



Energy research Centre of the Netherlands

An overview of gaps in the Socrobust tool and proposals on how to integrate this missing information in WP3

Deliverable 2

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**Create
Acceptance**



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Abstract

In this second task the limits of the original Socrobust methodology have been identified on the basis of the competences and experiences of partners of the Acceptance projects.

First general decisions had to be made concerning the aim and intended results of the Create Acceptance tool, the intended users of the new tool, the fields of application (kind of innovation; phase of innovation) of the tool and the intended usability of the tool after this project has ended (stand alone or need for consultants). After these decisions were made each partner identified other limits of the original tool which were translated in specific questions and recommendations for development of the new tool.

The identified limits of the original tool dealt with the lack of attention for the classification of demo projects; regime analysis; dynamics of innovation practice; market and industry analysis; stakeholder involvement; stakeholder identification; stakeholder representation and stakeholder selection; actors taxonomy; power relations between actors; stakeholder motivation; risk communication and trust issues; the role of intermediary organizations; use of descriptive and normative scenarios; need for multi-stakeholder present and future networks and pathways.

The original Socrobust is a method of assessment based on one stakeholder in the relevant position of managing an innovation project. It was aimed at reflection and learning and less aimed at action and implementation. The WP1 report is an introduction to the original Socrobust toolkit and a critical review of its suitability to measure, promote and support social acceptance of innovative RES and RUE technologies. In general it can be stated that the existing steps and most of the instruments of the original Socrobust toolkit can be maintained, but that additions and small alterations need to be made if the tool is to function as a tool that assists multiple relevant stakeholders simultaneously instead of only the direct developers or innovators. In addition, the Socrobust instruments need additions and alterations to function as a toolkit that can measure societal robustness and create a platform to involve relevant stakeholders in the process of developing a socially robust product. The above briefly discussed results and recommendations are the starting point for the consortium’s efforts in WP3, where Socrobust will be developed into a new toolkit and methodology for Create Acceptance.

Cultural Influences on *Renewable Energy Acceptance* and *Tools for the development of communication strategies to promote ACCEPTANCE among key actor groups*

Project co-funded by the European Commission within the Sixth Framework Programme (2002-2006)

Partners of Create Acceptance



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An overview of gaps in the Socrobust tool and proposals on how to integrate this missing information in WP3

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Executive summary

Introducing the project Create Acceptance

This summary provides results of research that has been conducted as part of the EU-funded project Create Acceptance. Create Acceptance is supported by the European Commission under its Sixth Framework Programme (Project no. 518351). This report describes the results of the activities carried out for the first work package ‘WP1’, which was coordinated by CNR/CERIS-Italy. The objective of WP1 was to explore the potential of an already existing methodology developed in the project Socrobust, supported by the European Commission under its Fifth Framework Programme. Create Acceptance is coordinated by ECN (the Netherlands), and involves research institutes in Italy (CNR/CERIS), Finland (NCRC), Spain (EcoInstitut), Germany (OEKO), United Kingdom (SURF), France (IAE), Iceland (INE), Hungary (MAKK) and Poland (IEO). More details about the Create Acceptance project can be found at <http://www.createacceptance.net>

Often, successful adoption and diffusion of innovations is assumed to be merely an issue of securing the techno-economic dimension. In practice, many technological projects such as wind turbines or biomass plants are facing severe resistance from various stakeholders. Aligning the views of these stakeholders and finding an agreed common view on the innovation lies at the heart of good management practices for successful technology development. Successfully diffusing innovations relies on creating the societal acceptance of the technology.

The project Create Acceptance contributes to facilitating the implementation of new and emerging sustainable energy technologies by assessing optimal conditions for the implementation of these new technologies in terms of socio-economic aspects, consumer preferences and citizen needs. The objectives of this project are to increase the competitiveness RES (Renewable Energy Sources) and RUE (Rational Use of Energy) technologies by developing a tool that can measure, promote and improve social acceptance of these technologies.

Introduction of Work Package 1

The first Work Package (WP1) assessed the already developed Socrobust tool platform for its suitability to measure, promote and improve social acceptance of innovations in general by mapping its potential to contribute to societal embedding of RES and RUE technologies and by means of identification of its limitations to assess the social acceptance of RES and RUE.

WP1 was divided into two tasks. The first task was to familiarise the consortium with the original Socrobust tool, and familiarise the consortium with experiences ECN built up while using the tool. Output of this task are a manual on the original tool, including a theoretical section to position the methodology amongst other approaches and a report on ECN experiences. The second task aimed to take the Socrobust tool as a starting point, critically review it for its use, and selectively choose which aspects need further research and implementation. A special focus was put on integrating mechanisms that influence public perception and acceptance such as trust, knowledge, capacity and capability. On the basis of the research conclusions were drawn on how to further modify the Socrobust tool. Output of this second task is a report consisting of an overview of gaps in the Socrobust tool with respect to mechanisms underlying social acceptance and a proposal on how to integrate this missing information in the existing Socrobust tool platform in WP3.

In the next sections the results of the second task of WP1 and recommendations following this task, are discussed in more detail.

Results tasks 1.2 - From Socrobust towards the Create Acceptance tool.

In this second task the limits of the original Socrobust methodology have been identified on the basis of the competences and experiences of partners of the Acceptance projects.

First general decisions had to be made concerning the aim and intended results of the Create Acceptance tool, the intended users of the new tool, the fields of application (kind of innovation; phase of innovation) of the tool and the intended usability of the tool after this project has ended (stand alone or need for consultants). After these decisions were made each partner identified other limits of the original tool which were translated in specific questions and recommendations for development of the new tool.

The identified limits of the original tool dealt with the lack of attention for the classification of demo projects; regime analysis; dynamics of innovation practice; market and industry analysis; stakeholder involvement; stakeholder identification; stakeholder representation and stakeholder selection; actors taxonomy; power relations between actors; stakeholder motivation; risk communication and trust issues; the role of intermediary organizations; use of descriptive and normative scenarios; need for multi-stakeholder present and future networks and pathways.

The proposed recommendations will be further developed in WP3 of Create Acceptance.

Recommendations task 1.2

First a bullet wise overview of seven recommendations dealing with the aim, users, usability and field of application of the new tool is given below. Then recommendations to close gaps in the original Socrobust methodology are specified.

- The aim of Create Acceptance should be to create an instrument that helps an innovative project (in terms of new market or new technology) to assess and enhance its potential to successfully make the step from demonstration to market by facilitating creation of new market-technology networks and facilitating learning processes within this network.
- The targeted user is the demonstration project (including all involved partners at the starting point).
- Innovations of various types and stages can be targeted.
- Both single technology and small scale projects and multi-technology and large scale projects can be assisted.
- The tool should be flexible enough to accommodate differences in national and regional contexts (geographical contexts, institutional, socio-cultural and economic factors may differ).
- It is necessary to broaden the understanding of the potential future developments (descriptive scenarios), taking into account a large number of dimension (such as cultural, environmental and so on), but also to provide a more comprehensive set of normative scenarios and of the potential conflicts among them.
- The tool should be designed in a user friendly way as to assure the understanding of its principles by the users themselves, without involving an external consultant. Lack of presence of a consultant cannot be a hindrance to use the tool. The new version of the tool, therefore, should provide a list of questions which would help perform the societal robustness assessment as a stand alone application. A simplification of the language, a reduction of the concepts and references, a glossary of commonly defined terms should characterise the final version of the toolkit that will be used for the test activity in WP4.

Instrument specific recommendations

- The present and future networks instruments should be altered to comprise of more than users, producers, science/technology and regulation. All aspects relevant, i.e. technological, economics, cultural (fashion, user preferences and needs), infrastructural (production i.e.), institutional, context (local and regional specific), environment need to be included.
- The present and future networks instruments should be extended to include the drafting of present and future networks by all relevant stakeholders, not only the innovator.

- The present and future networks instruments should further be altered to differentiate between reference, descriptive, and normative scenarios and make conflicting normative scenarios explicit and find ways to deal with these conflicts.
- The external check instrument should be altered to also identify the broader context of the project.
 - Including an analysis of stakeholders, their representativity, centrality, alignment, power.
 - Including a regime analysis checklist for identifying possible windows of opportunities and possible barriers.
 - Including a database and checklist to identifies local/regional/national key indicators for acceptance.
 - Including a technology competition analysis.
 - Including a market/industry analysis.
- The action table and recommendation box instruments could be altered to include recommendations for all relevant actors involved.
- An instrument should be added that identifies the available different perspectives concerning the technology under analysis and confronts the project manager with them in a face-to-face interaction in a non-adversarial situation.
- An instrument should be added that facilitates monitoring of the public image of the technology under analysis.
- Face to face interaction between all relevant stakeholders should be organized to ensure stakeholder involvement and public participation. It is important to ensure that stakeholder involvement is not merely a ‘one-off exercise’, but part of an ongoing network-building process.

Conclusions

The original Socrobust is a method of assessment based on one stakeholder in the relevant position of managing an innovation project. It was aimed at reflection and learning and less aimed at action and implementation. The WP1 report is an introduction to the original Socrobust toolkit and a critical review of its suitability to measure, promote and support social acceptance of innovative RES and RUE technologies. In general it can be stated that the existing steps and most of the instruments of the original Socrobust toolkit can be maintained, but that additions and small alterations need to be made if the tool is to function as a tool that assists multiple relevant stakeholders simultaneously instead of only the direct developers or innovators. In addition, the Socrobust instruments need additions and alterations to function as a toolkit that can measure societal robustness and create a platform to involve relevant stakeholders in the process of developing a socially robust product. The above briefly discussed results and recommendations are the starting point for the consortium’s efforts in WP3, where Socrobust will be developed into a new toolkit and methodology for Create Acceptance.

