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Improving interaction between KOMBI partners in the development of sustainable and profitable innovations in the Dutch agro-food value chain

Theme 4 The Mobilisation of sustainable consumption

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A. Goals and Design

The agro-food sector is changing. More stringent regulation and more attention for sustainability issues are putting high pressure on the farms, firms, research institutes and other players involved. In the Netherlands the agro-food sector has reached its borders of development, with growing concerns related to animal welfare, biodiversity and environmental problems, resulting in a strong plea for a transition to more sustainable practices. Sustainable development requires that multiple dimensions are taken into account, such as social, environmental and economic aspects, also known as people, planet, profit aspects. The concept of sustainability has not been operationalised uniformly, because it is given content in the very practices it guides. Sustainable development offers no clear vision of an ideal end-state, but – instead- involves a *process of change*, a transition process. Within the context of such a process, various actors have to deal with differences in balance between the people, planet and profit aspects, all having their own perspectives and values on sustainability.

Socio-technical transitions in the Dutch agro-food sector are required in order to meet the challenges of sustainable development. Typical for this sector are the specific organisation of knowledge production, relations with users, supportive- and supporting infrastructure and the strong interdependencies between the actors in the complex agro-food value chains.

Innovations designed to improve sustainability and often resulting in economic improvements are found in many parts of this value chain, depending amongst others on the degree to which these innovations are in line with the interests, values and perspectives of the actors involved. The implementation of such innovations calls for new and more extensive alliances between researchers, producers and users throughout the whole agro-food value chain. Innovation is not related to a single technology but to a broad range of intertwined technologies and societal issues along the value chain. For example, changes in the agro-food sector are related to the availability of energy and biomass, to what and how people eat and to the perceptions, visions and values of end-users on food and health, how and where that food is processed, distributed and marketed. It is therefore important to generate insights in how user producer interaction along this complex agro-food value chain could be improved in order to contribute to the PPP dimensions of sustainability.

Besides complexity, the high degree of heterogeneity is an important feature of the Dutch agro-food value chain, in which various forms of technology, various types of producers (e.g. organic, large scale-intensive farmers) and users (e.g. consumers, retailers, firms, NGOs) are involved, each with their own visions and agendas.

Interdependencies in the value chain make it important for these heterogeneous actors to align with or at least adapt to the different perspectives of other actors in the chain in order to reach a more sustainable agro-food value chain. Accordingly, the question how transitions towards a more sustainable agro-food sector can take place, entails a question about the alignment of perspectives in a complex agro-food value chain. In interaction between various actors in the value chain a shared vision or common goal of sustainability can be developed. More insight is needed in the relation between the various types of interaction between the actors in the agro-food value chain. TransForum assumes that the transition to a more sustainable and commercially viable agro-food sector puts heavy demands on the collaboration between the so-called KOMBI parties, i.e. knowledge institutes, governmental bodies, civil society

organisations, businesses and intermediaries. The underlying assumption is that interaction between KOMBI partners can stimulate sustainable development if the multiple perspectives on PPP are adequately integrated in user-producer interaction (UPI) activities.

Theoretically, this research builds on what can be learned from innovation studies about the role of user-producer interaction in innovation processes (e.g. Von Hippel 1988; Lundvall 1992; Oudshoorn & Pinch 2003; Moors *et al.* 2008; Smits & Den Hertog 2007; Smits & Boon 2008)¹. From this literature it becomes clear that intensified user-producer interaction increases chances for successful innovations, due to more effective articulation of societal needs, increase of competitive strength, improvement of acceptance and societal embedding of new technologies, improvement of learning capacity of society as a whole, and enhancement of democracy. Although broad consensus exists on the value of stimulating interaction between KOMBI partners in agro-food innovation processes, it is not clear how this interaction should be organised in an effective/efficient possible way, given differences in the characteristics of these innovations.

Accordingly, in the research proposal the central goal of this project was formulated as: *to elucidate how different KOMBI partners can be involved in innovation processes in the agro-food chain in order to stimulate interaction leading to improvement of the sustainable character and commercial value of the innovation process.*

To reach this goal the following central research question was formulated:

How to organize user-producer interaction in innovation trajectories in the agro-food value chain in such a way that the quality in terms of sustainability and commercial value is improved in an effective and efficient way?

