RESEARCH-BASED KNOWLEDGE FOR POLICY DECISION MAKING: MAXIMIZING THE OPPORTUNITIES OF IMPACT

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The permanent dissatisfaction about abilities of state legislation together with public administration to use scientific research knowledge for public decision making has underpin. Not inconsiderable body of dissatisfaction comes from the side of policy managers and practitioners with reflection of unperfected quality of research outcomes. However, effectiveness of research-based knowledge utilisation for public decision making is not a self-oriented or spontaneous action. It challenges the research content quality on the one hand and the policy modelling process on the other hand.

The goal of this research was to outline the managerial practical implications for the potential use of research-based knowledge with the purpose to improve public policy decision making and to propose the actionable framework for use of research based knowledge.

The study design. The investigation was based on the analysis of officially issued scientific reports, which were initiated and funded by the government with the purpose to inform policy decision making. The sample frame consisted of 50 scientific research reports (6780 pages) issued in the period of 2007-2009 from the pull of 180 and lay under responsibility of two ministries: Ministry of Economy and Ministry of Education and Science. The topics of research reports cover health resort research, health improvement, administration burden diminishing, special regulation for researchers' social security, intellectual property rights, small and medium business development, technology park development, and so on.

The key findings. Knowledge for policy decision making is conceptualized during interaction of policy actors, who represent own stakes. However, the policy decision is made before a certain knowledge level is reached and determines the fundamental common decision making knowledge gap, which could be filled by research-based knowledge. The evidence based policy paradigm recognises wide list of barriers for sustainable utilisation of research-based knowledge for policy decision making (governmental political commitments; legislators' skills to communicate research and low awareness of research, researchers' distance from political context and managerial needs). Taken in to account knowledge generation environment for policy decision making (policy rounds and actors diversification), paper propose the model for research based knowledge utilisation coping with the obstacles of evidence based policy and facilitate this utilisation via natural relieve of barriers cause. The managerial framework is based on threefold aspects, such as a.) the research content quality including transformation scenarios; b.) the research process interaction with policy making rounds; c.) alignment of policy creation actors with researchers.

Keywords: *research-based knowledge, participatory policy, evidence based policy, actors' alignment, decision making process, participatory policy.*

Introduction

There is permanent dissatisfaction about abilities of state legislation together with public administration to use scientific research knowledge for public decision making. Lithuanian policy making is not an exception of that mean. National legislation is lay of improper use of research knowledge charge by researchers and even society, with claim that policy makers don't search for evidence, don't make efforts to incorporate evidence into new legislation and even have no special skills to use the research output. Even government funded and initiated research impact is uncertain and gains many critics from the side of those who conduct certain research. Meanwhile, there is underpinning of such frustration. In the annual report on 2010 the National Audit Office of Lithuania has supported reservation of impact effectiveness for better policy management and legislation of research, initiated purposefully by public administration needs (National Audit Office of Lithuania, 2010).

The lack of impact of research knowledge on policy was reported by many scholars around the world (Marton & al, 2003, Nowotny, 2007, Hirasuna & al, 2010). The most serious gap of research and policy is observed in the countries where evidence based policy paradigm is new (Almeida & al, 2006). Not inconsiderable body of dissatisfaction comes from the side of policy managers and practitioners with reflection of unperfected quality of research outcomes, information assembling and reporting, week focus on practical needs, or on sensitive issues of acceptability by society (Head, 2010).

However, effectiveness of research-based knowledge utilisation in to public decision making is not a self-oriented or spontaneous action (Bhattacharyya & al, 2009), which could be intentionally faulty by any party of concern, no matter whether it is a researcher or policy maker. Honestly, it challenges the research content quality on the one hand and the policy modelling process on the other hand. In addition

to main causes of research-based knowledge exploitation effectiveness, many more satellite managerial aspects could be monitored with the purpose to stabilise the research-based knowledge generation phenomena during policy creation rounds.

The goal of this research was to outline the managerial practical implications for the potential use of research-based knowledge with the purpose to transfer it to public policy decision making overcoming natural restriction and facilitating knowledge creation.

The research method includes comparative and systematic analysis of scientific literature. The analysis of Lithuanian government initiated research reports issued in the period of 2007-2009 were conducted in terms of content and recommendations in order to draw the standardised guidelines for research content and interviewing experts (researchers and public administrators) in order to make alignment between the research and decision making process.

What is important for policy decision making?