1. Introduction

This second task of work package 1 aims to take the Socrobust tool as a starting point, critically review it for its use, and selectively choose which aspects need further research and implementation. In this second task the limits of the original Socrobust methodology have been identified on the basis of the competences and experiences of partners of the Acceptance projects.

First general decisions had to be made concerning the aim and intended results of the Create Acceptance tool, the intended users, the fields of application (kind of innovation; phase of innovation) and the intended usability of the tool after this project has ended (will it be a stand alone tool or will there remain a need to involve external consultants).

After these decisions were made, the partners identified other limits of the original tool which were translated in specific questions and recommendations for development of the new tool. Each partner had a special focus: the lack of attention for the classification of demo projects (MAKK); the need for a regime analysis (SURF and ECN); dynamics of innovation practice (CERIS); market and industry analysis (MAKK); stakeholder involvement (ECO/NCRC/OEKO); stakeholder identification (ECO/NCRC/OEKO); stakeholder representation and stakeholder selection (ECO/NCRC/OEKO); actors taxonomy (ECO/OEKO); power relations between actors (IAE); stakeholder motivation (ECO/NCRC/OEKO); risk communication and trust issues (NCRC); the role of intermediary organizations (SURF/ECO/NCRC/OEKO); use of descriptive and normative scenarios (ECN/OEKO); need for multi-stakeholder present and future networks and pathways (ECN). On the basis of this research, conclusions were drawn on how to further modify the Socrobust tool.

Output of this second task is this report, consisting of an overview of gaps in the Socrobust tool with respect to mechanisms underlying societal acceptance and a proposal on how to integrate these gaps, in the new tool. The proposed recommendations will be further developed in WP3 of Create Acceptance.

This deliverable consists of two sections. Firstly the key decisions made by the consortium as to the field of application for the new multi-stakeholder tool, its users and its usability as a stand alone tool are discussed. Secondly, the identified gaps of the original Socrobust tool are discussed, followed by recommendation as to how to close these gaps and a possible outline for the steps and instruments of the new tool are presented.

2. The aim, users and fields of application of the new tool

Firstly general decisions had to be made concerning the aim and intended results of the Create Acceptance tool, the intended users, the fields of application (kind of innovation; phase of innovation) and the intended usability of the tool after this project has ended (will it be a stand alone tool or will there remain a need to involve external consultants).

2.1 The aim of the new multi-stakeholder tool

The aim of the new tool will be to enhance societal acceptance of RES and RUE by:

- Facilitating the interaction between the project leader and other stakeholders in creating new socio-technical networks that learn about both technology and deployment context.
- Facilitating the introduction of the project from the experiment phase to the niche phase or from the niche phase to market phase.
- Assuring that the decision process does not become less democratic.
- Identify the diversity of visions, of stakeholders and of pathways.
- Using indicators for success and failure as identified in WP2 as a checklist to assess societal acceptance.

The researcher then should facilitate the critical reflection upon the desired future of the project manager (this can be a team). Summing up the aim is to create an instrument that helps an innovative project (in terms of new market or new technology/product or process) to assess and enhance its potential to successfully make the step from demo to market by facilitating creation of new market-technology networks (in a broader sense than techno-economic, including institutional and cultural aspects) and facilitating learning processes within this network.

2.2 The user of the new multi-stakeholder tool

The original Socrobust methodology targeted the innovator of a new technology. Often this was one person or a limited set of persons. The targeted user of the new multi-stakeholder tool is the management team around a demo project (including all involved partners at the starting point).

2.3 The fields of application of the new multi-stakeholder tool

2.3.1 Different categories of the innovation processes and its phases

The classical categorisation of the innovation process of technologies in terms of either business as usual (same technology same market), incremental (same market new technology), architectural (same technology new market) or radical (new technology new market) is somewhat crude. In Create Acceptance we deal with innovations of various types and stages: from the radical shift towards hydrogen energy and CCS to less radical RES innovations. Often, the innovative aspects of these innovations are concerned more with the production process than with the end product. The end product is most often an already existing product, for example electricity

and/or heat. The quality of this end product is often as good as that produced from incumbent players or sometimes somewhat inferior¹.

The innovative aspect thus often does not lie in the end-product or service, but lies in the new production system (the technical configuration needed to produce the end product), the system integration or transformation (which often is a prerequisite) and finally the innovation lies in the consequences of the diffusion of these technologies for society at large. These consequences often deal with the changed requirements for different user practices and user learning. This concerns some RES applications in households, H-fuelled transportation or micro CHP².

The innovative aspects of RES and RUE differ widely. For example, with respect to the demonstration projects that will be assisted in the Create Acceptance project, hydrogen technology is the least developed, whereas wind is the most mature, although there also changes and innovations can be expected. The wind production system and user practices are not much affected at present, but could be in the future (e.g. adding pump and storage plant, storage of off peak electricity in fuel cells etc.) And in the case of large penetration of wind energy, the electricity system is largely affected (system operation/control, security, distribution).

The need is felt for a categorisation (in the benchmarking step of the new tool) of the project under investigation that takes into account all aspects that might be innovative.

2.3.2 Different types of innovations.

The original Socrobust methodology assisted radical or architectural innovations. However, demonstration projects can be more or less radical, but still face massive challenges in becoming widely implemented. Therefore the new multi-stakeholder tool will analyse and assist different types of innovations, radical and incremental.

2.3.3 Single- and multi-technology/small and large-scale projects

The original Socrobust methodology focused most often on small scale radical single technology projects that were aiming for both a new market and a new technology. The new tool will be designed to be able to assist as many different kinds of projects. Important differences can be identified between small and large scale project and between single technology and multi-technology projects, especially when combined with categorisations of incremental, architectural and radical. The combination of these conditions gives the following diagram:

¹ RES electricity, if intermittent, has lower value for consumers. The situation is less clear as regards the H-economy, as H-fuelled transportation is only in its infancy, so it cannot yet be foreseen how, at what quality H-fuelled transport would satisfy users. This is true both as regards the vehicle use and the surrounding infrastructure (maintenance, filling etc). CCS is less likely to have a significant impact on the technology performance and electricity quality itself (disregarding costs and therefore price), but if accepted as a genuine method of CO₂ abatement, it can increase the acceptance of coal based electricity generation.

² Besides user practices and users knowledge, marketing/sales force knowledge and communication also play an important role in the entry and staying in the market of an innovative product.

Table 2.1 *Different projects according to four conditions*

	Single Technology	Multiple technology
Small scale	<ul style="list-style-type: none"> • New market/new tech • New market/old tech • Old market/new tech 	<ul style="list-style-type: none"> • New market/new tech • New market/old tech • Old market/new tech
Large scale	<ul style="list-style-type: none"> • New market/new tech • New market/old tech • Old market/new tech 	<ul style="list-style-type: none"> • New market/new tech • New market/old tech • Old market/new tech

However, during the Create Acceptance project, the tool will be tested and evaluated according to its usability in the five demonstration projects that were selected. These demos can vary in terms of small and large scale, but entail single technologies.

2.4 The usability of the new multi-stakeholder tool

2.4.1 Towards application in different national and regional contexts

The original Socrobust was designed to be flexible enough to accommodate differences in national and regional contexts. It is necessary to take explicitly into account how the new multi-stakeholder tool can be applied in different geographical contexts. One highly relevant aspect is that the new tool needs to be able to identify and if possible to deal with institutional and economic factors impacting on societal acceptance in a qualitative way, without the necessity of involving calculations and models.

2.4.2 Towards a stand alone application

The original Socrobust tool was not designed to be used without a knowledgeable consultant. The new tool should be designed in a more user friendly way as to assure the understanding of its principles by the users themselves, including the stakeholders, without the need to involve an external consultant. Of course the way might be open to involve a consultant who would facilitate the whole process, but lack of presence of a consultant should not constitute a hindrance to use the tool. The new version of the tool, therefore, should consist of a manual and a list of questions which help perform the societal robustness assessment as a stand alone application. Innovators and the policy makers, in fact, are interested in a list of do's and don'ts with respect to creating societal acceptance, and they should be able to produce such a document by the end of the process either by themselves or with the help of an external consultant.

A simplification of the language, a reduction of the concepts and references, a glossary of commonly defined terms, and examples of how to fill in and use the different instruments should characterise the final version of the toolkit and its manual. Both will be tested in WP4.

3. Identified gaps in Socrobust

3.1 The need for a broad socio-technical perspective

Widespread implementation of RES and RUE depends for a large part on the economic and technological characteristics of these RES and RUE options. However, tackling these two aspects is not sufficient if the goal is not only to measure but also to enhance the potential acceptance of RES and RUE options. To make an intervention in the societal acceptance of RES and RUE possible, it is imperative to have an analysis of all relevant aspects, not only the technological and economic ones. Societal acceptance can be affected by technological, economics, cultural (fashion, user preferences and needs), infrastructural, market and environmental aspects. It means understanding the extensive context of the technology or innovation.

3.2 The need for a reference to compare the outcomes with

The original Socrobust tool did to some extent analyse the context of the project. However, this analysis was rather limited. The consortium feels the need for both benchmarking the context and the project itself. Categorising the project, identifying relevant stakeholders, identifying the existing ‘systemic contexts’ in relation to innovative possibilities, identifying the regional specific and context independent indicators for success and failure, the system or regime, the complementary and competitive innovations and the existing market structures will all be discussed below.