Summarizing, the transition of agro-food chains towards sustainability has been reformulated in terms of focussing on transition processes in complex heterogeneous agro-food value chains, in which the various perspectives, visions and goals of actors involved play an important role. Innovation theory state that user-producer interaction (UPI) is important in such complex processes, particularly the interdependencies and interactions between the KOMBI partners, in order to improve the sustainability of agro-food innovation processes. The interaction between the different actors is studied in order to get insight in how it can influence the innovation and finally how this can improve or hinder innovation trajectories towards more sustainable agro-food chains.

After the choice and development of a theoretical framework to tackle the problem, the potential interesting TransForum Innovative Practice Projects (IPPs) were identified, including a) Search for the Golden Egg, b) Land Market, c) My Farmer, and d) Dairy Adventure.

¹ Von Hippel, E. (1988). *The sources of innovation*. Oxford: Oxford University Press; Lundvall, B-A. (1992). *National Innovation Systems: Towards a Theory of Innovation and Interactive Learning*. London, Pinter Publishers; Oudshoorn, N., & Pinch, T. (Eds.). (2003). *How users matter : The co-construction of users and technologies*. Cambridge, Mass: MIT Press; Moors EHM *et al.* (2008). User-producer interactions in emerging pharmaceutical and food innovations. *International Journal of Innovation Management*, 12(3), 459-487. Smits R. & Den Hertog P. (2007). TA and the management of innovation in economy and society. *International Journal of Foresight and Innovation Policy*, 3(1), 28-52. Smits, R. E. H. M., & Boon, W. P. C. (2008). The role of users in innovation in the pharmaceutical industry. *Drug Discovery Today*, 13(7-8), 353-359.

The project was set up following 5 research steps (including deliverables):

- 1) Development of a conceptual model providing insights in how to organize UPI in agro-food innovation chains, given specific contexts regarding knowledge base and demands. (*deliverable 1*)
- 2) Application of the developed conceptual model to analyse the why and how of involvement and interaction of KOMBI partners in 4-6 TransForum Innovative Practice Projects. Conclusions will be drawn regarding lessons learned and suggestions for improvements. (*deliverable 2*)
- 3) Based on 1 and 2, a toolbox with instruments to support involvement of KOMBI partners in Agro-Food innovation trajectories will be developed. (*deliverable 3*)
4. Formulation of *recommendations* on behalf of the KOMBI partners (including policy makers) regarding the management of user-producer interaction in sustainable agrofood value chains. (*deliverable 4*)
5. PhD Thesis and 2-3 scientific publications submitted to peer reviewed international scientific journals in the field of innovation studies and journals focussing on innovation in the agro-food sector. (*deliverable 5*)

B. Summary results

The realized output per deliverable is summarized in Table 1. Between brackets the PDF files which have been separately sent as appendices of this project.

As the PhD research project is not finished yet, not all deliverables could be fully realized.

Table 1 Project deliverables and realized output

Deliverable	Output
1	-Paper Moors <i>et al.</i> (2008) [IJIMMoorsBoonNahuisVandeberg2008.pdf] -Paper Nahuis <i>et al.</i> (2009) (NahuisMoorsSmits2009UPIclassification.pdf) -Paper Moors&Nahuis (2009) [Druid2009UPIpaper.pdf] -PhD Research plan [research plan Joyce Zwartkruis 3 juli 2009.pdf]
2	-Paper Zwartkruis <i>et al.</i> (2010a) [Zwartkruisetal2010IFSASymposium.pdf] -Paper Zwartkruis <i>et al.</i> (2010b) [ZwartkruisetalAHUM2010.pdf]* -Paper Klerkx <i>et al.</i> (2010c) [NJAS-S-10.002612.pdf]* -Professional publ. Holster,Zwartkruis, Klerkx (2010) [Vfo02.pdf] -Paper Zwartkruis <i>et al.</i> (2011) [Zwartkruisetal2011DIME.pdf]
3	-Paper Nahuis, Moors, Smits (2010) [TFSC-09-187revision.pdf]* -Final toolbox cannot be given as not all cases have been analyzed yet
4	-Paper Zwartkruis <i>et al.</i> (2010b) [ZwartkruisetalAHUM2010.pdf]* -Final recommendations cannot be given as project is not finished yet
5	-PhD thesis Zwartkruis is expected autumn 2012 -Publication output (realized and planned): See E) list of publications

*= under review, not public yet

Below a brief summary of the results per deliverable is presented.

