

**Europäische Akademie
für städtische Umwelt Berlin**

**European Academy
of the Urban Environment**

Thematic Strategy on the Urban Environment

Working Group on

URBAN ENVIRONMENT RESEARCH AND TRAINING NEEDS

Final Report

Berlin, April 2005

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Final Report to the Expert Group on the Urban Environment

on behalf of: European Commission – DG Environment

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0. Executive Summary

0.1 Background and approach

As part of preparatory work for the Thematic Strategy on the Urban Environment, the European Commission initiated a comprehensive consultation process, set up a number of working groups and in February 2004 published, as an intermediate step, its Communication "Towards a Thematic Strategy on the Urban Environment" (COM(2004)60).

The Communication emphasises the crucial importance of further research and training. This was the reason why an Expert Working Group on "Urban Environment Research and Training Needs" was set up in 2004. 25 experts from a wide variety of backgrounds and functions and from 14 European countries comprised this Working Group.

Proceeding on the basis of EU documents, the Expert Working Group perceives sustainable urban development as a permanent, integrative and participatory process. In the course of this process, ever new questions and challenges arise which affect future research and training needs. Sustainable development – and thus also sustainable development in European towns and cities – is not only a clearly defined political goal for the EU, it is furthermore a significant objective in the EU constitution. For this reason it should be firmly embedded in all relevant Commission programmes and activities.

0.2 Driving forces for future research and training needs

Future research and training needs in the field of the urban environment will be essentially determined by the following (*chapter 2*):

- **EU political objectives** (sustainable development, Lisbon Strategy, cohesion)
- current **EU-wide legislation**, regulations and approaches which require action by (and in) towns and cities within the next years;
- effects of **globalisation** and other international processes on the economic, social, environmental, spatial and political structure of European cities as well as on their competitiveness;
- **demographic change** and increasing 'proportion of elderly people' in the population of the EU;
- **immigration**;
- impacts of **climate change**;
- increasing **scarcity of resources and increase in price**;
- **urban sprawl**.

Furthermore, the European **network of cities and relationship structures** between cities will undergo change due not only to the effects of globalisation, but also to EU enlargement (and future enlargement processes).

Unless there is research and training at European level, European cities will not be in a position to face these challenges. Cities are confronted with common problems and have a number of potential attributes in common, which however produce maximum added value only when resolved and coordinated at European level (*chapter 3*). Without these steps, Europe as a common location for living, a place for commercial activities and for social intercourse, with equal opportunities for all its citizens to live in a healthy environment, would be at risk.

0.3 Recommendations on research and training

Based on these considerations, the Working Group suggests research fields and questions, as well as training activities, which ought to receive priority treatment in EU programmes and activities. Research and training are best seen in the context of a continuum, which leads from **research through demonstration, dissemination, and training, to practice**. This approach which was adopted in FP5 should be further developed and consolidated.

Some national research programmes and several research projects forming part of FP5 (as well as a few in FP6) (*chapter 4*) are of Europe-wide relevance with respect to these challenges. Outcomes of the research have however in some cases not been adequately disseminated (in particular national research projects) nor have they been examined with a view to transferability. The Commission should therefore consider

- a **systematic support structure** which serves to evaluate and disseminate research outcomes not only of EU-funded, but also relevant outcomes obtained in the course of national research activities;
- a specific **demonstration programme**, from which indications with regard to transferability, training, and dissemination, might be derived.

Research has its greatest added value and best cost-benefit relation only if research (and training) is conducted in ways a) relevant to everyday urban practice, integrative and specific to the respective target group (*chapters 5 and 6*), and b) involve cities much more closely than at present as actors in research. The Working Group therefore recommends for future EU research programmes a '**code of urban research**' to be mandatory for all EU programmes:

- cities are major actors and recipients of urban research;
- (topic-)relevant groups and disciplines need to be included;
- research needs to be inter-institutional, inter- and trans-disciplinary;
- dissemination, considerations regarding demonstration and transferability must be included in the concept and methodology of research projects.

The most significant result of the Working Group's considerations and recommendations may be summarised as follows:

The Expert Working Group on Research and Training Needs emphasises the importance of further urban research and training coordinated at the European level. Towns and cities are to be involved as significant players in research activities. The Working Group stresses its expectations that questions of sustainable urban development will once again be incorporated as an independent field in future research, training and demonstration programmes, and calls upon the Commission to strengthen support for communication, dissemination, demonstration and implementation of the 5th Framework Programme (FP5) outcomes and other research results. They should be disseminated and used more effectively and in targeted ways; furthermore they should be incorporated into all relevant EU funding programmes related to dissemination and training.

0.3.1 Recommendation on research

Specific research fields and topics identified by the Working Group are outlined in *chapter 5.2*. They have been categorised in accordance with the priority themes in the Thematic Strategy.

As answers in these fields will support European cities in meeting the essential challenges, they should be treated as priority by European research policy. Amongst these research questions and fields, however, there are areas which are of fundamental significance with regard to work on other research fields - areas which make possible far-reaching initial steps in coming to terms with future tasks, which thus are able to produce the maximum cost-benefit-effect. These top priorities are (*chapter 5.1*):

Integrated environmental and urban management strategies and models

is regarded by the Working Group as being of the greatest priority. If research in this field were to adopt the '**urban system approach**', it is able to improve decisively our knowledge concerning urban relationships, processes and resource flows, and to support better urban management and good governance. Sustainable development in the four Thematic Strategy priority fields - and dealing with other future challenges - depend to a crucial degree on improving urban management systems.

Future research on demographic change

Our knowledge is limited about the impacts of changes in population and demographic structure on cities. They are in some cases quite dramatic: impacts on urban infrastructure, transport systems, on urban design and construction, on social relationships and the needs of urban population groups, on participation processes, on the environmental performance of cities etc. In the medium to long-term perspective, the success of the Thematic Strategy, as well as the Lisbon Strategy, is at risk, unless these population changes are taken into account in urban management and decision making.

Long term predictive research on global trends

Many of the effects of globalisation are antithetical to implementation of the Thematic Strategy and the Lisbon Strategy, and will render sustainable development considerably more difficult to achieve. However, currently our knowledge of precisely how globalisation - and associated increases in costs of resources - will affect cities, and how these negative effects may be countered, what instruments and tools cities need, is minimal.

Research on climate change

In principle, the majority of necessary technical and political measures to abate or mitigate climate change are known. Barriers and mechanisms to overcome them - especially at city level - have by contrast barely been identified. Tending towards nil is our knowledge of how cities may be able to respond to the impacts of climate change.

Research on density and urban sprawl

Urban sprawl continues to devastate the landscape, to increase usage and costs of infrastructures services and resources, as well as eroding the quality of eco-systems. Sprawl opposes sustainable mobility and other sustainability aims, increases dependency on energy and other resources, and thus multiplies cities' vulnerability. Though several FP5

projects deal with urban sprawl, the Working Group identified knowledge gaps and research questions which are of major importance for facing future challenges.

Research on barriers to sustainable urban development

In many instances the necessary steps towards sustainable development in European cities are known. Nevertheless, these steps and measures are not common knowledge and practice. Implementation is being impeded by barriers which are to a great extent unexplored.

0.3.2 Recommendation on training

The Working Group has identified the most important target groups for future training and awareness raising (*chapter 6.1*). Training needs have been classified in accordance with the priority fields in the Thematic Strategy (*chapter 6.3*). Out of these fields, top priorities have been identified (*chapter 6.2*). A number of methodological reflections have been included (*chapter 6.1; 6.4*).

Future training measures need to achieve the following in order to meet future challenges experienced by and in European cities:

- **Communication and dissemination of research results:**
in particular research outcomes in priority fields identified by the Working Group need to be communicated and incorporated into training. Disseminating instruments and approaches in order to react to major challenges should form a main point of emphasis. The connection referred to above between research and training is of major significance in this respect;
- **Awareness raising:**
in some stakeholder groups which are crucial for sustainable urban development, there is a need for awareness raising and information on sustainable urban development in general and on opportunities and instruments which are already to hand.

The primary target group for training efforts are **decision makers** active within local authorities (political and governmental actors); following this group in significance are the **private sector** (businesses and enterprises), and **civil society** (NGOs, non-profit organisations, public institutions and general public).

Training methods and modules which are tailored to specific target groups should be applied and/or developed for these different groups, so as to correspond to their interests, their position or function in the urban context, their available time, the topic etc. While awareness raising action for politicians, for instance, must be compact and effective, training for technical administrators and managers should include clear training packages and tool boxes to assist them in understanding, implementing and monitoring sustainable urban development. Great importance for training is to be attached to evaluation and demonstration **using practical examples**.

Integrative approaches and cooperation between relevant stakeholder groups is regarded by the Working Group as an important pre-requisite for sustainable urban development. A major obstacle in this development is seen to be the differing habits of thought in such

groups and **'language' barriers**. The aim of general training measures or of those in the individual priority fields must therefore be in **overcoming these barriers** and in understanding the approaches of other (interest) groups.

Existing European as well as national and regional programmes and institutions relevant to training for sustainable urban development must be examined for their potentials and capacities. If necessary, **new programmes** should be created or existing programmes expanded, in order to enable training as recommended by the Working Group.

Existing **European (city) networks** should be involved in training and dissemination initiatives. Exchanges can be coordinated through 'leader-observer' programmes, through which local authorities work together in close partnerships in sharing experience and insight.

Demonstration centres are called for to collect, process, research, exchange and disseminate information and examples relevant to sustainable urban development. Such centres could be supported and networked at regional, national and international levels.

Communication and dissemination must **provide a basis for transfer and translation of results** and eventual adaptation and implementation. Existing dissemination programmes must be improved, made more user-friendly, more effectively networked and publicised.

1. The Thematic Strategy on the Urban Environment and the Expert Working Group on research and training needs in the urban environment - the need for further research and training

The Thematic Strategy on the Urban Environment is one of the key actions outlined in the Sixth Community Environment Action Programme. It is to be presented to the European Parliament and the Council in 2005. As part of preparatory work for the Thematic Strategy, the Commission initiated a comprehensive consultation process and set up a number of working groups. In February 2004 as an intermediate step the Commission published Communication COM(2004)60 "Towards a Thematic Strategy on the Urban Environment".

In common with numerous reports on the consultation results as well as those of individual Expert working groups, the Communication emphasises the crucial importance of further research and training in the field of the urban environment. For this reason, in 2004 an Expert Working Group was set up on 'Urban Environment Research and Training Needs'. Twenty-five experts from a wide variety of backgrounds and functions and from fourteen European countries have contributed to this Working Group. Their terms of reference include to put forward by the end of 2004 proposals addressing further urban research fields and further training needs.

