CIVISTI

**Collaborative project on Blue Sky Research on Emerging Issues
Affecting European S&T**

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Preface

This preliminary content analysis report is a product of an expert analysis of future visions that were created by citizens in seven EU member countries in the spring and summer of 2009. The report provides an overview of 69 visions by analysing their thematic content in terms of 37 topics that have been addressed and discussed by the national citizens' panels.

On the way towards this report – and to control its quality – two independent research groups conducted simultaneous analysis. The rich variety of themes and issues included in each vision made it a challenging but productive exercise to arrive at an overview of European dreams and concerns expressed in the visions. With the help of CIVISTI partners and outside experts, it will be the next step of the project to turn the citizen visions into relevant issues for future S&T policy and research framework design.

Executive Summary

The CIVISTI project is a research project, supported by DG Research of the European Commission under the call **Blue Sky Research on Emerging Issues Affecting European S&T,** Socio-economic Sciences and Humanities programme of FP7.

The common understanding of the CIVISTI parnters is that citizens are the carriers of concerns and expectations to the future and with the right facilitating methods, such concerns and expectations can be collected and transformed into relevant research agendas.

CIVISTI has the challenging tasks to:
- Produce a list of new and emerging issues for European S&T;
- Produce a set of policy options of relevance to future European framework programmes;
- Base these products upon a novel process of citizen participation in seven member states, supported by the analytical capacity of experts and stakeholders.

Panels of citizens (from 7 EU Member States - Austria, Belgium, Bulgaria, Denmark, Finland, Hungary and Malta) with varied educational and professional background; males and females at different age produced 69 visions of the future (time horizon 2050). Professional facilitators helped to organise the discussions. Thus, the data resulting from brainstorming and future deliberations by the seven national citizen panels provides an authentic sample of European citizens' visions of future.

The present report outlines a preliminary analysis of the contents of the citizens' visions. The report provides as well an overview of 69 visions by analysing their thematic content in terms of 37 topics (themes) that have been addressed and discussed by the national citizens' panels.

The CIVISTI methodology builds on the interplay of foresight and participatory technology assessment, where citizens describe their visions of the future following the normative approach, while stakeholders and experts have the challenging taks to "translate" these visions in S&T issues and policy options, thus supporting the programming process of FP8.

The citizens have extensively discussed seven broad topics in their visions: **healthcare and medical services; education and learning; ICT, automation and artificial intelligence; legislation; quality of life and life style; employment and new modes of work, and energy**. It is worth noting that five of the least prominent topics addressed in the citizens' visions are "big issues" for humanity, including *natural and technological disasters, genetics, religion, space technology, and developing countries*.

The report distinguishes five levels of impact, addressed in the visions: individual/family/community level, local level, national level, EU level, global level. An interesting observation is that the global level in the visions prevails over the others.

The report discusses as well weak signals that have been identified in the visions by the authors, like the virtual education system, where smart technology and educational technology replace teachers.

The "Conclusions" section brings the reader to the next steps in the CIVISTI process, shedding light on how new S&T issues will be identified.

Summaries of all visions can be found in Annex I to this report; the full texts of the visions can be seen at www.civisti.org

Background

The CIVISTI project is a research project, supported by DG Research of the European Commission under the call **Blue Sky Research on Emerging Issues Affecting European S&T,** Socio-economic Sciences and Humanities programme of FP7.

The CIVISTI project is based upon the idea that the process of defining research agendas relevant to the societal needs and concerns could in many respects gain from consultation with citizens. Our societies are changing rapidly as a consequence of globalisation, new technologies, multi-cultural societies, media developments, environmental and climate challenges, new energy futures, increasing welfare and consumption, etc. These developments involve an interface between science, technology and society. Linked to these developments, issues arise about societal management of the involved needs and uncertainties – for society as well as for the individual.

The common understanding of the CIVISTI parnters is that citizens are the carriers of the concerns and expectations to the future, and with the right facilitating methods, such concerns and expectations can be collected and transformed into relevant research agendas.

CIVISTI has the challenging tasks to:
- Produce a list of new and emerging issues for European S&T;
- Produce a set of policy options of relevance to future European framework programmes;
- Base these products upon a novel process of citizen participation in seven member states, supported by the analytical capacity of experts and stakeholders.

The CIVISTI process encompasses:
a. Development and documentation (manuals) of a transnational methodology, in which the main elements are the coordinated national face-to-face citizen consultation processes, and a European expert- and stakeholder involvement process. The process is based upon elements of well-tested public participation processes, of which the consortium has excellence of expertise, including the Citizen Hearing, Interview Meeting and Citizen Jury.

b. Development of a web-based Content Coordination Tool, so as to i) deliver a common bank of information for the citizens, ii) serve as a translation interface between the national citizen panels, iii) present the answers of the national panels for comparison, iv) present the results of the expert- and stakeholder analysis, v) present the cross-national comparisons, and vi) ensure transparency of the process.

c. European citizens in 7 geographically distributed EU member countries develop themes of relevance to European S&T activities in the future. A comparative analysis of the national contributions will be made and presented in the Content Coordination Tool.

d. Development of an analytical model for identifying and characterising the emerging research issues from the answers of the citizens. The tool will be based upon existing methods and

approaches from areas such as futures studies, innovation theory, foresight and horizon scanning.

e. Identification and characterisation of such issues through a process involving stakeholders and experts. The process will break down the themes of the citizens into issues of relevance to European S&T in the future. The synthesis of this process will be made available to the citizens through the Content Coordination Tool.

f. Final priority decisions, including a quality and authenticity assurance by the citizens. This will be made in a final round of citizen consultation with the same citizen panels as in the first round. The results are registered in the Content Coordination Tool.

