

ULYSSES

Urban LifestYles, SuStainability and Integrated Environmental ASsessment



ULYSSES Working Paper

Cristina Querol, Åsa Gerger,
Bernd Kasemir and David Tàbara

Citizens' Recommendations for Addressing Climate Change

A Participatory Integrated Assessment
Exercise in Europe

revised downloadable version Sep. '99

ULYSSES WP-99-4



Darmstadt University of Technology

Center for Interdisciplinary
Studies in Technology



The ULYSSES project

The European research project ULYSSES aims to bridge the gap between environmental science and democratic policy making in the climate domain. For this we study judgements of informed citizens on climate policy and make these judgements available to policy makers. As a support in this process the citizens will be given access to state-of-the-art computer models on environmental change.

Between 1996 and 1999 ULYSSES will conduct and analyse group discussions with citizens in Barcelona, Venice, Athens, Zurich, Frankfurt, Manchester, and Stockholm.

Objective

Policy makers dealing with complex environmental problems need knowledge from environmental science as well as from the social sciences to back up their decisions. Integrated Assessment (IA) research aims at providing useful overviews of relevant problems and elements of possible solutions for this purpose. In this context ULYSSES - short for **Urban LifestYles, SuStainability, and Integrated Environmental ASsessment** - develops procedures for including public participation in IA.

Science can provide neither unique descriptions nor unique solutions for truly complex environmental problems. On the other hand, citizens are used to deal with a variety of conflicting yet legitimate interpretations in democracy which is basically government by public debate. In this situation assessments can improve both in quality and in political relevance by combining expert knowledge with public participation.

Methodology

In order to develop a procedure for public participation in Integrated Assessment, ULYSSES designs a discursive process which is based on the focus group method. In a kind of microcosm of social learning small groups of citizens share a moderated discussion on climate risks and options for climate policy. These **IA-Focus Groups** meet approximately five times. They debate on climate policy, have access to relevant information to support their debates, and express their resulting judgement. The range of arguments and judgements expressed by the citizens will then be condensed and made available to interested decision makers.

One of the basic tasks of ULYSSES is to design an interface between these IA-Focus Groups and computer models. Our hypothesis is that citizens can arrive at reasonable and informed judgements on environmental policy if they have the opportunity to share an in-depth debate and if they are provided with relevant information in a suitable format. For this information the IA-Focus Groups organised by ULYSSES have access to state-of-the-art computer models relevant for decision support on environmental issues. These models include IMAGE (the Integrated Model to Assess the Greenhouse Effect), TARGETS (the Tool for Analysing Regional and Global Environment and Health Targets for Sustainability), PoleStar, and NAIADE (the Novel Approach to Imprecise Assessment and Decision Environments).

ULYSSES tests this IA-Focus Group procedure in the domain of urban lifestyles and their connection to climate change. In order to experience the cultural diversity within Europe in our experiments we will conduct IA-Focus Groups in urban regions throughout Europe: Barcelona, Venice, Athens, Zurich, Frankfurt (Rhine/Main), Manchester, and Stockholm.

See also: <http://www.zit.tu-darmstadt.de/ulysses/>

The ULYSSES working papers

The ULYSSES working papers present work being done in the context of the ULYSSES network. The responsibility for the contents lies with the individual authors.

The ULYSSES research team

Researchers at 12 institutions throughout Europe and in Canada contribute to ULYSSES:

coordinator

Prof. Carlo C. Jaeger: TUD, Darmstadt University of Technology, Germany

partners

Dr. Silvio Funtowicz: JRC, Joint Research Centre - Commission of the European Communities, Italy

Prof. Brian Wynne: CSEC, Centre for the Study of Environmental Change, Lancaster University, United Kingdom

Prof. Salvador Giner: IESA, Instituto de Estudios Sociales Avancados de Cataluña, Spain

Åsa Gerger: SEI, Stockholm Environment Institute, Sweden

Prof. Maria Giaoutzi: NTUA, National Technical University of Athens, Greece

Prof. Ferenc Toth: PIK, Potsdam Institute for Climate Impact Research, Germany

Dr. Jill Jäger: Consultant, Vienna, Austria

Dr. Jerry Ravetz: RMC, Research Methods Consultancy, United Kingdom

Dr. Bernd Kasemir: EAWAG, Swiss Federal Institute for Environmental Science and Technology, Switzerland

Dr. Jeroen P. van der Sluijs: SOM, Software op Maat, Netherlands

Prof. John Robinson: SDRI, Sustainable Development Research Institute University of British Columbia, Canada

ULYSSES is supported by the European Commission, DG XII, RTD Programme ‘Environment and Climate’, area ‘Human Dimensions of Environmental Change’ (Contract No. ENV4-CT96-0212). The **EC scientific officer** responsible for ULYSSES from the side of the European Commission is Dr. Angela Liberatore.

ULYSSES also profits from the collaboration with ZIT, the Center for Interdisciplinary Studies in Technology, at Darmstadt University of Technology.

For further information on ULYSSES please contact the **project assistant**

Dr. Bernd Kasemir (EAWAG, Human Ecology Group, Überlandstraße 133, CH- 8600 Dübendorf, Switzerland. e-mail: kasemir@eawag.ch)

Further ULYSSES working papers

Ravetz, J.R.,

Integrated Environmental Assessment Forum: developing guidelines for "good practice",

ULYSSES WP-97-1,

Darmstadt University of Technology, Center for Interdisciplinary Studies in Technology.

(This paper was originally prepared under a contract from the EC Joint Research Centre, No. 11972-96-06-F1E1 ISP GB.)

Dürrenberger, G., Behringer, J., Dahinden, U., Gerger, Å., Kasemir, B., Querol, C.,
Schüle, R., Tabara, D., Toth, F., v. Asselt, M.B.A.; Vassilarou, D., Willi, N., Jaeger, C.C.,
Focus Groups in Integrated Assessment: A manual for a participatory tool,

ULYSSES WP-97-2,

Darmstadt University of Technology, Center for Interdisciplinary Studies in Technology.

Jaeger, C.C., Shackley, S., Darier, É., Waterton, C.,

Towards a Polylogue on Climate Change and Global Modelling,

ULYSSES WP-97-3,

Darmstadt University of Technology, Center for Interdisciplinary Studies in Technology.

Kasemir, B., Behringer, J., De Marchi, B., Deuker, C., Dürrenberger, G., Funtowicz, S., Gerger,
Å., Giaoutzi, M., Haffner, Y., Nilsson, M., Querol, C., Schüle, R., Tabara, D., van Asselt,
M.B.A., Vassilarou, D., Willi, N., Jaeger, C.C.,

Focus Groups in Integrated Assessment: The ULYSSES pilot experience,

ULYSSES WP-97-4,

Darmstadt University of Technology, Center for Interdisciplinary Studies in Technology.

Darier, É., Jaeger, C.C., Kasemir, B., Schüle, R., Shackley, S., Wynne, B.,

Contributions to Participatory Integrated Assessment,

ULYSSES WP-98-1,

Darmstadt University of Technology, Center for Interdisciplinary Studies in Technology

Toth, F.L., Kasemir, B., Masing, V.,

Climate Policy as a Business Opportunity for Venture Capital in Europe,

ULYSSES WP-98-2,

Darmstadt University of Technology, Center for Interdisciplinary Studies in Technology

Kasemir, B., Dahinden, U., Gerger, Å., Schüle, R., Tabara, D., Jaeger, C.C.,

Fear, Hope and Ambiguity: Citizens' Perspectives on Climate Change and Energy use,

ULYSSES WP-99-1,

Darmstadt University of Technology, Center for Interdisciplinary Studies in Technology

Dahinden, U., Querol, C., Jäger, J., Nilsson, M.,

*Using computer models in participatory integrated assessment - Experiences gathered in the
ULYSSES project and recommendations for further steps,*

ULYSSES WP-99-2,

Darmstadt University of Technology, Center for Interdisciplinary Studies in Technology

Ravetz, J.,
Models as Metaphores
ULYSSES WP-99-3,
Darmstadt University of Technology, Center for Interdisciplinary Studies in Technology.

The **ULYSSES** working papers can be ordered at:

ULYSSES

c/o ZIT - Center for Interdisciplinary Studies in Technology
Darmstadt University of Technology, Darmstadt / Germany
Fax.: ++49-6151-16 67 52

The ULYSSES working papers are available in downloadable format
from the ULYSSES Website at Darmstadt:

<http://www.zit.tu-darmstadt.de/ulysses/>

Citizens' Recommendations for Addressing Climate Change

A Participatory Integrated Assessment Exercise in Europe

Cristina Querol¹, Åsa Gerger², Bernd Kasemir³ and David Tàbara⁴

Abstract

Citizens' participation in the assessment of global environmental issues such as climate change has long been neglected within the international debate. Given the limitations from science and policy in dealing with uncertain and complex problems, the need to find new strategies through which ordinary people can channel their views in ways that can be integrated with expert assessments is becoming increasingly clear. This paper discusses citizens' recommendations for addressing climate change and urban sustainability formulated within exploratory settings designed for developing participatory methods for Integrated Assessment (IA). The ULYSSES research project developed the IA-Focus Group methodology and tested it in seven European regions. Participants interacted with computer models and expert information and formulated written assessments during an in-depth discussion process. The diverse procedures for the citizen report task of 30 IA-Focus Groups are outlined and their suggested measures discussed. The findings indicate that all proposed measures were oriented towards addressing causes of the human-induced climate change and not the effects.

¹ Consultant for the Stockholm Environment Institute (SEI), Sweden. (formerly at IESA-CSIC, Barcelona, Spain)
cquerol@hotmail.com

² Stockholm Environment Institute (SEI), Lilla Nygatan 1, Box 2142, S-103 14 Stockholm, Sweden

³ Swiss Federal Institute for Environmental Science and Technology (EAWAG), Ueberlandstrasse 133, CH-8600 Duebendorf, Switzerland

⁴ Institute for Advanced Social Studies (IESA), Spanish Council of Scientific Research (CSIC), Egipcíacues 15, 08001 Barcelona, Spain

Each group report showed a high level of consensus and no contradictory suggestions are found between reports. The citizens' assessments were based on a holistic perspective as their reports contemplated a broad spectrum of policy areas. Their recommendations were pointing at infrastructural and technology improvements, and to organizational and individual action. The participants called for immediate action to mitigate climate change, and did not request more certain scientific knowledge on the matter before measures were adopted.

Acknowledgements:

This paper is based on research performed in the project ULYSSES - Urban LifestYles, SuSustainability and Integrated Environmental Assessment - conducted between 1996 to 1999 and funded by DGXII of the European Commission in its 4th Framework Programme, RTD Programme Environment and Climate, theme 4 Human Dimensions of Environmental Change (contract number: ENV4-CT96-0212). Project partners of ULYSSES were Carlo Jaeger, Silvio Funtowicz, Brian Wynne, Salvador Giner, Åsa Gerger, Maria Giaoutzi, Ferenc Toth, Jill Jäger, Jerry Ravetz, and Bernd Kasemir. We are grateful to all our colleagues from the ULYSSES project for sharing their thoughts and data with us. We are especially grateful to Jill Jäger, Éric Darier and Ralf Schüle for fruitful suggestions at an early stage of this paper. We also would like to thank the reviewers of the paper for their helpful comments. Finally, we are also most grateful to the citizens participating in the ULYSSES IA-Focus Groups.

Table of contents

ABSTRACT	1
<u>EXECUTIVE SUMMARY</u>	<u>4</u>
<u>1. INTRODUCTION</u>	<u>7</u>
<u>2. METHOD: IA-FOCUS GROUP PROCESS AND CITIZENS' REPORT PROCESS</u>	<u>9</u>
2.1. GENERAL IA-FOCUS GROUP DESIGN	9
2.2. PRODUCING CITIZENS' REPORTS IN IA-FOCUS GROUPS	12
2.2.1. COMMON PROCEDURE AMONG RESEARCH REGIONS:	13
2.2.2. MAIN REGIONAL SPECIFIC CHARACTERISTICS	14
<u>3. RESULTS: CITIZENS' RECOMMENDATIONS ON CLIMATE CHANGE</u>	<u>17</u>
3.1. RESULTS SUMMARY: MOST COMMON ASSESSMENTS AND RECOMMENDATIONS	17
3.1.1. ASSESSMENT OF CAUSES AND IMPACTS OF CLIMATE CHANGE	19
3.1.2. RECOMMENDATIONS ON SECTORS AND ACTION MEASURES	21
3.1.3. IMPLEMENTATION STRATEGIES	23
3.1.4. WHO, WHERE AND WHEN SHOULD THE RESPONSES BE TAKEN	24
3.1.5. PERCEIVED BARRIERS TO ACTION	25
3.2. GENERAL COMMENTS ON THE CITIZENS' REPORTS	26
<u>4. ASSESSMENT OF THE REPORT WRITING EXERCISES</u>	<u>29</u>
4.1. ASSESSMENT OF THE WRITING EXERCISES ACROSS RESEARCH REGIONS	29
4.2. OVERVIEW OF WEAKNESSES AND STRENGTHS OF THE WRITING EXERCISES	33
<u>5. CONCLUDING REMARKS</u>	<u>35</u>
REFERENCES	37
<u>ANNEX A: CLASSIFICATION OF CITIZENS' STATEMENTS BY ISSUE AND BY REGION</u>	<u>39</u>
<u>ANNEX B: SIX EXAMPLES OF CITIZENS' REPORTS</u>	<u>56</u>

Executive summary

Effective decision-making on today's complex environmental issues increasingly makes the involvement of a full spectrum of stakeholders necessary. Such a 'reality check' by different social actors is essential for policy measures in preparation to be tested regarding their practical application and acceptability. Without integrating the points of view of citizens, local policy-makers and industry representatives, environmental policy runs the risk of getting stalled in the early implementation phase.

Integrated Assessment (IA), aimed at providing support for environmental decision-making, should thus foster the participation of stakeholders in its methodology. The ULYSSES research project has explored the participation of citizens in IA, focusing on issues of urban lifestyles and sustainability in the context of climate change. IA-Focus Groups which lasted for five meetings of about 2,5 hours were designed to enable small groups of ordinary citizens to:

- have access to expert information and computer models related to global and local change;
- be provided with the time to reflect and debate among other citizens; and
- define measures for addressing climate change and urban sustainability.

This paper focuses on the procedures and results of the writing exercises carried out by the participants of 30 IA-Focus Groups conducted in the seven European regions. The citizens' reports are one of the diverse outputs derived from the IA-Focus Groups. Although citizens' reports considered on their own, lack the insights encountered in the actual group discussions, this type of task enabled that participants synthesized by themselves what they agreed to regard as worth a mention.

Results include those dealing with citizens' assessments of climate change. No single group assessment concluded that climate change (CC) does not exist; most of the impacts mentioned were of a geophysical nature, and sometimes also pertained to ecological effects. The only human impact frequently noted was *health problems or diseases*, whilst only two groups mentioned: *plagues or losses in crops; nutrition changes; and starvation*. Interestingly, there was no single group that specified *impacts on the economy* in their citizens' report.