The Working Group concentrated its deliberations around four guiding questions:

- **Why** further research and training? **Why** on a European level? (chapters 2; 3)
- **What** to research and to train? (chapters 5.1; 5.2; 6.2; 6.3)
- **How** can this be done? (chapters 5.3; 6.1; 6.4)
- **Who** needs to be involved and **who** is the target of research and training? (chapters 5.3; 6.1)

The most significant result can be summarised as follows¹:

The Expert Working Group on Research and Training Needs emphasises the importance of further urban research and training coordinated at the European level. Cities are to be involved as significant players in research activities. The Working Group stresses its expectations that questions of sustainable urban development will once again be incorporated as an independent field in future research, training and demonstration programmes, and calls upon the Commission to strengthen support for communication, dissemination, demonstration and implementation of the 5th Framework Programme (FP5) outcomes and other research results. Outcomes should be disseminated and used more effectively and in targeted ways. They should be incorporated into all relevant EU funding programmes related to dissemination and training.

¹ On 06 April 2005, the Commission presented a Proposal for a decision of the European Parliament and of the Council concerning the 7th framework programme... (SEC(2005)430/431). Urban questions are not specifically included amongst the nine proposed topics. However, to a considerable extent some of the the major challenges identified by the Working Group have been covered. The Working Group regrets that cities and specific urban topics were not included. However, the Working Group expresses its hopes that these subjects may yet be integrated in the course of further consultation on FP7.

It is crucial to close knowledge gaps concerning urban environmental questions and in this way make progress towards sustainable development in European cities, so that they can become more desirable and healthier places to live, to work and to invest. Due to the concentration of people and economic activities, cities are places and important players in meeting the Lisbon Strategy objectives.² Over the longer term, the 'European City' with its spatial and ecological advantages could strengthen Europe's ability to compete with respect to the dynamic nature of global urban development.

Sustainable urban development in Europe can underpin global sustainability and justice.³ In addition, in view of the increasing importance of environmental protection in rapidly developing regions in the world - such as, for example, China and Korea⁴ - it represents in the medium and long term a decisive advantage of location of European cities and will increase their competitiveness. European cities⁵ are even now places for ecological innovation and increasing efficiency. Compared to other urban models in the world, the 'European City'⁶ possesses advantages based on compactness, specific functional structuring, and the - comparatively - long tradition of

The Lisbon Strategy

The Lisbon Strategy, having been adopted by the European Council of 2000, aims at making the European Union to become the most competitive and dynamic knowledge-based economy in the world by 2010 with increased economic, environmental and social cohesion

The strategy remains a declared goal of European leaders. The 'Kok Report' - the outcome of a High Level Group set up by the European Council and chaired by Wim Kok - arrives, despite considerable doubts as to the time table, at the following conclusion:

"The Lisbon strategy is even more urgent today as the growth gap with North America and Asia has widened, while Europe must meet the combined challenges of low population growth and ageing. Time is running out and there can be no room for complacency. Better implementation is needed now to make up for lost time. In this context, if we are to deliver the Lisbon goals of growth and employment then we must all take action. To achieve them will require everyone to engage. This means more delivery from the European institutions and Member States through greater political commitment, broader and deeper engagement of Europe's citizens, and a recognition that by working together Europe's nations benefit all their citizens. Each element of the Lisbon strategy is still needed for the success of the whole."

Report of the High Level Group chaired by Wim Kok: Facing the challenge - The Lisbon strategy for growth and employment, 2004

² The originally primarily economics-driven objectives of the Lisbon Strategy were amplified - by the Council in Gothenburg and further consultations - to include the complete spectrum of sustainable development. These amplified objectives are subsumed in the term 'Lisbon Strategy' (cp. Annex II, VIa).

³ To give only one example: emission of greenhouse gases in Europe at 9.5 t per capita is approx. six times greater than the earth's capacity as an ecosystem can carry. Reducing this figure would not only be a contribution towards global justice, it would also represent a decisive environmental and economic advantage for European cities - cp. UN Habitat: The state of the world's cities 2004/2005

⁴ W. Bueckmann, Y.H. Lee, H.-U. Schwedler (Ed.): Das Nachhaltigkeitsgebot der Agenda 21. Die Umsetzung ins Umwelt- und Planungsrecht (The sustainability precept in Agenda 21 and its transformation into environmental and planning law); Berlin 2002 (English abstracts)

⁵ This term 'city' will be used in the report generally speaking as a synonym for 'towns and cities' and in a broader, structural sense for urban area(s).

⁶ The discussion on the 'European City' is controversial. Nevertheless, it is evident that even in some new member states with decades of socialist urban planning (and the Charta of Moscow), similarities between these cities and cities in western Europe are perceptible, at least when compared to the 'American', 'Asian' or 'Oriental' city, for instance: cp. Annex V

sustainable development. Without sufficient research and training, Europe is endangering these advantages.

2. Driving forces for future research and training

The Working Group begins with the following **points of departure**:

- that **sustainable development** is a **constitutional and political**⁷ aim of the EU and a **continuous, on-going and participatory process**. This requires over-arching and integrated structures for decision making and implementation and needs to be **incorporated into all Commission activities** and programmes;⁸
- that **economic, social and territorial cohesion** as a political and constitutional aim requires sustainable urban development and EU wide action;
- that sustainable urban development and environmental performance play a decisive part in realising the **Lisbon Strategy**. The economic objectives therein cannot be achieved without improving urban environmental quality at the same time;⁹
- that cities are vital players and locations in implementing EU objectives and aims.¹⁰ With respect to globalisation processes and increasing competition, the **European City** possesses a number of ecological and social locational advantages which have to be exploited in commercial and sustainable ways (cp. Annex V).
- that the fundamental environmental advantages of the European City (such as higher residential density) may be exploited not only in order to fulfil EU objectives, but also in the sense of **global sustainability and justice** (cp. footnote 2).

European cities as places to live and to carry on economic activity are increasingly under threat as far as global competitive capacity is concerned. They face tremendous **challenges**, particularly when seen from the point of view of the objectives mentioned above. The Working Group has identified the following central issues:

- **Globalisation** is presenting enormous pressures of competition for European cities in their function as centres of economic activity. As a result, cities find their decision making freedom curtailed and also see erosion in their sustainability oriented physical structures (environmentally and socially), leading to decline in inner cities, urban

⁷ Sustainable development as a political aim was accepted by all EU Member States in 1992 (Treaty of Maastricht, 'sustainable economic development'). The Treaty of Amsterdam (1997) incorporated sustainable development in a more comprehensive sense and introduced the 'integrational clause' which requires sustainable development to be transposed into environmental legislation. Though the European Constitution has not yet been ratified by all Member States, it was signed by political leaders in October 2004. Sustainability is one of the primary constitutional aims (Art. I-3) and will - after ratification - steer European institutions (cp. Annex II)

Against this background, discussion carried on particularly in an English-speaking context about the 'ethics of planning and of sustainable development' gains in political significance in a European context as well.

⁸ W. Bueckmann, Y.H. Lee, H.-U. Schwedler (Ed.): Das Nachhaltigkeitsgebot der Agenda 21. Die Umsetzung ins Umwelt- und Planungsrecht (The sustainability precept in Agenda 21 and its transformation into environmental and planning law); Berlin 2002 (English abstracts) (cp. also Annexes I and II)

⁹ In July 2004, the European Council of Environment ministers stressed the significance of the environmental field in realising the Lisbon Strategy.

¹⁰ This is a point which is made repeatedly, most recently during the City Summit in October 2004 which was initiated jointly by the Commission and the Government of the Netherlands.

sprawl and social and spatial fragmentation.¹¹ In addition, population patterns are changing dramatically due to **migration** (but also due to changing age structures).¹²

- **Prices for natural resources and for energy**, in particular for fossil fuels are rising steeply. Resource use in general is costing cities and economies more, calling for innovative and efficient technologies and plans.¹³
- **Urban sprawl** continues to decimate landscapes and to increase usage and costs of infrastructures services and resources,¹⁴ as well as eroding the quality of eco-systems. It conflicts with sustainable mobility and other sustainability aims, it increases dependency on energy and other resources and thus cities' vulnerability. Their ability to support the Lisbon Strategy and sustainable development (including European aims on climate change mitigation) is thus diminished.
- The **demographics** of European urban areas are undergoing massive changes. In 2050, the average age of the population in Europe will be about 50 years, and therefore, for example, approx. 10 years older than that of the USA.¹⁵ In a parallel process, **the populations of many European cities are shrinking** (and will continue to shrink dramatically without **necessary immigration**), whereas in other economic regions (in particular in newly industrialising countries, but also in the USA) it is expected that populations and cities will continue to grow. This development will increase problems related to globalisation processes and sustainable development. Local authorities are being faced with new tasks regarding city management, urban infrastructures,

Globalisation

The term 'globalisation' is used in many forms of political discourse. It is often labelled 'neo-liberalism' to legitimise certain political shifts... What is needed is more in-depth study regarding how globalisation can be understood in descriptive analysis... Urban scientists can embrace the opportunity to expand public debate beyond the concepts postulated by Foreign Direct Investment and related types of data. The sociology of global economy, presupposes a new concept of economy, one that has to take into account many 'side-effects' such as migration, urban design, cultural and discursive politics. Our attention might shift from economic globalisation to an economy of globalisation, which focuses on translocal mechanisms.

D. Hassenpflug, F. Eckardt (eds.): Urbanism and Globalization, The European City in Transition (Vol. 2); Weimar 2004

¹¹ SUPER - a cluster of four FP5-projects - sees this as one of the greatest dangers for European cities and emphasises - in complete agreement with the Working Group - the need for further research in the field of functional, social and demographic spatial fragmentation (cp. Annex VIb, no. 42)

¹² D. Hassenpflug, F. Eckardt (Ed.): Urbanism and Globalization, The European City in Transition (Vol. 2); Weimar 2004
UN Conference on Trade and Development: World Investment Report 2004 - The Shift Towards Services; New York, Geneva 2004; cp. Annex IVa and b

¹³ Several FP5 projects are based on the assumption that costs for fossil energy sources will increase dramatically. However, the concrete effects of these costs developments have (with the exception of 'modelling' projects as part of the LUTR cluster) hardly been examined (cp. Annex VIb).

¹⁴ Though the real and overall costs of urban sprawl are nearly impossible to calculate with the data and methods currently available (cp. SCATTER - Sprawling Cities And Transport: from Evaluation to Recommendations, FP5), it is clear that public costs and negative environmental impacts in less densely developed areas are higher than in densely built-up areas. The need for further research on urban sprawl is emphasised by a number of FP5 projects, e.g. FP5 projects no. 17, 37, 42, 52 (Annex VIb).

¹⁵ According to less conservative UN estimates, this difference may well amount to as much as 15 years if not compensated by immigration, cp. Annex IVb.

transportation, the housing industry, urban resource supply and waste removal systems, etc.¹⁶

- **EU enlargement** is leading to re-networking of European cities and to changes in competition and cooperation among cities.¹⁷ These developments call for European-wide action and research.
- In efforts to address and to minimise **climate change**, cities must play an essential part because of the concentration of economic activities and inhabitants. The EU has taken action in the form of programmes and legislation (also to begin to implement the Kyoto Protocol), which in the first instance affect cities as important players. Cities need to make a greater contribution than has so far been the case towards reducing greenhouse gases. The social and economic costs of possible climate change are tremendous.¹⁸ At the same time, cities to prepare for climate change (heat waves, storms, etc.) and for its effects, and so need to be better informed and engaged.

