



# Sustainable Mobility in Europe: the Role of Participation at the Neighbourhood Scale

Mobilità sostenibile in Europa: il ruolo della partecipazione alla scala di quartiere

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## Preface

In order to face the unsustainable nature of contemporary cities, in the last decades, many projects of urban development, following the principles of sustainability, have been realized in Europe.

Recently, the literature has focused on the “neighbourhood” because it has been demonstrated that sustainable strategies can have significant results if they are carried on at neighbourhood level (Barton *et al.* 2010; Cerreta and Salzano 2009; Maltese *et al.* 2011). Pertaining sustainable mobility (hereinafter SM), that is the focus of the present paper, a well connected and designed district does appear as the most effective level not only for planning transport and land-use, but even for fixing policies and investments (Wheeler 2009; Marshall 2000; Hull 2008). Besides, people participation is even more enhanced, being some evidence that at this local level, people have positive attitude towards collective actions (Zuindeau 2006; Loukopoulos and Scholz 2004; Banister *et al.* 2000).

Furthermore, transport has proved to play an ambiguous role in any quest for sustainability (Himanen *et al.* 2004; Codoban and Kennedy 2008; Geerlings and Stead 2003), especially at the urban scale, being at the same time a threat and an opportunity for urban areas (Makri 1999) where the vast majority of the population lives today (EU White paper 2006; EU Greenbook 2007).

Indeed, transport is an important driver for competitiveness and welfare, with a great deal of benefits (i.e. improved accessibility, economies of scale, time saving, and higher supply), both direct and indirect, but even negative effects may occur (i.e. air and noise pollution, natural resources and energy depletion, mortality and morbidity from accidents, reduced accessibility and public space, increased costs and times, damages to the landscape) owing to an imbalanced transport system's growth.

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In the last decades, many projects of urban development, following the principles of sustainability, have been realized in Europe. Specifically, it has been demonstrated that sustainable strategies can have significant results if they are carried on at neighbourhood level. When adopting a sustainable mobility (from now on SM) strategy, a large number of stakeholders is affected by its impacts and many conflicts could easily arise.

Therefore, participation plays a crucial role, firstly, because it is the most effective means to gain, deliver and sustain benefits deriving i.e. from SM interventions; secondly because some tendency for individuals is proved in adjusting their preferences to the average of the social group they belong to, thus sparking off a virtuous circle towards SM.

Within this context, the present paper analyses a panel of 37 European neighbourhoods, which are considered best practices for sustainability, in order to evaluate their SM strategies, and specifically investigate the role played by participation and collective actions in enhancing and achieving SM.

To do so, specific SM strategies and related indicators have been identified, according to two previous papers written by the authors (Maltese *et al.*, 2011; Bolchi *et al.*, 2011), and an empirical investigation on the SM strategies is presented. In particular, the empirical analysis underlines the role played by participation in enhancing SM and the commonalities and differences among the neighbourhoods.

In questo articolo sono analizzate le strategie di mobilità sostenibile di alcune best practices di sostenibilità, italiane ed europee, a scala di quartiere. Lo scopo è evidenziare quanto siano presenti e significative le iniziative compartecipate – sotto forma di partnership più o meno strutturate tra pubblico e privato o semplicemente di condivisione di intenti – per il raggiungimento di livelli elevati di sostenibilità. L'accesso e la partecipazione dei diversi stakeholders ai processi decisionali e di valutazione, infatti, contribuisce, da un lato, ad una migliore conoscenza degli obiettivi, dall'altro, ad una riduzione del grado di conflitto.

L'analisi prende le mosse da due precedenti articoli scritti dalle autrici (Maltese *et al.*, 2011; Bolchi *et al.*, 2011) e si concentra sulla valutazione del grado di mobilità sostenibile di 37 quartieri europei a partire da indicatori e criteri mutuati dalla letteratura; in particolare, i modelli di riferimento sono l'Esagono di Nijkamp, approntato per la valutazione ex-post della sostenibilità a scala urbana (Nijkamp, 1993) e di quartiere (Cerreta e Salzano, 2009), e il modello di Holden (2007), più specificamente focalizzato sulle leve di intervento per il raggiungimento della mobilità sostenibile.

Inoltre, vengono approfonditi sei casi-studio, allo scopo di valutare l'impatto della partecipazione sul grado di mobilità sostenibile a scala di quartiere.