A second group of results centres on recommendations of measures for addressing climate change and their implementation mode. The measures that were most commonly specified pertained to the *transport and energy sectors*. These were followed by measures concerning *households, waste and urban planning sectors*. Five out of nine groups which were asked to

specify in their reports a recommended reduction level of energy consumption suggested a 20-30 per cent reduction. Interestingly, no measures of an 'adaptive' type were proposed; all proposed measures were oriented towards addressing the causes of the human-induced climate change and not the effects. The stated measures were not only pointing at infrastructural and technology improvements, but also to organizational and individual action. For implementation, the most commonly advocated strategies were related to i) governmental and institutional intervention mechanisms: *information and communication improvements; economic instruments; regulation;* and to ii) citizens' behaviour: *lifestyle changes and citizen participation.*

A last group of results concerns the actors seen as responsible for taking measures, and the perceived barriers to action. The actors typically mentioned were: *citizens* or *everybody*; and a diversity of *governmental actors*. These were followed by *scientists* and *researchers; producers and business; household administrators and landlords;* and *environmental and social movements*. The groups which addressed the issue of timing explicitly suggested that the actions should be taken *now* or *as soon as possible*. This indicates that the citizen groups recommended action long before the Kyoto Protocol deadline of 2012. The typically reported barriers to action were related to i) *power relations (economic interests, lobbies)*, and the *lack of action from governments or politicians*; and to ii) *lifestyles-related barriers like: laziness, induced consumption needs or individuals not being prepared to decrease their living standards.*

Overall, the citizens' assessments were based on a holistic perspective as their reports contemplate a broad spectrum of policy areas and implementation strategies. Participants often addressed issues that were not approached explicitly in the expert information provided. The groups mainly suggested i) governmental and institutional intervention mechanisms and, to a somewhat lesser extent, ii) voluntary individual behaviour. Participants did not request more certain scientific knowledge on the matter before measures were adopted. Interestingly, each group report showed a high level of consensus and no contradictory suggestions have been found between reports. Regarding the citizens' report procedure it should be stressed that a pre-structured and homogeneous format of citizens' reports proves to be very convenient for making summaries, to seek patterns in the results and to carry out comparisons across groups. Nevertheless, in order to find a balance between what is lost in terms of in-depth (as the reports do not account for the full context and argumentation occurred during the discussions) and what is gained in terms of manoeuvrable results, it would be advisable that in

the future facilitators made a summary of the discussions which would complement the citizens' reports.

The findings discussed here are derived from an exploratory research project that has developed and tested a methodology for Participatory Integrated Assessment (PIA). While the main goal of ULYSSES was to advance the research agenda of PIA, it is hoped that the indicative findings regarding citizens' informed opinions and recommendations are of use for both the research and the policy community. It is expected that in the future an institutional embedding of PIA within decision-making processes will provide a chance to integrate the assessments of citizens and other stakeholders more directly in environmental policy than is the case today, and thus ensuring that the policies pursued are representative of the views and aspirations of the community they are supposed to benefit.

1. Introduction

Citizens' perceptions of climate change have been explored and compared with those of scientists and experts through both quantitative and qualitative methodologies in other studies. Dunlap (1998) explored lay perceptions and levels of understanding of climate change in six countries; Kempton (1991) compared lay perceptions with those of scientists in the USA and Bell (1994) looked at differences between media and public discourses on climate change. Other studies can be found in Read *et al.* (1994) and Lofstedt (1993). Here, however, the objective is not to look only at citizens' perceptions *per se* but also to document how informed citizens might participate in the assessment of global environmental change.

Citizen participation has been of increasing interest to researchers within the Integrated Assessment (IA) community (Schneider 1997; Toth and Hizsnyik 1998; Jäger 1998). This is connected to the intended function of IA of providing information for practical decision-making. Developments in the direction of Participatory Integrated Assessment (PIA) can be seen as practical implementation of the concept of extended peer communities, which Funtowicz and Ravetz (1991) suggest for cases where there are high levels of uncertainty in scientific knowledge and methods and also high decision stakes. In order to avoid the risk of environmental policy to getting stalled at the early implementation phase, effective decision-making on today's complex environmental issues necessitates the involvement of interested and affected parties. The emerging trend towards setting up Local Agenda 21⁵ processes is evidence of this need for effective citizen participation in environmental policy formation. What is often still lacking, however, are effective techniques for such citizen participation on complex and global environmental issues.

Against this background, the central theme of ULYSSES⁶ (Urban LifestYles, SuStainability, and Integrated Environmental ASsesment) has been to explore citizen participation in IA, focusing on issues of urban lifestyles and sustainability in the context of climate change (Jaeger *et al.*, 1995). The research was conducted in seven urban regions of Europe: Stockholm in Sweden, Manchester in the UK, Frankfurt in Germany, Zurich in Switzerland, Barcelona in Spain, Venice in Italy, and Athens in Greece. The general objective of ULYSSES has been described as bridging the gap between environmental science and

⁵Local Agenda 21 refers to Chapter 28 of *Agenda 21*, the key document approved at the Earth Summit in Rio de Janeiro in June 1992. The mandate established by Chapter 28 encourages local authorities to start processes to work with all sectors of communities -citizens, businesses, interest groups- to develop long-term local action plans towards the pursuit of sustainable development.

democratic policy-making for the issue of climate change (ULYSSES, 1998). For this purpose, the project designed and applied the “Integrated Assessment - Focus Group” procedure to enable small groups of ordinary citizens to:

- have access to expert information and computer models related to global and local change;
- be provided with the time to reflect and debate among other citizens; and
- define measures for addressing climate change and urban sustainability.

What is the problem? What should be done? How should it be achieved? Who should do it? Which barriers are foreseen? These are some of the questions subject to discussion among the participants and addressed in their citizens’ reports. Citizens’ reports are one of the diverse outputs derived from the IA-Focus Groups and the central focus of this paper. Other data outputs of the ULYSSES IA-Focus Groups included: audio and video recorded group discussions; visual expressions by the participants in the form of collages or ‘graffiti cards’; completed questionnaires; diary notes of participants; scenarios developed with the help of computer models in an interactive manner; and research notes from post-meeting interviews. Other papers produced in the context of ULYSSES describe and analyse such other materials. In Section 2 the methodological design of both the IA-Focus Group procedure and the citizens’ report task are described. In Section 3 the nature of the participants’ assessments of 30 IA-Focus Groups are discussed, and a synthesis of the most-commonly suggested measures is presented. In Section 4 an assessment of the writing exercises is provided, and in Section 5 some concluding remarks are furnished. In Annex A, a tabulated cross-regional summary of the assessments and recommendations is presented, while in Annex B⁷ six citizens’ reports translated into English are provided.

⁶ See <http://www.zit.tu-darmstadt.de/ulysses> for an overview of the project and to access ULYSSES research papers.

⁷ The full amount of citizen’s reports reviewed for this paper (26 citizens’ reports) are to be found in the project web page at <http://www.zit.tu-darmstadt.de/ulysses>.

2. Method: IA-Focus Group process and citizens' report process

The IA-Focus Group method is partially based on the focus group methodology that was first introduced by Merton and Kendall (1946), and more recently refined and documented by Krueger (1988), Morgan (1988) and Morgan and Krueger (1998). As IA-Focus Groups are considered to be suitable for discussing global issues with complex interactions, general focus group techniques had to be further developed for this purpose. For the same reason, the IA-Focus Groups designed in the ULYSSES project are also differentiated from some other public participation methods such as. "planning cells" or "citizen juries" (see Renn *et al.*, 1995; Coote and Lenaghan, 1997) which were designed mainly for addressing local or regional single-issue problems. Throughout more than 50 focus groups designed for ULYSSES, different types of group designs were tried out. This paper centres on citizen groups carried out between 1997 and 1998 and leaves unaddressed the groups formed with specific social actors (policy-makers, environmentalists, entrepreneurs or journalists). The groups carried out with citizens during the pilot phase of the project have also been left aside. Those groups, besides the fact that they have already been analysed elsewhere (Kasemir *et al.*, 1997), hold too great a diversity of procedures to be appropriate to be included in the synthesis presented in this paper.

In order to provide the reader with an accurate and concise image of the methodological components of the IA-Focus Groups and the citizens' reports, described below are both the basic common design and the basic procedural differences across the research teams.

2.1. General IA-Focus Group design

The comprehensive design of IA-Focus Groups developed and tested in the ULYSSES project has been described elsewhere (Kasemir *et al.*, 1999), therefore only its principal traits are specified here. For every urban region citizens were approached by random telephone contacts and invited to the meetings on the basis of recruitment criteria. The recruitment procedure secured a heterogeneous mix of participants that reflected somewhat the local social stratification, guaranteed different environmental attitudes within each group, and prevented the participating citizens from holding an unusual high level of expert/scientific knowledge about the issue before participating in the group debates.

The groups were designed along the following general lines. Each group consisted of approximately 6 to 8 citizens. Most groups met for five sessions of approximately 2.5 hours

per session, or for an equivalent amount of discussion time organised in fewer sessions. A moderator facilitated the group discussions which focused on climate and energy issues and on possible or desirable urban developments in the region where participants lived. Within this context, human-induced increase of greenhouse gases in the atmosphere, and specifically carbon dioxide (CO₂) emissions related to lifestyles, households and the transport sector were approached as a central theme. In some of the focus groups, links to Local Agenda 21 initiatives or other local development initiatives had been established, leading to a broadening of the focus beyond climate and energy. The groups were given access to expert assessments, usually in the form of computer models⁸ and a diversity of modelled future scenarios. In most groups, participants interacted with both an Integrated Assessment Model (IAM) with a global scope, and with a regional model or “Lifestyle-CO₂ calculator”. (For a detailed description of the models used and recommendations for future model design for use in PIA, see Dahinden *et al.*, 1999.) Beside computer models, other types of input information, such as video documentaries, expert speeches, fact sheets on climate change, regional statistics, journal or newspaper articles, were provided to support participants in the discussion of issues such as: population, economic growth, consumption, energy use, CO₂ emissions from the transport and household sectors. The scientific input, especially the computer models, were normally presented and discussed with the support of a second moderator. The use of a *model facilitator* prevented the *group moderator* having to perform an ‘expert role’ during the group discussions. It should be stressed that, although expert knowledge played an important role in the IA-Focus Group design, participants were provided with time periods to debate issues before the diverse expert information was facilitated. In this way, participants could express and share their diverse knowledge and views and, in some cases, they brought information which they had discovered in newspaper articles or from internet. The aim was not to limit the debates to the information provided by the facilitators or speakers but to promote discussion of viewpoints and enable a shared learning

As the overall goal of the ULYSSES project was to develop and test new tools for PIA, different design versions of participatory procedures within the same general format were developed and tested in the course of the project. The design summarized below was developed and applied by the Barcelona, Zurich, Frankfurt and Stockholm research teams (for further details see Kasemir *et al.*, 1999):

⁸ The computer models most commonly used within ULYSSES have been: IMAGE (Alcamo, 1994), TARGETS (Rotmans & de Vries, 1997), PoleStar (Raskin *et al.*, 1996), and “Personal CO₂ - Calculator” (Schlumpf *et al.*, 1998).

- *first session*: environmental problems, climate change and energy were discussed in a general fashion and participants encouraged to produce collages to illustrate their concerns;
- *second session*: the global dimension of climate change was addressed using an IA model and some of its future scenarios in order to stimulate discussion among participants;
- *third and fourth sessions*: these two sessions focused on the regional and local dimension, using either a computer model on regional CO₂ emissions or a model on lifestyle-CO₂ emissions; this type of information aimed at providing input to debates on possible goals and areas of action within critical energy sectors such as transport and household.
- *Fifth session*: the group participants produced or finished the citizens' report on the basis of the discussions in all previous sessions.

Apart from this design that was applied in Stockholm, Barcelona, Frankfurt and Zurich, there were two other methodological designs developed and applied by the Venice and the Manchester research teams. The latter team designed a participatory IA method closer to existing public participation techniques and without using computer models in the group sessions, while the Venice team adopted a PIA approach more closely related to research on citizens' assessment of climate change. As reported by these teams (Darier *et al.*, 1999), they used different terms to describe the meetings with local residents. For the Italian team⁹, the concept of *In-depth Groups* (Burgess *et al.*, 1988) is used, reflecting a 'research-framing' of their approach, while the British team called them *Citizens' Panels*, reflecting a 'policy for real' framing. In the Manchester design, issues for debate were bottom-up discussions which did not centre so much around climate change *per se*, but more specifically on what were the environmental and sustainability issues that participants felt should be addressed in their region. In these groups, the 'expert' knowledge was presented mainly through speeches by members of local institutions or local policy-makers (Kitchener and Darier, 1998a; 1998b), while in Venice the expert knowledge was presented mainly through the computer models but using a metaphor of the 'Voyage of Ulysses' (De Marchi *et al.*, 1998; Guimaraes Pereira *et al.*, 1999). Furthermore, the Venice team chose to introduce the regional model before the global model. On the other hand, the groups held in Athens were different from all other teams, since the main aim for that research region was to run 'media groups' which included

⁹ The Italian research team produced a web site which describes comprehensively the process and which reports some of the

journalists and citizens. For this paper only the Athens groups which were undertaken with citizens are considered.

2.2. *Producing citizens' reports in IA-Focus Groups*

The general purpose of the citizens' reports (one per group) was two-fold: i) it was considered essential that participants had the opportunity to synthesize what they agreed to be important; and ii) the citizens' report task also intended to help researchers and a (less defined) policy audience to improve their understanding of citizens' perspectives and recommendations for addressing climate change. The citizens' report procedure, it was believed, would help the participants to focus on some target issues and would give them a sense of tangible accomplishment at the end of the process. Nevertheless, it was not the intention that the report writing would be the focus of the whole exercise, and therefore this task was not highlighted as the main point during the course of the discussion process. On the contrary, the main emphasis was put on the actual discussions among participants.

The task of producing a written citizens' report was not undertaken by 4 of the 30 IA-Focus Groups reviewed for this paper. For these cases extracts from discussion transcripts have been employed. For the rest of the groups fully translated citizens' reports have been used. The six Venice groups reviewed wrote a specific type of group report, the so called 'logbooks'. Table 1 shows the diversity of output materials reviewed for the present paper.

Table 1: IA-Focus Groups and output materials reviewed for this paper.

These citizens groups were carried out between 1997 and 1998.

Region	IA-Focus Groups	Number of participants per group	Output materials reviewed
Zurich	4	6 ; 5 ; 5 ; 7 (23)	4 CRs
Stockholm	4	7 ; 8 ; 10 ; 11 (36)	4 CRs
Barcelona	5	7 ; 7 ; 8 ; 8 ; 8 (38)	5 CRs
Frankfurt	6	6 ; 6 ; 7 ; 7 ; 6 ; 10 (42)	6 CRs
Venice	6	9 ; 9 ; 9 ; 9 ; 9 ; 9 (54)	excerpts from 6 CRs (logbooks)
Athens	2	5 ; 5 (10)	excerpts from transcripts
Manchester	3	7 ; 8 ; 7 (22)	1 CR + excerpts from transcripts
TOTAL	30	225 participants	26 CRs + other materials

Note: CRs stands for Citizens' Reports

2.2.1. Common procedure among research regions:

The research teams of Zurich, Stockholm, Barcelona and Frankfurt designed a basic common procedure to be observed for the citizen report task. Participants were informed in the first session that they would be asked to write a report during the following sessions. A standard report structure was presented with overheads and distributed as photocopies. The citizens' report structure followed by 12 of these regions' 19 citizens' reports is shown below:

- Do you think there is a problem of climate change? Here (e.g. in the Stockholm region)? World-wide? If yes, then what is the problem?
- Given this, how should we live in 30 years' time here (e.g. in Stockholm)?
- What should be done so that we can get there?
- Given this, how much energy use compared to today is appropriate in total, and in the different sectors (e.g., transport, households).
- Who should take action? And when?
- What do you think will be difficulties in getting there?