3.2.1 The need for categorising the project

Categorising the project is a first step in benchmarking. The different possibilities for this categorisation have been discussed earlier under Section 6.3.2 and 6.3.3

3.2.2 The need for identifying the relevant actors

Identifying the relevant stakeholders for a project is step 2 in benchmarking a project. There are different types of actors. The following taxonomy highlights some of the possibilities:

- Non-associated persons: the general public.
- Associations and NGOs: neighbours’ association or/and other local associations, environmentalist NGOs, renewable energy NGOs, consumers organization.
- Public Administration: local authorities, energy regional/local authority, environmental public project manager (if the pilot project is a public initiative). As to the role of local authorities, we cannot define *a priori* if the local authorities will be shareholders or stakeholders, it depends on if the renewable energy project is a public or private initiative and which its role is.
- Private sector companies: private project manager (if the pilot project is a private initiative), *owner*, competitors.
- Experts: technology developers, environmental experts and other experts that can be important for the specific pilot project (for example in Iceland public transports and road mobility experts can be relevant).

Another type of taxonomy distinguishes between ‘core’ stakeholders (those on which the organization is dependent, such as consumers, owners, employees/suppliers, local community) and peripheral stakeholders (such as NGOs and media), which can be important since they can

influence the stakeholders' perception. A simple notion of stakeholders identifies those individuals or groups influenced by the project and the ones that can influence the project.

A more detailed distinction can be made between three sets of actors:

- *Partners/shareholders* surround the project and constitute its core, they are linked to the project through formal arrangements that institutionalize their resource commitment, and they have relatively clear principal-agent relations.
- *Stakeholders* can influence and are influenced by the project, but they do not have a formal commitment or relationship with it.
- *General actors* can enter or exit stakeholder status at different points of time (e.g., the media); their relation to the project changes over time.

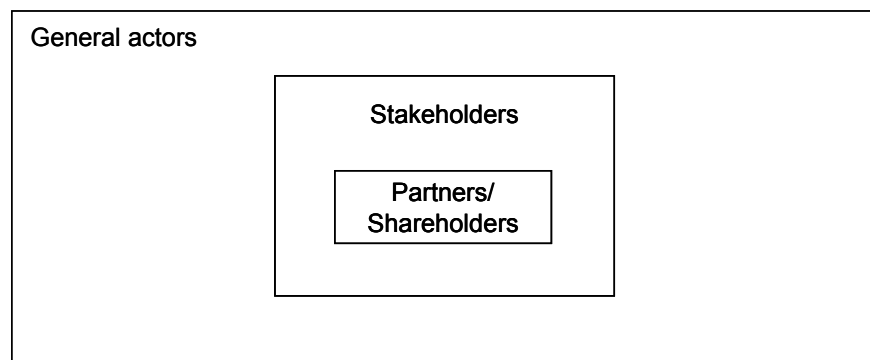


Figure 3.1 *Visualisation of the three different actors*

3.2.3 The need for identifying the context influencing societal acceptance

Local, regional and national specific context aspects, as identified in WP2 need to be taken into account, since these will have an impact on the potential and strategies for enhancing societal acceptance.

3.2.4 The need for a regime analysis

The potential for societal acceptance is directly related to the societal history and present situation surrounding the innovation and, as such, an analysis of innovation requires an emphasis on existing sets of socio-technical relationships constituting 'systemic contexts'. It is thus important to situate our understanding of innovative processes in relation to the opportunities and constraints of existing systemic contexts. In thinking about systemic contexts the concept of regime has been usefully developed in recent years (Geels, 2004; 2002).

Technological transitions (TT) approaches (Geels, 2004; 2002) outlines a way of thinking about the relationships, resources and practices, including technologies, institutions, skills, etc, which sustain existing configurations and regimes. It also addresses processes of adapting and evolving such a regime in respect of landscape 'pressures' for, and niche contexts of, new technological possibilities and innovations through processes of branching, add-on and hybridisation.

In terms of addressing existing systemic contexts, the concept of regime relates to incumbent technologies being intertwined within a configuration of institutions, practices, regulations and so on, where configurations impose a logic, regularity and varying degrees of path dependencies. Regime is defined as: 'the whole complex of scientific knowledge, engineering practices, production process technologies, product characteristics, skills and procedures, established user needs, regulatory requirements, institutions and infrastructures' (Hoogma et al., 2002). This focus on the embeddedness of transitions necessitates taking account of history. Path dependencies and logics of regimes are historically underpinned by circumstances which may have fa-

voured a particular technology over another within specific local contexts. The emphasis on regimes highlights the enablement and constraints on new technologies breaking through, whereby incremental evolutionary change may be more likely than 'revolutionary' change. Such reconfiguration processes do not occur easily, because the elements in a socio-technical configuration are linked and aligned to each other. Radically new technologies have a hard time to break through, because regulations, infrastructure, user practices, maintenance networks are aligned to the existing technology (Geels, 2002).

The emphasis here is on focusing on the regime in terms of transitions and incremental developments (Geels, 2004), instead of focusing on radical innovations (Kemp, 1994). Technological transitions are premised through 'stepwise process of reconfiguration' (Geels, 2002). TT involves the linking of 'multiple technologies' and that the use and development of innovations in different domains and contexts see an accumulation of niches - an important mechanism in gradual regime shift (Geels, 2002). Early linkages between niche and regime may rely on a 'link up with established technologies, often to solve particular bottlenecks' (Geels, 2002). There is an important focus on ideas of technological add-on and hybridisation where existing and new technologies 'form some sort of symbiosis' (Geels, 2002). It is useful here to move beyond the 'evolutionary' focus of technological transitions, to view the cultivation of networks in niches not solely as an actor-network (that is as a theory of agency), but in terms of the differential and structured 'relevant' resources which institutions and individuals may bring to future networks, often from different regime settings. Technological transitions are not *necessarily* about 'problem solving' and 'evolution', but are related to the different roles of actors and institutions and their (in-)capability to shape differentially, reflexively and in relation to resources, innovation. It is in this sense that the relative stability and obduracy of regimes provide understandings of existing socio-technical relations which highlight wider contexts within which we can understand the 'project story', 'key actors', 'future working worlds', 'key changes' and so on.

3.2.5 The need for identifying competing networks/innovations

Create Acceptance focuses on demonstration projects, when early embedding of an innovation starts and facing market needs, adoption paths and competition with other socio-technological solutions is worth. These aspects were not specifically dealt with in the Socrobust tool, since it was focused on the early design of an innovation. Understanding if other projects offering other solutions and building on other networks are important competitors and what their relative strength is, is missing in the Socrobust tool but should be included in the new tool. Technologies come to the market in a variety of forms. Adopting a new technology involves choosing among these variants in the first instance. An explanation of the initial choice between alternative variants is worth, since it provides a useful bunch of information, on which it is possible to built explanation of the determinants of the diffusion process. The explanation of initial choices (how, when) made in the market among technological variants helps to understand the future diffusion path of whatever variant that become established. Relations among actors and networks cannot only be represented in terms of mutual adjustment, collaboration and enrolment. In some cases they have to be represented through competition relations between networks and through a strategic game frame. This approach has been recently applied to analysis of networks relations (Klaes, 1997), more specifically to analysis of competitive alignment between dominant socio-technical constituencies in emergent technologies.

3.2.6 The need for identifying market structures and supply considerations

Demonstration projects are in the phase of early embedding of an innovation and face market needs and adoption paths. These market aspects were not specifically dealt with in the Socrobust tool, since it was focused on the early design of an innovation but need to be dealt with in the new tool.

Market is a ‘forum’ where supply and demand interact. Supply and demand are to be examined on their own and in their interaction. Market is an institution built on competition both on the supply and demand side, but collaboration between transaction partners can draw mutual advantages of trade. An organized electricity exchange is an example. A difficulty in applying economic market analysis lies in that it examines equilibrium of supply of a given set of products and demand with given preferences behind. In creating diffusion and acceptance actors have to grasp and even influence the dynamics of supply, demand and the way how they meet. On the supply side, other producers of similar outputs and competitors who produce close substitutes can be allies and form a lobby group to influence regulatory determined market conditions. The innovator may also rely on support of producers of complements if such products exist. Both the input and output markets are to be assessed. Input suppliers can be as important as the output suppliers when searching for allies. They are especially relevant for the biomass demonstration project, but also are to be examined for other projects.

Moreover a separate description of producer (supply) and user is not sufficient; since a relevant aspect is their relations, large part of which is realised via the market transactions, therefore the analysis of the market also means to analyse their interaction. The market structure interacts with the underlying technical infrastructure too, especially if it is supplied by a natural monopoly. It influences and is influenced by the market structure, its configuration often being locked for decades (path dependency). Often the owner and management of the underlying infrastructure are socially intertwined with those of the incumbent technology.

The energy (electricity) market liberalisation process is just partly successful in detaching natural monopoly and competitive undertakings of large companies (this process is called ‘unbundling’). Sometimes regulation forces innovations in the infrastructure (e.g. obligatory third party access), but the development and innovation path can only be optimal if incentives are provided for the infrastructure to innovate and change. It is more the so as the dominant regime - which the infrastructure is part of - may provide counterincentives, as they resist because radical changes are against their vested interests. It is worth analysing to what extent society accepts and agrees with the existence and degree of support to innovation. In the case of system benefits of decentralised energy production it is also a question whether the innovation project developers are explicitly rewarded or not, and what the attitude of stakeholders to the reward is. As such jointly produced externalities directly only affect the operators of the infrastructure (system operator, distribution), the general public is less appreciative regarding them, unless the price effect is publicised towards them. Examples can be reduced transmission and distribution loss, contribution to reserves and voltage/reactive power regulation. In some countries these are explicitly and proportionately rewarded, and/or other ways indirectly supported (in permitting and connection rules).

3.3 The need for involvement of multi-stakeholders

3.3.1 Getting away from the biased innovator’s perspective

Entrepreneurs (including project managers) typical have a strong bias in favor of their own technology (Baron, 2004). They need this narrow, ideological world-view in order to carry through their project in the face of uncertainty and negative feedback (Berglund, 2005). While commitment is important, it can also obstruct the integration of new, critical information. In the case of new technologies, there are however almost invariably quite divergent viewpoints on its social effects. External stakeholders can have quite legitimate and well-justified perspectives (positive or negative), which are quite different from those of the project manager. Therefore the most important change to the original single-perspective Socrobust methodology is the facilitation of the interaction (in interactive workshops) between all relevant stakeholders in the new multi-stakeholder tool. This multi stakeholder analysis offers the possibility of escaping from the myopia characterizing a single perspective methodology.