Deliverable 1

In the first year of the project the focus was on further developing the theoretical framework on user- producer interaction (UPI), resulting in an article of Moors *et al.*

(2008) on 'User-producer interactions in emerging food and pharmaceutical innovations' in the *International Journal of Innovation Management*, and a working paper of Nahuis, Moors & Smits (2009) 'User Producer Interaction. A Classification'. Seven possible ways to study user-producer interactions in innovation processes were identified in these papers, including 1) demand articulation, where in an early stage of technology development demands are articulated among users, 2) Learning by using, in which expected and unexpected use of a product are used to further development, 3) Innofusion, where technological innovation and diffusion of the technology merge, 4) Broadening, including views and visions of other actors early in development, 5) Frame sharing / Frame adding, allowing different actors to align their perspectives, and intentionally adjusting a frame to new situations, 6) Configuring the user, by setting constraints to user actions/interactions and 7) User representations, assuring that users are represented in development of products and/or processes.

As it is was not always clear what types of interaction were necessary in which particular context, specific contextual conditions from which above mentioned UPI types derive relevance, were further discussed, for example in the Druid paper of Moors & Nahuis (2009) 'User producer interaction in context', focusing on integration and configuration processes in user producer interaction.

In order to get more insight in the involvement of the heterogeneous users in agro-food value chains, the focus in this research project was especially on interaction and alignment of actors' perspectives in the complex agro-food value chain. A lack of shared visions can hinder sustainable transitions (Geels 2010)², therefore alignment within and between elements of the chain is needed. In interaction between actors a shared vision or goals can be developed. Actors have certain perspectives, or frames, and are in interaction with other actors confronted with different frames. Frames change when actors 'develop a new way of interpreting or understanding the issues', parties or interactions (Elliott *et al* 2003)³. With studying reframing, the changes in the way people perceive issues, interactions or processes, we gain more insight in the ideas, underlying the interactions of the actors. Accordingly, especially the two specific UPI tools frame sharing and frame adding were further conceptualized, being specified in the Research plan of the PhD candidate (Zwartkruis 2009), entitled 'Studying interactions in innovation trajectories in Dutch agro-food chains from a framing perspective'.

Deliverable 2

In interaction framing is taking place between actors. Because of new actors, actors leaving the project, new knowledge and changes in the context, framing of sustainability changed over time. Alignment is needed during the process, but lock-in is undesirable, because lock-in will hinder changes in the chain. It is important people have a shared idea of what the goal and direction is, but the exact realization will be open for discussion. Interaction with different actors can give new insights, new opportunities, but sometimes also hinders innovation trajectories.

By exploring a first case study on the TransForum Innovative Project 'Search for the Golden Egg' (also called 'Roundel project'), the framing perspective was further developed and specified in Zwartkruis *et al.*(2010a) 'Co-innovation in sustainable

² Geels, F.W. (2010): Ontologies, socio-technical transitions (to sustainability), and the multi-level perspective. *Research Policy*, 39(4), 495-510.

³ Elliott, M., Gray B., Lewicki R.J. (2003) Lessons learned about the framing and reframing of intractable environmental conflicts. In R.J. Levick, B. Gray & M. Elliott (Eds.) *Making sense of intractable environmental conflicts. Concepts and Cases.*, pp 409-435. Washington: Island Press.

laying hen husbandry systems: Investigating the interactive framing of sustainability' a paper for the European IFSA Symposium, Zwartkruis *et al.* (2010b) 'Negotiating sustainability in agricultural innovation', a paper submitted to the Journal of Agriculture and Human Values, and Zwartkruis *et al.* (2011) 'Sustainable development in Dutch agriculture: reframing in transition processes', a paper for DIME workshop on Technology, Institutions and Development. Further publications on this case study include Holster, Zwartkruis & Klerkx (2010) "'Rondeel' beter voor burger, boer en beestje' in popular magazine V-focus, and Klerkx *et al.* (2010) 'How reflexive interactive design works out in actual husbandry system innovation processes', a paper submitted to NJAS.

