The respondents were interviewed about RI, the four characteristics of SEiRI (transparency, interaction, responsiveness and co-responsibility), the critical issues they experience regarding these four characteristics and the management practices for dealing with these concerns.

The interviews were transcribed after the interview and sent back to the interviewees to allow them to make corrections and adjustments. Next, the transcriptions were qualitatively analyzed by the researchers. The researchers attempted to increase construct validity by also studying company documents (cf. Boeije, 2010). This turned out not to be feasible as the company documents only deal with corporate social responsibility issues and not particularly with SEiRI. To increase construct validity, data triangulation was used as stakeholder organizations were interviewed as well. By comparing the results of the company interviews with the stakeholder interviews, the researchers were able to assess the objectivity of the information provided by the companies, and provide specific information from the perspective of the stakeholder.

4. Results and discussion

Stakeholder engagement in responsible innovation in Dutch food companies

In order to answer the question how far companies are advancing toward the ideal of mutual responsiveness among stakeholders, we first explore whether the companies in our sample engage stakeholders in their innovation for society and with society, and whether they share responsibility with stakeholders in the process of innovation.

Innovation for society

All interviewed companies innovate both to make a profit in order to ensure the continuity of their company, and to fulfil their social responsibility to develop, produce and sell healthier food products. Company 1 explains for instance: 'A particular issue within company 1, in which we are not involved to increase profitability, is salt reduction. This doesn't contribute to profitability but it contributes in fact to the health of consumers'. For most companies, profitability is the main driver, directly followed by social responsibility as a motive behind their innovation efforts. For company 3, social responsibility is the main driver when they are innovating: 'Innovation is always necessary for business, otherwise it will not work. But the starting point is in the end the health of people, especially here because we have many scientists who are committed to the health of people'.

The idea that companies are at least partially motivated to innovate out of their responsibility to contribute to the health of society is confirmed by the stakeholders. Stakeholder A explains: 'I think many companies, not all of them of course, are aware of the fact that there is a problem in the Netherlands concerning food supply and consumers' food choices'. Stakeholder B makes this additional comment on the motivation of companies to innovate in a responsible way: 'What I see is that some companies launch a limited amount of new, healthier products on the market, while keeping the old assortment the way it is. And then I think, I would like to reduce the total amount of fat or salt or sugar in the whole assortment. ... It is great of course that a company brings a new product to the market, but I think that if you really are concerned about health, you should adjust all your products'.

Innovation with society

Regarding innovation with society, all respondents involve stakeholders as well, although in a different way than is suggested in the literature. According to Owen *et al.* (2013),

actors should be responsive to society concerning the direction and trajectory of innovations, and according to Von Schomberg (2013), stakeholders should be mutually responsive to each other during the innovation process. Finally, according to the Matter report (2011), 'RI is the consistent, ongoing involvement of society, from beginning to end of the innovation process' (emphasis added). In practice, it turns out that companies do engage stakeholders, although on a more strategic level and not in each phase of the innovation process. Companies 2 and 4 do engage health organizations directly in their innovation process, while companies 1 and 3 engage health organizations on a more strategic level and not at the product level. In these cases, research institutes are involved in the innovation process.

When talking about stakeholder engagement, most companies distinguish three phases in the innovation process: an initial phase which focuses on idea generation, a middle phase which consists in the actual product development, and a final phase which concerns the commercialization of the innovation. The engagement of stakeholders like health organizations mainly takes place in the first phase of idea generation and at a more strategic level, or as company 3 puts it: 'What happens is that together we try to find out where the nutritional gaps are. We use that as an input. What can we, as a company, contribute to the development of a product which is able to deal with these needs? And sometimes, not always, we can develop a product that meets the identified needs'. This quote makes clear that company 3 shows at least some transparency toward stakeholders by sharing information during the idea generation phase, is actually interacting with stakeholders and is sometimes responsive to the concerns raised by the stakeholders.

