



OCOPOMO

Open Collaboration in Policy Modelling

D7.1 EVALUATION STRATEGY, TRIAL DESIGN AND EVALUATION RESULTS

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ABBREVIATIONS AND ACRONYMS

API	Application Programming Interface
CCD	Consistent Conceptual Description
CMIS	Content Management Interoperability Services
CMS	Content Management Server / Content Management System
CSET	Collaboration and Scenario Editing Tools
CSV	Comma Separated Values
DDG	Data Dependency Graph
DIV	A tag in the HTML code
DRAMS	Declarative Rule-based Agent Modelling System
EMF	Eclipse Modelling Framework
GATE	General Architecture for Text Engineering, http://gate.ac.uk
GMF	Graphical Modelling Framework (from Eclipse platform)
GUI	Graphical User Interface
HTML	HyperText Markup Language
HTTP	Hypertext Transfer Protocol
HW	Hardware
ICT	Information and Communication Technologies
IDE	Integrated development environment
ID	Identifier
IDE	Integrated Development Environment
JDK	Java Development Kit
JRE	Java Runtime Environment
JSON	JavaScript Object Notation
KSR	Kosice Self-governing region
OPS	Official Production System
OS	Operating system
PDF	Portable Document Format
RDG	Rule Dependency Graph
REST	Representational State Transfer
RESTful	A web service implemented using HTTP and the principles of REST
SD	System Documentation
SDK	Software Development Kit
SE	Simulation Environment
SPAN	A tag in the HTML code
SVN	Apache Subversion (source versioning system)
SW	Software

TRAC	Tracking system for software development projects (http://trac.edgewall.org)
TXT	Plain Text format
URL	Uniform Resource Locator
UUID	Universally Unique Identifier
XML	eXtensible Markup Language
WP	Work Package

EXECUTIVE SUMMARY

Work package 7 (*Integrating ICT models and scenarios in pilots*) aimed at specifying an evaluation strategy for the pilots in Campania, Kosice and in London and at evaluating the pilot cases of the project. The evaluation of the pilots was performed in two iterations so that the experiences and insights gained from the first iteration could be fed back to revise policy models and ICT platform (including component revisions). The evaluation strategy bases on an evaluation framework, which emerged from the consideration of key questions regarding what should be evaluated: the OCOPOMO process and the OCOPOMO toolbox from the view of the different actors. As tools and process are interrelated, questions needed to be linked and cross-checked. Hence, the evaluation framework considers the following three dimensions:

1. Phases in the OCOPOMO policy development process - overall process and individual phases 1 till 6
2. Evaluation categories - either process, principles, ICT or artefacts,
3. Roles involved - either stakeholder, policy owner, facilitator, policy analyst or policy modeller.

For each reasonable combination of dimensions, we considered what should be evaluated and what the key evaluation criteria were. Based on this, a hypothesis was defined and the evaluation method was selected.

Based on this evaluation framework, questions were developed for each of the groups in the OCOPOMO process: stakeholders, policy modellers, policy analysts and facilitators of the OCOPOMO project. Each group got a different (online) questionnaire according to the individual experiences in the different phases of the OCOPOMO process. By doing the two iterations through time in the development process, on the one hand, a comparison of the different roles regarding the OCOPOMO platform could be made and, on the other hand, new questions could be asked regarding new functionalities in an evolved OCOPOMO platform through time.

This deliverable documents the evaluation framework and results gathered from two iterations of piloting and evaluating the OCOPOMO process and integrated ICT toolbox. The findings are summarised in the main document, while the evaluation results per iteration are provided in two annexes to this document.

1. INTRODUCTION

1.1. PURPOSE AND SCOPE

Work package 7 (*Integrating ICT models and scenarios in pilots*) aimed at specifying an evaluation strategy for the pilots and at evaluating the pilot cases of the project along the following aspects and tool support:

- Narrative scenario development in terms of value-add of the scenario contents and in terms of the process of scenario generation
- Policy model development in terms of value-added and in terms of validity of policy models and the process of agent-based model generation
- Collaborative ICT toolbox in terms of satisfying the user requirements (stakeholders, facilitators, modellers, analysts), the modeller and policy analysts' support needs, as well as the integrated features of the components the platform provides

The collaborative ICT toolbox comprises of the following components:

- Collaborative participation platform for scenario generation and stakeholder interaction along the OCOPOMO process steps
- CCD tool to conceptually model the policy case based on scenario annotation to establish traceability
- CCD2DRAMS tool to support the modellers in the transformation of the conceptual model into primitive simulation models, including conveying the trace information
- DRAMS tool to develop declarative rule-based agent models and to simulate them with simulation log files containing trace information which agents or what actions have been active
- Simulation Analysis tool to transform log files and statistical data of simulation runs into understandable model-based narrations (model-based scenarios) and graphical charts as well as annotations to close the loop for traceability along the whole OCOPOMO process
- Visualisation tool to visualise the simulation outcomes to the stakeholders
- Overall OCOPOMO process in terms of whether the process is suitable for collaborative policy development and engagement with stakeholders

The evaluation of the pilots was performed in two iterations so that the experiences and insights gained from the first iteration could be fed back to revise policy models and ICT platform (including component revisions).

The deliverable at hand (D 7.1 - Evaluation Strategy, Trial Design and Evaluation Results) documents the achievements in WP 7. It first outlines the evaluation strategy and how it has been developed (Chapter 2). Subsequently, the pilot outlines and results of evaluation for the first iteration are summarised (Chapter 3). The second iteration of pilot application and the respective evaluation results are summarised in Chapter 4. Chapter 5 discusses the experiences and lessons from the two pilot application and evaluation rounds. The conclusions in chapter 6 sum up the work documented in this report.

1.2. RELATION TO OTHER TASKS AND WORK PACKAGES

This document reports on evaluation activities that took place and results obtained in phases 3 and 4 out of the five main phases of OCOPOMO's work plan according to the Description of Work. Figure 1 shows the central role of the associated WP 7, which takes the outputs produced in a first iteration within WPs 4 and 6, and according to the evaluation results feeds back to WPs 3, 4, 5 and 6 in order to improve and extend the artefacts produced by these work packages.

The amended results achieved during the second iteration in WPs 4 and 6 are again input for the second iteration of WP 7. The herewith gathered final evaluation results are taken up by WP 8 in order to produce comprehensive guidelines for applying the OCOPOMO process, methodology and tools.

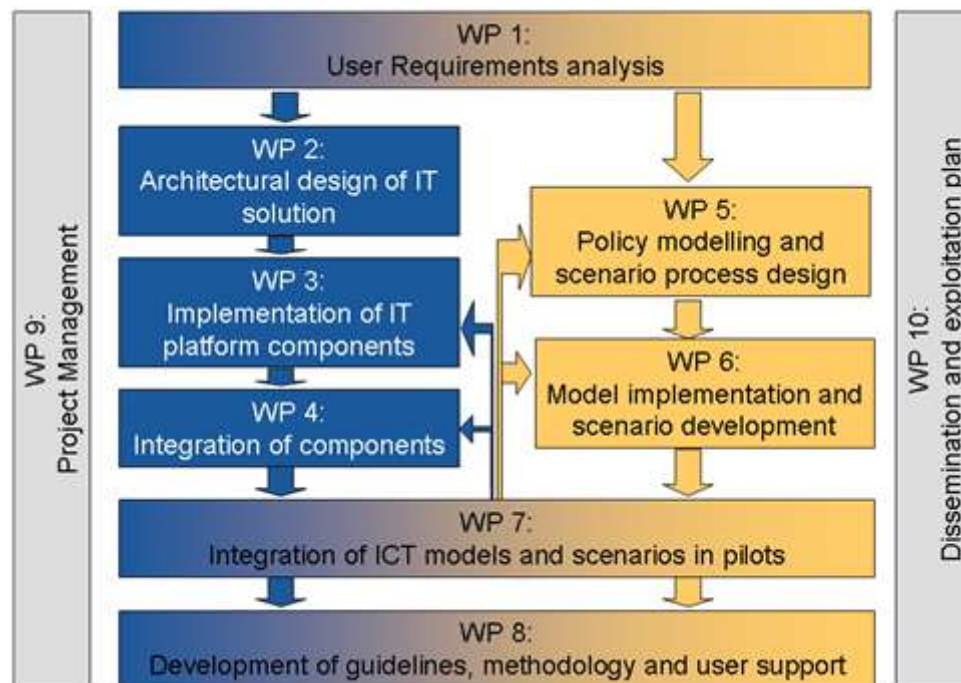


Figure 1: OCOPOMO's approach to implement the project (OCOPOMO consortium, 2009).

2. EVALUATION STRATEGY

2.1. DEVELOPMENT OF THE EVALUATION STRATEGY

The evaluation strategy encompasses key steps to perform an evaluation of project outcomes. It is designed to accomplish the requirements for two iterations of piloting, which have been described in the Description of Work and which are essential in order to perform a whole policy development cycle, including

1. the design of an initial policy and subsequent discussion in the first iteration, and
2. the amendment of the policy in a second iteration.

Moreover, the two iterations are also necessary in order to achieve a stable design of the OCOPOMO policy development process and the associated toolbox.

Figure 2 shows an outline and timeframe of the evaluation process as core of the evaluation strategy, with its relations to the piloting and toolbox development processes.

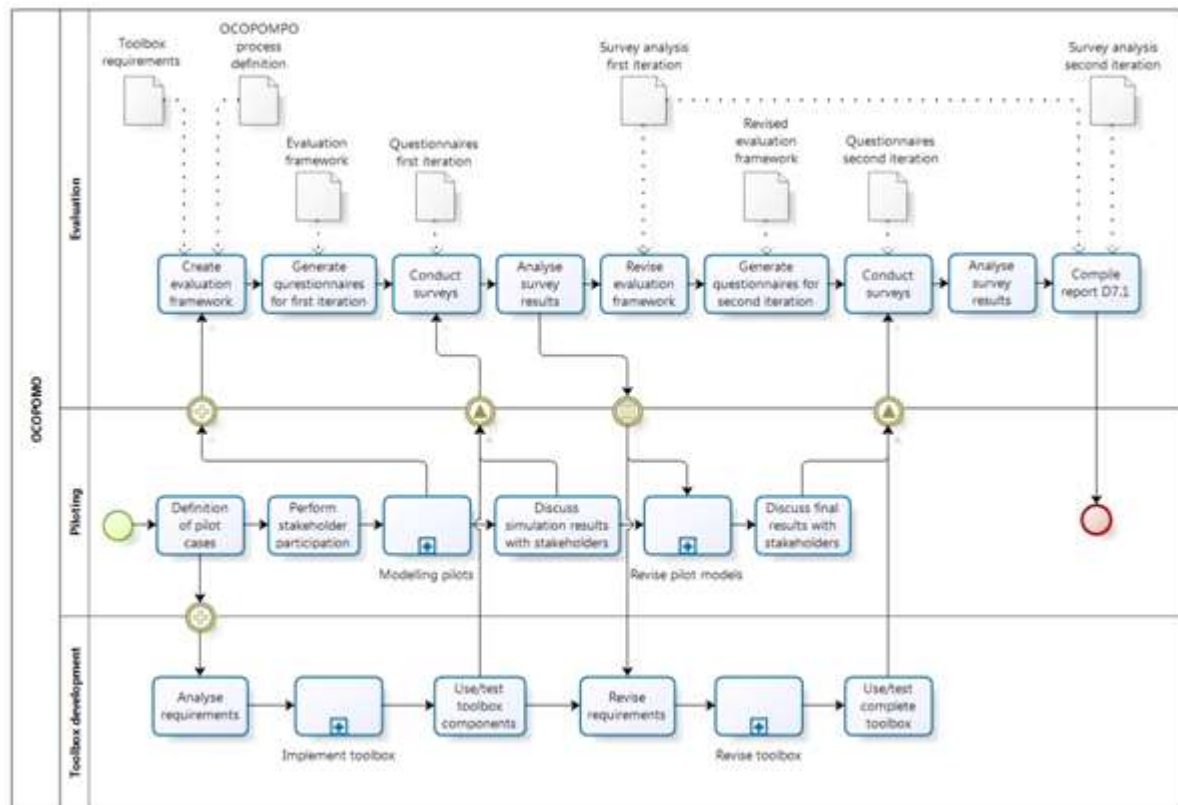


Figure 2: OCOPOMO evaluation process.

Starting with the "Piloting" strand, the pilot cases were defined, elaborated (with help of stakeholders) and modelled, while in parallel requirements for the toolbox were gathered, initial versions of the components were developed and already used and tested during modelling of pilot cases. At this time, the activities for evaluation started with developing the evaluation framework on base of the toolbox requirements and the (preliminary) definition of the OCOPOMO process. From the evaluation framework, different questionnaires (for stakeholders, policy modellers and facilitators for the participation process) were derived, in order to be ready to conduct surveys after finalising the modelling and implementation tasks for the first iteration and after discussing the results with the involved parties. The information revealed by analysing the survey results served as the basis for amending and/or extending the pilot models, the toolbox requirements and the evaluations framework, but also for revising the policy development process itself.

From this point, the second iteration of piloting and the revision and completion of the toolbox components was performed, leading again into conduction of surveys, for which new questionnaires were generated on base of the revised evaluation framework. The survey result analyses for both iterations flow into this final evaluation report.

Further details on the evaluation framework are given in the subsequent section 2.2, while the methods and techniques to reach the "users" in the evaluation process are subject of section 2.3. Syntheses and interpretations of survey results for both iterations and the different pilot cases are given in chapters 3 and 4. The detailed result analyses are available in Annex A and Annex B.

2.2. EVALUATION FRAMEWORK

The evaluation framework emerged from the consideration what should be evaluated: the OCOPOMO process and the OCOPOMO toolbox from the view of the different actors. It was further decided that these evaluation issues need to be regarded against each other. As result, the evaluation framework considers the following three dimensions:

1. Phases in the OCOPOMO policy development process - overall process and respective phases 1 till 6
2. Evaluation categories - either process, principles, ICT or artefacts,
3. Roles involved - either stakeholder, policy owner, facilitator, policy analyst and policy modeler.

Figure 3 visualises the dimensions.

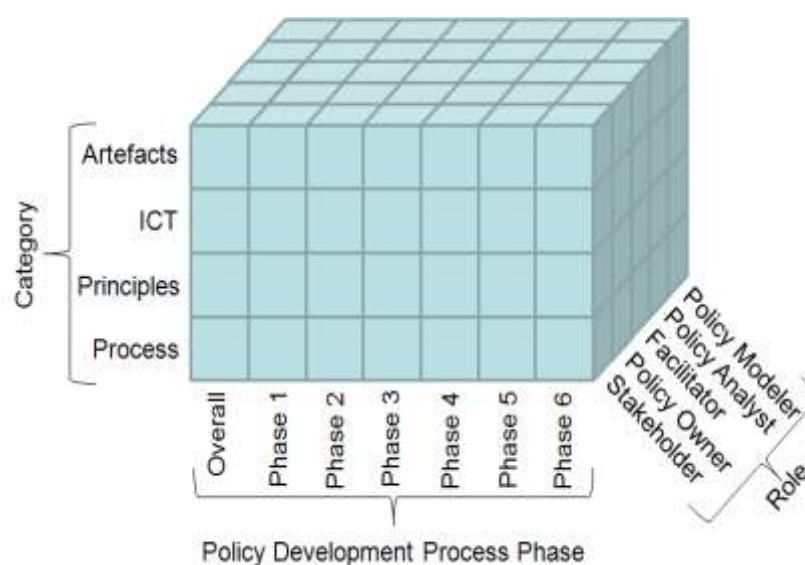


Figure 3: Evaluation Framework.

Each entry in the framework has the format shown in Table 1.

Table 1: Template for entries in the evaluation framework.

What will be evaluated	<i>Name of the evaluated component or part.</i>
Key evaluation criteria	<i>Establishing evaluation criteria, with which the assessment can be made.</i>
Hypothesis	<i>Hypothesis to be tested during evaluation</i>
Applied evaluation method	<i>Evaluation method, cf. section 2.3</i>
Related requirements	<i>Related requirements from D1.1</i>
Detailed evaluation questions	<i>Detailed question to test the hypothesis</i>



Iteration	<i>Relevant iteration; if the entry is relevant in both iterations, results are compared for changes during iteration.</i>
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As an example the entry for Phase 1, Category *ICT*, Role *Facilitator* is shown in Table 3. The full list is provided in Table 2.


Table 2: Evaluation framework of OCOPOMO.

Phase	Category	Iteration	What will be evaluated?	Key evaluation criteria	Expected outcome	Evaluation by whom	Detailed evaluation questions	Which method	Related requirements
1	ICT	1 + 2	Collaboration platform (CSE-Tool) - Usability	Does the OCOPO-MO Platform support the user in performing the tasks?	The ease with which people can employ provided tools in order to achieve a particular goal is analysed based on the thinking aloud studies with the platform. All participants in the thinking aloud sessions are able to fulfil the given tasks. First test users try to get an idea of the OCO-POMO platform, navigate through the website and use the search functionality. The general usability and the usability and usefulness of features is recognised as good.	Policy owners (user partners), Stakeholders, Facilitators	Functionality provided by particular tools for: - Facilitators: questions about overall aspects and also for details (Wiki, editing of documents, commenting, ...); Suggestions for improvements in tools and/or process (support of tool for process) - Stakeholders, Policy owners (more detailed): main task related to stakeholders, e.g. How simple was the uploading of material related to scenarios?	Thinking Aloud, Interviews, Automatic Usability Test (loop11.com)	



Phase	Category	Iteration	What will be evaluated?	Key evaluation criteria	Expected outcome	Evaluation by whom	Detailed evaluation questions	Which method	Related requirements
2	Process	1 + 2	Share views among stakeholders	Was this phase useful to share views on the policy to be developed?	The phase was useful to formulate and understand different points of view of stakeholders.	Stakeholders, Facilitators, Policy owners	For Stakeholders: Was it possible to get to know and understand arguments of other stakeholders? Did you feel comfortable and ready to share your opinion openly with others? Did you encounter any barriers in sharing your opinion freely (If yes, please name them)? How many comments did you pose? For Facilitators: Were the views shared online useful to understand the policy issue? Did you have to encourage stakeholders to present their point of views? If yes, please name the methods. Did all the stakeholders present their opinion?	Questionnaire	
2	Process ICT	1 + 2	Stakeholder engagement	How intensive was the contribution by stakeholders? Were Stakeholders reasonably well engaged in the process?	Stakeholders felt that they had a useful tool to express their views and engage in the policy development The facilities to discuss with other stakeholders was perceived as important and constructive to come to common understanding of the policy domain	-	How often during the 1st/2nd trial have you visited project site? (everyday...never) Did you write your scenario? Did you pose a question? Did you comment on other stakeholders input? (if yes, how many times) Is there anything we could do to enhance your engagement in the process? (what?)	Web statistics + Analysis of history and contributions of stakeholders	



Phase	Category	Iteration	What will be evaluated?	Key evaluation criteria	Expected outcome	Evaluation by whom	Detailed evaluation questions	Which method	Related requirements
2	ICT	(1 +) 2	Collaboration platform (CSE-Tool) - Security and privacy	How ensures the collaboration platform the preservation of security and privacy of users (in particular stakeholders)?		Facilitators, Stakeholders	Facilitators: all tools for resolution of conflicts and for moderation of collaboration Stakeholders: anonymity, invitation procedure	Interview and/or Questionnaire	
2	ICT	2	Collaboration platform (CSE-Tool) - Scalability	Does the CSE Tools scale with the number of users and size of the managed content?			How many users can simultaneously collaborate on the platform? How many documents/wiki pages/posts etc. can be managed in repository?	Load automatic tests	
2	ICT	2	Collaboration platform (CSE-Tool) - Traceability	Was it possible to prove the traceability for the stakeholders comparing the evidence based and simulation based scenarios?	The facilitators perceive that the collaboration platform provides useful information for tracing how their viewpoints on the policy domain are reflected in simulation based scenarios.	Facilitators, Stakeholders	Was it possible to prove the traceability for the stakeholders comparing the evidence based and simulation based scenarios?	Thinking aloud, interviews	



Phase	Category	Iteration	What will be evaluated?	Key evaluation criteria	Expected outcome	Evaluation by whom	Detailed evaluation questions	Which method	Related requirements
3	Process	1 + 2	CCD development process - Transformation of scenarios into conceptual models	Was the transformation of scenarios into a CCD model comprehensive and did the conceptualisation support the Facilitator and Policy modeller to get an overview about the policy domain? Is the annotation of scenarios and storing of links helpful to stakeholders to trace how their viewpoints on the policy domain inform the CCD model?	a) The process is easy to understand and the transformation performable without any difficulties. b) The analysis of documents and structuring of concepts supports the facilitator and policy modeller to get an overview about the policy domain	Facilitators, Policy modeller	a) How simple do you find the transformation into a CCD model? Did you have any difficulties with the annotation of scenarios? If yes, which? Did you have any difficulties with the creation of a CCD? If yes, which? b) Does the modelling with CCD helped you to build a better understanding about the given scenario?	Interview or Questionnaire	
3	ICT	2	CCD Tool environment - Traceability	Was it possible to prove the traceability during the development of models?	Through the annotations and their assignment to specific CCD elements the traceability was always ensured. The annotation of scenarios supports tracing the decisions of the policy modeller if it is used appropriately.	Policy modeller, Facilitator, Stakeholder, Policy owner	see - Does Phase III support the policy modeller to get an overview about the policy case? Other questions: Was it easy for you to jump between scenarios and CCD elements? Which difficulties did you recognise?	Interview or Questionnaire	I-2, I-40



Phase	Category	Iteration	What will be evaluated?	Key evaluation criteria	Expected outcome	Evaluation by whom	Detailed evaluation questions	Which method	Related requirements
3	ICT	1 + 2	CCD Tool environment - Documentation	Was the documentation useful and comprehensible?	The documentation is structured good and described in detail. It provides a good basis for the development of CCD models.	Policy modeller, Facilitator		Interview or Questionnaire	
3	ICT	1 + 2	CCD Tool environment - Usefulness Usability	Does the CCD Tool environment supports the user in performing conceptual modelling as envisaged in the OCOPOMO process.	The CCD Tool is useful to support conceptual modelling as envisaged in the OCOPOMO process. The usability of the CCD Tool Environment is appropriate for the complex task after user training. The tools are clearly arranged and the handling intuitive. A good overview is always granted.	Policy modeller, Facilitator	*How difficult was the handling of the CCD tool after the user training? *Is the handling of the CCD tool intuitive? *How good is the overview and the arrangement of the toolboxes within the CCD? --- *Are the diagrams/graphical representations of the conceptual model which are generated by the CCD tool helpful/too complicated/...?	Thinking Aloud, Interviews, Automatic Usability Test	I-NF-1



Phase	Category	Iteration	What will be evaluated?	Key evaluation criteria	Expected outcome	Evaluation by whom	Detailed evaluation questions	Which method	Related requirements
3	ICT	1 + 2	CCD Tool environment - Annotation	Does the annotation tool support the annotation of documents and is it used sufficiently?	Concepts in the CCD model are annotated with the help of the annotation tool.	Policy modeller, Facilitator	*Which CCD did you develop? *How many scenarios do exist for this pilot case? *How many scenarios did you annotate with the help of the CCD tool? *How many entities of the CCD did you evidence with annotations (approximately in percentage)? -- *Are the annotations sufficient to trace the CCD concepts back to the scenario? *What would be your suggestion to improve the annotation feature within the CCD tool?	Interviews	



Phase	Category	Iteration	What will be evaluated?	Key evaluation criteria	Expected outcome	Evaluation by whom	Detailed evaluation questions	Which method	Related requirements
3	ICT	1 + 2	CCD Tool environment - Conceptual Modelling	Does conceptual modelling support the policy modeller in creating the simulation model?	Conceptual modelling with the CCD Tool is an appropriate means to prepare the development of a simulation model.	Policy modeller	<p>[*How much of the simulation code was generated automatically?] --> transformation of evaluation criteria in iteration 2</p> <p>--</p> <p>*How meaningful do you find the transformation from the scenario to a conceptual model as a step to the simulation model?</p> <p>---</p> <p>*Does this kind of conceptual model speed up/simplify/... the implementation of a simulation model?</p> <p>*Does it reduce the number of implementation errors?</p> <p>*Does it have impact on the readability of model code?</p> <p>*Does it make models more efficient during execution?</p>	Interviews	
3	ICT	1 + 2	CCD Tool environment - CCD Meta-model	Comprehensiveness	Does the CCD Meta-model provide all necessary entities to describe a policy case?	Policy modellers, Facilitators	<p>Is the selection of concepts provided by the CCD comprehensive?</p> <p>Should further concepts be added to the CCD?</p> <p>Are some of the CCD concepts redundant or superfluous?</p> <p>Is it possible to express the policy case with the concepts provided by the CCD?</p>		



Phase	Category	Iteration	What will be evaluated?	Key evaluation criteria	Expected outcome	Evaluation by whom	Detailed evaluation questions	Which method	Related requirements
3	ICT	2	CCD Tool environment - Transformation	Does the transformation tool support and ease the generation of simulation models and preserve the links (UUIDs) to CCD elements (Are the links (UUIDs) between CCD model elements and simulation model code stored in a technically correct, reliable and unambiguous way?)	a) The transformation tool helps to generate at least basic classes and code in the simulation environment. The transformation tool preserves the links (UUIDs) to CCD elements in simulation model code. b) The generated basic classes can be easily traced back to the conceptual model so that the consistency is granted all the time.	Policy modeller	b) In which dimension is it possible to trace back the generated model to the conceptual model?	Interviews, Evaluator assessment, Tests	
3	Artefacts	2	CCD Models - Tree structure, actor network diagram, action diagram, instances diagram	Do the CCD models correctly present the corresponding policy case?	The CCD models are an appropriate presentation of the policy case.	Policy modeller, Facilitator		Interviews, Evaluator assessment	



Phase	Category	Iteration	What will be evaluated?	Key evaluation criteria	Expected outcome	Evaluation by whom	Detailed evaluation questions	Which method	Related requirements
3	Artefacts	2	CCD Models - Simulation Model	Do the CCD models correspond with the resulting simulation models and vice versa?	The number of entities (actors, objects, actions) from the CCD is equal to the generated entities in the DRAMS simulation model. The sequence of rules of the simulation model corresponds to the sequence of the actions in the CCD diagram.	Policy modeller, Facilitator		Evaluator assessment	
3 4	Process	1 + 2	Evidence and correctness of policy models - Development of models	Does Phase III support the development of more correct policy models.	To develop conceptual models and base them on evidence produces more correct policy models. To develop conceptual models first saves time and costs.	Policy modeller		Interviews	



Phase	Category	Iteration	What will be evaluated?	Key evaluation criteria	Expected outcome	Evaluation by whom	Detailed evaluation questions	Which method	Related requirements
3 4	Process	1 + 2	CCD development process - Support for Policy Development	What is the added value of (mixed bottom-up and top-down) conceptual modelling compared to bottom-up simulation model development	a) The conceptual modelling (CCD development) adds value by enabling policy analysts and modellers to develop the simulation model based on relevant and structured information. b) The analysis of documents and structuring of concepts supports the policy modeller to get an overview.	Policy modeller	a) Was the CCD tool useful to structure information? Did the CCD enhance the work on conceptual and simulation model? Was it easy to rebuild conceptual models according to new information arriving from trials? b) *How many scenarios did you annotate? *After developing the CCD by annotating scenarios, do you think that you know the policy domain? *Did the process of developing a CCD help you to structure the policy domain in preparation of the development of the policy model?? *Does the modelling with CCD helped you to build a better understanding about the given scenario?	Interviews	
4	Principles	2	Development of simulation models - Advantages of declarative rule-based agent modelling	Which advantages does declarative agent-based programming provide compared to other agent-based (imperative, procedural) programming methods?	The implementation with declarative programming provides a faster development of models.	Policy modeller		Interview or Questionnaire	



Phase	Category	Iteration	What will be evaluated?	Key evaluation criteria	Expected outcome	Evaluation by whom	Detailed evaluation questions	Which method	Related requirements
4	Process	2	Development of simulation models - Practice	How extensive is experience and education required for model development?	With the necessary prerequisites and an entering guide the development of first models is possible in a short time.	Policy modeller		Interview or Questionnaire	
4	ICT	1 + 2	SE (DRAMS/ Repast) - Model Development	To what extent does the tool support the policy modeller during the model development?	The tool offers several features for faster developing, error detection and correction.	Policy modeller	Compared to other declarative rule-based tools: - Was less time needed to develop models? - Was the number of errors less than with other approaches? - Was it easy to find and correct errors (debugging functionality)? - Were less efforts required to modify models (e.g. to add new aspects to the model)?	Interview or Questionnaire	T-16



Phase	Category	Iteration	What will be evaluated?	Key evaluation criteria	Expected outcome	Evaluation by whom	Detailed evaluation questions	Which method	Related requirements
4	ICT	1 + 2	SE (DRAMS/Repast) - Usefulness Usability	Is the simulation environment capable to cope with model complexity for the pilot prototype models?	Appropriate usability.	Policy modeller	Was it possible to handle models with the necessary complexity (e.g. measured by numbers of rules, numbers of fact templates and number of facts)? Was the performance of the simulation tools (DRAMS/Repast) sufficient to execute models with appropriate complexity and reasonable number of agents? The user interface (Eclipse plugin, DRAMS info panels with DDG, schedule etc.) useful, easy to understand, easy to handle, etc.?	Interview or Questionnaire, Automatic usability test	
4	ICT	1 + 2	SE (DRAMS/Repast) - Documentation	Is the documentation useful and comprehensible?	The documentation is structured good and described in detail. It provides a good basis for the development.	Policy modeller		Interview or Questionnaire	



Phase	Category	Iteration	What will be evaluated?	Key evaluation criteria	Expected outcome	Evaluation by whom	Detailed evaluation questions	Which method	Related requirements
5	Process	2	SE (DRAMS/Repast) - Supporting the interpretation of simulation outcomes in a way to be evaluated by the stakeholders	How well does the SE support the simulation analysis to prepare the simulation outcomes for the stakeholders?		Policy modeller			
5	ICT	2	SE (DRAMS/Repast) - Usability	Can simulation experiments be performed in a reliable, structured and user-friendly way?		Policy Modeller		Automatic usability test	FR19_PM, FR20_PM, FR21_PM, FR23_PM, FR24_PM, FR24_PM
5	ICT	1 + 2	SE (DRAMS/Repast) - Usefulness	Is the SE useful regarding Performance, Scalability, Adaptivity?	a) With a high end computer the performance in simulating low till middle complex models is high. b) With some restrictions appropriate scalability. c) The simulation environment offers the possibility to adapt parameters of a model directly within the GUI.	Policy modeller, Simulation analyst	a) Performance: Can the simulation be carried out in a moderate / adequate time? b) Scalability: Does the simulation environment scale with the model size appropriate for the pilot prototype models? c) Adaptivity: To which extent is it possible to change specific values / model parameters by simulation users?	Interview or Questionnaire, Profiling (a)	FR25_PM



Phase	Category	Iteration	What will be evaluated?	Key evaluation criteria	Expected outcome	Evaluation by whom	Detailed evaluation questions	Which method	Related requirements
5	ICT	2	SE (DRAMS/Repast) - Reproducibility	Is it possible to reproduce a simulation by using the same settings?	Different simulations with same parameters lead to the same outcome. The reproducibility is ensured.	-		Evaluator assessment	
5	Artefacts	2	Simulation models - Model interpretations	Are the simulation models correctly presenting the policy cases?		Policy modeller, Simulation analyst		Interview or Questionnaire, Evaluator assessment	



Phase	Category	Iteration	What will be evaluated?	Key evaluation criteria	Expected outcome	Evaluation by whom	Detailed evaluation questions	Which method	Related requirements
5 6	Artefacts	2	Model-based scenarios	Are the model-based scenarios meaningful, correct and do they fulfil the desired purpose (Usefulness of model-based scenarios to describe/interpret simulation outcomes of a policy domain to support comprehension of stakeholders about the policy to be formulated in order to iterate the policy development process, provide new insights)	The outcomes deliver meaningful results and give an insight into complexity of policy issue. The m-b scenarios provide crucial information to stakeholders about the simulation outcomes, which supports comprehension and transparency in the policy development process	Stakeholders, Facilitators, Policy owners, Simulation analyst, Policy modeller	Was the model-based scenario understandable? Did the presented outcomes meet the expectations of stakeholders? Did they provide new insight? How useful was to see how the model-based scenario is derived from textual description? Would you like model-based scenarios to be used in other policy domains? Is transparency in the policy development process important to you? Do model-base scenarios contribute to the transparency of the policy development?	Interview (policy owner); Questionnaire (stakeholders, facilitator)	
6	Process ICT	2	Model-based scenarios - Modification	Does the model provide the flexibility for conceptual modifications?	The modification can be slightly done by editing the conceptual model and transforming it again to the simulation model. The whole process allows multiple iterations.	Policy modeller, Simulation analysts		Interview or Questionnaire	



Phase	Category	Iteration	What will be evaluated?	Key evaluation criteria	Expected outcome	Evaluation by whom	Detailed evaluation questions	Which method	Related requirements
6	ICT	1 + 2	Visualisation of Model-based scenarios - Graphs, Plots	Are the graphs meaningful and do they fulfil the desired purpose?	The graphs provide meaningful information and are easily understandable by the stakeholders.	Stakeholders, Facilitators, Policy owners,	Were the data presented in understandable way? Did they provide meaningful and reasonable information? Did you encountered any problems with understanding the graphs? Would you like any additional information to be depicted on the graph?	Questionnaire (interview optionally)	
6	Artefacts	2	Quality of models - Comprehensiveness of models, impact of OCOPOMO process	To which extent / in which respect have models and other artefacts been improved by applying the process?		Facilitators, Policy modeller, Stakeholder			



Phase	Category	Iteration	What will be evaluated?	Key evaluation criteria	Expected outcome	Evaluation by whom	Detailed evaluation questions	Which method	Related requirements
6	Artefacts	1 + 2	Supporting material - Quality (Background documents, discussion threads and comments on scenarios from phases 1&2; discussions and resulting conclusions from phase 6)	Has 1st and 2nd phase been useful for collecting sufficient and relevant supporting material?	During 1st and 2nd phase relevant and important supporting materials were collected/presented to stakeholders and policy owners.		Two perspectives: - background material for stakeholders (instructions, CCD diagram, ...) - background material for facilitators provided by stakeholders describing scenarios (for modelling purposes) For stakeholders: Did you read some of them background documents? Were they useful? Where they reliable? Do you have any ideas for improvement? For facilitators: Did you receive sufficient quantity of background information? Where they of high quality/reliable)? Were they consistent?	Interview (policy owner); Questionnaire (stakeholders, facilitator)	



Phase	Category	Iteration	What will be evaluated?	Key evaluation criteria	Expected outcome	Evaluation by whom	Detailed evaluation questions	Which method	Related requirements
Overall	Process	2	Overall Process	Is the overall OCOPOMO process reasonable and manageable	Walking through all steps in policy development process makes sense	Policy owners (user partners), Stakeholders, Facilitators, Policy modellers	Is OCOPOMO approach to policy making useful for your purposes (explain why)? Do you have any prior experience with online collaboration/consultations? How do you like the idea of engaging stakeholders in online collaboration for purpose of policy making? What prompt you to take part in the project? Would you recommend it to others? Is the OCOPOMO process reasonable to you? Is the OCOPOMO process clear to you?	Questionnaire	



Phase	Category	Iteration	What will be evaluated?	Key evaluation criteria	Expected outcome	Evaluation by whom	Detailed evaluation questions	Which method	Related requirements
Overall	Process	2	Overall Process	What and where is the added value of the OCOPOMO process?	<p>a) Stakeholders engage in the process steps as foreseen. (see "Stakeholder engagement")</p> <p>b) Stakeholders perceive the process as important as they are actively involved in the policy formulation.</p> <p>c) Traceability through the overall process is a key added value of the OCOPOMO process</p> <p>d) The conceptual modelling (CCD development) adds value by enabling policy analysts and modellers to develop the simulation model based on relevant and structured information (see "CCD development Process")</p> <p>e) The open collaboration is relevant and adds transparency and participation to policy development processes</p>	Policy owners (user partners), Stakeholders, Facilitators, Policy modellers	<p>a) see "Stakeholder engagement"</p> <p>b) Is it important to you to be involved in development of policy? Did this experience increased your understanding the complexity of policy domain? What should we do to make the site more useful to your purposes? (open question)</p> <p>c) Is the traceability between scenarios and model important/irrelevant to you? How did it influence your understanding of the model/simulation results?</p> <p>d) see "CCD development Process"</p> <p>e) What do you particularly like/dislike in the OCOPOMO process? (open questions) Is this approach applicable to your position? Is the transparency of this approach important/irrelevant to you? Is it important to you to be involved in development of policy? Did this experience increased your understanding of the policy domain?</p>	Questionnaire and web statistics	



Phase	Category	Iteration	What will be evaluated?	Key evaluation criteria	Expected outcome	Evaluation by whom	Detailed evaluation questions	Which method	Related requirements
Overall	Process	2	Iterations	How useful is the iteration of the process?	Stakeholders acknowledge the stepwise comprehension and easier management of complexity of the policy domain and the iterative revisions towards an agreeable policy as useful and as contribution to implement good governance principles.	Stakeholders, Policy owners (user partners)	How useful is the iteration of the process? Where two iterations enough for you to get the common understanding of the policy domain and simulation output? Would you prefer to change something in the process of iterations, e.g., timeframe, tasks?	Questionnaire	
Overall	Process	2	Iterations	Were the iterations useful for policy modelling?	The facilitators and modellers perceive iterations with stakeholders as added value in capturing of complexity of the conceptual models and simulation models as very helpful.	Facilitators, Policy modellers	How useful is the iteration of the process? Where two iterations enough for you to build more consistent model/models? Would you prefer to change something in the process of iterations, e.g., timeframe, tasks?	Interview or Questionnaire; Experience reports (modeller and facilitator)	
Overall	Process	2	Iterations	How easy is the management of the versions among the different iterations?	Stakeholders perceive the different versions of the iterations as useful.	Stakeholders	How important for you was to see different viewpoints of other stakeholders? Did iterations help to reach consensus/deeper understanding of the policy domain?	Questionnaire	
Overall	Process	2	Iterations	How easy is the management of the versions among the different iterations?	Facilitators and modellers see space for improvement in the version management of the conceptual models and the simulation models	Facilitators, Policy modellers	How easy is the management of the versions among the contradicting scenarios? How easy is the management of the versions among the different iterations?	Questionnaire; Experience reports	



Phase	Category	Iteration	What will be evaluated?	Key evaluation criteria	Expected outcome	Evaluation by whom	Detailed evaluation questions	Which method	Related requirements
Overall	ICT	1 + 2	Collaboration platform (CSE-Tool) - Collaboration + content management	How useful is the collaboration platform in the interaction with stakeholders?	Policy owners and facilitators perceive the collaboration platform as very useful to gather relevant viewpoints and evidences of the policy domain. Policy owners perceive the collaboration platform as an important mean to implement good governance principles in their policy development. Stakeholders perceive the collaboration platform as useful to discuss among the stakeholder groups different viewpoints and to get informed and to get engaged in the development of a policy they are concerned; Collaboration tool is a good tool to organise the OCOPOMO process so all users know their tasks.	Policy owners (user partners), Stakeholders, Facilitators	<p>Functionality provided by particular tools for:</p> <p>- Facilitators: Which tools did you use most often? Was it easy to find relevant document? Was it easy to read document? Was it easy to upload document? Was it easy to moderate discussion?; Suggestions for improvements in tools and/or process (support of tool for process)</p> <p>- Stakeholders, Policy owners (more detailed): main task related to stakeholders, e.g. Were tools used in a way according to the process needs? Which tools did you use most often? Was it easy to find relevant document? Was it easy to read document? Was it easy to upload document? Was it easy to write scenario? Was it easy to participate in discussion? Do you think that collaboration platform is useful tool in process of policy development? Were there any functionalities that you missed?</p>	Interview or Questionnaire	T-5, T-24, T-28, T-29, T-30, T-34, T-42, T43, I-1, I-5, I-6, I-7, I-10, I-14, I-11, I-13, I-15, I-17



Phase	Category	Iteration	What will be evaluated?	Key evaluation criteria	Expected outcome	Evaluation by whom	Detailed evaluation questions	Which method	Related requirements
Overview	ICT	2	Collaboration platform (CSE-Tool) - Collaboration + content management	How useful is the collaboration platform in regards to discussing simulation outcomes with stakeholders?	The collaboration platform is perceived as an important new means to get in dialogue with stakeholders about viewpoints on a policy domain resulting from simulation of the policy The collaboration platform is an important means to inform stakeholders about discrepancies, inconsistencies and surprises emerging from the simulation of policy models.	Policy owners, Stakeholders, Facilitators, Policy modellers	For stakeholders and policy owners: Did you like the way the simulation results were presented? Is a collaboration platform a good mean for getting familiar with simulation results? Was it easy to discuss/comment simulation results? Did the simulation results and discussion about them at collaboration platform help to reveal some unintuitive aspects of policy domain? Will the outcome of the second trial be helpful in the development of policy? If yes, how will it influence the development of policy? For modellers and facilitators: Was it easy to present and explain simulation results with the help of collaboration tool?	Interview or Questionnaire; Experience reports; SWOT Analysis	T-1, T-1-1, T-1-2, T-1-3, T-1-4, T-1-5, T-4, T-5, T-17, T-23, T-25, T-32, T-33, FR27_PM



Phase	Category	Iteration	What will be evaluated?	Key evaluation criteria	Expected outcome	Evaluation by whom	Detailed evaluation questions	Which method	Related requirements
Overall	ICT	1 + 2	Collaboration platform (CSE-Tool) - Collaboration + content management	How useful is the content management support of the collaboration platform for facilitators and modelers in regards to the management of complexity and vast amount of information of the policy domain?	The content management support is perceived as useful to collect information from the stakeholders to inform the conceptual and formal policy models	Policy modellers, Facilitators	Was it easy to use OCOPOMO ICT platform in order to gather information? Was it easy to use OCOPOMO ICT platform to deal with vast amount of information? What are the pros and cons of collaboration tool? --- How would you grade the organisation of information on the collaboration platform? Would you say that the concept of centralised information management is applicable to the collaboration platform? Was it possible to manage the wiki information in an easy way?	Interview or Questionnaire; Experience reports; SWOT Analysis	T-5



Phase	Category	Iteration	What will be evaluated?	Key evaluation criteria	Expected outcome	Evaluation by whom	Detailed evaluation questions	Which method	Related requirements
Overview	Principles	2	Traceability	How useful is the traceability along the policy development process which is supported by the ICT toolbox?	Traceability is well appreciated by all actors along the policy development process: - stakeholders can better understand how their viewpoints are fed into the simulation models and which evidences cause the simulation outcomes received - policy owners better understand dependencies of actions - modellers reach better documentation in their simulation models; they are also supported in faster debugging and bug-fixing of simulation models. - facilitators are supported in faster construction of conceptual models and in arguing with stakeholders and policy owners as traces show how certain viewpoints feed the simulation outcomes	Policy owners, Stakeholders, Facilitators, Policy modellers		Interview or Questionnaire; Experience reports; SWOT Analysis; User tests	



Phase	Category	Iteration	What will be evaluated?	Key evaluation criteria	Expected outcome	Evaluation by whom	Detailed evaluation questions	Which method	Related requirements
Overall	Principles	2	Good governance principles (Openness, Transparency, Participation, Collaboration)	How well appreciated are open collaboration, transparency and participation in providing understanding and enabling stakeholders to participate in the policy development process?	<p>Good governance principles are perceived along two strands: Stakeholders perceive openness, collaboration and participation as key in the policy development to ensure transparency and to establish trust on the actions of policy owners; Policy owners are split into two camps:</p> <ul style="list-style-type: none"> - those appreciating open government and therewith being in need for ICT support to engage stakeholders and to ensure openness in policy development processes to establish trust and transparency; - those who are concerned that too much of openness and participation brings in too much of complexity and too many variances so that effective and reliable expert conclusions on a policy cannot be formed anymore; 	Stakeholders, Policy owners (user partners)		Interviews or Questionnaires	



Phase	Category	Iteration	What will be evaluated?	Key evaluation criteria	Expected outcome	Evaluation by whom	Detailed evaluation questions	Which method	Related requirements
Overview	Principles	2	Policy domain - Better understanding	How well does the overall policy development process support understanding of a complex policy domain?	<p>The OCOPOMO process supports well in providing a better understanding in the following respects:</p> <ul style="list-style-type: none"> - collecting information and managing this information in a content management system (therewith supporting complexity management) - supporting stakeholders in comprehending a complex policy domain through scenario descriptions - constructing conceptual models of the policy domain to a) support the formal policy modelling and b) supporting the understanding of a complex policy domain - supporting the comprehension of simulation outcomes through m-b sc and visualisations 	Policy owners, Stakeholders, Facilitators, Policy modellers		Interviews or Questionnaires; experience reports, SWOT, user tests	

Table 3: Example of an entry under “Phase 1, Category *ICT*, Role *Facilitator*” in the evaluation framework.

What will be evaluated	<i>Collaboration platform (CSE- Tool)- Usability</i>
Key evaluation criteria	<i>Does the OCOPOMO Platform support the user in performing the tasks?</i>
Hypothesis	<i>All participants in thinking aloud sessions are able to fulfil the given tasks. First test users try to get an idea of the OCOPOMO platform, navigate through the website and use the search functionality. The general usability and the usability and use-fullness of features is recognised as good.</i>
Applied evaluation method	<i>The ease with which people can employ provided tools in order to achieve a particular goal is analysed based on thinking aloud studies with the platform. Questionnaire, Automatic Usability Test</i>
Related requirements	<i>I-NF-1, I-NF-2</i>
Detailed evaluation questions	<i>Questions about overall aspects and also for details (Wiki, editing of documents, commenting, ...); Suggestions for improvements in tools and/or process (support of tool for process)?</i>
Iteration	<i>1+2</i>

2.3. EVALUATION METHODS AND TECHNIQUES

In order to evaluate the experience of the OCOPOMO platform used by different groups in the OCOPOMO process, questionnaires were prepared for this purpose. They were addressed to the stakeholders, policy modellers, policy analysts and facilitators of the OCOPOMO project. Each group got a different questionnaire according to the individual experiences in the different phases of the OCOPOMO process. By doing two iterations through time in the development process at the one hand a comparison of the different roles regarding the OCOPOMO platform can be made and on the other hand new questions can be asked regarding new functionalities in an evolved OCOPOMO platform through time.

After having agreed on the questionnaires, an online version was implemented to collect feedback in an efficient way. The questionnaires were created with the survey tool Lime Survey and were sent to all the stakeholders and policy modellers as well as facilitators in this EU project as an online survey. The consultation of the first iteration took place in July until October 2012. The given results and recommendations of the questionnaires will improve the OCOPOMO collaboration platform and give enhancements for the second iteration. To evaluate the results Microsoft Excel was used to generate the graphs underlining the output data of the surveys.

3. PILOT DESCRIPTIONS AND RESULTS OF PILOT APPLICATION EVALUATION: FIRST ITERATION

3.1. OUTLINING THE PILOT CASES AND STAKEHOLDER ENGAGEMENT

3.1.1. Kosice case

The Kosice Self-governing Region (KSR) pilot case deals with utilisation of renewable energy sources. Basic focus is set on issues of heating and possibilities of energy savings in this area. The most of the buildings in the Kosice city are using the central heating system connected to the large heat producers. Primary heat producer is TEKO company (using combined gas/coal technology) followed by minor companies such as waste incinerator plant. Central heating system is typical for most Slovak cities, but the situation in Kosice is slightly specific. Besides the main heat producer, which owns and maintains the main heat pipes, the rest of the distribution network is maintained by the independent TEHO company. The energy market (heat, electricity, etc.) is regulated by state administration Regulatory Office for Network Industries (URSO), which can influence the prices and capacity for produced energy or input sources (gas, coal, electricity, etc.). Besides of the producer/distribution companies, city (which is for example major owner of TEHO) and state government, the important stakeholders for the heat energy market are citizens (especially flat dwellers), who can actively decrease heat consumption by renovation of their houses, select heat providers or decide to build their own locale heating system and disconnect from the central system. Flat dwellers are organized in the household associations (for more details, see deliverable D6.1).

The preparation for the engagement of the stakeholders for the first trial included the following steps:

1. Three stakeholders were invited for the interviews - one was a former director of heat plant, one was from think tank NGO dealing with renewable energy sources and one was the representative of citizens. As the result of interviews, facilitator created three initial scenarios reflecting the point of view of each invited stakeholder. These initial scenarios were used as the example how to write evidence-based scenarios for other facilitators.
2. The facilitator created and configured the collaboration site for Kosice case. The content consist of
 - a) Introductory wiki page introducing the OCOPOMO project and process, links to initial scenarios and background documents and description of following tasks expected from stakeholders (http://ocopomo.ekf.tuke.sk/share/page/site/kosice/wiki-page?title=Main_Page_1st_Trial).
 - b) Initial scenarios published as Wiki pages.
 - c) The set of selected background documents describing the energy conceptions proposed for various cities in the Kosice region.
3. The group of stakeholder invited for the first trial was selected. The covered groups of stakeholders include representatives of:
 - a) Heat producers (TEKO and ENKOBEL from city of Spisska Nova Ves)
 - b) Heat distribution companies (ENKOBEL)
 - c) Distributors of heat technologies (Viessmann company)
 - d) Experts for building construction and heat technologies (from Faculty of Civil engineering, Technical University in Kosice)
 - e) Household associations
 - f) Citizens living in family houses
 - g) Citizens living in flats in block houses
 - h) City of Kosice and Kosice self-governing region
4. For each invited stakeholder, facilitator configured the account on the collaboration site, personal Wiki page for stakeholder's evidence-based scenario and personal folder for uploading

of background documents. The list of links to the stakeholder's scenario Wiki pages was published on the introductory Wiki page. All content was published in Slovak language.

Altogether 18 stakeholders and two policy makers took part in the first iteration which last from 10 January 2012 to 17 February 2012. Before the beginning of first iteration stakeholders as well as policy makers were invited to take part in workshop which aim was to clarify the tasks of participants and to establish engagement. During the online collaboration period five new scenarios were created, all scenarios were commented as well as additional relevant documents were collected.

The most discussed topics in comments include:

- General pros and cons of local vs. central heat system
- Negative influence of disconnecting from central heat system to other customers
- Utilization of Durkov geothermal energy source
- Energetics conception of the Kosice city

After the termination of the first iteration all stakeholders and policy makers were invited to fill in the evaluation questionnaire (see Annex A); six completed the task. Those who did, assigned themselves to the following groups of respondents: energy experts (3), representatives of housing association (1), policy makers (1) and university lecturers (1). Their motivation as well as prior experience in open collaboration initiatives (half of participants had previous experience with online collaboration on policy development) were not uniform. The motives of participants can be divided into three categories: interest in energy (to learn and gain experience), social reasons, interest in e-participation.