In addition to the Working Group's views of what constitute present and future (medium and long-term) urban challenges, several other factors have an effect on future research and training needs in Europe. These are, in particular:

- current **EU-wide legislation** and regulations which are required to be implemented by cities (cp. Annex III);

Demographic development and migration

Europe is facing today unprecedented demographic change. ... This trend is even greater when just the total working age population (15 - 64 years) is considered: between 2005 and 2030, it is due to fall by 20.8 million...

To meet this challenge, the Lisbon Agenda must be resolutely implemented...

Immigration from outside the EU could help to mitigate the effects of the falling population... As stated in the recent Commission Green Paper (COM(2004) 811 final, 11.1.2005), ever larger migrant flows may be needed to meet the need for labour and safeguard Europe's prosperity.

Commission of the European Communities: Green Paper "Confronting demographic change: a new solidarity between the generations", 2005 (COM(2005) 94 final)

Effects of climate change

According to recent research at the Hadley Centre (Nature, 432-2004) the outstanding temperatures in Summer 2003 were (with 90 % certainty) caused by anthropogenic factors. Up to 35 000 Europeans lost their life due to the heat. In addition, costs for losses and damage in the agricultural sector alone are estimated to amount to more than 10 billion €. The German 'Wissenschaftliche Beirat für Globale Umweltveränderungen' (Scientific Committee on Global Environmental Change) fears that immigration pressure on Europe will increase dramatically due to climate change and related environmental changes.

¹⁶ The need for further research is stressed by several FP5 projects which have come together to form part of the SUPER cluster project (Annex VIb).

¹⁷ Just how much competition has increased can also be seen in current discussion on differing rates of taxation in 'old' and 'new' member states. New economic regions and city networks are being created (e.g. Vienna and Bratislava; Baltic cities) aiming to increase their locational advantages by means of cooperation. Further research on the European urban network and on competition is underlined by SUPER, a cluster of four FP5 projects (Annex VIb).

¹⁸ cp. footnote 2 and this page, highlighted box; A number of FP5 projects which have been grouped within the CLEAR cluster, emphasise in particular the need to study further the effects on cities of climate change. In addition, the part played by cities in producing climate change is seen as a research task (cp. Annex VIb).

- implementation of the **Thematic Strategy** itself which will have effects on urban knowledge needed to meet required tasks in the short and medium term (cp. Annex III; Annex VIa).

3. The need for research and training at a European level

Only very few research projects in FP5 address the challenges and problem fields outlined (cp. Annex VIb). Even the few projects which concern climate change, urban sprawl and other topics provide limited or no answers to concrete research questions which the Working Group identified. Some national research projects (cp. Annex VIc) do admittedly deal with the problem fields which were outlined in chapter 2, however, application and transferability of their results are subject to limitations indicated below.

Answers to the challenges identified by the Working Group are only known in part. Without closing knowledge gaps it will be difficult to meet European goals and requirements outlined in the first part of chapter 2 and to exploit the advantages of the European City. As framework conditions for urban development outlined above are Europe-wide challenges, corresponding knowledge gaps have to be addressed at the European level.

Some of the projects funded under FP5, as well as other EU-funded projects, have, as part of their content deliberations, addressed the question of future European research needs (cp. for instance footnotes 11, 15, 16, 17 and 18). In common with the Working Group on future research and training needs, they conclude that a number of research fields ought to be addressed - optimally and with the greatest added value - at European level, and that furthermore, as opposed to national research projects, this would be more apt to provide for transferability to other situations (and cities) (cp. Annex VIII).¹⁹

In addition - based on considerations in chapter 2 - the Working Group sees the need for research and training on a European level for the following reasons:

- Sustainable development and cohesion as constitutional aims and EU policy approaches (plus in addition the Lisbon Strategy) need to be implemented to a major extent in and by cities. Growing competition through globalisation processes and EU enlargement might well contradict these aims if not steered at the European level. Social and economic cohesion need spatial cohesion, and thus the inclusion of cities. New and increased cooperation is needed. Special attention should be given to research needs in cities in the new member states. Exploiting the advantages of the 'European City' for the sake of overall European goals can best be steered at the European level. Urban questions therefore need to remain on the European research and training agenda.
- In the task of responding to future challenges, functional urban regions are playing an ever increasing part. Administrative barriers at local, regional and even national levels

¹⁹ In addition, they also propose (in many instances) the same research subjects and topics as the Working Group, and put these in a comparable justification context.

are currently blocking this process²⁰, a situation which can best be responded to at European level and through Europe-wide programmes and approaches.

- Individual cities and Member States have only limited capacity - and probably interest - in disseminating research results which are primarily gained at the local or national level and published in the specific national language (cp. Annex VIc). The research community is often small and needs effective linking up on the European level for scientific exchange.²¹ Cities in general stand to benefit from European level programmes which can assist in coordinating as well as 'translating' and disseminating research results. At the European level it is possible to carry out the necessary comparative research, to reach a critical mass of resources and to stimulate EU-wide dissemination of results.

4. Existing European research - conclusions for future research and training activities

In addition to the driving forces described in chapter 2, the proposals of the Working Group are based on analysis of other working group results and of publications, with the knowledge gaps identified in these, and of existing EU-wide and national research projects and programmes (cp. Annex VI).

In addition to specific conclusions reached with regard to future research needs (chapter 5), based on analysis of current research, the Working Group has arrived at a number of general conclusions and **recommendations concerning EU supporting action and requirements for future research and training:**

- **Research results must be disseminated in targeted ways:**
Initial results of the 5th Framework Programme for research, technological development and demonstration activities (FP5) are now becoming available. **Demonstration and dissemination** of these outcomes needs to be ensured. European research achieves its greatest impact only if the outcomes (and interim results) are presented and made available in a directed fashion with regard to target groups and in particular with respect to language and transferability. It is important to integrate into research projects from the very outset not only target group-oriented dissemination but also demonstration and development of training modules.²² The Commission should consider elaborating specific **standards and formats for presentation** (as a general rule) and for **dissemination** of results - which would be compulsory for all projects it is

²⁰ cp. reports of EU working groups on Sustainable Urban Management, Sustainable Urban Construction, Sustainable Urban Design, Sustainable Urban Transport.

The same conclusion is reached by a number of FP5 projects concerned with urban management and governance. In the main these include several projects grouped in the LUTR and SUPER clusters, and the LUDA and UGIS projects (Annex VIb). There are also a number of national research projects dealing with this topic (Annex VIc).

²¹ Some initial positive steps have been taken by successfully establishing networks through EU-funded COST actions and research in the context of various research programmes (FP5, Interreg, Life) but these steps now need to be sustained and the approach needs to be expanded.

The ERA-NET scheme is also a step in this direction: it involves coordination and cooperation of national and regional research programmes, but it needs to be amplified more firmly in the direction of dissemination.

²² as for instance in the INTERACT project within FP 5 (cp. Annex VIb)

supporting. A number of **concrete proposals for improvement made by the Working Group are detailed in Annex VIb.**

- Priorities and results of local and national research programmes are generally speaking determined by specific local characteristics, and therefore often only transferable to a limited extent. In addition, numerous national research activities focus on technical or safety questions i.e. they are relevant in the context of current (political) situations, however, they do not contribute to overcoming future challenges described above. Furthermore, language barriers also work against wider or international dissemination. In those instances where common European issues are being touched upon, outcomes should be made available on a Europe-wide basis. The Commission and European programmes should support systematic **evaluation and comparison of national research** activities. It would be beneficial for cities if an institutional and organisational framework could be set up which would organise analysing and disseminating 'good practice'.
- **Cities must be actors in research and research needs to be practically oriented:** Research results are more significant and meaningful for demonstration and implementation when cities are not only the focus of the research, but are also simultaneously research subjects. In future research projects it must be mandatory to **include local authorities and urban actors as major players** in the work. Only this will ensure that EU-funded research is directly **relevant to everyday practice** and can serve to overcome the challenges referred to above. Unless local actors are included in research activity, urban research may to a great extent deal with basic and fundamental research about urban areas (in a specific i.e. not inter-disciplinary context). This type of research is of minor relevance for facing major challenges and is difficult to transfer unless it is interpreted into practical conclusions for sustainable urban development.
- **Research into barriers and analysis of success stories is needed:** For a number of research fields there are now sufficient results available (in some cases duplicated). This applies - to give just a few examples - to developing quantitative indicators of sustainable urban development, to various technical solutions with regard to reuse of derelict or brownfield sites, or to transport. More relevant in this field is rather further elaboration and supplementing, by means of qualitative social, economic and 'soft policy' indicators and other evaluation instruments, questions of methods and methodologies of management and decision making approaches for sustainable land use, or transport including research on barriers to application. This point applies equally to other urban research questions. **Analysis of success stories and of barriers** is essential to gain practical guidance for urban development, and should be expanded. **EU-wide evaluation instruments need to be developed for this purpose.**
- **The need for demonstration programmes:** Some fields and projects, instead of needing further (European) research, would benefit more from implementation by means of **pilot and demonstration projects**, from which indications on transferability, training and dissemination can be derived. Specific **demonstration programmes are therefore needed**, which primarily would cover EU-funded work but would also include relevant national research outcomes. In this respect the Working Group regards research activities as particularly vital which address the challenges outlined in chapter 2. Demonstration programmes as described will increase take up and transfer of such research results.

These fundamental recommendations by the Working Group for future EU-funded research are in congruence with ideas in the majority of documents and publications referred to at the outset, as well as with recommendations made by several FP5 projects (Annex VIb). Some have been taken up by a series of EU programmes (for example FP5, Key Action 4: City of Tomorrow and Cultural Heritage). However, in the view of the Working Group they need to be implemented both more rigorously and more consistently.

In addition, the Working Group recommends that, for all **EU-funded projects it should be a requirement to identify those knowledge gaps which have not been addressed by the particular project** and to substantiate the relevance of these questions in the European context. In this way development of future research programmes could be facilitated and made more effective.

A need for appropriate framework conditions for EU research - recommendations to the Commission

- targeted dissemination must be mandatory for EU-funded research. Standards and formats need to be developed for this purpose.
- EU-funded projects should identify knowledge gaps and open research questions.
- Further research into barriers and analysis of success stories is needed. Evaluation instruments need to be developed for this purpose.
- Cities must be actors in research, and research needs to be practically oriented.
- An organisational framework is needed for systematic evaluation and comparison of national research activities and dissemination of outcomes.
- Demonstration support schemes for present research results need to be set up.

5. Future research needs

Based on a great number of publications, documents and research results examined²³ (cp. Annex VIa), on responses to the Thematic Strategy, on interim and draft reports of this Working Group and also on the wide variety of professional experience on which Working Group members are able to draw - as political and administrative urban decision makers, as researchers and as representatives of networks, NGOs and the private sector - there ensues a wide span of research opportunities and research needs.