Summarizing, framing and reframing processes, especially between researchers, project members, farmers, egg packer, retailers and the Animal Welfare Society, appear to be present in this agro-food value chain. The context (e.g. rules and regulation, technological and ecological elements) seem to influence the way the involved actors frame and reframe issues in the chain. What becomes clear from the case study is that transition processes towards more sustainable agriculture are not that straightforward; there are many ways and sideways which lead to successful innovation in the end. It can be concluded that reframing of the various perspectives of the KOMBI partners in the Roundel case, can be used to obtain a more open-ended perspective of what the actors themselves think of what effective sustainable development actually is.

Other TransForum Innovative Practical projects are currently being investigated (e.g. Diary Adventures), but these are not specified in concrete papers/deliverable yet, due to some practical problems encountered during the research project. It turned out to be difficult to find suitable IP projects and to get access to the right people in these projects, which led to a delay in the research planning.

Deliverable 3

When studying the different Innovative Practical projects we focused on the tools they use to realize together a sustainable agro-food chain. An investigation of these tools can provide input for the development of the toolbox, at the end of the PhD project, when all the planned Innovative Practice Projects (IPPs) have been analyzed.

Parallel to analyzing these innovative projects the seven UPI tools mentioned in deliverable 1, were further specified and empirically illustrated in Nahuis, Moors, Smits (2010) 'User producer interaction in context', submitted to *Technological Forecasting and Societal Change*. Here, a further distinction was made between types of technologies that differ in the degree to which they were customizable to user demands. Four case studies of different types of technologies show that technological characteristics indeed matter for UPI, as do the heterogeneity of users and the particular phase of technology development.

Some of the mentioned UPI tools have been further operationalised in papers which are only indirectly associated to the TransForum research project. These papers deal with UPI tools such as demand articulation, technology assessment, role of intermediaries, use regimes, learning by using, innovation policy (e.g. Smits *et al.* 2010; Boon, Moors *et al.* 2008, 2011; Nahuis & Moors, in preparation). See part E, list of publications.

Deliverable 4

Final recommendations cannot be given as the PhD project is not finished yet.

For the present, studying the Roundel project, it turned out that when discussing an ambiguous concept such as sustainable development in agro-food development, organizing effective alignments between all the heterogeneous actors in the complex agro-food value chain is needed (Zwartkruis *et al.* 2010a). Transition processes are not that straightforward. Reframing requires negotiation processes, being especially of value with a specified group of KOMBI partners over time, and at various stages of agro-food technology development. Reframing the actors' positions in the agro-food chain might help in changing routines and reframing ideas and shared visions on the organization of the value chain, to overcome lock-in in suboptimal sustainability solutions.

Deliverable 5

The PhD thesis will be finished in autumn 2012.

For overview realized and planned publication output, see part E.

Summarizing, the project output developed as was planned until now (still 20 months to go) and resulted in even more papers than foreseen (see publication output). The PhD candidate (co)produced 2 papers submitted to a journal, 1 paper published in peer-reviewed conference proceedings, and 1 paper submitted to the DIME workshop. Furthermore, one publication in a professional journals (V-focus) has been realized until now. In addition, the supervisors wrote about 6 scientific papers directly related to this program. Prof. Ruud Smits edited a book on Theory and Practice of Innovation Policy (Smits *et al.* 2010), in which many examples are mentioned that are important in the context of this program. Additionally various book chapters have been produced in the broad field of innovation studies and sustainable development. It can be noted that the publications until now covered a broad range of journals, both in the field of innovation studies (i.e. *International Journal of Innovation Management*, *TFSC*, *Research Policy*) and journals focussing on innovation in the agro-food sector (*Agriculture and Human Values*, *Wageningen Journal of Life Sciences*), demonstrating the high multidisciplinary character of the project.

C. Societal relevance

Using the UPI and framing perspective to study interaction processes in complex agro-food chain, gave more insight in the shared visions, frames, perspectives of the multiple stakeholders in the value chain. Although it is important to involve the KOMBI partners, it is also important to involve other actors in the agro-food value chain. As we learned from the Roundel case, a lot of power is with the retailers. Interdependencies between the actors influence the value chain and alignment between these actors is therefore important. Studying reframing processes can gain insight in how that alignment can be arranged and the factors hindering and stimulating the alignment. One of the next steps in the research is to look for tools that can be used to align the heterogeneous actors in such a way that more sustainable agro-food chains are developed. Multiple stakeholders might benefit from applying the proposed UPI and framing tools in their specific contexts to improve sustainability.