3.1.2. Campania case

The policy analysed in the Campania pilot application aims at establishing competence centres for knowledge transfer in the Campania Region. The formation of networks between private and public bodies is assumed as the main way to stimulate innovation in SMEs and extend the dissemination of R&D results and their market deployment. The competence centres represent a networking model with the objective of bringing together in a single pool the research capacities existing in the region in a plurality of institutions such as research bodies, universities, laboratories, etc. that were previously unconnected. With the consolidation of the public research centres, the first phase of the deployment of this mechanism has already been completed. The second phase, regards opportunities to match the supply and demand for innovation generated by businesses and research centres. In this phase the centres have become legal entities and have been able to perform contractual research. However, the centres still rely on public funding and are not yet self-sustainable. The goal of the OCOPOMO policy model is to support Regional centres of competence to become self-sustainable, i.e. able to gathering revenues from the market or from competitive bids

The preparation for the engagement of the stakeholders for the first trial included the following steps:

- workshops with stakeholders –so called scenario building workshops have been carried out in Naples in April and December 2010. In the same period desk research has been performed. Also a study visit to the premises of a regional centre of competence called BENECON has been organised in July 2011. This has led to the elaboration of three initial scenarios describing the policy issues at stake. These initial scenarios were produced by project partners as examples for stakeholders and initial input for their contribution.

- Following the elaboration of initial scenarios, the facilitator created and configured the collaboration site for the Campania case.
- In March April 2012 stakeholders were invited to comment initial scenarios online or produce alternative scenarios. For each invited stakeholder, facilitator configured the account on the collaboration site, personal Wiki page for stakeholder's evidence-based scenario and personal folder for uploading of background documents. The list of links to the stakeholder's scenario Wiki pages was published on the introductory Wiki page. All content was published in Italian and English. Stakeholders were also allowed to provide their contribution through face-to-face interviews.

Therefore, the collaboration site of Campania case consists of:

- a) Introductory text presenting the OCOPOMO project and process and description of the objectives of the online consultation foreseen
- b) Initial scenarios published as Wiki pages.
- c) Report of interviews carried out and comments from stakeholders
- d) A set of selected background documents describing the policy issue at stake.

The group of stakeholder invited for the consultation included:

- Researchers and University teachers
- Technology transfer officials
- Policy advisors
- Civil servants

The result of first iteration of stakeholders consultation are hereby presented:

- Stakeholders comments to initial scenarios representing in some cases alternative scenarios have been uploaded on the OCOPOMO online collaboration site for the Campania case (4 comments to 1st scenario, 4 to second, 1 to third scenario)
- 4 Interview reports have been uploaded on the online collaboration site
- 11 background documents have been uploaded on Alfresco.

After the termination of the first iteration all stakeholders and policy makers were invited to fill in the evaluation questionnaire 4 completed the task. The respondents belonged to the following groups of stakeholders: researchers (3), policy advisor/researcher (1). An account of their answers is presented in the following chapters.

The second iteration of the stakeholders consultation has been performed in February –April 2013 and has been based on 3 different outputs of simulations, i.e. 3 model based scenarios.

The same stakeholders' groups have been involved in this round. They have produced online comments on the model based scenarios and feedback on the OCOPOMO policy development process.

A validation workshop has also been performed on the 15th of April 2013 involving the Regional Councillor for University and research of Campania regional administration, the Deputy Director for University and Research of Campania Regional Administration, the rector of Suor Orsola Benincasa University, other civil servants and researchers.

Altogether 30 stakeholders have been involved in both rounds of OCOPOMO consultation, including online participation, face to face interviews and workshops.

3.2. EVALUATION RESULTS OF SCENARIO DEVELOPMENT AND STAKEHOLDER ENGAGEMENT

Altogether ten participants of the online collaboration process filled in the evaluation questionnaire. Most read instruction and claimed no difficulties in understanding their role and tasks in the process of online collaboration. In case of Kosice, the respondents who took part in the workshop evaluated it as useful. All respondents evinced a moderate activity during the first iteration – just a few visits per each respondent. From those who filled in the questionnaire only two of them declared to have written a scenario during the online collaboration and rated the wiki tool for writing as difficult for non-technical person. Most of the participants (70%) commented on existing scenarios or documents and didn't report any problems with the commenting feature or with the search functionality. The stakeholders who uploaded documents to the platform found this function rather intuitive.

Evaluation of the delivered and created during the first iteration documents related to policy cases was positive. Uploaded documents received marks from neutral to very good in each of the category: useful, informative, clear and comprehensive (Figure 4).

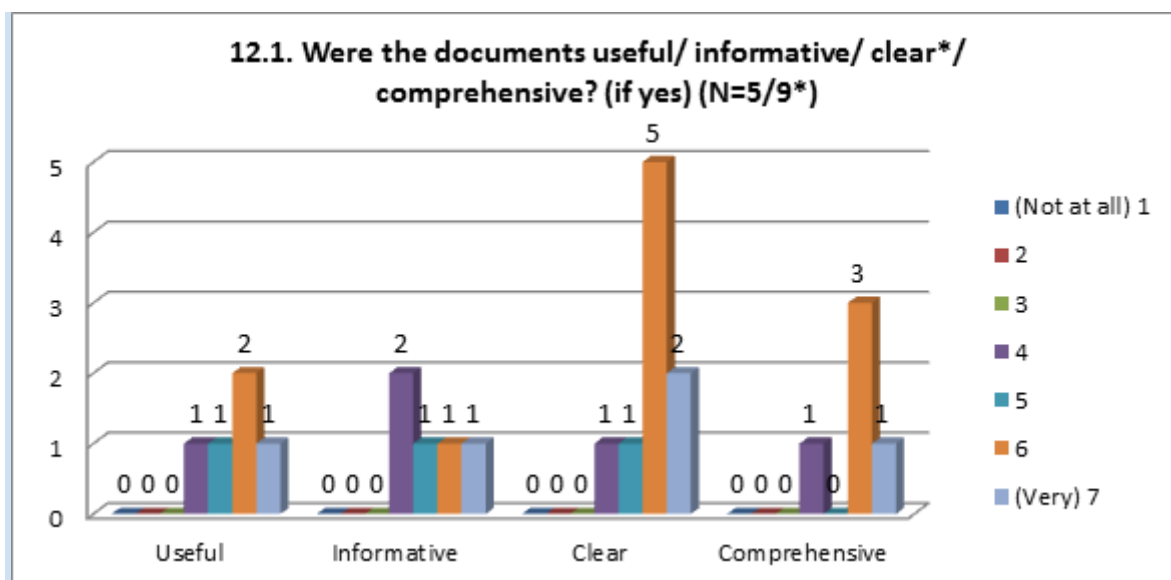


Figure 4: Survey result regarding quality of documents.

The stakeholders also reacted positively to the possibility of getting to know the point of view of other stakeholders. But the issue of whether the online collaboration should involve a limited or a wider set of stakeholders raised a lot of controversy, with numerous substantial arguments on both sides. Some participants were advocates of open collaboration, but half was more conservative with this idea stating that the character and the range of collaboration should be determined by the topic of policy case. The participants underlined that it was very important to engage people especially if the policy was going to affect their life but it was very important for them to guard the collaboration against populism.

Anonymity of collaborating stakeholders also proved controversial (Figure 5). By asking about the importance of knowing other stakeholders by name arguments were provided on both sides; for op-

posers the level of expertise of stakeholder was more relevant than name, for advocates public policy should not be anonymous and people should present their opinion/values openly.

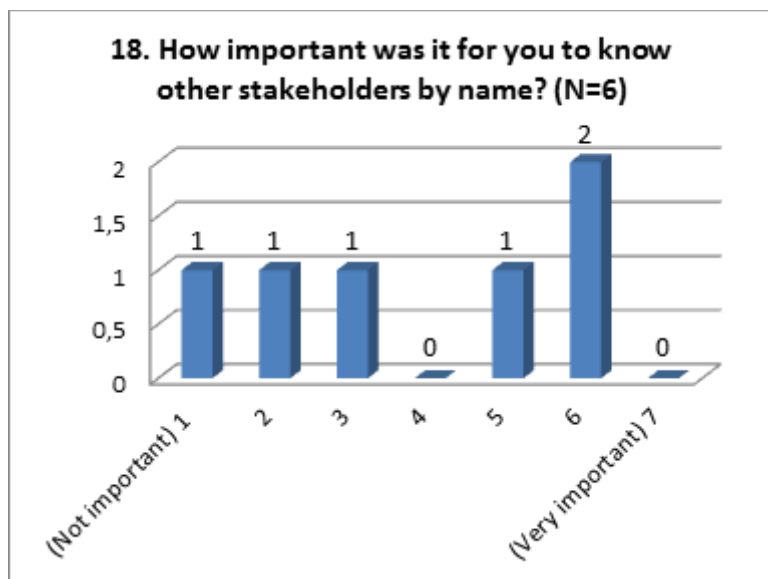


Figure 5: Survey result regarding anonymity of collaborating stakeholders.

It is worth noting that most of the respondents felt that the collaboration platform is well secured with respect to handling sensitive personal data (Figure 6).

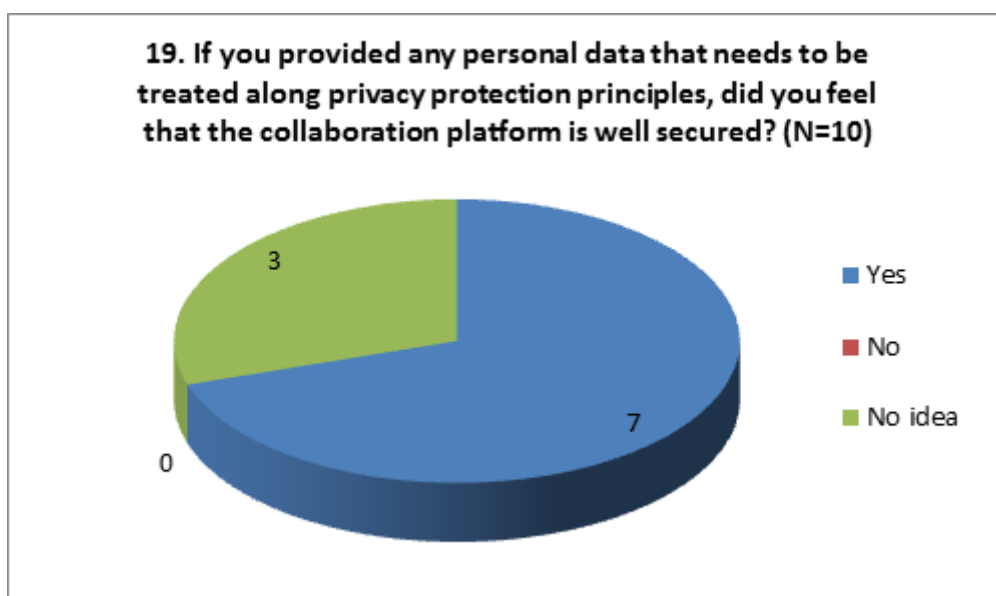


Figure 6: Survey result regarding security standards of the collaboration platform.

Overall, the stakeholders were satisfied with their experience although they did not take full advantage of the possibilities provided by the OCOPOMO platform. Based on their answers to numerous specific open-ended questions, the following recommendations can be made to increase future stakeholder engagement:

1. Platform access procedures could be more user-friendly.
2. The wiki tool for scenario writing would benefit from being more accessible to non-technical users.
3. More practical examples with clear contribution to the development of specific policies would be welcome.
4. Online collaboration could be complemented with face-to-face meetings (especially with senior staff/policy makers).

Also, there was one additional comment formulated, that after pilot testing positive results we should actively promote the tool first among experts and then among politicians and the wider public.

3.3. EVALUATION RESULTS OF CONCEPTUAL MODEL DEVELOPMENT

Annotation and modelling with the CCD tool did not cause any problems in the installation and creation of CCD files. Furthermore, the diagrams created with the CCD tool were rated as helpful to conceptualize the policy case and to understand the policy domain (Figure 7); the Actor Network Diagram got the highest mark.

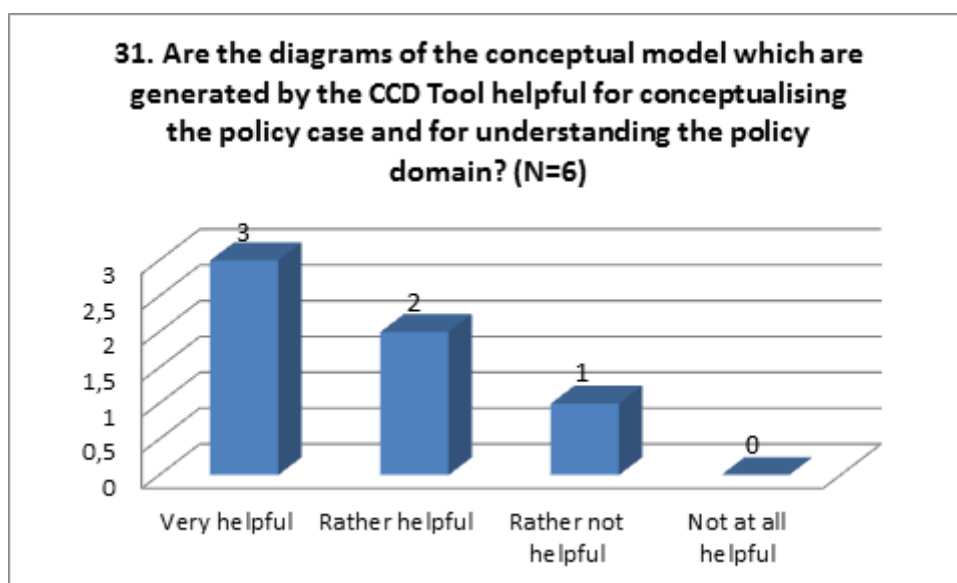


Figure 7: Survey result regarding helpfulness of CCD diagrams.

Also the annotation feature that CCD tool offers was evaluated positively. The annotation function (linking the elements of CCD to the scenarios and background documents - for more details see D6.1 and D8.1) was used quite frequently by policy analysts and policy modellers in process of conceptual model development - they declared to annotate from 20% to 100% of documents. The actual transformation of information from scenarios and background documents into CCD models was found for the majority as rather simple/intuitive.

Most of the policy analysts and policy modellers used all the concepts provided by the CCD tool while developing the conceptual model of a policy case. The concepts contain actors, objects, relations, attributes, instances, relation instances, attribute instances, actions, conditions, variables and enums. The

concepts of actors, objects, relations and attributes were evaluated as the most adequate concepts (Figure 8).

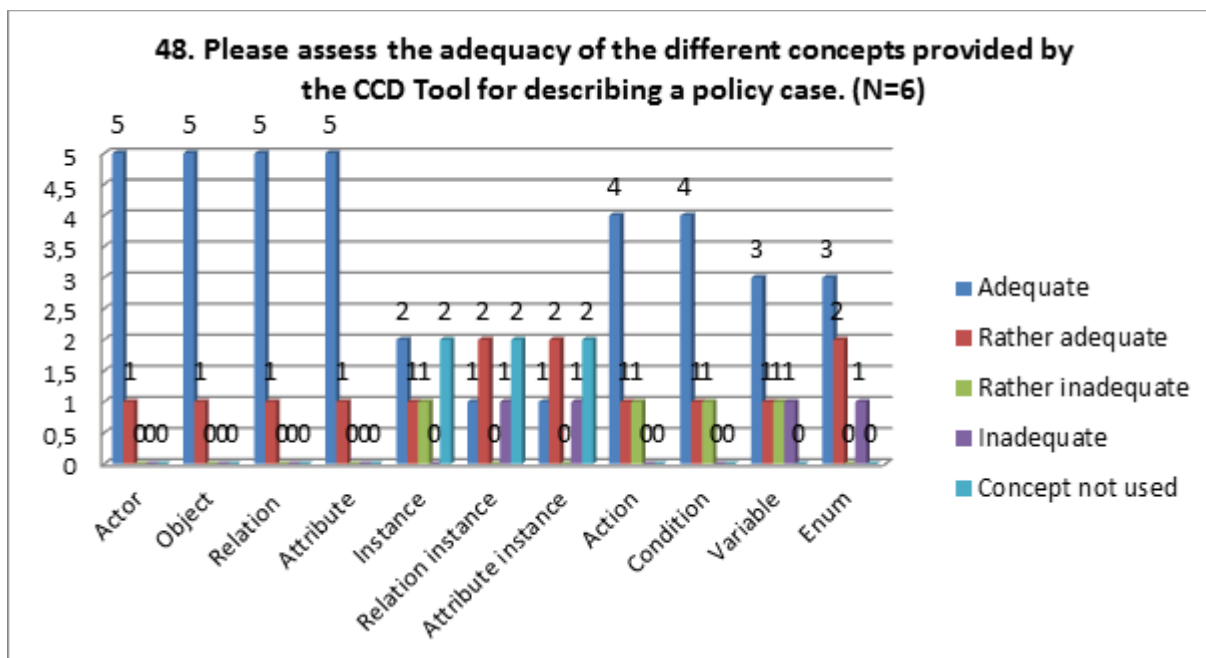


Figure 8: Survey result regarding adequacy of CCD concepts.

The evaluation results show that the gathered information and software helped supporting the policy makers and policy modellers in their process of creating a conceptual model. The CCD tool helped to build a better understanding about the policy contexts the users dealt with.

3.4. EVALUATION RESULTS OF POLICY MODEL DEVELOPMENT

All policy modellers found the transformation of the data provided in scenarios into a consistent conceptual model with the CCD tool as a “very meaningful” or “rather meaningful” step in the process of creation of the simulation model (Figure 9). Using the CCD tool in order to structure the data into the conceptual model enabled policy modellers to use the CCD2DRAMS transformation tool which was developed to automatise to some extent the creation of simulation code.

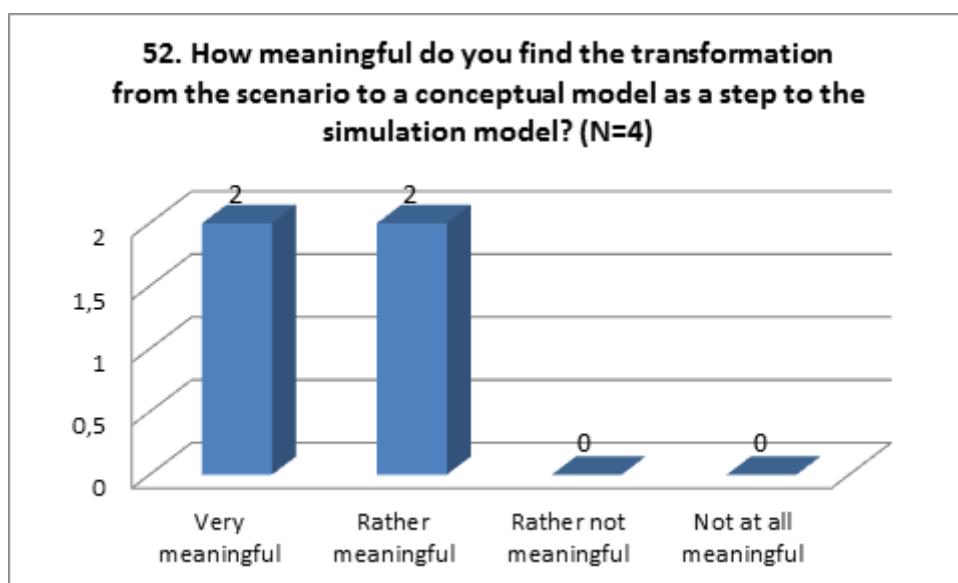


Figure 9: Survey result regarding transformation from scenario to conceptual model.

The policy modellers declared that in their case the CCD2DRAMS Transformation tool generated approximately from 1-20% to even 61-80% of the total simulation code (Figure 10).

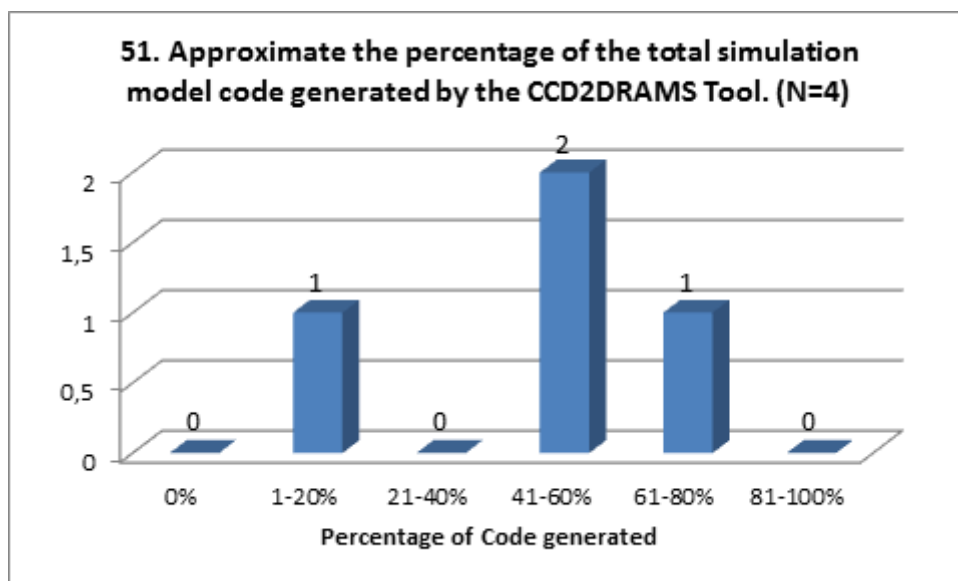


Figure 10: Survey result regarding percentage of generated simulation model code.

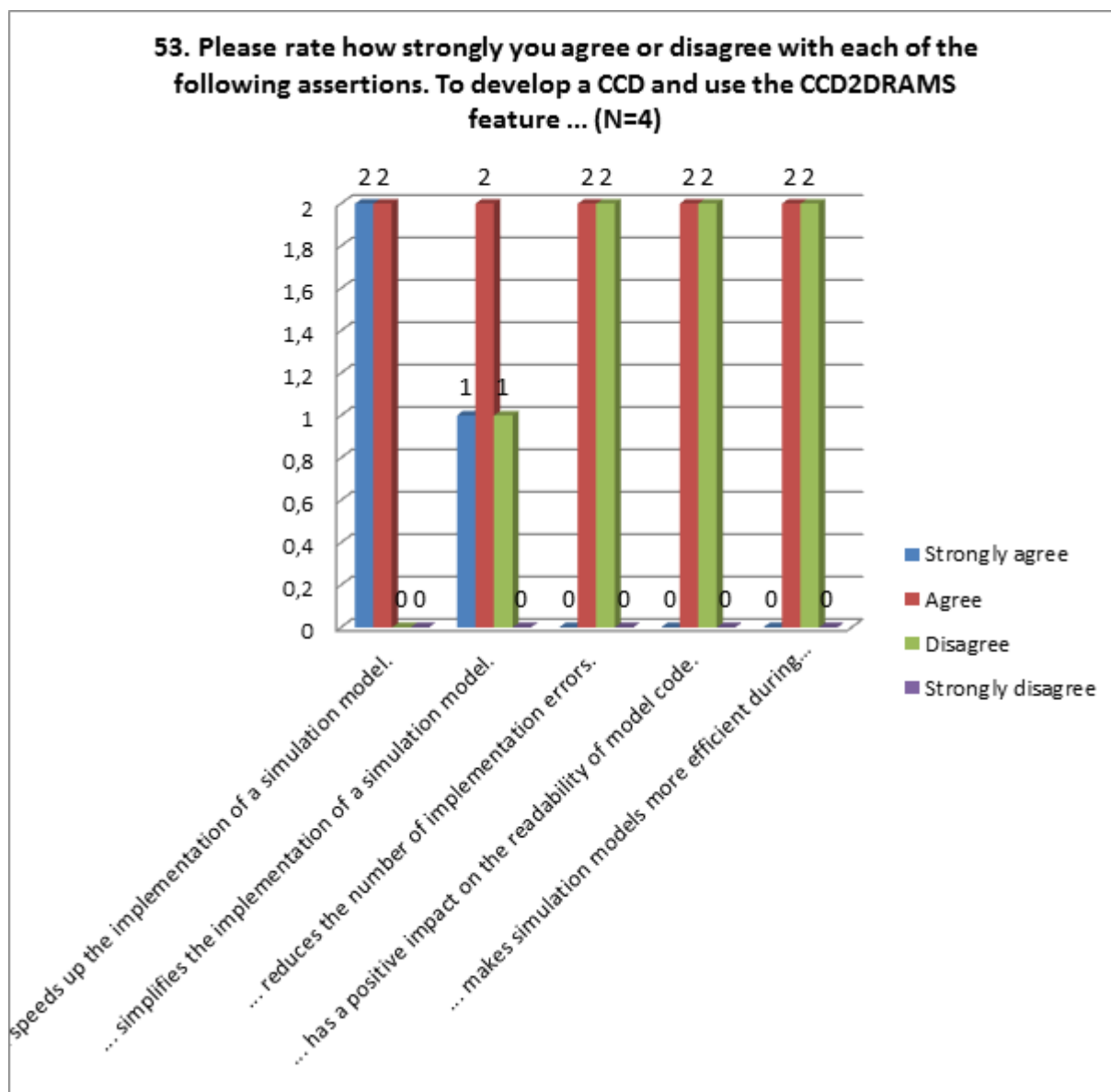


Figure 11: Survey result regarding benefits of CCD model and code transformation.

They all “agree” or even “strongly agree” that using the CCD2DRAMS feature speeds up the implementation of a simulation model. The majority reports that the tool simplified the implementation of the simulation model, but their opinions are definitely divided when it comes to evaluation of other features of the tool. The problematic issues are: the number of implementation errors, readability of the code and efficiency of the model (see Figure 11). One policy modeller suggested that: “It would be really good if the transformation tool were not to reproduce rule stubs where there is already a rule for the same agent type with the same rule name.”

While asking the policy modellers if they have any difficulties with the installation of DRAMS or using DRAMS in Repast-based models nobody declared any difficulties. One suggestion was made on how to improve DRAMS and strengthen the DRAMS/Repast Simulation Environment: “The new

mathematical expressions factory seems to be very slow. If that could be speeded up, it would be good but the user experience in using it is already very good.”

When comparing the DRAMS/Repast Simulation Environment to other similar approaches (e.g. JESS/Repast, SDML), all the policy modellers agreed on the assertion that it is easier to develop complex models using DRAMS/Repast Simulation Environment than others, but 3 of 4 policy modellers didn’t agree on the assertion that it needs less time to develop simulation models; just one did.

Also 3 of 4 policy modellers disagreed with the statement that when using the DRAMS/Repast Simulation Environment the number of implementation errors is lower than with other approaches. This means that errors while implementing DRAMS occurred more frequently or at the same frequency as when using other approaches.

Error correction appeared to be a problem as well and some of the policy modellers didn’t find it easy to correct them in the simulation model (Figure 12). Not sufficient debugging facilities were available for 2 of 4 policy modellers at that time.

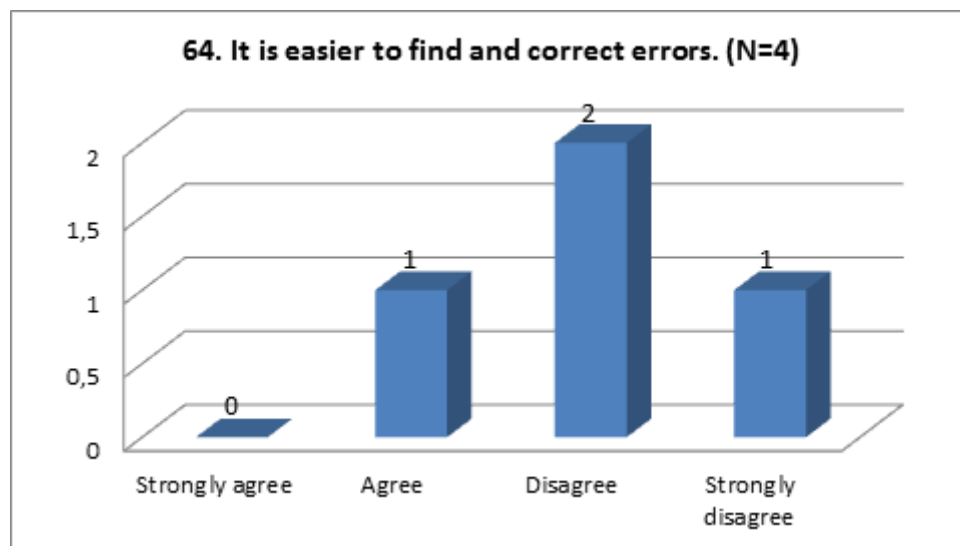


Figure 12: Survey result regarding benefits for debugging.

When it comes to DRAMS interface, in general the information presented in the DRAMS user interface can be rated as useful including the schedule log information that is presented in the “Schedule” tab of the DRAMS user interface and the overall data dependency graph (DDG) which is presented in the “DDG” tab. But the Agent-Type Dependent DDG presented in the “Agent-DDG” tab and the Rule Dependency Graphs presented in the “RDG” tab of the DRAMS user interface hasn’t been rated as clearly useful (Figure 13). Policy modellers provided no suggestions for improving the tabs of the DRAMS user interface.

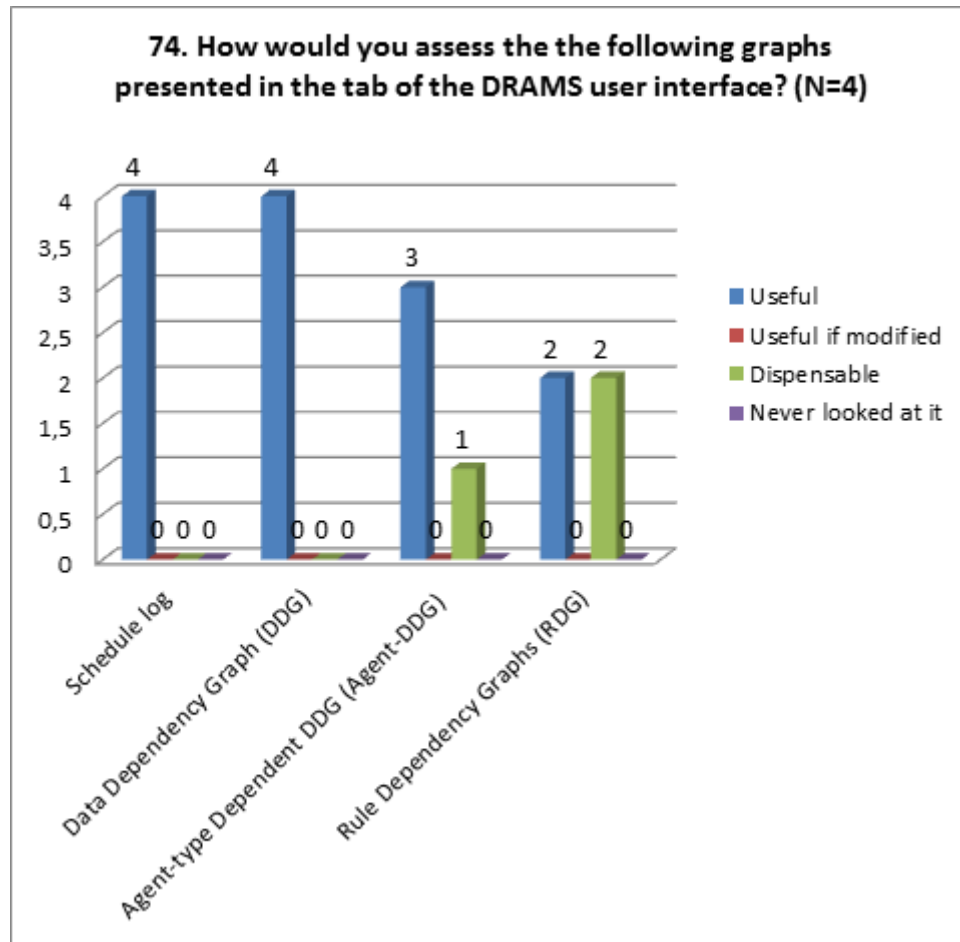


Figure 13: Survey result regarding DRAMS user interface.

In general, assessing the DRAMS editor plugin for Eclipse for implementing models 2 of 3 users who had installed it rated it as useful, one user rated it as dispensable (Figure 14).

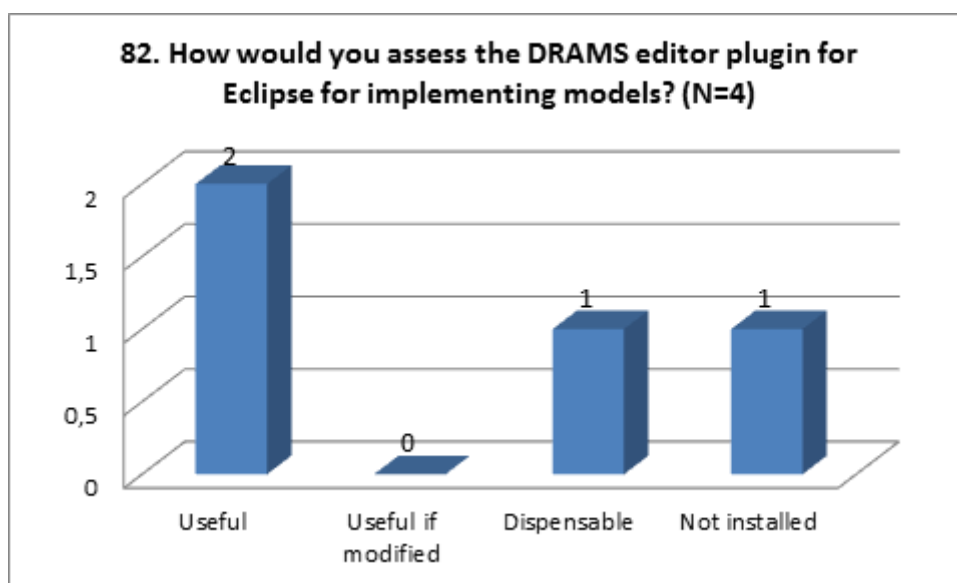


Figure 14: Survey result regarding DRAMS editor plugin.

To improve the DRAMS editor plugin for Eclipse and to make it more useful one policy modeller suggest that more developer support is needed, but “everything from the CCD (including annotation) tool to DRAMS is very useful and promising though there are still some minor implementation issues to be resolved.

3.5. EVALUATION RESULTS OF OVERALL OCOPOMO POLICY DEVELOPMENT PROCESS

In order to make a statement about the overall OCOPOMO policy development process ten stakeholders and policy makers were asked to evaluate their experience from open collaboration. Almost half of respondents (4) declared that their understanding of policy issues had improved thanks to online collaboration; 4 stated that their understanding of policy issue did not change much, and only two of them indicated that it did not improve after this online consultation.

When asked to evaluate the OCOPOMO collaboration platform the majority of stakeholders involved in the survey do believe that the collaboration platform can be a useful tool in the process of policy development, four respondents remained undecided and did evaluate the platform as not being useful (Figure 15). Moreover 80% of stakeholders declared that they would recommend the OCOPOMO platform to be used in other policy development initiatives; while 20% of stakeholders remained undecided (Figure 16).

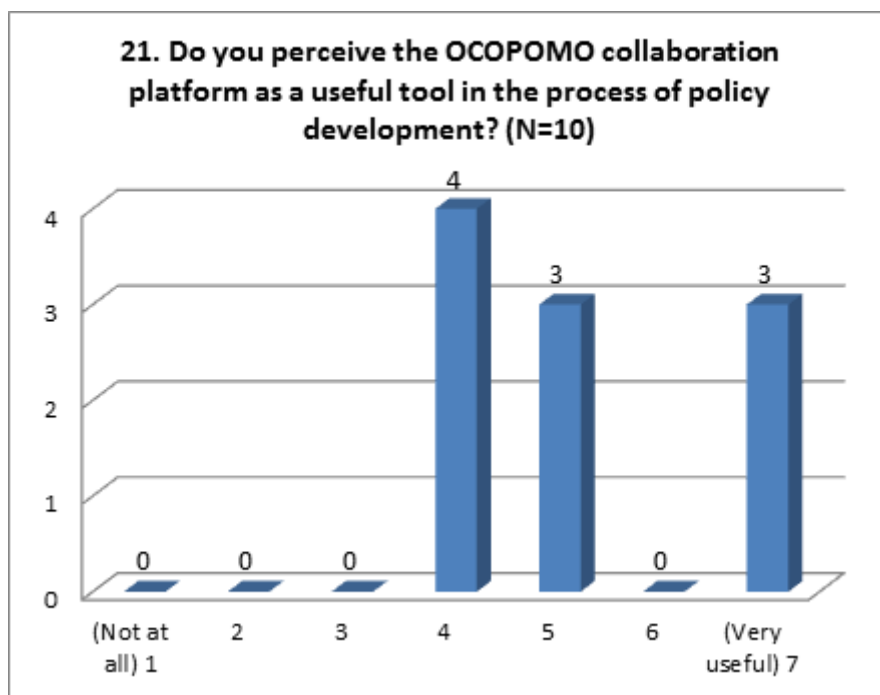


Figure 15: Survey result regarding usefulness of the OCOPOMO collaboration platform.

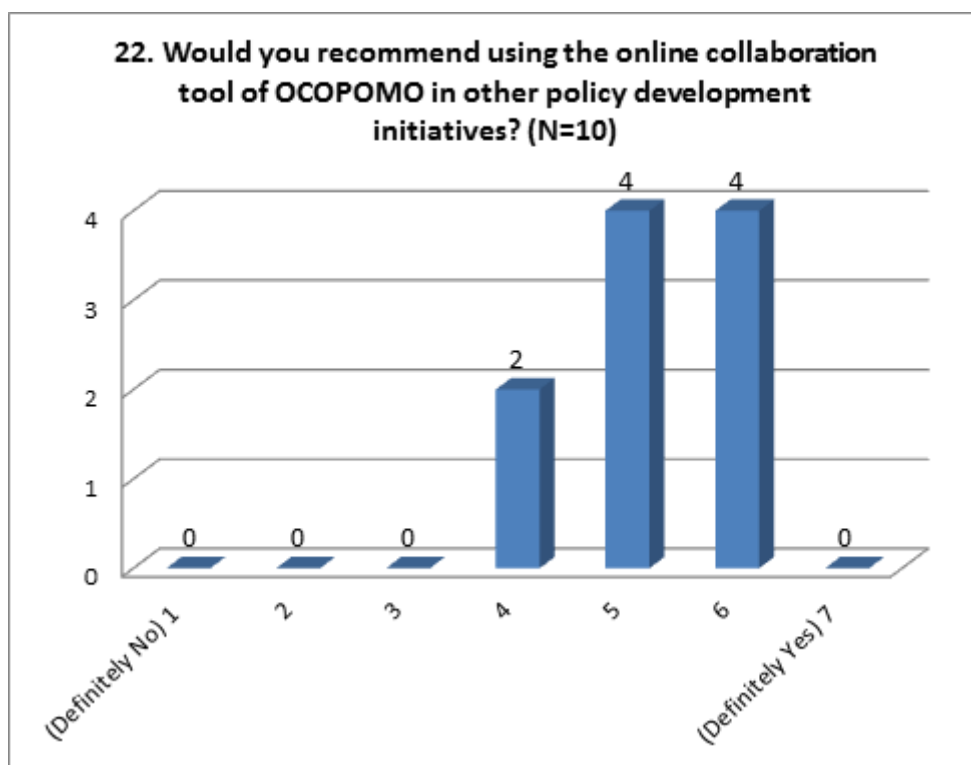


Figure 16: Survey result regarding stakeholder recommendation of the collaboration tool.

Summing up the presented evaluation results show a general positive bias of stakeholders and policy-makers to the OCOPOMO platform after the first iteration. To improve the platform the stakeholders suggested that the methodology of policy development should be simple so all who would like to use it could do it without the external help. Moreover respondents underlined the necessity of intensifying the advertising activities among specialists and general public after the final testing of the platform is finished.

3.6. CONSEQUENCES FROM FIRST ITERATION

The experiences made during first iteration lead to a revision of questionnaire design and structuring. While in the first iteration the facilitators filled in the policy modeller questionnaire (and were not able to bypass questions not relevant for this group, e.g. related to DRAMS modelling), together with an additional supplementing questionnaire (with questions dedicated only to facilitators), in the second iteration a joined questionnaire for policy modellers, policy analysts and facilitators was used, where question groups were designed and arranged in a way that according to the initial assignment to one (or more) roles only relevant questions had to be answered.

Some of the questions from the first iteration were also used for second iteration in order to be able to compare the results from both iterations, and, hence, get an indicator for improvements realised in the second iteration.

The technological consequences for the Collaboration and Scenario editing tools (CSET) from the first trial can be summarized around the usability identified as the important user requirement for the online collaboration. Collaboration and Scenario editing tools are based on the Alfresco software which provides lot of functionalities, which were even more extended for the OCOPOMO process. Since many tools and functionalities are provided, user interface can be quite complex and provides lot of options. For this reason, Alfresco tools are organized as the page components or dashlets on the personal or site dashboard. Out of the box, Alfresco provides flexible customization mechanism, which allow to configure selected tools for each collaboration site. This mechanism was extended to provide additional configuration options for particular components such as customization of Wiki pages or menu in Document library. All implemented extensions are reported in the deliverable D3.2 which also contains the description of bug fixes identified during the first trial testing. We have also identified that many usability issues can be resolved by reorganization of the published content (in this way we can improve navigation on the collaboration site). For this reason, we have proposed best practices and guidelines how to organize content for Facilitators in the methodological deliverable D8.1.

From the evaluation of the CCD Tool and its application in the OCOPOMO policy development process, we learned that the diagrams should be improved. The CCD modellers explicitly asked for a filter functionality in order to hide unconnected elements. Therefore a feature was implemented that allows in addition to filter the diagrams for selected nodes or edges as well as for nodes and edges of a certain type (as e.g. Actor or Relation) to hide unconnected elements of selected nodes or edges. Further an editor was implemented which allows editing of documents during modelling activities. Another feature, which was implemented after first iteration of the evaluation was the “known-by” feature. The so-called “known-by” feature can be used in the CCD to represent that an Object, a Relation or an Actor, which is only known by some Actors. An example for the use of this “known-by” feature is the Object “Agreement”, which might be only known to the two Actors, who made the agreement. Another example is the Object “HouseholdHeatingCostsInformation”, which contains information

about heating costs of households. As each household only knows its own energy costs, an Instance of "HouseholdHeatingCostsInformation" is only known to the particular Instance of "Household". If an Object has no "known-by" feature, its instances are globally known (i.e. by all Actors). In DRAMS, there exists a global fact base, where all general facts are available. In addition each agent has a fact base, where only facts for particular agents are stored. Thus the "known-by" feature is used for transformation into respective fact bases.

The evaluation of the CCD2DRAMS feature revealed some bugs which have been fixed.

The evaluation results of the first iteration also lead to improvements of tools related to simulation environment and simulation result analysis. For DRAMS, a new and faster mechanism for evaluating mathematical expressions was developed, algorithms for generating traces was implemented, and a plugin concept was introduced that allows easy extension of DRAMS with e.g. functionality for output file generation and traceability analysis. The availability of simulation logs with traceability information attached allowed to develop a Simulation Analysis Tool, with which simulation analysts are enabled to write model-based scenarios, i.e. description of simulation results dedicated to be presented to stakeholders. The presentation (with demonstration of traces) is done via the CSET, for which an additional component (CCD Viewer applet) was implemented.

4. PILOT DESCRIPTIONS AND RESULTS OF PILOT APPLICATION EVALUATION: SECOND ITERATION

4.1. OUTLINING THE PILOT CASES AND STAKEHOLDER ENGAGEMENT

4.1.1. Kosice case

The second iteration of the pilot was oriented towards the presentation of the CCD models and simulation results. The main goal of the simulation model for the Kosice case was to provide answers to the following questions:

- How many inhabitants will decide to renovate their houses and decrease the energy consumption
- How many inhabitants will decide to change heating technology, particularly, how many inhabitants will decide to disconnect from the central heating system and build their own local heating source.
- How does the ratio of renewable energy sources (RES) will change.

These questions are particularly important for the main heat producer and distribution company, because it will determine the demand of heat energy and number of customers. Disconnecting from central heating system has also negative impact on the rest inhabitants who will stay connected to the central heating system. Altogether, tendency of improving energy efficiency by renovation and installation of local sources can dramatically change whole heat energy market in the region. Model simulates behaviour of flat dwellers living in the different types of buildings within the time interval of 10 years. Depending on their decisions and financial state, it simulates the process of auditing, renovations and installation of local energy sources.

The results of simulation runs were summarized in the following model-based scenarios:

- Scenario 1 - a substantial majority of flats respond to rising energy prices first by improving the energy efficiency of the buildings and then by installing gas-fired furnaces in preference go biomass-fired furnaces. However some of dwellers were reluctant to changes due to the re-

quirement for very large loans in relation to the internally generated funds for the block of flats.

- Scenario 2 - results were similar with the Scenario 1, but with the better financial support and support for RES almost all inhabitants improved energy efficiency of the buildings. In parallel in reaction to price increase, some flat dwellers considered the change of heating technology. In sum, during 10 years 46% of flat dwellers disconnected from district heating and changed their heating technology. Majority of them (30%) chose to install heating technology based on gas (individual gas furnaces) and 16% decided to utilize renewable energy sources.
- Scenario 3 - results were much more conservative, only 30% of flat dwellers decided to improve energy efficiency of their buildings. In parallel in reaction to price increase, no flat dwellers decided to exchange existing heating technology, i.e., district heating system.

The model-based scenarios were published on the OCOPOMO collaboration site as the set of Wiki pages. Each scenario consists of one overall narrative text describing and summarizing the situation on the market and specific Wiki pages (“vignettes”) describing the behaviour of flat dwellers living in one specific flat. Overall Wiki page also contains charts visualizing over the time the % number of buildings in the given energy efficiency category or % number of buildings using the central heating system or different types of local heating sources. Vignette pages were annotated with the Simulation analysis tool with the links to the relevant CCD concepts and evidence-based scenarios provided by stakeholders during the first iteration. CCD models are also published online through CCD Explorer tool integrated with the collaboration site.

Also various background materials were published besides the CCD model and model-based scenarios, including the studies with the ROIs (return of investments) for the various combination of the isolation and heat energy sources (local in comparison or complement to the central heating system) estimated on the typical flat house and real detailed case studies of already realized renovations.

Altogether 11 stakeholders and two policy makers took part in the second iteration which last from 11 March 2013 to 12 April 2013. As for the first iteration, stakeholders as well as policy makers were invited to take part in workshop which aim was to clarify the tasks of participants. During the online collaboration period, stakeholders and policy owners provided the comments on model-based scenarios and published one new evidence-based scenario. The most discussed topics in the comments and new scenario include:

- Detailed technical pros and cons of local vs. central heat system, ROIs.
- Legislation applied by heat producers to customers who decided to disconnect from the central heating system.
- Financial tools for the investment to the building renovation or installation of new heat sources.

After the termination of the second iteration all stakeholders and policy makers were invited to fill in the evaluation questionnaire (see Annex B); nine completed the task. The profile and declared motivation of respondents did not change between iterations. Respondents belonged to the following groups: energy experts, representatives of housing association, policy makers and university lecturers/researcher.

4.1.2. Campania case

The second iteration of the Campania pilot application was also focusing on the presentation of the CCD models and simulation results to stakeholders.

The results of simulation runs were summarized in the following model-based scenarios:

1) In this simulation the outcomes of two research centres operating in Campania Region are presented. At the beginning of the simulation Research centres rely mainly on automatic funding which decreases over time. Promoting agencies (regional, national or European) issue calls for proposals, research centres set up consortia so to apply for competitive bids. At the same time Research centres attempt to sell services on the market. During the simulation only few proposals are successful and services are sold for RC2, therefore RC2 sustains itself only with automatic funding (awarded regardless of its capability to win bids or sell services) while in the same period Research centre 1 has been able to sell successfully services and attract competitive bids so its turnover increases. Over time RC2 relies mainly on decreasing automatic funding and it is forced to close while RC1 is able to operate thanks to a mix of competitive bids and revenues from the market.

2) The starting point is the same as in 1). In this simulation the outcomes of all research centres operating in Campania and the outcomes of other research centres outside the region are presented. At the beginning of the simulation Research centres rely mainly on automatic funding which decreases over time. Promoting agencies (regional, national or European) issue calls for proposals, research centres set up consortia so to apply for competitive bids (different from automatic funding). At the same time Research centres attempt to sell services on the market. Some competitive bids are successful for the 1st year, therefore regional research centres sustain themselves with automatic funding (awarded regardless their capability to win bids or sell services) and competitive bids awarded. Overtime they rely mainly on public funding, and are not able to sell successfully services on the market, their turnover remains steady or slightly decreases but survival is still possible. On the other hand research centres outside Campania are able to both generate incomes from the market and attract grants.

3) In this simulation the financial outcomes of research centres operating in Campania and the outcomes of other research centres outside the region are presented. At the beginning of the simulation there are mainly automatic funds decreasing over time. During the simulation regional research centres apply for public grants and intends to sell services on the market.

Over time few bids for publicly awarded grants are successful, but on the other hand Regional research centres are able to sell successfully services on the market and their turnover increases even though automatic funding decrease. Compared to several research centres outside Campania, research centres operating in Campania become self-sustainable over time and do not rely on automatic funding for their survival, but rely mainly on market revenues and competitive bids. On the other hand research centres outside Campania are not equally able to both generate incomes from the market and attract grants.

The main goal of was to gather stakeholders views on the following questions: are the model based scenarios plausible? If yes, under which conditions? Are there more realistic scenarios? Are there missing or neglected pieces of the Campania model (e.g. key actors, key objects or facts...)?

The model-based scenarios were published on the OCOPOMO collaboration site as a set of Wiki pages. Each page presenting the scenario consists of text and charts visualizing the financial performance

of regional centres of competence over time CCD models are also published online through CCD Explorer tool integrated with the collaboration site.

Model based scenarios were annotated with the Simulation analysis tool with the links to the relevant CCD concepts and evidence based scenario produced during the first iteration.

Altogether 8 stakeholders took part in the second iteration which last from March to April 2013. They included a high level policy maker, i.e. the Regional Councillor for University and research of the Campania regional administration which took part in an OCOPOMO workshop. During the online collaboration period, stakeholders and policy owners provided the comments on model-based scenarios.

After the termination of the second iteration all stakeholders and policy makers were invited to fill in the evaluation questionnaire; two completed the task. Those who did, assigned themselves to the following groups of stakeholders: researchers

The following key aspects affecting stakeholders engagement emerged in the Campania case:

- face-to-face meetings have proven essential for building engagement, motivation and commitment;
- language is a key issue; stakeholders have been enabled to express their views in national language, so to avoid language barriers.
- having the Regional authority as intermediary towards other stakeholders has proven to be very important
- E-literacy is still an issue particularly among senior stakeholders involved in the Campania case. Moreover, sometimes happens that the more stakeholders are influential the less they spend time on the web. Nevertheless demo sessions during workshops and face to face interviews have proven to be a very effective way to address highly influential and senior stakeholders (e.g. the Regional Councillor for University and research which took part in an OCOPOMO validation workshop).

4.1.3. London Housing case

The Mayor of London is required by statute to produce a 25-year housing strategy which is to be updated every five years. The strategy involves the setting of targets for total new housing and specifically affordable new housing. Proposals for the development of new housing are produced by private developers and by housing associations. Private developers are interested primarily in profits whilst housing associations claim in their reports and publicity to be interested in balanced development of housing and supporting infrastructure such as schools, health facilities, employment and transportation. The proposals are assessed, negotiated and ultimately either approved or rejected by the 33 boroughs of London. The boroughs are also the planning authorities and do not report to the Mayor.