Being the transport negative impacts greater than the positive ones, specially at the urban scale (Rodenburg *et al.* 2002), many attempts have been made to achieve a radical shift towards SM, that is any strategy which tries to «disconnect transport from its harmful effects» (Maciulis *et al.* 2009; Grimes-Casey *et al.* 2009; Wiegmans *et al.* 2003), including: transport policies, technological innovation, changes in the physical infrastructure, and land use, social, cultural, and institutional changes (Vergragt and Brown 2007). Moreover, it is difficult to reconcile the efforts towards SM with the rival societal aspirations, such as the pursuit of faster and more convenient forms of travel (Cohen 2010), because, for example, the unabated use of automobiles is a consequence of an unfortunate preference for short-term gains by car users *versus* long-term losses to the whole society (Steg and Gifford 2005; Steg and Tertoolen 1999).

Consequently, when adopting a SM strategy, a large number of stakeholders is affected by its impacts and many conflicts could easily arise. Thus, in order to avoid a harmful lack of collaboration in spatial and transport planning (Doi *et al.* 2008), it is necessary to call for a local scale at which it is easier to involve residents and city users. Within this

Dimension	Criteria
Ecoware: natural capital	<ul style="list-style-type: none"> <li>• Environment and natural resources</li> <li>• landscape</li> <li>• energy</li> <li>• waste management</li> </ul>
Hardware: man-made capital	<ul style="list-style-type: none"> <li>• built environment</li> <li>• buildings</li> <li>• technologies and building system</li> <li>• land use</li> <li>• transport</li> </ul>
Finware: economic and financial capital	<ul style="list-style-type: none"> <li>• financing, incentives, subsidies</li> <li>• costs</li> <li>• economic vitality</li> </ul>
Orgware: institutional capital	<ul style="list-style-type: none"> <li>• laws and regulation</li> <li>• local governance</li> <li>• partnership</li> </ul>
Software: human capital	<ul style="list-style-type: none"> <li>• training and knowledge</li> <li>• education and sensitizing</li> <li>• innovation and creativity</li> </ul>
Civicware: social capital	<ul style="list-style-type: none"> <li>• equity and social inclusion</li> <li>• participation</li> <li>• local quality of life</li> </ul>

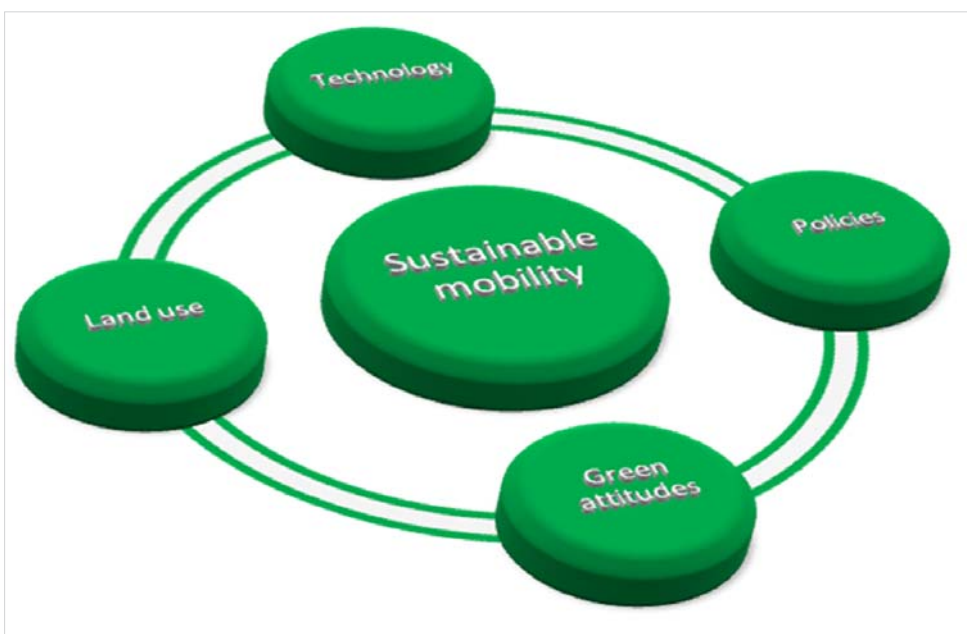
The Nijkamp Exagon Model (Table 1).

context, participation plays a crucial role, firstly, because it is the most effective means to gain, deliver and sustain benefits deriving i.e. from SM interventions (for an overview see Kleemeier 2000); secondly because some tendency for individuals is proved in adjusting their preferences to the average of the social group they belong to (Arentze and Timmermans 2005), thus sparking off a virtuous circle towards SM.

A particular attention has, thus, been recently paid to collective actions and participation, which, in the field of transport planning, clearly means the «involvement in planning-related decision making processes» (Brinkerhoff and Goldsmith 2000). The extent at which the involvement is considered is very important, because the level of public participation can be very different, comprising focus groups, citizens juries, study circles, community conventions, consensus conferences and planning cells (Rotmans 1998; Bell and Morse 2004).