The main motive of company 1 to engage stakeholders in this first phase is to identify new business opportunities for healthy food products, while for company 3, the engagement of stakeholders increases the credibility of the company: 'What we always say, is that we as a company want to be credible. We don't want to do something, which is only supported by us. We always want to do it in dialogue and we want that stakeholders believe that it is really a good product'. This quote is an indication that company 3 not only shares information and interacts with stakeholders, but to a certain extent also tries to be responsive to the demands of their stakeholders. Company 3 works for instance with a scientific advisory board that provides new insights and helps to reflect on new product ideas.

During the middle phase of the innovation, the actual product development phase, most companies do not engage stakeholders. The only exception is company 3. They share information with researchers in the middle phase under strict conditions of secrecy, legal contracts and IP management in the initial phase of the innovation process. In most situations, however, companies do not engage stakeholders like NGOs in the product development phase. One of the reasons is that stakeholders do not possess the technological competency to support the product development phase. According to the companies, the stakeholders also demand this, they prefer to stay independent and take an external and critical perspective, instead of being involved in the product development phase. This holds for NGOs but also for research institutes.

In case the innovation is very recent or concerns a new area, some companies do an extra check in the final commercialization phase. Company 2 for instance enables health organizations to form an opinion regarding the new product before it is actually launched on the market. When the stakeholders bring up major issues in this final phase, it is even possible that the feedback of the stakeholder has an impact on the composition or market launch of the new product. This example shows that some companies are transparent about, interact with and are responsive to stakeholders about new innovations during the final phase of the innovation process, although stakeholder engagement in this phase can also be seen as part of the broader marketing strategy of the company.

It can be concluded that the companies in our sample engage stakeholders to a certain extent in their innovation processes, although this engagement of stakeholders like NGOs mainly takes place at a strategic level, rather than at the product level, and mainly in the first phase of the innovation process. Stakeholders like research institutes can also be engaged during the middle phase of the innovation process in some cases, but under strict restrictions of (IP) management (see Table 3 for further details).

Co-responsibility

All companies use a form of stage-gate innovation process with clear gates in which go-no go decisions are made. During the decision making processes, input of stakeholders is explicitly taken into account. In some cases, higher management supervises whether the demands of stakeholders are integrated into new products (company 2). In other cases, new product development is guided by the criteria for healthy food products which are set by the stakeholder (company 4). In all cases, however, the decision

to invest in the development of new food products is solely taken internally by the gatekeepers of the company.

This means that co-responsibility is not recognized in commercial food innovations in the private sector. Company 1 for instance states: ‘We feel ourselves a number 1 brand with a certain quality we want to deliver. And we take responsibility for that ourselves’. According to Company 1 and 2, stakeholders like research institutes and NGOs do not want to be co-responsible for innovations of the company and prefer to maintain their independent position. Stakeholder A also confirms this: ‘We are never responsible for the product. ... In the end, it is the responsibility of the company because they sell a product with a [health] claim. ... So the company that sells the product is responsible that the claim is true’. Company 4 explains that stakeholders cannot become co-responsible for the final product, ‘because they didn’t have a say in the actual development of the product’. Contrary to the literature, therefore, it can be concluded that in industrial or private sector innovation processes, companies do not share responsibility for innovations with stakeholders. This gap between the literature and the findings in this research can

be explained by the fact that most literature on RI is written from the perspective of publicly funded research projects, in which co-responsibility of stakeholders is necessary for democratic reasons.