Dealing with multiple partners in a project team instead of dealing with one innovator that functions as representative (if others are even present) requires adjustments to the tool, because the original tool is not equipped to work with more than the innovator team and a single 'vision' of the innovator team. When dealing with different project partners, the visions will multiply and interaction needs to be facilitated.

3.3.2 The need for organising stakeholder: involvement/commitment/representation

The decisions about a project are made by different stakeholders: investors, project managers, public authorities (local, environmental ones). Given this it is very important that the different relevant stakeholders are involved and reach a minimum kind of agreement/acceptance/consensus that guarantees the viability of the project. The aim of the stakeholders' involvement depends on the characteristics of the national/local context where the tool is applied, on the kind of innovation and the extent to which it has the potential for getting consensus. The aim of stakeholder involvement in Create Acceptance is to broaden the perspective of the demonstration project by including the perspective of multiple stakeholders, to build social acceptance, to analyse the possibilities for social consensus and finally the involvement of stakeholders will aim at mutual adaptation.

Public participation is often organized as a response to a variety of diverse expectations (Klüver et al., 2000). Risk communicators seek to promote legitimacy through early engagement of a broad range of stakeholders. More enlightened risk communicators will also seek to *learn*: to gain and create new knowledge together with stakeholders, in order to surmount the limitations of their own perspective. People involved in public participation will usually also have a *political* interest: participation in local decisions and decisions about new technologies is viewed as one avenue for people to gain power in decisions concerning their own lives. All these interests are usually present in participatory forums, but the focus may vary. It is important to make sure that all stakeholders involved are aware of the different expectations toward the participation exercise, and that the connections to existing decision-making processes are made explicit.

3.3.3 The need to motivate stakeholders to participate

Motivating stakeholders to participate is a problematic issue, since in this project participation does not necessarily entail decision making power with respect to the innovation under analysis. This can create a lack of commitment. However, literature on intermediaries and risk perception and trust demonstrate that building trust in a new option through for example intermediaries is one important way of enhancing the motivation to participate in building societal acceptance for these options.

3.3.4 The need to identify power relations between actors

The Socrobust tool did not adequately treat the relations among actors and did not make power or authority relations explicit. However, to be able to assess the capacity for action of a stakeholder, this analysis is necessary. The Actor Network Theory (ANT) on which the Socrobust tool is based, developed three conceptual aspects of power relations:

- *Network centrality and power* - Power in ANT is the result of the networks structure. The shape taken by network at a certain moment in time determines the strength of some actors. Actors who are in central positions in the network have a greater access to a large number of interactions and their influence on the overall norms creation are thus supposed to be more important.

- *Network builders and enrolment strategies* - In ANT stories, project managers are entrepreneurs who contribute to shape and enlarge the network partly in accordance with their interests and goals. They cannot, due to the specific dynamics of networks and their instable nature, completely control the process of innovation, but they do influence it by enrolling/aligning other actors in the network.
- *Black boxing processes and obligatory passage points* - Project managers tend to negotiate and compromise with other actors in order to come up with agreed upon technical solutions (black boxes). This negotiated decision process defines a number of irreversibility.

3.4 The need for focusing on risk perception and communication

3.4.1 The need for acknowledging the rationale of risk perceptions

Expert risk assessments are based on mathematical models estimating the probability and magnitude of risk events. ‘Subjective’ risk assessments usually take into account a larger number of different factors, including: personal and control, voluntariness, familiarity, artificiality, dread - and, importantly - the equitability of the distribution of risks and benefits (Slovic, 2000). Originally, these ‘subjective’ elements in risk perception were called ‘cognitive biases’. Yet it has turned out that this ‘subjective’ way of viewing risks is in fact the prevailing perspective - it is a fundamental feature of human psychology, so one might just as well question the usefulness of expert-based risk assessment. For example, expert-based risk assessment is based on a utilitarian calculus that places all types of hazards on the same footing. For many people, some risks are simply unacceptable - hence, they cannot logically be included in such calculations.

3.4.2 The importance of local context and history in understanding risk perception and risk-related controversies

Local communities possess relevant knowledge that reflects local conditions, but which is tacit by nature and hence difficult to communicate to outside experts. Local conditions may be very variable, and require the integration of many different kinds of knowledge (e.g., political, social, cultural) besides ‘facts’ derived from natural science (Fourez, 1997). Because people need information that is relevant for their own context, other similar ‘ordinary’ people and local conventions are often the most reliable sources of information. This line of research also emphasizes the importance of local history and material relations in risk-related conflicts: new technologies will enter settings with existing economic dependencies. Irwin and Wynne (1996) have also stressed the importance of the ‘body-language’ of scientific and technological experts - and arrogant attitude may provoke controversies and obstruct communication (Grove-White et al., 2000).

3.4.3 The need to focus on risk communication

Sense-making is a social process, in which communities try to understand what a new thing entering their lives means for them. In the case of renewable energy initiatives, this perspective would emphasize the way people start to speak of the new technology, and the types of previous experiences that they draw on. For example, a new installation may be discussed in terms of its links with the local economy, or it may be spoken of as yet another new and disruptive change introduced by ‘outsiders’.

Over the past decade, these psychological and sociological findings have prompted a paradigm change in risk communications. When earlier, the focus was on educating the public, current risk communication literature emphasizes the need to engage members of the public through *public participation and consultation* and to *build up trust*. This is especially important for risks that involve high ambiguity - i.e., in which risks and benefits are inequitably distributed and in

which judgments about values are more problematic than judgments about facts (Klinke & Renn, 2006). Renewable energy technologies typically fall into this category: the impacts of both the technologies themselves (usually local impacts) and the impacts of the problem they seek to solve (climate change) require a balancing of different values and interests. The role of the media and of local contexts is relevant in this new paradigm of risk communication. People have to form their judgments in a world that is increasingly uncertain and full of contradictory information (Wagner et al., 2003). There is seldom full scientific agreement (in fact, it is in the nature of science to disagree). In the case of novel issues or technologies, uncertainties among experts can be amplified - and hence, people may not understand that expert opinions are perhaps not more divergent for this new issue than for many other issues. In order to develop informed opinions, people need help in how to use experts sensibly (Fourez, 1997). Thus, dealing with uncertainties openly is an important part of risk communications (Klinke & Renn, 2006).

3.5 The need to include an analysis of trust and trust building

Taken together, this body of literature implies that relations with local communities cannot be managed at arms' length. Project managers need to get involved; they need to allow local people to monitor their behavior over a longer term, and also to build up relations with local people who enjoy others' trust. While the risk communication literature discusses trust as a means to abate risk controversies, trust is also an important element in creating support for new renewable and energy-efficient technologies. Stakeholder participation and involvement can promote positive trust and engagement by developing partnerships and strengthened networks between and among stakeholders (Hemmati, 2002).

3.5.1 The need for trust building

Trust is closely linked to risk perception, although there is disagreement on the nature of this relation (i.e., whether it is a cause or a consequence of risk perception). Nonetheless, trust in the managers and institutions governing risky technologies is an important factor - when trust is missing, risks will easily be perceived of as less unacceptable. Trust includes at least two dimensions: trust in the *competence* and in the *intentions* of the trusted party. There are three main sources of trust (Zucker, 1988): *process-based trust*, *characteristics-based trust* and *institutional-based trust*. Process-based trust builds up gradually, as experiences of mutual interaction accumulate. Characteristics-based trust is related to membership in a group, whose members share a common set of norms and act in the interests of other group members. Institutional-based trust is tied to formal structures and procedures. While formal institutional-based systems are increasingly important in the modern world, it is also clear that personal experience, group membership and social distance still play an important role in evaluations of trustworthiness (Heiskanen and Lovio, 2003). Finally, trust can co-exist with distrust. Unquestioning trust is not always the most desirable goal (Lewicki, 1998): critical and involved citizens may be more important in the development of new technologies than ones who are trusting but disengaged (Poortinga and Pigeon, 2003).

3.5.2 The role of intermediary organization in building trust

Intermediaries can bridge very different social interests. The challenge is to understand the role of these 'intermediary organisations' and assess their contribution to energy transitions. They are not simply arbitrators. Intermediaries play a role in ordering and defining relationships. There are three reasons why we should look at place based intermediaries in the energy sector:

- Exploring the role of intermediaries in relation to systems of innovation. Intermediaries play an important role as a broker between different parties, by connecting, translating and facilitating flows of knowledge (Van Lente et al., 2003). This can be situated within the context of a move from a 'mode 1' to 'mode 2' science, that is from 'mono-disciplinary' to 'multi-

disciplinary forms of knowledge production. In mode 2 there are multiple and varied interactions between the world of research and users, and consequently, this creates a ‘breeding ground of the development of many, including strategic, intermediary functions’ (Van Lente et al., 2003). For our work the issue is, then, what are the forms and flows of knowledge necessary to develop RUE and RES systems in places as part of a broader energy transition.