The proposals which are to be found in this present report have been 'distilled' and augmented by the Working Group based on this span and on analysis of main future urban challenges which were outlined in chapters 2 (and 3). In addition, the consultant

²³ It should be pointed out that some Working Group recommendations were identified as knowledge gaps as early as the "Sustainable Cities Report", produced by the Expert Group on the Urban Environment in 1996, or by previous expert working groups such as the 'Land Use WG', however, to date they have not been taken on board at all - or not adequately - in the respective programmes. For example, research knowledge gaps identified in the Sustainable Cities Report included the fields of 'exploration of lifestyle changes', 'identification and development of strategic models where economic growth can be promoted in a sustainable way', - 'assessment of the implications of EU enlargement for the urban system and the perspective of European spatial development' or with respect to questions of inner-city land use and fiscal instruments, all of which were pointed out by the Land Use WG.

considered whether and if so to what extent recommendations made by the Working Group had already been incorporated in other EU-funded research activities. One such is the Key Action "City of Tomorrow and Cultural Heritage" in FP5, results of which were able to be accessed towards the end of the Working Group's period of reference. Furthermore, in a parallel process it was examined whether any of these projects had identified research needs which supported and amplified the Working Group recommendations. **The results of this analysis are summarised in Annex VIb.**

The recommendation of the Working Group is that EU-funded and supported research must support EU political **objectives and legislation** (the Lisbon Strategy, cohesion, sustainable development, directives) and sustainable development in the **priority fields of the Thematic Strategy**. Research of this kind is also necessary to respond to **major challenges** and future problems as well as making it possible to use the advantages of the European City:

- **globalisation and its economic, social, political, spatial and environmental consequences for cities (including shortage of natural resources);**
- **demographic change and migration;**
- **urban sprawl and its economic and environmental consequences;**
- **climate change prevention and adaptation.**

In addition to considerations on driving forces and main Europe wide challenges, the Working Group used four 'filters' in order to identify and consider future and major research needs:

- Does the proposal support competitiveness?
- Is the proposal significant at the European level?
- Can direct and measurable results be expected?
- Can the proposal be easily and quickly implemented?²⁴

As a result the Working Group recommends a series of research fields and questions, which should be treated as **priority** by European urban research policy (chapter 5.2). In a second step, the Working Group has identified from these a number of research fields which should be accorded **top priority status** (chapter 5.1). They offer the most far-reaching solutions to the problems and challenges outlined and best possible cost-benefit effect.

Those research fields and topics outlined in chapter 5.2 have been categorised in accordance with the priority fields in the Thematic Strategy. The Working Group believes this method would be the best way to assure integration into the strategy. However, the following points are to be noted:

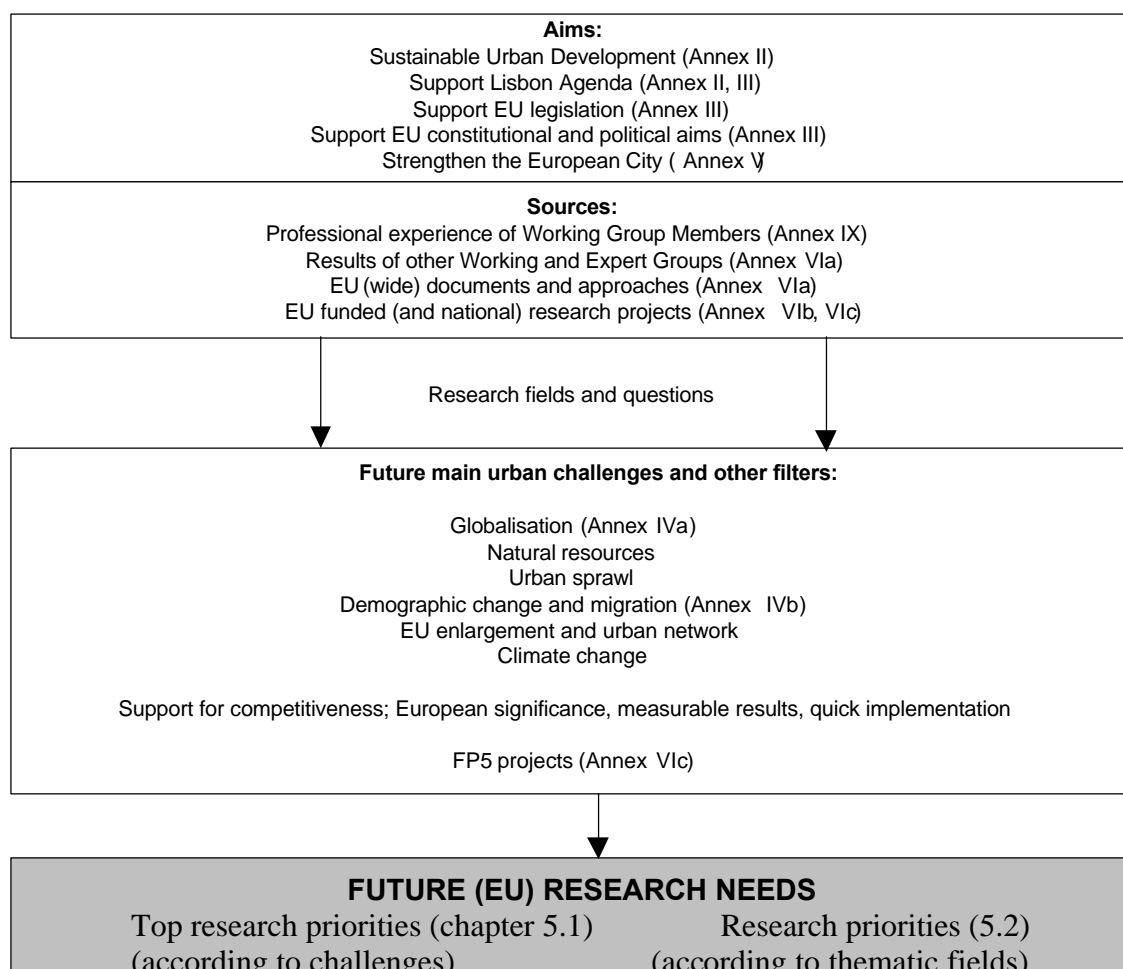
- As one of the main concerns of the Working Group is the integrative nature of research, several research fields and questions which are outlined here are directly linked to themes in the Thematic Strategy. In order to avoid duplication, they are listed

²⁴ The latter does not apply to some research questions related to medium and long-term development, which nevertheless urgently need to be addressed at the present time.

under the respective topic heading which the Working Group judged to be central or of major importance.

- As will be detailed in chapter 5.3, the Working Group recommends that research and training are best seen in the context of a continuum leading from research through demonstration, dissemination, and training, to practice. This should also be reflected in EU programmes. Nevertheless, the following sections will continue to deal separately with research and training recommendations, both for practical reasons and for the sake of implementation.

The Working Group approach is described in detail in Annex I and can be summarised as follows:



5.1 Top priority fields within research priorities

As stated above, amongst the research priority questions and fields identified by the Working Group are certain areas of fundamental significance with regard to work on other research fields, areas which make possible far-reaching initial steps in coming to terms with future tasks, and are thus able to produce the maximum cost-benefit-effect. These research fields overlap the individual priority fields in the Thematic Strategy to an even greater degree than the research priorities listed further on (chapter 5.2). For this reason they are not classified in terms of the individual priority fields of the Thematic Strategy.

Integrated environmental and urban management strategies and models

Further development of integrated environmental and urban management strategies and models of the 'real city' is regarded by the Working Group as being of the greatest priority. If this were to adopt the 'urban system approach' referred to below (chapter 5.3), research in this field is able to improve decisively our knowledge concerning urban relationships, processes and resource flows, and can support better urban management and good governance. Sustainable development in the four Thematic Strategy priority fields and in dealing with other future challenges (chapter 2) depends to a crucial degree on improving urban management systems.

Several FP5 and also national research projects have been concerned directly or indirectly with questions of urban management (i.e. projects 9, 10, 20, 21, 28, 30, 49; cp. table in Annex VIb). Several projects have developed indicators and tools which may serve as a basis for sustainable urban management. However, often projects deal with specific subject-matter questions, do not adopt a comprehensive 'urban system approach' or do not adequately take into account future challenges identified by the Working Group.²⁵ Thus they make only a limited contribution towards broad understanding of urban systems and towards coming to terms with future challenges. The Working Group therefore considers further research in the field to be necessary. This applies in particular to the following questions and fields:

- Research projects in this area should **investigate barriers, evaluate good and bad practice** and include **risk analysis of local authority action** (and non-action, the monetary and societal 'costs of doing nothing'). **Cost-benefit analyses** need to be carried out for this reason, firstly to eliminate political and psychological barriers to implementing good governance,²⁶ and secondly to derive the greatest possible benefit from it. **A common methodology needs to be developed for this.** In particular, questions of vertical, horizontal and spatial integration of urban management systems and the barriers need to be at the heart of this research field. **Practical tools and methods** (which reflect the question of transferability) need to be developed to overcome barriers and to foster integration.²⁷
- **Comparison of successful tools and instruments**, further development and elaboration, developing in **particular qualitative and 'soft' policy indicators** give political decision makers readily available instruments for the purpose of sustainable

²⁵ Several FP5 projects clearly point this out. To give some examples: CABERNET (5; table in Annex VIb) for instance calls for 'sound understanding of the urban systems', for DEMOS (9, *ibid.*) the question of how 'hard to reach groups' (such as immigrants or elderly people) can be included in participation processes has not been answered, INTEGAIRE (19, *ibid.*) identifies further research needs on the impact of local policies on climate change, and SCATTER (37, *ibid.*) is asking for further research on the management of 'smart urban growth'.

²⁶ cp. for example working group on Urban Environmental Management Plans and Systems, Draft Final Report, 2004, p. 14f, p. 26f and the DISCUS project (table in Annex VIb)

²⁷ A number of FP5 projects emphasise the need for comparative study of barriers in the field of 'Urban Management' (as well as in other fields). A number of projects refer additionally to the fact that transferability of their and other research results is limited, and that further research on this is required (cp. the table in Annex VIb). From these comments it may be deduced that **comparative** investigation into barriers and obstacles is required.

urban development. In this way it can also be ensured that such research is close to real life and of practical relevance.²⁸

- **Comparative research on public participation processes and instruments directed towards inclusion of different social and cultural/ethnic (minority/marginalised) groups is needed**, not only to enhance urban management, but also to meet requirements of present EU legislation, to support the Lisbon Strategy, the Thematic Strategy, and to cope with demographic and population change and changing needs of citizens. Several EU-funded and other research projects (cp. Annex VIb and c) underline the point that so far including these groups in participation processes has not been achieved, our knowledge of their needs is poor, the instruments and **methods required to achieve this still need to be developed**.
- In close connection with the preceding recommendation, **research on behaviour patterns and expectations** of stakeholder groups / end users / life styles, with the aim of enhancing urban management, quality and acceptance of decisions and coping with changing expectations and needs of citizens. However, the Working Group sees major knowledge gaps with reference to all urban groups, not only with respect to minorities. Certainly, some FP5 projects addressed this field of research or even developed tools to modify behaviour, but only in very specific areas (e.g. traffic, waste, cp. Annex VIb) and were based to only minimal extent on recording and analysing needs. In this context, the Working Group considers **the field of traffic and resource management** (especially of energy, water, urban green) to be crucial. Without profound knowledge on need structures it will hardly be possible to ensure good governance. **Methods and instruments** need to be developed for this purpose.
- **Comparative research on new forms of cooperation** and public-private partnership is needed to overcome barriers between economic and environmentally friendly and social oriented development, thus supporting the Lisbon approach and enhancing the competitiveness of the 'European City'. Some EU-funded and other projects have examined new forms of cooperation between local authorities and a wide variety of stakeholder groups, and have produced guidelines on this (Annex VIb and c). However, economic questions were scarcely considered in the process. **Comparative studies in the field of urban economy are still needed**.
- **Research on local economy and environmental development / performance** (including how to involve industry) in order to enhance European legislation and programmes, to support European political aims and to overcome barriers to sustainable development takes up elements in the preceding field. A number of FP5 projects (cp. Annex VIb) point out knowledge gaps in this question. The essence is to **perceive local economic and environmental inter-connections, to include economic decision makers**, to grasp their **interests** appropriately, to compare these with **public interests** and to develop **methods and instruments** for this purpose. Additionally,

²⁸ Although one of the main points of emphasis in FP5 projects and others with EU funding was to develop indicators (and evaluation systems) for sustainable (urban) development, the Working Group recommends further activities in this field. Application and transferability of existing indicator systems firstly seem not to be uncertain (many European municipalities have developed their own systems which are adequate for the particular situation), secondly, availability and quality of necessary (statistical) data have not been taken sufficiently into account. This is particularly the case in qualitative and soft policy indicators (cp. for example: Expert Working Group on Sustainable Urban Transport Plans: Final Report, 2004)

research is needed on the **economic and environmental performance of locally based economic activities / enterprises** and on **instruments to support** them.