Although innovative food companies contribute directly or indirectly to the solution of the grand challenges of our time and although they engage stakeholders to achieve their objectives – and therefore can be considered as having the disposition to innovate in a more responsible way – they fall significantly short of the ideal of mutual responsiveness among stakeholders, as it is stated in the literature. Companies engage stakeholders mainly in the first phase of innovation and at a strategic level. In this first phase, companies are to a certain extent transparent, interactive and sometimes responsive to the demands of their stakeholders. The fourth characteristic of SEIRI – co-responsibility – is not recognized by the food companies and the stakeholders involved in this research. In the middle phase in which the actual innovation takes place, stakeholders are not engaged, or only in a very limited way. In the final phase, companies engage stakeholders again by being transparent and by interacting with them, although

Table 3. Overview of the extent to which stakeholders are involved in the three phases of the innovation process.

Characteristics of stakeholder engagement in responsible innovation	First phase		Middle phase		Final phase	
	Discovery phase	Scoping phase	Business case stage	Development stage	Testing and validation stage	Launch stage
Transparency	+ (transparent ¹ or sharing of information with stakeholders (NGOs/research institutes))		-		+ (transparent or sharing information with stakeholders (NGOs/research institutes))	
Interaction	+ (regular or irregular stakeholder meetings and personal dialogue with NGOs, project meetings and program evaluation meetings with research institutes)		± ² (project meetings and program evaluation meetings with research institutes)		+ (personal dialogue and logo evaluation meetings with NGOs, project meetings and program evaluation meetings with research institutes)	
Responsiveness	+ (responsive to stakeholder demands, to logo for healthy food criteria)		-		+ (pre-launch consultation of NGOs, logo for healthy food evaluation meetings)	
Co-responsibility	-		-		-	

¹ ‘Transparent’ means that all information is shared and ‘shares information’ means that only necessary information is shared with stakeholders.

² Although company 2 mentioned that they interact with stakeholders during the middle phase if there are developments on certain health issues, this seems to be an exception.

this type of stakeholder engagement can also be seen as part of the broader marketing strategy of the company. Table 3 provides an overview of how far innovative food companies actually move in the direction of the ideal of mutual responsiveness among stakeholders, differentiated according to the four characteristics of SEiRI. A + is given if at least three companies recognized it, a ± if only one company recognized it, and a – if no company recognized it.

This gap between the ideal of mutual responsiveness among stakeholders in the literature and the practice of stakeholder engagement in the food sector raises the question why companies that can be considered as having the disposition to innovate in a more responsible way fall short of this ideal. The critical issues with regard to SEiRI and the possibilities for solving these concerns will be discussed in the next section.

Critical issues with regard to stakeholder engagement in responsible innovation and management practices for dealing with these concerns

Several critical issues with regard to stakeholder engagement, which were found in the literature, were confirmed as relevant during the interviews. Most companies are afraid that knowledge will leak to competitors and some argue that they are afraid to lose ownership of their innovations. Company 3 is an exception: they do not fear knowledge leakage, as they trust their stakeholders completely. This may be explained by the fact that they primarily collaborate with research institutes and under strict conditions of IP management. Company 1 also confirms fear of knowledge leakage, although they are not afraid to lose control over their innovations because they use IP management to protect important discoveries. Nevertheless, since patenting is an expensive and time-consuming process, it is not likely that patents are used to enhance transparency in the first phase of the innovation process. In the final phase, however, IP management makes it easier for company 2 to share information with their stakeholders. Other semi-formal protection mechanisms are found in contracts of endorsement (company 4) and confidentiality agreements (company 3).

Another critical issue that limits transparency toward stakeholders, which was not mentioned in the literature, is the fact that companies are uncertain whether innovations they work on really will enter the market: 'We can never say in advance that we are going to launch the product, because we do not know it ourselves neither. Formally speaking, it is uncertain whether and where a product comes on the market till three months prior to the product launch. ...

Till three months before product launch, it is possible that the innovation is put on hold or even cancelled. This is therefore something we need to take into account. So ... when the final step is taken... we show the final product ...' (company 2).