Objectives

The expected results of CIVISTI are directly related to the objectives of the Blue Sky Research call of the Socio-economic Sciences and Humanities programme of FP7.

First, the project will make a long-term view into the needs, concerns and **visions** of the future. **Citizens** in seven European Member States, prompted in a structured way to consider different aspects of the future, will make these visions. The prompting of the citizens will encourage views on the future, which are new or not generally recognised as policy issues. The visions will in themselves be a result, since they will represent trends of relevance to S&T in the future.

Secondly, a process involving **experts and stakeholders** will use an analytical model to extract new S&T agendas from the citizens' visions. The R&D issues will relate to scientific disciplines and technological developments, and/or complex trans-disciplinary challenges. This will result in an overview of potential **new areas for S&T, including an overview of policy options**.

Thirdly, the citizens will be consulted again to validate and prioritise the new S&T agendas and policy options. The result will be **a set of S&T issues and recommendations**, which the citizens find most important for their future, and which can directly be fed into the processes of defining FP8.

Fourth, CIVISTI will contribute to the **expansion of the European foresight capacity**. The aspect of citizen consultation is expected to attract attention from scientific areas – such as policy sciences, study of democracy, ethics and philosophy – who have not yet been generally aware of the developments in foresight. The results of CIVISTI, including the methodological approach and experience, will be actively disseminated to the scientific community as well as to the relevant policy-making institutions, which will support the attention towards forward-looking studies.

Fifth, a new concept for **citizen participation in long-term foresight** will be established in CIVISTI. This highly innovative methodological approach will be characterised by being very cost-effective – as compared to existing experience of cross-European citizen participation. Potentially, the method will make it possible to execute citizen consultations across all member states at a price, which has not yet been inside reach. An important reason for this is the innovative use of an on-line Content Coordination Tool, which binds the activities together across nations and across the project phases.

Sixth, CIVISTI will include **new researchers into forward-looking studies** by including partners and participants, who are new or have limited experience with foresight and foresight-like activities, including an SME in the area of opinion analysis. These partners will gain experience into methodological set-up of forward-looking studies as well as into the coordinated execution of such activities at a trans-national level.

Data and Method

Data

The data of the report consists of 69 visions of the future produced in spring and summer of 2009 in seven member states from different geographical corners of the EU – Austria, Belgium, Bulgaria, Denmark, Finland, Hungary and Malta (see Figure 1). The visions were created by citizens' panels (c. 25 members each; selected to provide a versatile sample of the demographic structure of the populations) that spent one and a half days in vision workshops organised by the CIVISTI partners. Professional facilitators helped organising the discussions and, when necessary, writing down the visions in literary format. The data resulting from brainstorming and future deliberations by the seven national citizen panels, therefore, provides an authentic sample of European citizens' visions of future.
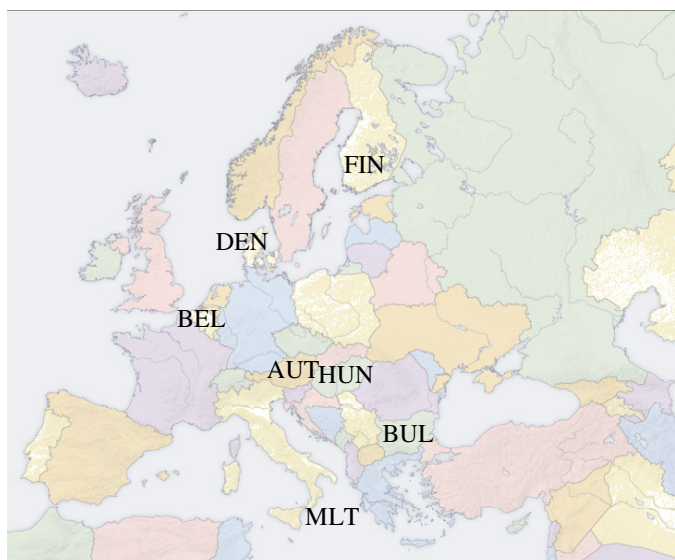

Figure 1: Map of CIVISTI partner countries (source: Wikimedia Commons)

Each vision is formulated as a (1-3 pages A4) description of the dreams and concerns of the future in a 30-40-year time span, including both personal, national, European and global level issues. It was decided by the CIVISTI consortium not to limit thematically the focus of the visions, but instead, a set of general questions and a template reflecting them was provided to the citizens. The template also provided a guideline to the vision descriptions. Each vision, consequently, follows the same structure: title, short description (1-5 lines), long description (1-2 pages), an assessment of the benefits and concerns related to the vision, and finally, a listing of the means (e.g., knowledge, policies, resources and skills) needed to realize the visions.

Originally, the visions were written in the native languages of the partner countries, and later translated into English. All visions are available both in English and native languages at the CIVISTI website, http://www.civisti.org/.

Method

The CIVISTI project builds on the methodology of participatory technology assessment and foresight, where the interplay of citizens, experts and stakeholders is crucial. There is the following methodological red thread: citizens are included in a role of providing normative visions of the future, whereas experts and stakeholders are responsible for transforming the visions into S&T issues and policy options. Finally, citizens are provided an opportunity to evaluate the authenticity of the process by commenting whether the contributions by the experts and stakeholders reflect their original visions of future. To support a productive interplay between the contributions by citizens, experts and stakeholders, the CIVISTI project follows an analytical model discussed and accepted by the partners. The model as a whole will be described in a separate document (Deliverable 4.1 - the analytical model) that will appear in January 2010.

