



EFP-Policy-Reflection: Policy options for surprising and emerging issues

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Surprising and emerging issues

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Weak signals are early signs of possible, but uncertain, changes that may later become more significant indicators of change.

A highly explorative means of finding alternative futures is based on finding surprising elements and emerging issues. Surprising and emerging issues are future developments that are still outside the mind set of organisations or society, but can have a significant impact on these organisations and society. The emerging issues are preceded by early warning signals and (the combination of various) signals are an indication that an issue with impact might develop. An important element is that the emerging issue in itself is often unknown to organisation and society, while the early warning signals can be well known. A specific approach to think about emerging issues and early warning signals are wild cards and weak signals.

A wild card is a surprising, unexpected event with a potentially high impact and strategic consequences for society (low probability, high impact). The formulation and analysis of a wild card has a subjective character, as it depends very much on one's world vision. Wild cards are especially shocking and surprising, because they do not fit into our usual frame of reference. A wild card analysis has the capacity to introduce new elements into the process of scenario building, which is often performed in a closed circuit of experts. Wild cards help to open up the debate and make decision-makers think outside their 'usual frame of reference'. The purpose of wild cards is to test the reactivity of a system or organisation to unforeseen, but high impact events. Also from a policy perspective wild cards are important to look for, as they make policies more resilient to the occurrence of wild cards and their effects; enable the monitoring of early warning signals of wild cards to timely adapt or mitigate to the impact; support safety measure investments; and counteract undesirable lobby cards and human caused wild cards under construction.

The main question is how to foresee wild cards. Weak signals are early signs of possible, but not certain, changes that may later become more significant indicators of critical forces for development, threats, business and technical innovation. Weak signals are unclear and ambiguous (i.e. "weak") but may become clearer or stronger by combining with other



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From a policy perspective it is relevant to concentrate on emerging issues that are highly plausible, will likely have a high impact, are novel for policy makers and can be influenced by policy.

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signals. They are 'hints' about potentially important futures and function as 'seeds of change'. Finding relevant weak signals typically requires systematic searching and environmental scanning and is one of the most challenging tasks in futures research.

Worldwide, there are several initiatives that aim to identify, collect and interpret emerging issues and potential surprises that could have an impact on the economy and society. Also in Europe the EC launched a number *blue-sky research* initiatives aimed to identify issues that should not be left "out of the policy radar" because they could have an impact on the European economy and society and could be important in shaping the European Research Area.

The EFP workshop brought together the emerging issues and potential surprises identified in various FP7 Blue sky research initiatives. The workshop aimed to discuss and prioritise the most important emerging issues and surprises for Europe as well as to identify policy requirements and research questions to address these surprises. Moreover, the workshop discussed in more detail how European and national approaches for early warning could look like.

Prioritising emerging issues and defining policy implications

For prioritizing emerging issues and weak signals, two most used dimensions include the plausibility and the impact or reach. From a policy perspective it is especially relevant to concentrate on those emerging issues that are highly plausible and will likely have a high impact. Moreover, two more dimensions can be used for further prioritization: the novelty of the issue for policy makers and the possibility for policy makers to influence the issue. In order to define appropriate policy responses, it is also important to assess the time-frame in which the emerging issue should be a priority for policy-making, the policy areas on which the issue will likely have an impact, the relevance of the issue to grand challenges, and the level of preparedness by policy-makers.

The workshop participants prioritized and assessed eight emerging issues during the workshop using the dimensions mentioned above. The selection included very different issues, running from 'not handling the financial crisis' to 'increasing self-medication'. The selection and assessment of emerging issues are presented in the workshop paper.

The main question is how policy can respond in order to manage the emerging issues. From a risk management perspective, prevention, protection and reinforcing the resilience of society and economy by

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organizing diversity and system redundancy are part of the tool box. On the other hand, policy intervention can also stimulate desirable or potential beneficiary early developments.

Identifying relevant implications and options for policy as a response to a specific emerging issue is not a simple task; it is a complex system of different policy areas and governance levels. The iKnow project (Popper and Butler, 2011) has developed policy alerts, describing emerging and surprising issues, assessing their likely impact and likelihood, but also discussing the potential policy actions to be taken by policy-makers and stakeholders, including research organisations, businesses, sector organisations, etc. This approach takes into account the many different policy areas the emerging issues can affect and identifies the different actions to be taken by different actors. Also at the workshop an attempt was made to prepare this assessment and to formulate policy implications. As an example, the assessment of one of the selected emerging issues from the workshop is presented below.