Furthermore, the PhD candidate was as a researcher in contact with the monitors of the TransForum Innovative Practice Projects, thereby assisting the monitor to reflect on the development of the projects.

D Description of evaluation

n.v.t.

E. List of (scientific) publications

Scientific publications, refereed

- Boon, W.P.C., **E.H.M. Moors**, S. Kuhlmann, **R.E.H.M. Smits** (2011) Demand articulation in emerging technologies: Intermediary user organisations as co-producers? *Research Policy* 40 (2011), 242-252.
- Boon, W.P.C, **E.H.M. Moors**, S. Kuhlmann, **R.E.H.M. Smits** (2008) Demand articulation in intermediary organisations. *Technological Forecasting and Social Change*, 75 (5): 644-671.
- Klerkx, L., S. Van Bommel, B. Bos, H. Holster, **J.V. Zwartkruis** and N. Aarts (2010) How reflexive interactive design works out in actual husbandry system innovation processes: Lessons on the practical value of designs. *Wageningen Journal of Life Sciences*, submitted.
- Moors, E.H.M. & R. Nahuis** (2009) User producer interaction in context. From integration to configuration in therapeutic antibody technology. *Conference Peer-reviewed paper* for International Druid Summer Conference, 17-19 June 2009, Copenhagen, Denmark.
- Moors, Ellen H.M.**, Wouter Boon, **Roel Nahuis**, Rens Vandeberg (2008) User-producer interactions in emerging pharmaceutical and food innovations. *International Journal of Innovation Management* 12(3): 459-487.
- Nahuis, R, E.H.M. Moors, R.E.H.M. Smits** (2010) User producer interaction in context. *Technological Forecasting and Social Change*, in review.
- Nahuis, R.** (2010) The politics of displacement. Towards a framework for democratic evaluation. *Humanities & Technology Review* 29:45-77.
- Zwartkruis, J.V.**, Klerkx, L., **Farla, J., Moors, E., Smits, R.** (2010) Negotiating sustainability in agricultural innovation. The case of a Dutch laying hen system. *Agriculture and Human Values*, submitted.
- Zwartkruis, J.**, Klerkx, L., **Moors, E., Farla, J., Smits, R.** (2010) Co-innovation in Sustainable Laying Hen Husbandry Systems: Investigating the interactive framing of sustainability. In Darnhofer, I., Grötzer, M. (Eds), Building sustainable rural futures: The added value of systems approaches in times of change and uncertainty, Proceedings of the 9th European IFSA Symposium, July 2010, Vienna, Austria. (ISBN 978-3-200-01908-9), pp413-422. <http://ifsa.boku.ac.at/cms/index.php?id=107>

Editorial book

Smits, R.E.H.M., Kuhlmann, S. & Shapira, P. (2010). *The Theory and Practice of Innovation Policy. An International Research Handbook (PRIME Series on Research and Innovation Policy in Europe)*. Cheltenham (UK) and Northampton, MA (USA): Edward Elgar Publishing.

Book chapters

Hekkert, M.P. (2010). The challenge of sustainable innovation policy. In L. Elg & J. Leijten (Eds.), *New economic Ground fro Innovation Policy (Coleccion Estudios, Numero 143)* (pp. 99-117). Madrid, Spain: Cultivalibros.

Kuhlmann, S., Shapira, P. & **Smits, R.E.H.M.** (2010). Introduction. A Systemic Perspective: The Innovation Policy Dance. In R.E.H.M. Smits, S. Kuhlmann & P. Shapira (Eds.), *The Theory and Practice of Innovation Policy. An International Research Handbook (PRIME Series on Research and Innovation Policy in Europe)*. Cheltenham (UK) and Northampton, MA (USA): Edgar Elgar Publishing.

Lente, H. van, Smits, R.E.H.M. & Hekkert, M.P. (2010). Systemic Intermediaries and Transition Processes. In S. Guy, S. Marvin, W. Medd & T. Moss (Eds.), *Shaping Urban Infrastructures. Intermediaries and the Governance of Socio-Technical Networks*. London, United Kingdom: EarthScan, 36-52.