The Holden Model (Figure 1).

The present paper analyses a panel of 37 European neighbourhoods, which are considered best practices for sustainability, in order to evaluate their SM strategies,



Indicator category	Indicator set	CODE	Individual indicator	New Technology	Land-Use	Green attitudes	Policies
ECOWARE	Energy	SM01	Renewable energies used for mobility (road-light, vehicles, etc.)	*			
HARDWARE	Built environment	SM02	Mixed use of land		*		
	Transport	SM03	Transport strategies for reducing car use				*
		SM04	Effectiveness and integration of Public Transport system				*
		SM05	Bicycle and pedestrian paths			*	
		SM06	Efficiency of private transport system (traffic calming, car free)				*
		SM07	Parking planning			*	
		SM08	Alternative fuelled vehicles	*			
		SM09	Density and urban form			*	
	FINWARE	Financing, incentives, subsidies	SM10	Funds for reducing car use (no car, green vehicles, bikes, public transport, ect.)			*
	Economic vitality	SM11	New jobs in the mobility sector			*	
ORGWARE	Local Governance	SM12	Involvement in policies and programs for sustainability			*	
		SM13	Accessibility to information and inclusion in decisional making			*	
	Partnership	SM14	Public-private partnership			*	
SOFTWARE	Education and sensitizing	SM15	Communication and information, assistance to users			*	
	Training and knowledge	SM16	New sensitizing jobs (even volunteers)			*	
	Innovation	SM17	Innovative approach to project and technology use			*	
CIVICWARE	Participation	SM18	Community involvement			*	
	Quality of life	SM19	Improvement of Quality of life (security, equity, air and noise pollution, comfort)			*	

Indicators (Table 2).

and specifically investigate the role played by participation and collective actions in enhancing and achieving SM. To do so, specific SM strategies and related indicators have been identified, according to two previous papers written by the authors (Maltese *et al.* 2011, Bolchi *et al.* 2011), and an empirical investigation on the SM strategies is presented. In particular, the empirical analysis underlines the role played by participation in enhancing SM and the commonalities and differences among the neighbourhoods.

### The sustainable mobility strategies

The identification of the Sustainable Mobility (SM) strategies and related indicators is motivated by two previous papers written by the authors (Maltese *et al.* 2011; Bolchi *et al.* 2011).

The literature review (see among the others, Gilbert *et al.* 2002; Gilbert and Tanguay 2000; Gudmundsson 2003; Litman 2003; Rassafi and Vaziri 2005; Euromobility 2008; Yigitcanlar and Dur 2010) and the analysis of the ex-post assessment models developed by Nijkamp (Nijkamp *et al.* 1993; Fusco Girard *et al.* 2003, Cerreta 2004; Cerreta and Salzano 2009) and by Holden (Holden 2007) allowed to identify the sustainable mobility indicators, which correspond to specific strategies undertaken by the neighbourhoods (see Table 1; for a detailed review on the SM indicators, see Maltese *et al.* 2011).

Specifically, the integrated vision of sustainability, found in the Nijkamp's Hexagon model, has been combined with the issues that Holden (2007) and Banister (2008) consider relevant for mobility: New Technology, Green Attitudes, Land-Use and Policies.

With reference to the conceptual framework suggested by the Nijkamp multidimensional model (Table 1), it is clear

that the level of sustainability achieved by a project, a plan or an intervention, depends on how many dimensions are considered and on the degree of their mutual relationships. The dimensions of the Holden model correspond to different attempts to achieve sustainable mobility: (i) technological innovations (mobility) to increase the efficiency of local public transport and reduce negative environmental impacts (but also to reduce the travel demand); (ii) land use to reduce distances; (iii) policy measures/strategies to encourage modal shift; (iv) green attitude and other technological innovations aiming at reducing the need to travel and the use of car (e.g. e-commerce, tele-working, etc.).

The matching of the Nijkamp and Holden models has allowed to make explicit the 19 results indicators, presented in Table 2.

The 19 SM indicators can, then, be grouped into two categories: "Direct SM indicators", and "Indirect SM indicators" (Table 3). The first have a direct impact on transport mobility, infrastructures and modal choice, i.e. include strategies for car reduction, parking planning, etc. The second foster SM throughout other strategies like mix land use, which, for example, primarily aims at creating more liveable places by offering a variety of activities, spaces and temporal rhythms of use, and leads to reduce trip lengths and cars use. Besides, the following three indicators concerning participation have been identified: (i) access to information and partnership; (ii) sensitizing; (iii) community involvement (they are mentioned in bold in Table 3).