- If you have anything else you want to note down, please do so.

During the first four sessions, participants in some groups wrote sentences, drew pictures on file cards, or started to draft the collective citizens' report. Some other groups also used individual or collective diary notes written at the end of each session or at home between two sessions. These cards, drafts or diary notes were then used in the final session to build up the final citizens' report. In very few groups, the moderator acted as a rapporteur during the report task by writing down what the participants wanted to document for later review. In these rare cases, the moderator typed the notes and made them available for everyone in a later session in order that the participants could revise them. It has been noted that when this procedure was followed, the reports tended to be longer and contain more detailed assessments.

In the fifth session the group worked on their own - unless they requested assistance from the moderator - on the citizens' report for approximately 1.5 hours. The group was encouraged to note down those points where consensus developed, but they were not required to address only agreed issues. The reason for this is that a strive for consensus at any cost might lead to 'trivial' reports, giving only the least common denominator and leaving all remaining conflict aside. Nevertheless, it was found that only a few groups specified differences in views among participants. At the end of this final session the group presented their citizens' report to the research team and commented on it in a final discussion round.

2.2.2. Main regional specific characteristics

- *Zurich*: In the fifth and final meeting the reports were written by the citizens on overhead projection slides. The process of report writing lasted for about two hours and was undertaken without the facilitators presence.

- *Stockholm*: Only in the first group no participant volunteered to act as a note-taker for the report, and therefore the group moderator acted as a rapporteur. The participants made desirable changes to the text in the next session. For the last three groups, participants were asked to write the report as if it were addressed to other ULYSSES researchers and EU officials. Each participant was also requested to write diary notes at the end of each session. During the writing session the moderators were available in case the participants had questions. For the last two groups the participant acting as note-taker wrote the citizens' report on a computer. The diary notes were copied and distributed for the writing task and were also provided in a document on the computer.

- *Barcelona*: All groups began to draft the report from the first session. At some point in most sessions, approximately 20-40 minutes were devoted to drafting the report. It was always a participant who was appointed by the moderator to take the lead role in writing down what the group agreed on to be included in the drafts. In order to provide support to this task, a few cards were used by the participants to express key ideas or to make drawings; these cards were then placed on a wall in the room. The research team explained to the participants that the addressees of their reports were mainly ULYSSES researchers and that, to some extent, their debates and also their reports would reach EU officials. However, the research team also pointed out that, since the exercise was part of an exploratory research study, the team could not guarantee that the group participants' views would be taken into account by the policy community.

- *Frankfurt*: The purpose of requiring participants to write citizens' reports was to analyse these results rather than framing them as a potential output for policy-making. At the end of the first two sessions participants wrote down statements and answers to some given topics in file cards. During the third and fourth sessions participants were given a list of sectors on which they had to write desirable policy targets, measures and responsible actors. These sectors could be disregarded or rearranged by the citizens; in these two sessions they wrote, for about one hour, their suggestions directly on boards. These written materials were typed and printed by the research team and delivered as a draft report to the participants for them to edit during the final session. The corrections were incorporated and mailed to the participants, and a further round of editions and mailings took place. In one of the six Frankfurt groups reviewed in this paper, the editing of the report during the last session was made on a computer by one of the participants. Furthermore, as this group had been closely linked to a Local Agenda 21 initiative, the resultant citizen report was mailed and presented to local decision-makers involved in the LA21 process.

- *Venice*: As a result of the research framing of the Venice research team, Venice groups followed a metaphor of the "Voyage of ULYSSES". This framing also made it more appropriate to have participants writing, during all sessions, logbooks (or voyage diaries) which contained unstructured impressions of the groups' voyage experience. The Venice In-Depth Groups used flip-charts that provided them with an informal tool which helped to formulate their ideas in writing. The fifth session was dedicated to the writing of the logbooks. The logbooks were displayed in a special web site on the Internet for participants and anyone else to see.

- *Manchester*: As the approach to frame the debates was bottom-up, the group that wrote a citizens' report decided by itself on the subjects to be included. The report was presented in a special session - together with a 20 minute video film on city spaces made by the participants on a voluntary basis - at a joint meeting with panel participants and some local policy-makers. The other two Manchester groups did not write citizens' reports.

The diversity of procedures adopted for the report writing led to different report formats and types of content. In Section 3, a summary of the citizens' more commonly stated assessments and recommendations for addressing climate change is provided and, subsequently, some specific characteristics of the report results are explained.

3. Results: citizens' recommendations on climate change

The fact that reports and assessments were formulated within 30 IA-Focus Groups carried out in seven western European metropolitan regions does not allow the generalization of the results as if they were statistically representative of the European general public. However, results are indicative of how citizens might frame the assessment and recommendations for climate mitigation and sustainability. On the one hand, results derived from group discussions, in which various types of expert information are facilitated and which last for approximately 12 hours, have a higher validity and possess much richer insights than results which could be gathered, for example, in a 45-minute interview, or obtained through a 10-minute opinion poll. On the other hand, the reader ought to keep in mind that the group reports are not to be considered as the central output of the ULYSSES IA-FG process. The citizens' reports on their own, lack the richness of the combination of the full range of outputs of the IA-FG processes (audio and video recorded discussions, collages, diary notes, file cards, completed questionnaires). The citizens' reports are mainly static statements which do not illustrate in which context they were formulated, nor do they reveal argumentation behind each suggestion. The written reports do provide, however, is a synthesis formulated by the participants themselves of what they had discussed during the five meetings.

3.1. **Results summary: most common assessments and recommendations**

The groups' statements are summarized by ascribing them to the following five issues:

Boundaries of the climate change problem:

1) assessment of causes and impacts of climate change

Suggested response measures:

2) sectors and action measures

3) implementation strategies

4) who, where and when should the responses be taken

Obstacles to achieve action targets or to implement strategies:

5) perceived barriers to action

These five issues have been divided into sub-issues as shown in Table 2. This organization of sub-issues just gives account on the diversity of subjects addressed by the citizens' statements but does not imply that all these issues were dealt with by all the groups, nor that the groups used this terminology. The specific participants' statements are accounted for in Annex A.

Table 2: Classification of citizens' statements by issue:

<i>1) Assessment of causes and impacts of climate change</i>
<ul style="list-style-type: none"> - Is climate change a problem?: now /future, here in the region/worldwide - Causes: natural causes, social causes - Impacts: geophysical impacts; ecological impacts; impacts on human society
<i>2) Sectors and action measures</i>
<ul style="list-style-type: none"> - general - resources - land - energy: energy sources, energy efficiency or saving - industry sector - service sector - transport: organisation of mobility; public transport services; technological improvements; citizens' use of transport - urban planning - households/residential: organization; technological improvements; citizens' behaviour
<i>3) Implementation strategies</i>
<ul style="list-style-type: none"> - economic/market instruments: financial support; incentives, subsidies or cheaper prices, higher prices; taxes - legislation/regulation: laws; licenses and permits; banning; control or penalties; decentralization - horizontal support measures: organisational/institutional,; information/communication; awareness raising; education; professional training; research - citizens' behaviour - other strategies
<i>4) Who, where and when should the responses be taken</i>
<ul style="list-style-type: none"> - everyone; specific societal actors - local; supra-regional; worldwide - now; later

5) *Perceived barriers to action*

- managerial and implementation barriers
- economic costs/market barriers
- social and cultural barriers
- lifestyle/experience of life barriers
- moral; values; attitude barriers
- cognitive barriers
- type of problem climate change is

The summary of the more frequently stated assessments provided below indicates the general patterns arising from a synthesis of all groups' statements. Nevertheless, as the reports did not consider any ranking of concerns, priorities or perceived feasibility of measures, it cannot be interpreted that the issues mentioned most frequently are also those that the groups would have regarded as the most important ones. It might not be inferred either - given the exploratory nature of the ULYSSES project - that the recommendations typically proposed by these IA-Focus Groups are, in all cases, likely to be accepted by the citizenry. However, what the review below strives to provide is a synthesis of what was commonly reported by the participants in these 30 IA-Focus Groups held across Europe, and therefore, indicate which policy measures they would support, and which individual actions they themselves as citizens would accept and act on.

3.1.1. Assessment of causes and impacts of climate change

Among the ten groups that assessed explicitly on the existence or non-existence of climate change, no single report suggested that climate change (CC) does not exist. Nevertheless, a report from Barcelona did indicate disagreement within the group regarding the evidence from which the existence of CC was to be proved. In this report it was stated that there were three views within the group: a) CC exists "*because it is evident*"; b) "*it exists because scientists say so from evident consequences*"; and c) "*we cannot know it*". In a report from Venice participants indicated that, although there was uncertainty around the CC issue, they believed CC existed. For the three regions in which the groups responded to whether CC is a problem 'now or in the future' it has been found that most of the reports stated that CC is a

problem at both temporal scales. For the two regions which addressed whether CC is a problem in ‘their region or worldwide’, it was found that the groups reported that CC is a problem at both spatial levels.

It can not be deduced from the citizens’ reports the level of importance attributed to CC in comparison to other environmental or societal problems. This was a subject which was generally addressed in all groups’ discussions, but which only a group from Stockholm explicitly addressed in its citizens’ report: “*It is hard to determine what priority should be given to the climate issue when compared to other societal issues. Other issues like unemployment seem more urgent to resolve*”. This group also reported that there are other environmental problems to which they could relate more easily, such as acidification and traffic pollution, since these were perceived to be more visible and concrete than climate change.

- The most commonly reported causes of CC were: *emissions of CO₂; population growth; the hole in the ozone layer* (see below); *energy use; deforestation; industry emissions; transport emissions; increase of private traffic; unsustainable consumption patterns; politicians’ inaction or short-sightedness; and economic interests and lobbies*. In contrast to the majority of groups referring exclusively to ‘human activities’ three groups reported that there could also be ‘natural factors’ producing CC.
- The majority of the reported impacts of CC were ‘geophysical impacts’ and, among them, the more commonly specified were: *increase of natural hazards; temperature increase/change; changes in seasons; melting of ice caps; sea level rise; storms; floods; droughts; and the hole in the ozone layer* (see below too). In a second term, three ‘ecological impacts’ were most frequently stated: *desertification; effects on flora; and effects on fauna*. Interestingly, most groups reported only one direct ‘human impact’: *health problems or diseases*. The following human impacts were specified only by two groups: *plagues or losses in crops; nutrition changes; and starvation or death*.

Whilst economic implications were at times commented on in the course of the group discussions, there was no single report which specified *impacts on the economy*. The distribution of typically mentioned types of impacts might have been influenced by the scientific input provided to the groups, but it could also be the case that citizens are influenced by the standard news coverage in newspapers and TV programmes on climate change, which focus on the geophysical and most obviously visible impacts. It could also be argued that *ecological* and *human impacts* derive from the *geophysical* ones and, therefore, those primary and direct climate change impacts are more likely to be mentioned.

Interestingly, two items were reported to be both *causes* and *impacts* of climate change. One is the “*destruction of forests*”, which was assessed by four groups as contributing to climate change (as less CO₂ absorption takes place), and also assessed by another three groups as an impact (in the sense that extreme weather events contribute to the destruction of forests). The other issue mentioned, both as *cause* and *impact*, is the “*hole in the ozone layer*”; this was assessed by four groups as a cause of CC, and another four groups mentioned it as an impact. While this may illustrate the confusion between *greenhouse effect* and *ozone layer depletion*, it was not the intention of the research teams to correct or teach participants when they misinterpreted the information provided. There could be at least two interpretations of mentioning ozone depletion in connection with climate change. From a climate science point of view, climate change and ozone depletion are at best weakly connected. Thus, their intertwining by the citizens could be seen as a lack of understanding that would need more education. In contrast to this, Steve Rayner has pointed out that one could also argue that the intimate connection citizens make between CC and ozone depletion makes sense from a policy point of view. Both issues can be seen to be caused by the technological system and lifestyles of industrial society. From this point of view, it can make sense to view CC and ozone depletion as parts of the same problem¹⁰.

3.1.2. Recommendations on sectors and action measures

The measures suggested for addressing climate change appear to account for a wide range of sectors and sub-sectors, as well as a diverse type of implementation modes. On some occasions, the groups defined sector actions without specifying the implementation mode, while other statements contemplated a general implementation strategy without specifying any sector. For example, there were groups suggesting that more information and communication are needed, but only on some occasions it was specified to whom the information should be addressed and for what purpose. Due to this diverse degree of specificity among groups’ statements, suggested sector actions are summarized in this Section and, in the following Section, the reported implementation strategies are outlined.

The measures most commonly reported to be critical for addressing climate change pertained to *transport* and *energy*. These were followed by the *household*, *waste* and *urban planning sectors*.

¹⁰ Steve Rayner, private communication.

- The more commonly stated measures within the transport sector were those related to the ‘organisation of mobility’: *limiting of cars in the city centre; more cycling facilities; and dispersing the placement of facilities*. Also reported were those measures related to ‘public transport’: *improvement of public transport quality*. To a somewhat lower extent the reports also mentioned: *improved technology for cleaner transport modes* (usually suggesting *electric vehicles* but also *solar* or *ethyl-alcohol* ones); and *less individual use of cars*.
- On the energy sector, the groups suggested measures related to ‘energy sources’: *clean or renewable energy sources*; and to ‘energy efficiency’. Five out of nine groups, which were asked to specify in their reports a recommended reduction level of energy consumption, suggested a 20-30 per cent reduction (this was framed as to be addressed by households and/or transport consumption).
- Typical measures regarding the household sector referred to ‘technological improvements’: *renewable energy sources; efficient appliances; and insulated housing*. Measures pertaining to ‘citizen behaviour’ were also frequently identified: *reduction in the consumption of electricity, goods and water; reduction of room temperature; and purchasing seasonal or regional food*. Some of the measures referred to the ‘housing services’: *improvement of heating and water supply systems*.
- It was typically recommended for waste management that *recycling should be promoted* and that *production of waste and packaging ought to be minimized*.
- A frequent measure regarding urban planing was *incrementing green zones*.

Actions pertaining to sectors such as *industry, land and resource management*, as well as the *service sector*, were also suggested but to a much lesser extent. The *industry sector* was not specifically addressed when suggesting measures, despite the fact that industry emissions had been the most frequently reported cause of climate change. This can be understood in terms of the influence of the research design of the discussions. Participants were encouraged to focus on the sectors of *energy, transport* and *households*, as these are critical sectors for the greenhouse effect, as well as areas that are more directly related to the citizens’ own experiences and lifestyles. The ten types of measures tackling the industry sector, which were mentioned, were mainly centred on technology improvements.