Knowledge generation for participatory policy. Policy decisions are lying in the range of high uncertainty with high risk, since every policy decision tries to shape long term society future, which is hidden from the present perspective. The success of such shaping and changes initiation lies on knowledge collection and generation during policy modelling which goes in hand with common perception of the issue and joint decision making when people are inspired to demand of change (Eikenberry, 2009).

Every policy intervention introduction is accompanied by the resistance from the side of reforming subjects (Fernandez & al, 1991) and this resistance is generally unavoidable (Fernandez & al, 2006). As often as not the reservation to reforms has real background due to constrains of knowledge about complex nature of society needs or unintentional steering mistakes led by public administration (Mora, 2002).

To cope with the complexity of decision future problems, knowledge about the nature of problem and knowledge about possible future, which could lead to finding the set of alternative solutions, is needed.

Policy decision making (PDM) knowledge as other organisational knowledge implies as facts, opinions, ideas, theories, principles, models, experience, values, contextual information, expert insight, and intuition (Mitri, 2003). Two PDM knowledge dimensions as tacit and explicit could be distinguished. While explicit knowledge is already articulated, codified, and communicated using symbols (Nonaka & al, 2001), the most critical to manage during policy modelling is tacit knowledge, which is based on experience, thinking, and feelings in a specific context and raise serious managerial issues. To gain real added value both knowledge forms tacit and explicit needs to be exploited (Nonaka & al, 2001), which can occur during social process between policy actors.

Policy actors and their alignment. Taken in to account participatory policy (Prager & al, 2008, Driessen & al., 2001, Berkes, 2009) paradigm, knowledge for policy decision making is conceptualized during interaction of policy actors, who represent own stakes. Despite the evidence that the learning curve (PDM knowledge generation) can be represented as exponential function (Lee & al, 2005), let us use the assumption of linear knowledge generation for simplicity. If we assume that for coherent policy decision a certain level of knowledge K_1 is needed and with a certain set of actors it is possible to reach at the time of t_1, and if we assume that every new comer enriches the process by his knowledge but does not increase the knowledge creation speed, the same knowledge level K_1 will be reached with delay of $t_2 - t_1$. On the other hand, with a new set of actors the demand for knowledge level K_2 increases (Fig. 1).

However, the moment $t_{knowledge}$ of certain perfect hypothetic level of PDM knowledge collection is not coincided with the moment the policy decision takes place $t_{decision}$. As often as not
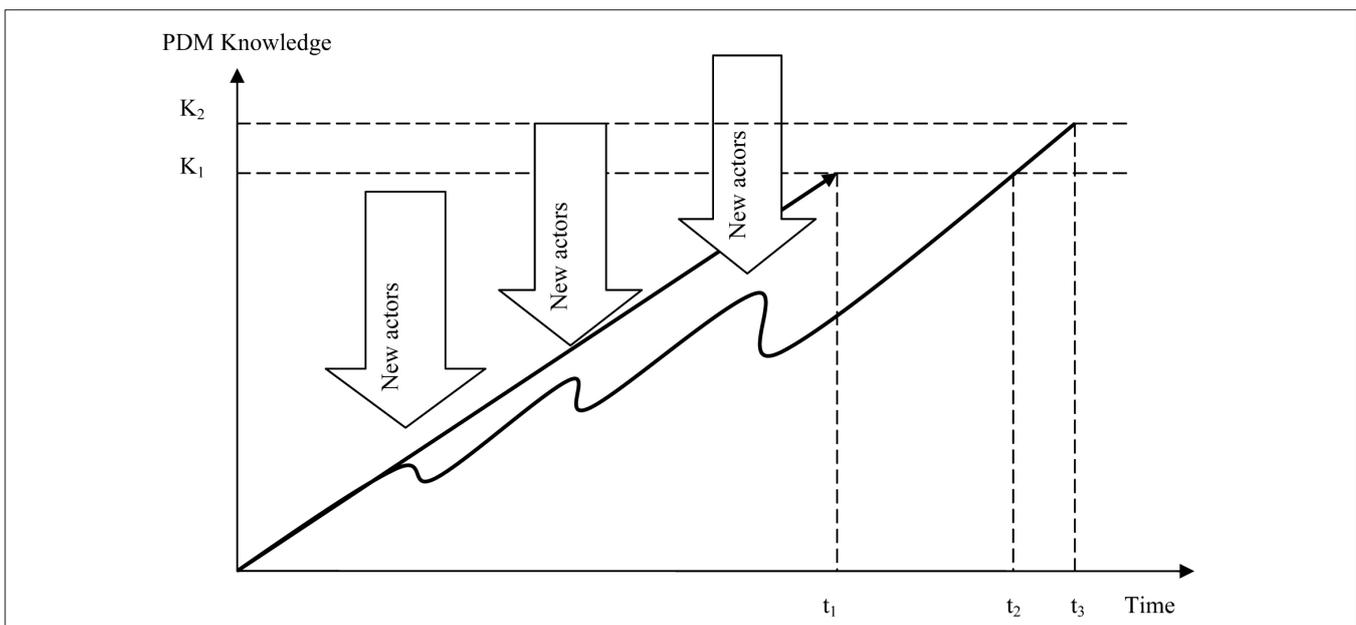