The SM indicators have been measured with a score tied to a performance scale of values, which ranges from 1 to 3 (for example, pertaining Private transport efficiency: 1 = deficient performance – no traffic calming measures and car reduction systems have been applied; 2 = ordinary practice, which is the minimum acceptable performance – some traffic calming measures have been adopted; 3 =

good performance – the neighbourhood is a car free area). Once all the indicators have been measured, for each neighbourhood it was possible to investigate their role in achieving the SM degree, and to compare the SM degree of the 37 case studies, as it will be described below.

### The European best practices

Many new projects carried out in Europe and US have been promoted under the flagship of sustainability. Nevertheless, not all of them are really sustainable, as many are made with smart but expensive materials and artefacts or are using sophisticated energy technologies which, at the end, do not achieve on the whole life cycle the economy/efficiency goals that they promised (Bolchi *et al.* 2011). The sampling procedure has, therefore, privileged districts with a size over 1,000 inhabitants and explicitly designed to fulfil urban design criteria, where morphology and transport cope with energy requirements in the frame of sustainability.

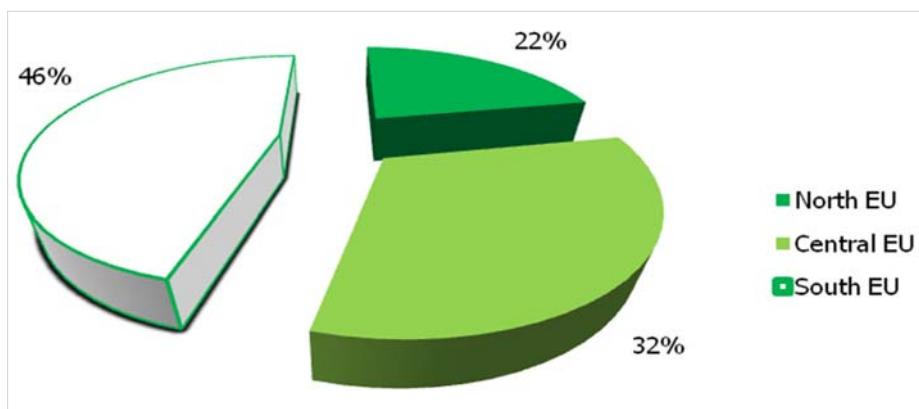
Following Bolchi *et al.* (2011), the paper focuses on 37 neighbourhoods, which have been chosen according to

<b>Direct SM indicators</b>
Transport strategies for reducing car use: car sharing; car pooling; collective taxi; park & ride; bike sharing...
Effectiveness and integration of public transport system
Bicycle and pedestrian paths
Private transport efficiency: traffic calming measures car free; ...
Parking planning (planning typologies: open air, underground, ....)
Alternative fuelled vehicles
Energy saving for mobility - road-light, - recharging vehicles
Energy saving for mobility - road-light, - recharging vehicles

<b>Indirect SM indicators</b>
Mixed use of land
<b>Access to information and partnership:</b> - Access to information and inclusion in decisional making processes - Public-private partnership
<b>Sensitizing:</b> Web site, forum and blogs, campaign for SM
<b>Community involvement:</b> - Involvement in policies and programs for sustainability

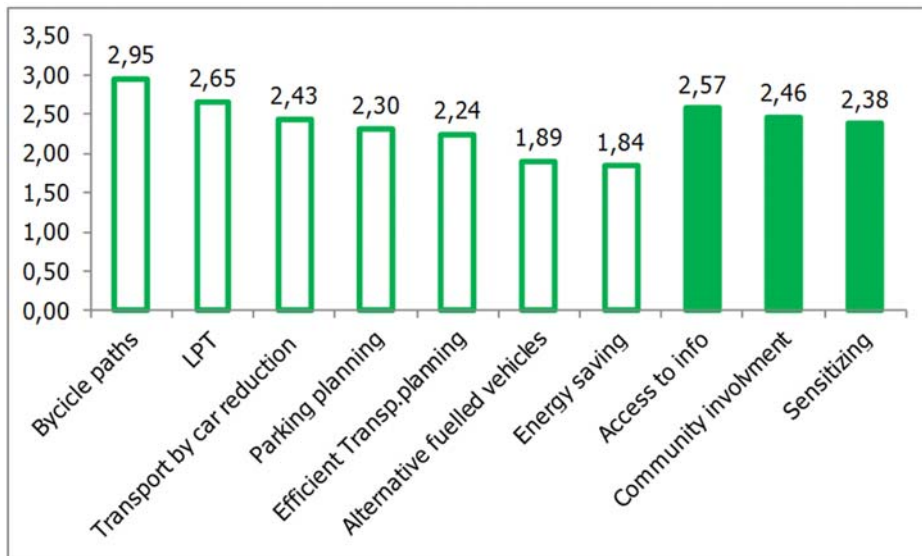
Direct and Indirect SM indicators (Table 3).