- There is a variety of organisations that function as intermediaries: knowledge intensive business services; research and technology organisations; industry associations; chambers of commerce; innovation centres; university liaison offices (Van Lente et al., 2003). Each of these offers different types of intermediation between different actors and it is possible to distinguish between ‘hard’ functions (transfer of knowledge, provision of specific technical services) and ‘soft’ functions (management support, organizational and institutional aspects’. The key question for our work is who are the intermediaries shaping the development of RUE and RES technologies in specific places. These intermediaries are likely to be acting as the transition managers within a particular context.
- Given the changing characteristics of innovation systems, namely a move to systemic transitions, the roles and functions of intermediaries are changing (Van Lente et al., 2003). More specifically there is a shift towards the emergence of ‘systemic intermediaries’. In contrast to both hard and soft intermediaries that work primarily in one-to-one interactions, that is bilaterally, these new systemic intermediaries work at the network or system level and offer support at the strategic level. The specific functions that these intermediaries perform will vary in different contexts, but broadly will involve ‘articulation of options and demands’, ‘alignment of actors and possibilities’, and support ‘learning processes’. Finally it is relevant to focus on how intermediaries develop processes at the systemic level to accelerate the development of RUE and RES technologies in specific contexts.

Differences across Europe

The concept of ‘intermediary organisation’ could also help us in understanding the role of places in energy systems transitions. In varied ways, across different contexts, infrastructure transition has been characterised by differentiation and the provision of more diverse services, opening up new spaces, within the production-consumption nexus. Within these spaces a range of services are being offered by a range of new and existing organisations. The emergence of intermediary space and organisations, being heavily contingent, varies enormously across Europe and would not appear to follow a clear pattern. Variety and importance of intermediary organisations is increasing across Europe. This has three key implications for the energy sector: In what ways are new intermediary organisations emerging? What sorts of work do intermediaries do? How do intermediaries transform the relationships between utilities, regulators and consumers? What role do intermediaries have in changing social practices and introducing new RUE and RES technologies?

3.6 The need for more action orientation

The consultancy step (step 4) of the original Socrobust methodology should be developed into a more action oriented instrument. Not only the type of action should be identified, but it should also whom, when, where and how to undertake these actions should be identified. The possibilities for explicit mediation processes (through skill formation, communication, collaboration, an intermediary organization role) or competitive dis-alignment should be analysed.

4. Recommendations on how to close the identified gaps

4.1 Towards multi-stakeholder involvement

4.1.1 Towards identifying all relevant stakeholders

This can take several forms. Different ways for getting a complete scheme of shareholders, stakeholders and actors are:

- asking the project manager view,
- taking advantage of the expertise of the local Create Acceptance team,
- the WP2 analysis of the regional, national and local context and
- the WP2 study of regional, national and local conflicts and successes.

Asking the project manager already occurred in the Socrobust project. The expertise of the local Create Acceptance team is important to a great extent because the CA teams are ‘well informed’ actors: they know very well the context, the previous conflicts, the CA project and they have technical knowledge. The WP2 analysis introduced the monitoring of the information collected both from the project manager view and CA local team view. The three views are complementary and we need all three for recognizing actors.

4.1.2 Towards selecting relevant stakeholders

The anthropological method of ‘following the actors from inside out’ could be a good solution. Alternatively we can proceed in two other different ways:

- Informative saturation method: interviewing the actors mentioned in the previous interview. The interview process ends when there are no new actors (there is no new information, the information is saturated).
- Defining a priori diverse types of actors and deciding a minimum and maximum number of interviews for each type. In this case different types of actors are selected and set and then a number of interviews for each type determined. The advantage is that a priori the number of interviews that will be realized are known. But this method allows having a less complete picture than the one done with informative saturation method.

Comparing the results of the CA group’s interviews with the project manager ones will highlight if there are agreements/disagreements on who are the key actors; who is often mentioned and who is cited very few times by all the actors interviewed: it can suggest who is core or peripheral in the project (hindering or supporting the project).

4.1.3 Towards identifying position and alignment of actors and their representativity

The role, alignment, opposition or support for the project, as cited by actors in the interviews needs to be identified. It is important to know how representative these stakeholders are for the broader networks. Moreover it is necessary to define which will be the stakeholders’ involvement and commitment in relation to the ‘participative process’ definition and methodology, the Socrobust steps that will be checked with the stakeholders and the role of the CA team.

4.1.4 Towards using intermediaries in Create Acceptance

Every Create Acceptance local team could be considered an intermediary organization, but it could be also another one, identified within the social network map. From a general view point, the intermediaries can facilitate the process of creating acceptance. Intermediaries can support the identification of the key stakeholders of every single experience (CCS, Hydrogen...), favour alliances and consensus among key stakeholders, support us in drawing up public and specific information for key stakeholders, particularly systemic intermediaries. Identifying these intermediaries is also important because these intermediaries possibly can take over the process after the CA project is concluded. Involve them strongly in the process as co-organisers is a possibility.

4.1.5 Ensuring stakeholder involvement and public participation

Stakeholders should be involved in a consistent, transparent manner and on an ongoing basis. This can be helpful both in order to avert controversies and to build up positive support and commitment to the project. Special attention should be paid to representation - are the diversity of potential viewpoints included? Another important issue is the fairness and openness of the process - will it meet participants' expectations; does it contribute to trust? The CA team has an important role in assuring that all the processes are transparent, that everything that emerges in the process is made public for everybody regardless of where the decision-making power is concentrated. It is necessary to manage the stakeholders' feed-backs. The stakeholders' commitment and involvement is related with how the stakeholders' proposals will be incorporated. It is important to discuss the role of the CA local team in the participative process. Will the role focus on the organization of a negotiation process among stakeholders that then will lead to recommendations (in this case the CA team acts as facilitator and the proposals are made by stakeholders) or will the CA team draw up the recommendations by itself, based on various material, including the stakeholder process?

In the Socrobust toolbox, the tool concerning 'future network and future working world' would be an especially appropriate stage for promoting face-to-face interaction. Yet it would be important to ensure that stakeholder involvement is not merely a 'one-off exercise', but part of an ongoing network-building process.

4.2 Towards an analysis of power

The views of the project manager, the CA team and the WP2 analysis are complementary and all three needed for identifying the power relationships among actors. The power analysis should include the following aspects:

- Recognising power of artefacts (artefacts or rules can have power as long as interviewees consider them as central and performative).
- Identifying network structure (centrality of actors as well as their influence on decisions shall be made clear).
- The negotiation process between actors should be traced (by means of the narrative + critical moments table).
- Identifying actors that are not enrolled but concerned (the method is to be devised). Actors shall be re-contextualised in their space and history as well as in their social ties, as they are occupying certain positions and are enjoying certain resources that are not neutral in the analysis.

4.2.1 Towards understanding and including different (risk) perspectives

It is necessary to overcome the bias of a single stakeholder (the project manager) perspective, since the innovator can feel the need of giving a safe picture and ignore other stakeholders dif-

ferent desirable future scenarios. The involvement of multiple stakeholders helps in facilitating adaptations (projects in early phases) or facilitating adoption (projects in later phases). The participation of other stakeholders than project/programme managers is a goal in itself. The socio technical network changes and it embeds potential for learning about each other expectations, visions and others. The interaction between the project/program manager and other stakeholders broadens the perspective. The project management team can become more open to a reflexive stance and might alter the technological trajectory. The project/programme manager and the other stakeholders learn from each other's perspectives, formulate compromises and work towards a more commonly shared and carried technological trajectory. The involvement of multiple stakeholders and their interaction allows at the same time to elicit other scenarios and other perceptions about risk and it allows for an assessment of the stakeholders' willingness to align their views with those of the innovator. However, simply reading or hearing about different viewpoints may not be sufficient to challenge project managers' strong convictions. It would thus be important that the new tool creates learning experiences for the project managers that enable them to be alerted to totally different perspectives on the technology they represent. Face-to-face interaction in a non-adversarial situation seems to be one of the best ways to create such experiences (Battarbee, 2004; Heiskanen and Repo, 2006). This perspective is already implicit in the Socrobust framework, yet it gains even more importance in a multi-stakeholder environment.

4.2.2 Towards multiple normative and descriptive scenario's

While the original Socrobust tool relies on merely one endogenous scenario, in Create Acceptance it has been proposed to broaden the scenario process. While from the innovator's perspective it was sufficient to come up with a normative scenario (how should the world look like for the innovation to work), in a broad societal perspective it is necessary to broaden the understanding of the potential future developments (descriptive scenarios), taking into account a large number of dimension (such as cultural, environmental, economical, etc.), but also to provide a more comprehensive set of normative scenarios. Importantly, taking into account multiple stakeholders and their different perspectives, the scenario process should not only aim at broadening the understanding of potential future developments (descriptive scenarios), but should also provide a more comprehensive set of normative scenarios and potential conflicts between them. The narrative, present network, future network, actor table and key changes table need to be drafted by all partners involved, and subsequently merged where possible. Possible conflicting perspectives need to be discussed prior to involving other actors (shareholders and marginal actors), external to the project team (stakeholders). As a result of both, the new tool will produce not just one scenario as in the original Socrobust tool, but a larger number of scenarios.

Reference scenarios describe how the future *will* look like *if* the current policies and trends are extrapolated into the future. They are not meant to 'foresee' or even 'forecast' *the* future (at least not in the sense of prophecy), but to give a point of reference (or yardstick/benchmark) to compare other scenarios with.

A broader³ class of scenarios is called '*descriptive*', since such scenarios describe what the future *could* be like, they show a variety of *potential* futures. Multiple descriptive scenarios can be helpful to capture the scope of possible future developments ('development corridor'). For the innovation project, such an analysis can help to be prepared for different paths, and to draw up robust strategies that are valid under different scenarios, or flexible strategies that can be adapted.

Normative scenarios, on the other hand, describe how the future *should* be. Different actors are likely to have different normative visions of the future. Multiple normative scenarios represent

³ In a narrow sense, a *reference* scenario is descriptive as well, as it aims to capture what *would* be *if* the current policies and trends are extended into the future.

different and potentially conflicting ‘values’ and ‘interests’. How stakeholders want the world to develop is an important criterion when it comes to making an innovation socially robust.

The following table summarises the different types of scenarios to be drawn up.