Figure 1. Relationship between knowledge gain in the decision making process during a certain time period, when additional actors are involved

the decision is made before a certain PDM knowledge level is reached and determines the fundamental common decision making knowledge gap. This gap could be potentially filled by special type of knowledge, which is based on research. The research-based knowledge could be analysed as input for evidence based policy and conceptualised as certain type of evidence.

Models for decision making processes. The success of policy modelling and policy changes fully depends on the way a decision is prepared. If the policy decision making is understood as a temporary organization, which exists for the time until the policy decision is made, the process would take the role of organization infrastructure, which should go in hand with the demand for collecting and generating the full set of PDM knowledge. There is some component needs to be discussed: it is the procedures for knowledge generation via proper actors alignment and interaction or superposition of their interest.

There is a rich body of literature discussing different approaches to decision making process. The most common approach to policy making models is linear model (Sutton, 1999) or phase model (Teisman, 2000) which is widely used in policy decision making institutions. The linear policy decision making process is broken down to stages with respect to different managerial tasks (policy formation, policy adoption and policy implementation). Each phase has its own actors and proceeds in sequences of phases. However, the real policy formation process is more complex and many parallel processes have direct or indirect impact to the final policy decision. So any other possible non linear approaches could be analysed and chosen as a process according to the complexity of the issues, uncertainty and present knowledge level (Teisman, 2000). Teisman proposes the stream model (as combination of three separate and competed streams of problems, solutions and actors) or rounds model (when a purposeful actor is the focal point for policy and acts both horizontally with other actors and vertically with other set of problems). The PDM rounds stick not to the time, but to the actors with PDM knowledge on the issues. The rounds model unfolds the PDM perspectives far beyond borders of a single legislated institution and is the nearest description of the real-life knowledge creation process before the linear or procedural legislation policy making process is announced or conceptualised as inevitability.

Research-based knowledge transfer in evidence based policy

If the quality of policy decision making strongly depends on PDM knowledge, set of actors, who possess the input knowledge and the process as infrastructure, where actors interact and generate knowledge, we still need a model as solution for research-based knowledge utilisation trying to overcome some fundamental barriers, what upraise from the side of research practice existed. The explicit list of barriers could be listed using the knowledge transfer approach and evidence policy paradigm.

Research-based knowledge transfer. Research-based knowledge as a single input to the whole range of PDM knowledge and has the primary task to fill the gap between existing knowledge about the issues and hypothetic needed level of PDM knowledge. However, fulfilling the main task,

scholars make emphasis on knowledge transferring issues, while it is relevant in case when localisation of knowledge creation and utilisation is separated in time or individuals. Knowledge transfer is described as an interactive exchange of knowledge between those who create knowledge and those who are going to use it or exploit it (Mitton & al, 2007). The knowledge transfer gives wide attention and support from the side of researchers primarily from technological sector, since government funded universities producing research-based knowledge generate knowledge absorption issue as a fundamental factor of companies or sector competitiveness (Smilor & al, 2007). For policy decision making case knowledge transfer describes interchange of communication between researchers and others policy actors. Using the transfer paradigm, different managerial measures are proposed on different organisational level (Mitton & al, 2007) seeking to cope with the challenge of misunderstanding: ongoing collaboration, networks, building trust, clear roles and responsibilities, support and training, recourses (money, technologies), authority to implement changes, readiness for change, communication management, face to face exchange, involvement of decision makers in research planning, sufficient time to make a decision. Despite the fact that knowledge transferring mechanisms recognise real barriers (lack of experience and mutual trust, different organisational culture, different timeframe) between knowledge creators and users and tackle the subsequence of phenomena, it does not relieve causes of barriers occurrence. Knowledge transferring recognises one source of barriers (it is the policy maker) and the course of knowledge transfer – from researcher to legislators, whereas the causes could be sheltered by knowledge creators. We can call these barriers the PDM knowledge localisation barrier. The evidence based policy paradigm recognises more barriers than only policy making system.