The major issues facing policy makers in London on housing are:

- Not enough houses are built to meet the rapidly rising demands of a dynamic city
- The attributes of the existing housing stock are not in line with current demands
- The areas where land is available tend not to want houses built
- There is insufficient social ('affordable') housing built



It is important to note in this context that the Greater London Authority (GLA) is not a user-partner of the project. The intention was not to use the OCOPOMO toolkit by involving the GLA in open (or any other type of) consultation. The London Housing case was used for purposes of testing the features of the OCOPOMO toolkit for both design and implementation of the on desirable model properties, the policy model, the presentation of the results to users on the collaboration website and getting feedback on desirable model properties.

Consultations were carried out during the course of the project with:

- Staff from the Mayor's policy office
- GLA staff from the housing department
- GLA staff from the Information Technology department
- GLA staff from the economics department
- Staff from Housing Associations
- Staff from banks responsible for loans to both private developers and Housing Associations

Two formal presentations of the model were made during the course of the project, and feedback obtained.

The feedback was co-ordinated within the GLA by the member of staff designated as the principal liaison office with OCOPOMO.

There was strong support for the technology of the project which:

- Links evidence to the output of a model
- Represents the workings of the model diagrammatically

However, there was little support expressed for the ability of the OCOPOMO tools to model simulation outputs in considerable detail. For the purposes of meeting the requirements in the London Plan, a broader overview is what is required. Equally, there was little support for the use of the OCOPOMO toolkit in an open, collaborative form. The concern of the officials is to produce the targets and projections required by the London Plan.

4.2. EVALUATION RESULTS OF SCENARIO DEVELOPMENT AND STAKEHOLDER ENGAGEMENT

Altogether eleven participants of the online collaboration process filled in the evaluation questionnaire; seven of them took part also in the first iteration, four joined the collaboration only for the second iteration.

Most of the new participants (3) did not have any prior experience with online collaboration. Respondents who used commenting feature, search function or uploaded documents did not report any problems with them. Majority of them read documents relevant for the policy case and all found them comprehensive; they liked the idea of closed collaboration and appreciated the possibility of knowing other participants by name. None of them reported any security concerns.

From all the respondents taking part in both iterations, four took part in the workshop and evaluated it as rather or very useful. All read the instruction and marked it as helpful; none reported any problems with understanding what is expected from them during the second iteration. Also all read the model-based scenarios, they found it understandable and appreciated the way the information (model-based

scenarios, CCD diagrams and figures showing simulation results) was presented on the OCOPOMO platform (Figure 17). The navigation between scenarios and CCD elements was marked as rather simple. In general the presented outcomes of online collaboration met expectations of respondents participating in the survey and were marked as helpful or rather helpful in the development of the policy.

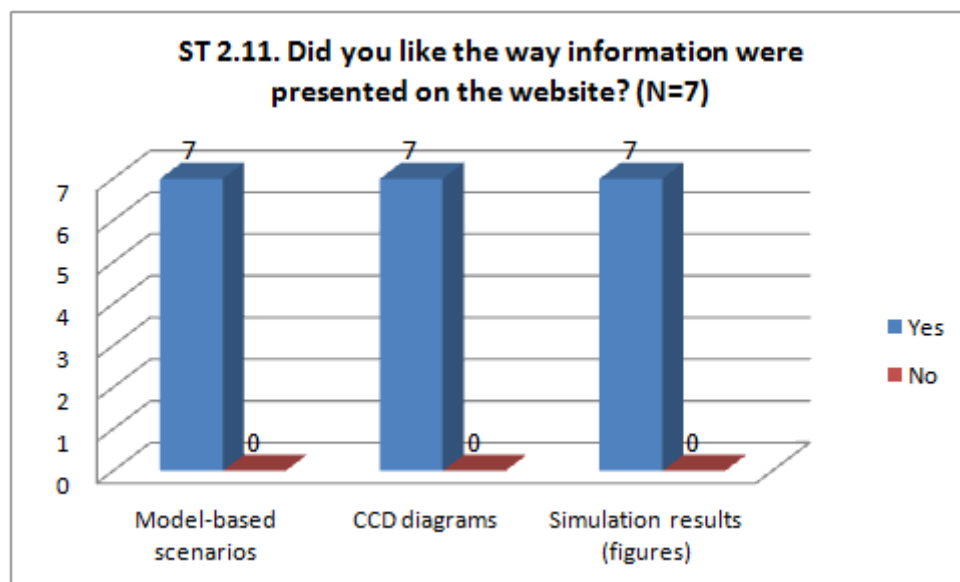


Figure 17: Survey result regarding website presentation.

Respondents declared that the second iteration enabled them to know the view of other stakeholders, which they evaluated as a very important aspect of the online collaboration process. Although they evinced a moderate activity during the second iteration – just a few visits per each respondent - this experience improved their understanding of the policy case. However some declared that more than two iterations would be useful to reach the common understanding of the policy domain and the simulation output. When it comes to participants’ engagement the answers varied from high to low; with prevalence of high - see Figure 18. One participant suggested that to improve the engagement it would be good to have “better communication with companies or persons who has been working in this process for longer time.”

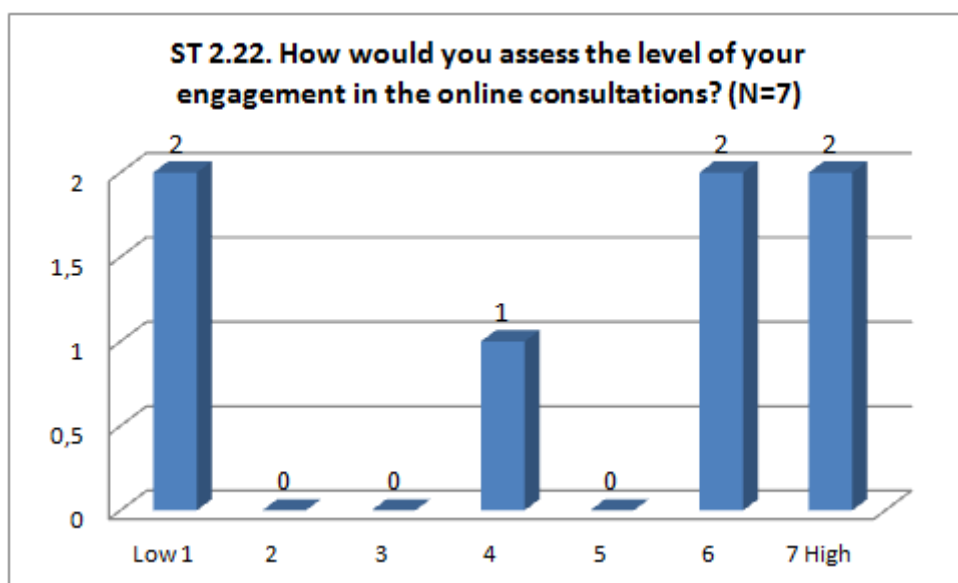


Figure 18: Survey result regarding stakeholder engagement.

One of the important aims of the questionnaire was to evaluate the OCOPOMO approach and ideas that stand behind it. All respondents claimed that the transparency in the process of policy making is very or rather important and the majority of them agreed that applying the OCOPOMO approach would contribute to the transparency of the policy development. They also indicated that idea of engaging stakeholders in online collaboration for purpose of policy making is positive (answers varied from acceptable to excellent). For all, the OCOPOMO collaboration platform could be the useful tool for policy development; most of them would not hesitate to recommend it to their colleagues (Figure 19) and declared interest in taking part in other online collaboration initiatives in the future.

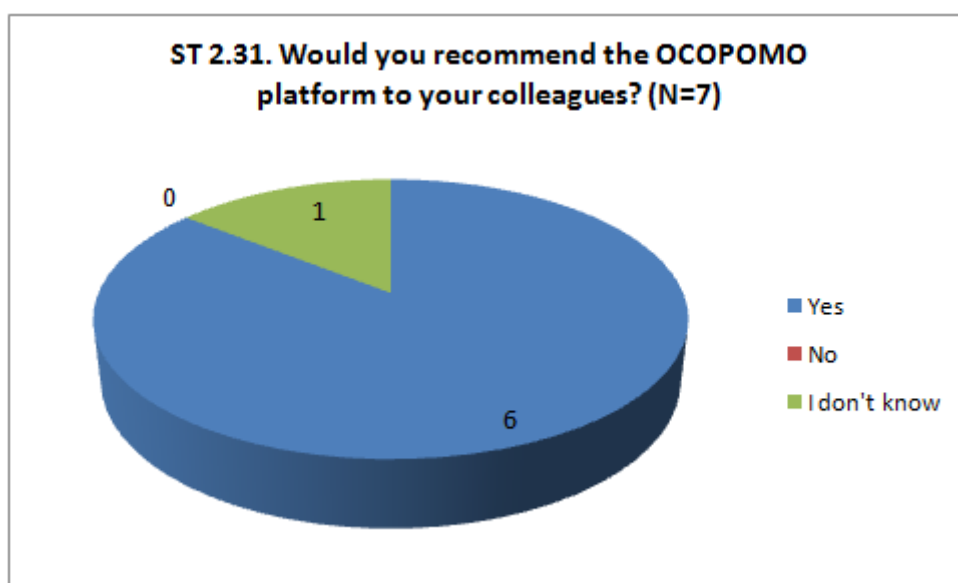


Figure 19: Survey result regarding stakeholders' recommendation of the OCOPOMO platform.

To sum up, we did not encounter critical comments regarding the usability of OCOPOMO platform from the perspective of stakeholders and policy makers. In general, this experience was positive for them. Taking into account the importance of increasing market of tablets and smartphones, stakeholder advised to ensure the high performance of the OCOPOMO platform on mentioned devices.

4.3. EVALUATION RESULTS OF CONCEPTUAL MODEL DEVELOPMENT

The synthesis of evaluation results of conceptual model development is derived from a survey conducted among policy analysts and policy modellers, with a total sample size of 7. According to the role selected, some answers are available only for a subset of that sampled. The most important findings are described in this sections, and in some cases results are compared with findings of the first iteration.

As in the first iteration, installation of CCD and supplemental tools and creation of CCD files did not cause any problems. The diagrams associated with a CCD model are in general considered as (very) helpful, with the exception of the instance diagram, where a equal distribution (very helpful to not at all helpful) can be observed. As a further improvement the implementation of a more comprehensive visual filter mechanism for the action diagram (path selection) was suggested.

It turned out that the number of scenarios and background documents varied among the different pilot cases and/or policy analysts. Two of the analysts collected between 21 and 40 documents, the other two between 0 and 20. These results are similar to the first iteration, while the number of annotated documents decreased slightly, but a significant statement cannot be made. Accordingly, the number of annotated CCD entities decreased compared to the first iteration. Reason for this decrease might have a relation to the smaller sample size.

Annotating and modelling with the CCD Tool helped to build a better understanding about the given scenarios and documents, and the conceptual transformation from scenario texts and documents into a CCD model was perceived more positively. All in all the annotation feature was considered as useful, though the usability could be improved by e.g. allowing to edit the documents during modelling activities and providing more sophisticated filter functions to the CCD diagram visualisation.

The expressiveness of CCD model entities was subject of another question group for policy analysts. Figure 20 shows the "popularity" of the different elements; the overall picture is similar to the first iteration. The opinions on the question whether the modelling with the CCD Tool is helpful to build a better understanding about the policy context(s) slightly shifted from " helpful" to " very helpful".

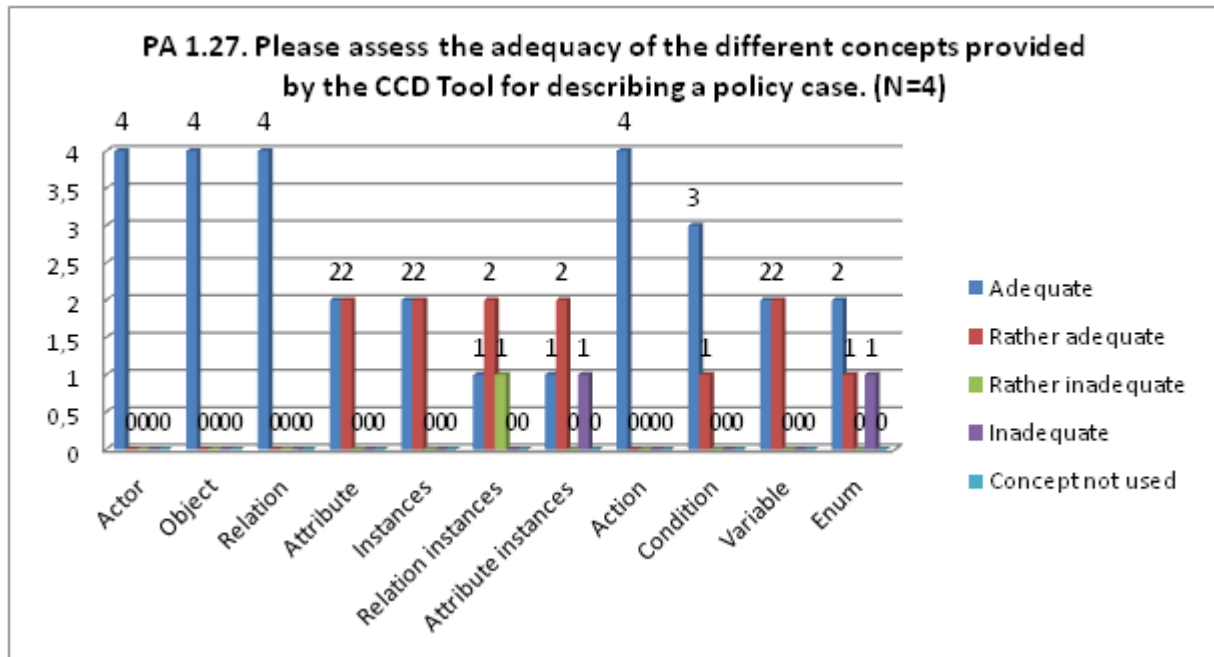


Figure 20: Survey result regarding CCD Tool concepts.

Particularly interesting were the evaluation results in the second iteration regarding the importance of stakeholder generated scenarios for the model generation. Scenarios were considered equally useful for understanding the different stakeholder positions, but the actual significance for the model is regarded more important than it was in the first iteration. This becomes visible in the Figure 21. This result reflects the fact that the OCOPOMO approach has found its place in everyday business of policy modelling for the involved persons.

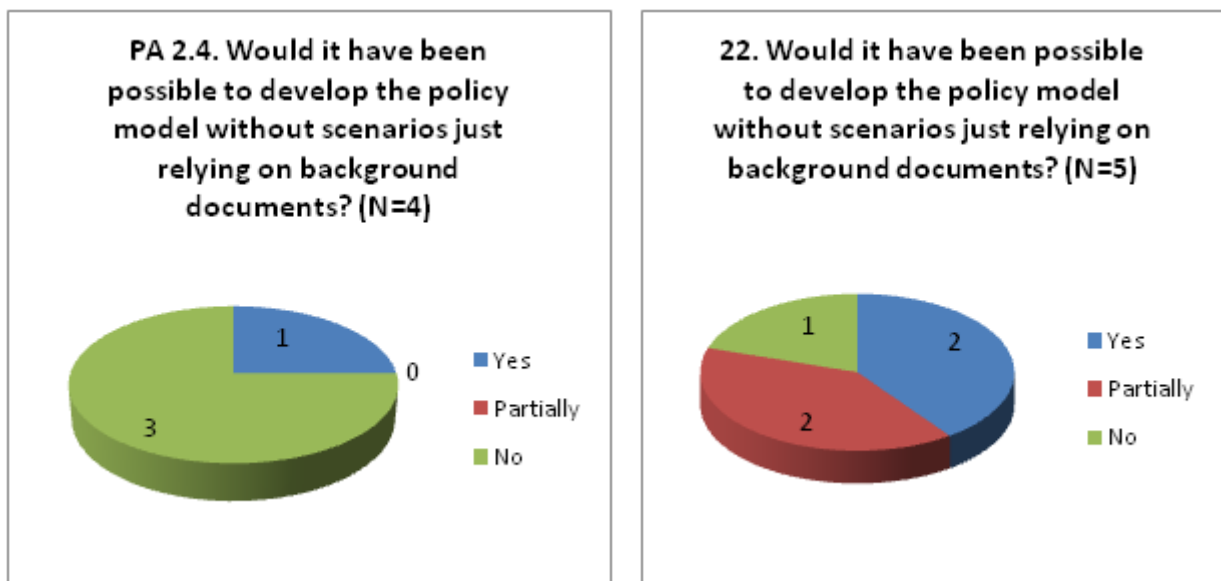


Figure 21: Comparison of survey result from the two iterations regarding importance of scenarios and background documents.

4.4. EVALUATION RESULTS OF POLICY MODEL DEVELOPMENT

This section gives a summary of the evaluation results from policy model development. It is based on results of a survey conducted among five policy modellers in the OCOPOMO project. First part of the survey was dedicated to code transformation (CCD2DRAMS tool), the second part to the actual simulation model development (DRAMS). In both parts, only few significant differences to the first iteration results were found.

In general, the code transformation was considered as useful, with a slightly better evaluation than in the first iteration. A deviation between the two iterations was found in a decreasing percentage of code generated by CCD2DRAMS. While in the first iteration three of four respondents estimated the percentage of generated code with 41 to 80 per cent, in the second iteration this was stated for only up to 40 per cent. This is most likely due to the fact that models of the second iteration are much bigger and more complicated than in the first iteration.

The sample size for DRAMS simulation modelling survey was three, which prohibits statistical analyses and interpretation of such results. Thus, only individual positions are discussed in the following paragraphs.

Installation and usage of DRAMS did not cause severe problems to the policy modellers. Although only one modeller had experience with declarative rule-based agent modelling languages before, the evaluation of the DRAMS features was quite positive. Details are given in Figure 22. Important and reasonable suggestions for improving DRAMS was to find means to better deal with tasks, which sometimes complicated the modelling, as well as the introduction of different time levels.

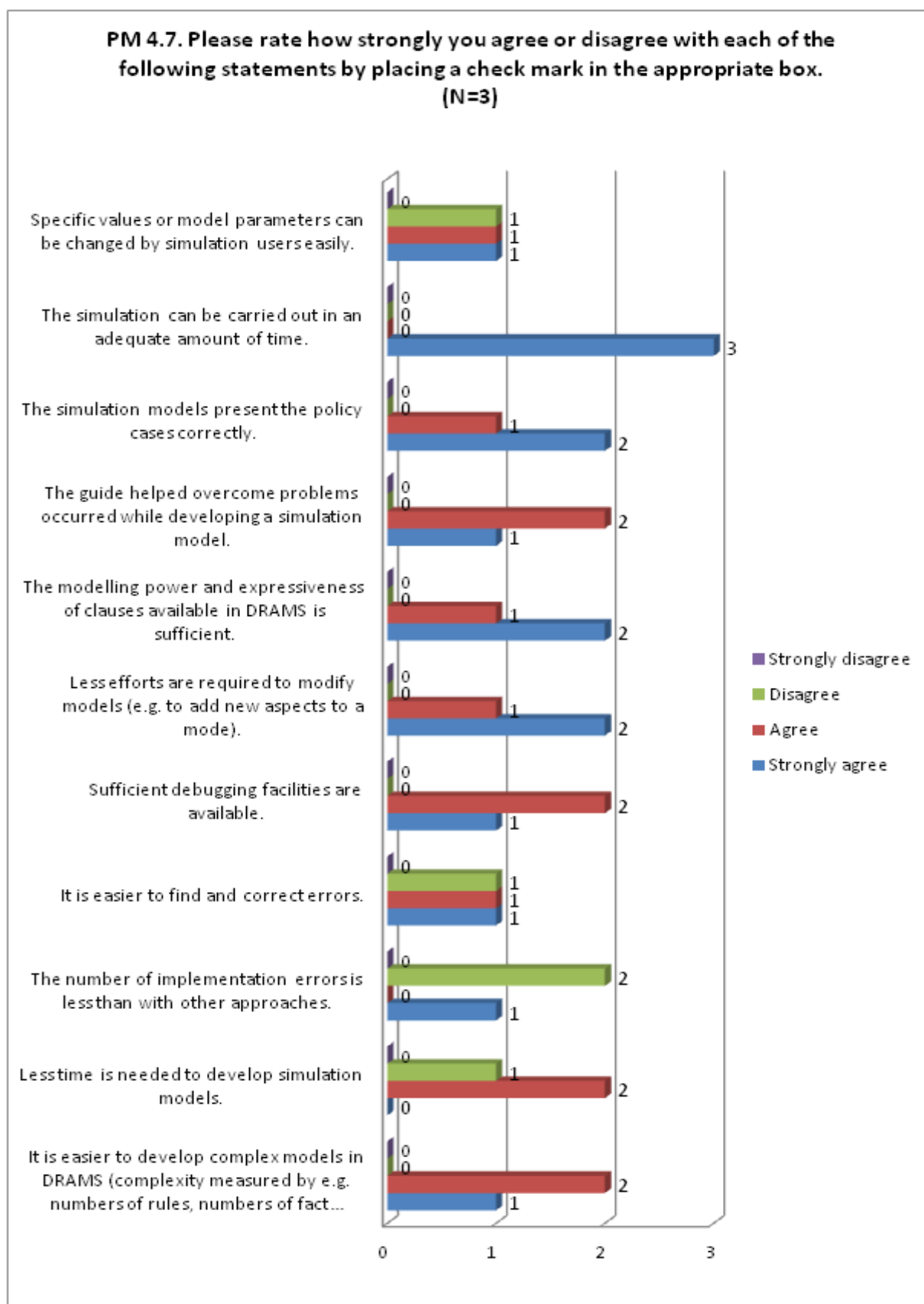


Figure 22: Survey results regarding DRAMS features.

All policy modellers agreed on the fact that with increasing complexity of models (measured by e.g. numbers of rules, numbers of fact templates and number of facts) the time needed to perform a simulation run increases in an adequate proportion. And two of the policy modellers agreed on the assertion that with increasing number of agent instances the time needed to perform a simulation run increases in an adequate proportion

Sufficient means for monitoring simulation runs are available, although the usefulness of the provided user interface components is differently assessed. Details are given in Figure 23. A suggestions was made the the rule dependency graph should be updated for any simulation tick.

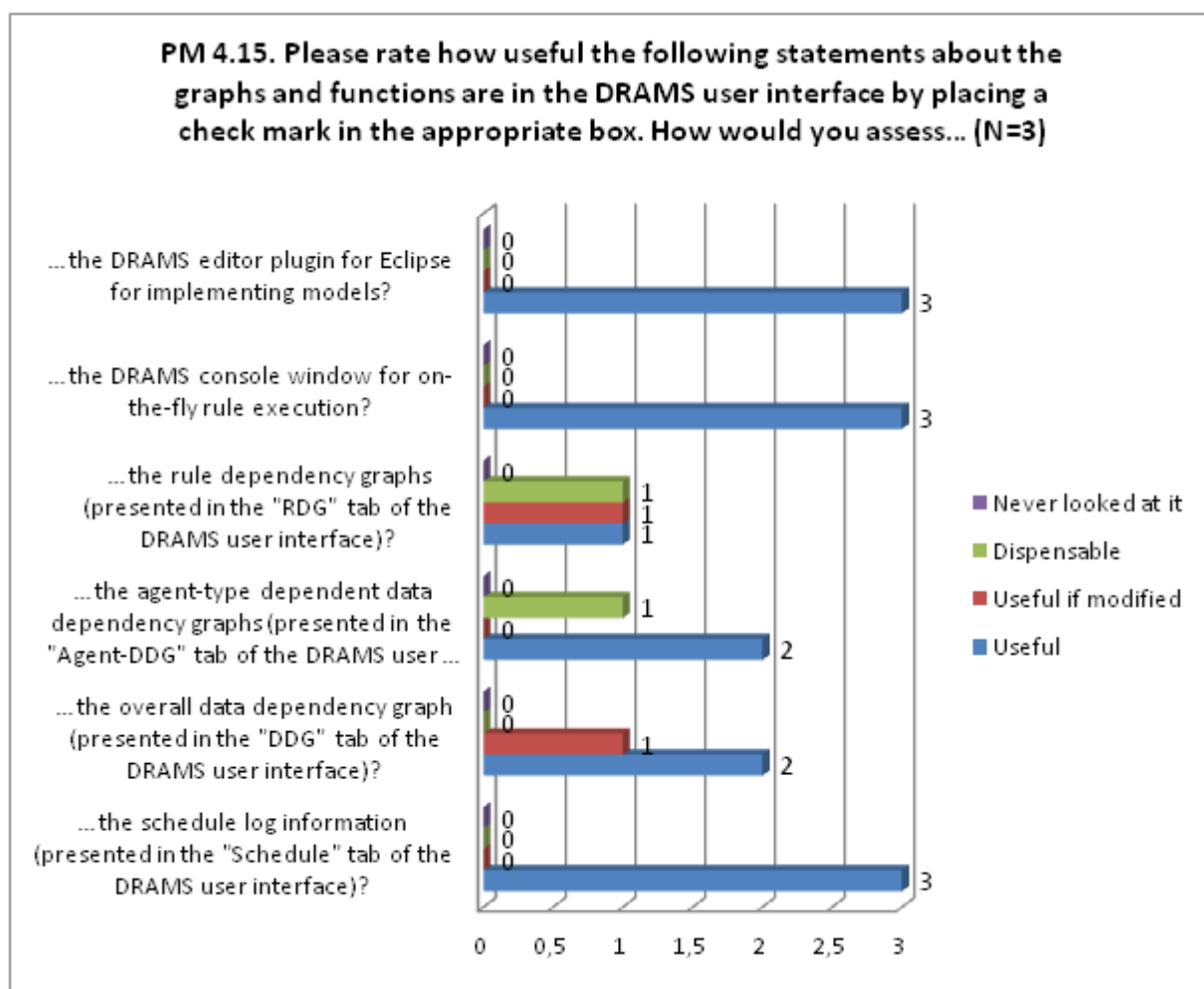


Figure 23: Survey results regarding extended DRAMS user interface.

4.5. EVALUATION RESULTS OF SIMULATION ANALYSIS AND VISUALISATION

Overall, Facilitators find presentation of simulation results in the collaboration tool very easy or rather easy (Figure 24). This task includes writing of the narrative scenario text in the Simulation Analysis Tool (Eclipse module) and an annotation of the scenario text to the records of simulation traces. During the publishing, the Simulation Analysis Tool automatically resolves links to the relevant CCD concepts and references to the corresponding text portions of evidence-based scenarios. All artefacts are automatically synchronized with the Alfresco repository and collaboration tools.

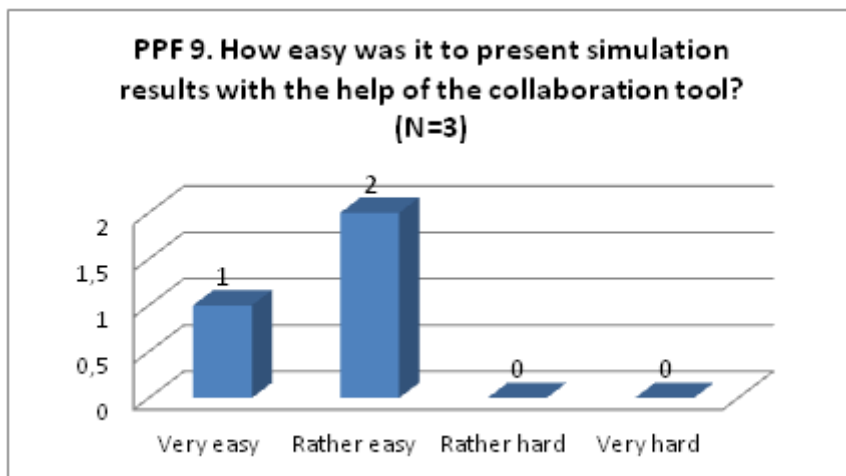


Figure 24: Survey results regarding presentation of simulation results with the collaboration tool.

The only existing limitation of the Simulation Analysis is that Facilitator has to add a formatting and embedded objects (figures, tables, charts for data visualization) on the Alfresco site, i.e. annotated text of the model-based scenario is formulated and published by means of the Eclipse tool, while a final formatting and editing is performed on the respective scenario Wiki page in the Alfresco environment. According to the feedback from facilitators, this limitation was not critical for them and did not complicate processing of model based scenarios. Versioning of the model-based scenarios is fully supported in the Alfresco repository and Facilitators found this functionality easy to use (Figure 25).

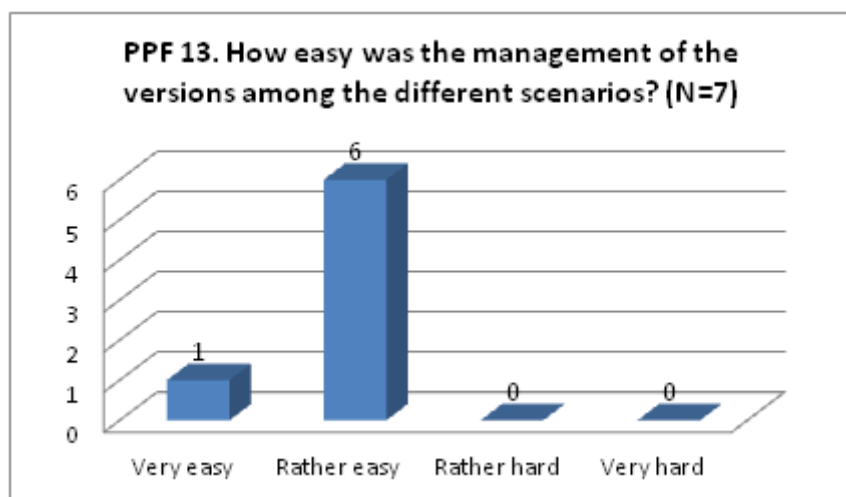


Figure 25: Survey results regarding scenario version management.

In some pilot cases, model-based scenarios are prepared in two languages (i.e. English and Slovak or Italian). In this case the text of model-based scenarios has to be translated and re-annotated to the evidence-based scenarios in the particular language (so evidence-based scenarios are linked to the model-based scenarios with the same language version). Also CCD models have been translated, so technically we have managed two independent branches in two languages. We have developed supporting

tool for the translation of CCD concepts and associated annotations. As the result, Facilitators and Modellers did not find that multilingual documents complicate the handling of information.

4.6. RESULTS OF OVERALL OCOPOMO POLICY DEVELOPMENT PROCESS

The questions related to the OCOPOMO policy development process in the second iteration partly corresponded to questions of the previous evaluation round. Additional questions were also introduced. Key results are hereby presented.

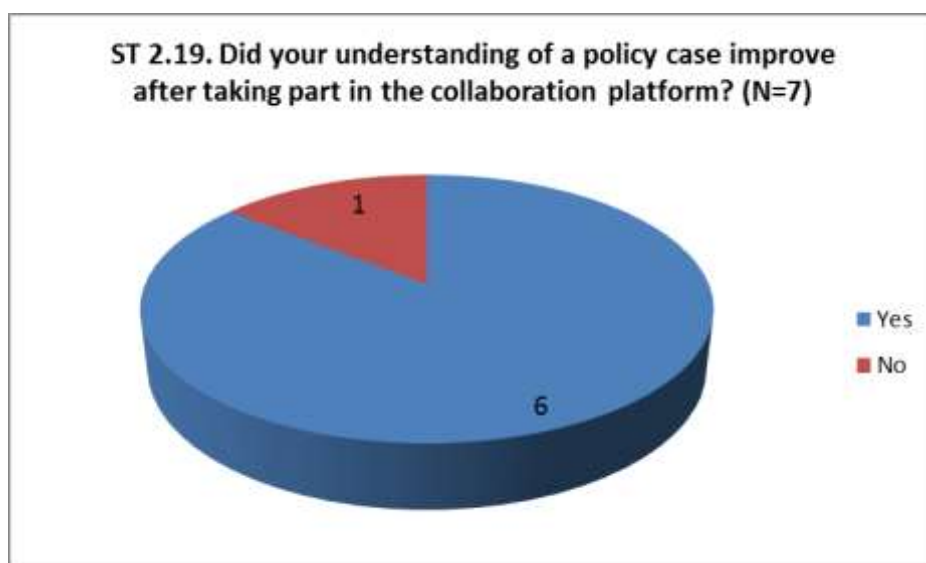


Figure 26: Survey results regarding impact of collaboration for the understanding of a policy case.

6 out of 10 respondents felt that they improve their understanding of policy issues thanks to online collaboration which took place in OCOPOMO (Figure 26). These figures are better than in the previous round.

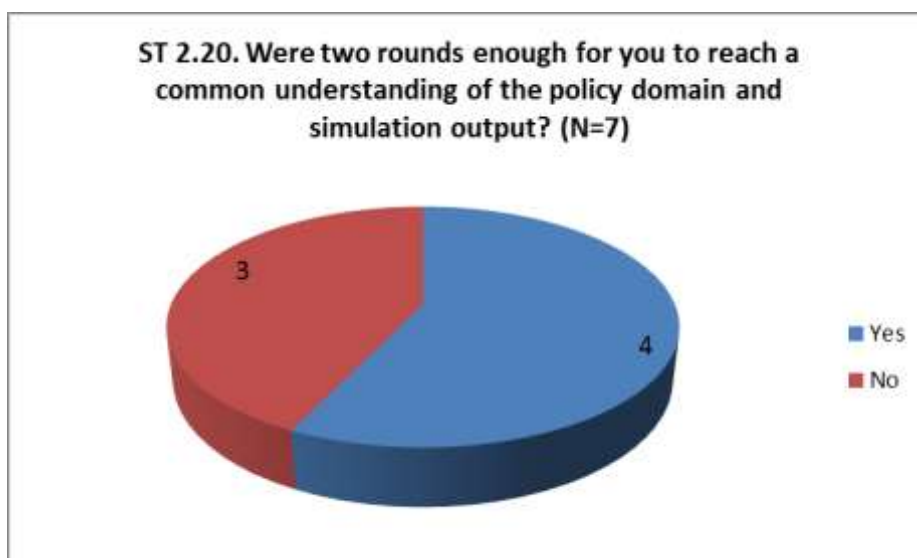


Figure 27: Survey results regarding number of iterations.

The sample of respondents is almost equally split in opposite positions in relation to the opportunity to perform two evaluation rounds (Figure 27).

Nevertheless, as the chart below demonstrates, all stakeholders involved in the survey do believe that the second round outcome is helpful in the process of policy development. The stakeholders had to answer this question using a Likert-scale from “not at all helpful” to “very helpful” (Figure 28).

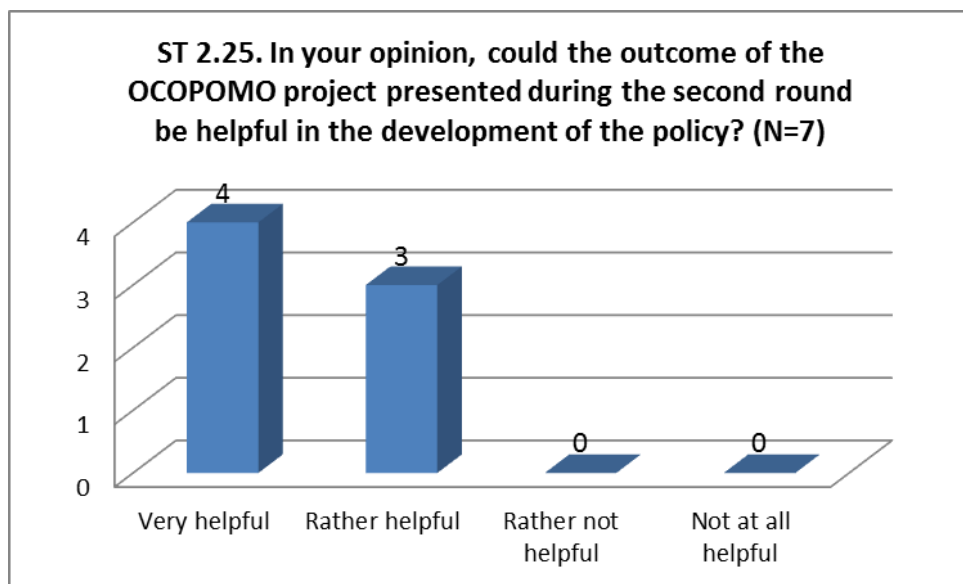


Figure 28: Survey results regarding impact of outcomes of the second iteration.

The chart in Figure 29 shows the answers to the following question “Do you think that the OCOPOMO collaboration platform could be a useful tool in the process of policy development?”

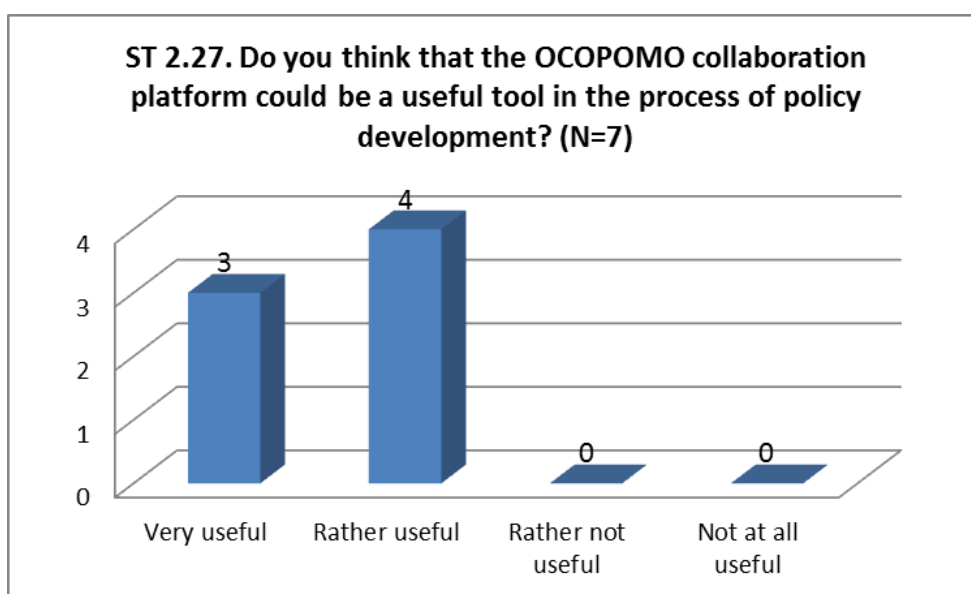


Figure 29: Survey results regarding usefulness of the collaboration platform.



The results, although gathered with a different scale than in the previous round, are consistent with the previous evaluation round outcomes.

The final questions confirm the willingness of stakeholders to use or recommend the OCOPOMO platform for other policy domains or to take part in other e-participation initiatives.

5. IMPLICATIONS TO THE OCOPOMO POLICY DEVELOPMENT PROCESS AND TOOLBOX

The policy process is a problem solving one. Policy makers need to produce convincing answers to a problem which seem to give reasonable certainty that a proposed policy will work. Such problem solving requires an intellectual framework which makes sense to both the policy analyst and the decision maker

It is crucial in the decision process that analysis remains relevant to the concerns of the policy makers. The extent of added complexity and variety of behaviour must be carefully considered.

It is therefore essential for modellers to understand that innovation in policy analysis usually arises from the need to support a policy preference or choice. Decision makers themselves are not in general interested in the science which underlies the modelling.

If the standard approach produces desired outcomes from the perspective of the policy maker, there will be no demand for more innovative approaches such as OCOPOMO, regardless of scientific merit. The practical development of OCOPOMO therefore requires the identification of situations where there is dissatisfaction with the outcomes of existing approaches.

The London Housing case is interesting in this respect. The requirements placed on policy makers in this context are scientifically very demanding, to project the evolution of the London housing market in 25 years' time, and to compare this with the projected needs at that time. The policy makers and their advisers do not imagine that they have a complete answer to these difficult questions and are open to ideas. However, the existing approaches which are used, do meet the criteria that they seem relevant, they can be understood, and they seem to make sense. The high level Matlab model of the London housing market developed as the initial prototype in the OCOPOMO project was well received because it met these criteria. Subsequent developments in the project, which translated this model into DRAMS and constructed much more elaborate and detailed rule bases, did not.

A key issue here is what the politicians want, what their civil servants want and what other stakeholders want from a policy analysis. The job of the civil servants is to provide a policy analysis that supports the aims and views of their political masters. The experience of SMA's principals, Scott Moss and Linda Moss, over the past quarter-century and more is that policy analyses that conflict with pre-conceived views about policy objectives and instruments are, to say the least, unwelcome. A strong scientific basis for alternative policies are not wanted.

If the standard approach produces desired outcomes from the perspective of the policy maker, there will be no demand for more innovative approaches such as OCOPOMO, regardless of scientific merit. The practical development of OCOPOMO therefore requires the identification of situations where there is dissatisfaction with the outcomes of existing approaches.

In cases requiring immediate solutions to problems in well documented contexts with clear and quantifiable objectives, the OCOPOMO process has been shown to be attractive. The Kosice case is our

clearest example. For longer-term policies, such as housing strategies in the London case, the context is much less clear and the relevant considerations can be so wide as to be beyond anyone's comprehension, any approach that confirms the views of the policy makers will be welcome. These preconceived views are not necessarily wrong and they are likely, as in the London Housing case to be based on experience and good (often tacit) understanding of a wide range of issues. Simple models that give answers that are close to the preconceptions of the policy analysts are certainly attractive in these cases. Our informants in the London case were clear that they wanted models that produced answers that could readily be modified to conform to their own expectations and views. The high level Matlab model of the London housing market developed as the initial prototype in the OCOPOMO project was well received because it met these criteria. Subsequent developments in the project, which translated this model into DRAMS and constructed much more elaborate and detailed rule bases, did not.

The value of the OCOPOMO toolkit in the policy process is likely to take one of two forms. Either the policy makers are genuinely uncertain about how to proceed and are forming initial views about what might and might not work or the issues are highly contentious with committed stakeholders having interests in conflict with those of the policy makers. The Kosice and Campania cases come close to the former. Because of the way it came into the project, the London case was not developed in a collaborative manner amongst different stakeholders. Without open consultation or collaboration and without a genuine interest on the part of policy makers to explore alternatives on the basis of the best available evidence, the OCOPOMO process can have no purchase.

It is important to realise that the OCOPOMO process can and should support relevant stakeholders in building and supporting their particular views of the requirements of a successful policy. We do not purport to offer any kind of objective truth. The process of seeking and using evidence and formalising the behaviour and relationships of stakeholders in models should inform the development of policies by leading the policy makers to consider the issues without burying their preconceptions in loose and possibly emotive language.

Clearly, those concerned with housing strategies in the Greater London Authority are not likely to be early adopters of the OCOPOMO toolkit or any similar approach. Our user partners, Kosice and Campania, have shown themselves to be more open to the OCOPOMO process. It remains to be shown that the OCOPOMO process will be of value to at least some extent in substituting scientific rigour for ideology and preconception in contentious cases where collaboration and consultation is open.

Kosice case has proved that OCOPOMO process is able to support multilingual environment of actors in which different stages of the process (e.g., open collaboration, development of CCD, development of simulation, consultation of model-based scenarios) have to be performed in two different languages. In that case close collaboration between internal actors, i.e., facilitators, policy analysts and policy modellers is essential. Besides it is highly recommended that the phase of online collaboration is long enough to cover the time needed for translation so it is possible for policy analyst to interact with stakeholders.

ANNEX A: EVALUATION AND RESULTS OF QUESTIONNAIRES – FIRST ITERATION

1. INTRODUCTION

To evaluate the experience of the OCOPOMO platform used by different groups in the OCOPOMO process questionnaires were prepared for this purpose. The questionnaires were prepared by UKL, UWAR, TUK and UNISOB. They were addressed to the stakeholders, policy modelers, policy analysts and facilitators of the OCOPOMO project. Each group got a different questionnaire according to the individual experiences in the different phases of the OCOPOMO process. By doing two iterations through time in the development process at the one hand a comparison of the different roles regarding the OCOPOMO platform can be made and on the other hand new questions can be asked regarding new functionalities in an evolved OCOPOMO platform through time.

UKL prepared the online version of questionnaires and conducted them. The questionnaires were created with the survey tool Lime Survey and was sent to all the Stakeholders and Policy Modelers as well as Facilitators in this EU project as an online survey. The consultation of the first iteration took place in July until October 2012. The given results and recommendations of the questionnaires will improve the OCOPOMO collaboration platform and give enhancements for the second iteration. To evaluate the results Microsoft Excel was used to generate the graphs underlining the output data of the surveys.

2. STAKEHOLDER QUESTIONNAIRE

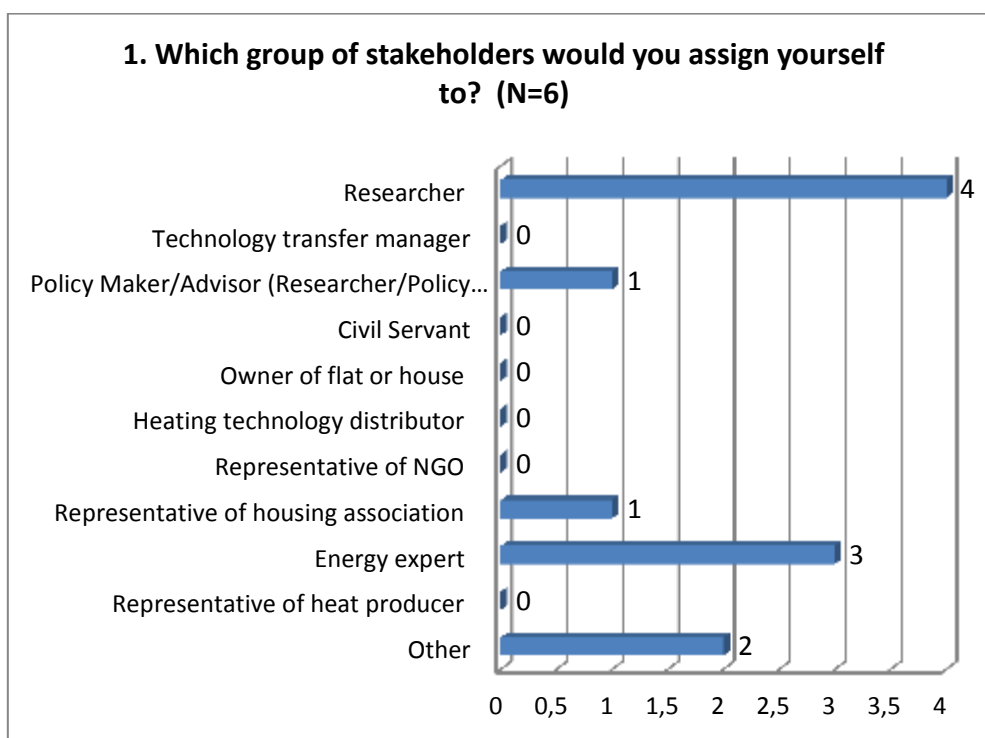
According to the different phases in the OCOPOMO process the stakeholders were asked about their general experience with the OCOPOMO platform and its structure. Stakeholders in this case were related to the two different cases modeled with the collaboration platform. The questionnaire is divided into the following sections:

1. Respondent's details
2. Experience with OCOPOMO
3. Impression on the online collaboration/consultation

Questions were not evaluated when no single answer was given. Nevertheless all results are documented in the annex. Although it has to be mentioned that because of the quantity of Stakeholders participating in this survey, no significant statements can be made. Only current trends of the use of the collaboration platform can be derived.

1.1 RESPONDENT'S DETAILS

Overall, there were 10 stakeholders participating to the evaluation survey representing two policy cases investigated in the project: 4 respondents were involved in the Campania case and 6 were involved in the Kosice case. Asking about their role in the policy cases the following graph shows the stakeholders divided into different professions.



As for Kosice respondents, half of the stakeholders were identified as energy experts (3 of 6). One stakeholder was a representative of housing association and two others couldn't be categorised in the given pattern of the questionnaire. In case facilitators have answered this questionnaire their results will not be evaluated in this chapter. According to the presented scenarios facilitators sometimes have taken over the role of the stakeholder.. Furthermore the results of the facilitators will be reviewed in a separate chapter.

Campania stakeholders were categorised according to the following profiles: researcher; technology transfer manager, policy maker/advisor, civil servant. 3 researchers took part to the survey, while the 4th respondent is both a researcher and policy advisor. Stakeholders indicated following motives of their participation in online collaboration:

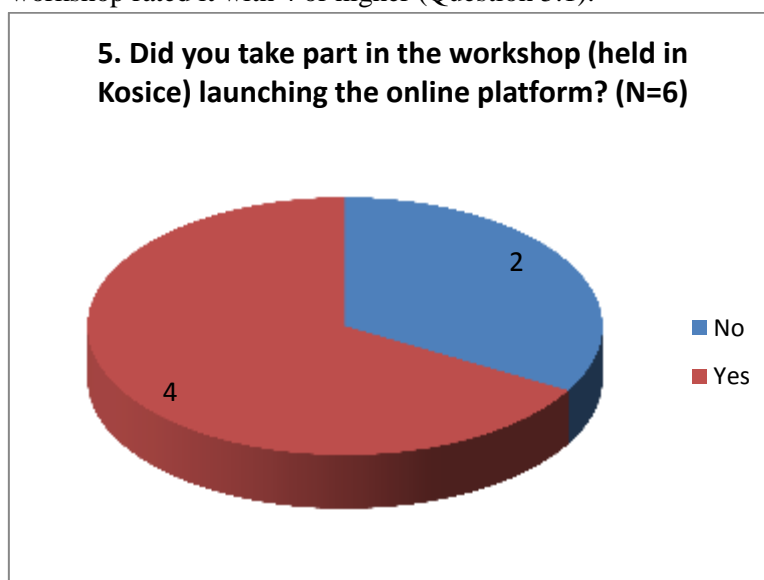
- Good collaboration with the department of regional development of KSR Kosice, especially with Peter Tapak – I think that today, in order to create policies, it is important to collaborate more intensively with socio-economic environment and not to create policy only “from table”
- Topicality of this theme
- Recommendations of my colleagues
- An interest to learn more about the given domain by means of new technologies
- It is my professional work.
- Experience acquisition and exchange
- Interest to test OCOPOMO Software and consult the on-line platform
- I was involved because of my expertise in R&D projects
- I have done research in the area of university-industry relations and interest in tools usability
- I was kindly invited and curious about project development in this area

In the context of e-participation the aim is to get more stakeholders involved in the policy process. Therefore the comments above provide a good feedback to keep the work going. Slight majority of the stakeholders had prior experience with online collaboration on policy development whereas others were interested in making the experience of getting involved in such a collaboration or get the recommendation by colleagues to participate.. During the online participation period the OCOPOMO

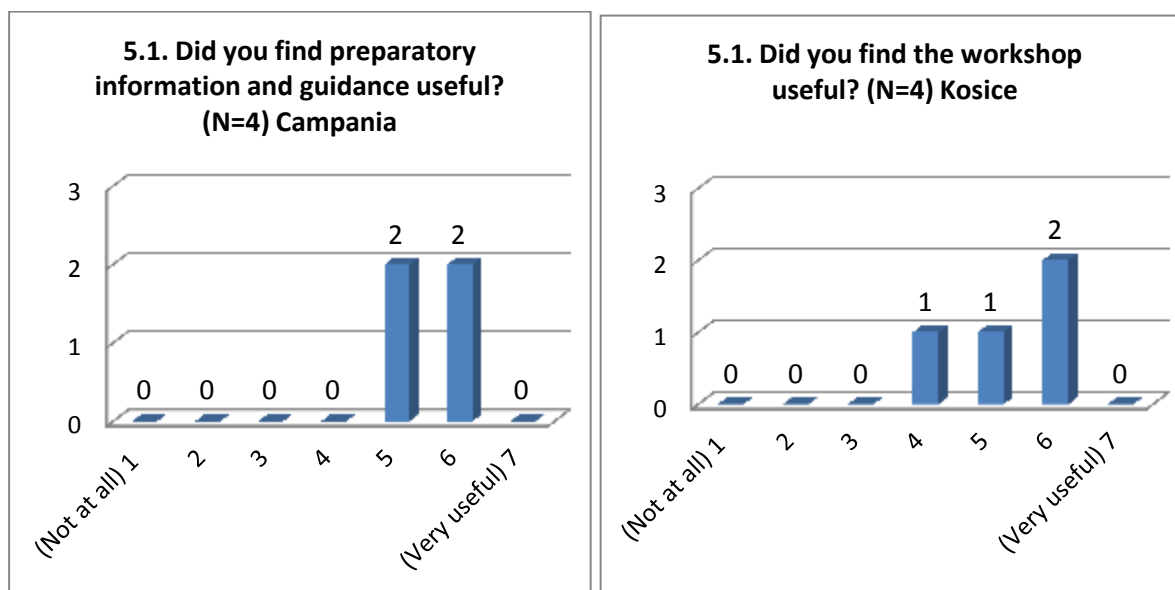
platform was less visited. Asking about the frequency of visiting the OCOPOMO platform users could choose between the answers “a few times”, “few times a week”, “every day” and “never”. All participants of the survey answered that they visited the OCOPOMO platform during the online participation period only “a few times”.