Table 4.1 *Possible scenarios of a project*

Scenario type	Innovation project	Stakeholders
Reference	What is the potential future development without changing current policies and trends (‘business-as-usual’ case)?	
Descriptive	What are potential future developments (irrespective of the innovation)?	
Normative	How should the world develop for the innovation to work?	How should the world develop (e.g. to be sustainable or for another innovation to work)? Different stakeholders are likely to have different views.

For the innovator it is probably sufficient to come up with a normative scenario (how should the world look like for the innovation to work).

Yet when the stakeholders are asked to comment on this scenario they can be asked:

- How they think the world will develop (reference case)?
- Where do they expect developments to deviate from the innovator’s scenario (descriptive scenario)?
- How they think the world could develop (maybe in contrast to the REF and innovator’s cases)?
- How they think the world should develop for the innovation to work?
- How they want the world to develop (normative scenario, irrespective of the innovation)? It may be that they want the world to develop without the innovation or want the innovation to develop in a certain way.

The descriptive scenarios expressed by the stakeholders can help the innovator to develop a better understanding of possible future developments. As for the normative scenarios, potential conflicts between different stakeholders on the one hand and between stakeholders and innovator on the other hand need to be dealt with. Potential approaches include:

- While starting from different normative scenarios, it may be possible to reach a consensus as a result of the stakeholder process. The question is whether the consensus reached within a limited process with a limited number of stakeholders is valid outside the process, too and can be relied upon for the further development of the innovation.
- The innovator can adapt the development of his innovation in a way that it matches the normative requirements of a greater number of stakeholders.

ECN proposed the following to integrate changes into the original Socrobust toolkit, keeping in mind that the time required to perform the tasks should be kept to a minimum. A relatively simple process is followed: to take the project/programme manager’s present, intermediate and future working world as starting point; to have stakeholders to react to them separately; to take all future worlds as equally important but keep the process transparent (also for innovators to be able to make priority choices); to organise interactive workshops aimed at convergence to at least a few worlds; to interact with project/programme manager in follow up process to facilitate adaptations to innovation if possible or user-innovation interaction. In the workshop or the interviews, the distinction between reference, descriptive and normative maps as discussed before should be used.

Below a concrete proposal for changes for most of the individual instruments is presented. Note that not all toolkit methods are extensively discussed in the proposal below (such as the various tables for actor descriptions or the capacity for action table).

STEP 1: Project story

Interview the project manager to construct a project story + critical moments table. The project manager can be the innovator, but can also be for example a program manager/policy maker. Other stakeholders might also be possible, although this is less likely. The project manager can also consider not being the source for the project story, which might then require an additional interview for the construction of the project story. The interview with the project manager also results in a preliminary identification of relevant stakeholders.

STEP 2: Project unfolding

2.a. Present network

We propose to have the innovator design the present network and a reference network and in subsequent interviews to have all stakeholders react to the given present network and reference network. Based on the interviews the consultant/analyst constructs one or two present networks and reference networks, depending on the amount of conflicts in the interviewee's perspectives. Note that this changes the assumption present in the original Socrobust tool that the consultant should not impose his/her analysis on the network mapping. The interviews might also lead to the identification of additional stakeholders (snow-ball effect).

2.b. Key actor table

Based on the number of present networks a similar number of key actor tables is constructed.

2.c. Future network

In a second round of interviews the consultant/analyst also has the innovator design one or two future networks (descriptive and normative networks). In subsequent interviews have all stakeholders react to the given future networks and have them formulate their descriptive and normative networks. Based on the interviews the consultant/analyst constructs one or multiple future descriptive and normative networks, depending on the amount of conflict in the interviewee's perspectives. The Consultant/analyst can also include an 'overview of commitment' demonstrating which stakeholder is supporting which future world and which stakeholder is resisting which future world and why. Possibly additional interviews are necessary or maybe in this stage an Internet research can be used to support the process, e.g. to collect stakeholders view in a more structured way.

2.d. Workshop 2

In a second workshop the new set of present and future networks are presented to the stakeholders. The stakeholders are invited to help constructing pathways from the present network(s) to the future network(s) as well as the key changes tables. Interactive process have to be designed. The consultant/analyst processes the input into an extended written document representing the present and future networks and the pathways.

STEP 3: Societal Robustness Assessment

3.a. External check

The involvement of the external stakeholders in a sense has become part of the external check. Checking key changes that are mainly occurring at the project level have been covered by including stakeholders explicitly in the Socrobust process. Therefore the original external check can be removed as such. This leaves the necessity of checking the key changes that occur beyond the direct influence sphere of the project/programme manager and stakeholders, i.e., at the systemic level of socio technical regimes. Vested interests of incumbent firms or dominant technological design or existing infrastructures, contextual factors possibly influencing the embedment of the innovation which are out of the scope of the project management are all included in this system analysis.

3.b. Positioning table

Content can be determined in consultation with the project management team and on the basis of an innovation diffusion analysis (competition, complementarities).

STEP 4: Consulting activity

This is the consultation step towards the principal/the project manager. It can remain the same as in the original Socrobust toolkit or a third workshop can be organized including the stakeholders, to come to a collective capacity for action table/task division (the process is to be designed in WP3).

4.3 Towards a context sensitive tool

4.3.1 Broadening the TEN

The present and future networks need to comprise more than users, producers, science/technology and regulation. All aspects relevant, i.e. technological, economics, cultural (fashion, user preferences and needs), infrastructural (production i.e.), institutional, context (local and regional specific), market and environmental aspects, need to be included.

4.3.2 Towards context specific success and failure indicators

A new instrument will be added in addition: a database with indicators that have been identified in WP2, being local, regional and national specific. For the future use of the Acceptance tool, a checklist will be drafted that identifies which knowledge needs to be acquired by the user of the tool to make a local/regional/national analysis of key indicators for acceptance possible.

4.3.3 Towards a regime analysis

A second new instrument that will be added is a regime analysis checklist to be able to identify relevant context indicators for the practice of innovation, and for identifying possible windows of opportunities and possible barriers.

4.3.4 Monitoring the public image of the technology

Very few people have a full understanding of the available RES or RUE technologies, their role in the energy system or their social impacts. Furthermore, few people are interested and have sufficient time and resources to fully educate themselves. People relate to the new technologies on the basis of their own interests and previous experiences, make often use of simplified images offered to them by the mass media, and rely on social sources of information. These sources provide anchors, i.e., the bases on which people relate to the new technologies and make sense of them.

This concern might relate to the ‘external check’ tool in the Socrobust toolbox. In addition to the current focus on the external check tool, the new tool might provide guidance for monitoring the public image of the technology and its discursive connections to other technologies, social institutions and economic activities. Such public images will also continue to evolve on the local level, building connections to previous experiences and social groupings. A set of questions in the toolbox on how people write and talk about the technology (contexts in which it is referred to, metaphors used, the type of agency denoted) might be helpful for this task.

4.3.5 Towards a categorisation of the innovativeness of the project

The following table aims at giving a more detailed classification of the demo projects followed in Create Acceptance than the two dimensional old/new technology and old/new market one.

Table 4.2 *Classification of demonstration projects of Create Acceptance*

	Maturity of core technology	Entrance into what market	Product/service	Production process (with its wider input and output technical context)	Tech system innovation required for tech system integration	Socio-system innovation required	Market integration required i: influence a: adapt
Hydrogen	New technology	new market	new	new	yes	***	***
CCS	New technology	new market	new	new	yes	**	iii - aa ***
Biomass	Mature technology	semi- new market	old	semi- new	No for output; Yes for inputs	**	ii - aa *
Solar	Semi-mature technology	semi- new market	old, semi- new	semi- new	yes	*	i - a **
Wind	Mature technology	semi- new market	old, semi- new	old	yes	*	i - a *

Note: From lowest * to highest *** level of requirement, from 'i' to 'iii' the strength of influencing the market rather than 'a' to 'aaa' the degree of adaptation.

Semi new market: electricity market is old, but market for electricity qualified and differentiated as 'green', is a relatively new regulatory/market development. Especially relevant, if green electricity is traded in a niche market.

Semi-new product: electricity is old product, but electricity with a quality of high uncontrollability (intermittency) and tolerated due to being 'green', is a relatively new product.

CCS can play in a special market: Demand from power plants, due to regulatory greenhouse gas limitation, can be boosted if CCS is accepted in CO₂ markets (especially EU ETS).

4.3.6 Towards a competition analysis

A third new instrument that will be added deals with the dynamics of innovation practices. When two or more variants of a new technology arrive at the same time in the market, diffusion involves a competition among the alternatives. We choose first of all to use as instrument of analysis a simple model of competition with path dependence. The analysis looks at the emergence of a structure within systems characterised by path dependence. In this case the probability of adoption rises with the market share of the technology variant. If we find two technological variants answering to the same problem on the market, we can take into consideration for each competitor:

- The initial choice (when, how).
- The absolute benefit offered by each technological solution, reflecting the heterogeneity of factors/groups of actors in the population and independent from the number of adopters.
- The relative speed of adoption.
- The kind of network linked to.
- The relative benefit which reflects the existence of network externalities.

The relative benefit can be distinguished in two types:

- Direct relative benefit (based on network externalities), which can be equal at the extension of adopters.
- Indirect relative benefit, deriving from the fact that a technology is inserted in/linked to a cluster of other technologies, with resulting large externalities and learning processes.

In sum what is necessary to know for each competing technology is:

- The absolute benefit (given a heterogeneous population).
- The level of direct network externalities: the number of participants to the network and the feedback effects from information distribution or other elements lowering the cost of communication, such as norms.
- The level of indirect network externalities.
- The process (mostly the initial events).