Evidence based policy. Evidence based policy is an approach to informative policy decision making that stimulates public administration to seek knowledge for relevant analysis of situation, use rational approaches for decisions via equally distributed stakeholder interests by policy actors and motivates to take into account decision impact evidences. This approach has spread up among different policy sectors, for instance medicine (Cochrane Collaboration, 2010), social policy (Roberts, 2005), education (Mosteller & al, 2002), criminal justice (Sherman, 2006) within the countries with long democratic historical records. Other policy sectors, such as security, technology development or foreign policy, are under consideration (Head, 2010).

Among different type of evidences appropriate for policy making, research evidence is both more reliable and more complicate to communicate. We can list such types of research-based knowledge as impact evidence, implementation evidence, descriptive analytical evidence, public attitudes and understanding, economic evidence, ethical evidence. Despite the proved added value to policy making, evidence based policy implementation has revealed many practical restriction and critics. In contrast to knowledge transferring approach, evidence based policy recognised three main sources of barriers (Head, 2010):

1. Governmental political commitments;
2. Legislators' skills to communicate research and low awareness of research

3. Researchers' distance from political context and managerial needs.

These three sources of barriers let us consider that research-based knowledge utilisation success depends on the complex efforts from both knowledge users and knowledge generators. Otherwise research-based knowledge limited itself to remain just information for policy making instead of converting to PDM knowledge as "systematic foundation for the policy process" (Head, 2010). In order to specify barriers, we need to look through the main obstacles (Head, 2010):

- Lack focus on moving from knowledge to action.
- Lack of rigorous research finding.
- Poor fit between scientific report and the way research is conducted with the policy makers' practical need.
- Poor fit between the way research is conducted with the policy makers' practical need.
- Room to use evidence for political manipulation for the turbulent or rapid change issues.
- Research evidence is just the one factor, which influences the decision makers, among many other factors (media, partners and stakeholders, time pressure).
- Conflict between professional knowledge and research-based knowledge.
- Research timing is differing from the timing of policy decision and external pressure from the side of stakeholders.

Seeking to align research-based knowledge utilisation for policy making, it is necessary to elaborate the model for established barriers overcoming.

Research Method

The investigation was conducted on the analysis of research reports, which were initiated and funded by the government with the purpose to inform policy decision making. The sample frame consisted of 50 research reports (6780 pages) issued in the period of 2007-2009 from the pull of 180 and lay under responsibility of two ministries: Ministry of Economy and Ministry of Education and Science. The topics of research reports cover health resort research, health improvement, administration burden diminishing, special regulation for researchers' social security, intellectual property rights, small and medium business development, technology park development, and so on.

Those ministries' activities in the field of research evidence use were selected for the investigation for two reasons. The Ministry of Economy stated that 98% of the initiated research was scientific. However, the peer review assessments of selected research reports were not conducted and used the assumption that reports were scientific according to Frascati manual (Frascati, 2002). Both ministries are responsible for research and development policy. The selected reports are analysed in respect of policy making.

According to the report of the National Audit Office of Lithuania, during 2008-2009 the Lithuanian government spent 24.6 million Lt (7,3 million euro) for policy oriented research, when scientific research made 47 percent. The following items were underlined as the main reservations:

- The intention to seek for research is not obvious.
- Particular research has no direct connections with ongoing policy strategic directions.
- Results exploitation is limited.

- Public administration skills are not sufficient to initiate focused research goals.

The data collected from the reports text let us draw the main components of reports and make emphasis on how the text was recognised by legislators. The only one distinction noticed between the Ministry of Education and Science and the Ministry of Economy was the research performer. In almost every case research was conducted by layers with certain scientific degree for the Ministry of Economy, while researchers from public research institutions conducted all research for the Ministry of Education and Science. Despite the fact that the National Audit Office expressed a reservation regarding research and political agenda connections, in 50% cases the topic tightly corresponded with the political agenda and new legislation appearing in the next half of the year. For instance: in 2009 the research "Analysis of decision making impact assessment, consultation with society and stakeholders quality" corresponded to the governmental challenge to adopt new legislation for transparency and quality of decision making process, what became legislation.