In the Kosice case, to provide a better access to the online platform a workshop was held . By attending the workshop most of the stakeholders find the workshop useful. 4 of 6 users take part in the workshop launching the online platform. Regarding the evaluation of the workshop everybody who participated in the workshop rated it with 4 or higher (Question 5.1).



In the Campania case preparatory information and guidance was provided through bilateral meetings and online interaction, not through a workshop. Also in the Kosice case, beside the workshop there was an useful instruction on the OCOPOMO platform which 5 of 6 stakeholders read. With all the information given the stakeholders were able to understand what they were expecting to do during the online collaboration. In both cases the majority of stakeholders expressed a positive feedback on preparatory information and guidance.

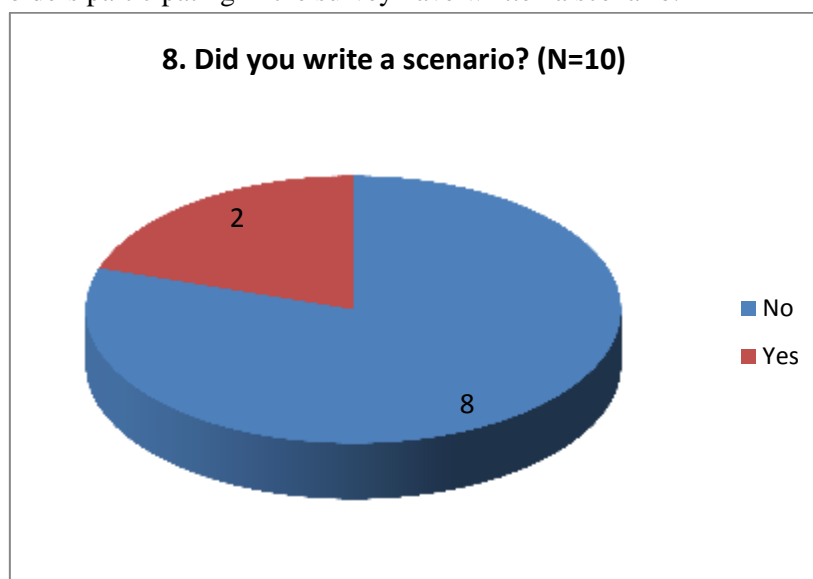


Overall the different type of stakeholders having more or less experience with online collaboration platforms are able to deal with the OCOPOMO platform and one success factor could be the workshop and the provided instructions. A respondent from Campania formulated a comment in this respect: he "stressed the importance of face to face guidance in addition to the information received and the need to find right balance between clear, concise and thorough information".

1.2 EXPERIENCE WITH OCOPOMO

In this section the experiences with the OCOPOMO platform are gathered. By asking about the different functions used in the OCOPOMO process by the stakeholders a clear understanding of positive and negative aspects of the collaboration platform can be drawn. This includes the scenario function, the commenting function, the wiki tool, the uploading function, the search function, the documents provided and other aspects about the collaboration process itself.

Only two stakeholders participating in the survey have written a scenario.

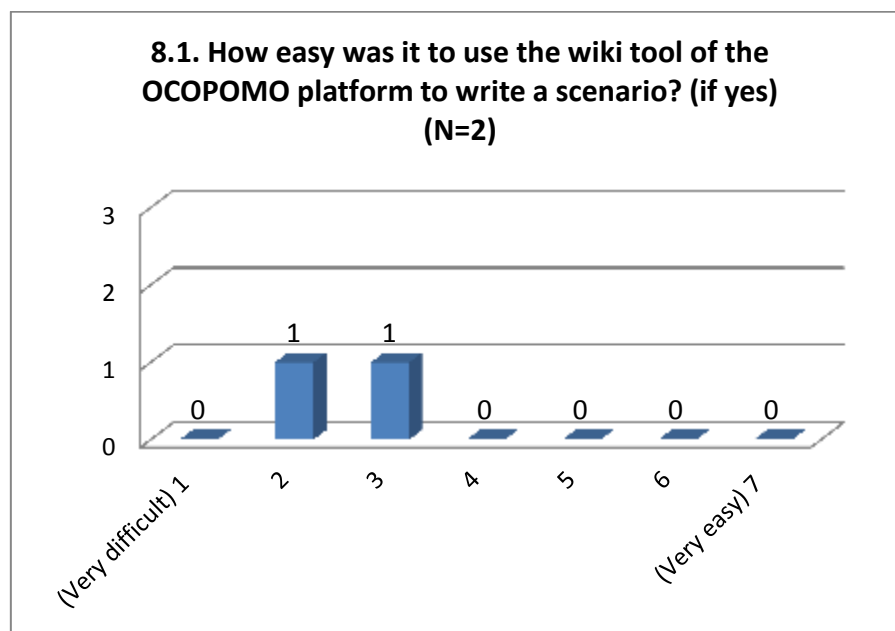


By asking the stakeholders about the arguments for not writing a scenario the following answers were given:

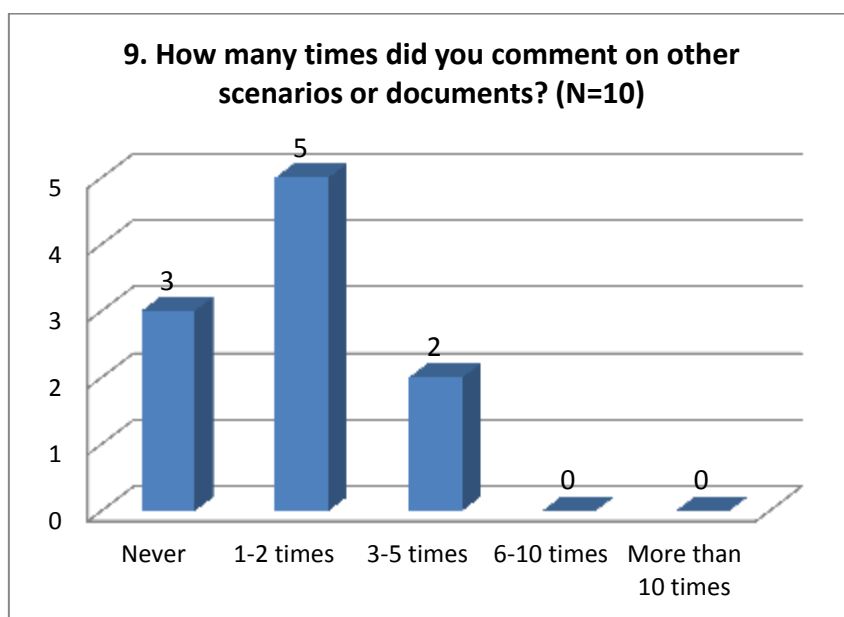
- It matched several opinions
- Lack of time

- Busy in work
- I wasn't involved in the creation of a scenario, I commented existing scenarios

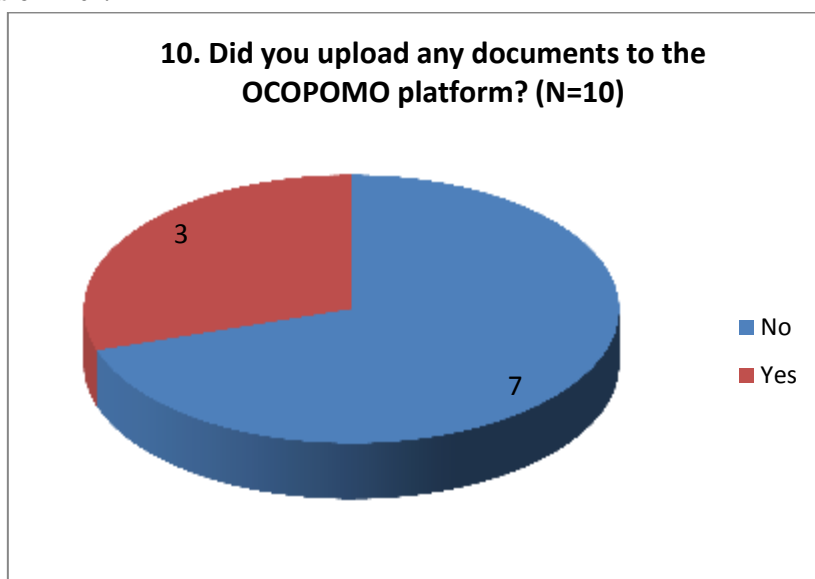
Those who wrote a scenario with the wiki tool offered for that purpose rated this tool as difficult (Question 8.1.). Why the wiki tool of the OCOPOMO platform is difficult isn't further elaborated. One reason could be technical difficulties because of less technical background of the stakeholders. Both scenarios were developed in a collaboration or a discussion with facilitators. For a development in the process of the collaboration platform the wiki tool offered for scenario documentation should become more useable for non technical persons.



Giving the possibility of commenting scenarios the majority of respondents did comment on existing scenarios and documents which gives the opportunity to other stakeholders to participate in the process of fully developing the scenario. All stakeholders commenting on scenarios haven't declared any problems while using the commenting feature.

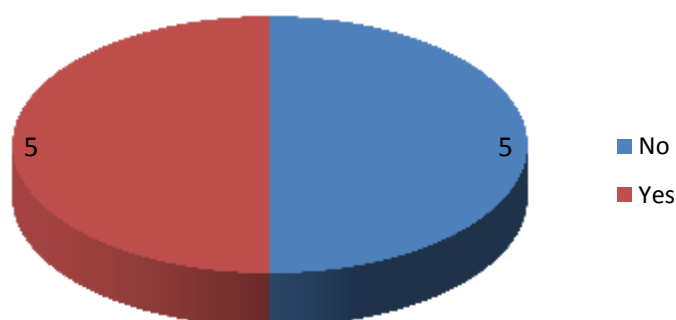


By asking about documents uploaded only 3 out of 10 stakeholders uploaded documents who also didn't encounter any problems with the upload functionality. A respondent formulated the following comment: "even though I have not uploaded directly, I have seen the functionality and it recalls me routine activities online".



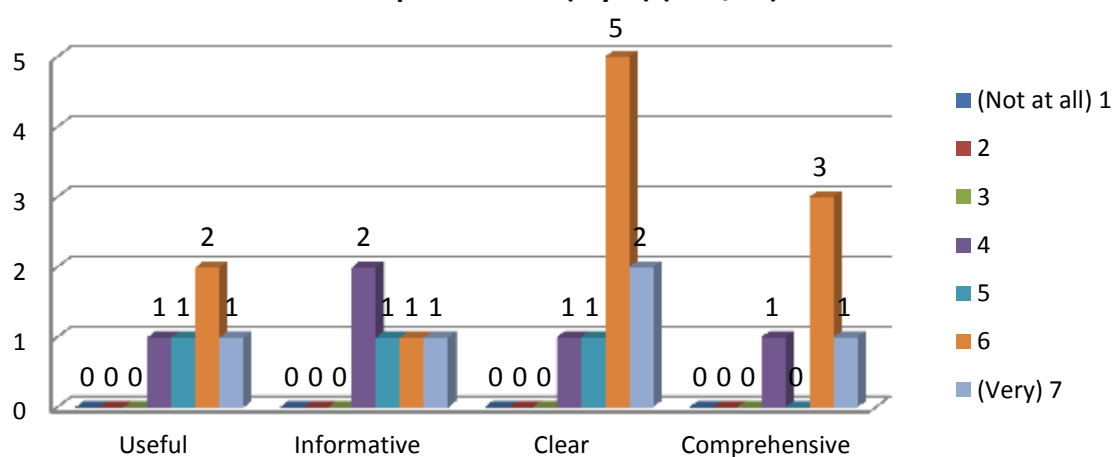
The search function on the OCOPOMO platform helped to navigate through the platform more quickly. Asking about the usage of the search functionality 5 out of 10 stakeholders used the it and one stakeholder did encounter a problem with the lack of sources or data while using the search function.

**11. Did you use the search function of the
OCOPOMO platform? (N=10)**



Background documents were provided for stakeholders to get additional information about the policies presented at the OCOPOMO platform. Most of the stakeholders have read the background documents (9 of 10). In the survey the stakeholders had to rate the documents regarding usefulness, informativeness, clarity and comprehensiveness with a likert-scale. The following chart shows the rating of the different aspects asked about the background documents which can be considered as mostly positiv in each category.

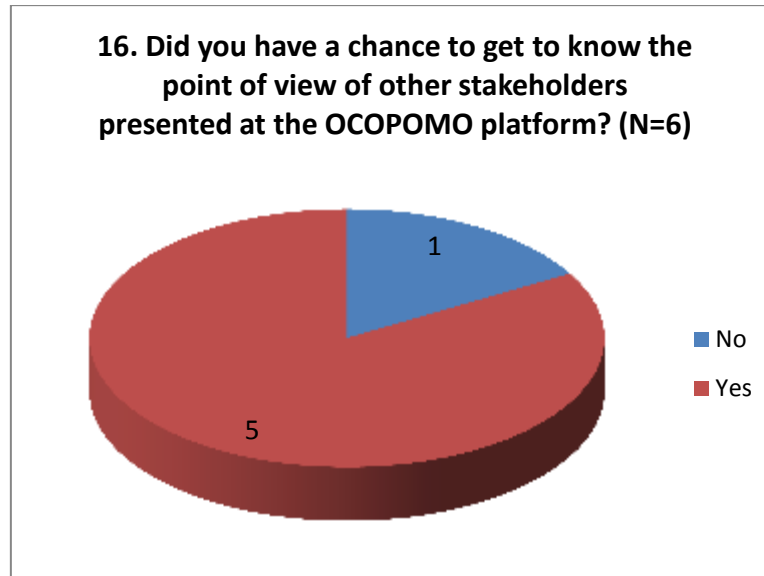
**12.1. Were the documents useful/ informative/ clear*/
comprehensive? (if yes) (N=5/9*)**



The questionnaire of Campania only asked if the documents were clear because they did not receive the last version of the questionnaire in due time. This is the reason why the results in this particular category consists of nine responses instead of five including the results of Campania. The stakeholders indicated some measures that could increase their engagement:

- Complicated log-in (the approach "to click on a link" suits me very well since I need not remember name and password)
- I would surely welcome to show more practical examples with clear contribution to the creation of public policies.
- Face to face meetings are very important particularly when dealing with senior staff into organizations or policy makers
- Some questions should be more narrow, focusing e.g. on a precise task online

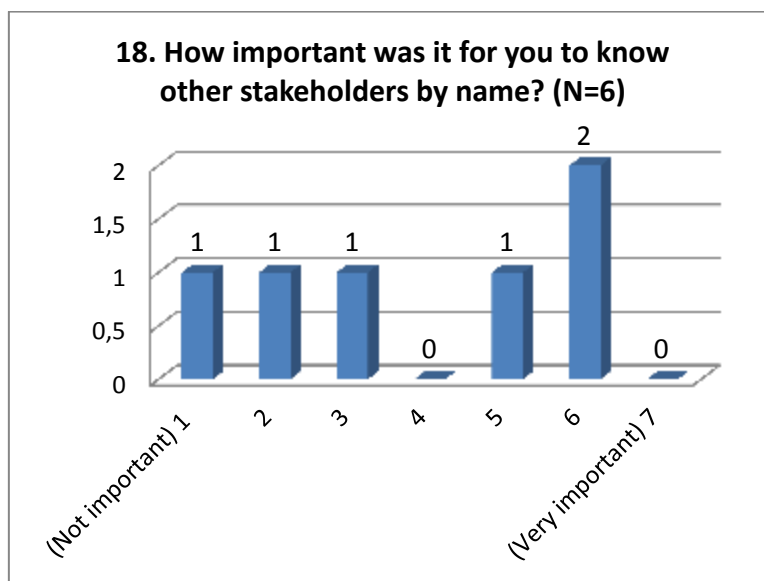
One engagement already realized was the chance to get to know the point of view of other stakeholders presented at the OCOPOMO platform. 5 of 6 stakeholder get to know the point of view of other stakeholders.



The stakeholder who can't get to know the point of view of other stakeholders just argued it with work business. Another question was if it was important whether the stakeholders are in favour of collaboration with a limited set of stakeholders, i.e. invitation only participation of stakeholders. Half of the stakeholders were in favor and the other half were against the idea with the following arguments:

- A more numerous group of collaborators should be selected – it is no problem in an online system; since now it is a model example/software development, the structure of the group was good
- Theme similarity
- A specialized topic should be handled preferably by specialists. If a topic is related to everyday life of citizens, then citizens' opinion should be strongly taken into account as well, but it should not be populism.
- It depends from the policy case. Some cases need wider engagement of stakeholders some do not.
- I am in favour of moderated open participation

Besides the point of view of the stakeholders another interesting question was how important knowing the stakeholders' name was on the collaboration platform.. Some of the stakeholders don't find it important to know the name of the stakeholders whereas other stakeholders rated it otherwise.



The following arguments were presented for the choice whether to know other stakeholders by name or not:

Pro:

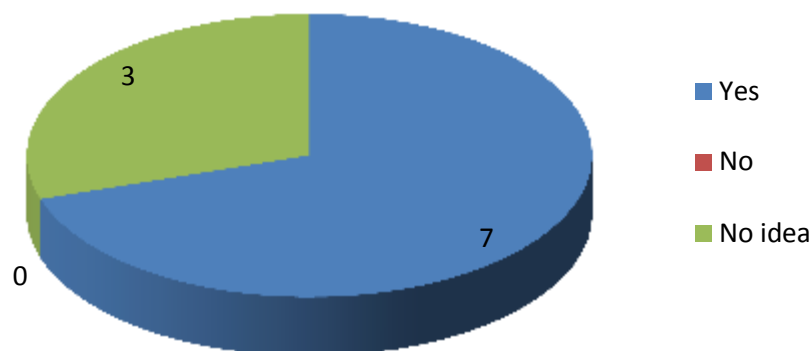
- It is better to know who I communicate with, I can have a look at his domain of expertise before the communication.
- Because I think that public policy should not be anonymous. Public policy is about values which one endorses or not.
- It could be a very stimulating strategy in order to know different points of view and improve my consultation

Contra:

- The segment/area/expertise represented by a participant is more relevant than his name
- I don't think it's necessary to know the other person in order to discuss scenario
- My evaluation is not affected by confrontation with other views

By presenting the name and other personal data the topic of security must be considered. Regarding security issues 7 out of 10 stakeholders felt that the collaboration platform is well secured. One respondent emphasized that he or she trusted the facilitators' handling of data.

19. If you provided any personal data that needs to be treated along privacy protection principles, did you feel that the collaboration platform is well secured? (N=10)

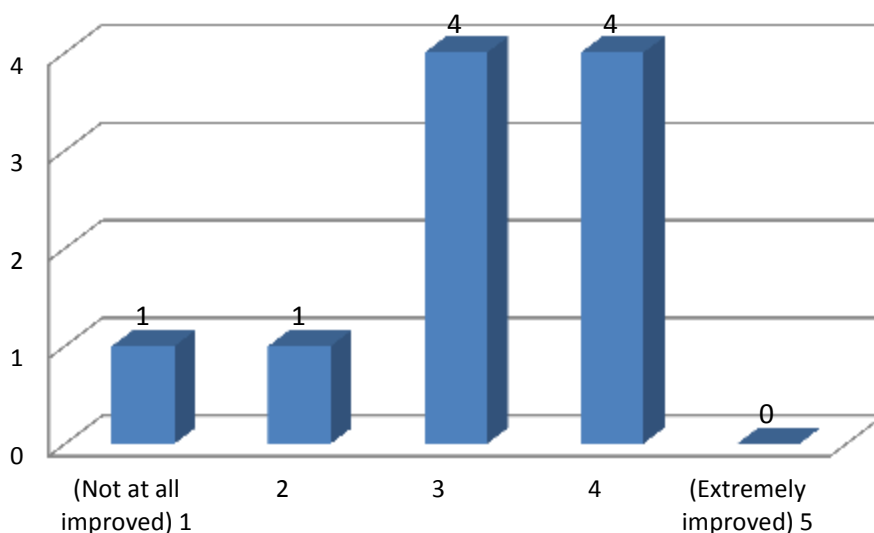


Summarizing the facts the stakeholders have not fully used the functionalities the OCOPOMO platform has provided. Regarding the documents and the information offered the collaboration platform is a suitable tool for addressing the different stakeholders in the process.

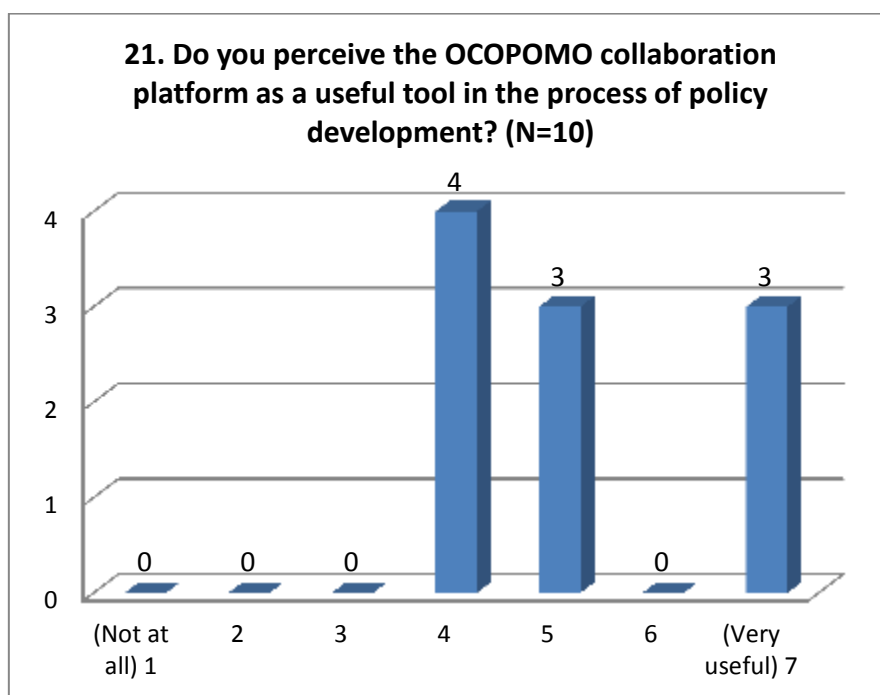
1.3 IMPRESSION ON THE ONLINE COLLABORATION/ CONSULTATION

4 out of 10 respondents felt that they improve their understanding of policy issues thanks to online collaboration which took place in OCOPOMO. 4 of them were neutral while 2 affirmed that their understanding of policy issue did not improve after this online consultation.

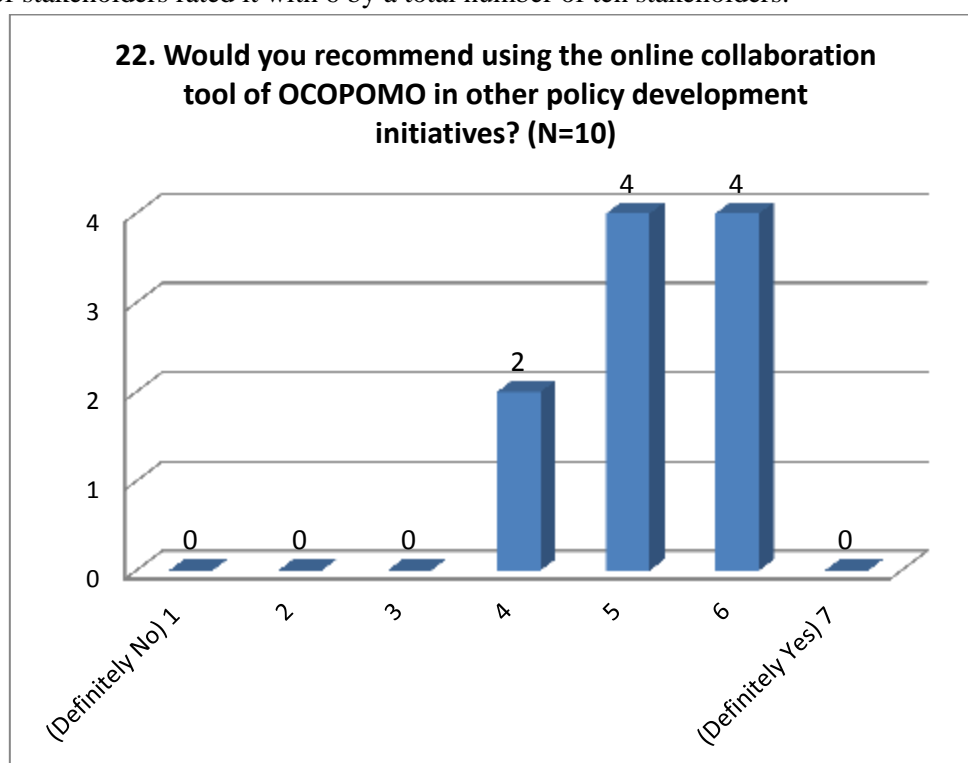
20. Has your understanding of the policy issue improved after taking part in the online collaboration? (N=10)



The charts presented below demonstrate that the slight majority of stakeholders involved in the survey do believe that the collaboration platform is an useful tool in the process of policy development. The stakeholders had to answer this question using a likert-scale from “not at all useful” to “very useful”.



Although they would also recommend the OCOPOMO platform for other policy development initiatives looking at the likert-scale the question was answered with. Choosing numbers between 1 (definitely no) and 7 (definitely yes) four stakeholders rated the recommendation with 5 and the same number of stakeholders rated it with 6 by a total number of ten stakeholders.



To improve the platform the stakeholders provide the following comments:

- I think that a "simple" methodology for the creation of new policies (policies for the 3rd millennium) should be composed – the necessity is that relevant institutions are able to use/apply this methodology independently without help

- After positive pilot testing, this tool should be actively advertised first among specialists and next among politicians and general public.

3. FACILITATOR ANSWERING THE STAKEHOLDER QUESTIONNAIRE

The Facilitators answered the stakeholder's questionnaire and that's why the results of the stakeholder questionnaire were divided. The survey has the same sections as the stakeholder questionnaire:

1. Respondent's details
2. Experience with OCOPOMO
3. Impression on the online collaboration/consultation

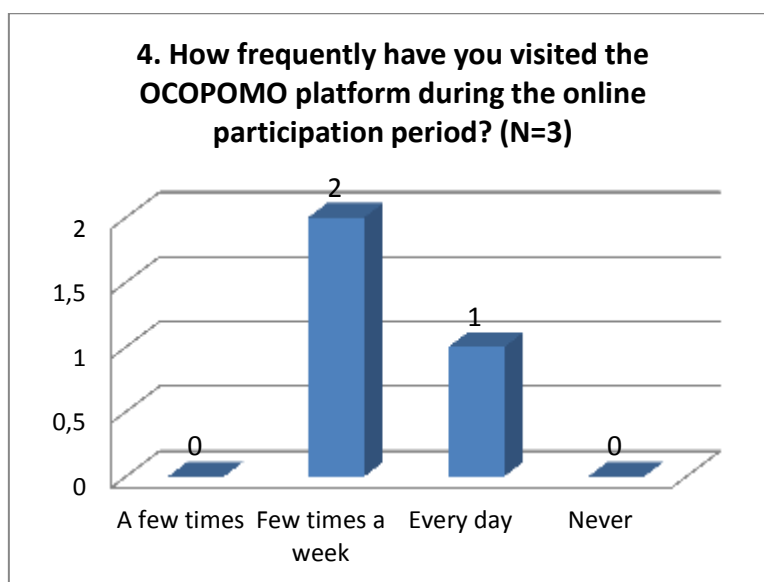
Some of the questions in the survey weren't answered by anyone, so these questions are not evaluated in this paper. Nevertheless all results are documented in the annex. Although it has to be said that because of the quantity of facilitators participating in this survey, no significant statements can be made. Only current trends of the use of the collaboration platform can be derived. For the next iteration of evaluation a separate questionnaire for facilitators is going to be planned.

1.4 RESPONDENT'S DETAILS

Only 3 facilitators could be recognized in the stakeholder results and asking about the motivation to take part in the online collaboration on policy development two facilitators answered the following:

- Work
- Prior experience on European Projects dealing with online collaboration

Also 2 of 3 has prior experience with online collaboration on policy development but the quantity of visiting the OCOPOMO platform during the online participation period was higher than the stakeholder's.

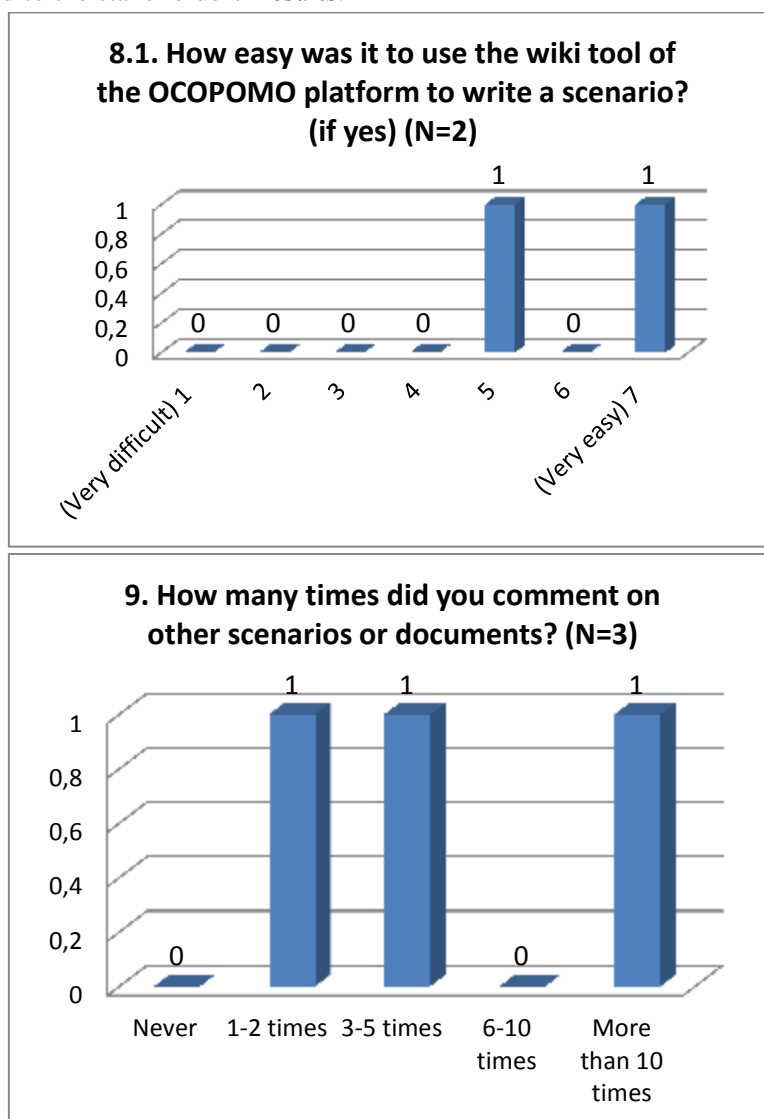


In addition to that 2 of 3 facilitators did take part in the workshop and found it useful. Having all the information every facilitator had a clear understanding of what they had to expect to do during the online collaboration.

1.5 EXPERIENCE WITH OCOPOMO

By gaining experience with OCOPOMO 2 out of 3 facilitators wrote a scenario with the wiki tool of the OCOPOMO platform and rated the tool as easy to use (Question 8.1.). This is the opposite of what

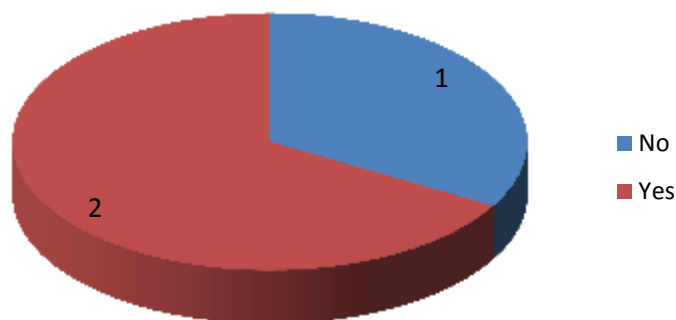
the stakeholders have said. Commenting on other scenarios and documents were also more frequently in regard to the stakeholders' results.



Although no problems were encountered with writing comments or uploading documents to the OCOPOMO platform. This results could be traced back to the fact that the facilitators are more technical persons. For increasing the level of engagement of the facilitators one to one meetings should be implemented. This was done for example in Campania.

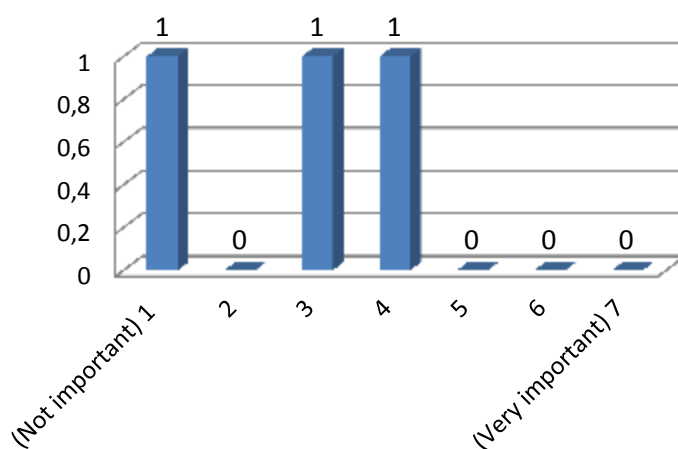
By asking if the facilitators had the chance to get to know the point of view of the stakeholders every facilitator answered with "yes". When it comes to collaboration 2 of 3 facilitators appreciated a limited set of stakeholders.

17. Are you in favour of collaboration with a limited set of stakeholders, i.e., invitation-only participation of stakeholders? (N=3)



The opinion about knowing the names of stakeholders on the OCOPOMO platform is very clear. Either the name doesn't matter or it's clearly not important for the facilitators on the OCOPOMO platform. By asking about the arguments one facilitator argued that the name doesn't make a difference but the area of expertise does.

18. How important was it for you to know other stakeholders by name? (N=3)



1.6 IMPRESSION ON THE ONLINE COLLABORATION/ CONSULTATION

Getting to know the impression on the online collaboration by facilitators their understanding of policy issues has improved after taking part in the online collaboration. They also find the OCOPOMO tool useful in the process of policy development and would recommend using the platform in other policy development initiatives. However one recommendation was given by a facilitator to improve the OCOPOMO platform which was to improve some automatic notification about changes made by stakeholders for example via E-Mail.

4. FACILITATOR AND POLICY MODELER QUESTIONNAIRE

The survey is divided into the following sections:

1. Respondent's details
2. Collaboration platform

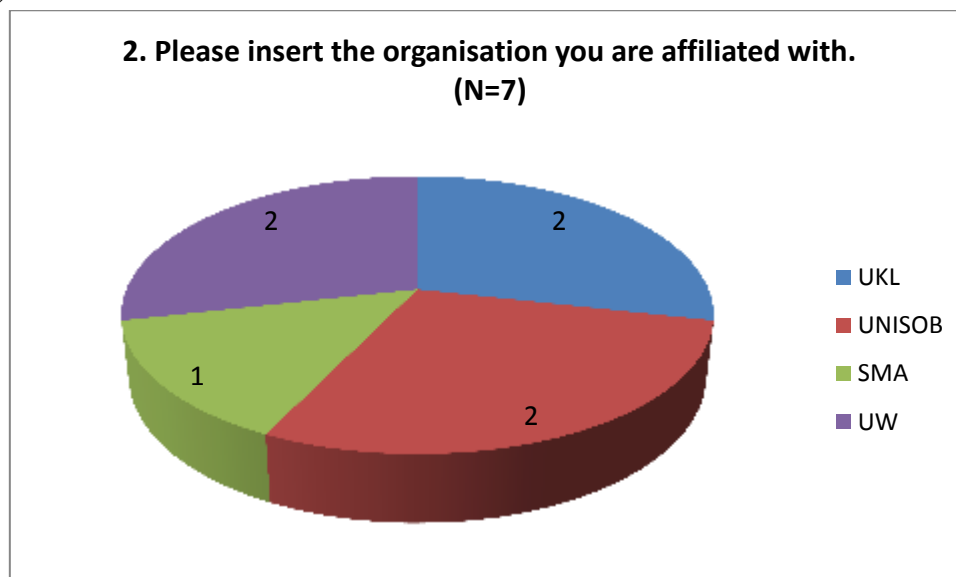
3. Scenarios
4. Conceptional modeling with CCD Tool
5. CCD2DRAMS
6. Simulation Models

After getting the respondent's details like the organisation they affiliated with and the tasks they performed the policy modelers should provide some experiences with the collaboration platform. This includes for example providing documents, information collection and evaluating the different functionalities on the platform. Of course in the context of the OCOPOMO process the survey evaluated the scenario development and the impact of these documents for the conceptual modeling with the CCD Tool. The use of the CCD Tool with its different diagrams will be asked as well as the code generation feature CCD2DRAMS. At last the development of simulation models with DRAMS and the simulation running with its different graphs will be evaluated.

Some of the questions in the survey weren't answered by anyone, so these questions are not evaluated in this paper. Specifically the facilitators do answered the questionnaire until the chapter with the CCD. Because the facilitators didn't use the CCD Tool and the other Tools afterwards, their results weren't taken into account in the results. Nevertheless all results are documented in the annex. Although it has to be said that because of the quantity of Policy Modelers participating in this survey no significant statements can be made. Only current trends of the use of the collaboration platform can be derived.

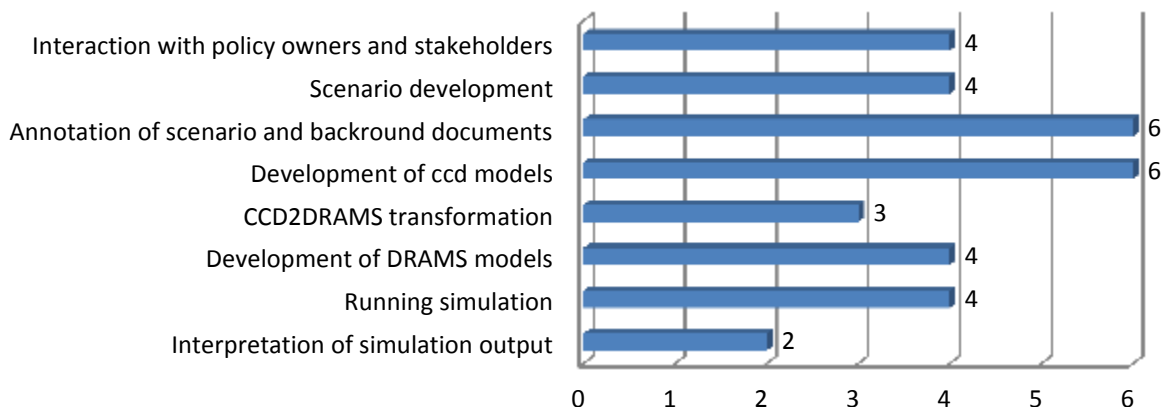
1.7 RESPONDENT'S DETAILS

7 Policy Modelers participated in this survey. The organizations the users are affiliated with are 2 users of the University of Koblenz (Germany), 2 users of the University of Warsaw (Poland), 2 users of the University of Suor Orsola Benincasa (Italy) and 1 user of the Scott Moss Associate (United Kingdom).



The most tasks Policy Modelers performed on OCOPOMO were annotation of scenario and background documents and the development of CCD models. The tasks which are performed less were the CCD2DRAMS transformation and the interpretation of simulation output. These results suggest that the scenarios made were rarely transformed into a DRAMS model and therefore fewer scenarios could be interpreted. This might be normal in the process of developing scenarios because not all scenarios were valued as good enough for a CCD2DRAMS transformation. Only 3 Users made a transformation to a DRAMS model and only 2 Users interpreted the output of the simulation. Nevertheless all steps were performed.

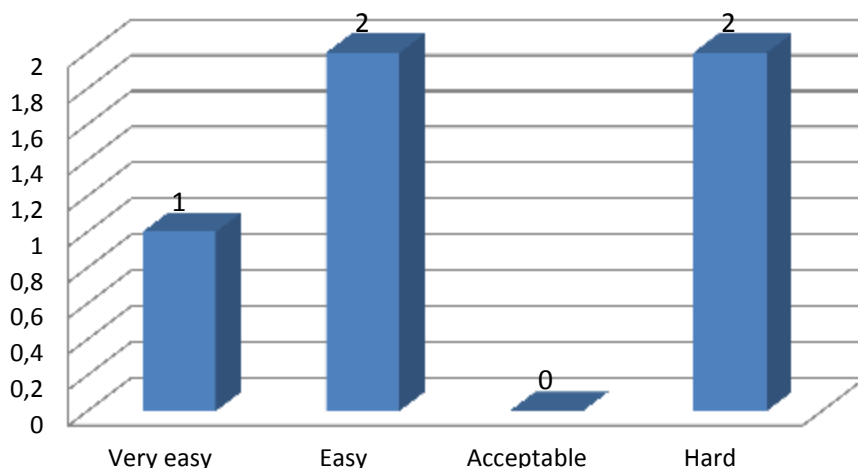
3. Please list all the tasks you performed in OCOPOMO on policy modelling. (N=7, multiple answers)



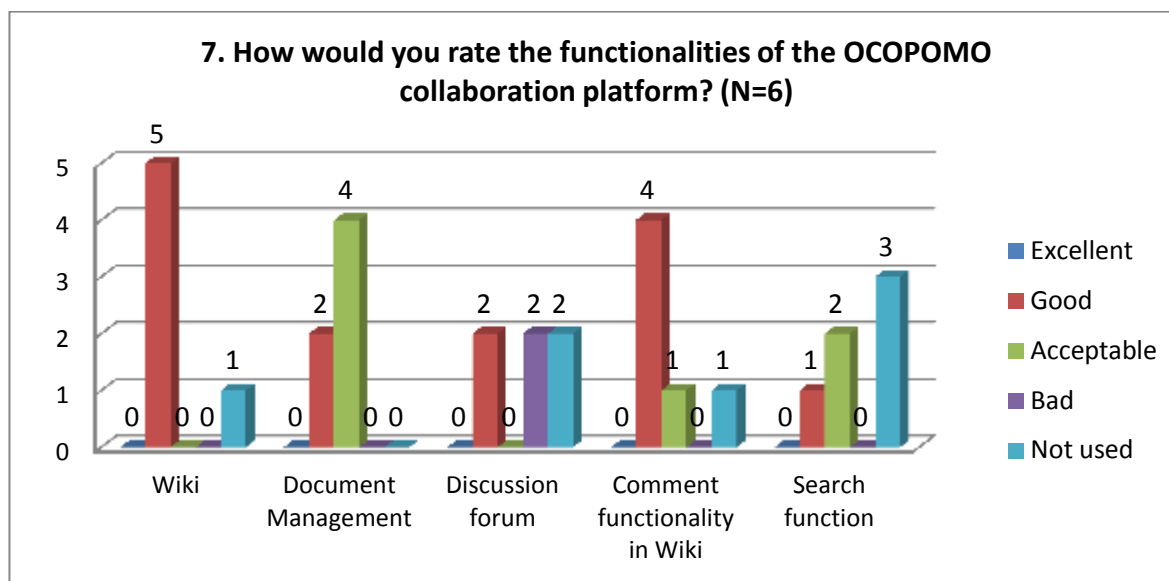
1.8 COLLABORATION PLATFORM

The Alfresco Collaboration platform of OCOPOMO was used by 5 of 7 Policy Modelers and Facilitators. Some of the users found it hard to find documents others didn't have any problems by asking the question if it was easy to find relevant documents.. It could be dependent on the kind of information the users were searching. With the divided results a clear statement of the difficulty of finding documents can't be made.

5. Was it easy to find relevant documents? (N=5)



Different functionalities were used on the platform such as a Wiki, a document management tool or the search function. By evaluating these different functionalities the results show that the Wiki and the comment functionality in the Wiki are the top rated functionalities whereas the search function was rated mostly "acceptable" or "not used". The results give no evidence for the usefulness of the discussion forum.

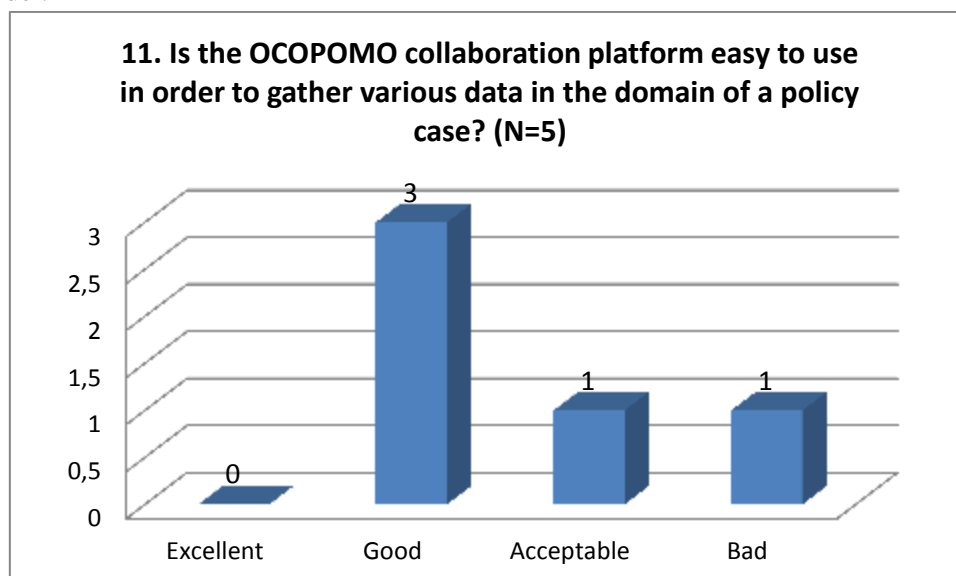


Beside of the available functionalities more than half of the Policy Modelers missed other functionalities that could further support the work of knowledge collection and interaction with stakeholders to inform policy modeling (3 of 5). These are the possibility of information organization, an E-Mail notification about the changes made on the OCOPOMO platform and a user-friendly display exploring the outputs from policy models all the way from the evidence documentary through the model design to the model output. These suggestions were made by three different users.

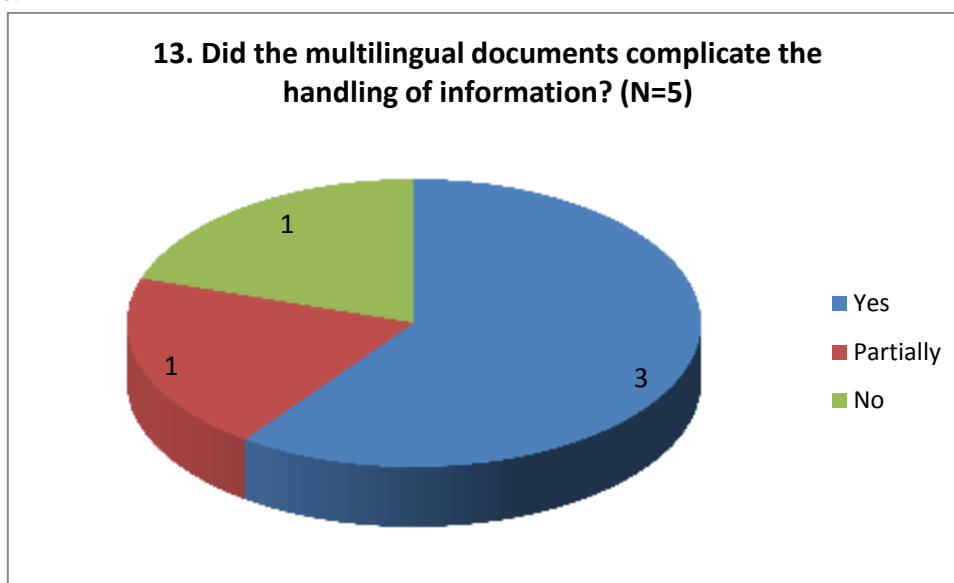
Moreover in the online questionnaire the Policy Modelers and Facilitators should provide suggestions for improving the functionalities already offered in the platform. Three statements by three different users were made:

- "I think that alfresco is too overloaded. A custom collaboration platform, only for the need of the OCOPOMO process would be more useful."
- "Efforts need to be concentrated on the integration of the collaboration platform, the CCD and the simulations."
- "Better visualization of changes made in wiki."

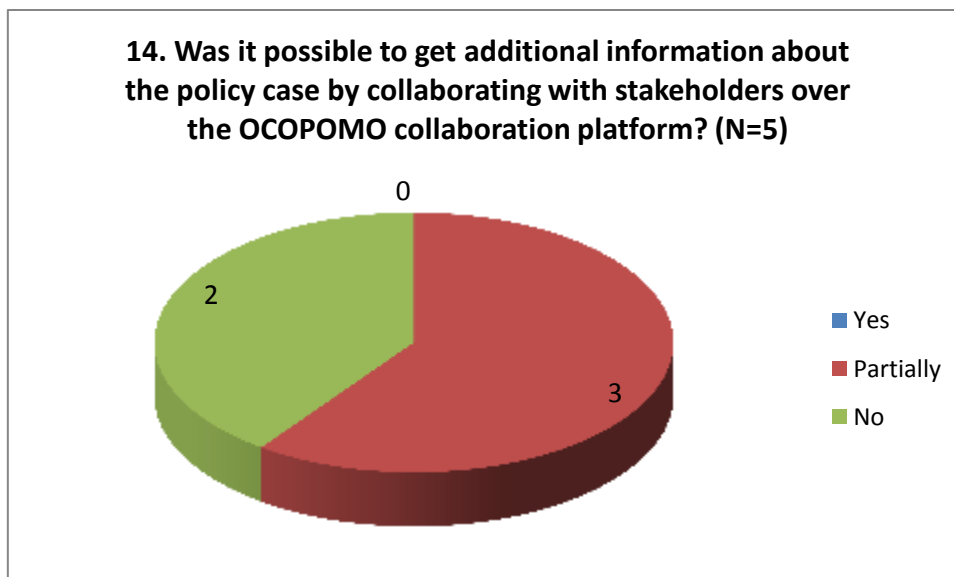
The following questions in aim at gathering the experience in collecting information for developing a policy model.