In this report, we present the preliminary findings of a **content analysis** of the 69 visions. The content analysis was based on a grounded theory approach that is generally applied in sociological analysis of qualitative data[1]. The key idea of such analysis is that any kind of qualititative data can be understood only through some form of conceptualisations (or categories), and that such conceptualisations should have some kind of grounding in the data to which they refer to. The idea of the grounded approach is, in other words, to maximally base the analysis on the data rather than apply any predifined concepts/categories to the analysis.

The content analysis of the CIVISTI visions was carried out in the following way. Experts in two independent research groups (ARC Fund in Bulgaria & Consumer Research Centre in Finland) read through the visions and coded the themes (or as called in this report, "topics") that they found emerging from the visions. After a first round of analysis the first group identified 28 topics and the second group identified 41 topics. Some 70% of the topics proved overlapping, and after mutual consultations the two research groups revised and verified both the final number (37) and names of the topics.

During the content analysis, the research groups analysed what themes were covered, what kind of problems, needs and desires were expressed, and what measures (both S&T based and other) were proposed by the citizens for the realisation of their visions. In this preliminary report of the content analysis, we present our findings concerning the following aspects of the visions:

- how, in general, citizens depict future through their visions (i.e. what does a "typical" vision look like, and how is it narrated?)
- what is the thematic scope of the visions (i.e. what are the "topics" that they cover)

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[1] For references see e.g.: Glaser B. & Strauss A., 1980, "The discovery of grounded theory: strategies for qualitative research (Aldine de Gruyter, New York) and Seale C., Copo G., Gubrium J. & Silverman D., 2004, "Qualitative research practice", p. 84-88 (Sage, London).

- on what structural scale the visions of the future are envisioned (i.e. the "level of impact", see terminology)

While presenting the results, we also give some examples of the most commonly discussed visions as well as indicate some common ideas that seem to emerge from the citizen panels working independently in different CIVISTI countries.

Terminology

- o **Vision**, as defined in the CIVISTI project, is a picture or an imagination of a desirable future. A vision can be based upon hopes and dreams - but also upon concerns and fears in relation to problems or imagined threats, which we do not want to become future reality. In CIVISTI, the time span of the vision is 30-40 years from now. The visions of the CIVISTI project result from the deliberations of citizen panels (c. 25 members each). Each vision has been structured according to a common template even though different styles and narrative formats have been used in the writing of the visions.

- o **Topic** refers to a single thematic unit identifiable in the data. "Aging" or "family values" are examples of topics.

- o The **scope of visions** refers to the number of different topics included in them. The scope can be defined either at the general aggregate level or or per a vision.

- o **Level of impact** refers to the structural unit, under which the vision and its impacts can be located. We have distinguished between five impact levels: individual and family level (L1), local level (L2), national level (L3), European level (L4) and global level (L5).

Results

The results of the preliminary content analysis are presented below.

Profiling a typical vision – style and structure

The citizens' panels developed **69 visions in total**. The Austrian panel developed 11 visions, Belgium panel 8 visions, and the panels in other countries developed 10 visions each.

In regard to the **style and structure** of the visions, there was a high variety of different solutions, as indicated by the examples of 10 different narrative structures presented in Table 1 below.

Table 1. Different narrative structures of the visions

- a list of 24 important future issues
- a description of desired future circumstance (e.g. peaceful elderly period)
- a story of a day in year 2045, experienced by a fictional character
- a glimpse of future society 50 ahead (in some visions there are even longer time frames)
- an analysis of the strengths and weaknesses of a desired vision
- an elaboration of a single idea (e.g., Europe TV)
- a definition of the most pressing problem of future (e.g., worst environmental problems have been beaten)
- a diagram explaining a new invention (e.g., new apparatus for conversion of energy)
- a fictional visit in the rooms of a future war museum
- a sketch of an idea (death passport)

The high variety of different styles and structures of vision descriptions can be explained with (i) the open definition of the visioning exercise and (ii) the usage of professional facilitators that have supported different narrative techniques. The high stylistic and structural variety of visions causes some restrictions to the analysis of the visions. For example, the limits between dreams and fears as well as means and ends are often vaguely described in the visions. The aim of this report is not to interpret or make ambiguous value judgements of the contents of visions. The report should help experts and stakeholders to gain a better overview of topics included in the visions for the identification of needs and problems and definition of research questions for policy and technology to address these needs.

Topics and thematic scope of the visions

As mentioned above, a significant challenge in the beginning was the large thematic variety and scope of the visions. Most visions encompass multiple topics that spead across multiple domains of the society (e.g., science, technology, economics, environment, politics and values). Thus, the next step was to carry out a content analysis and to identify and mark all relevant topics for each vision.

Overall, the visions were much diversified both in content, style and structure. None of the visions was single-thematic. The lowest number of topics in a vision was three, indicating a narrow scope of the vision (on a technical apparatus for conversion of energy by using water pressure). The highest number of topics included in a vision was 17, indicating a broad scope of the vision (on EU president touring Africa). The average number of topics per vision was 8.8, which indicates that people tend to include several issues of consideration, which are interwoven in their envisioning of future. In some cases, the high number of topics results from a broad thematic definition of the vision. An example is the vision **Link among generations, space and time** (Bulgaria, vision06), which presents "the happy life of a middle-sized European familily in 2049" and covers 15 different topics. More often, however, the high number of topics results from an "interdisciplinary" way of deliberating the problems, needs or hopes related to the future. An example is the vision **Support for the starting and maintaining a familiy – and the EU** (Hungary, vision01), which mainly focuses on the role of families in the society, but ends up with a list of 24 different issues for the future.