- **Barriers towards sustainable urban development are seen by a majority of FP5 projects as the most essential future research question** (cp. Annex VIb). In many instances necessary steps towards sustainable development in European cities are known, and have in fact been implemented in some cases. This applies also in the case of individual measures proposed in the context of the Thematic Strategy. Nevertheless, the steps and measures are not common knowledge and practice. Implementation is blocked by a number of barriers towards sustainable urban development, which are to a great extent unexplored²⁹. Awareness of barriers and of **methods to overcome** them is not only vital in order to carry out the Thematic Strategy, it is also crucial in realising other EU policy goals (for example cohesion). Particular significance is to be attached to comparative analysis of **good and bad practice in the fields of urban management, spatial planning and mobility**.
- **Research on barriers to adoption of sustainable construction techniques and transport means** is seen as a crucial and specific research field very closely linked to urban management and legislation as well as to the preceding recommendation. Due to the major share in energy consumption (and in waste production), to the direct effect on health and on quality of life, and their long life span, buildings have a decisive impact on urban development and have a decisive influence on future urban management and decision making processes. As concurrently the most significant sustainable construction techniques and methods are already known, and could be implemented comparatively easily by means of legislative steps, examination of the barriers is therefore crucial.

Future research on demographic change

Overall population prognoses are quite well known and methodologically sound; estimations of future migration patterns are also comparatively uncontroversial from a scientific point of view. On the other hand, our knowledge is limited about the **impacts on cities** of these anticipated changes in population - in some cases quite dramatic: impacts on urban **infrastructure, transport systems, on urban design and construction, on social structure and relationships between groups and the needs of urban population groups and on participation processes**. Future research on demographic change and migration is thus another absolute priority.

These changes will not affect all European cities uniformly. However, on this too there is little knowledge. Amongst other things, in order to be in a position to develop regulatory instruments in good time, it is essential to study **local influence factors on this demographic change** and to elaborate **scenarios**.

One of the essential questions is how to enhance the **environmental performance** of European cities while the population is shrinking rapidly. In the medium to long term perspective, the success of the Thematic Strategy is at risk, unless these population

²⁹ Several projects in the LUTR and SUPER clusters and other projects (such as for instance PEGASUS, cp. Annex VIb) state that our knowledge on this question is very limited, we do not know why certain tools and instruments work in one city but not in another.

changes are taken into account. A knowledge-based, highly competitive and sustainable economic region, as is envisaged in the Lisbon Strategy, may possibly be put in motion, but will not be able to be maintained and further developed unless demographic changes are included in the equation.

A number of further research questions (such as **participation of minority/marginalised and/or new social groups**) have been already put forward and discussed in the preceding paragraphs as they are closely connected to the topic of good governance.

Although the central importance of these questions was acknowledged for example in the Communication of the Commission "Towards an Urban Agenda in the European Union" (COM(97)197) and was recently underlined by two Green Papers "Confronting demographic change: a new solidarity between the generations" (COM(2005)94) and "A European Approach to Managing Economic Migration" (COM(2004) 811), the questions are not dealt with in any FP5 projects.

Long-term predictive research on global trends and their effects on cities

The strictures above apply equally to this research field. Its significance is emphasised in several Communications (e.g. COM(97)197), however, to date the topic has not been considered adequately in EU funded urban research projects.³⁰

From a considerable number of studies dealing with globalisation, it is obvious that many effects of this process are antithetical to implementation of the Thematic Strategy and the Lisbon Strategy, and will render sustainable development considerably more difficult to achieve. However, our knowledge of how precisely **globalisation and associated increases in the costs of resources** is currently and will in future affect cities, and **how these negative effects may be countered**, what **instruments and tools cities need** for this purpose, is minimal. In particular the following areas need to be examined in this respect:

- **impacts on infrastructure and housing**
- **impacts on local economies (including regional differences)**
- **impacts on social systems, behaviour and expectations**
- **decision making processes**

Research on climate change

There are close links between global developments and impacts of climate change. In principle, the majority of necessary technical and political measures and steps to abate or mitigate climate change are known³¹. **The barriers and in particular the mechanisms which can overcome them - especially at city level - have by contrast barely been identified.** Tending towards nil is our awareness of **how cities may be able to respond to the impacts** of potential climate change. **The concrete impacts on cities are not known.** In this field too the Working Group perceives a major research need, also in complete

³⁰ Several FP5 projects also refer to knowledge gaps in this field (cp. for example nos. 5, 22, 42 in the table in Annex VIb).

³¹ Contributions towards this have been made by several FP5 projects within Key Action 2 (Global Change, Climate and Biodiversity) which deal to a major degree with combating climate change. Urban questions are not considered.

agreement with several FP5 projects dealing with 'clean air' and climate change (of particular significance are projects in the CLEAR cluster, cp. Annex VIb).

Research on density and urban sprawl

Research on sustainable spatial planning and density in order to identify 'push factors' on **urban sprawl, to identify environmental, economic and financial problems** related to less dense developments, and to enhance **instruments and tools for mitigation** can significantly enhance future urban decision making. In particular the question remains unanswered as to **what is the best possible density** in which specific situations and results in the greatest environmental benefit. **Indicators, methods and instruments** need to be developed for recording and bringing about these densities. Furthermore, in accordance with project results grouped in the LUTR cluster, the politically crucial question still needs to be answered as to what **national economy costs arise** as a result of too low density and urban sprawl, what **methods and instruments exist for 'smart urban growth'**³².

The following table summarises the Working Group recommendations concerning top priorities in future urban research:

³² The same question is also posed by the FP5 project URBS PANDENS (cp. Annex VIb).

Major challenge / action field	Main knowledge gaps and issues	Main specific research questions and issues	Need for additional / further development of methods / instruments / tools	Most important specific urban field
Urban management / good governance	understand the urban system	basic research in understanding urban systems according to the urban system approach	models and scenarios	
	barriers to sustainable development and good governance (economic and societal) costs of action and non-action	analyse good and bad practice cost-benefit analyses of local authority action (non-action) research on barriers	common methodology and standards practical tools and instruments	vertical, horizontal, spatial integration construction techniques transport
	conditions for successful application of tools and instruments, why failures	comparison of successful tools and instruments		
	inclusion of minority and/or marginalised groups	comparative research on public participation processes and instruments	development of methods, instruments and tools for integration	
	behaviour and expectations of social / stakeholder groups	research on behaviour patterns and expectations	methods and instruments	traffic and resource management
	expectations and decision processes of economic stakeholders	comparative research on new forms of cooperation and public-private partnership		urban economy

	relations between urban sustainability and economic development	research on local economy and environmental development / performance	methods and instruments	
Demographic change	impacts on cities of demographic change (and migration)	local influence factors on these demographic changes environmental performance participation of minority groups expectations and needs of minority groups	scenarios instruments and methods	
Globalisation	effects on cities of globalisation and associated increases in the costs of resources	counter negative effects impacts on local economies (including regional differences) impacts on social systems, behaviour and expectations impact on decision making processes	instruments and tools	economy / investment infrastructure / transport housing and urban design resources social relationships management
Climate change	impacts on cities barriers, and, in particular, mechanisms which can overcome them	research on impacts and barriers for mitigation	tools and instruments	energy built environment
Urban sprawl	understand mechanisms of urban sprawl and dereliction	specific urban 'push factors' on urban sprawl identify environmental,	instruments and tools to mitigate indicators, methods and	

		economic and financial problems what is the best density possible national economy costs	instruments by which to capture and achieve these densities instruments for 'smart urban growth'	
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5.2 Research priorities in the field of the Thematic Strategy

The research questions and fields proposed below have been categorised in accordance with the four topics which form part of the Thematic Strategy. They augment the 'top priorities' which were outlined in chapter 5.1, and should also be addressed and supported at European level. Due to the high degree of overlap between the themes of 'urban construction' and 'urban design', these two will be addressed jointly.³³

5.2.1 Sustainable urban management and good governance

Urban management and good governance is a key issue and pre-requisite of sustainable development. Several research fields and question related to this topic have been dealt with in chapter 5.1 as top priorities. At this point it is proposed - to avoid repetition - only to outline additional aspects and 'second tier' priorities.

- **Sustainable Urban Management Plans**

Synergetic tools and instruments

The main obstacles to Urban Environmental Management Plans and Systems are, in the view of the working group on this topic, the need for extra effort in implementation and needs for adjustment and coordination with existing plans on the same and also on higher administrative levels.

It is against this background that the Working Group recommends development of **synergetic guidelines, instruments and tools for creating, implementing and monitoring** sustainable urban management, as well as for complying with EU directives. It is vital to further develop such instruments and tools which may be applied in different but related fields and which thus release synergetic effects. For example, in improving air quality and in noise abatement, similar or even the same instruments can be employed. In both cases it is (motorised) traffic which is the main causal factor. By using this procedure it is possible not only to integrate urban fields of action and to save resources, there is also an economic competitive advantage.

Several FP5 and other projects (for instance the LASALA project, cp. Annex VIb) have developed guidelines, indicators and tools for various fields of sustainable urban development. They can be used as a basis for further development and specification for the purpose outlined above.

- **New forms of cooperation**

Coordination of public and private interests

Faced with scarcity of resources, globalisation and liberalisation, new forms of cooperation and of partnership are gaining ever more significance. In line with several FP5 projects, research questions under this topic heading specifically include:

Cooperation with SMEs

- research into **Public-Private Partnerships**, and the extent to which they can **coordinate public and private interests**, and **balance economic, social and ecological objectives**;

³³ Any research questions which, based on the Working Group's analysis, would make only a minor contribution or none at all to dealing with the most significant challenges (chapter 2), were not included in the list of priorities.