For improving the collaboration platform participants of the online survey missed would have preferred more transparency and the overview where to get which type of information. It was easier to get information and documents either from the stakeholders themselves, other domain experts or the web. Although it was hard for Policy Modelers and Facilitators to deal with multilingual documents. 3 of 5 users find it complicated to handle information in different languages. We suggest a clear definition in which language the documents should be uploaded to fix this problem. A project in one country didn't need a translation whereas a cross country project is more difficult to handle in terms of multilingual documents.

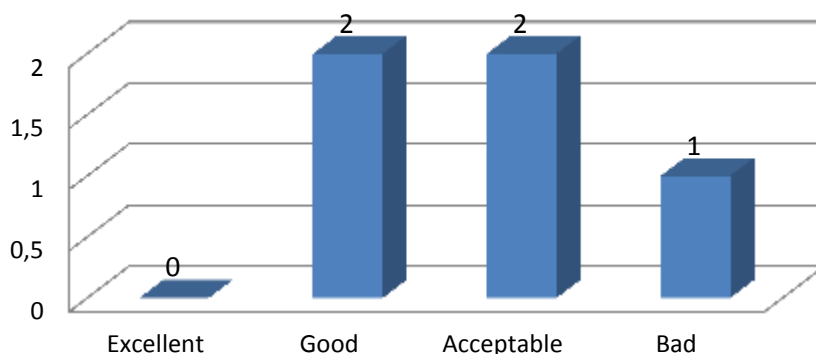


Beside of documents in the OCOPOMO collaboration platform it was not possible for 2 out of 3 users to get additional information about policy cases. The other two users didn't get information by the stakeholders at all.



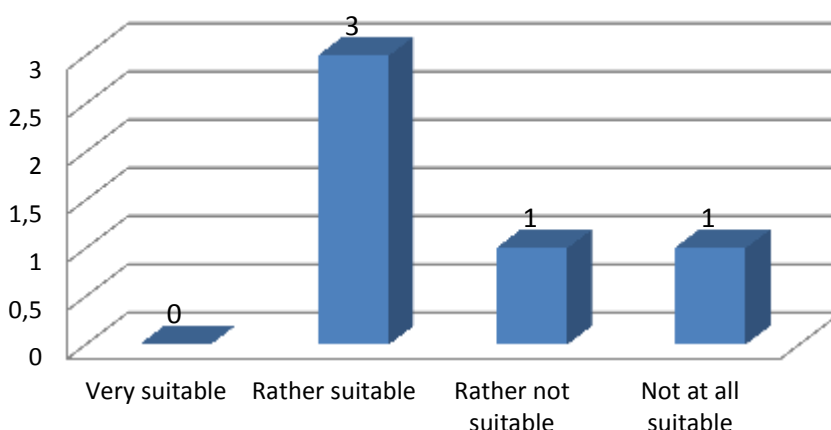
This diverse result is also reflected in the use of gathering information via the OCOPOMO platform. Regarding the overall process the opinions reach from "good" to "bad".

15. How useful do you think is the information gathering process using the OCOPOMO collaboration platform in policy development processes (considered overall)? (N=5)



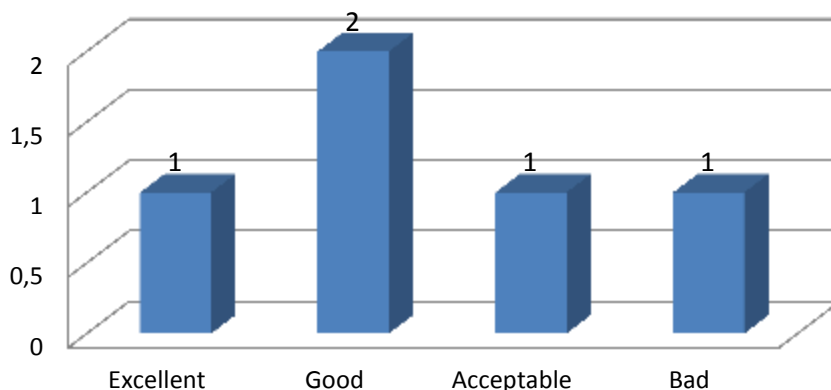
Dealing with the vast amount of information 3 of 5 users rated the OCOPOMO collaboration platform as “rather suitable”.

16. Is the OCOPOMO collaboration platform suitable to deal with vast amount of information? (N=5)



The organisation and structure instead was mostly rated well. Overall 3 of 5 users rated the organisation and structure of information as “excellent” or “good”. Only one user rated it as “acceptable” and one as “bad”

17. How would you rate the organisation and structure of information on the collaboration platform according to the needs of policy modellers? (N=5)

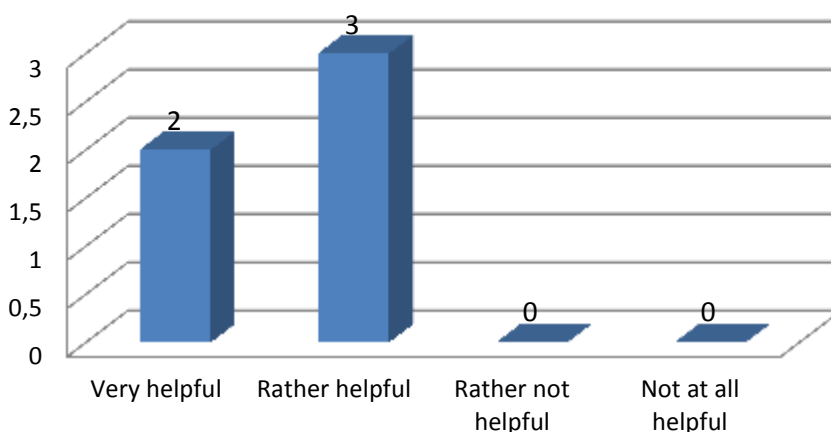


1.9 SCENARIOS

Scenarios are the means to gather the views of the various stakeholders and thereby- together with background documents - the basis for conceptual modeling. The following questions aim at eliciting the impact of these documents (as well as the phase in which these documents are created) for understanding the policy case and developing conceptual models.

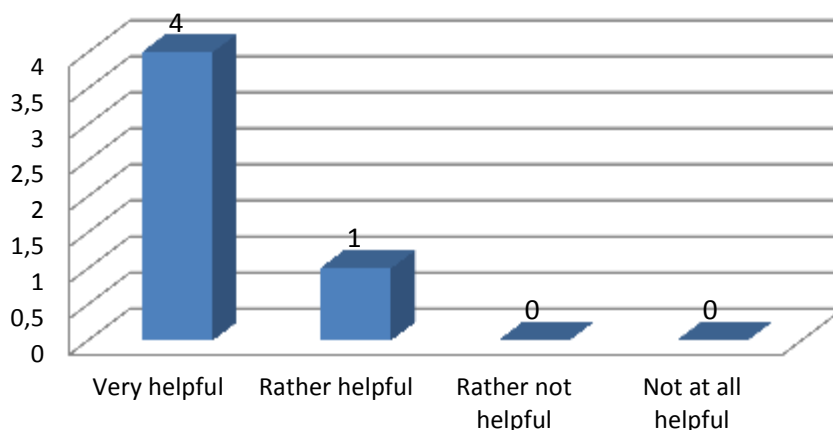
As in the section before it has been noticed that collaboration with the stakeholders is very helpful. For understanding the policy case in order to build a policy model the stakeholders have also a big part. Most of the policy modelers appreciate the help of stakeholders in order to build a mode.

19. Were stakeholders' scenarios helpful to understand the policy case in order to build a model? (N=5)



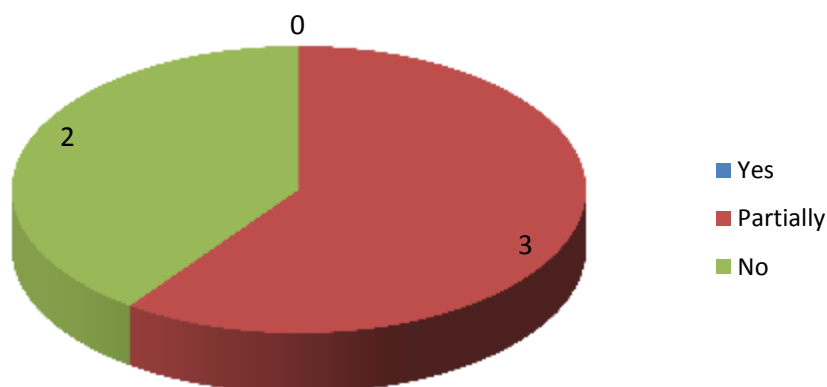
4 out of 5 Policy Modelers evaluated the scenarios in order to understand the view of stakeholders as "very helpful". In conclusion it can be said that scenarios from stakeholders are an important tool for the OCOPOMO process of building a policy model.

20. Were stakeholders' scenarios helpful to understand the views of the different stakeholders? (N=5)

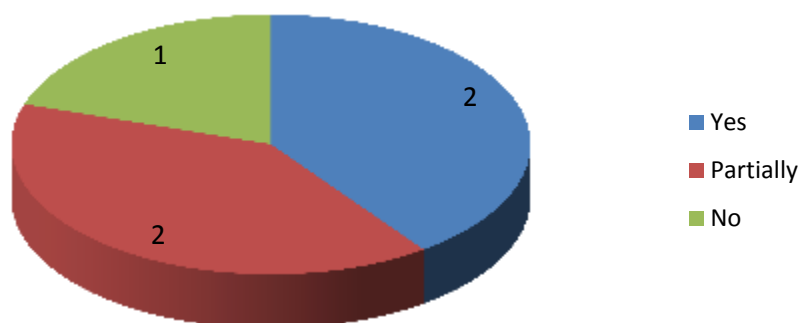


By using the scenarios not all the information are delivered. To build a policy model the Modelers need additional information. The scenarios only deliver information partially for the whole model. Beside of the scenarios background information give additional information for the development of policy models. For some Policy Modelers it would even have been possible to develop the policy model without scenarios, just relying on background documents. Others do need the scenarios and therefore both information are useful for its causes. Overall the OCOPOMO process phase for defining scenarios and collecting background information was sufficient to understand the policy issue, its boundaries and challenges.

21. Did scenarios deliver all necessary information to build a model? (N=5)



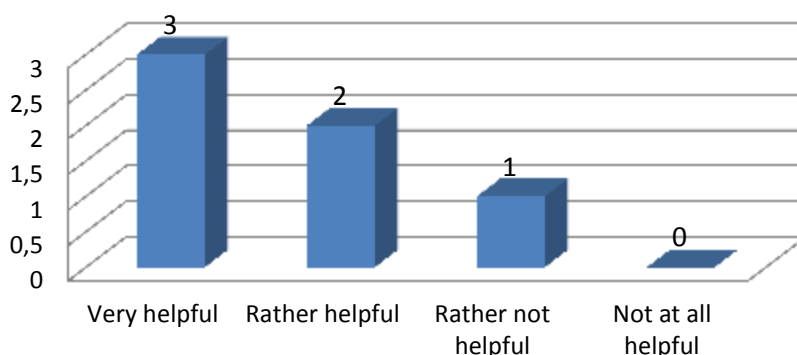
22. Would it have been possible to develop the policy model without scenarios just relying on background documents? (N=5)



1.10 CONCEPTIONAL MODELING WITH CCD TOOL

The next step in the process was the CCD tool. The installation and the creation of CCD files were not difficult at all. By asking about the difficulties with the installation every user answered with “no” and in addition to that no user had difficulties with the creation of CCD files either. Furthermore the diagrams created with the CCD tool were in general helpful to conceptualize the policy case and to understand the policy domain.

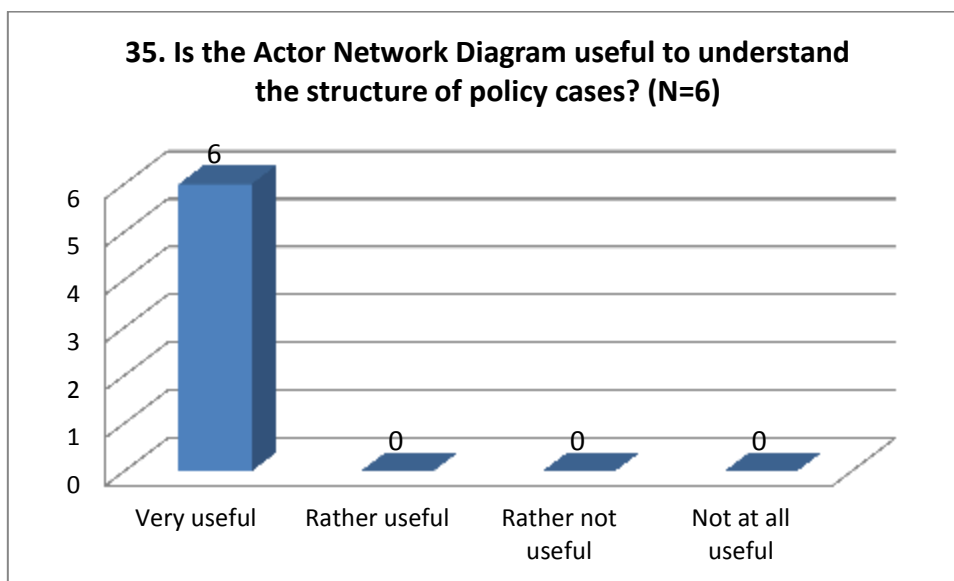
31. Are the diagrams of the conceptual model which are generated by the CCD Tool helpful for conceptualising the policy case and for understanding the policy domain? (N=6)



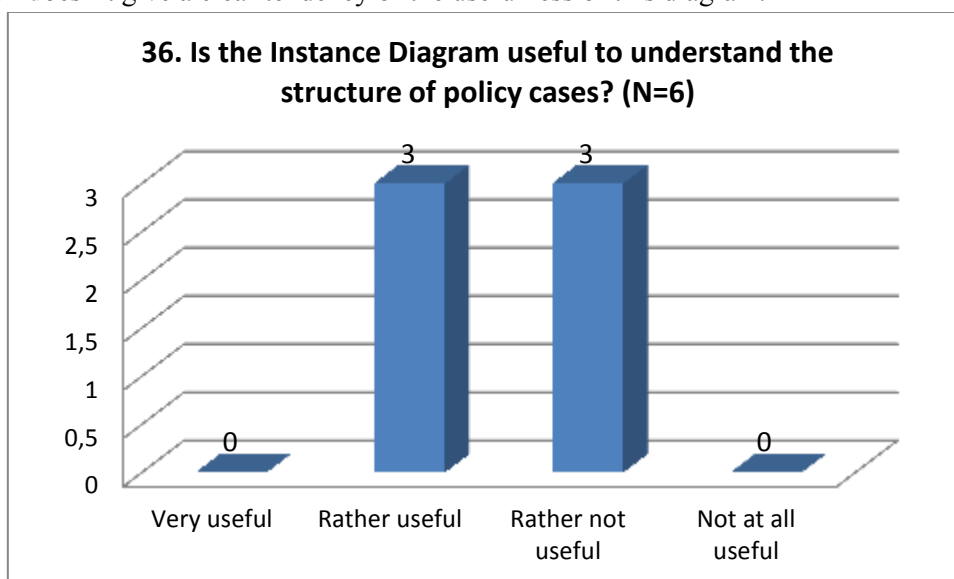
One user gave also a comment to the expectation of a CCD diagram:

- It is essential to be able to filter the elements of both the actor-network diagram and the action diagram in order to concentrate on individual aspects of the model design and its relationship to the documentary evidence.

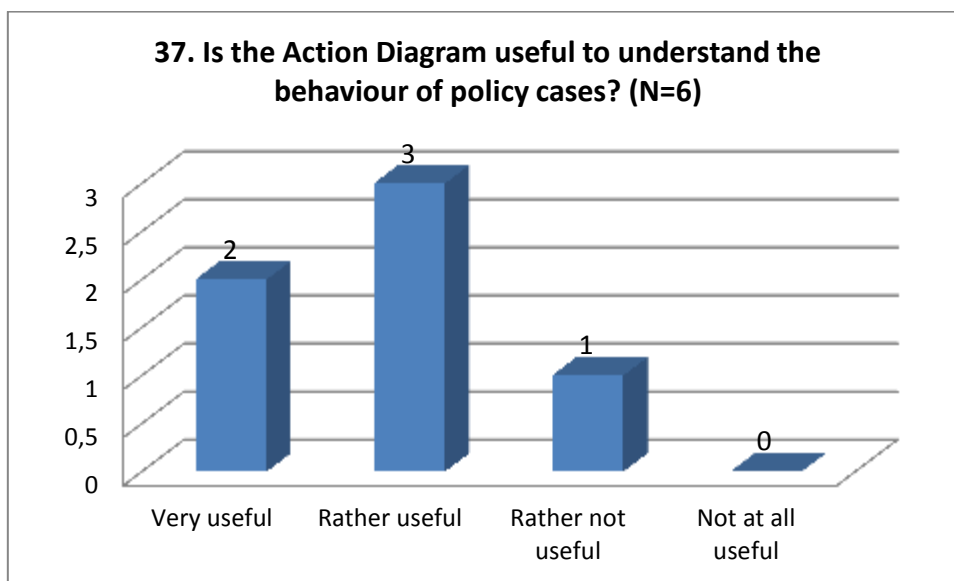
The different diagrams presented in the CCD tool were evaluated in their usefulness. The results show a variation in usefulness in the different diagrams. A very useful diagram in this case was the Actor Network Diagram. All the users rated this diagram as “very useful”



The Instance Diagram was partially rated as “rather useful” and as “rather not useful”. The 50/50 distribution doesn’t give a clear tendency of the usefulness of this diagram.



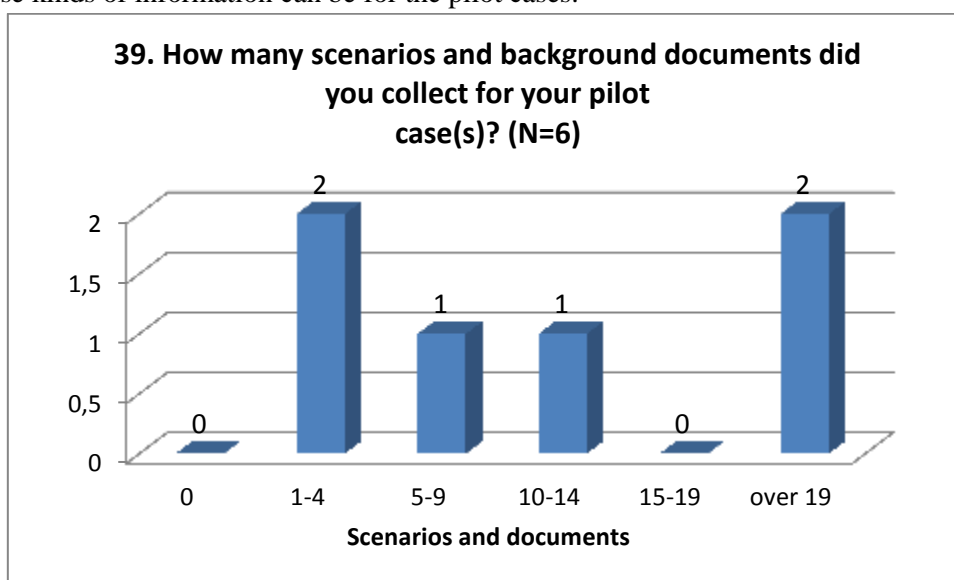
The Actor Diagram gives was rated slightly different. The majority find this diagram “very useful” or “rather useful”. Only one user rate the Action Diagram as “rather not useful”.



Two participants gave the following suggestions to improve the diagrams:

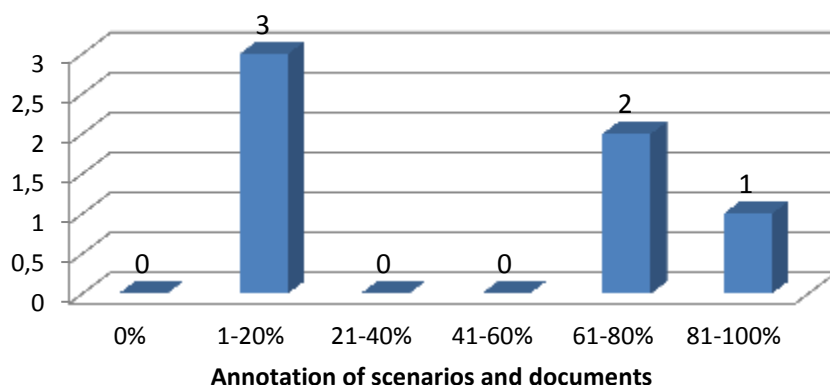
- As indicated, being able to filter what is shown positively (see what is selected rather than hiding what is selected) is an essential development.
- Editing functionalities could be farther improved, however I was working on the first version of the CCD Tool.

A lot of documents and scenarios were collected for the pilot cases. Even though 2 out of 6 users collected over 19 scenarios and background documents which gave a clear understanding of how useful these kinds of information can be for the pilot cases.

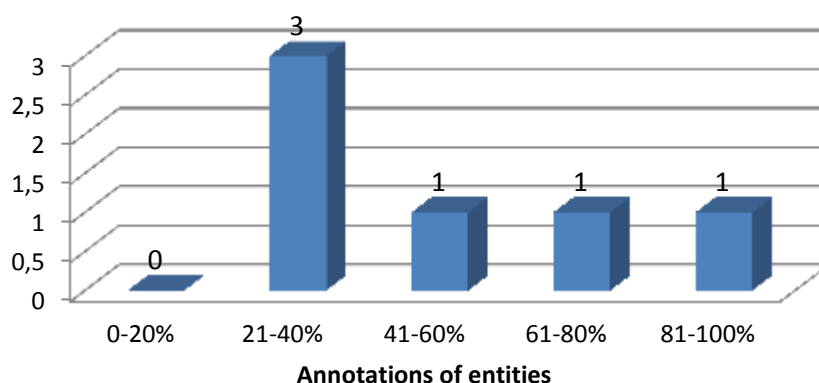


Although the CCD tool provides an annotation function which was used by the users differently.

40. How many of these scenarios and background documents did you annotate with the help of the CCD Tool (approximate percentage)? (N=6)



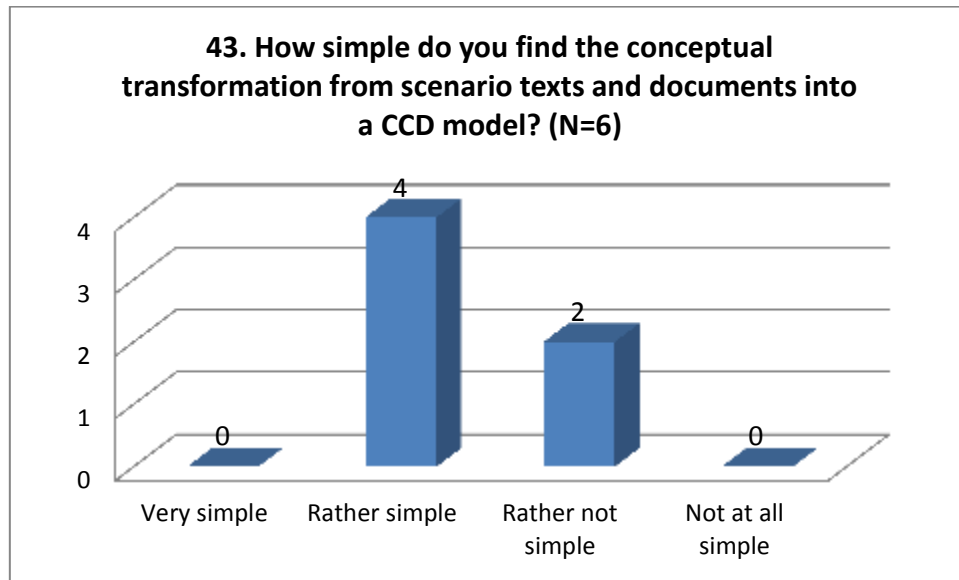
41. How many entities of your CCD(s) do have annotations (approximate percentage)? (N=6)



Difficulties with the annotation of scenarios and background documents only occur in one case. Therefore the user gives the following description of the problem encountered:

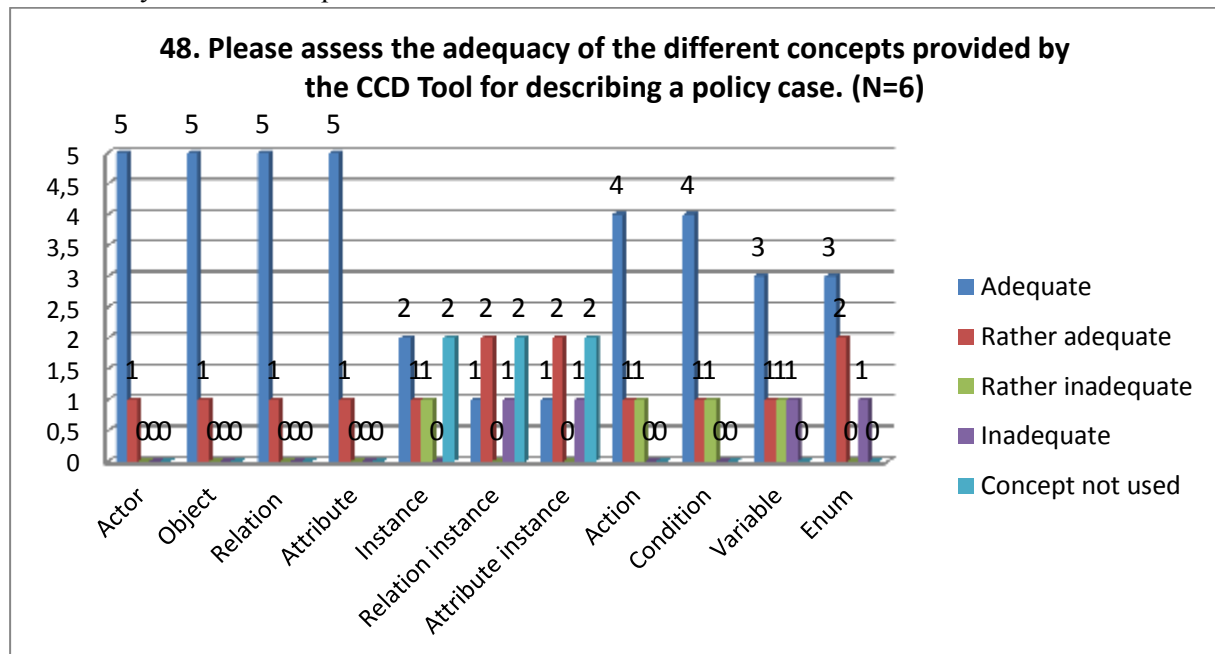
- The pdf annotation tool is still primitive. pdf documents created from Word, Excel and text editors (TextEdit on the Mac) do not highly easily or sometimes at all.

Asking about the simplicity of the conceptual transformation from scenario texts and documents into a CCD model the majority of Policy Modelers find it “rather simple”. Although they find the annotations useful to trace the CCD concepts back to the scenarios.



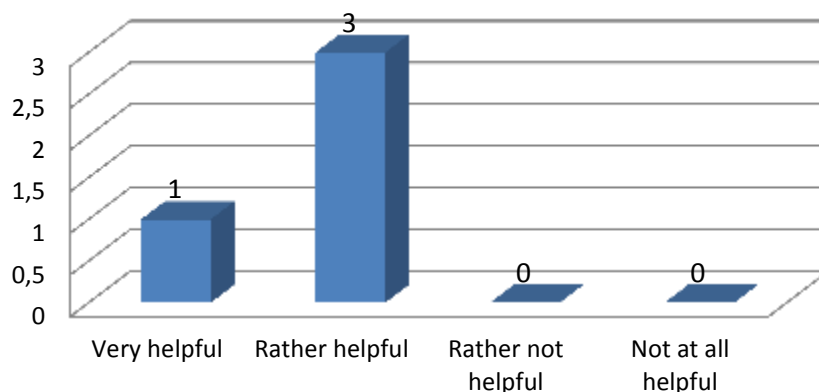
For a further improvement of the annotation feature of the CCD tool one Policy Modeler said that the pdf annotation tool should also be designed with the exact same features of the text annotation tool including drag-and-drop.

Continuing with the adequacy of the CCD Tool, different concepts provided by the CCD Tool for describing a policy case were asked for evaluation. The concepts contain actors, objects, relations, attributes, instances, relation instances, attribute instances, actions, conditions, variables and enums. Each concept was rated individually. Especially the concepts of actors, objects, relations and attributes were mostly rated as “adequate”.



Regarding the CCD tool and its diagrams and different concepts the modeling with it was overall helpful and gave a better understanding about the policy contexts.

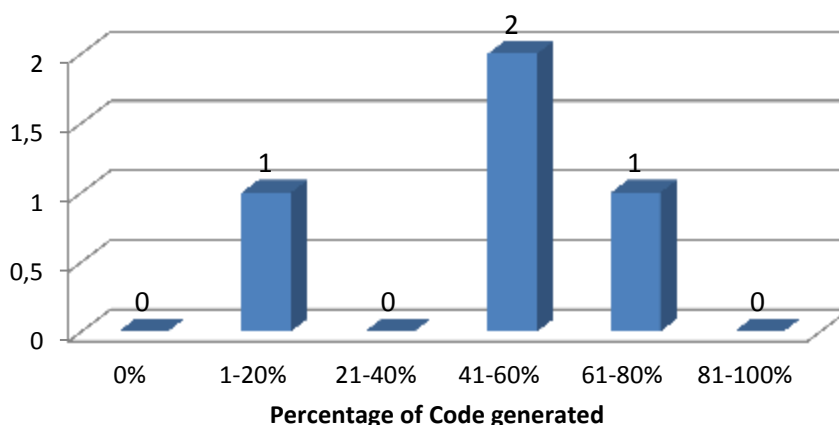
50. Is the modelling with the CCD Tool helpful to build a better understanding about the policy context(s) you dealt with? (N=4)



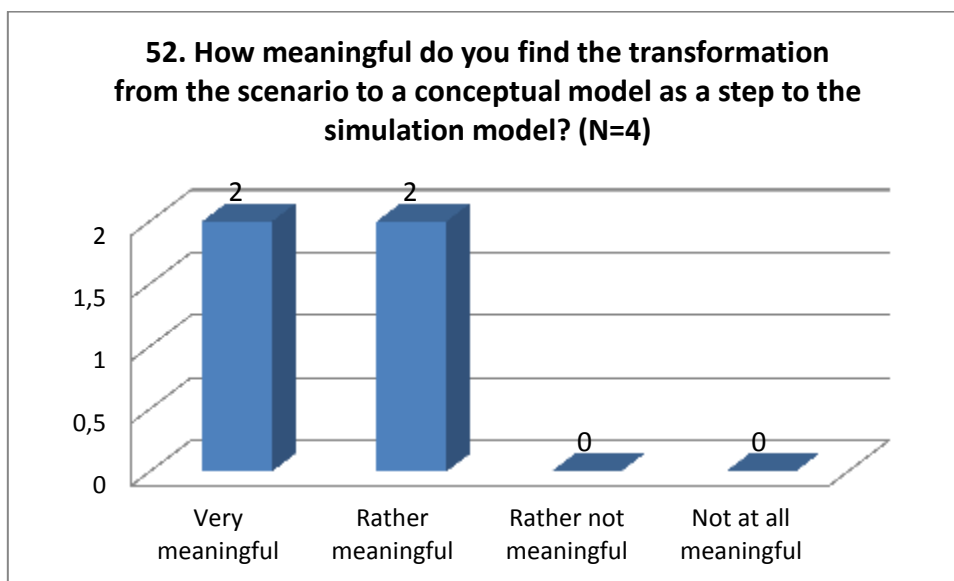
1.11 CCD2DRAMS

By approximating the percentage of the total simulation model code generated by the CCD2DRAMS Tool only one user have generated 1-20% of the model code by the CCD2DRAMS Tool. two users have generated 41-60% of the model code by the CCD2DRAMS Tool and another user generated even 61-80% of the model code by using the CCD2DRAMS Tool.

51. Approximate the percentage of the total simulation model code generated by the CCD2DRAMS Tool. (N=4)

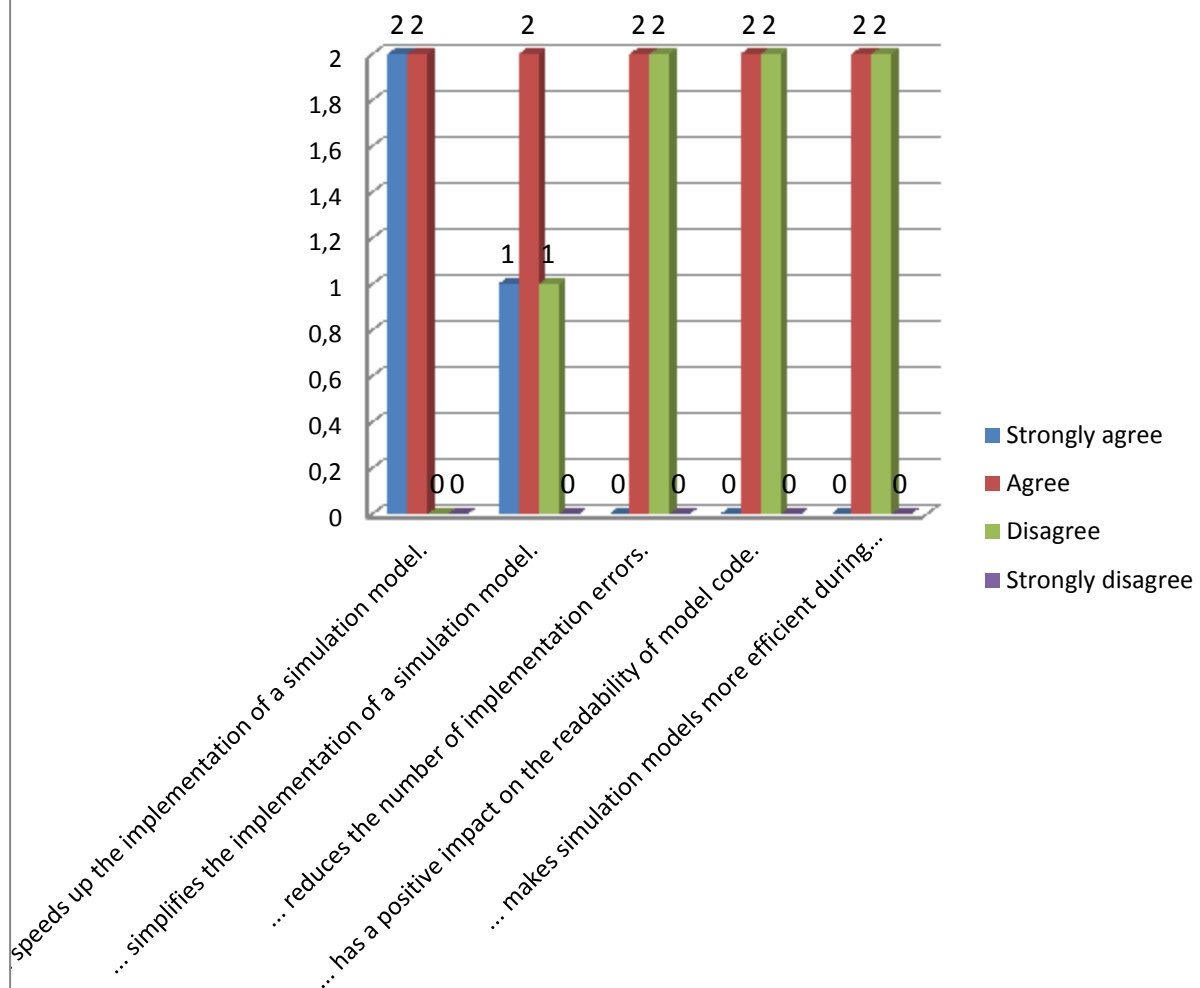


All the participants asked find the transformation from the scenario to a conceptual model as a step to the simulation model as “very meaningful” or “rather meaningful”.



To get a better picture of the CCD2DRAMS tool different assertions had been rated by the Policy Modelers.

53. Please rate how strongly you agree or disagree with each of the following assertions. To develop a CCD and use the CCD2DRAMS feature ... (N=4)



It's great to see that all the users "agree" or even "strongly agree" to the assertion that using the CCD2DRAMS feature speeds up the implementation of a simulation model. All the other assertions presented in the chart can't be confirmed or refute. The following suggestion is made by a Policy Modeler to improve the CCD2DRAMS feature within the CCD Tool:

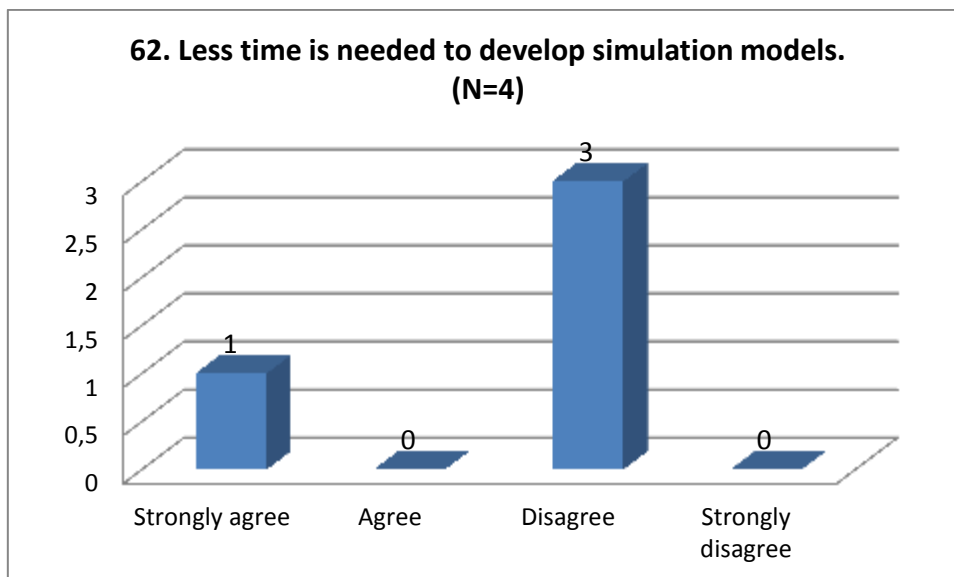
- It would be really good if the transformation tool were not to reproduce rule stubs where there is already a rule for the same agent type with the same rule name.

1.12 SIMULATION MODELS

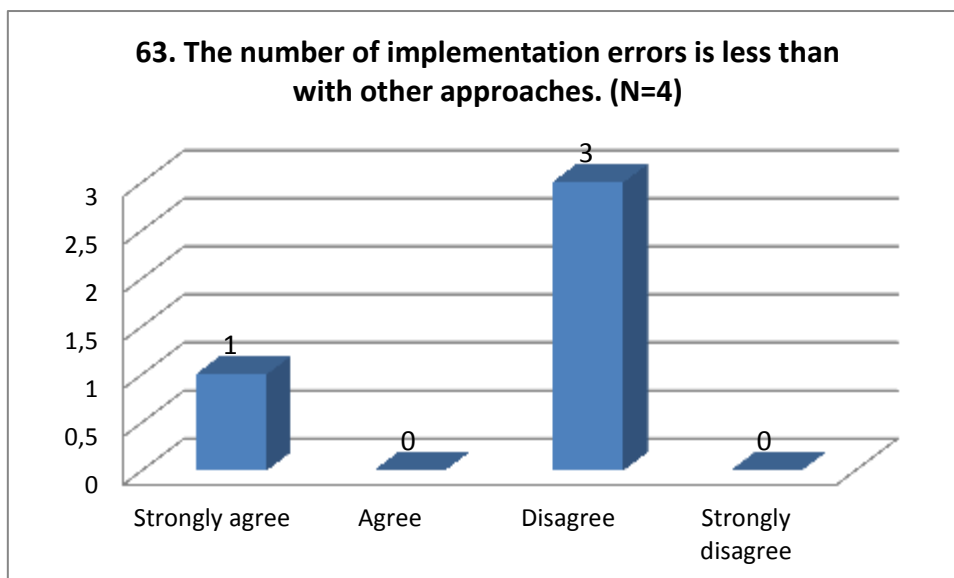
By asking the policy modelers if they have any difficulties with the installation of DRAMS or using DRAMS in Repast-based models nobody has any difficulties. Although suggestions were made to improve DRAMS and to strengthen the DRAMS/Repast Simulation Environment:

- The new mathematical expressions factory seems to be very slow. If that could be speeded up, it would be good but the user experience in using it is already very good.

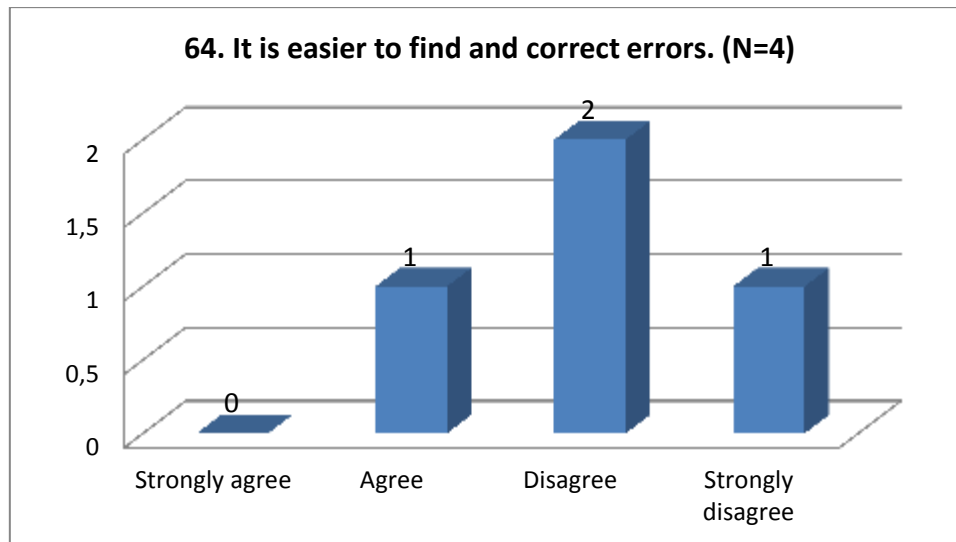
With the following assertions it should be tried to compare the DRAMS/Repast Simulation Environment with similar approaches (e.g. JESS/Repast, SDML). All the Policy Modelers agreed on the assertion that it is easier to develop complex models. But 3 of 4 Policy Modelers didn't agree on the assertion that less time is needed to develop simulation models.



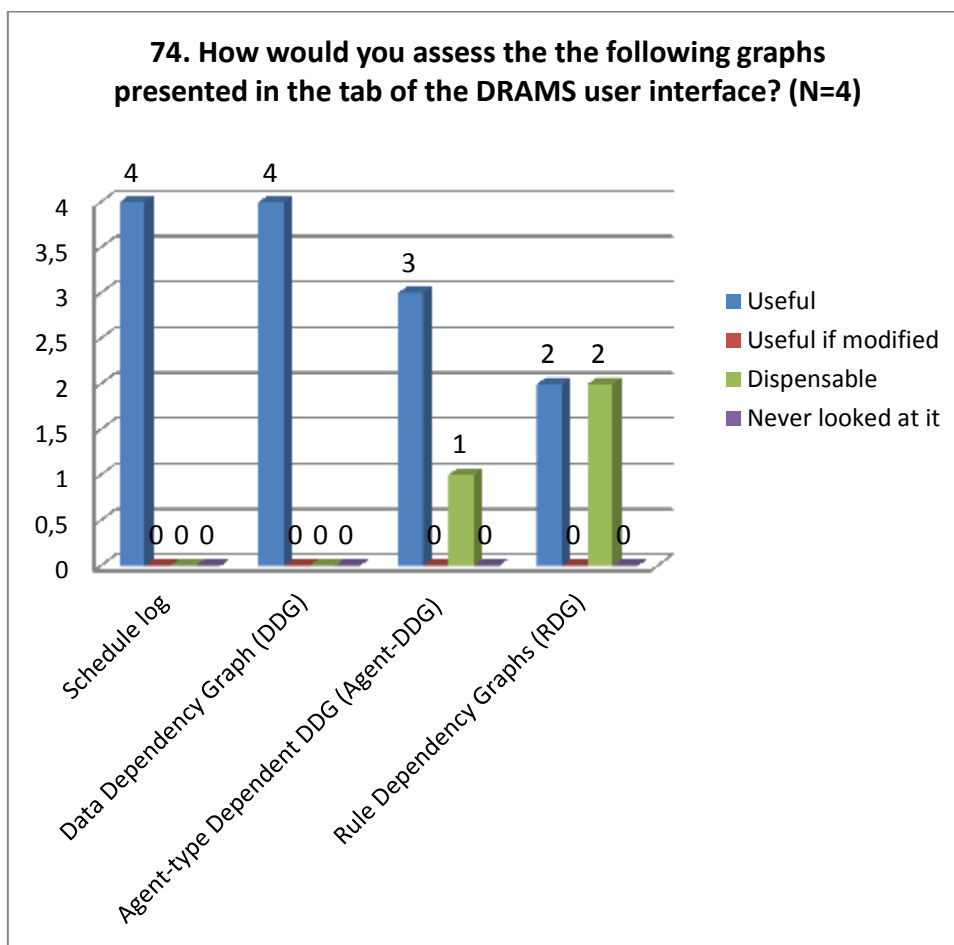
Also 3 of 4 Policy Modelers disagreed that the number of implementation errors is less than with other approaches. This means that errors while implementing DRAMS occurred more frequently than with other approaches.



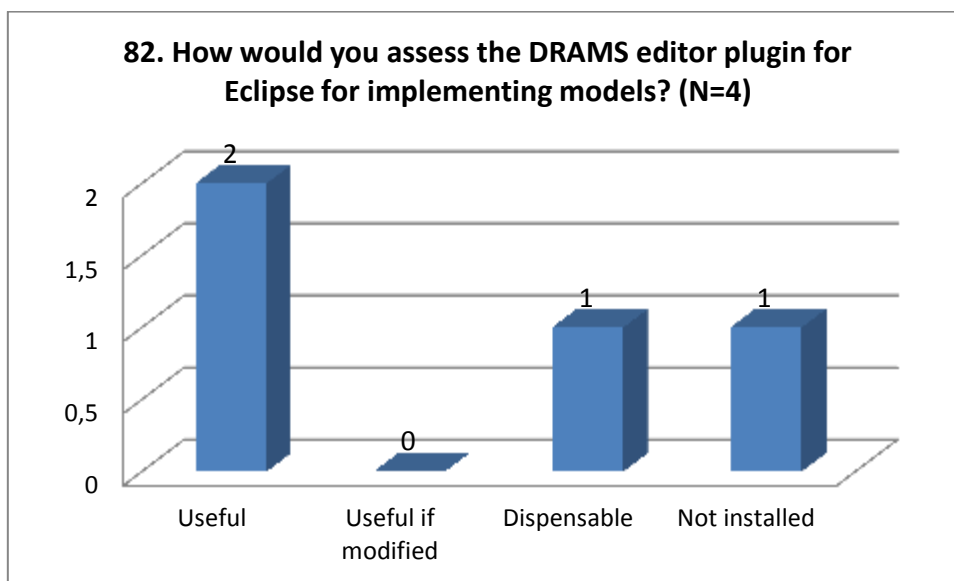
Error correction is therefore a big problem and some of the Policy Modelers didn't find it easy to correct them in the simulation model. Although sufficient debugging facilities aren't available for 2 of 4 Policy Modelers.



In general the information presented in the DRAMS user interface could also be rated as useful including the schedule log information that is presented in the "Schedule" tab of the DRAMS user interface and the overall data dependency graph which is presented in the "DDG" tab of the DRAMS user interface. But the agent-type dependent data dependency graphs presented in the "Agent-DDG" tab and the rule dependency graphs presented in the "RDG" tab of the DRAMS user interface hasn't been rated as clearly as the other information. Many reasons could lead to this results which can't be revealed. No suggestions were made for improving the different tabs of the DRAMS user interface.



By assessing the DRAMS editor plugin for Eclipse for implementing models 2 of 4 users rated it as useful, one user rated it as dispensable and one user didn't install the editor plugin at all.



For improving the DRAMS editor plugin for Eclipse and make it more useful one Policy Modelers said that more developer support is needed.

Finally the opportunity to provide any further comments or recommendations was given and the following recommendations and comments were made:

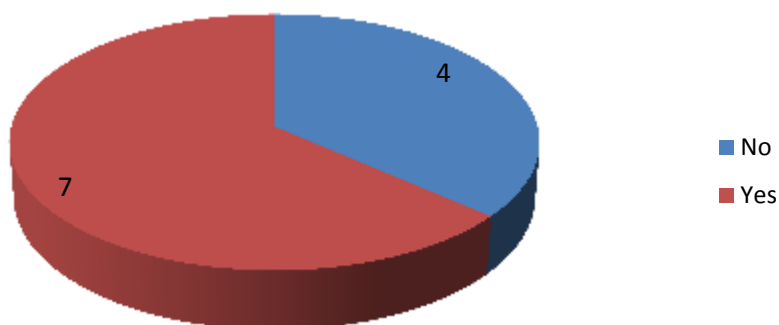
- Everything from the CCD (including annotation) tool to DRAMS is very useful and promising though there are still some minor implementation issues to be resolved. However, I have yet personally to meet a stakeholder interested in using the collaboration platform. However, the development of the London model is taking place largely without stakeholder engagement so far. Once the model is more fully developed, I will try to interest stakeholders in using the collaboration platform.
- The more stakeholders are important and influential the less they spend time on PCs, at least in Campania

ANNEX B: EVALUATION AND RESULTS OF QUESTIONNAIRES – SECOND ITERATION

1. STAKEHOLDER QUESTIONNAIRE

The second iteration of the stakeholder questionnaire is divided into two blocks. The first block containing of 20 questions is addressed to the stakeholders who didn't take part in the first round of the online collaboration. The second block with about 34 questions is addressed to the stakeholders who have taken part in the first round. As you can see most of the stakeholders in the 2nd iteration have taken part in the first round as well.