Emerging issue: Increasing self-medication

Relevance to policy-making:

- Short term:
- Cost reduction in general is the issue, or is it about shifting costs?
 - Where do we put our priorities?
 - Super bacteria: reasons why we avoid hospitals?: gradually
 - Wild card in some counties, while weak signal in others
 - Is an evolving issues but can be caused by financial/economic changes
 - Redesign of the health care system
 - Education needed for healthier lifestyle and prevention

Relevance to societal challenges:

- Active and Healthy Ageing

Relevance to policy areas:

- Social Welfare
- Economy & employment
- Education
- Security: face drugs impacts safety
- STI: if triggered by pandemic

How well is policy prepared:

- Experiments going on, mainly at level of awareness campaigns, information provision
- Families are well prepared. They know what to do with medical problems. Important source of information and self care

Policy implications and requirements

- Too expensive new treatments financed privately or public-private structures
- Black list of suppliers: Creating / increasing transparency, raising awareness
- Allocate health professionals to provide correct information via new channels of health care information for self care / self medication
- Find new structures / channels for consults and information provision
- Alter tax system to stimulate healthy food
- New technologies for communication: e-health / lab in the home
- Employers have responsibility to avoid harmful activities
- Pharmacies take over doctor's role
- Empower people to do self medication / self care or make it as difficult as possible?
- Insurance system: can offer products / services supporting + financing this
- Connection between health + physical working conditions
- Enforcement of laws?



Early warning systems for emerging issues

Governments can use “early warning systems” to prepare for the occurrence of weak signals and emerging issues or risks, although gathering reliable “sensor data”, or weak signals, for such systems is hard.

Early warning systems are intimately tied to (inter)national risk management.

A broader view of risk, beyond visible direct threats, is needed with awareness to trends and events that are underlying drivers and amplifiers.

A general approach to early warning systems consists of three steps: 1) information gathering to find weak signals, risks, issues or trends; 2) sense-making of the identified signals through creative and multi-factorial analysis; and 3) formulation of a strategy to respond to these trends and issues in an appropriate manner (amongst others Rossel, 2011). The concept of early warning is linked with environmental scanning and also with risk management. Especially in risk and disaster management, the idea of early warning is very important and early warning systems have become a standard tool for managing major environmental risks such as tsunamis. In a similar sense, governments can use “early warning systems” to prepare for the occurrence of weak signals and emerging issues or risks in all kinds of areas of society and economy, although gathering reliable “sensor data”, or weak signals, for such systems may prove to be even harder to do.

Such early warning systems are intimately tied to (inter)national risk management. Risk management consists of the identification of critical systems and resources, which if disrupted could trigger a series of knock-on effects with adverse results. Risk management systems and tools regularly focus on risks to society and economy from a perspective of security threats and natural hazards. These systems are widely available and are often included in the military frameworks and national security doctrines. There are also risk management and early warning systems focusing on specific sub themes, such as cyber security or financial markets.

At the workshop the approach followed in the Netherlands, the Dutch National Risk Assessment Report, was presented by Tim Sweijs from the Hague Centre for Strategic Studies (HCSS). Based on strategic foresight and horizon scanning, thematic in-depth foresights are prepared and identified national risks are assessed and prioritised. The results of the foresight and risk assessment activities are used as input for the capabilities planning. In the Netherlands, the national risk assessment model kick-started interdepartmental collaboration and offers a transparent process, but it remains questionable to what extent this model can cope with uncertainties. In addition, putting politically sensitive or unpopular risks on the agenda remains a challenge.

Also the OECD describes its report “Reviews of Risk Management Policies - Future Global Shocks – Improving Risk Governance” several national and international early warning and monitoring system. The OECD argues that risk managers should adopt a broader view of risk, beyond visible direct



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There is a great variability in horizon scanning approaches that allow for collecting, sharing, elaborating and assessing emerging issues.

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The accuracy and predictive power of modelling tools as well as the interface between modelling and policy actions should be improved. Lack of data, global coverage and cross disciplinary input are great challenges.

threats, and expand their situation awareness to include trends and events that are underlying drivers and amplifiers and can take place in faraway locations .

A relevant tool to inform policy and decision makers about new and future opportunities and threats and make them prepared for drastic changes and surprises/shocks is horizon scanning, as already introduced by Ansoff in 1975. Horizon scanning can be defined as “the systematic examination of potential (future) problems, threats, opportunities and likely future developments, including those at the margins of current thinking and planning. Horizon scanning may explore novel and unexpected issues, as well as persistent problems, trends and weak signal” (Van Rij, 2010).

At present, various forms of horizon scanning are quite wide-spread (see, e.g., Amanatidou et al., 2012), although with great variability in approaches, including pattern management, environmental scanning, informed improvisation approaches, scenarios, wild card analysis, consequence-based structural design approaches etc.. Despite this variability, horizon scanning offers approaches for collecting signals which (i) articulate credible observations about current or imminent changes (either sudden, gradual, or in between these poles), (ii) are felt to be potential indications of new emerging issues that may have received insufficient attention, (iii) can be meaningfully shared, elaborated, and assessed by the participants.