Two major conclusions concerning the type of actions proposed are that no measures of an ‘adaptive’ type were proposed (which might have been, for example, suggestions on urban engineering solutions to mitigate the effects of sea level rise on the coastline, or agricultural

adaptation to guarantee food commodities). All proposed measures were oriented towards addressing the causes of the human-induced climate change and not the effects. Second, regardless of the sector goals, the groups' recommendations were not limited to a) *material* measures:

- infrastructural (i.e. energy and goods supply systems; cycle paths; green zones);
- technology improvement (i.e. renewable energy sources; efficient devices);

but the groups also suggested b) measures regarding *procedures*:

- organisational action (i.e. shared house services; combined transport services);
- individual action (i.e. change personal consumption habits).

3.1.3. Implementation strategies

The groups' suggestions concerning the actual implementation procedures to pursue the mentioned measures have been clustered into four categories of strategies. Ascribing the specific defined strategies to the clustered categories has led to finding that the more frequent procedures pertain to '*horizontal support measures*¹¹', and to '*economic or market instruments*', followed by '*legislation or regulation*' and '*citizen behaviour*'. Below are listed the more typically stated instruments for each type of strategies, but, as mentioned above, it cannot always be stipulated which sector actions these instruments were meant to be pursuing (see Annex A, Table 4, for greater detail).

- The most frequent measures which can be regarded as Horizontal support measures were: *increasing and improving information contents (clear, accessible, consistent, less academic, pedagogical information and eco-labelling); improved communication (targeted advertising, campaigns in the mass media); and awareness raising and education of different social actors. To a lesser extent, suggestions were made regarding institutional partnerships and research.*
- Economic or market instruments that were typically recommended were: *promotion of subsidies or lower prices (i.e., for public transport, for clean energy sources and technologies, and for eco-friendly household appliances).* In addition, but to a lesser extent, the following measures were suggested: *promotion of funding/investments; incentives; increase of prices of fossil fuels; and eco-taxes.* Accounting for the numbers of groups which referred to what can be considered as 'positive incentives' (subsidies, lower

¹¹ "Horizontal support measures" is a term employed by the policy community.

prices and other incentives) and ‘disincentives’ (higher prices, taxes), it is clear that most groups suggested incentives (eighteen groups) compared to the number of groups that suggested disincentives (eight groups). The addressees of both incentives and disincentives were both producers and consumers.

- Legislation or regulation: Under this category, there were fewer specific instruments suggested. Most typically, the groups suggested *laws* and *standards for emissions’ reduction; regulation for industry; and penalties when the law is not accomplished*.
- Citizens’ behaviour: The participants also referred to the individual’s own capacity to implement measures. Typical suggestions to be considered under this type of strategy were: *lifestyle changes towards environmentally conscious consumption; and citizen organization and participation to channel concerns and group power*.

No written report suggested implementation mechanisms which could be related to what is termed by the climate policy community as ‘flexible mechanisms’, that is, CO₂ trade permits, joint implementation mechanisms or burden-sharing bubbles. While this does not mean that such flexible mechanisms would not be acceptable to citizens, it seems that these mechanisms are not the most natural way to deal with climate change from most citizens’ points of view. Only two citizens’ reports suggested *technological or economic assistance to developing or neighbouring countries*. The citizen groups typically recommended measures which do not imply that other communities or countries should take the burden of the action against climate change, nor that other countries should limit their population growth or their expectations of pursuing commodities.

Overall, these findings indicate that the groups suggested i) governmental and institutional intervention mechanisms, in the first place and, to a somewhat lesser extent, ii) voluntary individual behaviour.

3.1.4. Who, where and when should the responses be taken

Nearly all groups made recommendations on which actors should take measures to respond to climate change. There were fewer groups specifying the spatial and temporal context in which the actions were to take place.

- Who: The actors more typically suggested for having to take action were: *citizens* or *everybody*; and a diversity of *governmental actors*. These were followed by *scientists and researchers; producers and business; household administrators and landlords; and environmental and social movements*.

- Where: For the only two groups which specified the location of actions, the following was suggested: *at the local level and in each town; supra-regionally; western countries should aid the developing ones; and everywhere.*
- When: In the twelve groups which addressed this issue, it was suggested that the actions should be taken *now* or *immediately* (eight groups), and *as soon as possible* (four groups). This indicates that the citizen groups recommended more immediate action than what is stipulated in the Kyoto Protocol. The Kyoto Protocol sets out emission targets to be accomplished by the year 2012, while leaving undetermined when this pursuit should be initiated.

It should be noted that among the groups of actors that were proposed for taking action not all were regarded for contributing to climate change, but having specific roles in a joint effort to address it.

3.1.5. Perceived barriers to action

Only a third of the groups were asked to take this issue into account, while half of the groups address it directly or indirectly. The barriers that were brought up by most groups were, first, those related to what could be termed *managerial and implementation barriers* and, afterwards, those related to *lifestyle barriers*.

- Managerial and implementation barriers: The obstacles typically reported were *power relations (economic interests; lobbies)*, and *the lack of action from governments or politicians (i.e. measures or agreements not being implemented; politicians not willing to introduce measures)*.
- Lifestyle barriers: The groups typically reported the following issues as impediments to implement or achieve goals: *laziness*; and *induced consumption needs or individuals not being prepared to decrease their living standards*.

Other obstacles mentioned, but to a lesser extent, pertained to the following categories: *economic costs or market barriers*; *cognitive barriers (i.e. to get people or certain groups to understand that everybody must help)*; *social and cultural barriers*; and *moral barriers (i.e. egoism, indifference)*.

It appears, therefore, that the groups typically assessed *politico-economic* relations as major barriers to implement the suggested actions and strategies. On the other hand, difficulties related to *social consumption patterns* and *lack of awareness* were less commonly mentioned. Furthermore, the stated economy-related barriers were connected to the power held by

economic pressure groups, and not so much to the potential economic costs of taking measures, or the potential market (in)competitiveness of environmentally-friendly or energy saving goods and services.

It should be pointed out as well, that other possible barriers to action were not mentioned in any of the reviewed reports, as for example: *lack of appropriate technology*, *lack of means*, or *lack of knowledge*. What some groups did report were indirect types of barriers; that is, the existence of not sought effects from implementing some measures. For example, one group from Zurich reported to this regard: “*job reduction*” and “*keep(ing) the social peace*” as barriers. This outcome indicates that the citizen groups generally held a rather holistic view which considered the inter-linkages between the global climate change problem and other social problems.

3.2. General comments on the citizens’ reports

The citizens’ reports varied greatly in terms of structure and extension. With regard to structure, some reports contained developed sentences, whereas some others consisted mainly of listings of concepts. With respect to extension, some reports consisted of one page while a few were up to five pages long. The average length was around two or three pages.

Although the intended focus for the citizens’ discussions was climate change and specifically the areas of energy use, transport and households, both participants’ discussions and their assessment reports contain many other issues. The participants did not *disintegrate* or isolate inter-related issues of their concern; participants often addressed issues that were not approached explicitly in the expert information provided. The groups received and discussed information on pre-defined policy options (as presented in the form of computer model scenarios, by invited experts or other means) but, to an even larger extent, they also formulated and debated their own recommendations. In some group discussions, the participants pointed out that they, as citizens, would like to receive information or guidance on actions which they could personally take. Therefore, the “*areas of action*” stated by participants in their reports were broader in scope than “*policy areas*” as normally defined by policy experts. Normally, the policy-making community limits itself to addressing only those sectors and types of strategies upon which its actors have jurisdiction. For the citizenry, on the other hand, there is no limitation as they do not see themselves responsible for applying or enforcing the full variety of measures they propose. For the same reason, the policy

community does not propose those types of measures which are mainly taken on a voluntarily basis and which imply a change in lifestyle.

The groups were told explicitly that they could express disagreement in their reports but the reports expressed a high degree of consensus. Only in very a few reports did participants point out on which issues the group disagreed. This was the case, for example, in a report from Stockholm which expressed disagreement about whether or not to phase out nuclear energy. Another example is found in a report from Barcelona where participants wrote: *“It is proposed to ban the circulation of private vehicles in the commercial city centre, but the majority do not agree with this prohibition.”*

The summary of the most typical statements across reports has been rather unproblematic. Besides the diversity of report structures and contents, the reports reviewed did not contain incompatible recommendations. Only two apparently contradictory measures have been found between two reports. This was related to the recommendation of increasing or decreasing car park prices. Barcelona report C suggests the increase of car parking fees, while Barcelona report E suggests a price reduction or free use of car parks. Nevertheless, when looking at the context in which those measures were formulated, it becomes apparent that the idea behind both recommendations is to limit private car use in the city centres by promoting public transport. The contested issue relates to the placement of the parking sites. On the one hand, if parking lots are already located in the city centre, one may prefer to increase their parking fees in order to avoid their use and thereby discourage driving into the city centre; on the other hand, if parking lots are (or should be) located in the outskirts of the city, by reducing their fees drivers would be encouraged to use park-and-ride, that is, to drive to the parking site and, thereafter, use public transport to reach the city centre. In this regard, it appears that for some cases it is essential to carry out a more comprehensive investigation of the argumentation, and study the context in which statements are formulated. This denotes a weakness in reviewing data from citizens' reports alone, and indicates that a more comprehensive review of the different outputs of IA-Focus Groups is required.

A typical characteristic of report contents is that, in contrast to the actual group discussions, the citizens' reports hardly reflect unanswered questions that the groups posed to themselves. An exemption, however, is illustrated in a report from the Stockholm region which states: *“Would it be possible to plan for energy consumption during the night so that some of the energy will not go to waste?”*. Another report, from Venice, indicated: *“Maybe the whole thing {climate change} is due to natural evolution”*.

The limited number of groups and citizens' reports per region does not allow for determining cross-regional patterns. Nevertheless, some regional characteristics have been encountered which can be explained by local conditions. For example, the fact that the Barcelona citizens' reports were more likely to suggest a measure such as '*more recycling facilities*' than the Frankfurt reports may be related to the case that, in the Frankfurt region, and in Germany in general, recycling facilities are more available than in Barcelona. Also, with regard to implementation strategies, Frankfurt reports more often suggested eco-taxes than any other research region. This could be related to the fact that in Germany there already exists a public debate on the issue and - to some extent - a public acceptance of this strategic measure. However, it may also be the case that the measures in question are already well established in a region and are therefore not considered to be of high priority among its citizens. With this it should be pointed out that, besides methodological differences in the application of the IA-Focus Group process, regional differences regarding the measures proposed for climate mitigation are also to be interpreted in their specific environmental, political and socio-cultural contexts.

4. Assessment of the report writing exercises

Below, first, the functioning of the writing tasks as experienced and reported by both the participants and the researchers/moderators of each region are reviewed and, second, an overview of the major strengths and weaknesses of the writing exercises is provided.

4.1. *Assessment of the writing exercises across research regions*

At the end of the last meetings, participants were generally asked to provide feedback on their experience with the group process and on the scientific information provided. Although the research teams did not systematically request the participants to comment explicitly on how they had experienced the writing tasks and subsequent outcomes, at some point participants made several comments on this. Below, some of these comments¹² are highlighted and the regional researchers' considerations of how the different writing exercises worked are outlined.

- *Assessment from Zurich:*

The moderators have reported that participants seemed to take the writing tasks very seriously. Almost all participants felt satisfied with their work. Some of them were astonished that, although at the beginning of the writing exercise there were different opinions, a consensus was found. In some groups, the two-hour period provided for writing the group report proved to be too short: when the moderators returned to the meeting, the participants were still engaged in serious discussion and it appeared that they could have continued for some considerable time.

As noted earlier, the Zurich groups were asked to express ideas by means of drawings on file cards. There was initial opposition to this task as participants did not feel confident about it; nevertheless, most became familiar with it and started to enjoy it after the first try. In relation to the use of personal diaries, some participants took their diaries home to write down their thoughts between the sessions, while others did not write anything.

- *Assessment from Stockholm:*

In contrast to all other research regions, in Stockholm it was explained to the participants that their reports should be written as if the addressees were not only ULYSSES researchers, but also policy-makers and that to some extent - indirectly through research reports - their report

¹² The actual names of participants have been substituted by fictitious ones in the provided quotes.

would reach European policy-makers. The regional moderators have reported that, although the participants often took this task very seriously, many felt uncomfortable making formal claims about what should be done to address climate change issues locally or globally. While some participants were not convinced that policy-makers would have any reason to take their views into account in the actual policy-making, some of the others felt uneasy about making an analysis of CC that might later be judged by experts and policy-makers. This may be illustrated in the following participants' comments on the writing task:

Hedvig: *'I tried very hard I think, well, we all have, haven't we? But has it added to our previous list? I mean, look at it, it sounds a bit banal when you read it through.'*

Per: *'Yes, and we ourselves see this. So you can imagine what those guys in Brussels will think when they look at it? Or scientists? They will burst out laughing.'* (Stockholm, group A, session 5)

Another interesting comment raised by a participant was related to the issue on whether reports themselves would reflect the richness of the group discussions:

Gudrun: *'This stuff that we have said in this paper is only one sole thing, but I am thinking about the fact that we have said so much more than this. Will that also appear, I mean, will be it conveyed to the EU?'* (Stockholm group D, session 5)

The two Stockholm groups that had wrote their citizens' report on a computer completed their reports before they ran out of time. Although the computer contained an open file with a synthesis of the members' diary notes, these two reports hardly used any of that material or referred to it during the report writing and discussions. These two groups proved to have greater experience with the writing exercise as the rapporteurs were skilled typists and computer users who could easily write and make editorial changes in limited time. These groups also seemed more content with their final output than the previous two groups.

- *Assessment from Barcelona:*

The moderators in Barcelona have reported that participants became more confident with the group setting, discussions and writing tasks as sessions proceeded. It required them an effort to write the citizen reports, but they took the task as part of the discussion exercise, accepted their limitations and carried on. This may be illustrated by the following quote:

Joan: *'Let's see. How can we make a report about climate change and about regional impacts with the information we have available and the time we have got?'* (Barcelona group A, session 3)

Regarding the resulted reports and the level of agreement, participants were generally rather satisfied as expressed by the comments below:

Joan: *'It is a lot what we agree on! Isn't it?'* (Barcelona group A, session 4)

Victor: *'I think that we have said rather reasonable things given our knowledge.'*(Barcelona group D, session 5)

On one occasion a participant expressed confusion about the objective of the report exercise. The quote below illustrates that some participants noticed the multi-layered purpose of the research project:

Beatriz: *'There is something which I don't fully understand. This is a pilot test to see how works that we as citizens participate in elaborating a report, or is it there already the intention to extract a report {for politicians}?'* (Barcelona group C, session 3)

Similar to the Stockholm case, some citizens said that they did not believe that the policy community would pay much attention to what they said but, on the other hand, they also expressed hope:

Moderator: *'Do you see any difficulty with the report? How do you see that it is yourselves who have to write the report?'*

Marcos: *'If it is really to be taken into account, I think that is fabulous.'*

Simon: *'Everything done to approach citizens' opinions is good, but that they are taken into account this is another thing.'* (Barcelona Group E, session 3)

Regarding the role played by the participant chosen to act as a rapporteur, only in one of the five Barcelona groups did the rapporteur keep writing notes for the report without consulting his colleagues on what to include or not. Nevertheless, the drafts for this report were read aloud in several sessions and participants accepted what had been written.