**ST 1.1. Did you take part in the first round of the online collaboration and fill in the evaluation questionnaire?
(N=11)**

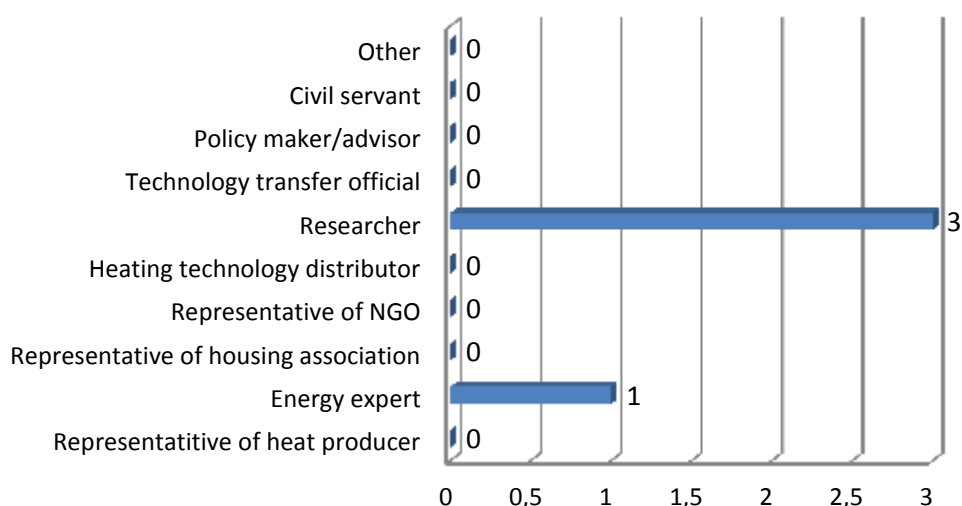


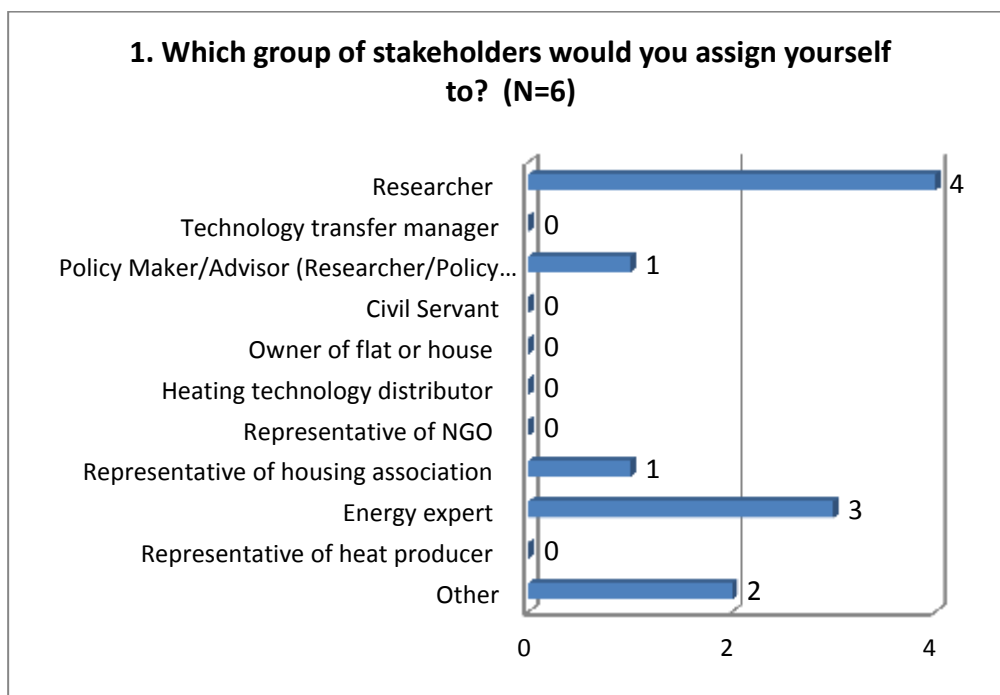
The following results don't consist of questions where no single answer was given. Although it has to be mentioned that because of the quantity of stakeholders participating in this survey, no significant statements can be made. Only current trends of the use of the collaboration platform can be derived. Because of some repetitive questions in the 1st and 2nd iteration those results were compared against each other.

1.1. STAKEHOLDERS WHO DIDN'T TAKE PART IN THE FIRST ROUND

As in the 1st iteration the question was asked which group the different stakeholders would assign themselves. Only 4 stakeholders didn't take part in the first iteration and most of them are researchers. One stakeholder is an energy expert. This majority of the two groups of stakeholders can also be found in the results of the 1st iteration which is listed under the second one.

ST 1.2. Which group of stakeholders would you assign yourself to? Please choose one. (N=4)

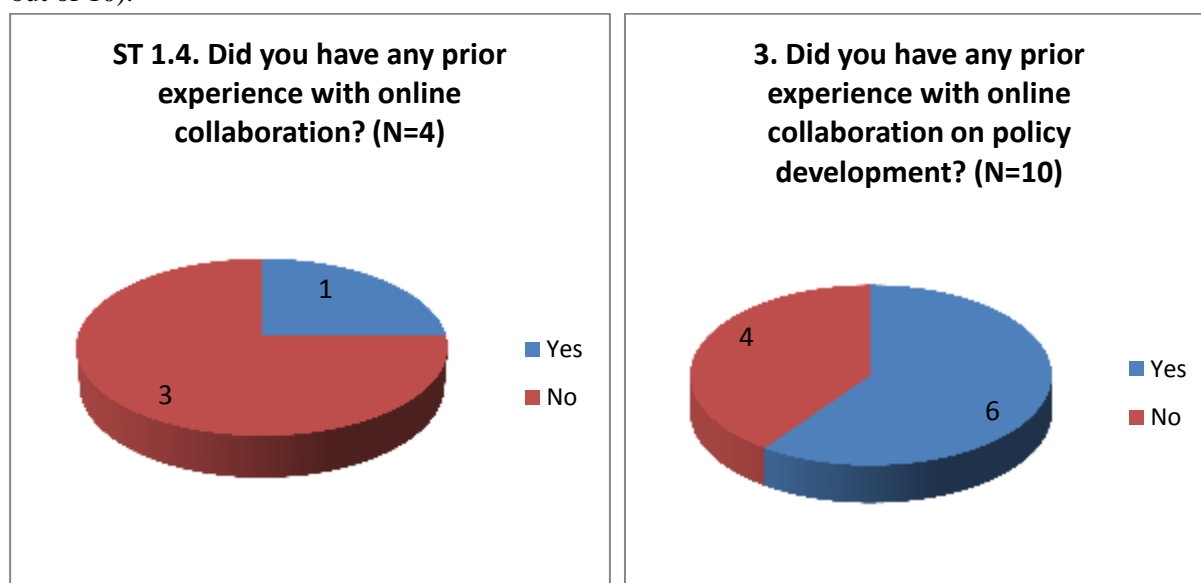




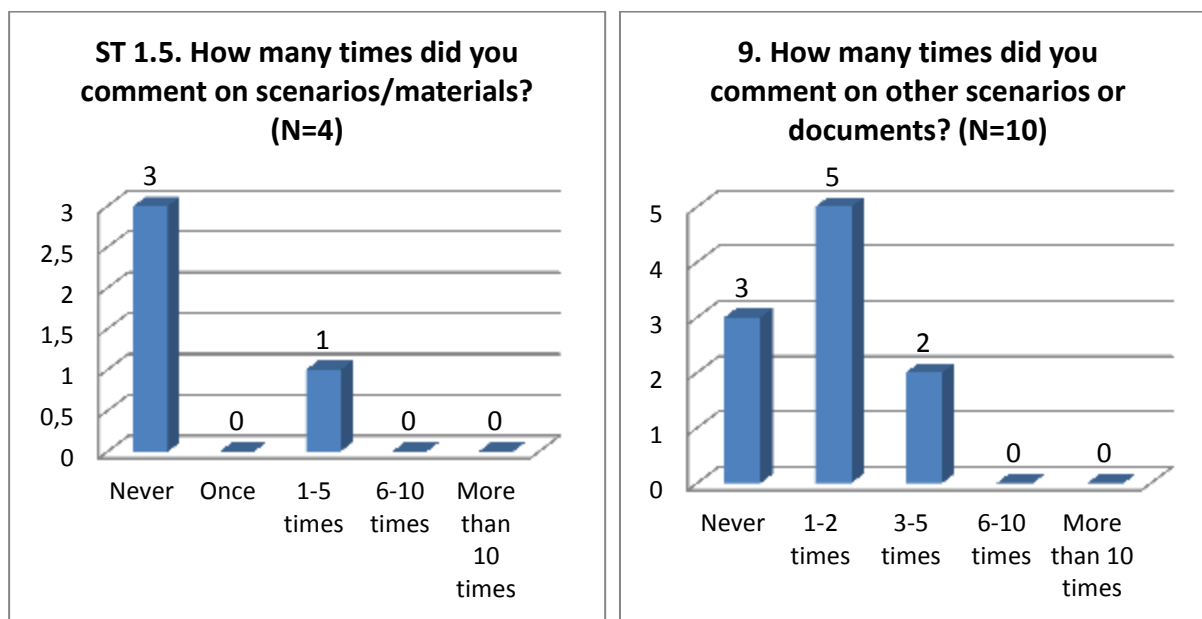
Asking about the reason why the stakeholders take part in the online collaboration the following statements were given:

- My goal was to help solving problematic of the heat energetics based on real knowledge of heat market in Slovak republic.
- A colleague asks me to do it.

Of course an interesting question is whether the stakeholders have had any prior experience with online collaboration. Most of the stakeholders who didn't take part in the first iteration also haven't any prior experience with online collaboration (3 out of 4). In comparison to the results in the first iteration on the right hand side more stakeholders had experiences with online collaboration before (6 out of 10).

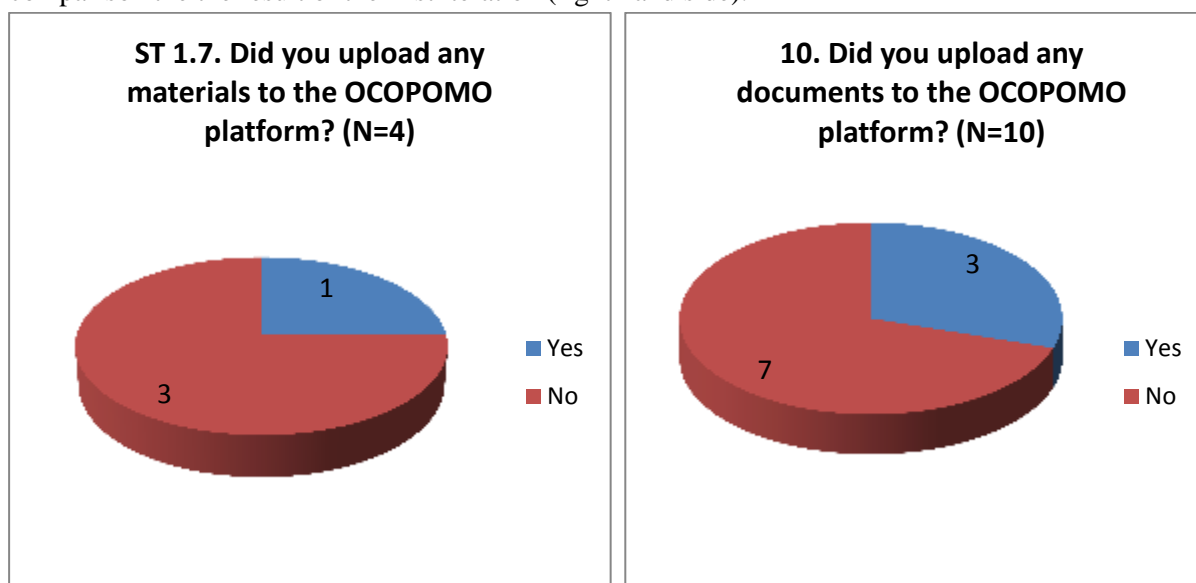


Most of the stakeholders in the second iteration didn't comment on scenarios or materials (3 out of 4). This question was also asked in the first iteration where you can see those results on the right hand side.



Commenting on scenarios and materials caused no problems for any stakeholder in the first as well as in the second iteration of the questionnaire.

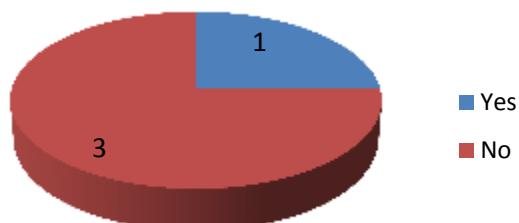
The minority did upload materials to the OCOPOMO platform (1 out of 4). This result is the same in comparison the the result of the first iteration (right hand side).



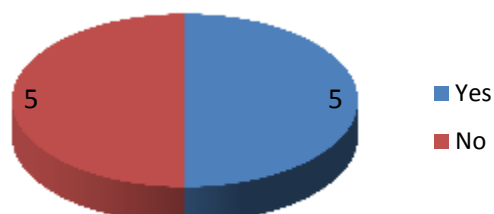
The one who uploaded documents and other materials to the OCPOMO platform in the second iteration had no problems with it. This outcome is the same as in the first iteration.

While half of the stakeholders did use the search functionality of the OCPOMO platform in the first iteration sadly most of the stakeholders in the second round didn't use the search functionality at all (3 out of 4). Both results can be seen in the following charts. As in all the other compared results the 2nd iteration is shown on the left hand side and the 1st iteration on the right hand side. The one who used the search functionality didn't encounter any problems.

ST 1.10. Did you use the search functionality of the OCOPOMO platform? (N=4)

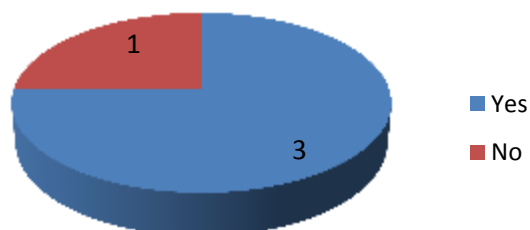


11. Did you use the search function of the OCOPOMO platform? (N=10)

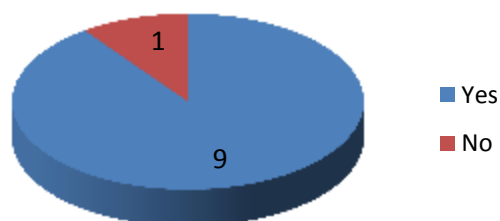


Most of the stakeholders (3 out of 4) did read the documents regarding the policy presented at the platform which is similar to the answers in the first iteration.

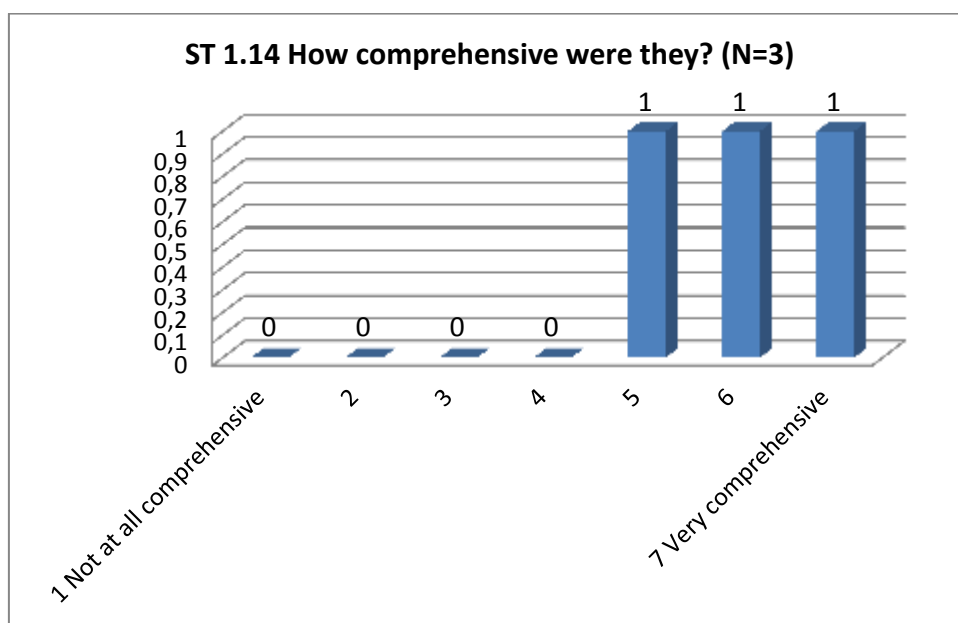
ST 1.13 Did you read some of the documents regarding the policy presented at the OCOPOMO platform? (N=4)



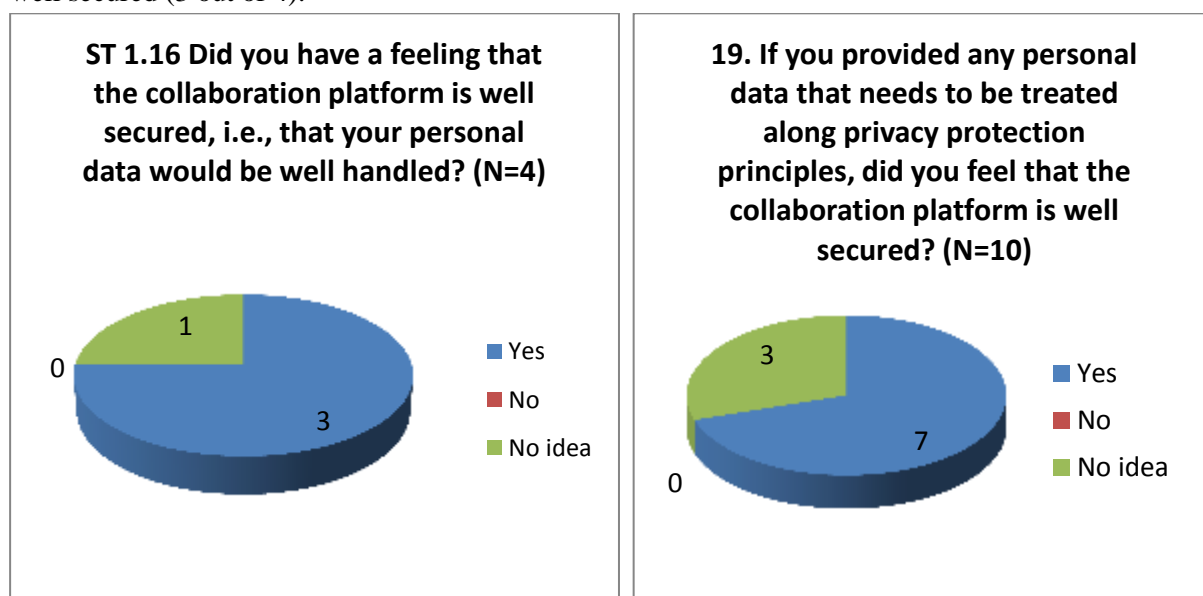
12. Did you read any background documents regarding the policy presented at the OCOPOMO platform? (N=10)



By rating the comprehensiveness of these documents the stakeholders were given a 7-point-likert-scale. Overall the comprehensiveness is rated with 5 or higher which means that the documents were very comprehensive.

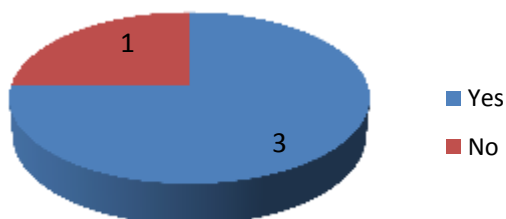


A similar result in comparison to the first iteration is also given in terms of security of the collaboration platform. Most of the stakeholders do feel that the platform and their personal data is well secured (3 out of 4).

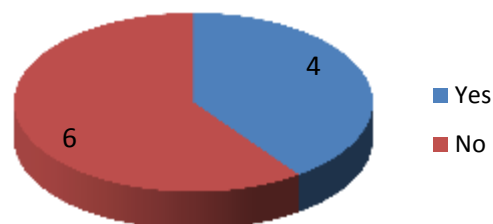


During the time the opinions about closed collaboration have changed slightly. On the left hand side are the results of the 2nd iteration whereas on the right hand side the results of the 1st iteration are shown. It has to be taken into account that the questionnaire of the second iteration only consists of 4 stakeholders who answered the question. But the majority of the stakeholders in the second iteration like the idea of a closed collaboration procedure which was different in the first iteration.

ST 1.17. Did you like the idea of closed collaboration procedure of inviting only chosen stakeholders? (N=4)

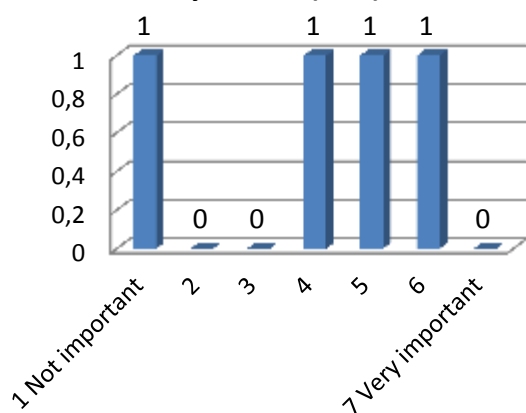


17. Are you in favour of collaboration with a limited set of stakeholders, i.e., invitation-only participation of stakeholders? (N=10)

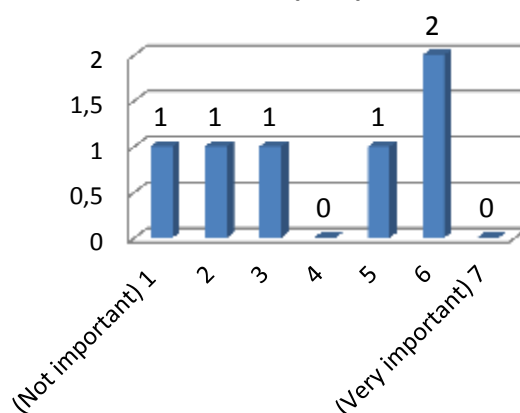


The next question aimed at the importance to know the stakeholders by name. Between the first and the second iteration of the online questionnaire the importance increases. Comparing the two results more stakeholders relatively found it more important to know other stakeholders by name.

ST 1.19 How important was it for you to know other stakeholders by name? (N=4)



18. How important was it for you to know other stakeholders by name? (N=6)



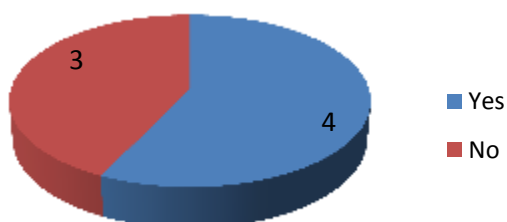
By asking why it was important or not important to know the stakeholders by name one comment was made:

- Exchanging of knowledge from the same problematic

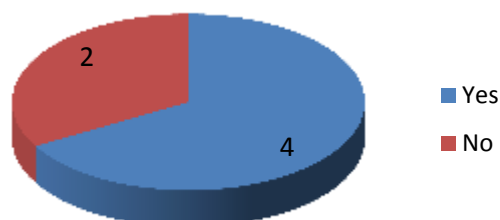
1.2. STAKEHOLDERS WHO TOOK PART IN THE FIRST ROUND

Most of the stakeholders who took part in the first iteration also took part in the workshop (4 out of 7). This result is quiet similar to the evaluation in the first round.

ST 2.1. Did you take part in the workshop launching the second round of the online collaboration? (N=7)

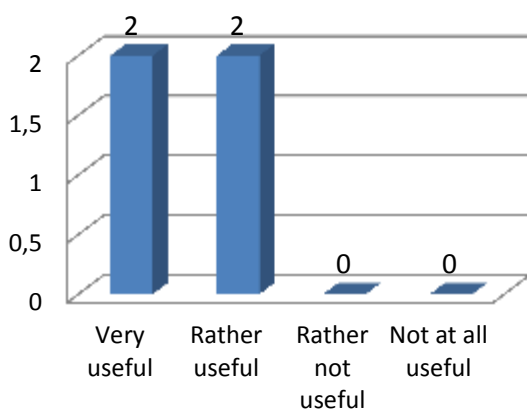


5. Did you take part in the workshop launching the online platform? (N=6)

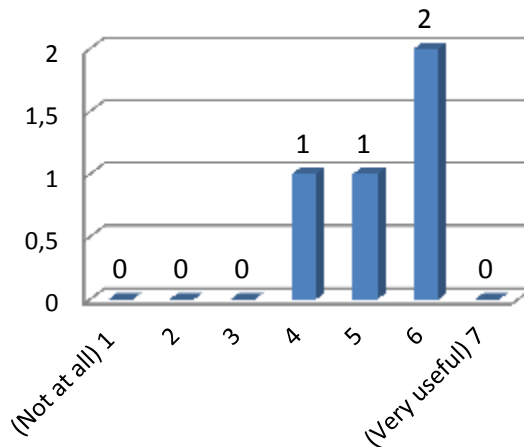


The workshop was “rather useful” to “very useful” by asking the stakeholders in the second iteration. A slightly different result was given in the first round. Where some of the stakeholders were very neutral according to the usefulness of the workshop.

ST 2.2. Did you find the workshop useful to understand your role in online collaboration? (N=4)

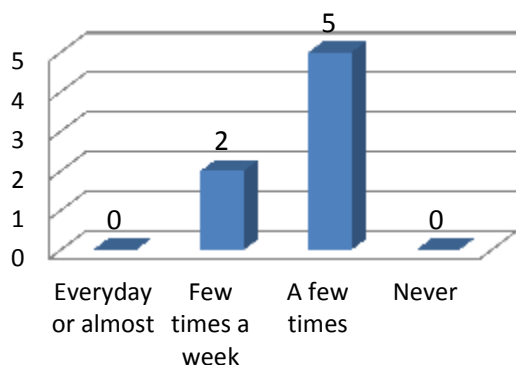


5.1. Did you find the workshop useful? (if yes) (N=4)

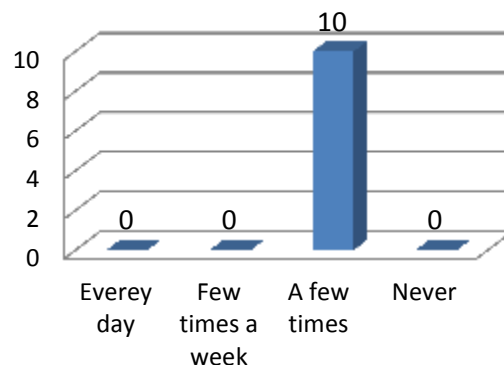


Although the OCPOMO platform was visited more frequently compared to the first iteration. There were only seven stakeholders who answered the question about how often they have visited the platform during the second round but from those seven two of them visited the platform “a few times a week” which is more often than the stakeholders in the first iteration (right hand side).

ST 2.8. How often did you visit the OCOPOMO platform during the second round of the online collaboration? (N=7)

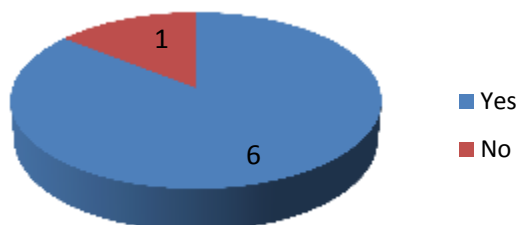


4. How frequently have you visited the OCOPOMO platform during the online participation period? (N=10)

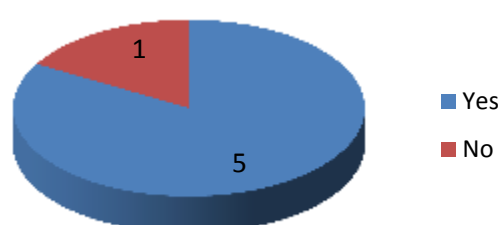


Most of the stakeholders did get the chance to know the point of view of other stakeholders. Both results in the first and second iteration are in this case very similar. On the left hand side you can see that 6 out of 7 stakeholders in the second iteration got to know the point of view of other stakeholders and in the first iteration on the right hand side there were 5 out of 6 stakeholders.

ST 2.15. Did you get to know the point of view of any other stakeholder(s) presented at the OCOPOMO platform? (N=7)

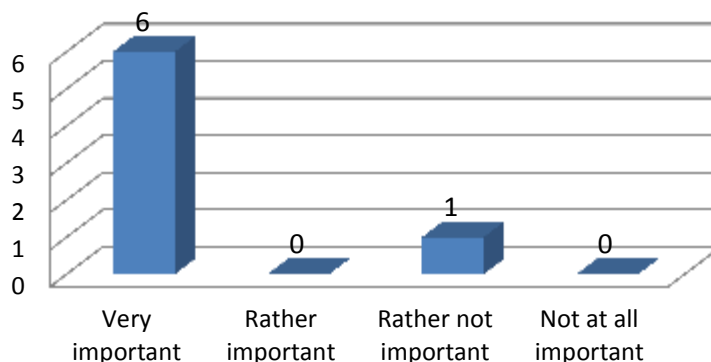


16. Did you have a chance to get to know the point of view of other stakeholders presented at the OCOPOMO platform? (N=6)



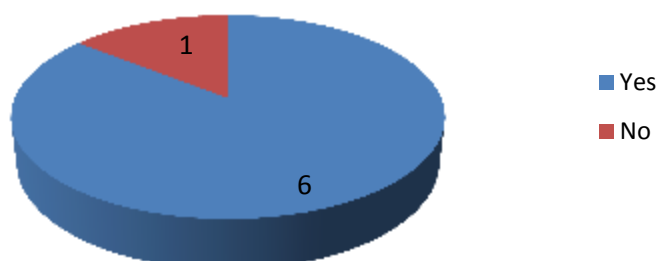
In addition to that the different viewpoints were rated as “very important” for 6 out of 7 stakeholders in the second iteration.

ST 2.17. How important was it for you to see different viewpoints of other stakeholders? (N=7)



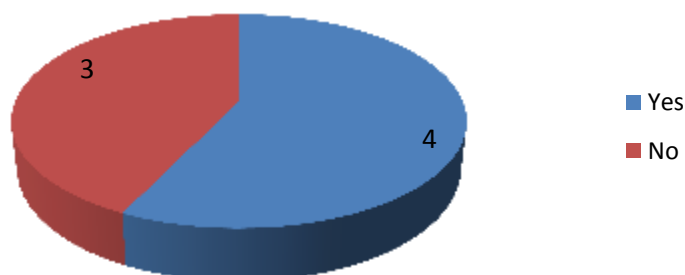
Taking part in the OCOPOMO collaboration platform although causes a better understanding of policy cases for 6 out of 7 stakeholders. These result shows how supportive the collaboration platform can be for policy cases.

ST 2.19. Did your understanding of a policy case improve after taking part in the collaboration platform? (N=7)

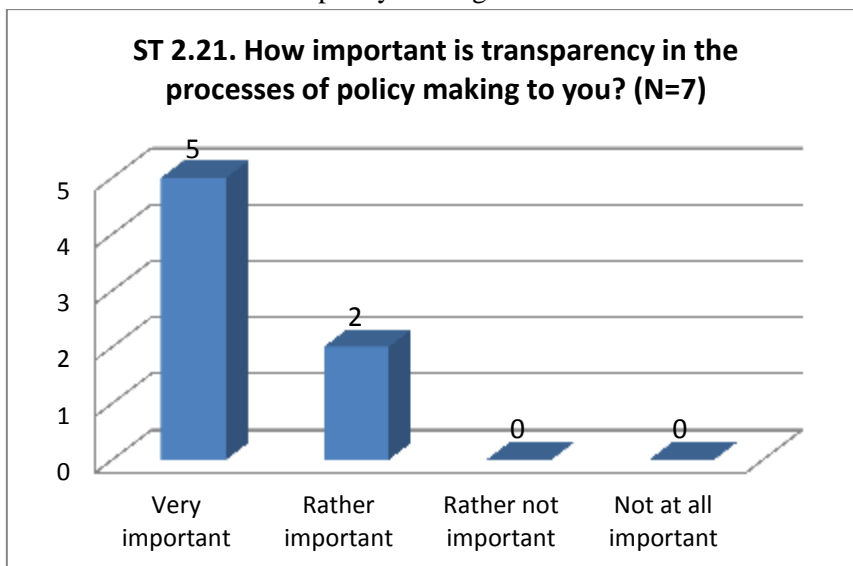


For the policy domain and the simulation output 4 out of 7 stakeholders found two rounds enough to get the common understanding.

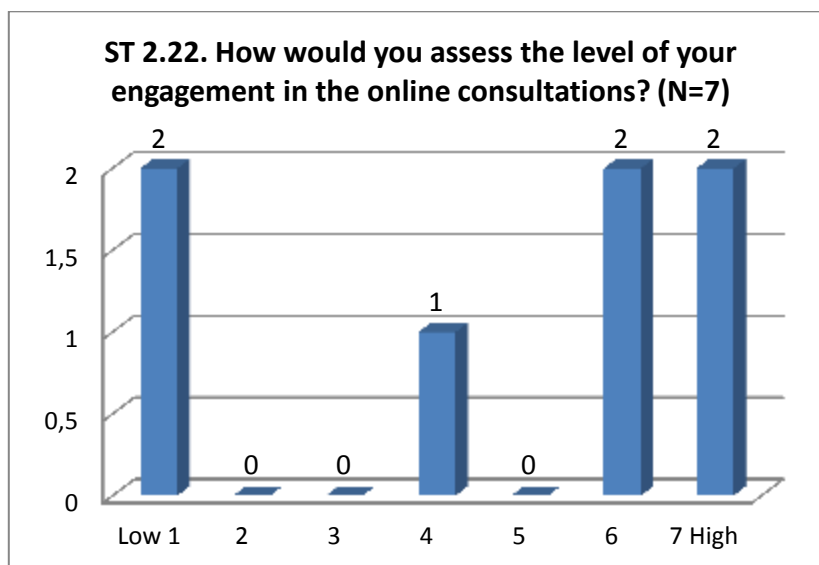
ST 2.20. Were two rounds enough for you to reach a common understanding of the policy domain and simulation output? (N=7)



Transparency in the process of policy making is “very important” for 5 out of 7 stakeholders. Two stakeholders evaluate transparency as “rather important”. Transparency is therefore an issue which has to be taken into account in the context of policy making.



The stakeholders had a different level of engagement in the online consultation. 2 out of 7 stakeholders had a very low engagement whereas 4 out of 7 stakeholders had a very high engagement.



To enhance the engagement 4 out of 7 stakeholders had no idea what could have been done. 2 out of 7 stakeholders didn't feel the need to improve the engagement in the process.

ST 2.23. Is there anything we could have done to enhance your engagement in the proces? (N=7)

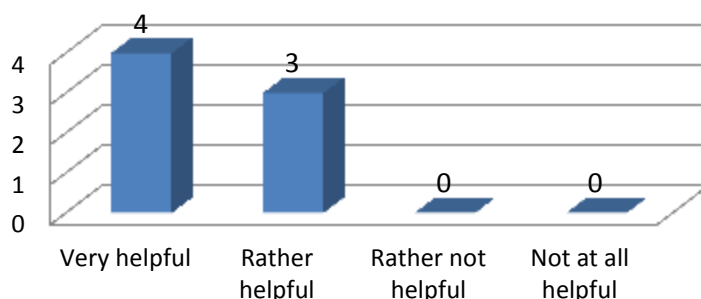


To enhance the engagement in the process only one stakeholder gave a proposition what could have been done:

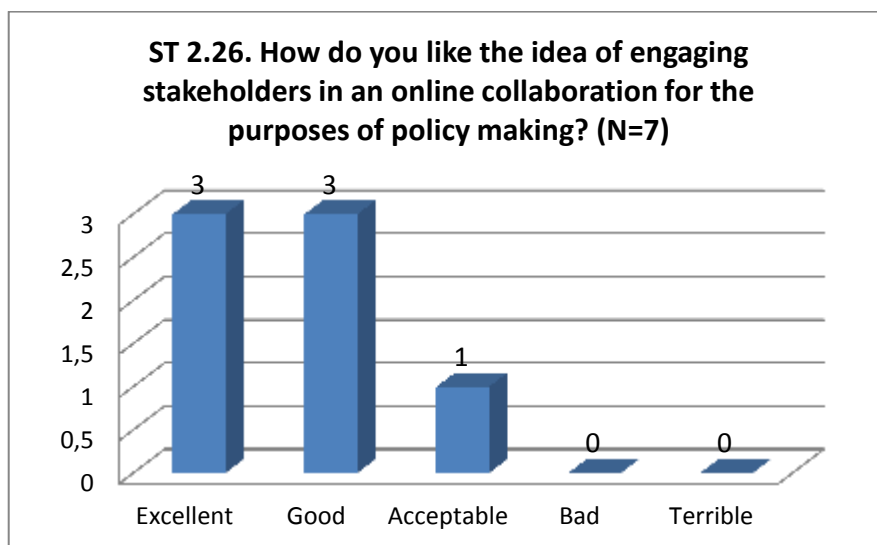
- Better communication with companies or persons who are working in this process during longer time.

Regarding the outcome of the OCOPOMO project it could be helpful in the development of the policy for all the stakeholders taken part in the online survey.

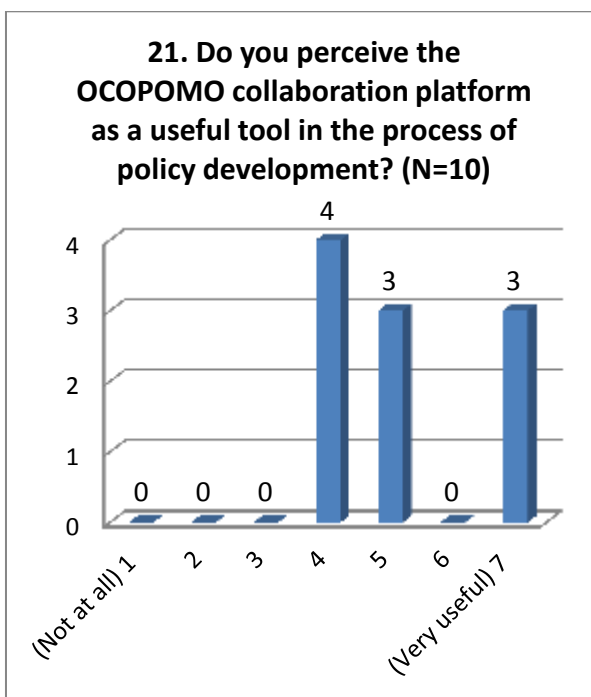
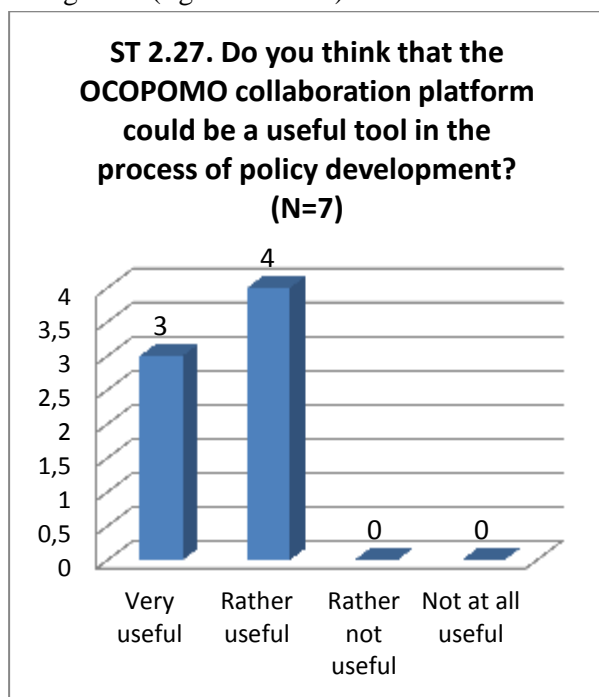
ST 2.25. In your opinion, could the outcome of the OCOPOMO project presented during the second round be helpful in the development of the policy? (N=7)



The idea of engaging stakeholders in an online collaboration for the purpose of policy making is also a “good” even an “excellent” idea for most of the stakeholders.

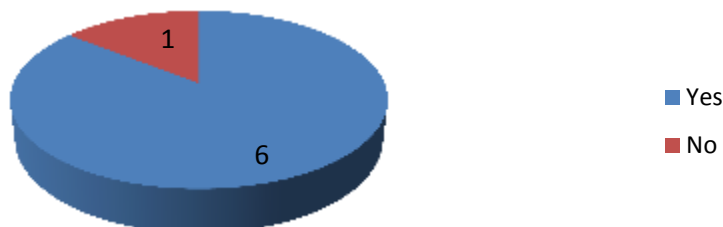


In the process of policy development all the stakeholders thought that the OCOPOMO platform is ja useful tool. The questionnaire in the first iteration have also asked this question but with a different rating scale (right hand side).



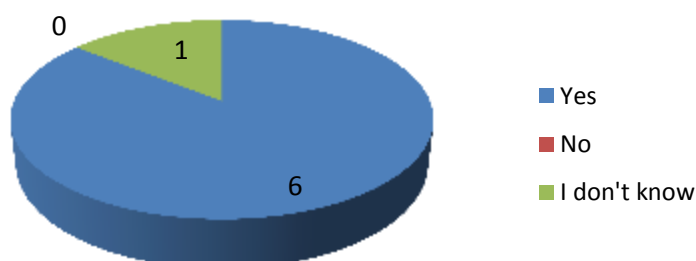
By asking about the transparency of policy development by applying the OCOPOMO approach using for example scenarios or CCD almost every stakeholder agreed that OCOPOMO would be a contribution to the transparency.

ST 2.29. In your opinion, would applying the OCOPOMO approach (i.e., development of scenarios, CCD, model-based scenarios and online consultations) contribute to the transparency of policy development? (N=7)

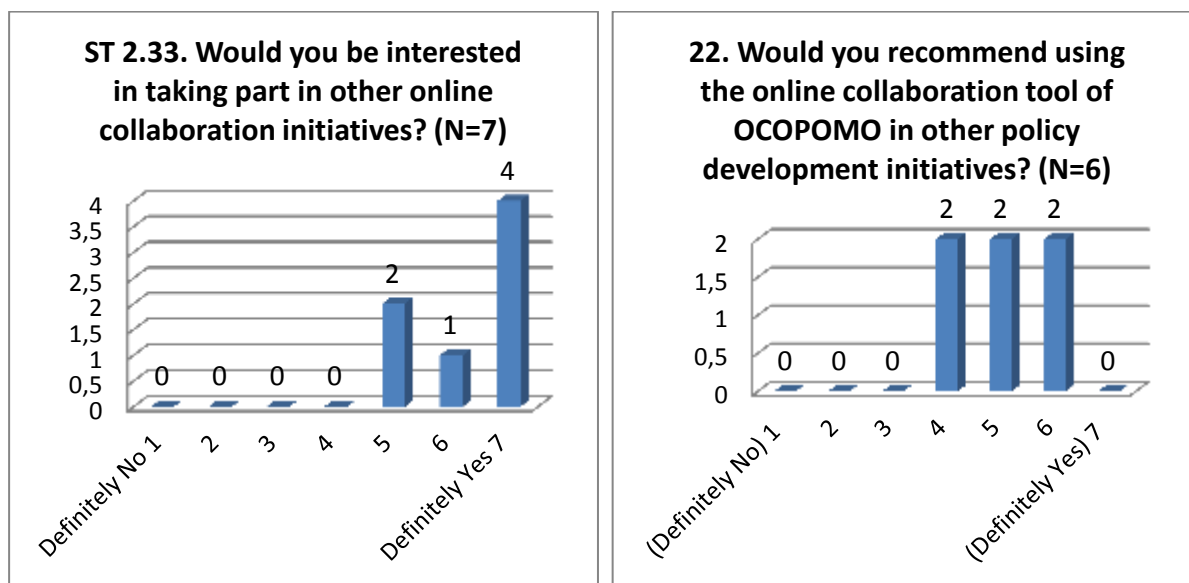


Would stakeholders recommend the OCOPOMO platform to other colleagues? 6 out of 7 stakeholders in our 2nd round survey would tell colleagues about the OCOPOMO platform.

ST 2.31. Would you recommend the OCOPOMO platform to your colleagues? (N=7)



A slightly different question with more or less the same intention was asked according to other online collaboration initiatives in both iterations. In the first iteration it was asked if the online collaboration tool of OCOPOMO could be used in other policy development initiatives (right hand side) whereas the question in the second iteration wanted to know if the stakeholders would be interested in taking part in other online collaboration initiatives generally (left hand side).



One stakeholder did share a remark according to the OCOPOMO platform at the end of the survey:

- Some questions in questionnaire should have "partially" answer variant, usability of OCOPOMO tools can be improved if the tablets and smart phones will be supported.

2. FACILITATOR QUESTIONNAIRE

The questionnaire of the facilitators is divided into the following sections:

1. OCOPOMO Platform
2. Model-Based Scenarios

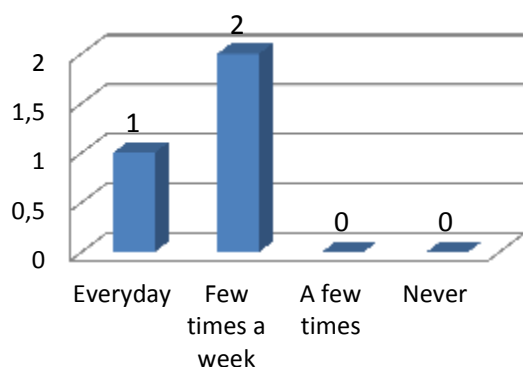
Some of the questions in the survey are not mentioned because there were no results given. Although according to the small number of participants the results are not significant and only give a tendency what the facilitators think about the OCOPOMO approach. Results from the first iteration are also taken into account were it was possible. Therefore the results of the first iteration are on the right hand side or directly under the results of the second iteration due to space.

2.1. OCOPOMO PLATFORM

Facilitators in the second iteration did visit the OCOPOMO platform as often as in the first iteration. By facilitators who answered the question in both rounds one facilitator visited the platform every day and two visited the platform a few times a week.

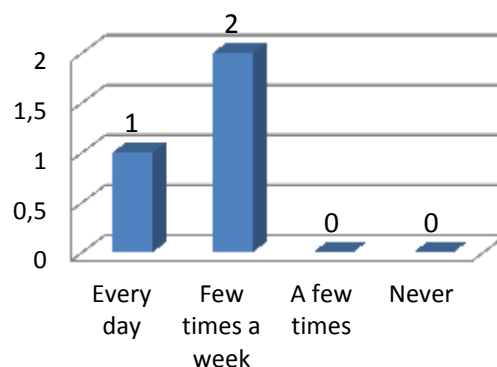
FA 1.1. How often have you visited the OCOPOMO platform during the online consultation period?

(N=3)



4. How frequently have you visited the OCOPOMO platform during the online participation period?

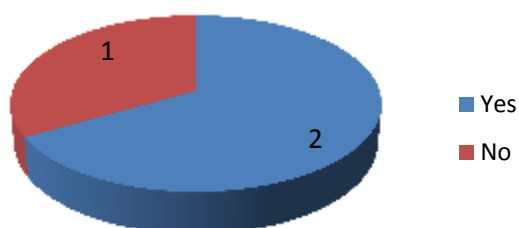
(N=3)



Asking about the workshops launching the online platform in the first and second iteration the results are exactly the same. On the left hand side are the results of the second iteration and on the right hand side the results of the first one. In both workshops only 2 out of 3 facilitators asked have taken part in the workshops.

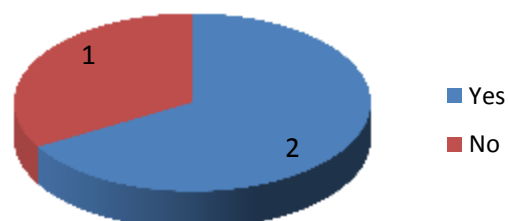
FA 1.2. Did you take part in the workshop launching the second round of the online collaboration?

(N=3)

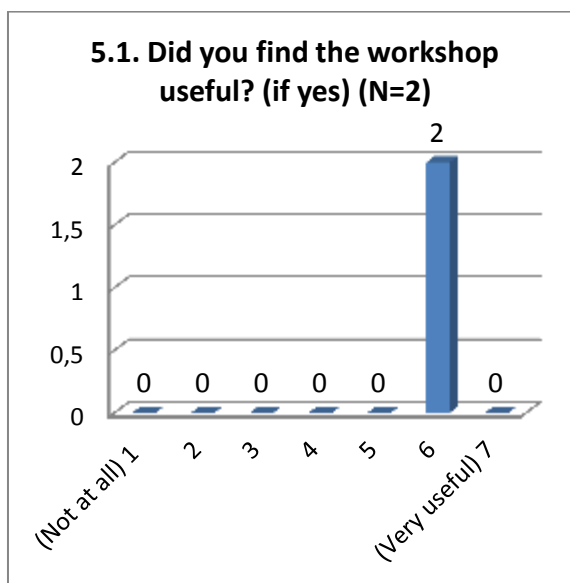
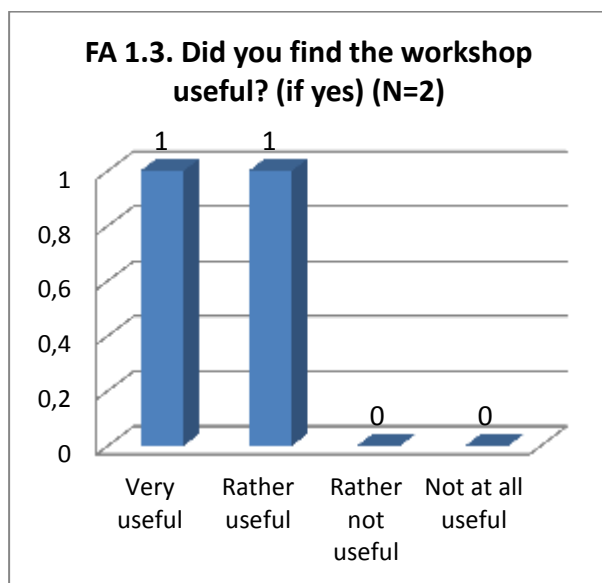


5. Did you take part in the workshop launching the online platform?

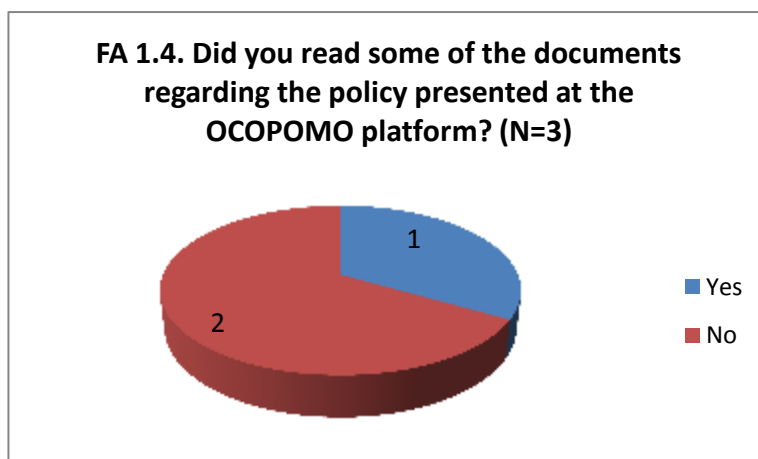
(N=3)



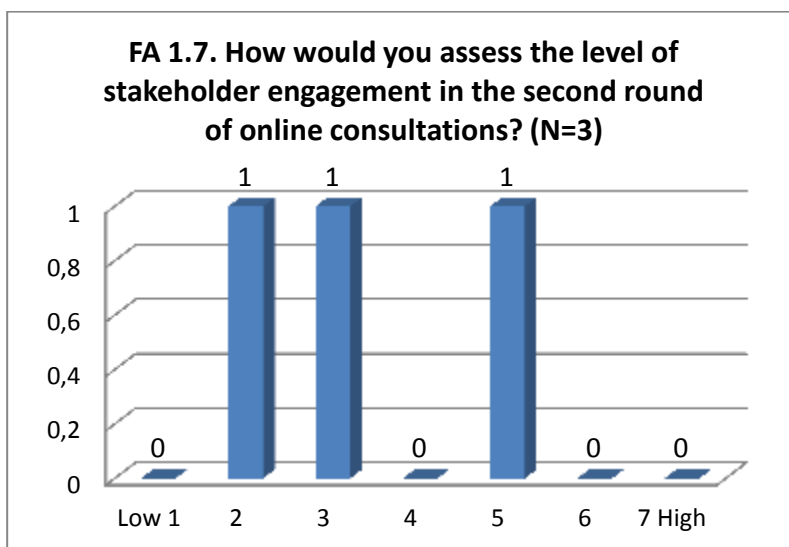
By using a different scale in the second iteration the results seems quiet the same while asking about the usefulness of the workshops. Only two facilitators in both iterations did answer this question with “rather useful” to “very useful”..