Analysis of failures and success stories

- development of **cooperation strategies between local authorities and SMEs** for the purpose of creating, studying and implementing innovative sustainable technologies and systems;

Barriers to horizontal and vertical integration

- **analysis of failures and successful partnerships** and an adequate **methodology**.

At the same time sustainable development needs new forms of administrative cooperation and strategies for horizontal (among departments, disciplines) and vertical (city, region, national, European level) cooperation; questions such as "What does a sustainable city administration look like (and what are the barriers)?" and "How can one balance the principle of subsidiarity with European level initiatives?" need to be answered. These specific research questions amplify recommendations made in chapter 5.1.

- **Public participation and information**

Further development and adjustment of tools and instruments to the requirements of directives

All recent environmental directives (cp. Annex III) require public information and participation. Except for questions such as how **minority and marginalised groups may be incorporated into participation processes** and what role user **behaviour, lifestyle and expectations play in influencing participation processes** (cp. chapter 5.1), there are many and varied research projects³⁴ on this topic and the Working Group believes further research at European level is not a priority.

Relationship between public information strategies and successful participation

However, it is necessary **to develop further and adapt public information and participation methods and approaches in order to implement existing and forthcoming directives**. To date no studies have considered how **public information strategies and methods influence further participation processes** and public attitudes.³⁵

Studies of this kind can speed up and make implementation of directives more effective. They can prevent fulfilment of requirements becoming merely a formality, and in this way are able to further increase public awareness of sustainability in general.

- **Sustainable economic development**

Relationships between privatisation / liberalisation and public control

The economic, social and environmental effects of liberalisation of products and services have been quite widely researched. However, effects on the local level are hardly known. Relating sustainable development to economic development, growth and competitiveness will be

³⁴ Some which could be mentioned include firstly FP5 projects DEMOS and PLUS. In addition, there are further projects in this field - especially those dealing with urban management (cp. chapter 5.1 and Annex VIb).

³⁵ Exceptions to this are several projects such as TOOLSUST (cp. Annex VIb), which however deal with specific issues of sustainable development.

essential to meet future challenges and needs.³⁶ Cost-benefit analyses will be required. This research field includes, therefore, the following main **questions and tasks**:

- | | |
|---|---|
| <i>Sustainability attracting investment</i> | - studying relationships between privatisation / liberalisation and public control of urban development; |
| <i>Applying innovative clean technologies</i> | - comparing ways in which sustainability can strategically attract investment;
- research into urban applications of green, innovative and clean technologies as economic market forces; |
| <i>Relating industries to sustainability</i> | - research on ways of and methods for relating knowledge-based industries to urban sustainable development. |

- **The sustainable and changing European City**

'Marketing' the advantages of the European City

If we want to preserve the character of our cities and use their advantages in furthering sustainable development, future research - in addition to research on climate and demographic changes mentioned above - has to address the following research topic:³⁷

What are the specific sustainable advantages of European cities and how can they be further strengthened and 'marketed' as advantages for economic development?

This topic would include comparison between conditions and needs with respect to sustainable development among cities in eastern and western Europe, and among smaller and larger cities, as well as regions and agglomerations, in order to strengthen cohesion and to support the Lisbon Strategy.

5.2.2 Sustainable urban transport and mobility

- **Sustainable urban transport (mobility) plans**

Instruments and tools for mobility planning

Success factors and barriers for mobility planning

Planning for sustainable mobility in an urban context means first of all linking transport and land use planning for the whole urban area (beyond administrative boundaries) and also to meet the needs of people living and working in it (including generations in the future with changed age and ethnic-origin structures).³⁸ The Urban Transport Plans which form part of the Thematic Strategy proposals are a first step in this direction³⁹. As sustainability is a matter not only of transport, but also of accessibility, and as several European cities already have transport plans (even

³⁶ FP5 projects grouped in the SUPER cluster of projects considered the connections between economic development and urban management. However, they concentrate on questions of (spatial) planning, on improving industrial / commercial activities in the sense of increased (ecological) sustainability or on developing decision making tools. They do not - or only in germ - provide answers to the Working Group's proposed research questions, but they do point out gaps in research (cp. Annex VIb and VIII). FP6 projects do not address economic questions at city level.

³⁷ cp. also the SUPER cluster project (Annex VIb)

³⁸ cp. the Final Report of the working group on Sustainable Urban Transport (2004), and European Commission (COMM (2004)60): "Towards a Thematic Strategy on the Urban Environment".

³⁹ cp. Expert Working Group on Sustainable Urban Transport Plans: Final Report, 2004

Further development of indicators and evaluation systems for mobility planning

beyond their administrative boundaries but seldom integrated mobility plans), plans need to be further developed, **instruments and tools for mobility planning** and **success factors and barriers against implementing them need to be analysed on the basis of case studies.**

Indicator and evaluation systems which have been developed as part of several FP5 projects,⁴⁰ should be further developed for analysis of this kind. From this stage **specific 'indicator systems', methods for practical integration between sectoral policies** and **minimum and aspirational targets** can be derived which are called for by the working group on Sustainable Urban Transport Plans (cp. Annex VIII).

- **Mobility, access, and society**

It is necessary to examine mobility as a question of providing access to activities.

There is the need for research into the **political, social and economic dimensions**⁴¹ **involved in implementing mobility** in a sustainable way in order to meet the needs of

Political, social and economic impacts of mobility planning

all social groups, not losing track of present minority groups and future population developments. Infrastructure measures (as indeed all measures in the field of the built environment) have very long-term repercussions and affect future development to a major degree. Research in this field is

therefore all the more important. It underpins the Lisbon Strategy, is able to generate competitive advantages, responds to changed needs of population groups and generates ecological benefits.

- **Energy and mobility**

Comparison of urban strategies for reducing energy use

Faced with scarce and expensive resources, it is necessary to **compare strategies for reducing fossil fuel and energy use through urban and regional mobility policies**, and to **develop applications and systems for energy and fuel alternatives**, in order to reduce cities' economic dependencies and vulnerability.

Development of urban applications and systems for reduction of dependencies and vulnerabilities

Some FP5 projects (such as ECTOS, MOSES and PROMPT, cp. Annex VIb) have developed methods and instruments which either directly or indirectly can reduce dependency on fossil energy sources. The question arises as to **how and in what conditions approaches such as these can be integrated into mobility planning.** From this not only economic competitive advantages would emerge, in addition EU climate policy and other environmental policy areas would derive support.

Integration of innovative approaches into mobility planning

⁴⁰ The majority of these projects are grouped in the LUTR cluster (including the PLUME project, Planning and Urban Mobility in Europe). Outcomes of this project are also of great relevance for proposals made by the working group on Sustainable Urban Transport Plans. These proposals should be integrated into follow-up projects.

⁴¹ cp. for example recommendations in the PROPOLIS and PROSPECTS projects, Annex VIb.

5.2.3 Sustainable urban design and construction

- **Cultural Heritage and built environment**

Environmental, social and economic potentials of cultural heritage

Methods and guidance for city marketing

Flexibility and reuse of buildings

With one exception, all FP5 projects within the Key Action 4.2. "Protection, conservation and enhancement of European cultural heritage" are concerned with specific technical and conservation questions. The SUIT project (cp. Annex VIb) concentrates on environmental assessment and touches on research topics recommended by the Working Group only in a few position papers. A series of important questions have not been addressed.

The questions refer in the first instance to the relationship between cultural heritage and 'built identity'⁴² (the 'European City') and the **prospective social, economic and environmental potential**. Questions such as "What is the value of historical buildings and districts in attracting investment and new development?" and "How does cultural heritage relate to sustainable design, city identity, tourism and marketing?" are therefore areas to be examined. The purpose of this is to develop methods and guidance for city marketing.

In view of the low level of flexibility and of viability for the future (sustainability) of a major part of current building stock, our knowledge of sustainable methods for reuse and renovation of old historical and other building stock is limited. **Studies of building flexibility and adaptive reuse of buildings and infrastructure are therefore needed** (cp. Annex VIII).

- **Sustainable building and construction**

Research on environmental performance and development of common methodologies

The building sector has a key influence on sustainability and extracts more resources than any other sector. Over and above existing approaches such as the directive on energy performance of buildings and results from several FP 5 projects⁴³, **performance criteria for sustainable buildings need to be developed**. This includes the following questions and tasks (cp. Annex VIII):

- analysing barriers in mainstreaming existing good practice in construction and management of buildings (cp. chapter 5.1);
- developing common methodologies for assessing building sustainability;
- developing performance criteria for sustainable buildings;
- further development of strategies for identifying life cycle costs and whole life assessment.
- comparing methods for dealing with Energy Performance Certificates.

⁴² W. J.V. Neill, H.-U. Schwedler (eds.): Urban Planning and Cultural Inclusion, London 2001

⁴³ Several FP5 projects deal with sustainable construction techniques and other issues - namely projects 8, 17, 31, 35, 38 (cp. table in Annex VIb). The results and recommendations of CRISP and HQE2R can serve as a starting point for dealing with the research questions and issues that have been recommended by the Working Group.

Combined vulnerability of different building materials and the overall health performance of buildings

Despite European approaches and research projects on indoor air quality and other health issues, there is need for further research into these fields, especially research on the combined vulnerability of different building materials and the overall health performance of buildings.

In order to overcome hindrances with regard to more sustainable buildings, opportunities for and barriers concerning relationships between sustainable development and various **conditions of ownership** need to be examined. This includes, for example, the question of balancing private and public, short and long-term interests.

Research on large housing estates: redevelopment schemes, renovation techniques and cost assessment and financing

On average, more than 45 % of the inhabitants of former socialist New Member States live in prefabricated large housing estates. These large estates contain hardly any functional mixing, local amenities are in several respects completely inadequate, the physical state of these estates meets neither current residential nor environmental standards, and social decline and segregation are already visible in some cases. These estates represent one of the

most serious challenges to urban development and cohesion. **Research and pilot projects** are urgently needed, mainly on questions of appropriate **redevelopment schemes, renovation techniques** and especially on **instruments and tools for cost assessments and financing**.⁴⁴

- **Sustainable urban green structure**

Urban green open spaces cover a larger spatial proportion than built-up areas in cities. A coherent urban green structure is an important element of sustainable land use patterns in order to maintain and promote quality of life and health, to address new challenges of socio-demographic change, urban growth and decline as well as of climate change.

Comparative research of effects on urban climate

In accordance with GREENCLUSTER projects (cp. Annex VIb), the Working Group came to the conclusion that more **knowledge must be generated about the role of green structure in regulating urban climate in different parts of Europe**, and about the **design of multiple use green networks** in European cities.

Research on multiple use green networks

Serious gaps also exist in our understanding of people's attitudes to maintenance practices and about the **long-term health effects** of a variety of green spaces in urban areas.

Long-term health effects

Creating and managing an urban green structure is a complex task that involves many stakeholders on different levels. It is fundamental in order to understand better the dynamics of conflicts, as well as **choice and performance of instruments** in green structure planning and management.