Shapira, P., **Smits, R.E.H.M.** & Kuhlmann, S. (2010). An Outlook on Innovation Policy, Theory and Practice. In R.E.H.M. Smits, S. Kuhlmann & P. Shapira (Eds.), *The Theory and Practice of Innovation Policy. An International Reserach Handbook (PRIME Series on Research and Innovation Policy in Europe)*. Cheltenham (UK) and Northampton, MA (USA): Edward Elgar Publishing.

Smits, R.E.H.M., Kuhlmann, S. & Teubal, M. (2010). A system-Evolutionary Approach for Innovation Policy. In R.E.H.M. Smits, S. Kuhlmann & P. Shapira (Eds.), *The Theory and Practice of Innovation Policy. An International Research Handbook (PRIME Series on Research and Innovation Policy in Europe)*. Cheltenham (UK) and Northampton, MA (USA): Edward Elgar Publishing.

Smits, R.E.H.M., Merkerk, R.O. van, Guston, D.H. & Sarewitz, D (2010). The Role of Technology Assessment in Systemic Innovation Policy. In R.E.H.M. Smits, S. Kuhlmann & P. Shapira (Eds.), *The Theory and Practice of Innovation Policy. An International Research Handbook (PRIME Series on Research and Innovation Policy in Europe)*. Cheltenham (UK) and Northampton, MA (USA): Edward Elgar Publishing.

Scientific publications, non-refereed

Hekkert, M.P. & Ossebaard, M. (2010). *De innovatiemotor*. Assen: Koninklijke Van Gorcum BV.

Lente, H. van (2010) *De maakbare behoefte: naar een filosofie van duurzame ontwikkeling*, Oratie Universiteit Maastricht op 12 Nov 2010, 36 pp. Universitaire Pers Maastricht, ISBN 978-94-6159-020-6

- Nahuis, Roel, Ellen H.M. Moors and Ruud Smits**, (2009) User producer interaction in context: A classification <http://www.geo.uu.nl/isu/pdf/isu0901.pdf>, ISU working paper #09.01, Utrecht University
- Nahuis, R. & E.H.M. Moors** (2011) Technological versus Use regimes. Why a celiac disease pill is conceived but not embraced. *Forthcoming*
- Zwartkruis, J.V., Moors, E.H.M., Van Lente, H., Farla, J.** (2011) Sustainable development in Dutch Agriculture: reframing in transition processes. Paper for DIME workshop, Jena, Feb 2011

Professional publications

- Holster, H., **Zwartkruis, J.V.** & Klerkx, L. (2010). 'Rondeel' beter voor burger, boer en beestje. *V-focus*, 7(2), 32-33. (<http://edepot.wur.nl/135125>)
- Lente, H. van** (2010) *De maakbare behoefte: naar een filosofie van duurzame ontwikkeling*, Oratie Universiteit Maastricht op 12 Nov 2010, 36 pp. Universitaire Pers Maastricht, ISBN 978-94-6159-020-6

Presentations / posters/ abstracts

- Lente, H. van** (2010) De vragen van duurzaamheid. Invited presentation at the annual meeting of Humanistische Alliantie, 25 Nov 2010.
- Lente, H. van** (2010). The needs of Innovation. University Twente, Enschede, The Netherlands, Invited lecture at Philosophy of Technology, 18 Feb 2010.
- Lente, H. van** (2010) *De maakbare behoefte: naar een filosofie van duurzame ontwikkeling*, Oratie Universiteit Maastricht op 12 Nov 2010, 36 pp. Universitaire Pers Maastricht, ISBN 978-94-6159-020-6
- Lente, H. van, Boon WPC & Klerkx L.**(2010) Positioning intermediary organisations in innovation. Wageningen, The Netherlands, Paper presented at Wageningen International Conference on Chain and Network Management, 26 mei 2010.
- Lente, H. van, Boon, W.P.C. & Klerkx, L.** (2010) Tentative positions: The positioning of intermediary organisations in the context of emerging technologies. Enschede, NL. Paper presented at the international conference Tentative Governance in Emerging Science and Technology, 28 Okt 2010.
- Moors, E.H.M.** (2010) Valorisation in life sciences. Invited lecture Rathenau Institute, 26 Oct 2010.
- Moors, E.H.M. & W.P.C Boon** (2010) Demand articulation in emerging technologies: the role of intermediary user organizations, *presentation* at workshop 'The role of users in the intertwined changes of technology and practice' at the Helsinki Collegium for Advanced Studies, August 17-18, 2010
- Moors, Ellen, Roel Nahuis, Wouter Boon** (2010), "User producer interaction in emerging innovations", *abstract* for workshop 'The role of users in the intertwined changes of technology and practice' at the Helsinki Collegium for Advanced Studies, Helsinki, August 17-18, 2010.
- Moors, E.H.M.** (2010) Analysis of science policy in life sciences, *invited lecture* at NGI Discussion Meeting, NWO Den Haag, February 22, 2010.
- Moors, E.H.M.** (2009) User-producer interaction in context. The cases of functional food innovations and antibody development. Wageningen, The Netherlands,