During the interviews, the differences in vision, mission, goal and motivation among multiple stakeholders were recognized by company 2. They often consult stakeholders and during these consultation rounds, they 'hear all kinds of visions and then we realize that there is no one truth. This makes it sometimes more difficult, and this is thus one of the barriers'. Differences in interests were also mentioned by company 1, although they do not necessarily experience these differences as a barrier to interaction with stakeholders. According to company 1, it is for instance good when different actors have different interests such as the publication of the results in scientific journals.

A first possible reason why differences in vision and mission are not experienced as a critical issue by most companies, is that there are clear health criteria which are used by the health organizations and count for all companies. Stakeholders may have different views on what is healthy but in the end, there are accepted health criteria, which are used as a guideline in the industry. A second possible reason is that the interaction is not oriented toward costs and benefits: 'I think that the people who are currently in contact with [the health organization], are more interested in the content and less in profitability. I think that if we are sitting around the table with other parties, we could have such problems [regarding differences in vision and mission]. But because we have people around the table with the same interests, we don't have these issues' (company 4). A third possible reason is mentioned by company 1. They do not experience these differences as a critical issue and if they did experience them as such, they would search for another partner. This means that differences among stakeholders are in fact seen as a barrier to interaction, but that companies overcome this barrier in advance by the selection of aligned or complementary partners (cf. Blok, 2014b). It is expected that differences among stakeholders are relatively unproblematic in health issues which are already more often discussed in the food industry, like sugar and salt reduction. In the case of new or emerging health issues, controversies among stakeholders may still arise and need much more interaction and discussion to be settled. The extensive evidence in the field of GM for instance gives reason to expect that differences among stakeholders are in fact a critical issue for stakeholder interaction in case of more controversial food issues.

During the interviews, power imbalances among multiple stakeholders were not recognized as a critical issue. Company 2 does not experience power imbalances, because they have actively asked for stakeholder opinions in the pre-phase of the innovation process. It usually does not happen that stakeholders suddenly have a totally different opinion in the final phase than in the initial phase of the innovation. Company 3 acknowledges that research institutes are dependent on the company because they sponsor their research. They are in the lead because they invest in the research and according to company 1, stakeholders accept this position because of the win-win situation for both parties. Another possible reason why power imbalances are not experienced as a critical issue may be that most companies do not interact with stakeholders in the actual product development phase and during the decision-making processes.

Another concern regarding stakeholder interaction, which was not mentioned in the literature, is the fact that interaction with stakeholders is time consuming: 'You don't have to come every week because it is quite a time burden. In the end, science does not change every week. So it has to have an added value' to interact with stakeholders. Company 2 does not need to talk about issues like salt reduction too often as new research and insights on this subject do not appear on a regular basis.

Dialogue and commitment are both confirmed as management practices for dealing with the critical issues with regard to stakeholder interaction. Company 4 states that dedication improves the interaction, as this shows the company is pro-active in the collaboration. Another practice concerns previous experience in collaboration on other subjects and in different networks (company 2). Finally, company 1 and 3 mentioned a management practice which was not found in the literature review: prior agreements on the objectives and the time frame for achieving these objectives can be seen as a successful management practice for dealing with concerns related to stakeholder interaction.

Another concern regarding responsiveness toward stakeholders can be found in different views on health by different stakeholders (see above). As a result, stakeholders may give different advice, which is a barrier in being responsive to these stakeholders. Because there are always opposing views according to company 2, they sometimes launch the innovation even though not all stakeholders agree on some health aspects. Stakeholder B also confirms this concern.

One management practice, which is often employed to overcome issues related to responsiveness, is the use of objective health criteria. Companies 2 and 4 use the criteria for healthy food of a stakeholder/health organization in order to use their front-of-pack logo, while other companies have developed their own health criteria and guidelines for healthy food (company 1). These criteria, for example on salt and fat levels, are challenging but compulsory gate criteria during the innovation process. Company 1 explains: 'We just have our own guidelines which we want to meet as a company. These guidelines are significant challenges for which we have to work very hard. For example to keep a good flavour while using less salt. But we just have imposed our own guidelines and these are really compulsory for us'. This example clearly shows that companies can be responsive to the demands of stakeholders without engaging them in the innovation process. One remark is that the use of objective criteria is possible in health subjects which are already more often discussed in the food industry, like salt, sugar, etc. In new or emerging issues in health, like the use of fish oil, much more interaction and discussion is needed in order to develop objective health criteria that companies and stakeholders can agree upon.