- *Assessment from Frankfurt:*

The research team at Frankfurt has reported that the entire process and style in which the citizen reports were written worked well. The citizen reports of this region had been framed as an exercise to gather assessments to be analytically interpreted rather than to be used directly in political contexts. For this reason the impression of the researchers is that the reports' outcomes (mostly listed statements and suggestions) on their own, would be insufficient and difficult to mediate. For the participants, the process of report writing was generally evaluated positively, although some participants remarked that they had problems writing their ideas on the file cards. In some cases, questions concerning the basic topic of the session had to be clarified by the moderators. When participants were asked to provide suggestions for policy targets and recommendations, some participants found it difficult to distinguish clearly between "targets" and "measures". For this reason, in some groups these two topics were discussed and reported together. Moreover, in some of the groups, participants had difficulties in making recommendations for each of the sectors suggested by the research team. In such cases, the participants themselves combined different sectors and recommended measures valid for them all.

- *Assessment from Venice:*

The Venice research team was concerned with the legitimacy of asking lay persons - who are not used to write reports and who do not know each other - to write a formal report with policy recommendations. For this reason, the Venice groups were asked to reported their views in a less formal way; the groups first used flip-charts and, in the fifth session, completed the logbooks. Venice moderators have reported that there was no opposition to these tasks; nevertheless, in some groups, there was an initial - though not lasting - inertia to write the 'exercises'. It proved very rewarding for the groups that the project homepage with their logbooks was presented to them. The opinion of the Venice team was that, if the participants knew beforehand that what they were saying would '*go out of the room*', they would be more willing to carry out the writing exercise.

- *Assessment from Manchester:*

The Manchester team designed the group processes closer to planning-for-real exercises at the local level. Nevertheless, the researchers have stated that the processes had limited practical policy-relevance and participants of the first group felt that they did not own the process. In the first focus group carried out in Manchester (Darier, 1998), participants did not write a report, but they were asked: i) who they thought to be relevant policy-makers to whom to address their concerns; ii) how would they like to communicate with the policy-makers (written report, with a video); and iii) what did they want to tell them. That is, to whom, how and what to communicate. The response was that the *addressee* of their concerns had to be people who knew something about the issue and people who could do something about it (from education, industry, scientists, politicians). The response on the appropriate communicative *form* was to meet the policy-makers themselves; and the *content* of their communication was said had to be questions for the policy-makers, but also that the report would have to be attractive to catch the policy-makers' attention. Nevertheless, participants did not express enthusiasm about writing a report for policy-makers when a speaker presented to them the Local Agenda 21 process taking place in Manchester, and participants realized that this initiative - which intended a high degree of citizen participation - had not reached any of them. For this reason participants felt reluctant to write a report for local policy-makers who had not shown a clear initial commitment to the issue. The Manchester research team also reported that participants showed a general sense of uneasiness and confusion around the task of writing a report due to i) the lack of clear and specific focus about what the purpose of ULYSSES was about, and ii) the obvious lack of a mandate or even a sense of basic commitment from governmental institutions on topics that were supposed to be of concern to

participants. The situation was different in the third citizen panel, in which a well-known and trusted environmental NGO participated, and in which the council made clear to the participants that it was interested and committed to the process. The research team found that, in order for participation to be meaningful, its context and conditions should be made clear to participants: 1) a clear mandate from the sponsoring institution and which must have a clear jurisdiction in the issue reviewed; 2) a commitment to implement the group's recommendations or to publicly justify why not; and 3) the questions posed to the group must be as specific as possible (Darier, 1998).

4.2. Overview of weaknesses and strengths of the writing exercises

Among the major weaknesses or limitations accounted both by the participants or the researchers, it should be stressed, on the one hand, that it was commonly perceived that the participants had some difficulties in formulating their concerns, opinions and suggestions into synoptic and formal written recommendations. The writing exercises are a more demanding task than debates. Therefore, the difficulties were probably due to factors such as: the complexity of the issue at stake; lack of clear guidelines; lack of time; lack of experience in working in a group context; and lack of experience in writing formal documents. On the other hand, an important limitation of focusing exclusively on citizens' written outcomes is that these materials are less rich and somehow decontextualized from the actual discussions and argumentation which supported the specific assessments.

Among the major strengths it should be emphasized that the citizen report task has proven to be taken seriously by the citizen groups, although in some groups, or for some participants, it was carried out with a certain degree of confusion and scepticism. The participants felt, nevertheless, generally satisfied with the outcomes, and pleased by the degree of agreement they had achieved in their reports. The diverse writing exercises (reports, diary notes, file cards) also made participants focus their debates, as on many occasions it was the participants themselves who asked their partners to return to the topic being reported when their discussions started to lose track. Furthermore, the successive drafting of the group reports by the participants themselves enabled groups to work in retrospect and give an account on which of the discussed insights and positions they considered worth a mention.

From a practical perspective, the citizens' reports - or other written exercises such as completed questionnaires - can be very convenient to provide an overview of the contents or agreements reached through the group discussion process. As a full transcription of a single

IA-Focus Group of twelve hours exceeds one hundred pages, it appears advisable to pursue these type of summary data. A pre-structured and homogeneous format of citizens' reports proves to be very convenient for making summaries, to seek patterns in the results and to carry out comparisons across groups. Nevertheless, there is a need to find a balance between what is lost in terms of in-depth - full context and argumentation - and what is gained in terms of manoeuvrable results.

We believe that Participatory Integrated Assessment outputs, to serve as input for policy, ought not to be provided only by researchers or facilitators' summaries of the group discussions. If such summaries were the only inputs for policy, it should be considered that the contents of the discussions can be influenced to some extent by the way the group process is established, and that the summary of the discussions can be induced by the researchers' selection and interpretation of statements. Since citizens' reports are written by the participants this output will have a higher validity than any interpretation or summary of the recorded discussions. Therefore, an advisable procedure would be that facilitators made a summary of the discussions which would complement the citizens' reports. An interesting additional content of future citizens' discussions and citizens' reports could be that the citizens are required to express their views on policy measures as currently formulated by the policy community.

5. Concluding remarks

Citizens are not only consumers, workers or voters; they can also be viewed as affected parties by both i) local and global change impacts, and ii) the mitigation policies implemented to combat the problem. Current trends in local environmental management acknowledge that citizens and stakeholders should be given the opportunity and provided with proper means to have their concerns and interests voiced. This is so, not just for the purpose of improving the exchange of understanding between the rulers and the public but, more importantly, to improve both decision-making processes and to make the implementation of the adopted measures more effective, realistic and fair. This is even more important in situations where the issues at stake are inherently complex and uncertain as is the case with global environmental changes.

Reviewing the overall citizens' reports, it is found that the participation in a participatory/research exercise has influenced the participants to express in their reports that one of the strategies for addressing climate change is by means of increasing public participation channels. This outcome would have been rather unlikely if the consultation technique employed had been a survey questionnaire or one-to-one interviews. We find that four groups out of the 30 groups reviewed here made suggestions for addressing climate change through *institutionally promoted public participation*, and that seven groups *suggested self-organisation of the citizenry for channelling concerns and pressures*. This could also indicate that, in general terms, people would like a higher degree of citizen involvement than is the case today.

Although the participants in the ULYSSES 'Integrated Assessment-Focus Groups' were not requested to evaluate which measures they considered to be more technically, economically or socially effective and feasible, the overall findings from the citizens' written assessments reveal a fair degree of understanding on the globality and interconnection between climate change and other issues. Furthermore, their reported measures and strategies for action appear to be realistic, sound and based on a precautionary standpoint. It is worth recalling that the citizens' groups called for immediate action to mitigate climate change, and did not request more certain scientific knowledge on the matter before measures should be adopted. Moreover, many of the recommendations show similarities with recommendations that derive from the policy-making community.

The findings arising out of these exploratory IA-Focus Group exercises have to be understood as pertaining to the area between scientific research on citizen assessment of climate change, development of participatory techniques and “planning-for-real” exercises. This later dimension is relevant for the relation between citizen assessments in IA-Focus Groups and citizen participation in Local Agenda 21 (LA21) processes. It has been argued that local climate action strategies should evolve into a broader and more democratic compass of Local Agenda 21 (O’Riordan and Jäger, 1996). LA21 aims at encouraging participation of all social sectors of the community, including citizens in general, to formulate “local action plans” towards sustainability for the 21st century. The IA-Focus Group method looks promising for supporting LA21 processes. However, the citizens’ recommendations formulated within the ULYSSES IA-Focus Groups differ from “local action plans” because of the exploratory character of this research project. The difference between the procedural guidelines to formulate action plans within LA21 processes and the IA-Focus Group procedural guidelines tested in ULYSSES is that, in the latter case, participants were not asked to define priority settings of actions, detailed implementation mechanisms, nor indicators for monitoring implementation and effectiveness of measures. Therefore, for application in LA21 processes, the IA-Focus Group method, and especially the technique of producing citizens’ reports, would have to be further developed.

In order to apply Participatory Integrated Assessment (PIA) in a variety of social contexts, diverse tools, designs and output formats should be kept as simple and as flexible as possible. Seeking transferability across social contexts will enable the results from extended PIA exercises to be part of a more generalized application of such techniques. If PIA methods are to be applied jointly in several world regions, considerations on the contextual differences among the North and the South would be necessary in order to adapt the methods to local conditions. Therefore, simplicity and flexibility could prove to work to advantage than seeking to apply fixed and predetermined designs and formats. However, in order to allow for comparability and cross-regional analysis of the diverse data outputs, it may be desirable that the direct output of citizens’ expressions are combined with a summary document made by the facilitators or researchers.

PIA is currently at a developing stage, and the ULYSSES experience has been embedded within a comprehensive research framework. Notwithstanding this, its potentials shed light on bringing PIA to actual policy-making frameworks. This requirement for policy and institutional embedding will guarantee that clear and specific objectives are set, and that specific outputs better fit the current possibilities within the policy-making processes.

References

- Alcamo, J. (Ed.) (1994). *IMAGE 2.0: Integrated Modelling of Global Climate Change*. Kluwer, London.
- Bell, A. (1994). Climate and Opinion: Public and Media Discourse on the Global Environment. *Discourse and Society* 5(1): 33-64.
- Burgess, J., Limb, M. and Harrison, C.M. (1988). Exploring Environmental Values through the Medium of Small Groups: 1. Theory and Practice. *Environment and Planning A*. 20: 309-326.
- Coote, A. and Lenaghan, J. (1997). *Citizens' Juries: Theory into Practice*. Institute for Public Policy Research, London.
- Dahinden, U., Querol, C., Jäger, J. and Nilsson, M. (1999). Using Computer Models in Participatory Integrated Assessment. Experiences gathered in the ULYSSES Project and Recommendations for Further Steps. *ULYSSES Working Paper WP-99-2*. Darmstadt University of Technology, Germany.
- Darier, É. (1998). "ULYSSES Manchester IA-Focus Group 1. Process Description and Preliminary Observations". CSEC (unpublished report).
- De Marchi, B., Funtowicz, S.O., Gough, C.A., Guimarães Pereira, Â. and Rota, E. (1998). The ULYSSES Voyage: The ULYSSES project at the JRC, Joint Research Centre – European Commission, Ispra. EUR 17760EN.
- Dunlap, R.E. (1998). Lay Perceptions of Global Risk. Public Views of Global Warming in Cross-National Contexts. *International Sociology* 13(4): 473-498.
- Funtowicz, S.O. and Ravetz, J.R. (1991). A New Scientific Methodology for Global Environmental Issues. In: Costanza, R. (ed.) *Ecological Economics*. Columbia University Press, New York.
- Guimaraes Pereira, A., Gough, C. and De Marchi, B. (1999). Computers, citizens and climate change - the art of communicating technical issues. *International Journal of Environmental Pollution* (forthcoming).
- Jäger, J. (1998). Current thinking on using scientific findings in environmental policy making. *Environmental Modeling and Assessment* 3: 143-153.
- Jaeger, C.C., Chadwick, M., Wynne, B., Funtowicz, S., Giaoutzi, M., Giner, S., Toth, F., Jäger, J., Dürrenberger, G., Ravetz, J. and Casilli, C. (1995). ULYSSES: Urban Lifestyles, Sustainability and Integrated Environmental Assessment. A RTD proposal for Framework Programme IV (EC), Environment and Climate, Darmstadt University of Technology, Germany.
- Kasemir, B., Behringer, J., De Marchi, B., Deuker, C., Dürrenberger, G., Funtowicz, S., Gerger, Å., Giaoutzi, M., Haffner, Y., Nilsson, M., Querol, C., Schüle, R., Tabara, D., van Asselt, M.B.A., Vassilarou, D., Willi, N., Jaeger, C.C. (1997). Focus Groups in Integrated Assessment: The ULYSSES Pilot Experience, ULYSSES Working Paper WP-97-4, Darmstadt University of Technology, Germany.
- Kasemir, B., Dahinden, U., Gerger, A., Schüle, R., Tàbara, D., Jaeger, C.C. (1999). Fear, Hope and Ambiguity: Citizens' Perspectives on Climate Change and Energy Use. ULYSSES Working Paper WP-99-1. Darmstadt University of Technology, Germany.
- Kempton, W. (1991) Lay Perspectives on Global Climate Change. *Global Environmental Change*, 1: 183-208.

- Kitchener, D. and Darier, É. (1998a). ULYSSES St. Helens Citizens Panel - Process Description and Preliminary Observations, Centre for the Study of Environmental Change, Lancaster University (unpublished report).
- Kitchener, D. and Darier, É. (1998b). ULYSSES St. Helens Joint Citizens/Policy-makers Panel - Process Description and Preliminary Observation, Centre for the Study of Environmental Change, Lancaster University (unpublished report).
- Krueger, R.A. (1988). *Focus groups: A Practical Guide for Applied Research*. Sage Publications. Newbury Park, California.
- Lofstedt, R.E. (1993). "Lay Perspectives Concerning Global Climate Change in Northern Sweden". *Energy and Environment*, **4**: 140-54.
- Merton, R.K. and Kendall, P.L. (1946). The Focused Interview. *American Journal of Sociology*, **51**:541-547.
- Morgan, D.L. (1988). *Focus Groups as Qualitative Research*. Newbury Park, CA.
- Morgan, D.L. and Krueger, R.A. (1998). *The Focus Group Kit* (6 Volumes). Sage, Thousand Oaks.
- O'Riordan and Jäger, J. (1996). "Beyond Climate Change Science and Politics". In: O'Riordan, T. & Jäger, J. (eds.) *Politics of Climate Change. A European Perspective*. Routledge, London and New York.
- Read, D., Bostrom, A., Morgan, M.G., Fischhoff, B., and Smuts, T. (1994). "What Do People Know About Global Climate Change? 2. Survey Studies of Educated Laypeople". *Risk Analysis*, **14**: 971-82.
- Raskin, P., Heaps, C., Sieber, J. and Pontius, G. (1996). *PoleStar System Manual*. Stockholm Environment Institute, Boston.
- Renn, O., Webler, T. and Wiedemann, P. (eds.) (1995). *Fairness and Competence in Citizen Participation - Evaluating Models for Environmental Discourse*. Kluwer Academic Publishers, London.
- Rotmans, J., de Vries, Bert (1997). *Perspectives on Global Change: The TARGETS Approach*. Cambridge, Cambridge University Press.
- Schlumpf, C., Behringer, J., Dürrenberger, G. and Pahl-Wostl, C. (1998) The Personal CO₂-Calculator - A Modeling Tool for Participatory Integrated Assessment Methods. *Environmental Modeling and Assessment* (accepted).
- Schneider, S.H. (1997) Integrated Assessment Modeling of Global Climate Change: Transparent Rational Tool for Policy Making or Opaque Screen Hiding Value-laden Assumptions?. *Environmental Modeling and Assessment* **2**, 229-249.
- Toth, F.L. and Hizsnyik, E. (1998). Integrated Environmental Assessment Methods: Evolution and Applications. *Environmental Modelling and Assessment*, **3**:193-207.
- ULYSSES (1998) Progress Report May 1997- April 1998. Darmstadt, Technical University of Darmstadt, ZIT Centre for Interdisciplinary Studies in Technology.