From the methodology perspective, all research reports fit to one standard, except for two research reports. Most reports followed the same template: abstract, EU policy good practice analysis, current state analysis, recommended alternative and conclusions. The exceptional reports seem more attractive since those reports have incorporated alternative solutions analysis and developed more than one scenario in discussions and recommendation part.

Discussion

Taking in to account knowledge generation environment for policy decision making (policy rounds and actors' diversification), the proposed model for research-based knowledge utilisation must cope with the obstacles of evidence based policy and facilitate this utilisation via natural relieve of barriers cause. The investigation let us draw the main managerial framework, which is based on threefold aspects, such as a) the research content quality including transformation scenarios; b) the research process interaction with policy making rounds; c) alignment of policy creation actors with researchers.

a) **the research content quality including transformation scenarios**. Special consideration for research content must be acknowledged when research output is transforming to knowledge for policy decision making. The scientific research quality is the subject of peer review evaluation with requirements for excellence, novelty and uniqueness, which is described by Frascati manual. However, research-based knowledge quality in terms of action ability for policy could be shaped by additional specification, since good scientific research is an essential but not sufficient requirement for research outcomes utilisation in decision making. We assume that the research output transforms to the state of PDM knowledge only after its incorporation into policy decision round; until then the research output is only data or information. Research content must be shaped up in the form directly usable for policy decision making, otherwise, the gap between knowledge and action is still present, due to "actionability" knowledge as additional knowledge to the research-based knowledge. Describing direct usability we have in mind the extent to which knowledge is usable without additional efforts and recognized as organic prolongation of

policy process or detached to policy round which afterwards has impact to policy round as knowledge for inevitable actions. So the concept of research content "quality" needs to be extended via additional attributes such as "directly usable" knowledge for policy making. That helps to overcome the obstacles concerning the use of evidence with political purpose, when rapid change is disposed in turbulent political domain, and helps to make practical use of evidence taken in to account practical needs of policy managers.

Based on investigation, the main criteria were drawn how data and information is presented as research output in the real life research, which were initiated by policy makers with the clearly announced purpose to inform policy makers. In all analysed cases three main criteria could be observed (Fig. 2):

• data description and analysis for static state before policy intervention;
• data description and analysis for static state after desirable intervention;
• data, that stimulates changes, analysis.

However, the description of static state before and after policy intervention is not sufficient for the managerial action, since additional information, knowledge about proper and operable directions, aligned with the political culture and acceptable for policy actors is still missing.

The criteria that could make research output appropriate for spontaneous integration into policy decision round could be improved by additional consideration, which we can call transformation data/knowledge. The transformation data content must cover the following stages (Figure 3):

• evidence regarding the necessity of changes,
• despite the content of changes is guided roughly by the research topic and objectives, there is urgent need to collect evidence that political changes are necessary and that present status is unsatisfied in term of objectives.
• possible alternative decisions or transformation scenario analysis.