Another management practice not mentioned in the literature is direct supervision by higher management levels. In the case of company 2, higher management supervises whether the R&D department is responsive to certain health issues, which are raised by the stakeholders.

Table 4 provides an overview of the critical issues with regard to SEiRI, with additional quotes in order to clarify the specific concerns. Because of the exploratory nature of this research, a \checkmark sign is added if the critical issue was confirmed at least once by a company and/or stakeholder.

Table 5 provides an overview of the management practices for dealing with the concerns with regard to SEiRI, with additional quotes in clarify the specific management practices. Because of the exploratory nature of this research, a \checkmark sign is added if the management practice was confirmed at least once by a company and/or stakeholder.

Table 6 provides an overview of the critical issues with regard to stakeholder engagement and the way companies deal with these concerns in their innovation processes, based on the literature and the interviews. Because of the exploratory nature of this research, the limited number of companies and stakeholders involved and the specifics of the food industry, a general overview of possible critical issues and management practices is preferred, rather than listing the

Table 4. Overview of the critical issues with regard to stakeholder engagement in responsible innovation, based on literature and interviews.

	Critical issues with regard to stakeholder engagement based on literature	Critical issues with regard to stakeholder engagement based on cases	Significant quotes
Transparency	Decrease of competitive advantage	√	Company 4 does not share all information, the complete recipe for instance with stakeholders, 'because it has no advantage for [the health organization] and can cause sensitivity for us towards our competitors'.
	Lack of control	√	'We are hesitant [to share information] ... and the reason is ... that we do these studies to get ownership as well. You put yourself a lot of innovation in the new product and then, it is not nice to see a private label copy in the [supermarket] two months later' (company 2).
	Fear of knowledge leakage	√	'As [company 1], you obviously don't want knowledge leakage to competitors, because in the end, you innovate to gain competitive advantage as well. That is an important barrier'. 'I think that [openness to stakeholders] is easier in the final phase. In this sense, that you can be much more open about the product we developed and where it will be used. While in the beginning phase, we are ourselves still searching where we can contribute something relevant. In the final phase it is much more easier to be concrete toward the stakeholder because then we really know that the product will be launched' (company 2). 'What is maybe difficult sometimes is, that the stakeholder with whom we collaborate not only collaborates with us but also gives advice to our colleagues from other companies. And then they cannot be completely open to us because they are not allowed to share certain knowledge.' (company 3). Information about the ingredients of food products 'do not even concern confidential information, but the fact that we put all information next to each other in order to make comparisons possible, makes that companies don't want to be involved' (stakeholder A).
Interaction	Different visions, goals, motives, sectors and values	√	Company 2 often consult stakeholder and during these consultation rounds, they 'hear all kinds of visions and then we realize that there is no one truth. This makes it sometimes more difficult, and this is thus one of the barriers'.
	Power imbalances	Time load	'You don't have to come every week because it is quite a time burden. In the end, science does not change every week. So it has to have an added value' (company 2).
Responsiveness	Different visions, goals, motives, sectors and values	√	'There is no food product which is 100% healthy or 100% unhealthy. There is always a grey area...' (stakeholder B).
Co-responsibility	Investment decision responsibility of the investor alone	√	'We feel ourselves a number 1 brand with a certain quality we want to deliver. And we take responsibility for that ourselves' (company 1).
	Co-responsibility may result in legitimacy losses of NGOs	√	'We are never responsible for the product. ... In the end, it is the responsibility of the company because they sell a product with a [health] claim. ... So the company that sells the product is responsible that the claim is true'.