Comparison of good practice and instruments

⁴⁴ cp. European Academy of the Urban Environment: Twelve Candidate Countries Overview Report, Berlin 2003

Maintaining green structures with declining public funding is a challenge in cities across Europe. **Analysis of good practice and successful instruments** is needed to cope with this challenge. There is a need for differentiated approaches for growing and shrinking cities.

5.3 Target groups and methodology of future research

Future trends and challenges and the research needs identified by the Working Group call for practical research that is close to the urban reality and is oriented towards application and implementation. This can best be guaranteed if **cities play a major role in developing and carrying out research projects**.⁴⁵ Most immediately addressed are actors found in **city administrations** and governments. As much of the research which is needed deals with functional urban areas - rather than cities within their administrative boundaries - it has to be ensured that institutions from **different spatial levels** are included.

Also important for both research and implementation of sustainable urban development are other groups such as professional architects, engineers and planners, etc. Envisaged are new 'innovation alliances': involving cities, professionals, universities and other research institutes.

Urban knowledge is not a pure discipline or a new field of science, but is best seen as a way of drawing together knowledge and knowledge production on urban questions which is often generated in separate research fields and sectors of practice. **Urban research needs to be inter-institutional, inter- and trans-disciplinary**, and partnership is needed between different disciplines and professionals. This context is still unfamiliar for many, and with an unclear balance of responsibilities, mandates, resources and power, the risk of getting stuck in wishful thinking is obvious. Deeper understanding of what will be required of the arenas, actors, structures, methods and tools involved is needed, and new approaches have to be developed.

Cities need to be perceived as urban systems which do not end at institutional or political boundaries, but on the contrary are composed of many sub-systems and sub-relationships, which are inter-woven one with another and spatially with the hinterland. This requires not only integrated and trans-disciplinary research approaches. It can also lead to new and necessary research questions in order to understand the urban system. It will support identification of the most important barriers to sustainable development and can help to mitigate them. An '**urban system approach**' of this kind can assist in understanding cities better, and most importantly also to adapt urban management towards sustainable development.

It is against this background that the methodology of urban research, one which can steer sustainable urban development in a direct way, has to be further developed and becomes a research topic in itself.⁴⁶

⁴⁵ This is not to negate the importance of universities and other research institutions for future EU research programmes, but nevertheless points out the necessity of trans-disciplinary **and** inter-institutional, praxis-oriented research, in order to come to terms with urban future tasks and challenges.

⁴⁶ R. Evans, S. Marvin: *Disciplining the Sustainable City: Moving Beyond Science, Technology or Society?*, Cardiff 2004 (<http://www.cf.ac.uk/socsi/publications/workingpapers/abstracts/wrkpaper-ab65.html>)

Systematic establishment of **institutional support structures** and activities is necessary for this. These are essential in the (re-)structuring of European urban research and of particular interest for cross-border knowledge development (multi-, inter-, cross- and trans-disciplinary work). Activities include workshops, seminars, compilations and state-of-the-art reports. Institutional support structures include improved network and community structures as well as infrastructure for urban research, such as data collection and management (a European urban knowledge archive), GIS support, coordination of dissemination activities etc.

By means of support structures such as these, it will also be possible to make knowledge derived from a wide variety of research projects and programmes available to cities in Europe, and to evaluate and disseminate good (and less successful) practice. **Evaluating good and bad practice, analysing conditions for success and barriers, represents in the view of the Working Group an overarching field of research.**

Future research projects must therefore incorporate from the very outset dissemination of the results and outcomes in a target-group oriented way as part of development of the project research strategy and methodology. The same principle applies to questions of transferability to other situations. In this respect model or pilot projects (insofar as this is possible for the particular research topic) are useful.

Communicating research results needs not only to overcome language barriers between nations, but also subject matter-based barriers between different disciplines. For this reason too, urban research must necessarily be structured both to be trans-disciplinary and also to include all the affected groups of actors.

These reflections make it clear that future research concepts need to operate along a continuum ranging from research, testing/trial, dissemination and finally to training and implementation.⁴⁷

This can only be achieved if urban research is perceived as an autonomous, praxis-oriented field of research, under the umbrella of which a wide variety of disciplines and relevant actors are cooperating, and who - to summarise the considerations of the Working Group outlined above (and in addition cp. chapter 4) - will follow a **'code of urban research' that should be mandatory for future EU-supported research activities.**

Code of urban research

The Working Group recommends a code of urban research which should be mandatory for future EU-supported research:

- cities are both major actors and recipients of urban research;
- all (topic-) relevant groups and disciplines have to be included;
- research needs to be inter-institutional, and inter- and trans-disciplinary;
- dissemination and considerations regarding demonstration and transferability must be included in the concept and methodology of research projects.

⁴⁷ This approach has already been implemented in the context of the City of Tomorrow Key Action, part of FP5; however, in the view of the Working Group, it needs to be applied more strictly when approving projects as well as being monitored and evaluated during a project lifetime.

If this is not carried through successfully, the financial and social costs - the costs of doing nothing, or of doing the wrong thing - may well by far exceed the costs involved in such research as the Working Group is now recommending.

6. Future training needs

The proposals found in the following sections regarding training needs and sustainable urban development in European cities are based on the suggestions and experiences of Working Group members, as well as a number of relevant reports and publications, especially the Communication "Towards a Thematic Strategy on the Urban Environment". This Communication offers ideas and directions for education and training, stressing the need to ensure that professionals and experts have the right **skills to deliver innovative and integrated decision making** required to achieve a high quality and healthy urban environment. With many urban technologies and techniques already known, it is critical to give attention to **awareness raising initiatives, to demonstration, dissemination and practice**, especially involving urban decision makers and actors. As sustainability is a cross-cutting concept demanding communication among all fields, new training fields have to be opened to overcome 'professional segregation', and to **get beyond narrow and sectoral views** based on 'compartmentalisation' of expertise (e.g. in local authorities).

At the European level, there are a number of urban environmental obligations with established targets - and there will be more - that must be met. The adoption of sustainable management plans and sustainable urban transport plans for urban areas may also be required. To respond to and comply with such plans, considerable training and awareness initiatives will need to be coordinated at the European level, which in turn will require local promoters to develop and implement initiatives at the local and regional levels.

The arguments for training relevant to sustainable urban development are similar to those for research. It is critical to see research in relationship to training and to follow it up by dissemination action and practice. Appropriate training programmes coordinated at the EU level can (among other things) lead to better governance, support implementation of political aims of the Union, ensure communication and dissemination of research results and thus enable sustainable urban development and implementation of the Thematic Strategy.

Future training measures need to achieve the following in order to underpin the tasks and enable the challenges referred to above to be overcome in and by cities in Europe:

- **Communication and dissemination of research results:**
in particular those outcomes of research on priority fields identified by the Working Group need to be communicated. A main point of emphasis should lie in disseminating instruments and approaches to react to major challenges. The connection referred to above between research and training is of major significance in this respect;
- **Awareness raising:**
in some of those stakeholder groups which are crucial for sustainable urban development there is a need for awareness raising and information concerning sustainable urban development in general and the opportunities and instruments which are already to hand.

The following sections will discuss primary target groups and their training needs as well as appropriate methods and propose a number of training fields related to the priority themes identified for the Thematic Strategy. An emphasis is placed on a more effective dissemination and take up of results from existing and future European urban research. Relevant training and education initiatives including actions, products and projects from the two programmes Leonardo da Vinci and Socrates are summarised in Annex VIII. These examples are significant in contributing to the implementation of the Communication "Towards a Thematic Strategy on the Urban Environment". The examples emphasise raising awareness using a variety of tools and methods, and training modules for planning and management, as well as dissemination of results and information through networks.

6.1 Target groups and methods

The primary target group for training efforts in general should include decision makers active with local authorities (political and governmental actors); following this group in significance is the private sector including professionals (businesses and enterprises) and civil society (NGOs, non-profit organisations, public institutions and general public).

Target group: Public administration and local authorities

Awareness raising projects and information campaigns need to be organised⁴⁸ to inform, inspire and motivate **decision makers** at all levels – including at the European, national, and regional levels while **emphasising local authorities**. To meet the requirements of politicians, awareness raising actions must be compact and effective. 'Strategic information packages' should be offered, with politically-oriented examples.

Pioneering projects should receive significant attention, and through this decision makers should receive extra encouragement. Furthermore, successful experience and products should be shared at the corresponding level of politicians and decision makers, for example mayors with mayors, and technicians with technicians.

There are two key types of personnel needing training in public administration: technical personnel and policy or administrative personnel. **For technical personnel, clear training packages and tool boxes should be developed to assist them** in understanding, implementing and monitoring sustainable urban management as well as transport and other plans and projects. This group of 'implementers' needs to be skilled and informed as to the details of directives and regulations, as well as to specifics of alternative strategies for implementation.

Public management and senior administrators should be offered special short courses, and public administration and staff members should be offered training, for example in providing public services.

To complement the training and information efforts a Sustainable Cities Civic Leadership Programme for local government officials (capacity building) should be implemented.

⁴⁸ cp. Thematic Strategy on the Urban Environment, final reports of the working groups on Sustainable Urban Management, Sustainable Urban Transport, Sustainable Urban Design and Sustainable Urban Construction, January/March 2004; and Interim Reports of the working groups on Environmental Management Plans and Management Systems and on Sustainable Urban Transport Plans, 2004

Target group: Private sector

Private practitioners including professionals need training, beginning in the school and university systems, through which the next generations of architects, builders, planners and managers receive the information and skills they need to work in integrated ways.

Businesses and especially small and medium-sized enterprises need information and training to help them adapt to changing regulations and directives. Learning kits, workshops and events should be supported and networked to both inform and inspire more sustainable practices by companies working on various aspects of implementation in sustainable urban development.

Training and awareness raising is also important for the media and advertising professions. Sustainable urban development can be viewed in part as a public relations campaign, in which many actors have roles to play, in communication and information as well as culture in general. Professionals need to be trained in marketing and communicating sustainable development. Environmental communication methods and technologies need to be expanded to respect integrated and sustainable methods, themes and practices.

Target group: Civil society

Non-profit organisations, NGOs, and the public at large - this is the group whose needs are ultimately supposed to be met by the creation, building and maintenance of the city, yet they often feel their views and needs are not being properly addressed. Citizens and non-profit bodies often see no adequate forum in which their views can be expressed and heard. There is therefore the need both to create the appropriate participatory structures and to empower the public through a lifelong learning approach such that they can be truly involved in the creation and management of the built environment and the sustainable city in general.

The individual citizen has a vital role in achieving a sustainable, healthy urban environment, and to this end is to be engaged with information and awareness campaigns. Good governance and public participation are pre-requisites for sustainable development, and so training should provide the elementary basis for this.

As sustainable urban development is an ongoing and long-term process, working across generations, it is of great importance to reach children, for example through the school systems. The UN Decade on Education for Sustainable Development (2005 - 2010) provides an excellent framework for European initiatives.

Sustainable development processes should be expected to work with democratic and market structures, through which citizens are asked to participate in planning and development, voting with their consumer choices as well as their ballots. Creative training approaches should be developed that are capable of leading to integrated and new solutions and perspectives. Creative strategies are needed to encourage creative thinking and acting. For this it is important to work with intermediate organisations, in their function as disseminators or multipliers, both in the sense of increasing political pressure for change and in communicating and mediating between population and decision makers.