The sample of analysis - 37 neighbourhoods (Figure 2).



the following characteristics: (i) being acknowledged as “best practices” for sustainability; (ii) hosting more than 500 inhabitants; and being larger than 0.010 Km<sup>2</sup>; (iii) being mixed used, that is the residential area should not exceed 90% of the total area; (iv) hosting green areas for more than 0.3% of the total area). The 37 neighbourhoods are located in southern Europe (46%), central Europe (32%), and in northern Europe (22%) (Figure 2). The prevalence of southern Europe, and specifically, of Italy has been due to data availability.

The 37 districts are mixed use, indeed the residential area occupies, on average, about 70% of the total. The main functions of the neighborhoods are: residential areas, offices, wholesale and manufacturing activities, private and public services, green areas, and the number of functions different from housing, are, on average, three. Mixité plays a relevant role in SM because it enhances car reduction: living in neighborhoods with different functions (living, working, making use of recreational and commercial areas) reduces the need to use private cars. Mixed used districts, thus, differ from the



The sustainable mobility indicators (*average*) (Figure 3).

existing suburbia areas, which are often zoned (keeping separately residential areas from industrial and commercial quarters).

### The role of participation in achieving SM

This section is dedicated to the analysis of the neighbourhood's SM, and specific attention is placed to participation collective actions in enhancing and achieving SM.

As concerns the Direct SM indicators (Table 3; Figure 2), all the neighbourhoods have invested in pedestrian paths and bicycle lanes organisation, and make use of the bike transport mode. Specifically, green corridors encourage the use of walking paths and cycle paths. The local public transport management, by means of integrated network, plays a key role in all the cases. More than one third of the districts (35%) promoted car sharing, and Solar city-Linz uses collective taxi. About 30% are even car free. In GWL in Amsterdam, for instance, the 57% of tenants do not own a car, and the bike is widely used. About 70% of movements within the area does not use engine means, while 39% of tenants has a public transport year ticket, and 10% joined a car-sharing program. In Vauban, 50% of the inhabitants make use of teleworking and this promotes car-reduction.

Besides, the car pooling is adopted in Bo01, which offers an information system about the use of public transport. In the neighbourhoods where cars are allowed, the open air parking lots are often masked by tree planting; in Viikki even the bike parkings are masked. For most of the cases, the area for parking has been allotted to green areas, playground and kitchen gardens. Besides, a reduced parking

provision (i.e. 0.1 parking lots for inhabitants in Nordmannngasse; 0.5 parking lots for residential unit in GWL) concerns most of the cases, with the exception of the Spanish and the Italian ones, where no car reduction strategies have been adopted.

The Energy saving indicator, which registers the lowest score, suggests that the energy produced by the photovoltaic panels has been used for road-light and electric vehicles, and that about 22% of the the neighbourhoods use alternative fuelled vehicles (i.e. electric scooters and cars).

As expected, the districts located in northern Europe are more

sustainable, nevertheless, also the southern countries like Italy and Spain are improving their sustainable attitude, with differences according to the region of location. The European districts in the South, in particular, seem very reluctant to change their car-addicted lifestyle: no parking lots reduction is ever adopted.

Rather high values, ranging from 2.38 to 2.57, characterize the Indirect SM indicators (accessibility to information, community involvement and sensitizing). All the neighbourhoods adopted Agenda 21 and most of them have undertaken cooperation programmes between the public and the private sectors. Besides, a good level of governance is reached by all the districts, especially about the inclusion in decision making processes, and the access to information with the possibility for the inhabitants to play an active role (i.e. Bo01, GMW, Vauban, Valdespartera developed specific forum) (see among the others, Loukopoulos and Scholz 2004). The voluntary community involvement is rather significant: the neighbourhoods fostered an active and long-term participation of all the stakeholders (residents, city-users, local entrepreneurs, etc.), through forum, blog, etc.

Finally, the neighbourhoods have developed awareness campaigns (sensitizing indicator) to promote "sustainability" and sustainable mobility, which provide an information system about the use of public transport (see for example, the case of Bo01, Solar City and Viikki with a specific campaign for families); in S. Francesco an environmental education centre has been developed, and Villa Fastiggi promoted specific campaigns to sensitize the inhabitants on how to reach a sustainable behaviour, in order to limit the use of energy and the maintenance costs. Besides, Viikki hosts the Gardenia environmental centre, and Hammarby founded the GlashusEtt Centre that provides

information about a green lifestyle. Participation, community involvement and sensitizing are, then, investigated in the following case studies, four in northern Europe and two in Italy.