The table below presents the thematic topics that are discussed in the visions

Table 2: Topics addressed in the citizens' visions

Topics in alphabetic order
1. Ageing
2. Agrifood technologies, organic production
3. Animals and ecosystems
4. Citizens' role and democracy
5. Climate and global warming
6. Creativity and innovation
7. Demography
8. Developing countries
9. Disasters (natural and technological)
10. Education and learning
11. Employment and new modes of work
12. Energy
13. Environmental awareness
14. Equality - gender, minorities, disabled, ethnic
15. Family values
16. Genetics
17. Healthcare and medical services
18. ICT, automation and artificial intelligence
19. Identity (national and EU)
20. Infrastructure and urban design
21. Legislation
22. Linguistic technologies
23. Local and regional development
24. Multi-cultural and multi-lingual society
25. Pension policy
26. Quality of life and life style
27. R&D policy
28. Reducing bureaucracy

29. Religion
30. Role of media
31. Smart materials
32. Social care and services
33. Space technology
34. Transport
35. War and peace
36. Waste management
37. Water management

The total number of topics identified was 37. This number also indicates the overall thematic scope of the visions.

There are seven broad topics that are extensively discussed in the visions: **healthcare and medical services; education and learning; ICT, automation and artificial intelligence; legislation; quality of life and life style; employment and new modes of work;energy**.

In the background of the visions related to **health care and medical services** there were often observations of the needs of aging populations and hopes for new solutions from the development of the medical sciences. An example of this theme is the vision *Europe as a welfare state* (Austria, vision08)**.** As stated in the vision, in an aging society significant changes in pension and health insurance systems are needed to retain a unitary health care system. It is ethically appropriate that medical care should be guaranteed without social differences, whether through taxes or contributions by the insured. Other themes to which the topic of health care and medical services was frequently linked to, included education and learning, quality of life and life styles, and energy issues.

The topic of **education and learning** was focusedly discussed, for example, in the vision *Holistic Education* (Bulgaria, vision05). This vision accentuates on the importance of education as holistic, physically and psychologically healthy personality-building. The ossified doctrines in the higher education will die out because people realize that the personality maintains national culture, not the other way round. Other regular themes linked to education and learning were quality of life, employment and new modes of work, and ICT. In some more provocative visions, for example, smart technology and educational technologies replace teachers.

Visions related to **ICT, automation and artificial intelligence** build sometimes even radical pictures of the future, in which new multimedia and ICT tools are applied to an ever increasing extent. Such an example is the vision *Mass Communication Replaced by the Massess Communicating* (Denmark, vision07). This vision contains an idea of convergence of the physical and virtual realities through perpetual on-line existence. The vision depicts a future, in which such distant actors as a Cretan and Norwegean sheep farmers consult each other by using internet based communication and translation

services. Another important theme to which ICT, automation and artificial intelligence issues were often linked to, were visions on the future forms of work and employment.

Not many of the visions directly addressed issues of policy or governance. **Legislation**, however, was among the topics that were more often discussed. In some cases legislation could be among the measures helping to realize the main goals of the visions (such as more ecological society). In other cases, however, people dreamed about more transparent, equal or less bureaucratic societies. An example of such vision is the vision **Simplification. Easier Structures by 2040 (less laws and rules)** (Belgium, vision04). As the vision states,"[p]arliaments and governments are replaced by technical committees that design solutions to problems and their output is supervised by citizens. Laws and rules are kept simple and consistent across boarders."

Quality of life and life style was among the more extensively discussed topics. On one hand, this topic can be regarded as a main category that is addressed in all visions, since the aim of all visions is to have a better quality of life. On the other hand, quality of life and life style, and as regarded by the analysts of this report, is a more specific issue with a focus on how people arrange their every day life, increasingly with the "luxury" of choosing between different alternative solutions for issues such as work, leisure, education, pension period or medical treatment. Quality of life, consequently, was a topic that was often linked with topics from very different domains of life. For example, in the vision **Favouring Ecological Lifestyle** (Finland, vision02), there is a strong linkage between life style and sustainability. As the visions often are, there is a holistic view of ecological life in this particular vision: "The environment will remain vital and productive also for future generations: it will offer enough food, visual pleasure and relaxation. People's quality of life is improved and there is a return to the natural state of being which is integral to human existence."

Employment and new modes of work was among the topics extensively discussed in the visions. Such visions were often linked to the role of information and communication technologies that support distant work; work without geographical boarders; and provide tools for redefining the limits between work, leisure and pension time. Also expressed in the visions were the pressures of the globalised society to both an individual worker and his/her family. The vision **A Happy Day – Tuesday, 16th April 2045** (Hungary, vision04), for example, envisions future, in which people work four days a week and unemployment rate is under 2 percent in the EU. Business conferences are managed through interactive telephone conferences and discussions take place in 'World-English' that is an official language of the EU.

Energy, finally was among the most extensively discussed topics. There were many visions in most countries raising issues of renewable energy, energy efficiency and more generally, sustainable development. In Malta, for example, there were two visions fully dedicated to energy issues: in the vision **Extrminating Fossil Fuels** (Malta, vision07) the focus is on how to substitute fossil fuels with more natural or sustainable sources of power such as wind turbines or water powered automobiles, whereas in the vision Apparatus for Conversion of Energy – Using Water Pressure (Malta, vision09) the focus is more specifically in an equipment facilitating the use of hydropower. That energy was among the frequently discussed topics may indicate that environmental issues are increasingly being perceived through issues of sustainable energy production, and linked to it, actions related to climate change.

In regard to the less prominent topics, an interesting observation is that the five least prominent topics in the visions are "big issues" for humanity, including *natural and technological disasters, genetics, religion, space technology, and developing countires*. Nevertheless, the observations of partners show that there were elaborated discussions also on these issues during the citizen consultations.