Table 5. Overview of management practices for dealing with the critical issues with regard to stakeholder engagement in responsible innovation, based on literature and interviews.

	Management practices to deal with concerns regarding stakeholder engagement, based on the literature	Management practices to deal with concerns regarding stakeholder engagement, based on the cases	Significant quotes
Transparency	Intellectual property (IP) management	✓	‘IP filing happens most of the time in the beginning phase. In case of collaborations, we make agreements about this. In case we collaborate with stakeholders, we state upfront in the contract that we collaborate and that every discovery is ours’ (company 3). Company 2 always use collaboration agreements. ‘the dialogue is different with such an agreement... more open’.
	Semi-formal protection methods First mover advantage Design complexity Building trust	✓	
		Open culture	‘We do not work with agreements in which everything is covered. Often we don’t work with this because yes, you cannot check it so you primarily need a good basis of trust’ (company 1). ‘I think it is more in the DNA of organizations, that they are more transparent and more open and maybe even more honest as well’ (stakeholder A).
Interaction	Dialogue and relationship building	✓	‘If we receive signals from the market, we ask their [the health organization] opinion and then more discussion emerges. ... I think a positive discussion, especially to find out where we have to look for and to get closer to the subject’ (company 4). Commitment ‘helps to become visible for the parties involved. Well, there has to be a match between parties as well’ (company 4). ‘Once in a while the group of people who are involved in the research come together and results are exchanged via presentations and new appointments are made for the next period. ... The goal of the research, the expected results, how we collaborate, the planning. Everything is recorded in the project proposal’ (company 1). ‘And we organize sometimes symposia in order to explore what is relevant in the field of health’ (company 2). ‘I think that the people who are currently in contact with [the health organization], are more interested in the content and less in profitability. I think that if we are sitting around the table with other parties, we could have such problems [regarding differences in vision and mission]. But because we have people around the table with the same interests, we don’t have these issues’ (company 4). ‘It is not the case that if we have a network, we only discuss one subject. We do often also other things together, other research for instance. We are part of [front-of-pack NGO]. We have all kinds of different networks. We are no strangers for each other’ (company 2). ‘I don’t really have experience with this [barriers related to different visions and missions among stakeholders] but if this the case, we just search for another party with which we have a match’ (company 1).
	Commitment	✓	
	Formal socialization mechanisms	✓	
	Informal socialization mechanisms	✓	
		Same interests of stakeholders and representatives of the company	
		Previous experiences	
		Selection of aligned partners	

Table 5. Continued.

	Management practices to deal with concerns regarding stakeholder engagement, based on the literature	Management practices to deal with concerns regarding stakeholder engagement, based on the cases	Significant quotes
Responsiveness	Aligning partner's expectations, experience and identity Acceptance of conflict	✓ Objective health criteria Supervision	Stakeholder interaction is very direct, like 'this is the product and this could be the package. What is your first impression? And whether they would change something and whether they think it is relevant. Whether is meets their expectations' (company 2). The criteria, which are set by the stakeholder (health organization) 'are already taken into account during the first briefing of marketing with us. There it is often already agreed upon which requirements have to be met' (company 4). Whether we are responsive to stakeholders is something 'which is continuously asked for by the higher management' (company 2).
Co-responsibility	N.A.	N.A.	

Table 6. Critical issues with regard to stakeholder engagement in responsible innovation (SEiRI) and management practices for dealing with these concerns, based on the literature and the cases.