**Case- studies**

*GWL-Terrein*

GWL-Terrein is a Dutch car-free neighbourhood, 3 km far from the centre of Amsterdam, to which is well connected by tram and bus. About 40% of the citizens has a local transport pass, more than 70% uses non-motorized vehicles (there are 4 bikes every 3 citizens), and 60% of the inhabitants does not own a car. Besides, car-sharing is adopted by 25% of households and parking lots are very limited (0.2 spaces per residential unit), and primarily situated along the edge, outside the district area. Only emergency vehicles and freight distribution are allowed inside the quarter. Such a high level of SM, allowed by high density (more than 5



GWL-Terrein.

times the inner city density) and little distances, has been achieved even thanks to a great participation of the local residents, which have been involved since the first steps of the planning process in 1992 to subscribe a non-obligatory

Vauban.

declaration supporting the car-free nature of the district. Besides, public-private partnership has played a relevant role (i.e. the Agenda 21 Program).

A continuous participation is then represented by the umbrella association Koepelvereniging, which has been developed by the local stakeholders (companies and citizens).

The association aims to guard and encourage the green character of the district and its cohesion level. Two general meetings per year are held and other four (at least) technical ones are regularly organized. More-over, a website and a newsletter for inhabitants and other interested parties are provided.





Hammarby-Sjöstad.

*Vauban*

Vauban is a residential quarter of Freiburg, in Germany, with a very close, frequent, efficient and effective public local transport (less than 500 m far) that hampers private car use and ownership. Even the hotels (in all the Freiburg region) enhance SM by providing a free transport pass to their customers.

Parking lots, whose price has been increased, are outside the neighbourhood and close to the public transport stops, while cars are admitted at 5 km/h speed only for picking up and dropping off deliveries, emergencies or car-sharing. Bicycles are very much used and the bike-lanes very efficient.

About 20% of the movements occur using the Local Transport System, and about 65% non motorized vehicles. The roof of the parking site of the supermarket, settled just outside the Vauban neighbourhood, accommodates a photovoltaic system, able to provide electricity to the district.

Car sharing (12 cars, 5 of the them solar-fuelled) is also available and connected to public transportation both in exchange-parking places and tickets, and about 46% of the citizens has got the membership. Even in this case, community involvement in the decision making process has started at the beginning of the district planning, which adopted sustainability principles.

The Forum Vauban now Stadttei Vaubanl, in particular, has been created in order to maintain contacts among residents, organize workshops and newsletter, and plan a shared and sustainable vision of the quarter, starting from the car-reduced nature of the site and of the belonging to it. A strict relationship is also established between Forum Vauban

and the Vauban Committee, specifically created in the Freiburg municipality, which allows coordination in decision making and problem solving. Finally, the Agenda 21 Program has been joined.

*Hammarby – Sjöstad*

Moving to Sweden, and to Stockholm in particular, an interesting example is represented by Hammarby – Sjöstad, built on the lake in the South of the city (for a review on this district, see Troglia 2010). This district has been planned with the purpose to reduce the need of car at 20%, approximately. Specifically, it has been pursued a high density in order to lower the private car-dependency, and to attract different private and public functions by enabling a more efficient use of resources; besides, the quarter is well served by an effective public transport with bus lanes, light railways and free boats. In addition, many km of safe and accessible networks of bike lanes and pedestrian streets are provided and it is possible to join bike-sharing, car-sharing (with dedicated parking areas) or car-pooling programs, with alternative-fuelled cars (about 25% expected).

Parking is allowed inside the district, with a 0.7 parking lot per dwelling standard, a bit higher than that of the inner city (0.5), but very expensive; the congestion charge in Stockholm and the parking pricing make very difficult for the residents to use their car. Interventions on freight distribution have lowered emissions by 90%.

The planning process has involved many interested players and levels of government (citizens, companies, institutions and public administrations), even for the realization of new rail and road infrastructures and for integrating amenities, public and green spaces and transport facilities in a well



Serra Gardenia, Viikki.

designed mixed use of land. For achieving SM, the community has been involved and well informed about targets and options: higher levels of SM are expected in the future and a strong sensitizing campaign is carried out. The GlashusEtt Centre has been created in order to provide a place for meetings and conventions and any information about a green lifestyle, that is essential for achieving SM in the neighbourhood. Other cultural centres, Fryshuset and Kulturama, are real meeting places that foster socialization and sense of belonging to the community. The Agenda 21 Programme has been adopted in this neighbourhood, too. Concerning planning models, a specific Hammarby Model for the management of every sustainability aspect has been developed; among the other issues, it focuses on the modal shift for accessibility to the neighbourhood, and on the drastic reduction of waste transport, replaced by an automated waste collection system.

#### *Viikki*

Within the Scandinavian countries, a best practice in sustainability is provided by Viikki, an ecological neighbourhood that is well connected to the centre of the Finnish capital Helsinki.