Level of impact of the visions

As the levels of impact of the visions were rather diverse, several levels were distinguished to aid the analysis: individual/family level, local level, national level, EU level, global level. It is worth noting that the global level in the visions prevailed over the others as presented in the table below. This is an indication that people become conscious and caring about the global developments and are not focused on their individual problems only.

Table 3: Visions by level of impact

L1	Individual and family level	17 visions
L2	Local level	5 visions
L3	National level	5 visions
L4	European level	13 visions
L5	Global level	29 visions

New connections, weak signals

As the above examples indicate, most of the 37 topics discussed in the visions were complexly interconnected, creating sometimes even surprising connections between different domains of activity. For example, several visions (Austria, vision10; Finland, vision03; Hungary, vision07) sketched an idea of an interactive **Europe TV** that helps people grasping how both the official and non-official sides of countries across Europe see and live through their lives (e.g., what policy makers debate in a country or how people cook local foods). As it was stated in one of the visions, such a television would create "a largest ever peace project and mass enthusiasm for the EU."

Many of the visions of the CIVISTI project highlight and link together ideas in a new way. Such ideas that at first glance may look like oddities or irrelevant issues in a particular context (e.g. in the design of the 8th EU framework programme) but may prove to be helpful in anticipating future changes, are often called, in futures studies, weak signals.[2]

What really are new, essential or relevant ideas among the many issues discussed in the CIVISTI visions remains a matter of personal or interpersonal judgement. Weak signals, in other words, are very much in the eyes of the beholder. To give an idea of the potentially rich variety of such signals, the analysts of this report have collected ten ideas that they perceive as weak signals in Table 4 below.

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[2] See Hiltunen E. (2008). The Future Sign and Its Three Dimensions. Fuures 40 (3) 247-260. As the author states, however, defining weak signals is problematic, and various authors term the concept differently.

Table 4: Weak signals from the CIVISTI visions

1. Virtual education system, where smart technology and educational technology replace teachers.
2. People become independent of the weather (a surprising vision in the world of climate change).
3. "DESC-Help" (Death Companion Experts for Social Communities) or professional dying process crew assists families and dying persons in all matters (Austria, vision11).
4. A "rural living commissariat" is established in the EU to favour and develop countryside on the basis of ideals of creativity, friendships and security (Finland, vision10).
5. Physical and virtual realities converge as a result of perpetual on-line existence. Cretan sheep farmers, for example, can fluently consult on their matters with their colleagues in Norway.
6. Interactive Europe TV creates a largest ever peace project and mass enthusiasm for the EU.
7. Community action days are organized to recollect and recycle old electric devices. Those that bring back their old devices should be given some money.
8. Transportation becomes fluent, ubiquitous, super fast and environmentally friendly.
9. The problems with adequacy and qualitaty of fresh water are solved in Europe.
10. Medicine helps prolong life (e.g., anti-ageing machines) and cure diseases and senior cities are founded.

Conclusions

This preliminary content analysis report has the objective to provide an overview of the topics and themes included in the 69 visions that were created by more than 150 citizens in seven EU countries in the spring and summer of 2009.

As the content analysis--carried out by two independent research units--shows, there are seven topics that were extensively discussed in the visions: 1) healthcare and medical services; 2) education and learning; 3) ICT, automation and artificial intelligence; 4) legislation; 5) quality of life and life style; 6) employment and new modes of work; and 7) energy. A large number of other topics of high value for better future and wellbeing of the European citizens were also identified.

One of the key characteristic of the visions was the holistic and "interdisciplinary" treatment of future issues. Since expert-based thinking can often be characterized as specialized instead of holistics, and disciplinary instead of interdisciplinary, the visions created by the citizens (or "lay-experts") in the CIVISTI project are expected to provide new ideas and viewpoints to the experts and stakeholders of how to think about and interpret new issues of science and technology policy. The main message of CIVISTI is that issues of importance for the European citizens should be addressed in the European research agenda.

Citizens' visions discuss the normative aspect of life, in other words, what people find important, fearsome or desirable in the future. It will be up to those having access to the systems and management of science and technology to start thinking about the implications of the visions: what aspects of the visions contain ideas or viewpoints that can be turned into new research questions, research programmes or other policy issues.

It will be the next step of the CIVISTI project to organise an expert-stakeholder workshop in Sofia, in spring 2010, to "translate" the CIVISTI visions into relevant topics for science and technology. This is both a challenge and opportunity to test how participatory foresight can contribute to science and technology policy design and decision making.

ANNEX 1. National visions - summaries

AUSTRIA

AT01: Individual and virtual education system
This vision is about an educational system in which the individual abilities and competencies are in the foreground. The basis is values like gratitude and appreciation rather than fear and pressure. Virtual teachers (machines) dominate. However specialized human teachers for sport and social issues support them.

AT02: A United Europe through real cultural exchange
There is a need for an early awareness amongst children and their parents for tolerance and mutual respect of other cultures. Children and teenagers spend some months in different European countries at different stages of primary school up to high school and also for career training.

AT03: More respect and understanding for socially deprived people
Through availability of well-educated social workers and professionals people can deal with challenges in their life without long bureaucratic processes. In special courses at school, children learn early enough to recognize social problems and to try to find solutions.

AT04: Beaming for environmentally friendly transporting
Through new transportation systems and technologies it is possible to reduce environmental pollution, achieve rapid transportation of organs for transplantation and use space and time more economically. Services are more localized and beaming is affordable for all.

AT05: Our personal simultaneous electronic translator
In this vision people gain the ability to work in all countries in the world with the help of a wrist-worn simultaneous translation chip. Language barriers could be eliminated. Everyone could use this chip free of charge or preconditions.