Annex A: Classification of citizens' statements by issue and by region

- *Thematic tables:*

- 1) Assessment of causes and impacts of climate change
- 2) Recommendations on sectors and areas of action: what should be done
- 3) Implementation strategies: how to implement the actions
- 4) Who, Where and When should responses take place
- 5) Perceived barriers to action

- *Regional citizens' reports and groups' statements reviewed in the tables are the following:*

Zur - Zurich, Switzerland:	4 citizen reports (a,b,c,d)
Sto - Stockholm, Sweden:	4 citizen reports (a,b,c,d)
Bar - Barcelona, Spain:	5 citizen reports (a,b,c,d,e)
Fra - Frankfurt, Germany:	6 citizen reports (a,b,c,d,e,f)
Ven - Venice, Italy:	6 partial logbooks (a,b,c,d,e,f)
Ath - Athens, Greece:	2 groups selected transcripts (a,b)
Man - Manchester, United Kingdom:	2 groups selected transcripts and 1 citizen report (a,b,c)

- *Classification, tables layout, and interpretation of the tables:*

The terms which cluster the specific statements have been chosen by the authors, as these are our organizing concepts, while the specific participants' statements have mainly been just shortened. Some of the statements have been left out of the tables due to difficult categorization.

The *bold and italic* characters in the clustered themes indicate these are summary lines of the appearances of the sub-issues specified below themselves. The statements with a hyphen (-) indicate these could be regarded as sub-issues of the issue above themselves.

The shaded areas in the tables indicate the ‘more common’ statements; the criteria used here has been that the statements had to be reported by at least 4 IA-Focus Groups from at least 2 different research regions. Only the more common statements have been shaded, not the clustering themes. Therefore, to account which thematic issues or clusters were more common, the reader should look directly at the summary lines. The reason for this has been the same one which has led us not to rank numerically which issues were mostly mentioned: these tables have to be read as indicative patterns resulting mainly from citizens’ written output of an exploratory and research-based application of the IA-Focus Group methodology.

1) Assessment of causes and impacts of Climate Change

Note: For the 2 Athens groups, causes and effects of climate change have not been collected from the transcripts. The first question below was addressed only in the indicated three regions.

Region	Zur	Sto	Bar
Is CC a problem?			
- Now	abd	bcd	abcd
Future	abd	bd	cd
- Here in this region		bcd	bcd
Worldwide		bcd	bcd

Region	Zur	Sto	Bar	Fra	Ven	Man
Causes						
• <i>Natural Causes</i>				<i>e</i>	<i>cd</i>	
It could be a natural evolution of climate				<i>e</i>	<i>cd</i>	
Due to natural cycles and by <i>Homo Sapiens</i>					<i>d</i>	
• <i>Social Causes</i>	<i>acd</i>	<i>a</i>	<i>bce</i>	<i>abdef</i>	<i>d</i>	<i>a</i>
Disturbance of extremely sensitive ecolog. equilibrium	<i>d</i>					
Emissions of CO ₂			<i>bc</i>	<i>bef</i>		
Emissions of methane			<i>b</i>			
Emissions of CFCs			<i>b</i>			<i>a</i>
Ozone hole (as cause)			<i>b</i>	<i>ef</i>		<i>a</i>
Population growth, over-population		<i>a</i>	<i>be</i>	<i>ef</i>		
Urban agglomerations				<i>a</i>		
Welfare society: consumption and capitalism			<i>b</i>			
Deforestation, loss of rain forests				<i>ef</i>	<i>d</i>	<i>a</i>
Energy production, kind of energy carriers				<i>bf</i>		
Energy use/consumption		<i>a</i>	<i>b</i>	<i>ade</i>		<i>a</i>
Electricity		<i>a</i>	<i>b</i>			
Industry emissions			<i>bce</i>	<i>abef</i>		
Increase of industrialization in developing countries				<i>ef</i>		
Organic waste, lack of waste treatment facilities			<i>b</i>	<i>a</i>		
Transport emissions	<i>c</i>		<i>b</i>	<i>bf</i>		
Increase individual traffic, cars	<i>a</i>			<i>bef</i>		
Mobility due to commuting, leisure or tourism				<i>bf</i>		

Holiday flights				abe	
Households emissions (consumption, heating)	a			bf	
Unsustainable consumption patterns, lifestyles		a	bc	f	
(*) Politicians' inaction, not long-sighted	c		c	f	a
Economic interests, lobbies (car, fossil fuels)	c		bc	df	a
Bureaucracy, law				f	
No use of available techniques				f	
(*) Lack of good habits, laziness, used to comfort			be	b	
Lack of information or education, unawareness			b	f	
Mass Media: television advertisements			be		
Ethics, no solidarity with future generations			c	f	

(*): indicates that these type of issues which were stated as *Causes* were also regarded for these groups or for others as *Barriers* (see Barriers Table).

Regions	Zur	Sto	Bar	Fra	Ven	Man
Impacts						
• <i>Geophysical impacts</i>		<i>abcd</i>	<i>abcd</i>	<i>abcef</i>	<i>adeef</i>	<i>a</i>
Increase of natural hazards (general)		bd	d	be	f	
Temperature increase/change		ad	ad	aef	def	
Changes in seasons (extreme seasons, or more similar)		cd	abc	f	df	a
Melting of ice caps or glaciers		ab	b	acf	e	a
Sea level rise (loss of beaches: Sto-d)		abd	b	bef	ae	
Extreme weather: rain, heat, snow					f	a
Storms, hurricanes, El niño		c		ab	ef	
Floods		c		abef	e	a
Droughts			ab	abf	f	a
Shift of atmospheric layers				bef		
Ozone hole (as impact)			d	b	df	
Ice age due to Gulf Stream - in the far future		d				
• <i>Ecological impacts</i>		<i>b</i>	<i>b</i>	<i>abcd</i>	<i>abcef</i>	<i>ef</i>
Changes in ecosystems, degradation environment			a	e	e	
Desertification			abd	bce	f	
Impacts on flora, vegetation (on forests: Sto-b, Fra-ac)	b	b	bcd	acef		
Impacts on fauna, extinction of animals			bd	c	e	
Loss of biodiversity			ab			
No nature any more and no food				f		
• <i>Impacts on human society</i>		<i>b</i>	<i>c</i>	<i>abcd</i>	<i>abef</i>	<i>ef</i>
Freshwater shortage, increase % salted water			b	a		
Plagues or lost in crops			ac			
Food products, nutrition changes			bd			
Starvation, death				ef		
Violent conflicts for natural resources				e		
Health problems, diseases (i.e.:allergies, malaria, mental)	b	c	abd	bef		ab
Diminished quality of life			b			
Influences our mood					f	
Positive impact: "probably an improvement for those who love hot weather"					e	
<i>Impacts on the economy</i>	<i>No group stated this in their reports</i>					

2) Recommendations on sectors and areas of action: what should be done

Regions Sectors	Zur	Sto	Bar	Fra	Ven	Ath	Man
GENERAL	*	*	*	***		*	
Address all environmental issues as a whole		a					
Protect the environment		c					
Limit population growth		a		e			
Slow down unlimited growth				f			
Limit/change consumption patterns				f		c	
Reduce CO ₂ emissions	c	a	a	ad			
RESOURCES	**	*	*	*			
Sustainable use /management of natural resources	bd	c	c	b			
LAND		*	*	*		*	*
Restoration/stabilization of ecosystems			a				
Forest or parks management (preserve, plant trees)		a				a	c
Halt desertification		a					
Regionalization of agriculture (to shorten transport)				d			
ENERGY	***	***	*****	*****		**	
• <i>Energy Sources</i>	<i>abc</i>	<i>abd</i>	<i>abce</i>	<i>abcdef</i>		<i>ab</i>	
Promote or develop alternative, clean, or renewable energy sources: solar, hydroelectric, geothermal, bio-fuel, wind (in general, or for transport, or for households)	abc	abd	abce	abcef		b	
Phase out fossil fuels as much as possible		b					
Less petrol and more gas (i.e. for heating)						ab	
Water power plants instead of nuclear	c						
Community power plants for heating or electricity				cd			
• <i>Energy efficiency or saving</i>		<i>abd</i>	<i>abcd</i>	<i>ce</i>		<i>ab</i>	
General (No specified if in production or consumption)		abd	ac			b	
Reduce energy use, low consumption devices		a	bd	ce		ab	

<ul style="list-style-type: none"> % Reduction of energy consumption (at Households and/or in Transport) 						
10 - 20 %						ab
20 - 30 %	acd	ac				c
50 - 60 %	b					
INDUSTRY						
Get out of the “megamachine” industrial society						f
Environment-friendly industrial settlements						e
Optimise industrial production			a			
Reduce emissions			c			
Alternative energy sources, energy-saving techn.	a					
Eco-friendly production of goods	a					
Less packaging, wrapping (in the industry sector)	a		c			d
Purifying plants, purification mechanisms	a		d			
Modernization of industry in developing countries	a					
No industrial dumping in less stricter countries			c			
SERVICE SECTOR (private or public)						
Solar energy in public administration and business						e
No unnecessary outdoor lightening	a					
Turn off lights and computers when not in use	a					
Electronic communication instead of letters						f
Eco-labelling of goods	a					
WASTE Production - Recycling						
Less waste or packaging	a		c			ef
Not to export nor to import waste			c			
Only recyclable products in the market		a	d			
Encourage more recycling (more containers, free waste receptor centres, municipal collection of old furniture, lumber)		a	acde		f	a
To compost and recycle at restaurants, offices		a				
Recycle used water						e
TRANSPORT						
<ul style="list-style-type: none"> Organization of mobility and infrastructures 						
More effective/planned freight transport system (i.e. by train not by trucks)	c	a				ade

Less import of goods				d		
Ring road around city, limit cars in city centre	ad	e			ab	ac
More bicycle paths, bike trailers, bike hire	c	b	cdf			c
More pedestrian zones, car access only neighbours	a	c				
Job or Education tickets for commuter traffic			abcdef			
Sundays no traffic or no cars	a		a			
Park and ride system			b			c
More central facilities with large car parking						c
Disperse the placement of facilities:	d	bc	de			c
- Supermarkets in housing areas, home ordering			bde			
- Work place or educat. nearer to housing areas			cd			
- Work from home, video-conferences			abe			
Disperse the timing schedules of work, schools			f			
• Public (collective) transport services	abc	acd	abcde	abcdef	ab	abc
Improve/promote public transport quality (i.e. more vehicles, more frequency, more stops, faster, extended networks, more attractive, lower prices, shuttle services for big events, combine bus with cabs, rail with bikes, ...)	abc	acd	abcde	abcdef	ab	abc
Public or collective transport to industrial zones			de			
Increase boat traffic, set underground		cd				
• Technological improvements	a	acd	bcde	aef	ab	a
Cleaner transport, better vehicles, 3 litre car		c	de	a		a
- Electric vehicles (cars, buses, taxi, tram)	a	d	bc	f	ab	a
- With alternative fuels (solar, ethylalcohol)		a	d	e	a	
Smaller cars			c			
• Citizens' use of transport modes	ab		abe	abcdef		
Less individual or private transport (cars)	ab		ab	def		
Car sharing			e	abcdef		
Shorter distance holidays; more cycling, hiking				bef		
Use railway instead of short distance flights				f		
URBAN PLANNING	*	*	***	***	*	*
<i>(regarding mobility planning: road belts, park sites, closer facilities, etc.: see Transport-Organization section)</i>						
More green zones	a	a	bce	def	b	c
Control the urbanization model			b			

The city for the citizens and less for cars; industry outside urban centre							ce
HOUSEHOLDS - RESIDENTIAL	**	**	*****	*****		*	*
• <i>Organization</i>		ac	bd	abdf			

Communal services (i.e. heating system, washing machine, swimming pool)			bd	b			
Improve heating and (warm) water supply systems, use waste heat, use surplus industrial heating		c		abdf			
Energy meters in households		a		a			
- Energy quotas for energy use in households		a					
• <i>Technological improvements</i>	ab	ac	abe	abcdef		b	a

Eco-friendly or energy efficient appliances		ac	a	ac			a
Renew./clean energy (i.e. solar, manual appliances)			be	abd			
Energy-saving construction of houses, insulation	ab			abcdef		ab	
• <i>Citizens' behaviour</i>	b	ac	abce	abcdef		b	

Reduce electricity and goods consumption:							
buying long-life or energy efficient appliances, use		ac	abce	acef		b	
less light, less luxury devices (dryers)							
Reduce room temperature, rational use of heating	b	ac	b	cef			
- Wear a pullover				f			
Limit use of (warm) water, showers not baths		a		ae			
Buy seasonal or regional food		a		abef			
Limit meat consumption				d			
Charge batteries with physical training		a					

3) Implementation strategies: how to implement the actions

Region Strategies	Zur	Sto	Bar	Fra	Ven	Ath	Man
ECONOMIC - MARKET INSTRUMENTS	****	****	****	*****		*	**
• <i>Financial support, funding, investment</i>		a	cde	bd			a
Funding , investment (general)		a	d	b			a
Increase public budget for research			c				
Assign part of the military budget to ecology			e				
EU or state funding for solar energy				d			
1,2 Euro/year per person to halt desertification		a					
• <i>Positive incentives (general)</i>	b	a	bc				c
Incentives to save energy	b		b				
Prizes/bonus to environmentally-friendly industries or services, to citizens recycling or reducing electricity consumption		a					
Tax reduction to enterprises reducing emissions			c				
Encourage community recycling by sharing profits							c
• <i>Positive incentives: Subsidies, decrease prices</i>	bd	abcd	de	abcdef		b	a
Subsidies/cheaper clean <u>energy sources, technology</u>	d	abd		bf			
Subsidies to purifying plants for <u>industries</u>			d				
Subsidies/cheaper public <u>transport</u>		ac		acdf			a
- Subsidies for car-sharing systems				b			
- Subsidies/cheaper for env.-friendly cars				f		b	
- Cancel subsidies for truck transport				d			
- Free large park sites at entrance of cities			e				
Subsidies to eco-friendly <u>household appliances, recyclable products</u>		ac	e	e			
Subsidies to <u>buildings</u> insulation	b						
• <i>Negative incentives: Increase prices, costs</i>	c	a	c	aef			
Env. degradation more expensive than env. protection				f			
Increase 10% costs in order to reduce energy emiss.		a					
Higher prices gasoline, fossil fuels	c		c	ae			
Higher prices on domestic flights				a			