- Invited guest lecture for Master Course Innovation Management and Cross-Disciplinary Design at Wageningen University, Dec 4, 2009.
- Moors, E.H.M., R. Nahuis** (2009) User producer interaction in context. From integration to configuration. *Paper* presented at International Druid Conference, Copenhagen, 17-19 June 2009.
- Moors, E.H.M.** (2009) Societal implications of converging technologies. An assessment approach from an innovation studies perspective, invited panel discussant at Society for Philosophy & Technology Conference on Converging Technologies, Changing Societies. Twente Univ, Enschede, July 7-10, 2009.
- Moors, Ellen** (2009) invited panel member at Technopolis workshop on 'Valorisation Life Sciences 2020' Utrecht July 1, 2009.
- Moors, E.H.M.** (2009) User producer interactions, invited lecture on WTMC workshop, Ravenstein April 2, 2009.
- Moors, Ellen** (2009) Panel member expert-meeting Trend analysis Biotechnology 2009, April 1 2009.
- Moors, E.H.M.** (2008) Regulation and Functional Food Innovations. Rotterdam, The Netherlands, Presentation at the 4S/EASST conference Acting with science, technology and medicine, August 20, 2008.
- Nahuis R. & E.H.M. Moors** (2009) Technological versus use regimes. STePS / user cluster, 11 november 2009, Enschede.
- Nahuis R. & E. Moors (2008)** Why genomics implies a reconceptualisation of user involvement, 4S/EASST conference: Acting with science, technology and medicine, 20-23 August 2008, Rotterdam.
- Nahuis, R. & Moors, E.H.M.** (2008) User producer interaction in context. The case of functional food innovation. Amsterdam, The Netherlands, SCG/CESAGen Conference: Setting the Agenda, April 17, 2008.
- Nahuis, R. & E. Moors (2007)** User producer interaction in context. The case of functional food innovation, Corsage Winter Meeting 2007. Contingencies of genomics - finding roads into the future, 13 December 2007, Utrecht.
- Nahuis & E. Moors** (2007) User producer interaction in pharmacogenomics and nutrigenomics innovation. Two perspectives, BSA Medical Sociology, 6-8 September 2007, Liverpool, UK.
- Smits, R.E.H.M.** (2009) Innovation and Sustainable Development. Utrecht, the Netherlands, Guest lecture Faculty Geosciences, Utrecht University, 2 okt 09.
- Smits, R.E.H.M.** (2009) The role of government in stimulating innovation in times of crisis. Presentation at the Knowledge Group, Ministry of Education, Culture and Sciences: The Hague, The Netherlands (2009, november 23).
- Smits, R.E.H.M.** (2009) Innovation, Technology Assessment and Policy. Amsterdam, the Netherlands, Guest lecture at the Department of Earth and Life Sciences, Free University, Sept 15, 2009.
- Smits, R.E.H.M.** (2008). Long term innovation policy: perspectives, instruments, implementation. Ispra, Italy, JRC-EC, 14 October 2008.
- Smits, R.E.H.M.** (2008) Technology Assessment and Innovation Policy: a vision on the future. Wassenaar, The Netherlands, Presentation at TA Autumnschool, Rathenau Institute & Technical University Delft, 8 Oct 2008.
- Smits, R.E.H.M.** (2008) Innovation Policy and Technology Assessment. Amsterdam, The Netherlands, Presentation at the Free University, 16 sept 2008.

- Smits, R.E.H.M.** (2008) Management of Innovation in Economy and Society. Amsterdam, The Netherlands, Guest Lecture at the Free University, Sept 1.
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