AT06: Multicultural and integrative education for more tolerance
In order to achieve more understanding and tolerance and to reduce the fear of the foreign and new, state-funded kindergartens and schools as well as special training programmes enable children and teenagers from different cultures and handicapped ones to grow up and to learn together.

AT07: Being allowed to die in dignity, a companionship of dying in a network of family and relatives
A chip implant enables monitoring the process of dying by a socio-psychological hospice. This vision points at the importance of the process of dying in an aging society. It includes a supervisor, acting as a companion for the dying persons and their families and friends.

AT08: Europe as a welfare state
In an aging society significant changes in pension and health insurance systems are needed to retain a unitary health care system. It is ethically appropriate that medical care should be guaranteed without social differences, whether through taxes or contributions by the insured.

AT09: Disabled people as fully valuable members of the society
Integration of disabled people should be achieved through affordable tools and involvement of disabled people in daily life as well as more research on the treatment and prevention of disablement even before birth.

AT10: TV for the creation of a European identity
An independent and advertisement free TV channel will broadcast from all EU countries. There will be rules and facilitators, acting as an incorruptible objective virtual institution to ensure neutral information without manipulation. All broadcasts should be available in all EU languages.

AT11: Death passport
Respect for autonomous decision about one's own death should be possible through a voluntary personal death passport for passive euthanasia. It should include the individual conditions and should easily be renewed with a minimum of bureaucracy and free of charge.

BELGIUM

BE01: Smart society
Everybody can afford to be surrounded by a smart environment equipped with robotics and technologies that simplify the organisation of everyday life.

BE02: Endless energy (independence of fossil fuels. Local and environmentally friendly production of energy).
A world without the need for fossil fuels. Every home has its own energy-generating system (solar cells, wind turbines, home trainers,…). Solar energy is stored and used for heating. Cars run on electricity with batteries that can be recharged at home.

BE03: Grey is OK in senior city
Senior citizens are now considered as being "plussers". They live for free in senior cities that are adapted to their recreational needs. They still play an active role in society and assist the younger generations.

BE04: Simplification. Easier structures 2040 (less laws and rules)
Parliaments and governments are replaced by technical committees that design solutions to problems and their output is supervised by citizens. Laws and rules are kept simple and consistent across borders.

BE05: H_2O_2 (Water purification for drinking water to meet the deficiencies)
A combination of water purification and water doubling techniques to ensure drinking water supply worldwide. Water will be enriched with nutrient and can be stored in "hyper" concentrations.

BE06: Where there's a will, there's work (Employment for all. A vision about the balance between work and private life, voluntary work and full employment).
By redistribution of work, everybody has a job and can choose their number of working hours according to their own family/health situation. Voluntary work is rewarded and you get a fixed wage when you stay home to take care of the children.

BE07: Unlimited communication.
Simultaneous interpretation (subtitles or dubbing) is available, enabling cross-border communication. A uniform language is created. A virtual working environment makes it possible to work from home and interact with colleagues.

BE08: Make me human! (A dream about health and wellness, technology and ethics)
Improvement of the quality of life using technologies that focus on health, food quality, smart clothing, leisure time. Physicians also pay attention to ethical aspects of medical matters.

BULGARIA

BG01: A Contemporary European City in the Year 2050
A constructive scheme of a future city outlook with high residential areas, terraces with flowers and greenery, pedestrian zones and oases. New light-weight designs and materials are used. Transport systems are noiseless due to their location in environment insulating transparent canals and going when necessary underground.

BG02: Bulgaria – the Garden of Europe
Rrecovered traditions and successful transformation of Bulgaria into a major nutritious ecological and bio-resource centre in Europe based on the unique climate and the geographical location, as well as on the scientific potential in this field. In its essence Bulgaria regains its proud position in the production of fruits and vegetables that it used to have more than 100 years ago and it becomes famous for being the European Garden of Eden.

BG03: Eco-techno Future
The vision represents a perfect balance between ecology, health and technology in terms of different manufacturing processes and technological products. "Smart" electronic cigarettes which are healthy and assist breathing are manufactured. Digital paper is a substitute, made from recyclable ecological materials, while cars run on water fuel or electrical engines.

BG04: Free the Information!
This is a vision about a unified system for publishing full information about every large-scale manufactured product. The term "product" is used in the widest sense! The emphasis is put on the adoption of a uniform legislation framework which is going to guarantee the existence and authenticity of the information.

BG05: Holistic Education
This vision accentuates on the importance of education as complete, realized, physically and psychologically healthy personality-building. The ossified doctrines in the higher education died out because people realized that the personality keeps national culture and not vice versa that nation keeps personality culture.

BG06: Link among the Generations, Space and Time
The vision portrays the happy life of a middle-sized European family in 2049. It is unique that people could participate in part in the European online referendum for the new generation of solar power-plants, take longevity pills (developed by the research laboratory in Osaka), learn twenty new words in the language of the Basques and go to the beach for the traditional series of yoga exercises. No obstacles, neither in space, nor in time, exist anymore that can separate people from their beloved ones.

BG07: One Bulgaria, One Europe, One World – one whole!
The vision is about harmony and unity of people who change the world together. Bulgaria is described as a piece of Heaven, a pure and enchanting part of Europe which attracts and fascinates tourists every day with the greatness of its nature, the cultural-historic heritage and most of all with its benevolent people.

BG08: Sofia – the Green Capital
This vision encapsulates respect to the development of a contemporary green European city and a social integration in terms of people's gathering in the skirts of Vitosha Mountain, in the South Park. Their transportation is achieved via electric cars and bicycles that do not pollute the air.