It is a large and low-density district with a significant mix of functions (education at every level, retail and residence,

social and recreational facilities) and different income users. The aim of reducing car use is pursued by an enlarged bike lanes and pedestrian street circuit, that is well separated from roadway, and a reinforced local public transport system. Furthermore, cars use is allowed at a very slow speed and strongly hampered (for example, there is a limited provision of parking: 1-car parking space for 80 mq of residential area). Bike and car parking are hidden by green barriers.

The sustainability idea that inspired the project is "nature oriented": street lighting is wind powered and a nature conservation area is adjacent to Eko-Viikki, with an ecological recreational park for the young people.

As concerns participation, it starts from the cooperation between all the interested parties: citizens, university, local administrations and companies. Public - private partnership has been very important like joining the Agenda 21 Program. There are, then, many public spaces available for the inhabitants: two of them are specifically planned as socialisation centres. The Korona information centre is a new building of the University of Helsinki that houses the Science Library and the Public Library, thus becoming a meeting place for students and the local community. Gardenia centre, on the contrary, hosts an environmental education centre, relax and gardening centre, and a kids-area; it is also a meeting, exposition and info place, where people can meet and discuss.



The two of them are often the place for community convention on sustainable issues: from the technological aspects of energy-saving building-system, to waste management rules, and SM strategies to be discussed and approved.

#### *Villa Fastiggi*

Villa Fastiggi district is located in the city of Pesaro, in Marche region in the Centre of Italy. The neighbourhood is surrounded by industrial, business and agricultural areas, and it has been planned with specific sustainable characteristics. Separated bike lanes and pedestrian streets are organised in an inner circuit that allows people to easily choose walking or biking instead of car driving. The quarter is connected by a bus line to the LPT of the city and cars are forced to go at 30km/h.

The participation of the community has firstly been focused on energy saving and decisions on buildings. However, since the involvement on every option is long-lasting, even SM strategies are now commonly shared and chosen like, for example, the realization of some car-free areas inside the quarter, and of underground private parking lots, to be reached using a special parking ramp. The district has joined the Agenda 21 Program, thus, improving the public - private partnership.

#### *Parco Ottavi*

Specific SM strategies have been discussed in the project of Parco Ottavi district, in Reggio Emilia, north east of Italy. The aim was to reduce noise and air pollution. A well connected system has enhanced an intermodal system providing alternatives to car use: bikes, metro, car-sharing, train. Bike sharing is also available, like in all the rest of the Emilia-Romagna region, by using a single common ticket. Services and green areas are accessible by bike or foot, squares and streets are open and off-limits for cars, except for emergency vehicles, during the day, and closed for safety during the night, like a gated community.

Even at the boundaries, traffic calming measures are adopted and public and private parking lots are accessible from an outer street that runs around the district at a lower level. A light railway is also supposed to connect the quarter to the centre of the city and to the other towns of the region, together with 8 km of bike lanes.

Pertaining the mixed use of land, it is worthwhile to notice that Parco Ottavi has been planned placing the most of services less than 500 m far. for the majority of residents. The same will be for the stop of the light railway and for other services, which are expected to be at a small walking or cycling distance.

Therefore, density will be higher around these attractors, while there will be a lower density moving out of the quarter.

Finally, energy saving is also applied to street lighting. All the community has been involved in the district planning, especially for the identification of weaknesses and problems to be solved, and even for choosing among different SM options; the discussion has always taken place even with technicians and architects. The Agenda 21 Programme has been adopted fostering the public-private partnership.

#### Conclusions

This article explores the link between participation and SM at the neighbourhood scale, specifically, focusing on the role and scope played by citizens' participation and public-private partnership in urban and transport planning. According to the former authors' work (Maltese *et al.* 2011) green attitudes, concerning citizens' lifestyle and active involvement, do appear very important: the intention towards SM is unavoidable.

If it is quite clear that a "strategy packing" is highly recommended, with a mix of push and pull measures to discourage private car use; nothing could be made without the voluntary acceptance of some "green rules" inside the neighbourhood's community.

Furthermore, not only a good mobility planning, concerning land use (i.e. infrastructure provision, density and mixed land use) and policies (i.e. regulation and traffic calming measures), but also a high quality and accessible public transportation system is expected, in order to be successful in the sustainability of the district's mobility plan.

In the current situation, marked by great uncertainties, it appears necessary to make as many stakeholders as possible to share the SM goal; in particular, there is a widespread acceptance that integrating decisions at different organizations' level, institutions and administrations, are crucial for achieving SM. The involvement and sensitizing of the whole community is, thus, strongly advised and, in many cases, sharing the districts' experiences in a partnership was a key-factor to make the initiative succeed.