Driven by advances in ICT, a new generation of mapping and modelling tools of complex systems has emerged. Tim Sweijts from HCSS presented several example of more quantitative approaches employed in Dutch foresight and risk assessment practices, which could be interesting approaches for more systemic early warning systems. ‘Metafore’, for example, collects many views on future developments from many different sources and different language domains. The future views are systematically coded in a software programme in search for dominant views but also trends, countertrends and missing elements. Another example is ‘System Dynamic Modelling’, which is used to explore multiple futures by focusing on feedback loops between drivers, to simulate a large set of scenarios and to look for ‘scenario islands’ and outliers in the scenario runs.

Nevertheless, Barrie Stevens from the OECD argued during the workshop that the accuracy and predictive power of modelling tools should be improved and interface improvements are needed to translate the modelling results into policy actions. The lack of data about complex



More international and public-private collaborations are needed.

Regardless the approach followed, the results will only be taken into account by strategists and policy makers if the results are legitimate to them.

Legitimacy is created by using a rigorous, systematic and transparent methodology.

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systems is an important challenge, as well as the need for diverse modelling capabilities with global coverage and including variables from various disciplines. The OECD also makes a plea for more international collaboration and even a global intermediary to ensure the gathering and aggregation of monitoring data according to common standards and terminology. This would help to identify emerging issues and weak signals that will be hard to find on a national or international level only and it will support the exchange of information and could even lead to co-ordinated joint counter measures. In addition, partnerships between private and public bodies would be necessary to support the exchange of information and to enhance the interpretation of the emerging issues, for example because large parts of infrastructure are in hands of private actors.

Conclusions and lessons from the workshop

The EFP workshop and background paper on 'Policy options for surprising and emerging issues' show that many projects and initiatives in the world aim at identifying and assessing weak signals and wild cards. Moreover, these projects and initiatives make clear that it is a rather difficult task to recognise these weak signals and wild cards and to really open our eyes. Many authors underline the notion that weak signals and wild cards should be collected from many different sources and perspectives and by many different experts and stakeholders. The projects and initiatives discussed in the workshop show that different approaches do exist, including very qualitative and very quantitative approaches, each with their advantages and pitfalls. Regardless the approach followed, the results will only be taken into account (and absorbed) by strategists and policy makers if the results are legitimate to them. As put forward by Teichler (2011), this legitimacy is created by using a rigorous, systematic and transparent methodology, one that fulfils the criteria of science. A lack of time and resources often limits the possibility of sound scientific approaches.

Participants in the EFP workshop acknowledge that systematic and transparent approaches are needed and that the foresight toolkit needs to be further developed. Nevertheless, some participants also warned against the appearance of 'scientificism'. We should avoid that we will predict things that cannot be predicted or that we develop 'evidence' that is non-existing. We should apply the qualitative and quantitative methods in a coherent way. Moreover, we need to develop better methods for linking the diverse types of information and taking into account the context of the information. Combining methods used in the security and defence domain with approaches more frequently used in the 'civil' domain could be beneficial in this respect.



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A combination of thematic / domain experts, policy-makers and foresight practitioners is needed in the process of identifying, analysing and assessing emerging issues.

Policy can never be fully prepared for surprises and uncertain events. Policy-makers should focus on building capacity and capabilities, strengthening the resilience of the system, and embrace and integrate the notion of the unknown unknowns in their policy-making.

Participants in the EFP workshop also concluded that we should focus on connecting the results of the forward looking activities to policy making. In the workshop, the participants tried to explore and discuss the requirements and options for policy makers in relation to the selected weak signals and wild cards. An important difficulty in this assessment was the broad set of weak signals and wild cards available in the workshop. Although participants represented different backgrounds, including foresight practitioners, STI policy experts, and policy makers, participants were not real experts in specific domains and found it rather difficult to assess the impact, likelihood, but also the policy requirements and options for specific weak signals and wild cards. Overall, the policy requirements and options formulated in the workshop remained rather general. This is not much different from other 'horizontal' initiatives to horizon scanning, early warning systems and the connection to policy. Once more, the workshop emphasised the need to involve a combination of thematic / domain experts, policy-makers and foresight practitioners in the process of identifying, analysing and assessing emerging issues as much as possible and to apply participatory approaches.

Despite the pleas for a better connection and translation between the results of forward looking activities and policy and to involve a broad audience, participants in the workshop also made clear that, because of the 'surprising' dimensions and high uncertainty of wild cards and weak signals ('unknown unknowns'), policy can never be fully prepared and fine-tuned towards these surprises. It is, however, very important that policy-makers focus on building capacity and capabilities, strengthening the resilience of the system, but most of all embrace and integrate the notion of the unknown unknowns in their policy-making.

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