6.2 Top priorities for training

The driving forces, primary challenges and opportunities facing European cities with respect to sustainable urban development, are quite similar for research and training and so there are parallels among the recommended priorities for research and training. Following are the main priorities regarding training needs, followed by priorities as identified by the Working Group within the three priority thematic fields.

Training related to integrated, participatory and sustainable urban management

As sustainable targets, actions and monitoring programmes are required, local authorities and all urban stakeholders will need information and training to respond to such obligations.

Adoption and implementation of appropriate plans and systems for public sustainable management and transport will require training in the areas of public participation and public planning. New communications efforts should emphasise an integrated approach to dealing with good governance in general, realising the importance of public participation for sustainable urban development.

Training should assist local authorities in the areas of monitoring and reporting, and in particular with directives regarding air quality and noise, energy and water etc.

Education and training campaigns will also have to support local planning departments in more effective use of data and management tools, and in balancing project-based development with long-term, coherent and integrated planning approaches. Strategies and tools must be made more attractive and useable, such as EMAS, ISO 14001, the Local Agenda 21, the URBAN AUDIT, ecological footprint, etc.

Training related to demographic change

European cities are centres of demographic changes, in terms of age as well as ethnic and cultural background. Awareness raising initiatives are necessary to assist local planners and administrators in understanding and dealing with population trends confronting their cities. Information is needed to assist local decision makers in responding appropriately to local populations that are shrinking and increasingly elderly and diverse in their cultural structure. Participatory planning will not be possible unless local actors are supported with information and strategies necessary for involving changing and complex populations.

Training related to global trends and climate change

Awareness raising projects are necessary to help local decision makers to deal appropriately with local impacts of globalisation and global challenges such as world trade and competition, resource scarcity and climate change. Information initiatives are critical to assist local authorities in planning for changing environmental and climate conditions, and for increasing costs and competition, for example regarding energy and other resources. Information and strategies are also important to assist cities in contributing to sustainability at the European and global levels, for example through resource efficiency, clean technologies and fair trade. European cities need training to be able to respond to this.

Training related to barriers to sustainable development

A priority has to be made on overcoming barriers to the implementation of sustainable urban development. As many technologies and strategies are already known, an emphasis has to be placed on training and information needed to identify and overcome obstacles in the way of sustainability, for example local habits, customs and patterns of working.

Training related to networking and communication

Training is expected to assist in increasing cooperation among different levels of government, as well as different departments within local administrations. Local authorities have to be helped in accessing necessary information and strategies, for example in working through networks at the regional and international levels.

6.3 Training priorities in the fields of the Thematic Strategy

In addition to top priority training needs the Working Group has identified training needs within the priority fields of the Thematic Strategy.

6.3.1 Sustainable urban management and good governance

The most important thematic field deals with integrated and sustainable planning, management and governance, involving innovative strategies and corresponding training programs.

The advantage of tools and instruments

Comprehensive systems for urban planning and development should be demonstrated in model cities, but also adapted and ‘translated’ for use in the various European urban regions. Training is needed for local decision makers and planners to be able to work with the ongoing processes of comprehensive and sustainable policy definition, target setting, the use of indicators and monitoring, auditing, reporting and planning.

Public land and urban sprawl

There is a need to help politicians better understand the likely medium and long term impacts that privatisation of public land is likely to have, or is already having. Decision makers and all stakeholders need more information and examples regarding sustainable alternatives and methods for using and redeveloping public land and properties.

Mechanisms and driving forces for urban sprawl have to be communicated. This must include interests of investors, barriers, instruments and tools to fight urban sprawl as well as information on interests of private investors

The approach of the private sector

There is a need to train local officials in understanding the approaches of private developers, for example with respect to urban regeneration and public-private partnerships. It is necessary to provide training in financial modelling techniques that would permit the creation of a common dialogue between these essential partners in urban regeneration. More information and examples are needed to understand the benefits that can be won by the incorporation of sustainable principles into PPP models and contracts. There is also need to train politicians and administrators on how trans-national corporations make decisions, to assist local actors in dealing with such investors and developers.

The role of cooperation

Training of officials and elected representatives in municipalities must also support more effective links with regional and national environmental and sustainability strategies. Local authorities need to learn how to obtain more support from national level governments, as, for example, is called for in the White Paper on Governance and the Aarhus Convention. The Communication "Towards a Thematic Strategy on the Urban Environment" suggests for example supporting information initiatives through National Reference Centres (NARCs) for the urban environment, as well as Sustainable Cities Civic Leadership Programmes (SUSHIP).

6.3.2 Sustainable urban transport and mobility

From transport to mobility planning

Cities need information and training to assist them with adopting and implementing sustainable urban transport plans. Information and training campaigns will be needed to communicate the meaning and importance of urban transport plans and of sustainable transport and mobility in general, and a range of initiatives are needed for the demonstration, dissemination and exploitation of such plans, strategies and systems.

Training programmes must cover all modes of transport and assist local planners in changing the modal split in favour of more efficient transport modes such as public transport, cycling and walking. Alternative mobility strategies should be supported through initiatives such as CIVITAS, including support for research, benchmarking, demonstration projects and awareness raising actions. This should emphasise comparison and exchange of best practices and experience.

More information is needed by local authorities to be able to understand and deal with new trends in traffic management, especially the management of the private car, but also trends such as tele-working etc.

Information programmes are needed to encourage more sustainable mobility behaviour, and to this end planners as well as marketing and media specialists must be involved in educational efforts. Training is called for to assist planners in managing public awareness and health campaigns, and participatory policy making involving stakeholders.

Alternative fuel strategies

In particular, local authorities and stakeholders need further training to help meet the targets of alternative fuel substitution (Alternative Fuel Strategy), concerning the marketing of sustainable alternatives and integration of alternatives into existing traffic and transport infrastructures. Training and information will be needed to help local actors publicise and market energy efficient and clean vehicles.

6.3.3 Sustainable urban design and construction

Overcoming barriers

Training and information efforts are needed to achieve a widespread understanding of sustainable design and building. Design and construction industry professionals need training to help them overcome traditional professional, design and institutional barriers, and to assist them in working with environmental labelling of construction methods and materials.

Training is needed regarding an urban systems approach, which would assist in properly incorporating the characteristics of city design so as to reduce the energy profile. There is a need to be able to show the medium and long term benefits of adopting holistic approaches to urban design and a need to devise ways of overcoming the traditionally short term perspectives of politicians, banks and other institutions.

The advantages of sustainable construction

Bringing the relevant actors in the construction industry to implement sustainability in their day to day practice relies predominantly on how effectively actors can be motivated to take on the liabilities and risks associated with change. This requires appropriate information and examples and must be supported by demonstration and exchange efforts included in Community research and training programmes. Training and awareness raising should be supported through production of a dictionary or glossary of terms regarding sustainable construction – to ensure greater consistency across Member States.

Awareness raising actions should be supported, such as sustainability prizes for urban design, architecture and construction, or for example through a database on sustainable buildings and construction projects. Awareness raising is also important for the 'end users' as they eventually need to demand (and buy) sustainable building practices.

Environmental and energy performance

Training programmes are needed in implementing sustainable construction, as well as to assist local planners, architects, builders and others in evaluating the overall sustainability performance of buildings and construction methods, including life-cycle costing strategies. Training initiatives are necessary to assist decision makers and practitioners in working with energy performance certificates, and in meeting minimum energy efficiency requirements. Methodologies concerning sustainable performance should be relevant to renovation of older buildings as well as new construction, and training is necessary not only for dealing with buildings but also districts and neighbourhoods including urban green and open spaces.

Derelict and under-used land

A particular theme requiring further information and training is sustainable reuse and development of urban brownfields and contaminated land, for example in comparing and exchanging experiences and strategies. The Commission could assist such exchange and could also offer guidance on approaches concerning taxing development through 'betterment' taxes and trading development rights, to encourage private financing of public goods, and new forms of cooperation for re-using land and buildings.

Green and open space

Tailored training and education packages for green space managers are required to successfully tackle the many new challenges of urban change, declining budgets and new forms of governance in green structure planning and management. E-learning courses that build on outcomes of European research projects may be an effective way for communicating and significantly promote learning from good practice in other cities. Development of such learning and training modules should be an obligatory element in future green space research.

6.4 The framework for dissemination and training

Before **creating new initiatives** it is necessary to **review and work with existing European as well as national and regional programmes** and institutions relevant to training for sustainable urban development. It is essential to build on existing programmes and initiatives, for example CIVITAS, LEONARDO da Vinci, SOCRATES, CONCERTO, INTERREG, the European Social Fund, LIFE, COST and others. At the European level, awareness raising activities should be continued.

Results derived from existing programmes such as the City of Tomorrow and Cultural Heritage Key Action are significant for offering comprehensive approaches and for integration of key urban issues.

Existing European (city) networks should be built on and involved in training and dissemination initiatives. Exchanges can be coordinated through 'leader-observer' programmes, through which local authorities work together in close partnerships in sharing experience and insight.

European trans-national city networks should be regarded as vital players in the process of disseminating knowledge and good practice across Europe.

Initiatives that can be taken outside EU funding initiatives will have to be considered, and projects at national and local levels are called for. **Local, regional and national systems of training and education** must be involved and opportunities exploited. Training strategies and initiatives should not be developed without cooperation and participation at the local level, where the primary target groups and end users are found.

To communicate and exchange effectively information and experience vital for sustainable urban development in European cities, it is recommended that regional (national) centres be supported, to facilitate comparison, exchange and implementation of data, methods and experiences among cities regionally and internationally. Thus, demonstration centres are called for, to collect, process, research, exchange and disseminate information, technologies and examples relevant to sustainable urban development. Such centres could be supported and networked at regional, national and international levels. Different approaches to dissemination and assimilation of knowledge can only be dealt with by making local adaptations.

Not only 'best practices' should be communicated, but also problems, failures and obstacles. Deliverables and products must be 'easy to digest', with appropriate language and format – and be able to be understood by the target groups. Reports and products should not only use text but also visual information (film, video, pictures, etc) and be sensitive to design in general. Information campaigns and implementation activities should consider principles of market introduction for new products, including market research, identification of targeted end users and beneficiaries, product testing, strategic cooperation with media and NGOs, and then marketing and transfer to broader groups.

Dissemination must go beyond simply publishing research results on Internet sites (although Internet sites are also necessary for general access), and should provide a basis for transfer and translation of results and eventual adaptation and implementation. Existing programmes for dissemination of such information, such as CORDIS, must be improved, made more user-friendly, more effectively networked and publicised. E-learning courses could build on the outcome of European research projects, also helping to communicate

sustainable strategies. Conferences should be used more, with clearly targeted presentations and lists of participants. It is often easier to assimilate new information when it is presented directly, (verbally and visually) than when it is presented in printed form.

To conclude, the Working Group contends that direct involvement of urban actors in 'practice-oriented urban research' will itself lead to more integrated and more meaningful research results, including training, dissemination, demonstration and implementation of urban sustainable development.