If we assume a strategic use/promotion of a technological variant from the supply side, we can explain decisive events for lock-in. Each technological structure can be 'locked-in' to a different degree measurable by the (minimum) cost of changeover: if the adjustment cost is low, the lock-in can be reversible. We can identify both: critical events for lock-in and cost of changeover.

The use of quantitative instruments would be possible in a simplified context, where enough stability of goals and beliefs has been reached by the competing socio-technical networks. More easily and better fitting with the Acceptance goal of looking to competition between emergent socio technical constituencies, competition between different innovation networks could be studied in a descriptive way.

4.3.7 Towards a market/industry analysis

Market aspects have to be integrated in the new CA tool, in particular when examining the competing networks, in the external check (now regime analysis) and in the capacity for action table. The innovators could form a picture on relevant other players (potential allies and competitors), and assess scope of and experience on formalised relationships; then compare the picture of the innovator with the analogous picture of others in the external check/positioning.

In the *Actors table* when analysing linkages among actors and power relations it is useful to add market aspects, such as market power - monopoly, oligopoly structure of incumbents-, their legal constraints to abuse their power, etc., searching for common and differing market vision in different stakeholders and checking the potential for compromise. Incumbent and incoming competitors also create image and try to enhance their own acceptance or may also generate hostility towards new technologies (e.g. by pushing an image of unreliability, riskiness, inferior quality, inferior value for money etc). The innovator should know the actors' market role and their market interests for deciding with whom and how to co-operate, identifying allies and creating alignment.

In Step 3, *Checking the key changes at systemic level*, the analysis of supply/market can help in identifying the non-manageable competitive opposition: the market chances of this opposition should be assessed. The success of the innovation 'break-in' hinges upon the structure of the incumbent market into which the innovation seeks breakthrough. In a market where there are players that enjoy benefit from freely causing negative externalities or have substantial market power (monopolistic, oligopolistic markets), it can only happen with additional support to offset the uneven playing field. These barriers are often addressed with support mechanisms.

In the *Capacity for Action* table, market conditions (e.g. market structure, prices, subsidies, market regulations, institutional settings as well as related transaction costs, etc) heavily influence R&D activities and sales possibilities, thus innovation diffusion as well. The strategic question for the innovator is: to what extent trying to change or adapt to the market setting. Be a market maker/shaper or follower? There are aspects that cannot be altered, but there are also aspects that can; if these markets are heavily regulator influenced, gaining regulators' positive attitude and long term, reliable commitment, are crucial. The market conditions are also relevant in shaping the niche management strategy, if niches are the stage via which to advance for the innovation project. In the *Capacity for Action* table the main market aspects to deal with can be:

how the market should be transformed; market making/market shaping and/or adapting. What concrete steps the innovators should take to well-positioning themselves in the favourable market structure.

In the new ‘contextualisation check’, dealing with context, regime and technology competition analysis also a market/industry analysis can be added. Some systematic template with descriptors would help (e.g. degree of liberalisation, market concentration, market access of RES etc).

Table 4.3 *Augmenting/modifying Socrobust to more explicitly include market aspects in Create Acceptance - an operational summary*

What	Where (in which tool)	How	Why
I. When labelling the events, use the label (dimension) 'market' (related event) if relevant	Critical moments table (CMT)	Label the event as market event, if such type of event takes place	<ul style="list-style-type: none"> To make it consistent with further analysis especially with TEN poles/dimensions, and with any other tool, where market aspects are involved
II. When labelling key historic changes, use the label (dimension) 'market' (related change) if relevant	Critical moments table	Label the key change as market change in CMT, if change in market structure/conditions is necessary from getting from PN to FN/FWW	<ul style="list-style-type: none"> To make the analysis consistent To be able to better target action recommendations
III. Identify key market players, producers and consumers of competing products, and maybe complements, potential consumers of the innovator's product/ services.	PN, FN, FWW, Competing network; Critical Actors table(s)	Elicit innovator's view. Apart from direct individual interests/benefits, also try to describe formal/informal/potential coalitions and their spill-over/network effects, if any.	<ul style="list-style-type: none"> To clarify the role and interests of players, their importance in the market (and the whole innovation journey), their potential attitude and alignment. They form an important subset of actors; they are important subjects in key changes and targets of strategies in capacity for action. For example, competitors may constitute a strong part of opponents.
Relevant input markets, suppliers.		Is the given innovative product/service is to be embedded in characteristically a global and/or regional and/or local market? ⇒ global and/or regional and/or local players.	<ul style="list-style-type: none"> Besides 'direct' or natural actors, intermediaries are also of interest, as they can facilitate market access and diffusion of RES. E.g. an aggregator of RES-E generators in the wholesale market.
Market intermediaries.		Identify the innovator's/ innovation's competitive advantages and weaknesses in the present market and in the future or dynamically as both the firm and the market) evolve.	
Describe links, relations of key players.		Assess stability of players, links, the market. Uncertainties.	
Identify the market role and place of the innovator in these contexts.		Is the market organised/ institutionalised to the extent, that it itself can be regarded an intermediary (e.g. electricity exchange, or for other products Ebay)	
IV. Identify and characterize policy created separate market(s) of jointly produced otherwise external goods, or other incentives/subsidies to complement possibilities in the	PN, FN, FWW, Competing network; Critical Actors table(s)	Add CA expert view (only in external check phase?) Use relevant existing publications and available market surveys. E.g.: CO ₂ allowance market; Tradable Green certificate market; (not for our demos: White certificate market for energy efficiency;) Rewards for RES producers' external electricity system benefits (e.g. avoided network loss).	<ul style="list-style-type: none"> Success in these markets create additional benefits, enhances project stability. Policy makers' reward for social benefits via these incentives. E.g. allowing CCS in CO₂ EU ETS market would give a boost to it (subject to unit cost being lower than allowance price). Often the main motivation for RES and RUE

What	Where (in which tool)	How	Why
traditional market. Identify the market role and place of the innovator in these contexts.		List any benefits outside markets, but valued by society	Incentives and uncertainties in these markets significantly influence the innovator's (and opponents') behaviour
IV cont'd Externalities not rewarded, but valued by society?		Add CA expert view (only in external check phase?)	Interests, allies and opponents/ competitors in these markets can be as important as those in primary product market. Social acceptance of these related new markets is often doubtful
V. Assess market power of actors	Critical actors table (then utilise in capacity for action table)	Detail what type and how large power. Formal and informal power. Monopoly. Regulation deficiencies to avoid/constrain abuse of market power.	Acceptance is largely influenced by how society values the external benefits. To see allies' and opponents strength. To assess potential for key changes. Capacity for action. Legal possibilities and risks
VI. Obtain and incorporate view on the future market structure of the regulator/policy maker(s), too, if the market or parts of it regulated (or just being liberalised)	FWW; Revise Key changes; External check (positioning regulated (or just being liberalised) recommendations	Add CA expert view (only in external check phase?) Elicit in workshop and interview(s) with policy makers/regulator(s) (only in external check phase?)	To accommodate CA's multistakeholder objective So as to check whether project developer's view of the world is compatible or not with the main market framers' view. To assess key changes, positioning, strategy and capacity for action (change technology, influence external future or adapt)
VII. Include actors' market role and interests (or refer to points above where it was done) for boundary mapping	Boundary map	Elicit innovator's view. CA expert's input. To be done in its dynamic evolution.	It helps to realise which organisations are for what 'take part in the game' so as to judge their potential involvement. E.g. intermediaries can be for profit and non-profit. The way they maximise their objective (function), determines their interests, behaviour, attitude, potential involvement.
VIII. Obtain also experts' view on market perspectives when contrasting the innovator's view of the future world with outside visions and actual trends	External check augmented	Expert interviews that complement internet check. Specifically ask about market structure, role and support (if any) of RES or the technology in question, situation of incumbents and new competition, dominant players' market power. How the innovation projects fit into the given liberalised/regulated market?	To complement internet External check Giving emphasis for this potentially key aspect of success Adds to basis for positioning table Adds to basis for action
IX. Market/industry analysis	External check augmented Positioning table	CA expert's input. Use available publications, statistics, Existing market surveys, trends, forecasts. A simplified method to be applied on issues like above in expert interviews: (maybe the experts' and this result could be combined?) Place the given innovative product/ service as to whether	Giving emphasis for this potentially key aspect of success Adds to basis for positioning table (e.g. circumstances for and probability of alternatives' success, allies and opponents of the alternatives) Adds to basis for action

What	Where (in which tool)	How	Why
X. Compare how the project developer views the future market vs other stakeholders	External check augmented	embedded in characteristically a global and/or regional and/or local market	
XI. Innovation design reflection, adjustment	Capacity for action/ recommendation table (utilised here, but to be conducted several times earlier in the CA process - to be elaborated)	<p>It is worth making the distinction in the comparison:</p> <ul style="list-style-type: none"> 1. regulators/decisionmakers and 2. a/ incumbent b/ new innovative competing opposition 3. other experts <p>Early and interactive stakeholder and user involvement especially for less mature technologies -method to be elaborated (relying on CTA?).</p> <p>Monitor user preferences via proxies.</p>	<ul style="list-style-type: none"> To contribute to the robustness assessment of the innovative project, contrast wishful thinking with 'reality' To identify potential for compromise To better incorporate user needs in design Helps to decide on market following or market shaping strategy and product differentiation strategy
XII. Use the 'market' dimension (related capacities for action and recommendations), if ECN scheme is applied	Capacity for action/ recommendation table	Decide and classify if some recommendations/actions are related to the market (either influence it or being influenced by it), if ECN scheme is applied.	To better focus actions, achieve more conscious actions related to adapting or market shaping
XIII. Niche management (for early stage projects)	As ECN	<p>Include recommendations/ actions regarding treatment of uncertainties</p> <p>As ECN - Niche workshop</p> <p>Add elements of (potential) product differentiation</p>	<ul style="list-style-type: none"> As ECN Voluntary green premiums? (Niche of green pricing) From regional to regime, too? It would go beyond even mature demo projects...
XIV. Policy makers' reflection and actions related to market developments	Lines for action, but more specifically, where, what tool?	<p>How? Structuralised action plan inferred by CA expert from interviews with policy makers/regulators?</p> <p>Use policy announcements, presentations of policy makers</p>	<ul style="list-style-type: none"> To accommodate multi-stakeholder objective Largely affects innovators' possibilities and strategy To achieve compatibility between policy maker's and innovator's objectives

4.4 Towards action orientation

In Socrobust the actions were introduced only at the end during the assessment step, without a specific attention and treatment during the whole process. They were 'recommendations' to the project manager. The new tool introduces paths to action since the early analysis, through interviewing and checking the various stakeholders views on the (descriptive and normative) present and future worlds of the principal and with large attention to aspects such as risk perception, trust building, coordination and alignment of the actors. The actions/recommendations derived from the application of the tool will be addressed to actors at different levels, taking into account timing aspects, different possibilities for actions, and different categories for action.