BG09: Human Values
This vision is based on human ethics' rules and principles, the so-called "human values," which can be used as fundamental criteria for lawmaking and socio-political relationships. Creating and guaranteeing existence-minimum and maximum, building legislation, using the formula "the family – basic unit of the society" with clearly defined rules and prerogatives based on human morality.

BG10: The human being in 2050 – harmoniously-built personality
The vision presents a balance in the physical and spiritual development of an individual with medical innovations as background. This harmonious personality-building is achieved through gathering of information for the physical state and talent of the child during pregnancy which facilitates his or her development after birth.

DENMARK

DK01: The EU president touring Africa
Africa has been changed from development country to industrial- and knowledge society based on a fully developed educational system from start of school to end of university. The health conditions of the population are comparable to European standard. Growth of population is under control. The African countries now have democratic governments and a well functioning public administration. Infrastructure now is sufficient.

DK02: Responsible animal production in the EU
Animals are kept under conditions respecting their natural behaviour. Live animals are not transported unnecessarily and are always butchered locally. Infectious diseases transmitted from animals to humans are eradicated through improved animal welfare and responsible handling of the animals.

DK03: EU for the people
Through close dialogue, in which citizens get a sense of being listened to and having a say in democratic processes and development of visions, the EU now feels like an institution close to the people. Citizens feel this closeness through a shared identity and through a vision, also shared, by citizens and institutions.

DK04: The ageing man/woman is a resource
Europe's share of elderly people has increased. Now elderly people have become a resource rather than a "burden", which was a concept generally used in years around 2000. Society is gaining economically, socially and culturally from this new role of elderly people. It benefits the younger generation and improves the quality of life for elderly people.

DK05: A world without war. Peace through weapons control
In the year 2045 the world's conflicts are solved without the use of weapons. Every single country and region is represented in a joint council, where conflicts are solved through dialogue and negotiations. Resources, which were used to development and production of weapons, are now used for healthcare and rebuilding of war devastated regions. The world's arsenal of weapons is diminished and there is full knowledge of the locations of every weapon.

DK06: Environmentally sound transportation throughout Europe
In 2040 all transportation in Europe will be environmentally sound and there will be many environment friendly means of transportation for both countryside and city: bicycles, electric cars, electric buses, trams and metro. Public transportation is the most attractive choice and the most used transport method. Public transportation is fast and easy to use day and night.

DK07: Mass communication replaced by masses communicating
The multimedia environment is so developed that no economic, political or other interest are controlling it. Everybody can use it freely and seamlessly in the interest of him-/herself and the recipients. Physically remote – yet close. Dialogue is seamless although there are still numerous languages. Intercultural bridge building – everyone is stranger, no one is stranger. – Private and public "communication drones" are reality.

DK08: Renewable and CO2 neutral energy
By 2049 renewable energy production is fully developed. Last year the last conventional power plant was closed. The world's production of energy is now CO2 neutral. Energy is stored and distributed by means of safe, simple and cost-efficient media with a minimum of transformational losses. The demand for energy has been minimized by optimal technologies and methods.

DK09: Assume personal responsibility – assume shared responsibility
In 2045 every person assumes personal responsibility for his/her own way of life. In daily life, in every decision and choice, everybody will act in a responsible way regarding environment and interpersonal relationships. Knowledge and education are keywords. Society is organised so as to ensure that the healthiest and most environmentally sound solutions are available to everyone.

DK10: Food production in the EU is sustainable
Europe's agricultural production takes place in a closed circuit, supplying exactly as many nutrients as are lost in production. Agricultures do not pollute, pesticides are not used and there is no leaching of nutrients. The yield from agriculture is at optimum level.

FINLAND

FI01: Strengthening of language and culture
The immigrants and refugees come to Europe from all continents because of ageing of original population and decreasing birth rates of Europe. They need to be assimilated into the culture through language as well as the "mainstream" population must adjust to the immigrants with respect and support for their difference at the same time preserving own culture.

FI02: Favouring ecological lifestyle
Society should favour sustainable and ecological lifestyle in order to preserve the environment vital and productive for future generations. This change happens through gradual changes in attitudes (e.g. consumer choices) that can be achieved by means of marketing and legislation.

FI03: Europe-TV
A common European TV channel is established to report on EU operations and other European current affairs and to introduce e.g. the cultures and events in the EU countries. The channel is open and free for everyone and interactive e.g. via Internet-based opinion polls. The channel should be as neutral as possible in every possible way.

FI04: Joint citizen action – let's get going!
Each citizen do their bit according to their skills and abilities. The role of community in society is increasing. This leads to more even distribution of resources, prevents marginalization and increases social interaction.

FI05: The worst environmental threats have been beaten
The environment remains habitable and healthy for humans and other forms of life. This can be realized through bringing global warming under control, new transportation solutions, decreasing use of toxic substances, development of technologies and overall more sustainable development.

FI06: Finland as a pioneer of innovations
With investments to better education creating innovations can be consolidated. The benefits of innovations are distributed equally between industrial and developing countries. Inventions are advanced in workshops that involve both educated and unschooled people.

FI07: Technology (eServices) reduces bureaucracy
Bureaucracy is reduced through technology when various matters are taken care of at the same desk electronically. Taking care of matters is not anymore dependent of time and place.

FI08: The triumph of scientific worldview
Science is advanced by increasing its resources , productivity and popularization. Society is better able to use the information for making important decisions and to resist pseudoscientific beliefs and religious fundamentalism.

FI09: Nature and modern society in harmony
In future nature and modern society live in harmony based on better understanding of sustainable development. Attitudes have changed; investing to sustainable techniques is prioritized also by businesses. Radical decisions and changes in order to preserve nature are made

FI10: Go countryside!
The value of living in countryside is "re-understood" and it is made possible for everyone through e.g. public transportation. Living in countryside lessens introversion and spiritual individualization, improves security, health and children's growth environment and raises the value of community and family.