Put real costs for cars				a		
Higher prices of park sites (in city centre)			c			
Higher energy prices of luxury goods		a				
• <i>Negative incentives: Taxes</i>	a			adef		
<hr/>						
Energy taxes to change behaviour				d		
Deterrent taxes for large polluters				a		
Eco-taxes for entrepreneurs (i.e. car producers)				e		
Eco-taxes for oil and fuels				f		
Taxes for use of private transport				f		
Higher taxes to higher horse-power vehicles	a					
Higher taxes to large houses				d		
LEGISLATION - REGULATION	*	**	*****	*****	**	**
Laws (general)	d		a	b		
Worldwide law, international legislation				bf		
Laws, standards for emission reduction			bd	bf		
Regulation for industry		ac	d	e		
Regulations on public energy spending, on buildings			d			
Laws to restrict car use, to avoid waste				f		
Stricter licences and permits for buildings			c		b	
Introduce driving licences to reduce cars in the city		a				
Banning (general, or non-recyclable products, stand by in electrical devices)		a		a		a
Control by the police, eco-police, environm. agency				e		c
- Penalties if law not accomplished			de		a	c
Decentralize administrative power, dissolve electricity monopolies			b	d		
HORIZONTAL SUPPORT MEASURES	****	**	*****	***	**	* ****
• <i>Organizational - Institutional</i>		ac	c	f	a	ac
<hr/>						
International co-operation (i.e. Club of Rome, UN...)				f		
Technical assistance to developing / neighbouring countries		ac				
Collaboration among western countries		a				
Create a competent authority to enforce laws					a	
Free consultant advice on environmental issues			c			
Demonstration projects		a				
Public participation / involvement						a

Ask teenagers what they want, to make facilities <i>their</i> facilities							c
Establish environmental organizations to work with people at grass root and local level		a					
• Information - Communication	<i>bcd</i>	<i>ad</i>	<i>abce</i>	<i>bf</i>	<i>be</i>	<i>ab</i>	<i>ac</i>
More/ improve information contents: clear, accessible, attractive, striking, consistent, less academic jargon such as CO ₂ , down to individual level, keep it to one page, pedagogical (what we can do), info in products (i.e. eco- labelling, how to tackle waste)	<i>bcd</i>	<i>ad</i>	<i>abce</i>	<i>bf</i>	<i>be</i>	<i>ab</i>	<i>ac</i>
Improve communication by way of: targeted advertising (i.e. workplace directors, small business, schools), campaigns, mailings, publications, adverts in walls and cinema, mass media, TV, radio, Internet	<i>bc</i>	<i>ad</i>	<i>bc</i>	<i>bd</i>	<i>b</i>	<i>ab</i>	<i>c</i>
Two-way communication channels, have localized communication, regularly, inform on meetings and decisions, with contact details to give feedback							c
Advertise those enterprises which reduce emissions, to inform what is to be paid, avoid deceitful advertising			c				
• Other	<i>acd</i>	<i>ad</i>	<i>abcde</i>	<i>bef</i>	<i>bef</i>	<i>ab</i>	<i>ab</i>
Awareness raising (i.e. of people, government, enterpr.)	<i>ac</i>	<i>d</i>	<i>bcde</i>	<i>bf</i>	<i>b</i>	<i>ab</i>	<i>a</i>
Education of citizens, in schools, to builders,	<i>d</i>	<i>a</i>	<i>acde</i>	<i>be</i>	<i>bef</i>	<i>b</i>	<i>ab</i>
Professional training			a				
Research on alternative energies, alternative fuels for motors (i.e. water engine), heating for households	<i>a</i>	<i>a</i>	<i>b</i>	<i>ef</i>			
CITIZENS' BEHAVIOUR	<i>***</i>	<i>***</i>	<i>*****</i>	<i>*****</i>	<i>*</i>	<i>**</i>	
Make changes by own conscience not by control						b	
Social organization of the citizenry in order to channel our worries towards those to whom we gave the right to decide; be conscious of our rights and obligations and of our power as a group; greater pressure to government, express protest	<i>c</i>		<i>acd</i>		<i>b</i>	<i>ab</i>	
Change lifestyle, environm. conscious consumption (purchase choices: products, services, energy sources)		<i>d</i>	<i>ade</i>	<i>ef</i>		<i>ab</i>	

Collected from citizens' behaviour as in 'Sectors/areas table':

*Transport: less car use, car sharing, ...	ab		abe	abcdef		
*Household: reduce room temperature, less devices...	b	ac	abce	abcdef		b
OTHER implementation strategies		**	*			*
Combination of options (actions)						a
The env. should be a transversal subject assumed by all			c			
Individual generosity, but also top-down ruled discipline	b					
Policy measures as a guide for our lifestyles	a					

4) Who, Where and When should responses take place

Note: The reason that most of suggestions on actors come from Frankfurt reports is because in this region this issue was explicitly address for every sector and sub-sector.

Region	Zur	Sto	Bar	Fra	Ven	Ath	Man
Who: actors							
• <i>Individual level</i>	abc	abc	cde	abef	b		ab
Citizens, ordinary people, we	c	ab	cde	ef			
Everybody	ab	ac		abc	b		a
Not everybody : “not everybody needs to cut back on using energy and fuel”							b
• <i>Social actors level</i>	cd	abd	bcd	abcdef	b	ab	a
Political, social and economic contributions					b		
Collaboration at all levels		b					
Public administration, government, the state	d	ab	bcd	abcdef		ab	a
Local communities, towns, county councils	c	a		abde		b	a
Politicians, policy-makers, legislative power	cd	ab		ce		a	a
EU policy-makers		a		d			
Dept. of the Environment and all other dept.			b				
Political parties		a		f			
Experts		a				a	
Scientists, Science, Research(ers)		ab		cef		b	a
Environmental consultancy				e			
Urban planners				cd			

Architects, Engineers							bf	
Lawyers							a	
Industry			d				ae	
Employers and employees							acef	
Producers, businessmen, firms, shops							abdef	a
Farmers		c					e	
Consumers							abf	
Households, landlords, house administrators			ad				af	
Institutions as: Consumer information centres, Youth organizations, Churches, Schools, Universities, Kindergarten, Tourism sector, Travel agencies, Public transport organisations							abcdef	
Environmental or /and social movements		c	a				af	
Mass media							b	
Educators					c			
Families							c	

	Zur	Sto	Bar	Fra	Ven	Ath	Man
Region							
Where							
At local level, each town							a
Supra-regional level		a					
Western countries collaboration							a
Everywhere, worldwide							a

	Zur	Sto	Bar	Fra	Ven	Ath	Man
Region							
When							
Immediately, now	abc	b	ce	c			
As soon as possible	d	cd	d				
Near future	c						
In steps, continuously	c	b				b	
According to the urgency of the problem						b	

5) Perceived barriers to action

Note: Barriers can be understood as (either or both) obstacles implementing the strategies, or as obstacles in achieving specific targets. Only a few groups were asked to address this issue explicitly, and only half of the groups did so directly or indirectly. (None of Frankfurt focus groups explicitly addressed this issue in their reports. As for the Venice, Athens and Manchester groups, this information had not been especially collected from the logbooks or from the discussion transcripts used for this paper.) Therefore, there is a rather low regional representation in this table.

As indicated with an asterisk (*) in the “Causes of climate change table”, there were some issues which were formulated by the groups as *Causes* of climate change (by the Zurich, Barcelona and Frankfurt groups), and some of them were also formulated later as *Barriers*.

Region	Zur	Sto	Bar	Fra	Ven	Ath	Man
Barriers							
• <i>Managerial and implementation barriers</i>	<i>abcd</i>	<i>b</i>	<i>cde</i>	<i>ab</i>		<i>ab</i>	<i>a</i>
Power relations, economic interests, lobbies,	bcd	b	de				a
Laws obsolete, not clear or applicable, bureaucracy			c	a			
Little participation from general public	a		c				
Direct democracy	d						
Co-ordination problems among diverse interests, and lack of co-operation in planning process		b					
<i>Governmental / Politicians' inaction:</i>	<i>c</i>		<i>c</i>	<i>b</i>		<i>ab</i>	<i>a</i>
- Measures are paperwork, not realistic							a
- Govts. do not work together, no universal approach							a
- Rulers do not accomplish signed agreements			c				b
- Money is badly spent by the administration			c				
- Politicians oriented to economic interests and to popular issues, long-term scope is missing					b		
- Unawareness, not willing to introduce measures					b		a
- Laziness of politicians	c						
• <i>Economic costs - market barriers</i>	<i>a</i>	<i>abcd</i>	<i>ce</i>				
Economic barriers at global level			c				
It is cheaper to produce in a non clean way			e				
High costs to develop alternative energies		b					
Foreign products are cheaper than local (though distan.)		a					

Lack of competitiveness of energy savings	a			
If measures are expensive for people		ad		
Everybody must be prepared to pay more for comfort		c		
• Social and Cultural barriers	bd	a	c	b
Fear of unemployment	b			
Consumer society, commitment to the car	d			b
Social changes	d			
Social disenchantment			c	
We distrust Swedish political parties		a		
• Lifestyle / experience of life barriers	bcd	ad	cde	
Induced consumption needs, dependency on products, not prepared to make sacrifices or to decrease standard/comfort of living		ad	ced	
Laziness	bcd		c	
People have no time, are stressed, forgetfulness	d		c	
• Moral, Values, Attitudes barriers	bcd	a		a
Egoism	bcd			
Greed for profit	b			
Indifference, laxity of attitudes, lack of values	d	a		a
• Cognitive barriers	a	ac	ce	a
Lack of information-communication			c	a
Get people or certain groups to understand that everybody must help, lack of awareness (i.e. people, car lobby)	a	c	ce	
Not all people can digest all surrounding information		a		
• Due to type of problem climate change is		a	c	
Less tangible and concrete than other problems		a		
Socio-economic-political, it tackles many areas			c	
Uncertainty		a		

In some of the citizens' reports there was a final question put to participants in which they could add further remarks. The following are some interesting statements on this question:

"FURTHER REMARKS"	Zur	Sto	Bar	Fra	Ven	Ath	Man
Make more discussions of this kind	a						
Redistribution of working places is possible	b						
Info. should not be downplayed nor dramatized	d						
Our planet Earth is perfect if we take care of it					d		
Everything that happens globally is a result of what happens locally and daily					c		

Annex B: Six examples of citizens' reports

Below are presented six reports pertaining to six different urban regions: Zurich, Stockholm, Barcelona, Frankfurt, Venice and Manchester.

Zürich Citizen Report: group B

27th April 1998

1. Is climate change a problem today or in the future?

If yes, what is the problem in your opinion?

Climate change is an enormous problem today and in the future.

Health problems are drastically increasing, e.g. asthma, allergies, epidemics = AIDS, TB, Hepatitis, viral infects.

Changes in vegetation and climate.

2. On that background, how should we live in 30 years?

Conscious of the environment.

More modest, easier satisfied.

Happy and content.

Without fears that have to be covered by consumption.

Think about whether a project can be realized with less waste.

3. What should be done to get there?

Promotion of the public traffic, reduction of the individual TRAFFIC

Insulation of buildings

Reduced room temperature

Alternative energies

Incentives to save energy

Subsidies for measures of insulation

Information and targeted advertising for every man/woman

Be more economical with resources

4. By how much should energy consumption be reduced in total and in certain sectors (e.g. traffic, households)?

Reduce energy consumption by 50-60%.

5. Who should do something and when?

Every INDIVIDUAL and ALL together

SOLIDARITY

Educational work, information, show the links

ACT IMMEDIATELY and NOW

6. Where do you see difficulties to get there?

Industry and interest groups

Fear of UNEMPLOYMENT

Finance society = greed for profit

EGOISM of the individual

Thoughtlessness, laziness

7. Further remarks

Redistribution of working places is possible, e.g. skiing teacher in the wintertime, mountain guide in the summertime. Hospital assistant in the wintertime, worker in the Alps in the summertime.

Have the courage to live in an environmentally conscious way, even though my environment is laughing at me.

Stockholm Citizen Report: group D**31st of March 1998****1. Problems related to climate change**

Here in Stockholm:

One of the effects of climate change is a warmer climate with milder winters. In the future we will have a rise in the water level and the number of beaches will be reduced; we do not know to what extent. In an even longer perspective we can have an ice age due to the Gulf Stream changing its course and becoming colder. It can become so cold that it will be uninhabitable.

Globally:

We foresee that natural disasters have a powerful strength; these natural phenomena have not taken place because of climate change but it has contributed to their being greater. The existing facts on climate change, which we have received, are credible in spite of the uncertainty behind these. We are aware that there are different opinions and thereby no clear-cut answers. We feel that the prognosis regarding the future is very much governed by the source and we realize that it is a power struggle in order to reach the goals of the interested parties.

2. and 3. In the event of problems, this is the way we should live in 30 years time in Stockholm and this is what should be done.

We ascertain that climate change is a problem and can become much worse if we do not take measures. In order to counteract these we suggest that the existing environmentally friendly resources such as electric buses, electric cars, underground, etc. should be developed. Stockholm can be improved by using water as a transport route and directing through traffic around the cities on ring roads. Choose environmentally friendly sources such as wind power, bio-fuel, solar energy, etc. Households should take greater responsibility considering that we are so densely populated and we have the power to influence the choice of products, services and energy sources. Sweden can also influence through political decisions by subsidizing eco-friendly alternatives.

4. Energy which we believe is suitable to use and save

Energy consumption is at the lowest during the night. Would it be possible to plan for energy consumption during the night so that some of the energy will not go to waste? The existing energy should be used without increasing the quantity. This should be achieved by households and industries using appliances and machines that are low in energy use.

5. Who should do this and when should it be put into practice?

Households and industries shall bring about the changes together as soon as possible, but within a reasonable amount of time and before the situation has gone too far.

6. Difficulties in reaching the goal:

It is uncomfortable taking environmentally friendly measures today. It is also expensive and inaccessible. We believe in creating laws for people to act in an environmentally friendly way but this should be done through awareness. This should be done through more reliable information, but the dilemma is how? Should it be done solely through interest groups/organizations? How do we influence the people and persuade them to take responsibility? The information should be channelled through the main means of communication such as TV, newspapers, radio and schools.

Our solution is lengthy but fairly sure: By moving the city centre to small attractive surrounding communities, the distances will be decreased and so also the emissions. People will become closer to one another and become more harmonious, violence will decrease, people will become more involved in their surroundings and therefore also more conscious of the environment, taking more responsibility for it.

Barcelona Citizen Report: group C

12th December 1997

1. Which is the problem of Climate Change?

- **Now / Future**

- **Global level / Our society**

- CO₂ emission to the atmosphere due to lifestyle: industry, progress, advancing in a non-natural way,

...

- We are selfish: we do not think about the future generations who will come after us.

Now - Global

- World scope

- Underdeveloped countries are not so responsible as developed countries.

- It is not correct that different treatments are given depending on the country's "right" to pollute.

Facilities should be given for underdeveloped countries to develop in a non-polluting way.

- With a very small level of pollution increase, the standard of life increases enormously

(underdeveloped countries).

Now - Our society

- It is surprising that Spain is enabled to pollute more.

- There are effects in the atmospheric weather due to the climate change (we go from winter to summer without spring or autumn).