5. Conclusions Part II

In this second task the limits of the original Socrobust methodology have been identified on the basis of the competences and experiences of partners of the Acceptance projects.

Firstly general decisions had to be made concerning the aim and intended results of the Create Acceptance tool, the intended users of the new tool, the fields of application (kind of innovation; phase of innovation) of the tool and the intended usability of the tool after this project has ended (stand alone or need for consultants). After these decisions were made each partner identified other limits of the original tool which were translated in specific questions and recommendations for development of the new tool.

The identified limits of the original tool dealt with the lack of attention for the classification of demo projects; regime analysis; dynamics of innovation practice; market and industry analysis; stakeholder involvement; stakeholder identification; stakeholder representation and stakeholder selection; actors taxonomy; power relations between actors; stakeholder motivation; risk communication and trust issues; the role of intermediary organizations; use of descriptive and normative scenarios; need for multi-stakeholder present and future networks and pathways.

Recommendations task 1.2

Below is first a bullet wise overview of seven recommendations dealing with the aim, users, usability and field of application of the new tool is given. Then recommendations to close gaps in the original Socrobust methodology are specified.

- The aim of the new tool will be to enhance societal acceptance of RES and RUE by facilitating the interaction between the project leader and other stakeholders in creating new socio-technical networks that learn about both technology and deployment context.
- The targeted user is the project initiator (including all involved partners at the starting point)
- Innovations of various types and stages can be targeted.
- Both single technology and small scale projects and multi-technology and large scale projects can be assisted.
- The tool should be flexible enough to accommodate differences in national and regional contexts (geographical contexts, institutional, socio-cultural and economic factors may differ).
- It is necessary to broaden the understanding of the potential future developments (descriptive scenarios), taking into account a large number of dimensions (such as cultural, environmental, economic, etc), but also to provide a more comprehensive set of normative scenarios and of the potential conflicts among them.
- The tool should be designed in a user friendly way as to assure the understanding of its principles by the users themselves, aiming to oblivate the need of involving an external consultant. Lack of presence of a consultant cannot be a hindrance to use the tool. The new version of the tool, therefore, should provide a list of questions which would help perform the societal robustness assessment as a stand alone application. A simplification of the language, a reduction of the concepts and references, a glossary of commonly defined terms should characterise the final version of the toolkit that will be used for the test activity in WP4.

Instrument specific recommendations

- The present and future networks instruments should be altered to comprise of more than users, producers, science/technology and regulation. All aspects relevant, i.e. technological, economics, cultural (fashion, user preferences and needs), infrastructural (production i.e.), institutional, context (local and regional specific), environment need to be included.
- The present and future networks instruments should be extended to include the drafting of present and future networks by all relevant stakeholders, not only the innovator.

- The present and future networks instruments should further be altered to differentiate between reference, descriptive, and normative scenarios and make conflicting normative scenarios explicit and find ways to deal with these conflicts.
- The external check instrument should be altered to also identify the broader context of the project.
 - Including an analysis of stakeholders, their representativity, centrality, alignment, power.
 - Including a regime analysis checklist for identifying possible windows of opportunities and possible barriers.
 - Including a database and checklist to identifies local/regional/national key indicators for acceptance.
 - Including a technology competition analysis.
 - Including a market/industry analysis.
- The action table and recommendation box could be altered to include recommendations for all relevant actors involved.
- An instrument should be added that identifies the available different perspectives concerning the technology under analysis and confronts the project manager with them in a face-to-face interaction in a non-adversarial situation.
- An instrument should be added that facilitates monitoring of the public image of the technology under analysis.
- Face to face interaction between all relevant stakeholders should be organized to ensure stakeholder involvement and public participation. It is important to ensure that stakeholder involvement is not merely a ‘one-off exercise’, but part of an ongoing network-building process.

The original Socrobust is a method of assessment based on one stakeholder in the relevant position of managing an innovation project. It was aimed at reflection and learning and less aimed at action and implementation. The WP1 report is an introduction to the original Socrobust toolkit and a critical review of its suitability to measure, promote and support social acceptance of innovative RES and RUE technologies. In general it can be stated that the existing steps and most of the instruments of the original Socrobust toolkit can be maintained, but that additions and small alterations need to be made if the tool is to function as a tool that assists multiple relevant stakeholders simultaneously instead of only the direct developers or innovators. In addition, the Socrobust instruments need additions and alterations to function as a toolkit that can measure societal acceptance and create a platform to involve relevant stakeholders in the process of developing a socially accepted project. The above briefly discussed results and recommendations are the starting point for the consortium’s efforts in WP3, where Socrobust will be developed into a new toolkit and methodology for Create Acceptance.

6. A visualisation of the new multi-stakeholder tool

Below the above discussed recommendations for the new tool are depicted in table form. The original Socrobust instruments that have been reused in the new tool are in bold-italic

Table 6.1 *Recommendations for the new tool*

Step	1 Project context and actors	2 Scenario building	3 Scenario explanation	4 scenario testing	5 pathways probing	6 action planning
Goal	Past & present project description Project Context description	Confronting project's stakeholders visions for the future, not merely as an 'one-off exercise', but part of an ongoing face-to-face interaction network-building process TEN	Analyzing possible futures and their implications	Feasibility study of various scenario: Resilience & Robustness demonstration	Testing stakeholder's reactions to possible pathways	Report for Action planning
Tools	Narrative Critical moments table <ul style="list-style-type: none"> revison of columns to include different relevant dimensions Actors table <ul style="list-style-type: none"> including opposing actors extend with power analysis include different actants: human actors, artefacts, rules, networks explicit focus on market actors (see table MAKK in D2) identification of actor involvement, perspectives identification actor centrality identification actor representativity identification actor alignment (actual and possible) identification actor commitment 	Eliciting multiple visions/expectations underlying stakeholder scenario's Analysis of possible conflicting perspectives Material (for scenario building) <ul style="list-style-type: none"> narrative form + pictorial Guiding questionnaires benchmark scenario from step1 	Future worlds Scenario analysis <ul style="list-style-type: none"> Make assumptions explicit Check assumption's consistency Analyse implications Define alternative pathways/ steps to clear 	Portfolio of options <ul style="list-style-type: none"> Map with path Resilience analysis <ul style="list-style-type: none"> stability indicators for existing networks Robustness analysis <ul style="list-style-type: none"> Check risk against trends, alternatives, opponents and path dependencies WP2 illustrations – contextual circumstances	Sensitizing stakeholders → Communication artist view? →roleplaying: <ul style="list-style-type: none"> present different options/situations describe associated implications/risks Identify preferred pathway 	Desired future <ul style="list-style-type: none"> Preferable pathway Risk & other options Capacity for action table <ul style="list-style-type: none"> extended to include timing extended to include actions for different actors extended to include pathways to achieve action through different actions

Step	1 Project context and actors	2 Scenario building	3 Scenario explanation	4 scenario testing	5 pathways probing	6 action planning
	<ul style="list-style-type: none"> • identification actor opposition • Identification motivation actor position • Identification of intermediaries and discussing co-organization 	<p>Stakeholders identification</p> <ul style="list-style-type: none"> • through view project manager, CA team and WP2 analysis, • following the actors from inside out; • Informative saturation method; • a priori definition of number and categories 			<ul style="list-style-type: none"> • sensitive to building trust • sensitive to risk communication 	
	<p>Instrument to deal with place and time issues</p>					
	<p>Context analysis</p> <ul style="list-style-type: none"> • Landscape/ regime analysis • Competition & Synergies with other industries • market/industry structures analysis • identifying public images of technology • Project Benchmark • categorizing the innovativeness of the project • Starting with WP2 influential indicators & knowledge base 					
	<p>Benchmark scenario</p>					
						<p>Recommendations table</p>
						<ul style="list-style-type: none"> • steps for network alignment/ extension • sensitive to different users and different phases of innovation • sensitive to building trust • sensitive to risk communication • Further reading • Both cautionary & inspiring (incl wp2 knowledge base)

Step	1 Project context and actors	2 Scenario building	3 Scenario explanation	4 scenario testing	5 pathways probing	6 action planning
	Devise interview questionnaires as basis to fill in all instruments					
Expected output	1.5 page Narrative Context analysis Stakeholder list/short list Benchmark scenario	Multiple scenari description	Map with pathways	Portfolio of options + Socio-tech SWOT (risk)	Preferable pathway? Ranking options?	Final report
Expected time needed for step	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX
Who	Consultant 'Project manager'	All	Consultant ↔ Project manager	Consultant → Project manager	All	Workshop
To do	Co- interviewing	Co-interviewing/focus group All- role playing	Co-interviewing PM-reflecting	Workshop	Co+PM-workshop All- role playing	Co-report delivering

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