Some distinctive alternative solutions as single decisions must be analysed and compared with each other, with the
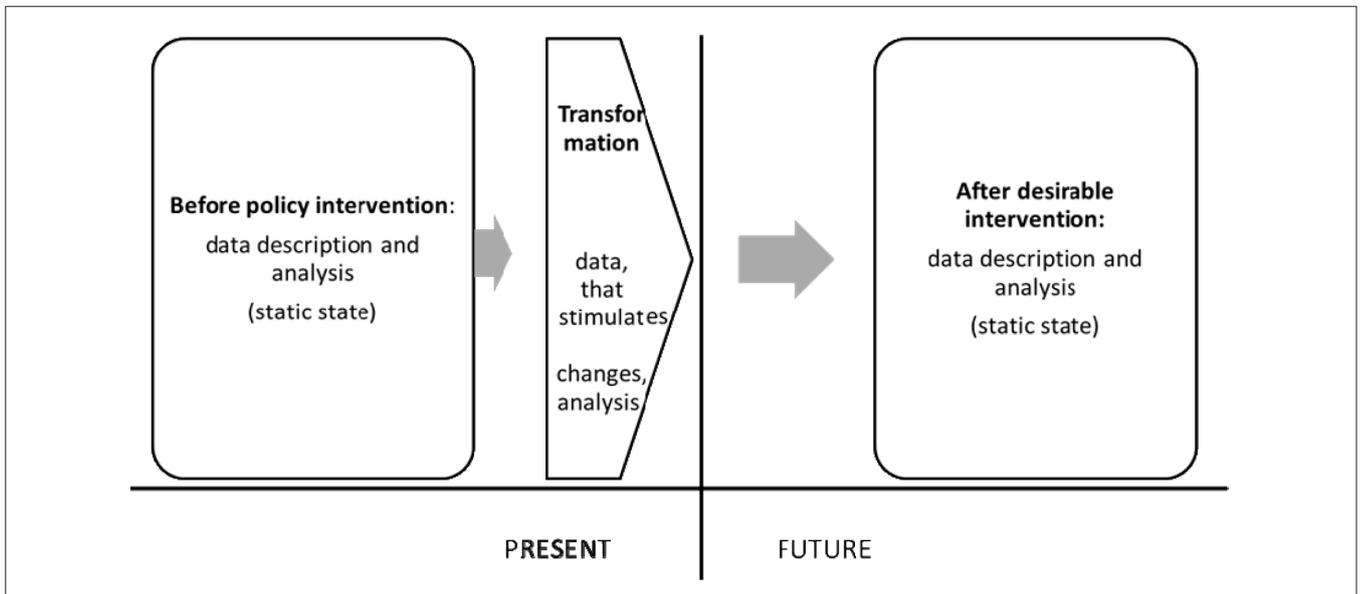

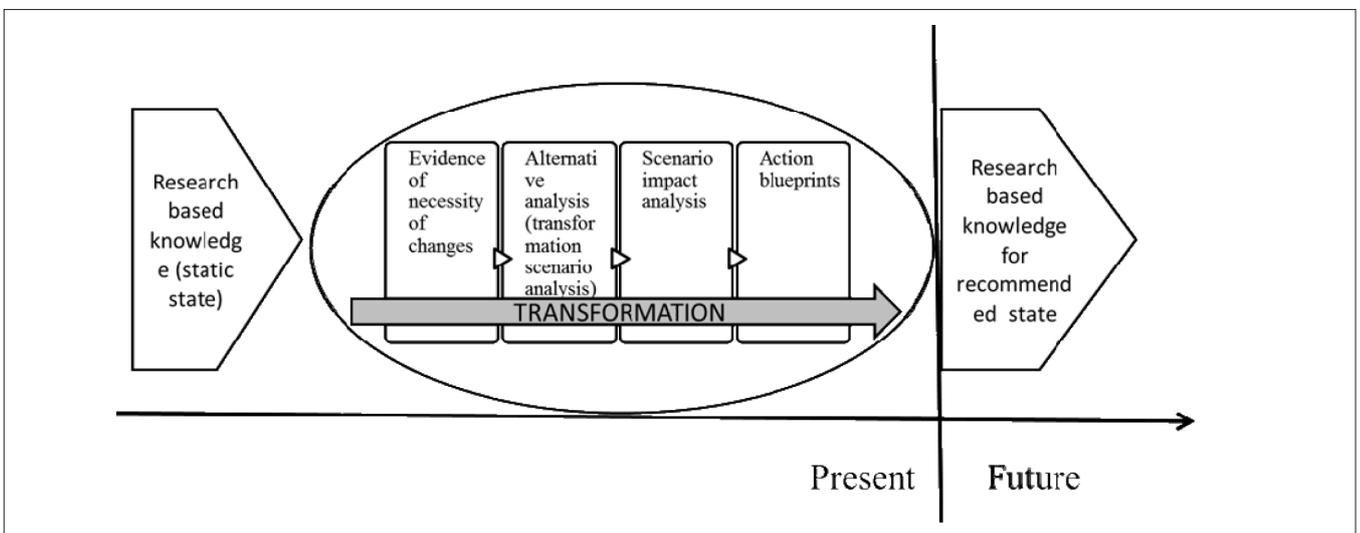**Figure 2. Research content: data about the static public policy stages**

Figure 3. Actionable content of research-based knowledge for policy decision making

purpose to make space for policy rationality and democratic public choice valuating pro and contra of social value. Eventually, alternatives give the floor for further creativity for decision makers in the next decision rounds.

• the impact of transformation analysis

The impact of possible alternative solutions could reveal the hidden, sometimes undesirable outcomes of possible good-looking and objective-fitting policy decisions.