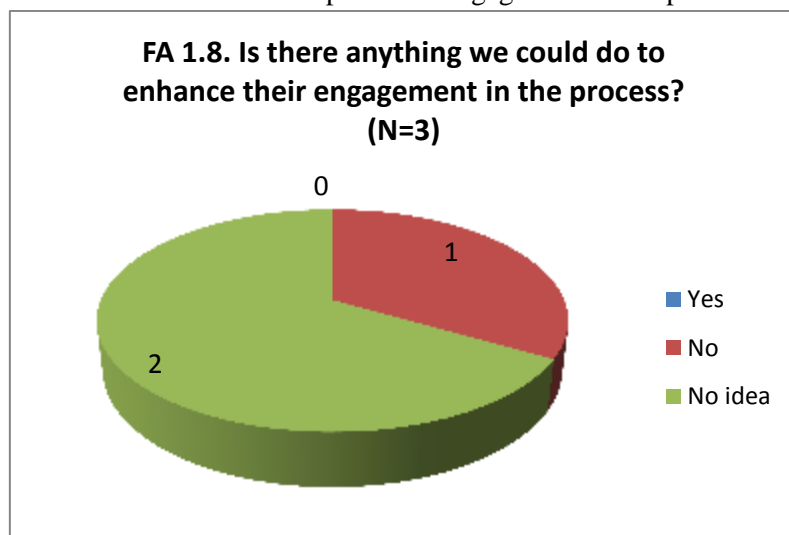
In the first iteration every facilitator (3 out of 3) read the background documents regarding the policy presented at the OCOPOMO platform. The documents regarding the policy presented in the second iteration weren't read as much as in the first round. Only 1 out of 3 facilitators read the documents. The question would be if the documents were the same as in the first round or are there any other documents?



The one who read the documents found it “rather comprehensive” by a 4-point-likert-scale with the options “very comprehensive”, “rather comprehensive”, “rather not comprehensive” and “not at all comprehensive”



Asking about the engagement one facilitator is absolutely satisfied with the engagement in the process whereas the other two had no idea how to improve the engagement in the process.

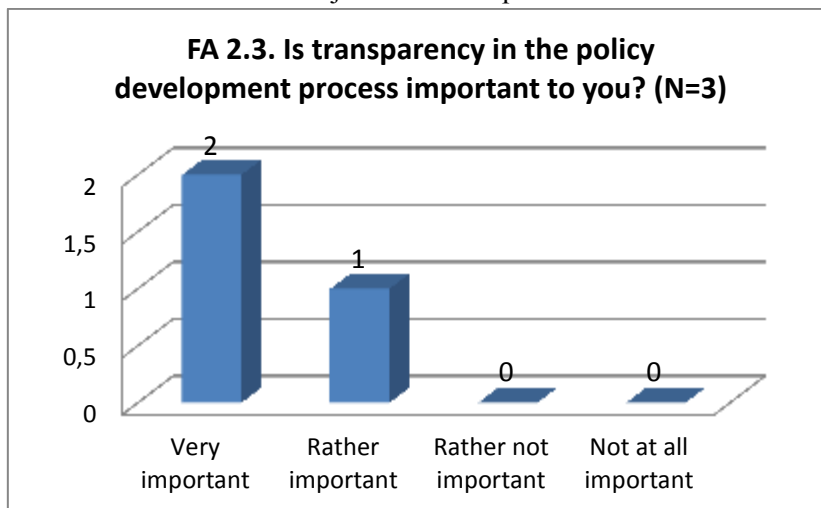


Asking about why the OCOPMO approach is or isn't useful for the purposes of the facilitators the following answers were given:

- My stakeholders do not want to spend significant amounts of time providing information or evaluating models. But they do find the links to evidence useful.
- The more stakeholders are senior and influential the less are likely to go online due to time/skills constraints.

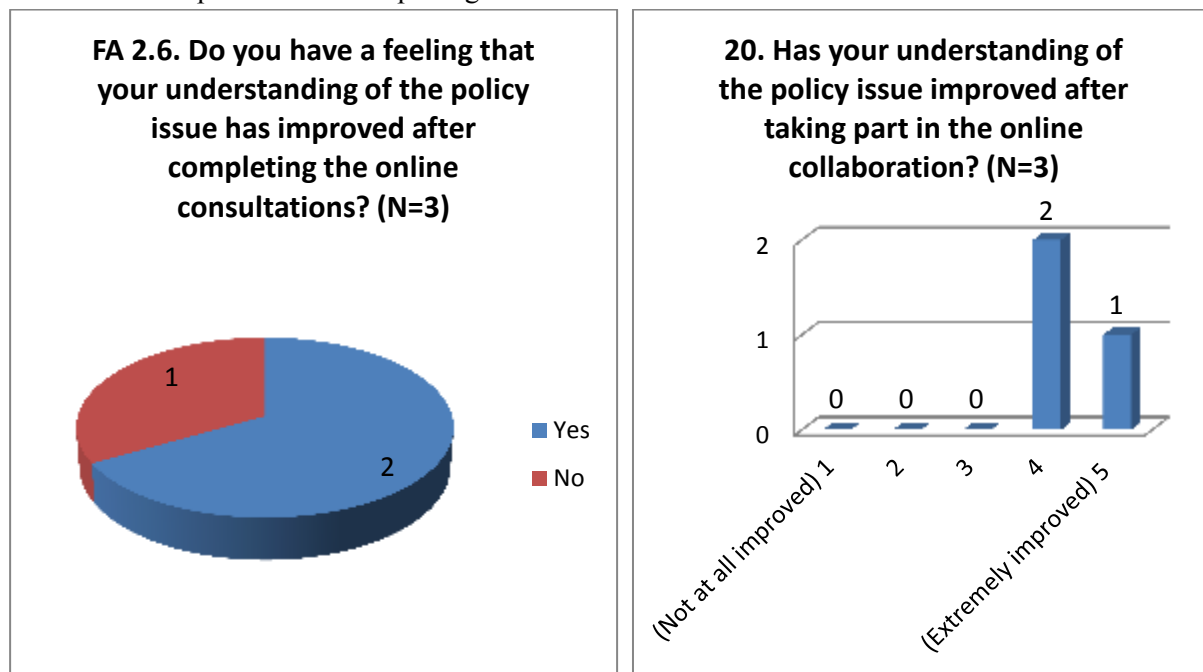
2.2. MODEL-BASED SCENARIOS

Asking about model-based scenarios every facilitator (3 out of 3) had the opinion that they are understandable. Although all the facilitators wanted the model-based scenarios to be used in other policy domains (3 out of 3). Transparency is also a “rather important” as well as a “very important” issue in the policy development process for the facilitators. 2 out of 3 facilitators found transparency “very important” and the other one found it just “rather important”.



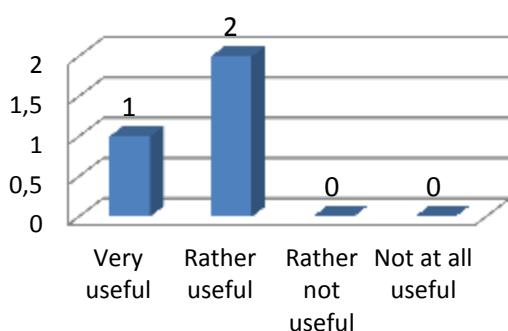
Besides that all facilitators agreed on the fact that model-based scenarios contribute the transparency of policy development (N=3).

Taking part in the online collaboration the understanding of policy issues has improved on the side of the facilitators. Even though the question in the 1st iteration was structured differently the results are almost the same. Just 1 out of 3 facilitators in the 2nd iteration said that the understanding of policy issues hasn't improved after completing the online consultations.

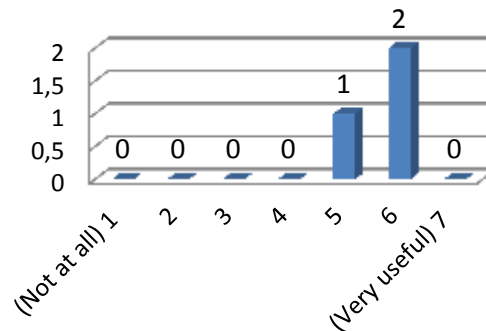


In the process of policy development the OCOPOMO collaboration is a “rather useful” or even a “very useful” tool for the facilitators. A slightly similar result is given in the 1st iteration according to a differently asked question with the same intention (right hand side).

FA 2.7. How useful do you think the OCOPOMO collaboration platform can be as a tool in the process of policy development?
(N=3)

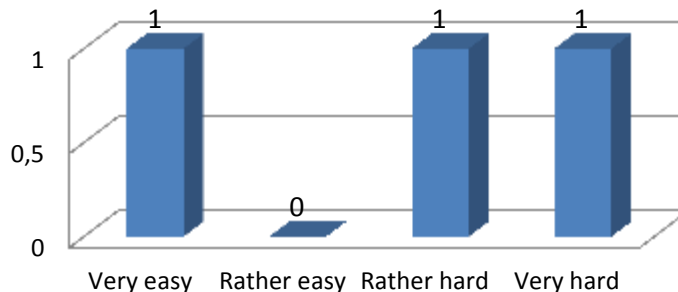


21. Do you perceive the OCOPOMO collaboration platform as a useful tool in the process of policy development?
(N=3)



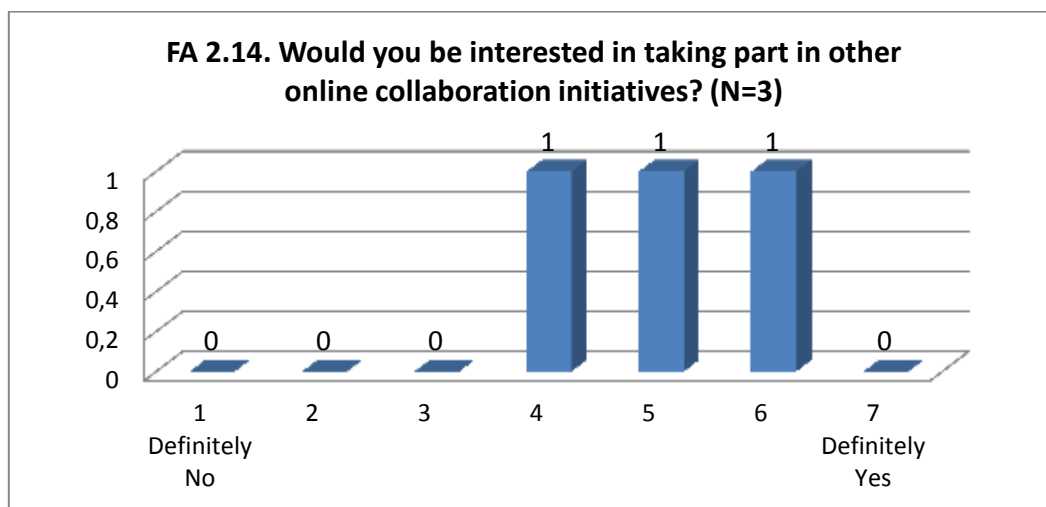
Asking about how easy it was to present and explain the simulation results using OCOPOMO most of the facilitators rated it as “rather hard” or “very hard” (2 out of 3). Even one facilitator said, that presenting and explaining the simulation results using the collaboration tool is “very easy”.

FA 2.9. How easy was it to present and explain simulation results using the collaboration tool?
(N=3)

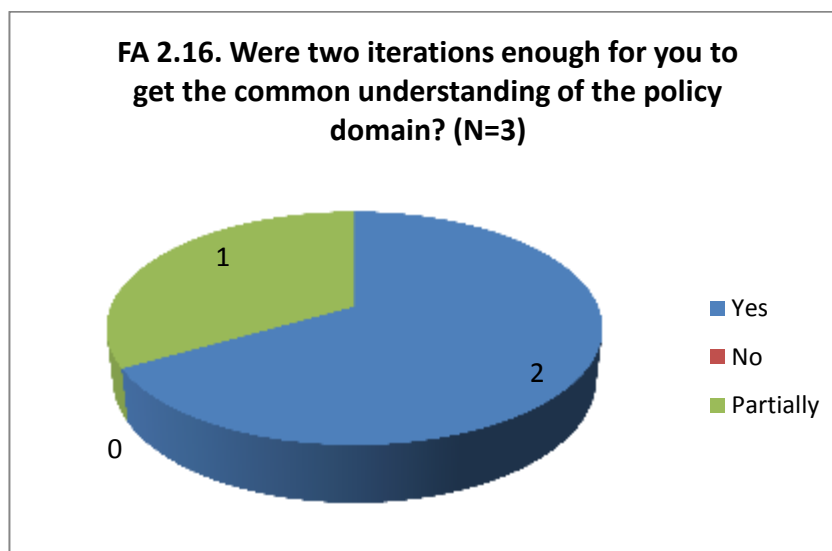


All the facilitators had also the opinion that it was possible to prove the traceability for the stakeholders comparing the evidence based and the simulation based scenarios (3 out of 3).

Jumping between scenarios and CCD elements were “rather easy” for facilitators using a 4-point-likert-scale (N=3).



All in all the facilitators would recommend the OCOPOMO platform to colleagues (3 out of 3). Two iterations were in fact enough for 2 out of 3 facilitators to get the common understanding of the policy domain.



By asking about changes in the process of iteration, e.g. timeframe, only one facilitator answered with “no”.

3. POLICY ANALYST QUESTIONNAIRE

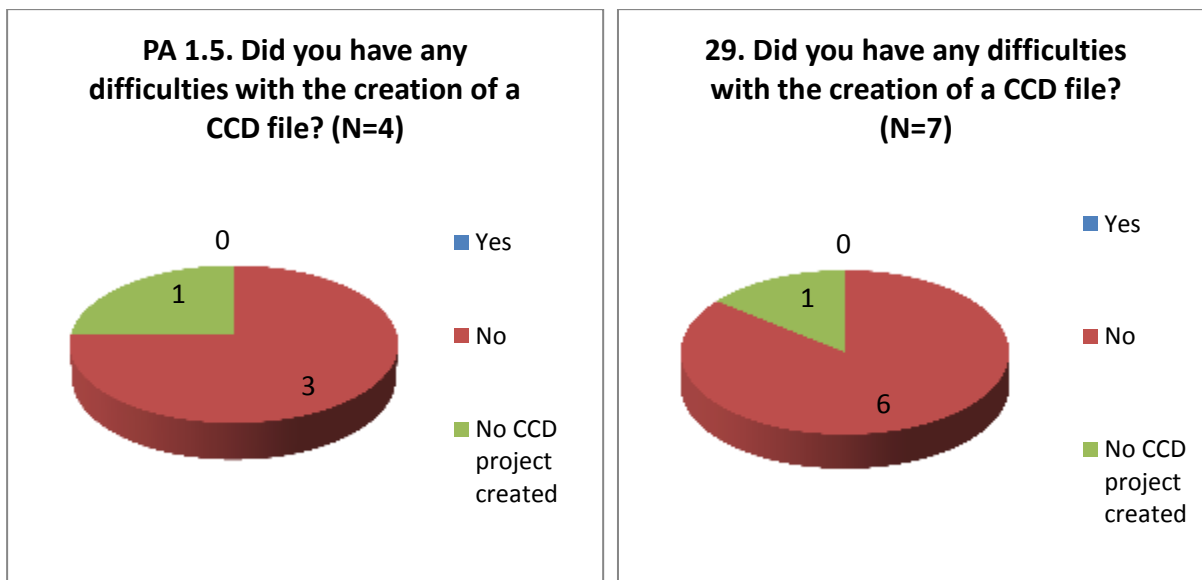
The questionnaire of the facilitators is divided into the following sections:

1. Conceptual Modeling with CCD Tool
2. Scenarios

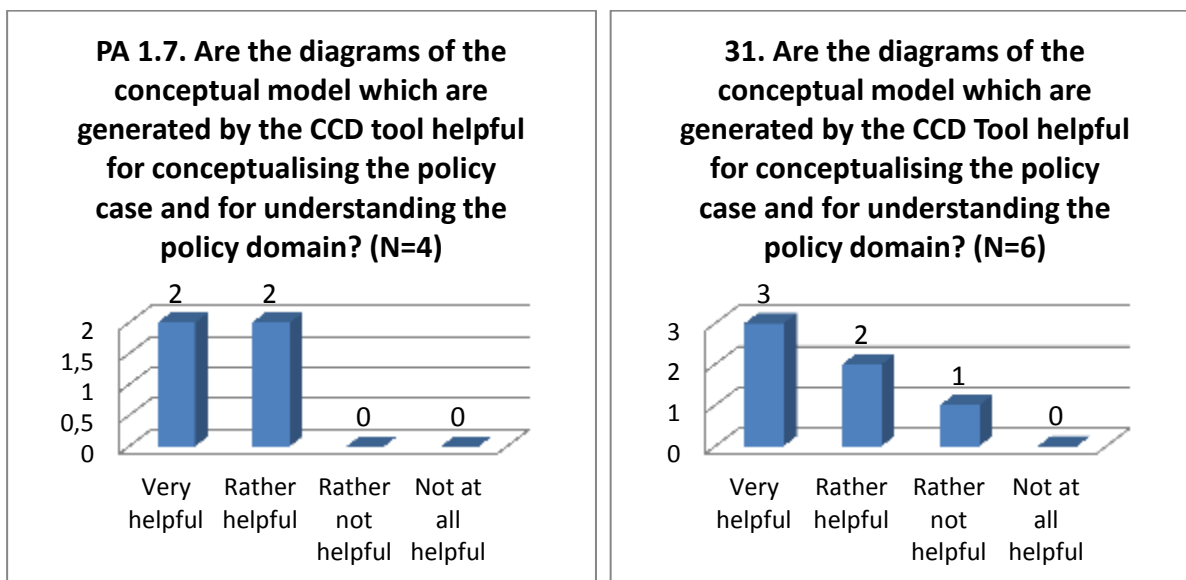
Some of the questions in the survey are not mentioned because there were no results given. Although according to the small number of participants the results are not significant and only give a tendency what the facilitators think about the OCOPOMO approach. Results from the first iteration are also taken into account where it was possible. Therefore the results of the first iteration are on the right hand side or directly under the results of the second iteration due to space.

3.1. CONCEPTUAL MODELING WITH CCD TOOL

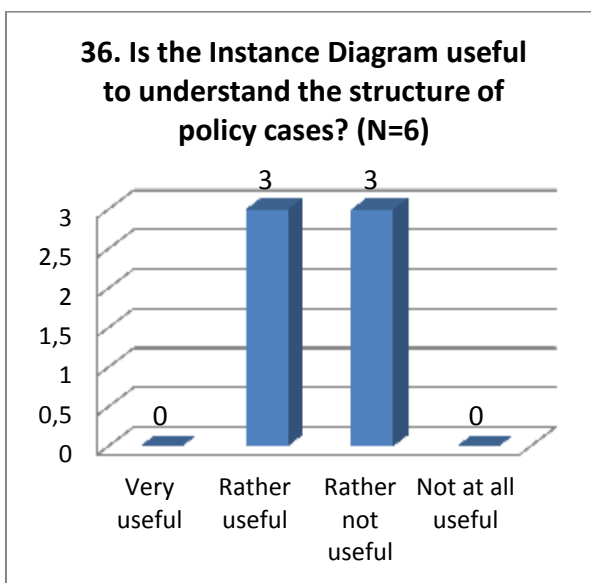
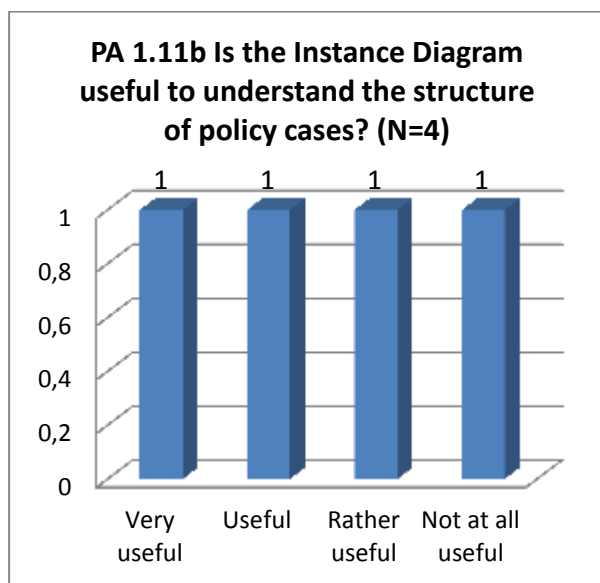
No policy analyst had problems with the installation of the CCD Tool (N=4). The creation of CCD files also caused no difficulties. Comparing the results with the results of the first iteration no real difference can be made.



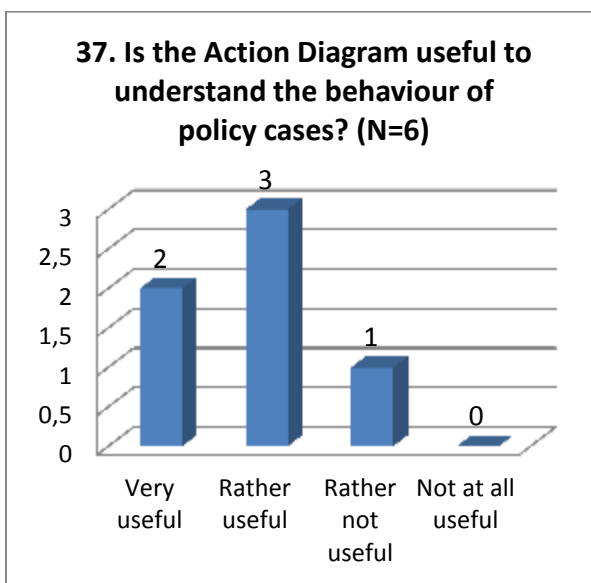
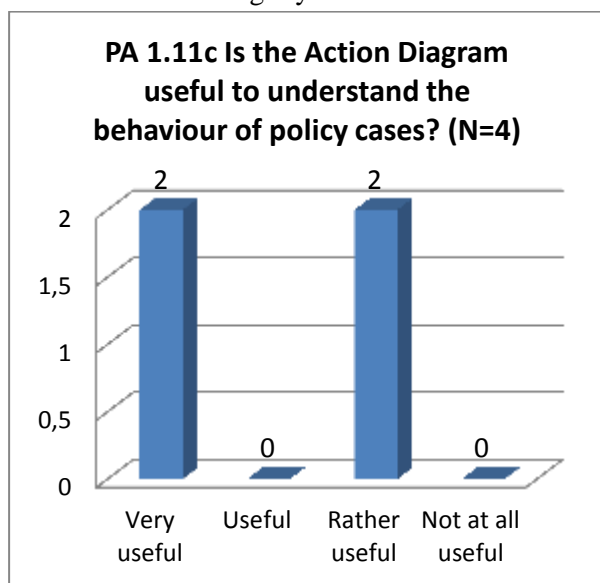
All the stakeholders evaluated the diagrams of the conceptual model helpful to conceptualize the policy case and to understand the policy domain. The range of the answer is from “rather helpful” to “very helpful”. Comparing the results in the first iteration they are quiet the same although one stakeholder found it “rather not helpful” in the first iteration but the number of stakeholders taken part in the two different iterations have to be considered in the evaluation.



After the second iteration in the collaboration platform no policy analyst had difficulties with the creation of a CCD diagram anymore (N=4). Furthermore asking about the different diagrams the Actor Network Diagram was rated as “very useful” from all policy analysts which is the same result as in the first iteration. The instance Diagram however was rated quiet differently according to the first iteration. On the left hand side below you can see the results of the second iteration. The policy analysts had a more divided opinion regarding the results of the first iteration.



The Actor Diagram was “very useful” for 2 out of 4 policy analysts and for the other two just “rather useful”. These results also slightly differ from the results in the first iteration but the scale used in both iteration was also slightly different.

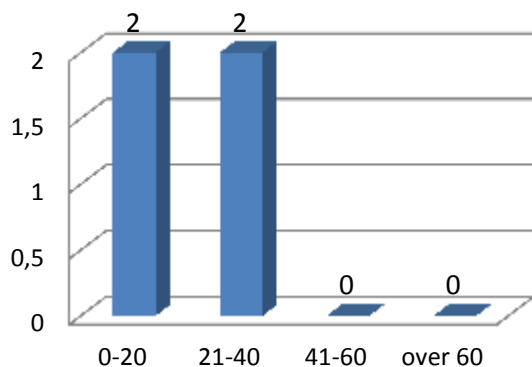


By asking about further suggestions in order to improve the diagrams one statement were given:

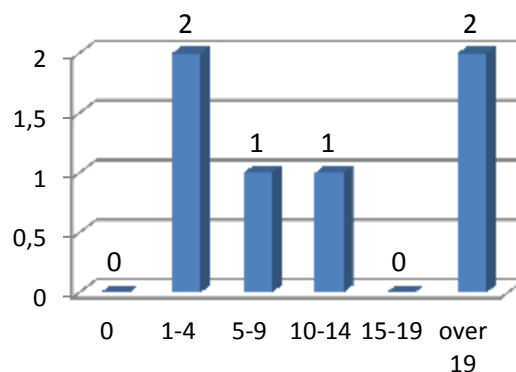
- It would be good to be able to build up whole paths through the action diagram so that selecting a node and clicking on "show connected elements" left previously selected elements visible.

Asking about narrative scenarios and background documents which exist for the different pilot cases the number increases in comparison to the first round. Although a different scale was used in the different iterations.

PA 1.13. How many narrative scenarios and background documents do exist for your pilot case(s)? (N=4)

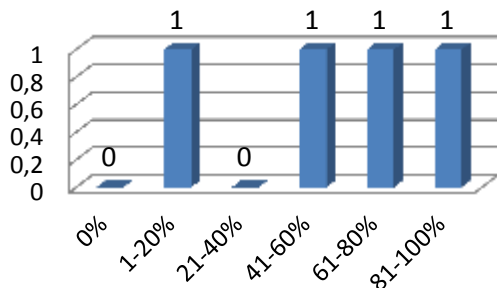


39. How many scenarios and background documents did you collect for your pilot case(s)? (N=6)

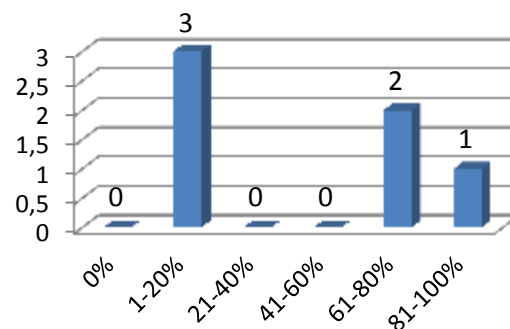


The annotation with the help of the CCD tool also has different results regarding the first and second iteration. The results doesn't differ that much. A significant statement however can't be made with these low quantities of answers.

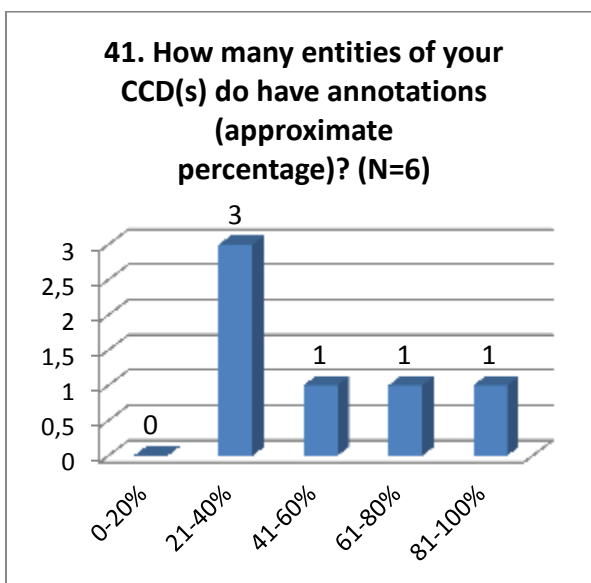
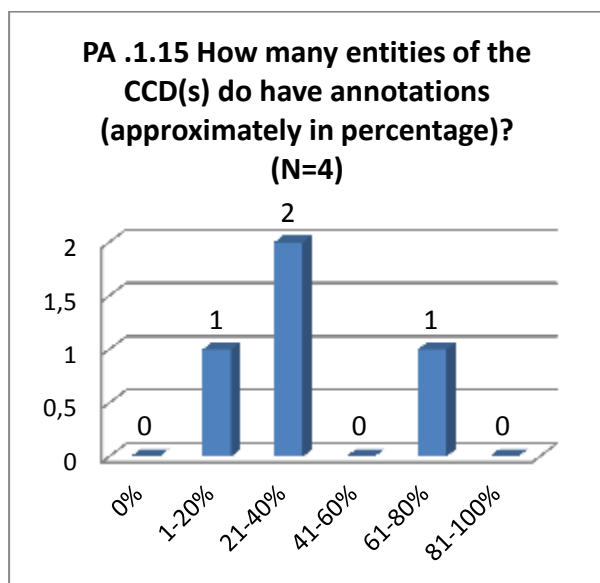
PA 1.14. How many of these scenarios and background documents did you annotate with the help of the CCD Tool (approximately in percentage)? (N=4)



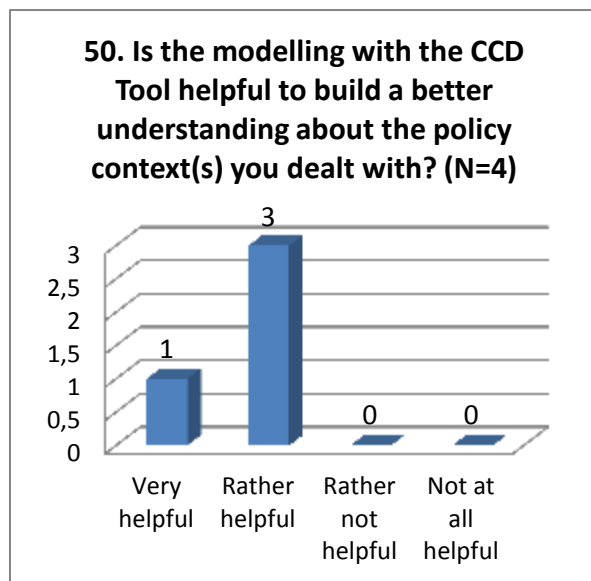
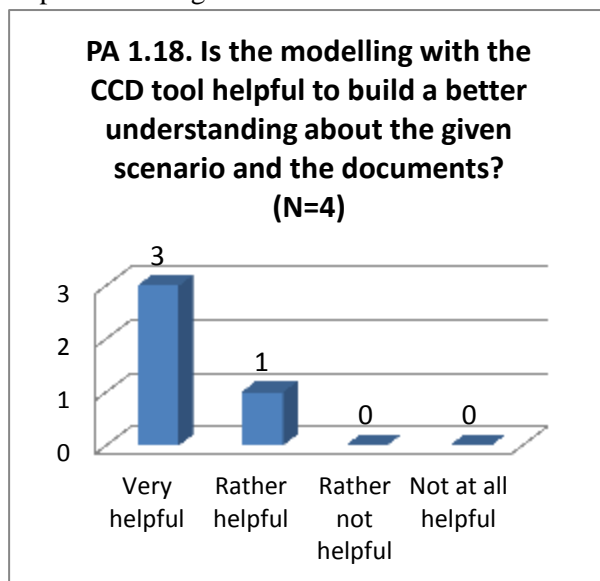
40. How many of these scenarios and background documents did you annotate with the help of the CCD Tool (approximate percentage)? (N=6)



The annotations of the CCD entities however decrease from the first to the second iteration a little bit. To interpret these results the number of policy analysts answered this question should be considered.

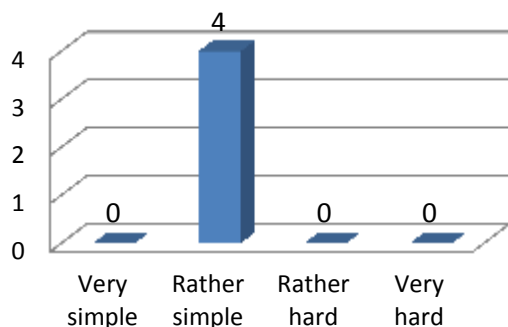


Overall no policy analyst had any difficulties with the annotation of scenarios or documents (N=4). The modeling with the CCD tool therefore did help to build a better understanding about the given scenarios and documents. 3 out of 4 policy analysts rated the question with “very helpful”. Comparing to the results in the first iteration there is a slight tendency that the modeling with the CCD tool has improved through time.

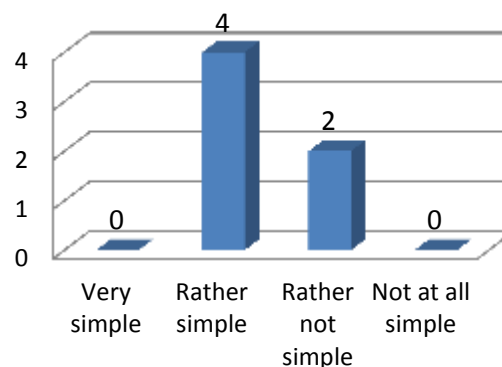


The process of conceptual transformation from scenario text and documents into a CCD model was rated as “rather simple” from all the policy analysts in the second iteration. These results also differ slightly from the results from the first iteration but there are no significant changes.

PA 1.19. How would you rate the process of the conceptual transformation from scenario texts and documents into a CCD model? (N=4)

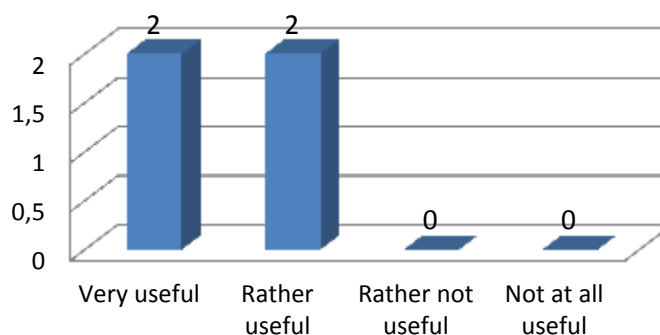


43. How simple do you find the conceptual transformation from scenario texts and documents into a CCD model? (N=6)



“Very useful” and “rather useful” are the annotations to trace the CCD concepts back to the scenarios.

PA 1.20. Are the annotations useful to trace the CCD concepts back to the scenario? (N=4)



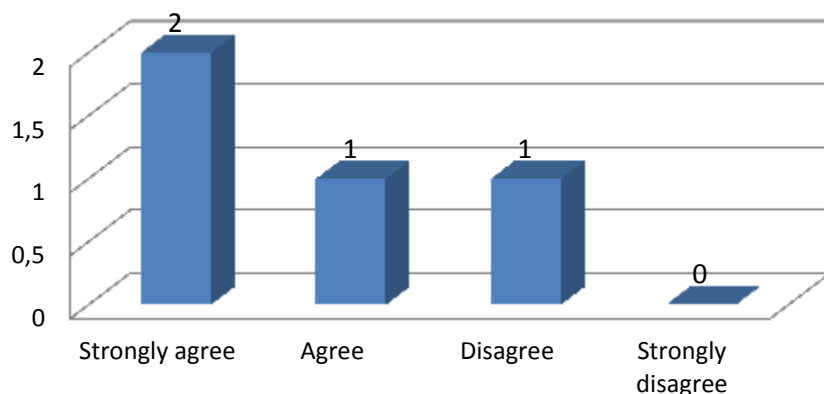
Asking about the navigation between the scenarios and CCD elements all policy analysts answered that it was easy (N=4). To improve the annotation feature of the CCD tool the following suggestions were given:

- Possibility to edit wording, paragraphs of annotated text and maintaining annotations
- The CCD in our case was very complex, so maybe functionality that enhances movement between elements of the CCD would be helpful

Furthermore the interaction with the CCD tool and the use of it was rated as “rather intuitive” by all policy analysts (N=4).

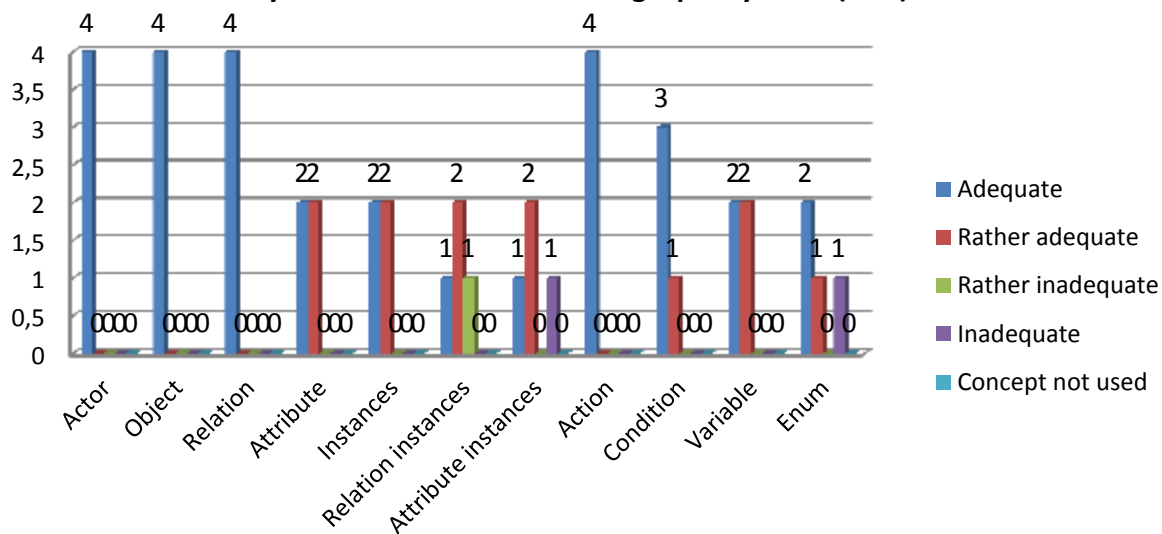
To overcome problems that occurred while developing a conceptual model the user guide/manual just helped 3 out of 4 policy analysts.

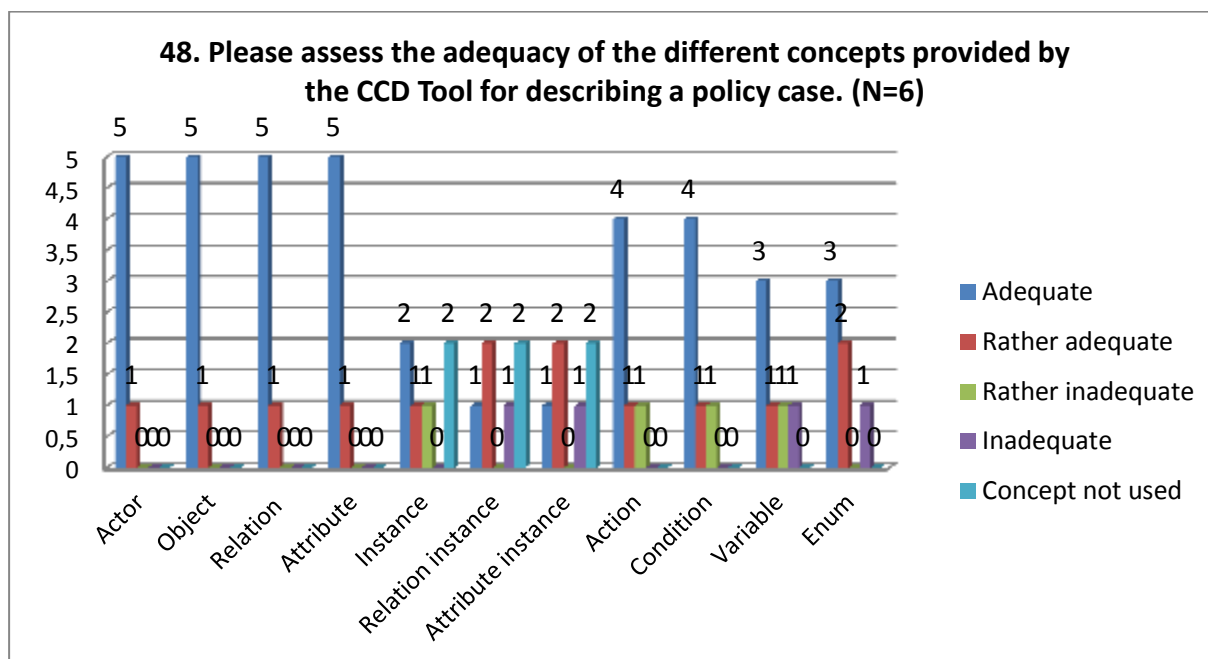
PA 1.26. The user guide/manual helped to overcome all the problems that occurred while developing a conceptual model. (N=4)



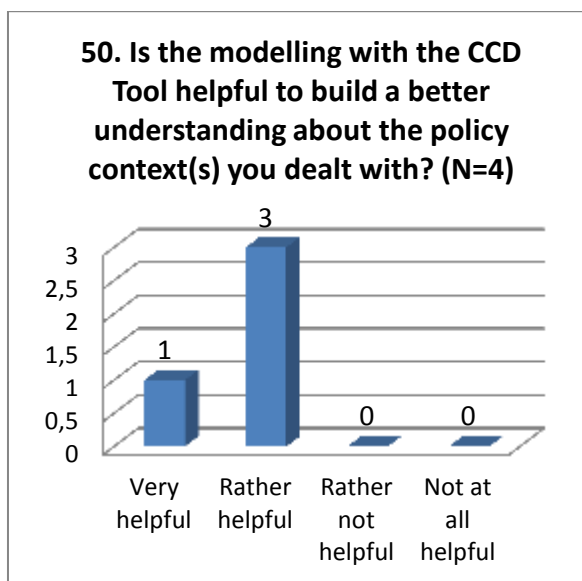
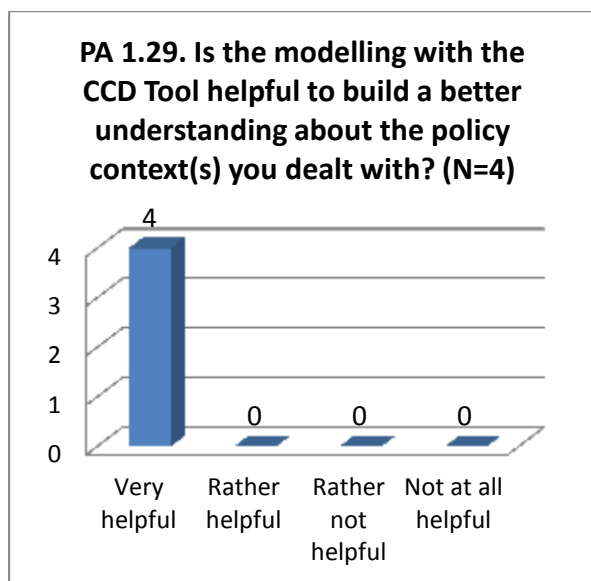
The following question is aimed at the adequacy of the different concepts provided by the CCD tool for describing a policy case. This question was asked in the first iteration too and the results are also listed below. All in all the results don't differ very much and there are no significant differences.

PA 1.27. Please assess the adequacy of the different concepts provided by the CCD Tool for describing a policy case. (N=4)



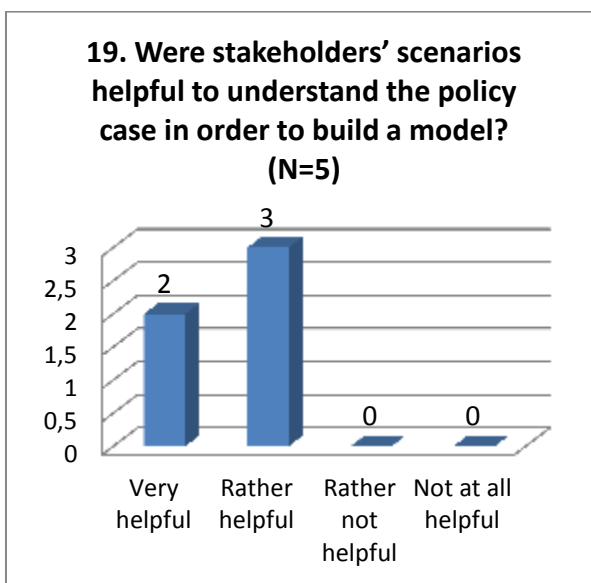
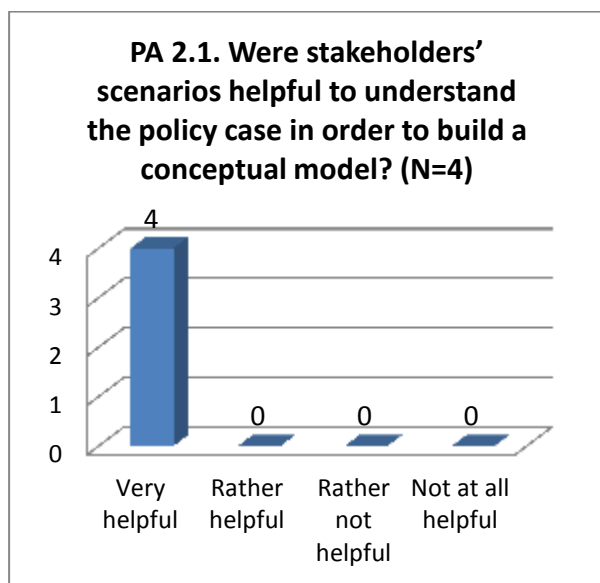


The modeling with the CCD tool was “very helpful” for the policy analysts in the second iteration to build a better understanding about the policy contexts they dealt with. A similar result was also given in the first iteration.

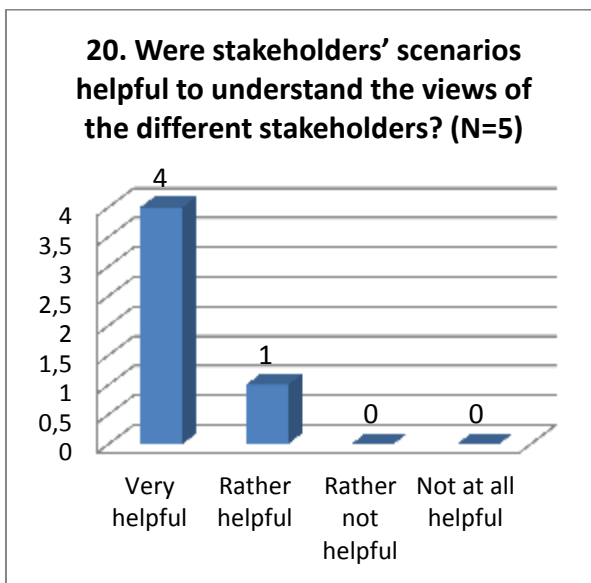
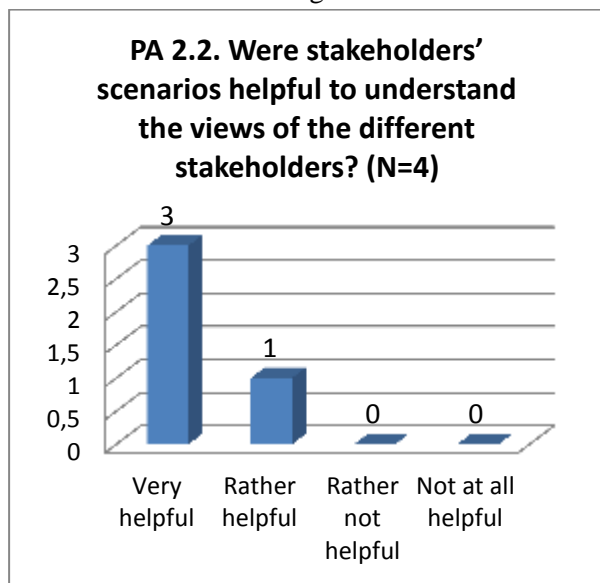


3.2. SCENARIOS

The following questions aim at the scenarios. “Very helpful” were the scenarios from the stakeholders to understand the policy case in order to build a conceptual model. Similar results were also given in the first iteration (right hand side). Significant differences can’t be identified comparing the two results.

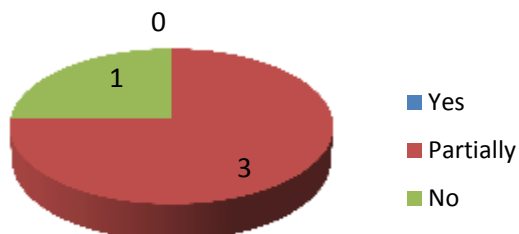


Although stakeholders' scenarios were helpful to understand the different views of them. 3 out of 4 policy analysts rated the question below as "very helpful". This result is quite similar to the result in the first iteration on the right hand side.

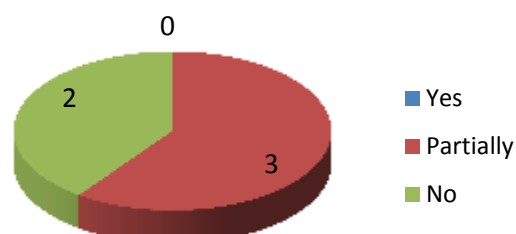


Just slight differences between the results of the first and second iteration can also be seen by asking if the stakeholder scenarios deliver all necessary information to build a model. No significant changes can be identified and 3 out of 4 policy analysts answered the question below with "partially" in both iterations.

PA 2.3. Did stakeholder scenarios deliver all necessary information to build a model? (N=4)

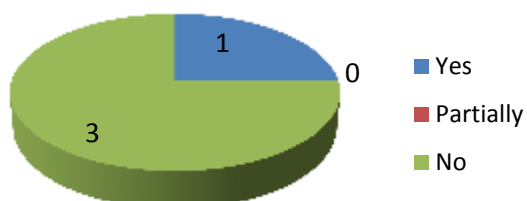


21. Did scenarios deliver all necessary information to build a model? (N=5)

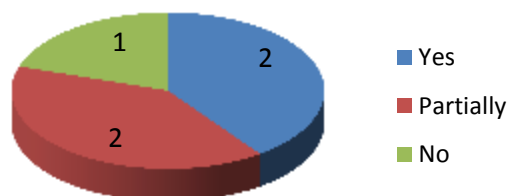


It wouldn't be possible to develop policy models without scenarios just relying on background documents for most of the policy analysts in the second iteration. This result is partly different from the results in the 1st iteration on the right hand side shown below.

PA 2.4. Would it have been possible to develop the policy model without scenarios just relying on background documents? (N=4)

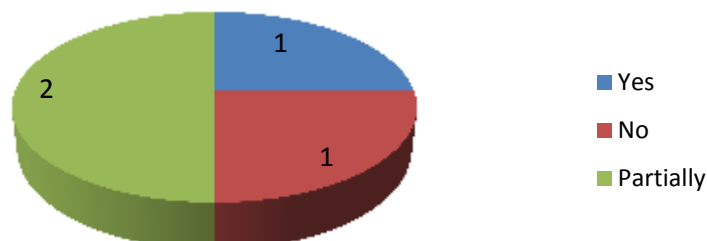


22. Would it have been possible to develop the policy model without scenarios just relying on background documents? (N=5)



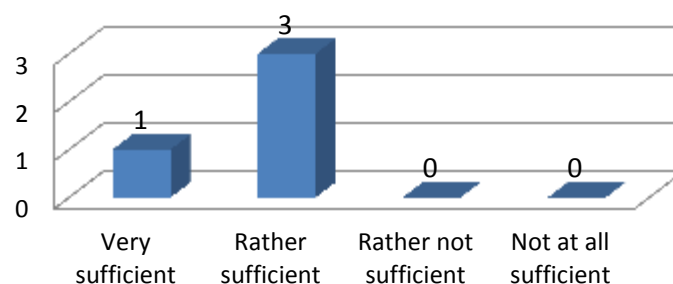
To get additional information about the policy case by collaborating with stakeholders over the OCOPOMO platform was just partially possible for 2 out of 4 policy analysts.