- Effects on crops (trees and flowers blossom out of time, loss of crops).

Future

- If they do not put a solution forward, the future is very black.

- {the ones who} trust in technology do not see it as very black.

- The environment will be destroyed until the non-renewable resources are used up (petroleum,...).

- They already have the solution, but it is an economic problem. (Two persons say:) Politicians are not interested in resolving it.

2. How should the metropolitan area and our lifestyles be in the year 2030?

- There should be a reduction in the number of vehicles by way of promoting public transport: creating new functional networks, thinking of people's movements and improving timetables.

- To promote alternative energies (e.g.: electric cars).

- Smaller cars.
- More walking zones with private transport access restricted to neighbours.
- To increase park sites prices and petrol prices in order to promote public transport.
- Citizen education.
- To reduce waste.
- To improve the cycles of selected waste collection
- To reduce packages and wrapping.
- Waste containers nearer to houses, more facility.
- The city {should be} more for people and less for cars and industries.
- To increase solar energy.
- More green zones in all the metropolitan area. To re-organise the construction policy and to provide green spaces. (e.g. no hard squares...)
- Industries less polluting.
- To promote an atmosphere of town and city.
- To administer the energy we use in a more efficient way: not to waste water, light, ...
- To bring nearer the workplace and the home: long travels are not logic.
- (One person thinks:) To work at home.
- To improve energy efficiency.
- To reduce industry emissions, wherever it is located.
- To reduce, to administer or to reconvert waste.
- Not to export or to import waste.
- International trade is positive, it can also enrich.
- It is negative that businessmen from countries with stricter environmental laws set-up industries in countries which do not have so many environmental laws.

3. What should be done to achieve it?

- Who

- When

- To inform and to raise consciousness.
- To educate.
- To legislate (said by some of us only)
- To invest more in research.
- To use properly the terms of *Recycle*, *Recyclable*. Not deceitful advertising.
- To provide incentives by way of funding, tax reductions and advertisement to those actions taken by enterprises in favour of reducing emissions, ...
- Advertising in the mass communication media.
- Policies of not paying what we do not consume.

- To increase the public budget for research.
- To inform and clarify what it is that we pay for
- To help small business economically and with information.
- Social organization of the citizenry base in order to channel our worries towards those to whom we gave the right to decide.

Who:

Rulers, educators. The initiative has to come from the rulers and from the citizenry.

When:

Now, from the 5 December, 1997 {date of writing this report}

- To educate and to investigate: to start now because it is a slower process and it takes longer to obtain results.
- The improvements in transport: now, because we know which improvements can be made.

4. Which difficulties will there be to achieve it?

- Economic difficulties at a global level.
- {Difficulties in} decentralize energy production and to exchange it.
- Laziness to change.
- Too theoretical and obsolete laws, minimum applicable to the reality (e.g. the administration with any excuse does not let you provide energy into the network, as for example, saying that you do not produce enough energy to pay you for it).
- The middle and old age citizens are not aware.
- Rulers do not accomplish signed compromises.
- Socio-economic-political {problem}: it is a problem which tackles many areas.
- Laws are limited in clarity.
- Waste of the money administered by the public administration.
- The Ministry and the Department of the Environment should look more into the building licences and permits (before the problem appears!). Currently they only look to health and security aspects.
- The environment should be a transversal subject, assumed by all.
- {there should be} Free consultant advice about environmental issues.
- We have consumerism very much assumed, many needs are created by us. We might have to raise again the question of whether we need what we have.
- Low rate of people participation.
- Lack of media communication: the very same product adverts should incorporate how to tackle the waste which the advertised product generates.
- Social disenchantment.

- People are extremely stressed and people do not have time.
- There is a lack of information on the products.
- If the consumption necessity went down, the necessity to work so many hours would go down, and therefore we would have more time to communicate among ourselves and to make parties in the streets.

5. Comments

Everything that happens globally is a result of what happens locally and daily.

Frankfurt Citizen Report: group F**17th December 1997****1st Session: Introduction****As images about global climate change were discussed:**

Shift of atmospheric layers and seasons

Cold winters, hot summers

No air any more

No nature any more

Smog, Temperature rise, unhealthy air – illnesses of circulation, asthma

Ozone - and UV-radiation

Drought - Floods - No food anymore - illnesses - death

Floods, melting ice

Drought zones

Change of vegetation

No rain forest anymore

Deforestation

No forest resources

Related illnesses

As causes of climate change were discussed:

Ozone hole

Growth for every price (more, more, more)

No long-scale viewpoint, no imagination

Industrialization

Industry and their products

Deforestation of rain forests

Bureaucracy, laws

No use of available techniques

Individual traffic (tourism)

CO₂, cars

CO₂ emissions of private households , traffic

As general measures were suggested:

Getting out of the "megamachine" industrial society

International co-operation with Club of Rome, UN, or similar

International Legislation → Law regulations worldwide

Laws for emission reduction

Slow down unlimited growth

Public information as basis for political decision.

Make environmental degradation more expensive than environmental protection

Ecological economies correspond to change of everyday life

Change from car to rail

Initiative at the individual level

Change of consciousness

Change of consumption patterns

Support of ethics and environmental consciousness

Avoidance of waste by laws (e.g. recycled bottles)

2nd Session:**After the presentation of the TARGETS model, the participants added or confirmed the following causes of climate change:**

Affluent lifestyle

Interests basing upon fossil fuel

Car lobby

Over-population

Ethics, consciousness

Computed results are widely known

As threatening developments were perceived:

Increase of mean temperature and sea level

CO2 emission, population

The increase of non-renewable energy carriers (as presupposed in the model)

3rd Session: Regional Targets, Measures and Responsible Agents in Frankfurt

(Traffic sector)

[in italics: targets and measures for which the City of Frankfurt is seen as responsible]

For the traffic sector, the following targets and measures were suggested:

Commuter Traffic :

Targets:

Reduction of car traffic

Reduction of emissions

Combination of rail and bike

Eco-taxation for oil and petrol

Eco-ticket for public transport

New models of work (time management etc.)

Avoidance of traffic jams → simultaneous begin of schools → Public transport has to react

Measures:

Emphasis of rail traffic in planning

Subsidies of public transport by job-providers

Combined solutions between public transport and cabs

Improvement of public transport , better co-ordination

More electrical taxies

Public plugs for electric vehicles

Public subsidies of environmentally friendly behaviour

Subsidies of environmentally friendly cars

Car-Sharing

Job-Ticket

Carriers using cycles

Electronic communication instead of letters

Responsible Agents:

National State, State

Deutsche Bundesbahn and public transport organisations

National Government (e.g.. taxes, sanctions)

Job-provider

Shopping traffic :

Targets:

No transport of goods by cars that can be transported in another way.

Measures:

Less imports (more goods from the own country)

No strawberries in every season

Consumption of more local goods.

Weekly purchase by neighbours, families etc.

Recycled bottles

Responsible Agents:

Private Households

Regulation of prices by the state with regard to the environment

Leisure time :

Targets :

less motor sports

Measures :

Creation of green oases in the city

Bus instead of private car

Restrictions of car use by laws

Taxes for private use of traffic

No use of cars in leisure time when visiting events

Use more cycles

Walking instead of gym

Horses

Responsible Agents :

Legislative

Private persons

Business traffic :

Saving, saving, saving

Holiday traffic :

Targets:

No long-reaching travels

Measures:

Local holidays

Use agencies

Usage of railway instead of short distance flights (e.g. Frankfurt - Berlin)

Decrease of prices in trains

Responsible Agents :

Tourism sector

Public administration

The Greens, social movements

Energy :

- use of alternative energy carriers

getting out of the "megamachine" and the small car

eco-taxation for fuels and oil

- 3l car instead of subsidies of conventional car production in Eastern Germany

Purchase of environmentally friendly cars

Invent better car motors (less use of fuel)

- Use of solar energy

Cars with less emissions, fuel use, efficiently produced

4th Session : Regional Targets and Measures in Frankfurt (Household sector)

For the household sector, the following targets and measures were suggested:

Housing Insulation

Targets and Measures:

Insulation of houses and roofs; use of insulated windows

Only approvals for low-energy-houses

Learning from traditional ways to build houses and apply positive aspects of them

Insulation with hemp, loam, etc.

Assessing of the insulation effect of different materials such as concrete or brick stones etc.

Responsible Agents:

Construction workers

State government, national government

Legislative

Heating :

Targets and Measures:

Energy-saving devices

Support research in the area of alternative energy carriers (solar)

Provide private households with surplus of industrial heating energy

Kraft-Wärme-Kopplung (technical term for the low-scale linkage of power plant and heating plant)

Gas-plants

Temperate and heat rooms differently

Information: How do I heat the right way?

Wear a pullover!

SOLAR energy

Responsible Agents :

- Consumers

- Energy providers

Consumption :***Targets and Measures :***

Do not purchase unnecessary consumption goods

Purchase long-life goods

Purchase only goods with positive environmental balance-sheet,

Nutrition goods: cultivation at the regional level

No purchase of cans and glasses but of frozen vegetables

Some Eco-sins are inevitable (washing machine). However, dryer is not necessary

Many electrical devices are not necessary such as electric bread-cutting machine

No purchase of one-way bottles

Purchase of recycled paper

Don't use plastic bags.

Use regional products instead of "packed wealth"

Buy products at the bio-farmer or in the bio-shop

Cultivation and support of hemp

Responsible Agents:

Producers of devices

Consumers

Warm water :***Targets and Measures :***

Reduction of size of bathtubs reduces use of warm water

Use water with sense!

SOLAR energy

Showering instead of bathing

Responsible Agents :

- Landlords

- Architects

- Consumers

Energy Use :***Targets and Measures :***

SOLAR energy and wind energy

Subsidies for alternative energy

Energy saving bulbs

Ice box mostly not necessary; fridge is enough!

Clean refrigerator

Abolish unnecessary electrical devices

Purchase of energy-saving devices

Information: How do I save electricity?

Switch-off TV instead stand-by position

Completely fill up washing machines, do not wash higher than 60°C.

Support solar energy

More conversation, reading, playing instead of watching TV

Support of alternative energy sources

Responsible Agents :

Main-Gas, RWE (Regional energy provider)

House owner, landlords, architects, craftsmen

Education of architects and craftsmen as in Sweden (low-energy-house)

Legislative, science (foundations)

Consumers

Venice logbook: group B**2nd June 1997****From Session 2:****”THE EARTH IS BURNING**

Truth or alarm?”

”Is it enough to commit ourselves [to make changes], or do we accept to be controlled? (One always prefers his/her own conscience)”

From Session 3:

”Truth as hypothesis: after the news, information and discussion, we hypothesized ways of changing thanks to political, social, economic contributions and those of the whole community”

From Session 4:

”Is it better to adopt the ‘theory’ of being afraid about the future, or else search the consensus about ‘common sense’ to avoid the worse...”

If one prefers the second theory, what tools and strategies can one use?”

From Session 5:**OPEN LETTER FOR ALL PRESIDENTS**

[extracts]

You should:

1. Disseminate to the populations exact information about the research methods and results of studies being conducted about environmental issues; informing people will develop into awareness and responsibility towards a problem;
2. ”LISTEN” to us and you should take into account the observations made by all the different NGOs and from individual citizens;
3. Educate people through all possible channels so that people learn to love and respect Nature and the environment, also using in appropriate ways all technology available;
4. Be more sensitive about this environmental problem. That will allow people to engage in more dynamic and direct precautionary actions to deal with this problem;
5. Establish common objectives to be attained according to the urgency of the problem, by setting well defined steps. (...)

Manchester Citizen Panel Report: group C
(Presented at the Joint Citizens / Policy-Makers Panel)
1st December 1997

Aims:

- We want the development of a town centre.
- We want the development of communities.

Recommendations:

1. Unemployment and industry

- The unemployment problem affects the environment through idle hands; lack of monies; boredom and despondency.
- We want areas cleaned up to attract industry to create jobs. Specifically we want:
 - Industrial estates smartened up.
 - Landscaping instead of industrial ghettos.
 - Link road is a start - let's keep going.
- We want to offer people environmental work and pay them a proper wage.
- This is much better than dole money. We have to generate the will to work. Budget for all, the right things - stop the slide into an 'I'm all right Jack' culture. Look closely at social spending. With no money we have to look to alternative ways. For every negative there is a positive.
- We want to question where profits go.
- This can relate to recycling and car parking and any other source of income we can generate.

2. Rebuilding community spirit

- We want to rebuild community spirit that has been lost due to unemployment. We want to make St. Helens a place to be proud of; to make sure our PR lets the world know our achievements - the centre of glass technology in the world - and our famous sons such as Pilkingtons and Beechams.
- We want to:
 - Actively encourage community leaders and groups.
 - Re-invent parish and local councils with some teeth and a proper place for meetings. Let them be involved directly with metro.
 - Have channels of communication wide open at all times.
 - Have localized communication - A4 newsletters on a regular basis, keeping people informed on meetings and decisions.
 - Have 2-way newsletters, with contact names and numbers for feedback.

3. New Facilities and Transport

- We want to develop tourist attractions.
- We know of the proposed 'World of Glass': will this be expanded into a theme exhibition that will attract people in instead of a static museum type? Will there be workshops producing items of glassware for sale?
- We need more central facilities.
- A proposed greenfield site without so many shops which close each evening. It is OK to have a shopping mall attached but not to have shops mixed in with the leisure facilities.
- We should have:
 - Better theatre.
 - New cinema
 - Sports facilities.
 - Bars, cafes, pizza, etc.
 - Restaurants.
 - Night-clubs.
 - Large car parking facilities.
- We want an attractive town centre:
 - The brightening up of town - the Groundwork Trust work.
 - With colonnades; walkways; seating and attractive flower beds.
- We want the paving improved.
- We need better access for greater numbers of people:
 - A more suitable form of public transport running about town.
 - A Park and Ride with shuttle buses (Birchley Street).
 - No cars in city centre.
 - Push bike hire?

4. Waste disposal

- Recycling: there is not enough done; we need incentives for people. We want this properly organized into a business and split into communities such that communities get to share in the profits. We need to provide the means to create the incentives.
- Litter: we want more city cleaning staff (including road and graffiti cleaners). We want more bins, fines, and more control by the police, the Environment Agency and the council.
- Pollution: we want more control and monitoring (of air and water) by the Environment Agency.

5. Youth facilities

- We want localized facilities for young people within walking distance.

- Incentives are needed to create interest - such as badges and adventure weekend placements as rewards.
- We want experienced youth leaders.
- We want liaison with teenagers: to ask them what they want; and to make facilities *their* facility but we also need discipline/ youth leaders.
- We should have curfews on bad behaviour.

6. Community Policing

- We want residential policemen, on push bikes or walking, not in cars. The cost of this will be offset by saving on vandalism - prevention is better than cure.
- We keep being told that this is not practicable. If so, why did it used to work? We had residential policemen that kept an eye on us, knew everyone including the local villains and could spot an outsider a mile off. He had back-up when required (without 2-way radio) and his mode of transport was a bike or a good pair of boots. It also breeds confidence in the local community to let him know about wrongdoers whereas now the fear is of reprisal.

7. Greenbelt, Parks and Agriculture

- We want greenbelts and parks conserved - the Groundwork Trust works and it can be left to them.
- We want to know what additives are being put in our food.