• tentative actions blueprints.

The blueprint could be plausible as suggestion for further action direction but particularities need to be avoided.

Transformation data could be developed as managerial operational approach, while conceptual knowledge is accompanied by actionable design. This transformation part of research is usually missed from real life policy informing research since it seems too practical to be solved by researchers. However, transformation details could be the necessary connective link between static data before and after intervention and they make research output valuable for policy rounds without additional efforts.

Research content quality described above in terms of research-based knowledge usability for policy rounds could be attained just in coherence with the knowledge generation process. The process modelling makes actionable research content quality.

b) **the research process interaction with policy making rounds**. Instrumental use of research as an external advice for informed policy decision making is overestimated since the pull of challenges concerning research impact (transmission of research; cognition of findings; reference made to significant studies; efforts made to operationalise findings; influence seen on decisions; and application of research to policy and/ or practice) (Daves & al, 2005) must be coped. Whereas the research-based knowledge is used with the purpose to inform policy decision making, any policy decision stage could initiate research exercises with special focus, for instance, on decision actors identification or analysis of the present state. However, the narrow use of research-based knowledge as information or advice for policy makers still left both practitioner and researchers unsatisfied by the process and by the outcome and challenging broadening the research as evidence utilisation.

Despite rounds as approach for policy process modelling used to describe decisions, the true meaning of rounds is description of consensual learning process, when common ground of knowledge is generated. As consequence, research findings that are generated outside the rounds hardly ever have a chance to become the policy decision knowledge. If we consider policy decision making process as round model when different decision actors create the rounds (rows of decisions) through interaction at different time and on different policy issues, interactive and participated knowledge is created during common consensual learning process. Accordingly there is the only one logical and practical approach for research output utilisation. It is alignment between processes of research output generation and policy decision modelling.

Such design of process facilitates research-based knowledge transforming to PDM knowledge since space is created for tacit knowledge distribution among researchers and others policy actors, less engaged in scientific methodologies or political obligations. The research-based knowledge could

be created either during research own round with attributes of policy decision rounds or be fully integrated into policy issue decision making round. Both approaches could be realised if the next managerial aspect was implemented.

c) **alignment of policy modelling actors with researchers**. The policy decision making rounds and research-based knowledge generation round needs to be aligned. The alignment could be reached through policy actors' interaction. Using the terminology of participatory policy decision making, the researcher generating tacit knowledge for policy decision is converted to the policy actor with the stake to recognise the hidden phenomena covering the other actors' stakes and fundamental consistent pattern. Equal actor distribution and stake representation is the background for participatory policy modelling, which brings creativity, shared knowledge, commitments and responsibility. Networks of actors, acting in the knowledge generation policy rounds, give rational response to emerging social problems via the non-hierarchical and interdependent nature. The non-hierarchical nature of network lets a single policy actor act in a coherent manner, equally sharing own knowledge and responsibility among round participants. Researchers bound with policy actors ensure awareness, confidence and mutual understanding and use rounds as the platform for communication, which is based on self-confidence, they enable fully understandable knowledge generation, based on scientifically relevant, politically evidenced and socially acceptable set of policy decision.

From the managerial point of view, the networks of actors are conceptualised as an alignment mechanism, when the social context becomes open for researchers, and let deeper investigation, filling the gap of practical needs and scientific knowledge.

Conclusions

The permanent dissatisfaction about abilities of state legislation together with public administration to use scientific research knowledge for public decision making has underpin. Not inconsiderable body of dissatisfaction comes from the side of policy managers and practitioners with reflection of unperfected quality of research outcomes. However, effectiveness of research-based knowledge utilisation in to public decision making is not a self-oriented or spontaneous action.

Knowledge for policy decision making is conceptualized during interaction of policy actors, who represent own stakes. However, the policy decision is made before a certain PDM knowledge level is reached and determines the fundamental common decision making knowledge gap, which could be filled by research-based knowledge.

The evidence based policy paradigm recognises wide list of barriers for sustainable utilisation of research-based knowledge for policy decision making. Taken in to account knowledge generation environment for policy decision making (policy rounds and actors diversification), the proposing model for research based knowledge utilisation coping with the obstacles of evidence based policy and facilitate this utilisation via natural relieve of barriers cause. The managerial framework is based on threefold aspects, such as a.) the research content quality including transformation scenarios; b.) the research process interaction with policy

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