PA 2.5. Was it possible to get additional information about the policy case by collaborating with stakeholders over the OCOPOMO collaboration platform? (N=4)



Overall the OCOPOMO process phase for defining scenarios and collecting background information was “rather sufficient” to “very sufficient” for the policy analysts to understand the policy issue, its boundaries and challenges.

PA 2.6. Was the OCOPOMO process phase for defining scenarios and collecting background information sufficient to understand the policy issue, its boundaries and challenges? (N=4)



4. POLICY MODELER QUESTIONNAIRE

The questionnaire of the facilitators is divided into the following sections:

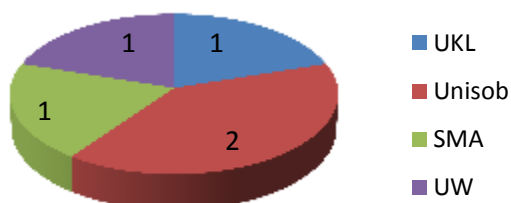
1. Respondent's details
2. Collaboration platform
3. CCD2DRAMS
4. Simulation Models

Some of the questions in the survey are not mentioned because there were no results given. Although according to the small number of participants the results are not significant and only give a tendency what the facilitators think about the OCOPOMO approach. Results from the first iteration are also taken into account were it was possible. Therefore the results of the first iteration are on the right hand side or directly under the results of the second iteration due to space.

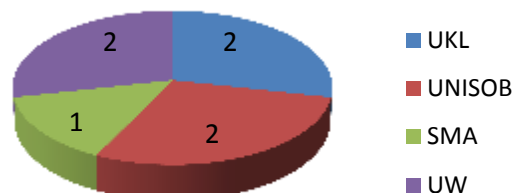
4.1. RESPONDENT'S DETAILS

Looking at the respondents there are no big changes made. Regarding the numbers of policy modelers who answered the questionnaire in the second iteration one from UKL and one from UW didn't take part in the second iteration who took part in the first one.

**PM 1.2. Please insert the
organisation you are affiliated
with. (N=5)**

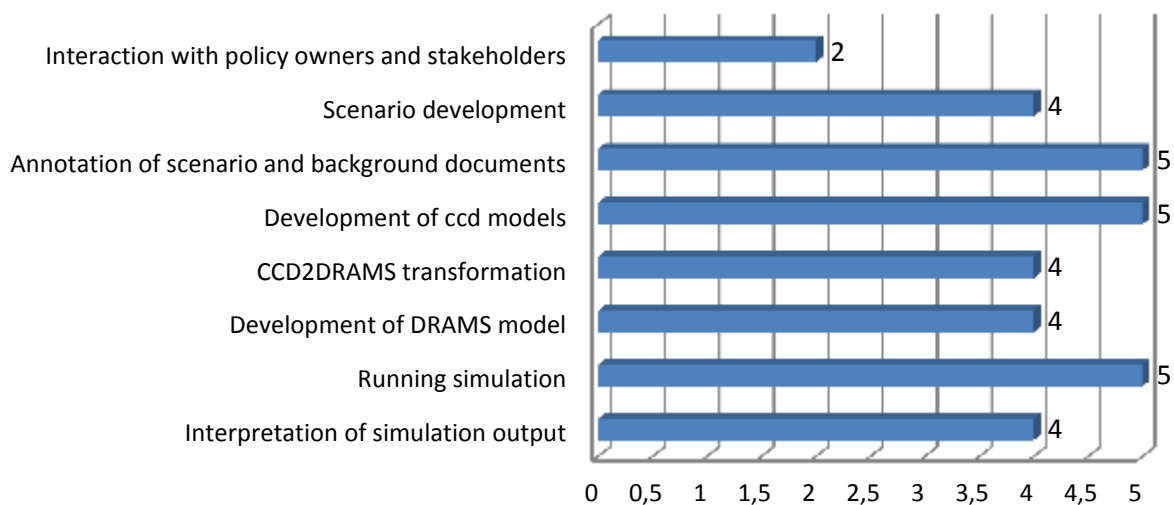


**2. Please insert the organisation
you are affiliated with. (N=7)**

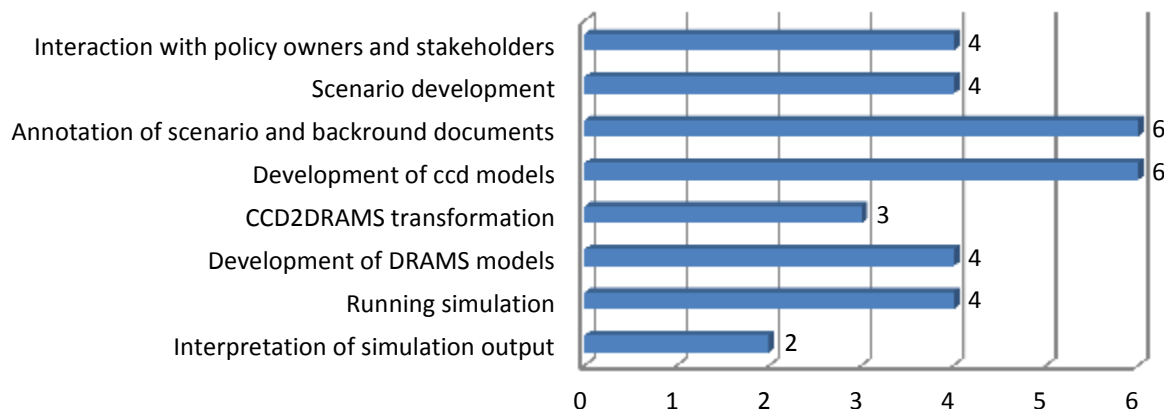


Although regarding the different tasks performed in the OCOPOMO platform there are no big changes identified. The results of the second and first iteration are shown below.

**PM 1.3. Choose your tasks performed in OCOPOMO on policy
modelling. (N=5, multiple answers)**



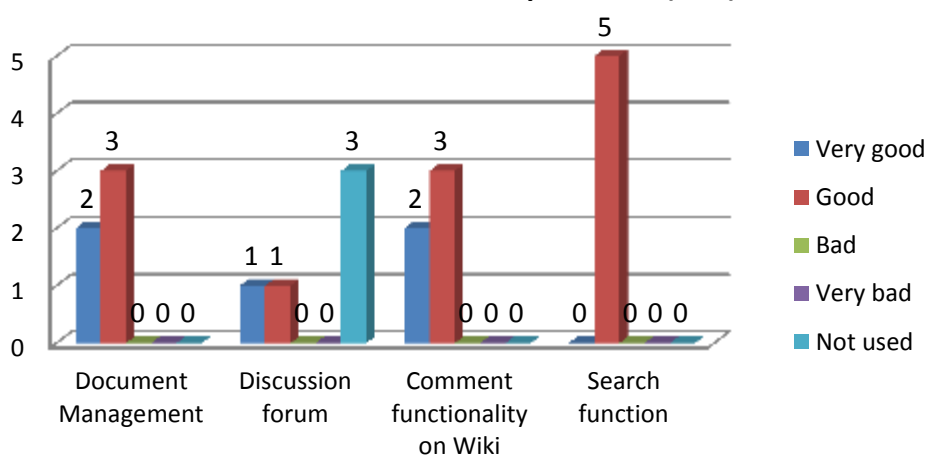
3. Please list all the tasks you performed in OCOPOMO on policy modelling. (N=7, multiple answers)

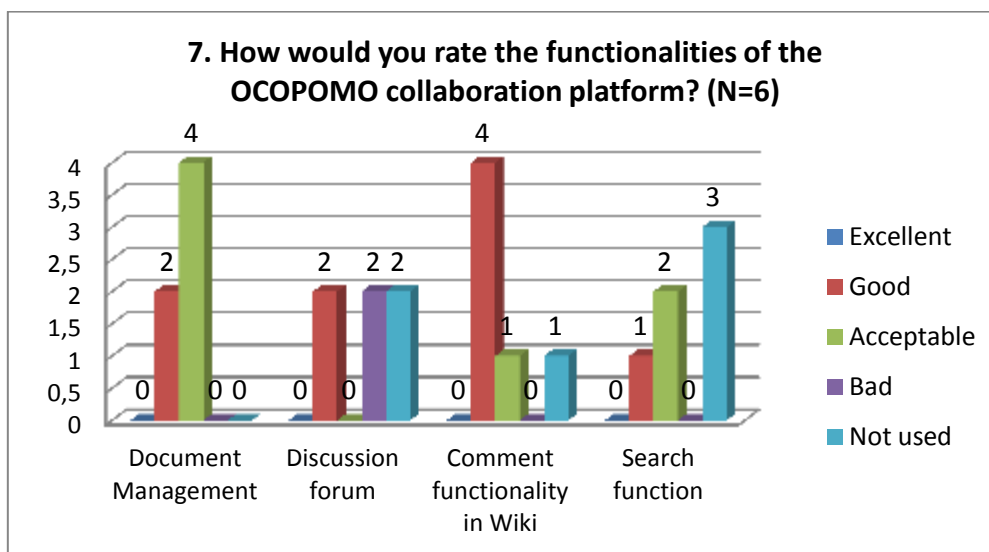


4.2. COLLABORATION PLATFORM

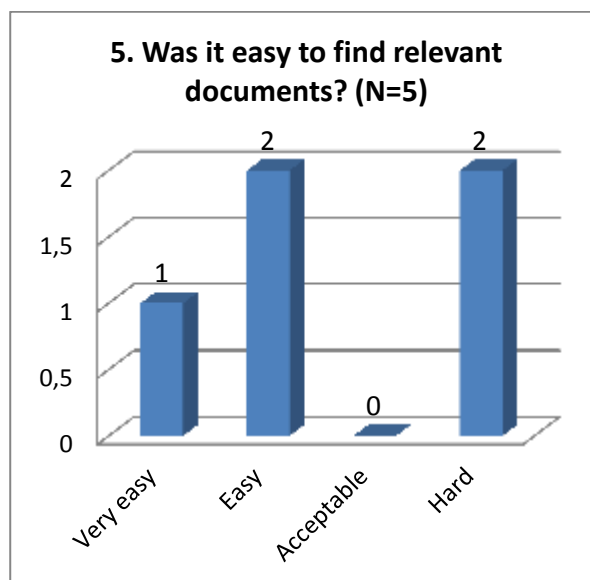
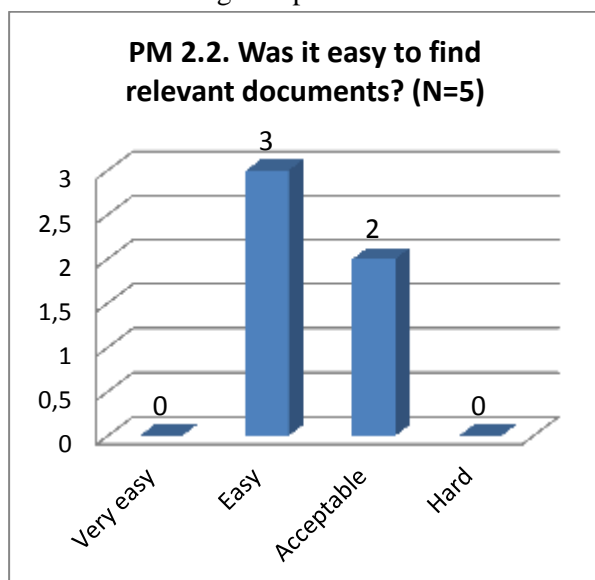
Looking at the functionalities of the OCOPOMO collaboration platform all the functionalities were rated “good” or “very good” if used. This shows an improvement regarding the results in the first iteration which can be seen under the results of the second iteration.

PM 2.1. How would you rate the functionalities of the OCOPOMO collaboration platform? (N=5)

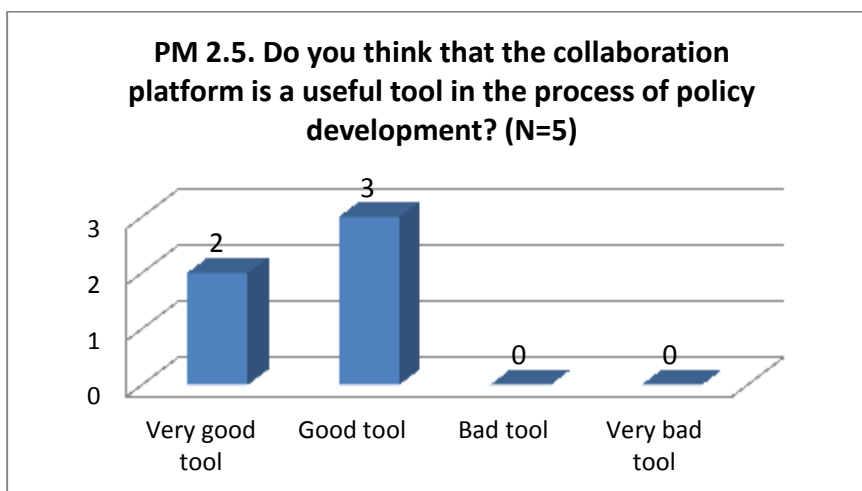




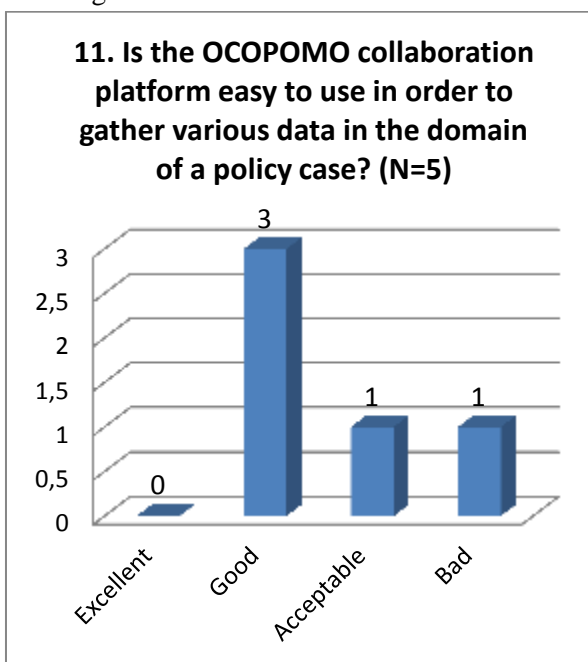
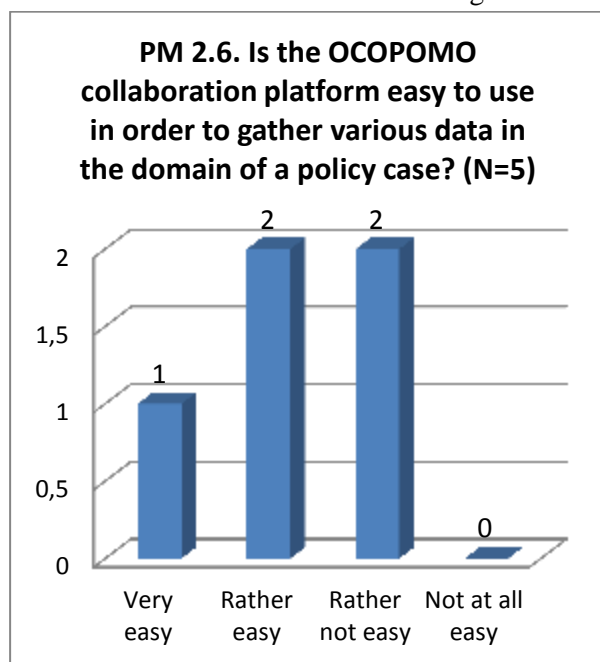
To find relevant documents was “easy” for 3 out of 5 policy modelers. Regarding the results of the first iteration a slight improvement can be seen.



Although by asking the policy modelers if any functionalities in the OCOPOMO collaboration platform are missing that could further support their work of knowledge collection no functionalities were missing (N=5). Overall the policy modelers rated the collaboration platform as a “good tool” or a “very good tool” in the process of policy development.

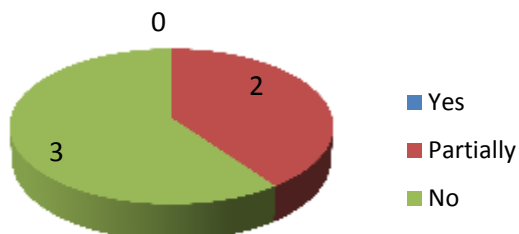


Using the OCOPOMO collaboration platform in order to gather various data in the domain of a policy case the policy modelers rated it as “rather not easy” to “very easy”. These results are quiet similar to the results of the first iteration on the right hand side although a different evaluation scale was used.

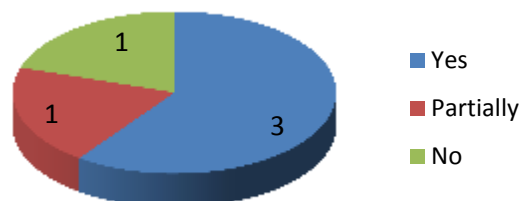


An interesting result is that in the second iteration the multilingual documents didn’t complicate the handling of information for 3 out of 5 policy modelers (left hand side). Comparing to the results of the first iteration 3 out of 5 policy modelers do have difficulties handling multilingual documents (right hand side).

PM 2.8. Did the multilingual documents complicate the handling of information? (N=5)

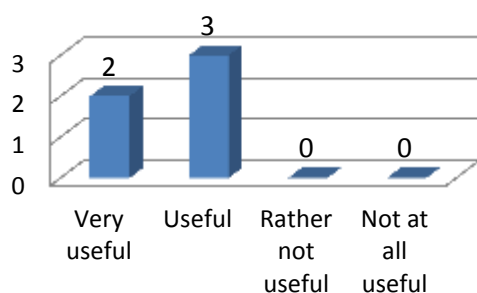


13. Did the multilingual documents complicate the handling of information? (N=5)

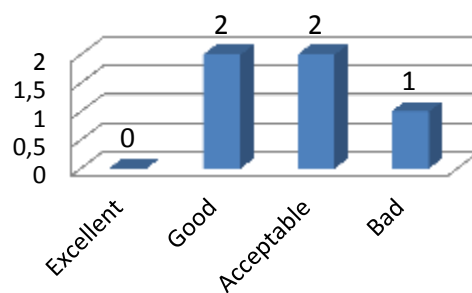


Asking about the usefulness about the information gathering process using the OCOPOMO collaboration platform in the policy development process all the policy modelers answered with “useful” or “very useful”. These results is a slight improvement regarding the results from the first iteration on the right hand side with a different evaluation scale.

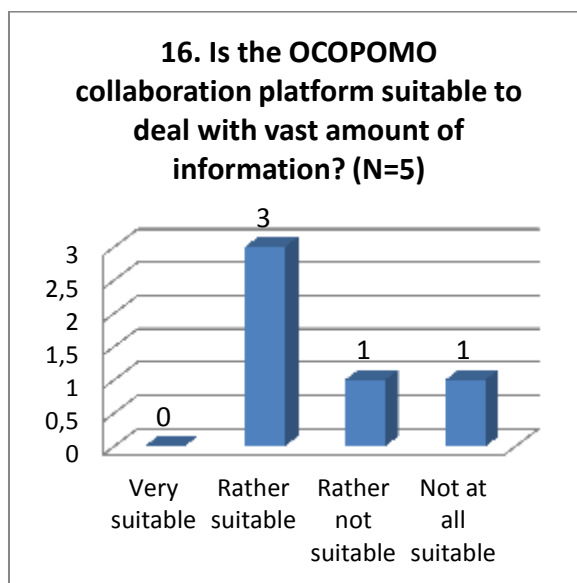
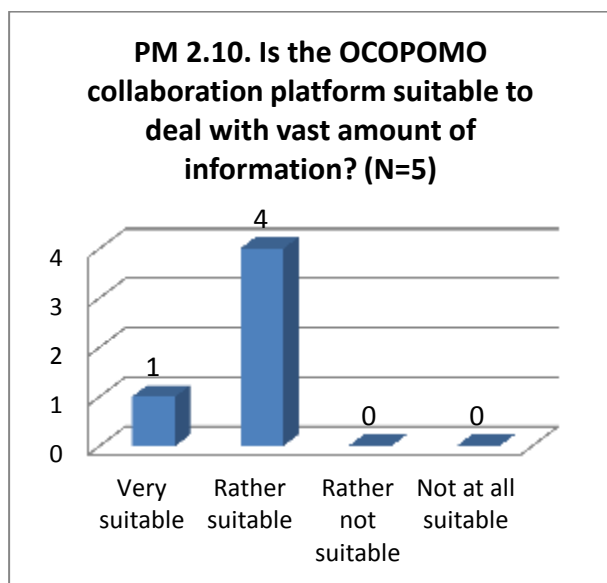
PM 2.9. How useful do you rate the information gathering process using the OCOPOMO collaboration platform in policy development processes (considered overall)? (N=5)



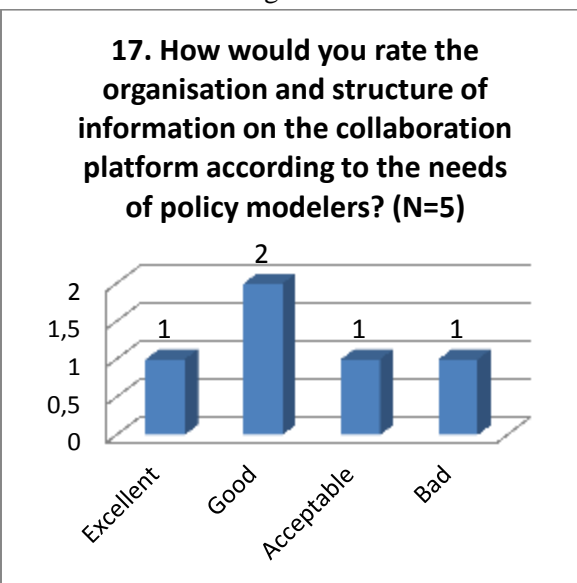
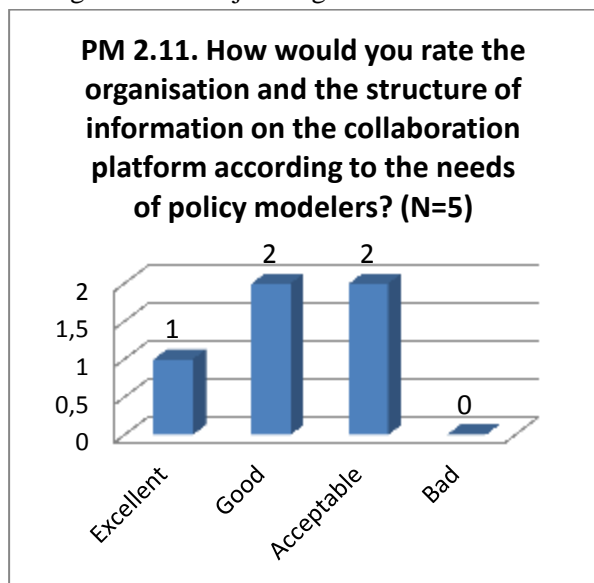
15. How useful do you think is the information gathering process using the OCOPOMO collaboration platform in policy development processes (considered overall)? (N=5)



Regarding the following question an improvement of dealing with the amount of information on the OCOPOMO platform can be seen. Both questionnaires in the first and second iteration were answered by five policy modelers and therefore a comparison is useful and possible. As you can see the second iteration gave a more positive result regarding the vast amount of information on the collaboration platform.



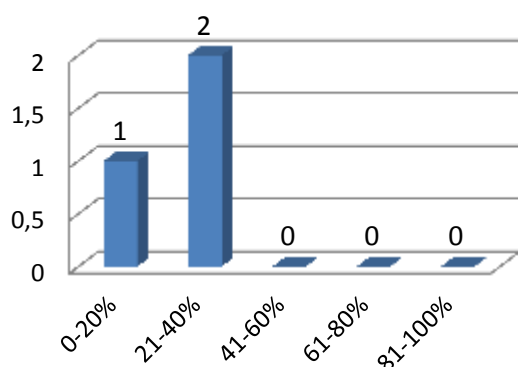
The organisation and the structure of the information on the collaboration platform according to the needs of policy modelers were rated very differently. According to the results in the first iteration on the right hand side just slight differences can be identified which are not significant.



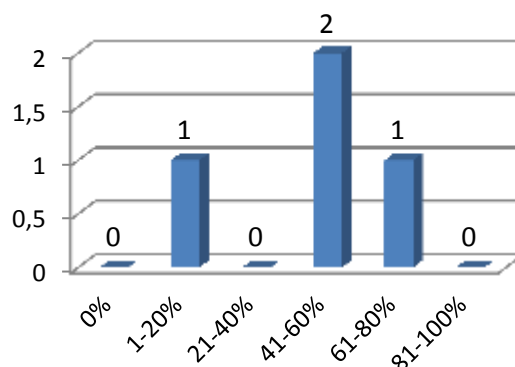
4.3. CCD2DRAMS

Asking about the CCD2DRAMS tool only a maximum of 40% of the total simulation model code was generated by the CCD2DRAMS tool in the second iteration. Looking at the first iteration these number decreases.

PM 3.1. Approximate the percentage of the total simulation model code generated by the CCD2DRAMS Tool. (N=3)

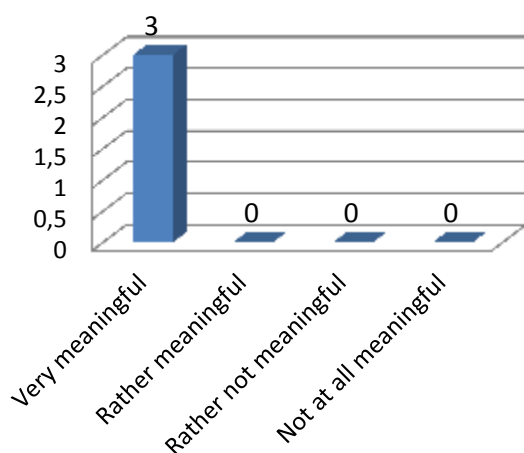


51. Approximate the percentage of the total simulation model code generated by the CCD2DRAMS Tool. (N=4)

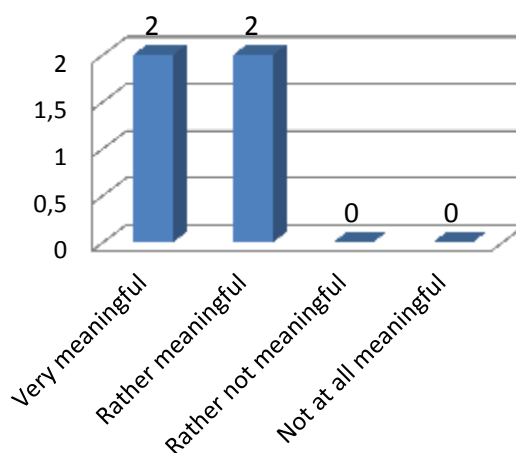


“Very meaningful” was the transformation from the scenarios to a conceptual model as a step to the simulation model for all policy modelers in the second iteration. A quiet same result was also given in the first iteration on the right hand side below.

PM 3.2. How meaningful do you find the transformation from the scenario to a conceptual model as a step to the simulation model? (N=3)

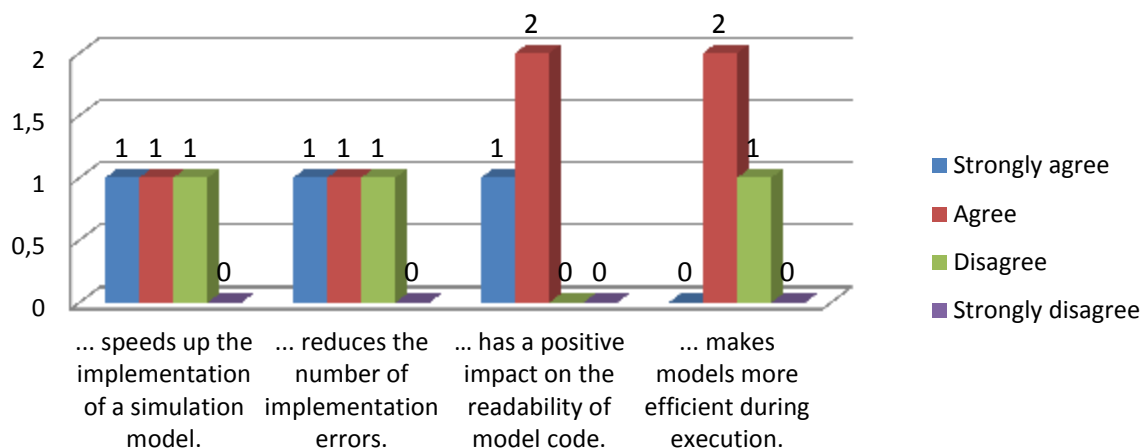


52. How meaningful do you find the transformation from the scenario to a conceptual model as a step to the simulation model? (N=4)

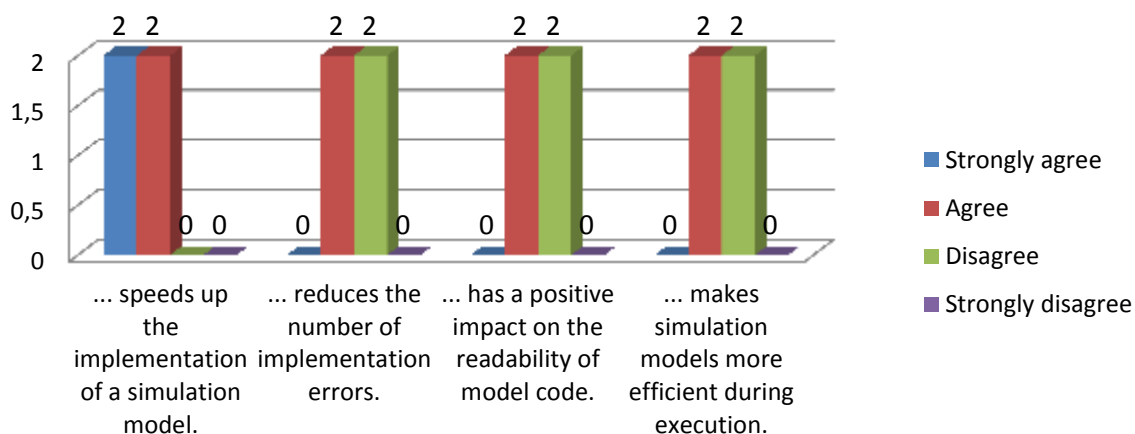


Developing a CCD and the use of the CCD2DRAMS feature causes a speeds up in the implementation of a simulation model, although reduces the number of implementation errors and has a positive impact on the readability of the model code. Although it makes models more efficient during execution. Those statements were mainly agreed on by the policy modelers. Only one policy modeler in the second iteration disagreed on all the statements. Regarding the results from the first iteration this is a slight improvement of the CCD2DRAMS tool.

PM 3.3. Please rate how strongly you agree or disagree with each of the following statements: To develop a CCD and use the CCD2DRAMS feature... (N=3)



53. Please rate how strongly you agree or disagree with each of the following assertions. To develop a CCD and use the CCD2DRAMS feature ... (N=4)

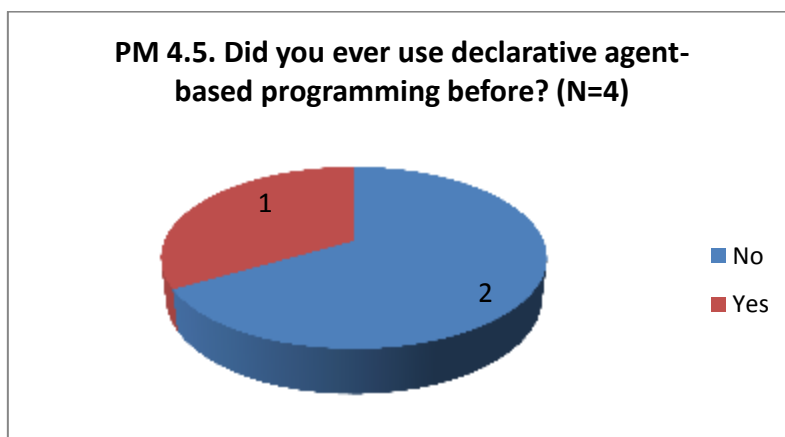


One policy modeler had the following suggestion to improve the CCD2DRAMS feature within the CCD Tool:

- Presently, it produces some LHS code but not RHS code. It could usefully do both.

4.4. SIMULATION MODELS

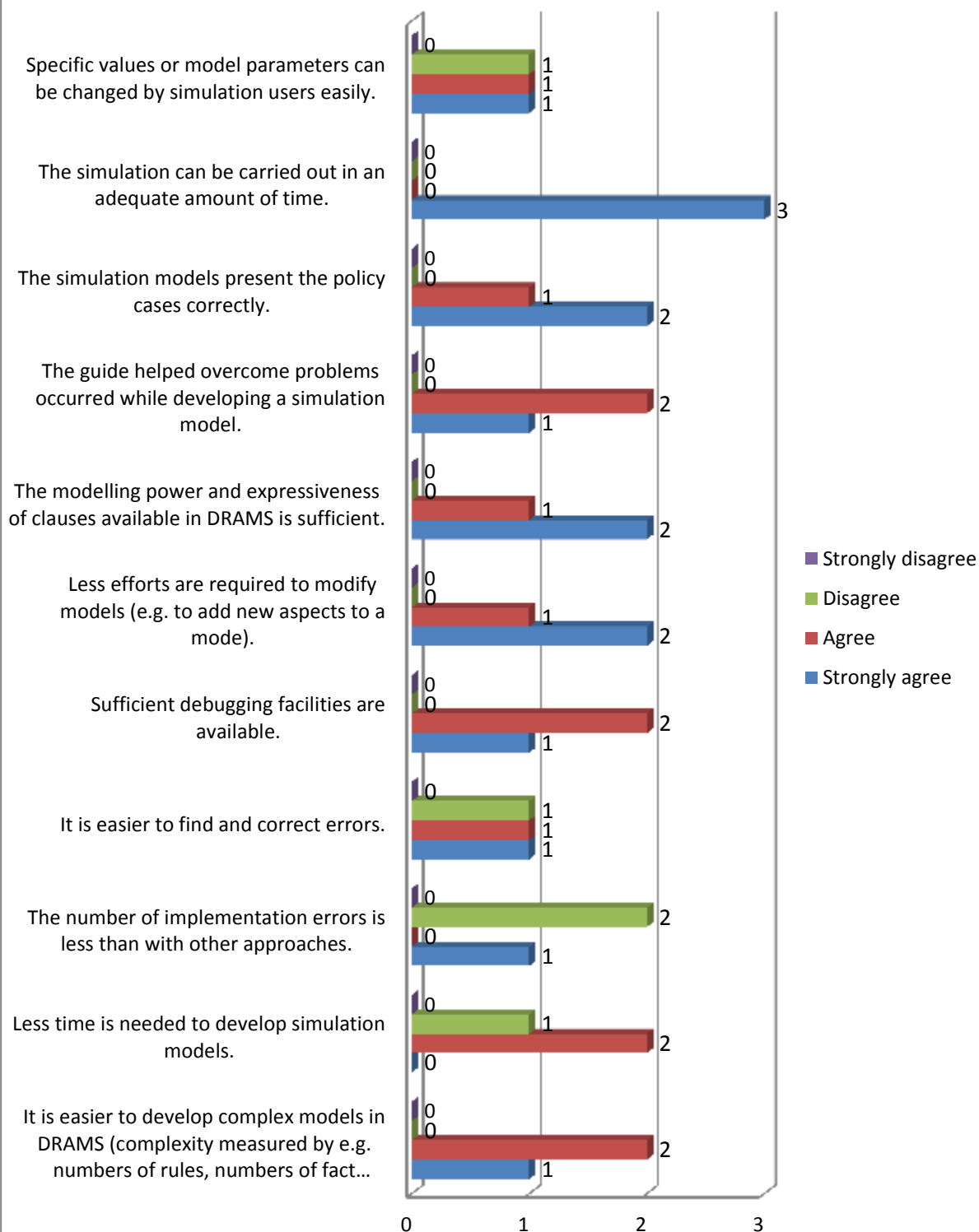
No policy modeler had any difficulties with the installation of DRAMS or using DRAMS in Repast-based models. (N=3). This result is the same as in the first iteration. Most of the policy modelers answering the questionnaire of the second iteration didn't use declarative agent-based programming before.



Asking if it was faster compared to other agent-based (imperative, procedural) programming methods one policy modeler answered that it was faster (N=1).

A bunch of statements according to the simulation model were asked and overall the policy modelers did mainly agree on all of the statements listed below. Most policy modeler only disagreed on the statement that the number of implementation errors are less the with other approaches.

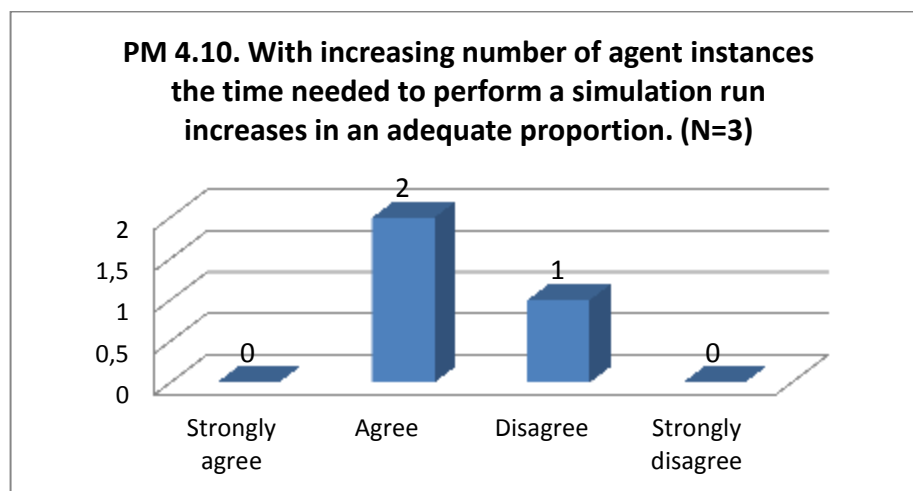
**PM 4.7. Please rate how strongly you agree or disagree with each of the following statements by placing a check mark in the appropriate box.
(N=3)**



A suggestion to improve DRAMS in order to strengthen the DRAMS/Repast Simulation Environment was given by one policy modeler:

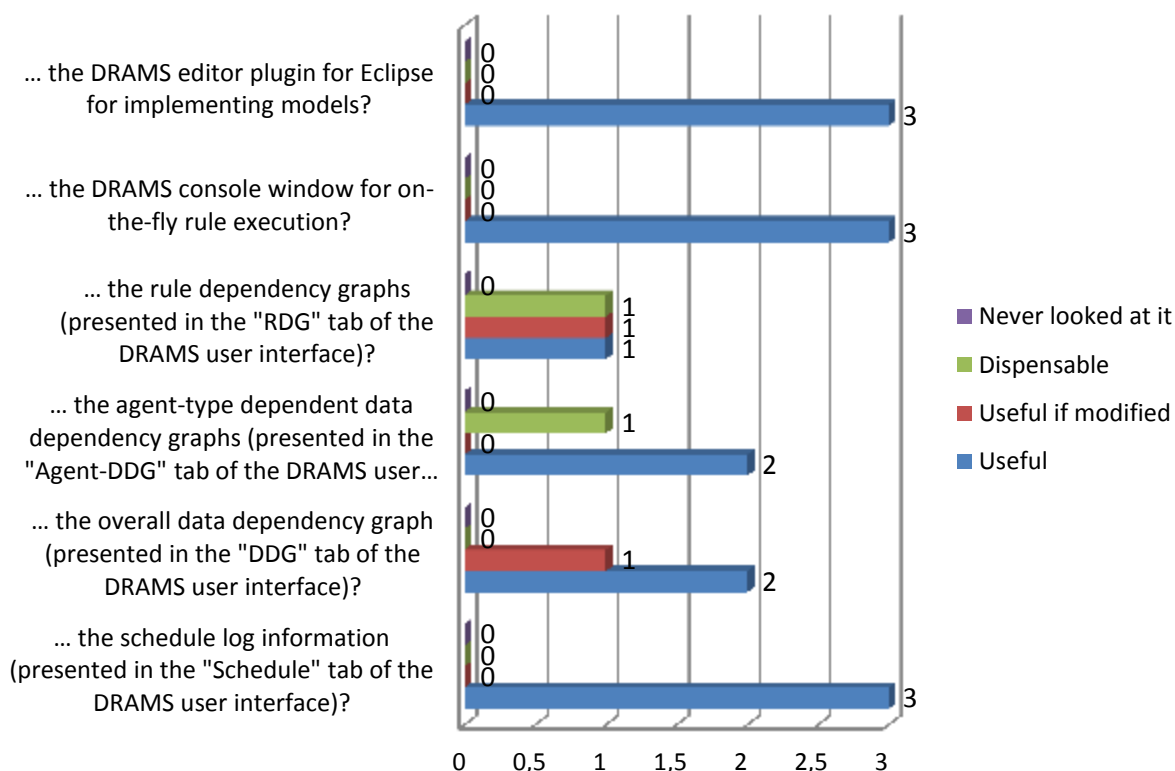
- Tasks sometimes complicate the modelling. It would be good if that could be improved. Different time levels would also be useful -- e.g. year, month, week.

All the policy modelers agreed on the fact that with increasing complexity of models (measured by e.g. numbers of rules, numbers of fact templates and number of facts) the time needed to perform a simulation run increases in an adequate proportion (N=3). Although most of the policy modelers agreed on the fact that with increasing number of agent instances the time needed to perform a simulation run increases in an adequate proportion. Only one policy modeler disagreed on this statement.



Asking about sufficient means for monitoring simulation runs all policy modelers agreed that they are available (N=3). In addition to that the information presented in the DRAMS user interface were useful for all policy modelers in general (N=3). By rating the statements about the usefulness of the graphs and functions in the DRAMS user interface below most of the policy modelers do agree on all of the statements.

PM 4.15. Please rate how useful the following statements about the graphs and functions are in the DRAMS user interface by placing a check mark in the appropriate box. How would you assess... (N=3)



Asking about what suggestions in order to improve the rule dependency graph the policy modelers have one user answered with the following comment:

- RDG should be updated for any simulation tick.

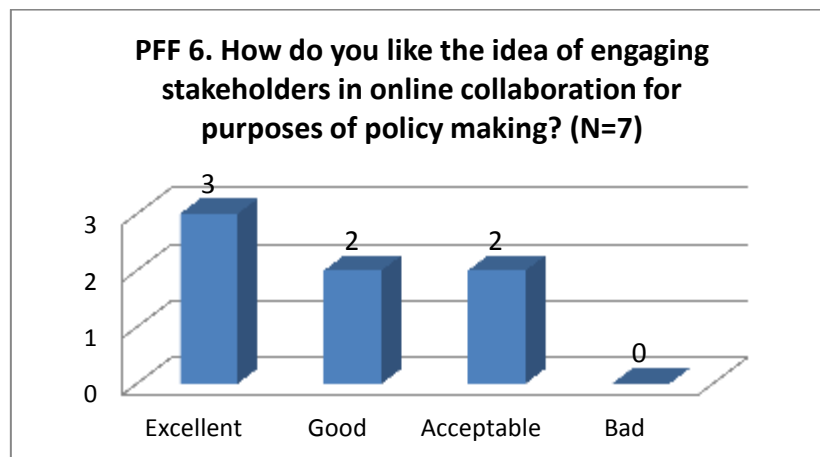
5. OVERALL PROCESS

The overall process was evaluated by the facilitators, the policy analysts as well as the policy modelers. Therefore all their results are included in the following charts.

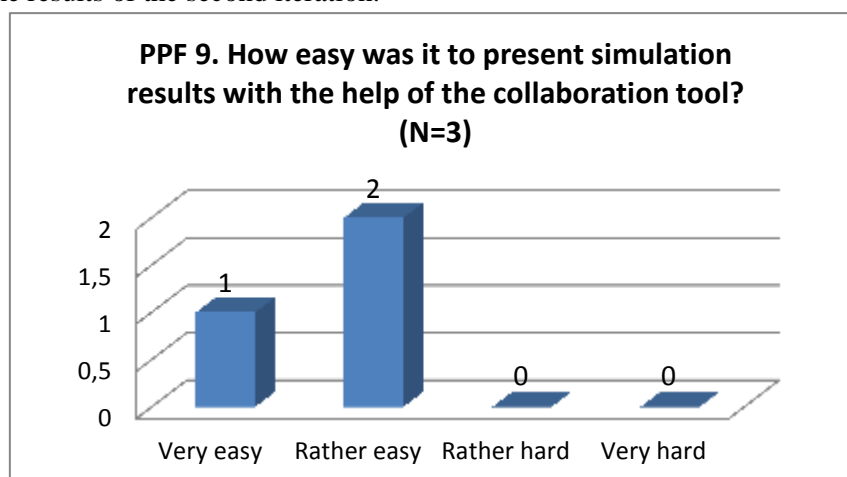
All the users answered that the OCOPOMO approach is useful for their purposes in the policy making (N=7). Asking about why the OCOPOMO platform is useful the following answers were given:

- Because it makes it possible to explore the relevant social processes in and any level of detail that I find useful
- It allows more comprehensive decision making
- I think it would be good to use this approach in other projects requiring stakeholders collaboration
- It is very good approach for inclusion and communication with stakeholders.

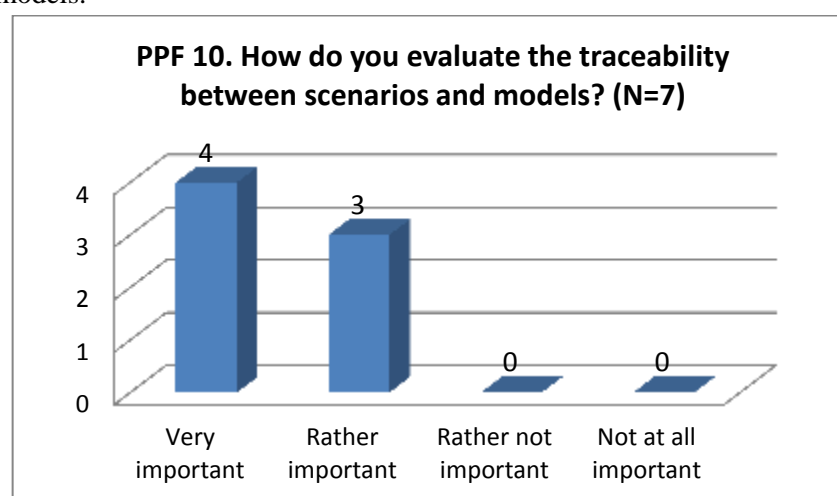
Although asking the users if the OCOPOMO platform is an adequate way to provide and manage the information needed for the complex policy domains, every user answered with “yes” (N=5). The issue of engaging stakeholders in the online collaboration for the purpose of policy making was answered differently by the facilitators, policy analysts and policy modelers. But as you can see in the results below no user didn’t like the idea of stakeholder engagement.



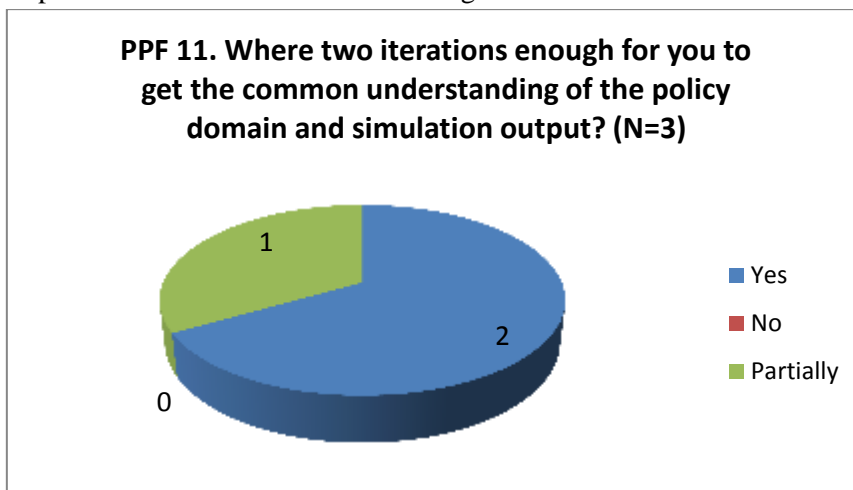
To understand the complex policy domain all the users answered, that the conceptual models did help their understanding (N=4). Although all users answered with “yes” when they were asked if constructing conceptual models helped to support the formal policy modeling (N=4). Presenting the simulation results using the collaboration tool was “rather easy” and for one user even “very easy” according to the results of the second iteration.



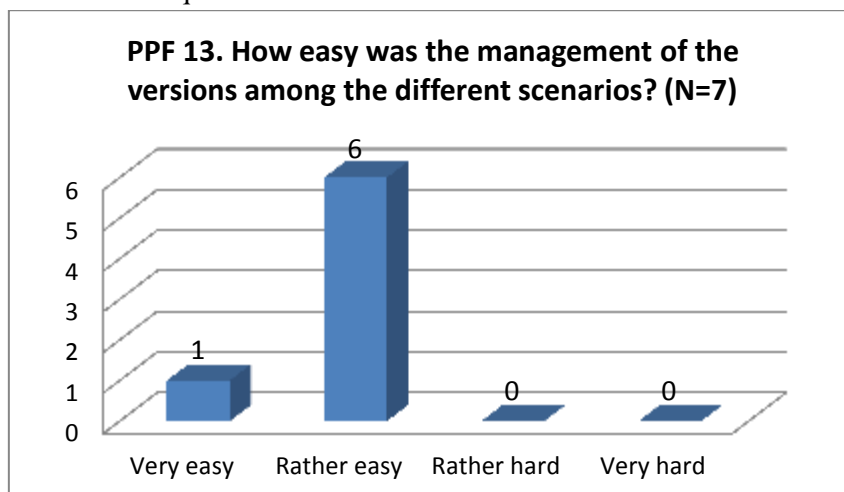
An addition to that the issue of traceability was rated “rather important” to “very important between scenarios and models.



The users were also asked if two iterations would be enough to get the common understanding of the policy domain and the simulation output. Even though a minimum of users answered the question 2 out of 3 had the opinion that two iterations were enough.

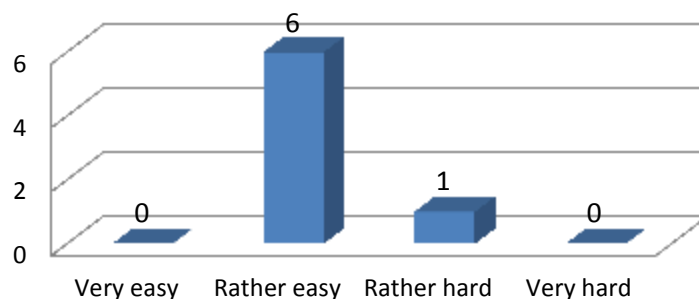


Asking about changes in the process no users had suggestions to improve the process at all (N=3). Furthermore the management of the versions among the different scenarios was “rather easy” for 6 out of 7 users who answered this question in the second iteration.



The version management was “rather easy” for 6 out of 7 facilitators, policy analysts and policy modelers. Just one person evaluated it as “rather hard” to handle the version management of the models among the different iteration.

PPF 14. How easy was the version management of the conceptual and simulation model among the different iterations? (N=7)



Finally the opinion is provided for any further comments and recommendations:

- The software makes it possible and effective to produce complicated models which are, I believe, useful for scientific purposes. Policy makers want simple models. Both are very well supported by the toolkit. It remains to explore the differences and complementarities between simple policy models and more complete scientific models.