Actually, participation can reduce the contrast between public and private interests concerning SM, which, it is worth remembering, has to be achieved at both individual and collective levels, thus making administrations much closer and respondent to the citizens' demand. But participation is not just a mean, it has to be considered a goal itself since it contributes to the building of the sense of belonging to the community. If a well-designed participation leads to a better and more accepted planning scheme, by the avoidance or, at least, the reduction of the conflicts, it also removes delays and favouritism during the planning and realization of the urban project. It is also true that the community involvement can improve the level of innovation of the project itself.

It is possible, then, to identify a mutual link between participation and SM: if participation, is, indeed, essential to decide, for example, about a car-free area (see, for example, Vauban or GWL Terrein), SM can contribute to the participation, too, since it allows people to move by foot and bike, fostering their meetings and interactions. Furthermore, the mixed use of land recalls the existence of well connected and accessible public spaces (from the central square of Villa Fastiggi to Gardenia info centre, in Viikki), and fosters the sense of community belonging.

Last but not least, the needed access to information about SM decisions is important for options' communication and evaluation, thus leading to better decision results. That's the reason why it is very important that the participation – that is communication and access to information, sensitizing and community voluntary involvement – should be long lasting, maybe supported by an *in-itinere* assessment. In this sense, participation should be considered as a process instead than an isolated moment in the district life. Since participation has recently become so important, with new methods like the virtual involvement of many different stakeholders, even mobility planning theory should refresh its own skills and tools. Finally, since the context is also important for new developments, it should be useful to look at commonalities and differences among the different Euro-pean areas.

As regards the national scale, the analysis has pointed out, as expected, the primacy of the north European countries; nevertheless, also the southern countries like Italy and Spain are improving their sustainable attitude. The European districts in the South, in particular, seem very reluctant to change their car-addicted lifestyle: no parking lots reduction is ever adopted. Nevertheless, especially in Italy, it appears more frequent to adopt energy saving measures for buildings, while SM is considered very important but even more difficult to achieve. Within this context, no surprise if even the participatory processes are less focused on strategies aimed

Neighbourhood	City/Province	Country
Gwl	Amsterdam	NL
Ecocity Bad Ischl	Bad Ischl	AT
San Pietro	Bologna	IT
Casanova	Bolzano	IT
Violino	Brescia	IT
San Rocco	Faenza	IT
Giuncoli	Firenze	IT
Amschl	Freiburg	DE
Vauban	Freiburg	DE
Rieselfeld	Freiburg	DE
Falkenried-Terrassen	Hamburg	DE
Hafencity	Hamburg	DE
Kronsberg	Hannover	DE
Viikki	Helsinki	FI
Solar city	Linz	AT
Gmv	London	UK
Bo01	Malmö	SE
Lunetta	Mantova	IT
S.Francesco Biopep	Nonatola - MO	IT
Cognento	Modena	IT
Borgo delle corti	Modena	IT
Riem	Monaco	DE
Pilastredet	Oslo	NO
Fairfield	Perth	UK
Villa Fastiggi	Pesaro	IT
Parco Ottavi	Reggio E.	IT
Parco Plinio	Roma	IT
Lunghezina	Roma	IT
Nieuw Terbregge	Rotterdam	NL
Malizia	Siena	IT
Hammarby	Stockholm	SE
Burgholzhof	Stuttgart	DE
Villaggio olimpico	Torino	IT
Ecocity Tübingen	Tübingen	DE
Ecocity Umbertide	Umbertide	IT
Nordmangasse	Wien	AT
Valdespartera	Zaragoza	ES

The European sustainable neighbourhoods (Table 4).

at discouraging car use or ownership. Therefore, it can be stated that SM strategies in Italy are much more “top-down” if compared to the “bottom-up” proposals promoted by the citizens in the North (see, for example, Hammarby – Sjöstad or Vauban); furthermore, even the planning processes are mainly guided by technically educated planners more than by citizens.

The idea is that participation is more used as a mean for reducing conflicts (and for creating consensus) rather than for collecting new more user friendly response to demand needs and expectations.

Being these the first characteristics of the *status quo* of the Italian “green attitudes”, the only way to proceed is to manage with land use; a great work is still to be done on people’s lifestyle. Recognizing that car, as a primary mobility mean, is ecologically unsustainable, and that, in presence of very decentralized urban areas, car dependence is a difficult process to reverse, the only solution will require

agreement and participation from all the stakeholders: people selecting alternative modal choices; companies creating alternative-fuelled vehicles, organizing car pooling or car sharing services; administrations to provide an effective local transportation system, a good infrastructural network and any measure useful for making car less convenient than the other modes.

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### Image sources

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