Characteristics of SEiRI	Critical issues with regard to stakeholder engagement in RI	Management practices to deal with these concerns
Transparency	Decrease of competitive advantage Lack of control Fear of knowledge leakage Uncertainty whether the product will be launched Collaborations of stakeholders with other companies Direct product comparison on nutritional values	Intellectual property management Semi-formal protection methods First mover advantage Design complexity Building trust Open culture
Interaction	Different visions, goals, motives, sectors and values Power imbalances Time load	Dialogue and relationship building Commitment Formal socialization mechanisms Informal socialization mechanisms Same interests of stakeholders and representatives of the company Previous experience Selection of aligned partners
Responsiveness	Different visions, goals, motives, sectors and values	Aligning partner's expectations, experience and identity Acceptance of conflict Objective health criteria Supervision
Co-responsibility	Investment decision responsibility of the investor alone Co-responsibility may result in legitimacy losses of NGOs	

specific concerns and management practices based on a limited amount of cases.

Because companies do experience critical issues with regard to SEiRI, one particular approach of responsiveness toward stakeholders is important to highlight here. Responsiveness toward stakeholders is possible without engaging them in a transparent and interactive innovation process, if stakeholders set objective health criteria which have to be met by companies in order to be able to use their front-of-pack logo. In this case, stakeholders and companies are responsive to each other without being fully transparent and interactive. Some interaction between companies and stakeholders will always be necessary to communicate and negotiate the health criteria, but this does not mean that they need to interact during the whole process. Future research should explore whether such an approach, which seems to be typical of Food Innovations, is suitable to achieve RI in the private sector.²

5. Conclusions

In this article, we asked how far companies that contribute to the solution of the grand challenges of our time and engage stakeholders to achieve their objectives – and therefore have the disposition to innovate in a more responsible way – are moving in the direction of the ideal of mutual responsiveness among stakeholders, as it is stated in the literature on RI. The main research questions were to what extent companies engage stakeholders in each phase of the innovation process, what are the critical issues with regard to stakeholder engagement companies experience and how they deal with these concerns.

Based on the findings in this research, it can be concluded that, although innovative food companies contribute directly or indirectly to the solution of the grand challenges of our time and although they actually engage stakeholders to achieve their objectives, they fall significantly short of the ideal of mutual responsiveness among stakeholders. Companies engage stakeholders mainly in the first phase of innovation and at a strategic level. In this first phase, companies are to a certain extent transparent, interactive and sometimes responsive to the demands of their stakeholders. The fourth characteristic of SEiRI – co-responsibility – is not recognized by the food companies and the stakeholders involved in this research. In the middle phase in which the actual innovation takes place, stakeholders are not engaged,

or only in a very limited way. In the final phase, companies engage stakeholders again by being transparent and by interacting with them, although this type of stakeholder engagement can also be seen as part of the broader marketing strategy of the company.

This gap between the literature and the results of this research has raised the question why companies that can be considered as having the disposition to innovate in a more responsible way are failing to achieve this ideal. A possible explanation can be found in specific critical issues with regard to stakeholder engagement in the context of industrial or private sector related RI practices. Table 6 provides an overview of the critical issues with regard to stakeholder engagement and the way companies deal with these concerns in their innovation processes, based on the literature and the interviews.

Limitations of the current research are the limited number of companies and stakeholders involved, and the specifics of the food industry. This restricts the generalizability of our findings but opens new avenues for future research. Future research should extend the number of cases in order to contrast sectors and average and best in class cases, as well as the critical issues with regard to stakeholder engagement and the management practices for dealing with these concerns. Furthermore, more research is needed regarding the overlap and differences between different stakeholders – NGOs and research institutes for instance – and the variations in the context of incremental versus more disruptive innovations. Finally, research should be extended to other sectors and other types of stakeholders; branch organizations for instance may be able to make agreements regarding RI on behalf of a whole branch or sector. Since several food companies rejected the invitation to join this research, much more in depth research is needed on the critical issues with regard to SEiRI as well. In this respect, the results of this research are a first contribution to the finding new ways to engage stakeholders in RI.

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² See Bos *et al.* (2013) for another example of collaboration between a stakeholder for the protection of animal welfare and a Food company, based on objective criteria regarding animal welfare.

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