HUNGARY

HU01: Support for starting and maintaining a family – and the EU
Our social and economic system is 'citizen-friendly'. Everybody has the right for a decent standard of living and for a first flat. Working conditions are flexible to family life and it is not a problem to go with bicycle or baby carriage on the streets. We can also use 'multigenerational' cars. Children see and do gardening and feeding animals. People die at home, not in 'total institutions'. People get help from a complex institutional system and from the local people who know them.

HU02: Life is value
People do sport and check their health conditions with their personal device every morning. The father does research on age-increasing technologies; the mother helps the grandparents in the housework. The mother goes home when her personal communication device gives a message that her children left school. She takes a transport automata that plays her favourite music.

HU03: Renewable beauty and utility
Fossil energy sources are replaced with renewable energies. Raw materials are also renewable and waste is reused as a new value or ingredient for another thing. Companies and households operate in an environmentally friendly way because of prevention, education, and tax reduction.

HU04: A happy day – Tuesday, 16th April 2045
As fatal diseases and pandemics have been combated and health care prevention functions well, life expectancy is between 120 and 130. People work four days a week, thus, unemployment rate is under 2 percent in the EU. There is no significant environmental pollution, discrimination, nor inequality between social groups. Ageing took an opposite trend: there are three children in every family. Modern technology is everywhere: bird-twittering robot in the morning, maglev, and interactive telephone conferences are just a few examples. 'World-English' is an official language of the EU.

HU05: Abolition of energy wastage; energy saving
The power plants burning fossil materials are all replaced with fusion power plants which are not polluting the environment and almost inexhaustible. Cars and vehicles are run by hydrogen, all other machines work with electricity. Those who use old-type machines or engineers who develop less-efficient technology are punished.

HU06: Salad of localism à la globalism. Decreasing the negative effects of globalisation
Multinational companies have to employ local labour force defined by a quota. CSR of big companies is fruitful for the local community and for their public image as well. Multinational companies offer decent work for employees and seasonal farm products of local producers for the customers. Regional lobbying is a well-developed policy tool.

HU07: Traditional, multigenerational family model in the Union
A multigenerational family lives and run their ecosystem together. Grandpa repairs the solar collector while grandma does bio-gardening. Schools integrate all minorities of the society, e.g. gender, ethnic groups, and disabled people. Citizens of the EU know how people live in other member states through TV commercials and a single holiday exchange program in the EU.

HU08: Being a happy Hungarian child and student in the Union
We have multilingual (mother tongue plus 2 foreign languages) education system from kindergarten until the age 18. Students can study in any school of the EU as there are many opportunities of mobility and e-learning. The education system synthesizes theoretical and practical trainings; and is free until the first diploma.

HU09: Condition of being alive! Drinking water!
Drinking water does not contain any chemical as soil contamination has ceased and bio-production is widespread. New water supply is unearthed and people can produce the water they use with their own driven wells. Water is cleaned after use and before it is taken back into the river.

HU10: Tranquil elderly period – actively
There is a Single Pension System in the EU; half of the pension comes from the states and half from personal pension savings. Preventive health care examination is obligatory from the age 40; thermal bath can be visited for a reduced cost from the age 55. Pensioners are still active: they take part in the Elderly Council at their former workplace once a week and do voluntary work for a civil organization. Adult children are obliged to contribute to the costs of institutional services for their parents in accordance with their economic capacities.

MALTA

MT01: Outer Space Exploration for Future Solution

To alleviate the explosion of the world population we will be able to send people to live in other planets. Working on new discoveries on resources such as deposits of hydrocarbon, to re-develop of surface land, underground space, climate, magnetism, etc.

MT02: The 3R's for a Greener Future

The use of waste materials in conjunction with natural resources to produce new materials. Their application to different sectors will benefit society. Reduce the use of natural resources, Reuse waste material, Recycle producing new materials.

MT03: Our Way Forward Stems from Our Roots

To create a more tolerant ecosystem. Remedy our past misuse of the resources at our disposal. Together as a unified nation we should be able to re-engineer all our current approaches to business processes.

MT04: A Brighter Future – or Just a Dream?

A true cooperation between peoples and nations, with the sole purpose of achieving justice, peace and serenity. This entails mankind to put aside any egoistic attitudes and start to genuinely feel responsibility and respect for those experiencing inequalities and injustices created by society itself.

MT05: Green Sustainable Living

Greener cities for present and future generations using sustainable energy production and measures to reduce pollution. This requires greater political will, improved planning, better education and a concerted effort in cooperation.

MT06: Globally Oriented Diffused Information City (GODIS)

Having a system in which different organisations in the same field of work can pool information, work together, and help each other in problems they might be unable to solve alone. It will also publish their results and studies for the general public.

MT07: Exterminating Fossil Fuels

Substituting fossil fuel energy to natural power. Use energy resources where they are most abundant. Alternative powered vehicles and alternative energy generation. Working hand in hand with nature to generate electricity

MT08: Celebrating Diversity through Inclusion

To recognise the diversity of people and use these diversities to enhance learning opportunities and promote inclusion. By means of including everyone, we can celebrate diversity.

MT09: Apparatus for Conversion of Energy – using water pressure.

To facilitate the use of hydropower where there are no waterfalls or running rivers. Electricity is produced at a very low price.

MT10: Natural Access to ICT Services Everywhere!

Technology in the form of a voice interface or neural system, enabling one's data to flow freely and securely, always there when you need it. The technology is invisible, used only where it makes sense in the holistic context of improving our quality of life.