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# Blueprints for Resilient Communities - Micro-comprehensive Sustainability Planning in Baltic Sea Urban Local Areas

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## ABSTRACT

Twenty-six common local urban townscape areas were studied in five Swedish, two Russian, two Latvian, one Polish and one Danish city – altogether 11 Baltic Sea Cities. A method was developed during 10 years for multi-dimensional assessment of the sustainability status of the local communities studied according to the United Nations *Habitat-agenda*. Seven universal key resources were thus analysed for each local area. *Physical resources* concerned *e.g.* energy, water and land use in the local community. *Economic resources* comprised the typical value of houses, equipment, informal activities, the rents and costs in a community. *Biological resources* were *e.g.* the entrance-, courtyard-, mid-scale- and large-scale green structure accessible to inhabitants. *Organisational resources* concerned functional aspects like transport, food service, child care and community communication in the local area. *Social resources* were – like social capital – the relations between inhabitants in their roles as dwellers or as representatives of clubs or organisations. *Cultural resources* were defined as the degree of awareness and value of site history, traditions, ceremonies and local arts in the community. *Aesthetic resources* were the valuable visual, auditive or other sensory input of value to the inhabitants.

From the analysis of strong and weak points of the seven resources - a contextual micro-comprehensive plan for sustainable community development could be outlined for each local area, comprising three components: universal, townscape type specific and unique place specific part-strategies. From our empirics we could also conclude that for each community – a *key change factor* mostly existed – either a *specific problem* or a *specific vision* for positive change. By addressing the key factor, a broader change described in the micro-comprehensive plan, towards a more sustainable community development, could successively be introduced.

**Key words:** Urban planning, Habitat agenda, Community resources, Sustainability

# 1 INTRODUCTION

The quest for transforming present affluent cities to more resilient living systems accelerates. New strategies typically combine a number of measures, *e.g.* substitution of fossil to renewable energies, dematerialisation of urban material flows, reinforcing public transport, transformation of urban structure and implementing sustainable life-styles in local areas in urban and rural communities (Gaffron et al. 2005; Berg, 2006; Hallsmith, 2003; UNCHS, 1996). But still the proposals rely distinctly on universal solutions – the same planning is supposed to be relevant all over the cityscape. This is surprising, given established experience in architecture and landscape architecture, which stress the uniqueness of places (Day, 2002; Benson and Roe, 2000; Norberg-Schulz, 1980; Alexander *et al.*, 1977; McHarg, 1969; Geddes, 1904; Mumford, 1938). We thus now need to nuance current planning practices – both to be able to extend into meaningful long-term radical visions (Moffat, 2003) but also to be able to develop local area plans, tailor-made to fit the place's unique properties and potential (Berg, 2004). Such local planning procedure is the objective and focus of this paper.

## 1.1 Background and Objectives

Quantitative Indicators are often used as universal tools for assessing how cities and regions cope with demands for less energy consumption, more efficient infrastructure and more resource efficient economic systems. This will, however, have to be supplemented on the local urban level with ways to understand the local context. The key role of local communities for developing urban sustainability has been discussed as an international phenomenon by Etzioni (1993) and Putnam (2000). The role of neighbourhoods in urban planning was scrutinized for Swedish conditions by Franzén & Sandstedt (1993), Falkheden (1999), and theoretically by Berg and Nycander (1997). A method to analyse and explain the significance of context for creating local sustainability, was earlier reported for three common townscape type areas in four Swedish cities by Berg (2004). The main objective of this paper is to take the method from the latter paper further, and propose a complete procedure for finding and proposing contextual sustainability strategies for local areas. In this way the otherwise universal city planning can take more efficient decisions at the right moment and more appropriately adapted to unique local communities. The end goal is to give planning more powerful tools to implement necessary changes towards sustainability.

Our method has been applied to 26 local communities in 11 cities in the Baltic Sea Region (BSR) and this is the first paper describing the entire procedure, illustrated with a selection of examples from our large material. We have therefore developed our place- and situation analysis in a number of relevant dimensions further. We have developed our procedure of assessing the strengths and weaknesses of places and finally developed a procedure for proposing changes, relevant to each local area.

## 1.2 Our starting point – The Habitat Agenda

The preconditions for sustainable habitation has been discussed and developed on an international level during more than 30 years. The first UN conference on habitation was held in Vancouver 1976 (Habitat I), which at that point focussed on the acute problems with homelessness and slums in 3$^{rd}$ World Urban areas. During

the next conference two decades later in Istanbul (Habitat II) the focus was still on the consequences of urbanisation, on equity and slum upgrading, but this time *sustainable urban development* was also brought to the fore (UNCHS, 1996). In the key document prerequisites for sustainable urban development were thus highlighted, while pinpointing several key dimensions, mandatory to consider, in order for achieving long-term radical change towards sustainability in human habitation:

> The quality of life of all people depends, among other economic, social, environmental and cultural factors, on the physical conditions and spatial characteristics of our villages, towns and cities. City layout and aesthetics, land use patterns, population and building densities, transportation and ease of access for all, to basic goods, services and public amenities have a crucial bearing on the liveability of settlements. […]. (UNCHS, 1996, Habitat-agenda, chapter II, section IV:30).

The Habitat agenda further emphasised the need to involve inhabitants and actors on the local level to be able to address the site and situation specific properties in the development plans of the city:

> Sustainable human settlements' development requires the active engagement of civil society organizations, as well as the broad-based participation of all people. It equally requires responsive, transparent and accountable government at the local level. Civic engagement and responsible government both necessitate the establishment and strengthening of participatory mechanisms, including access to justice and community-based action planning, which will ensure that all voices are heard in identifying problems and priorities, setting goals, exercising legal rights, determining service standards, mobilizing resources and implementing policies, programmes and projects. (UNCHS, 1996, The Habitat-agenda, chapter IV, section D.3, § 181).

Our research group has, during the last ten years, hence developed and tested a method for producing a site-specific local planning procedure, based on the intentions of the Habitat-agenda (Berg, 2004; Granvik, 2005). The dimensions mentioned in the first quotation above, were therefore operationalised into a framework of *seven universal key resources,* relevant to all conceivable local human habitats. The exclusive performance of these resources, however, depends to some extent always on the site and situation properties of the place, why we here stress the need for a unique sustainability plan on the local level.

Our hypothesis was that such a plan should always contain a combination of general, townscape-type specific and site specific strategies. Comparative case-studies will thus be expected to reveal strengths and weaknesses that are common *all residential areas*. We can also expect that some results will be similar in areas of the same *townscape type.* Those are areas with the same general characteristics, *e.g.* city centres, small-house areas near the centre, multi-family house areas at distance from the centre or small communities outside cities. Finally, we can expect that there are some *unique properties of each single place.*

## 2. METHODS

### 2. 1 Selected cities and townscape types

Two townscape types were studied in totally 22 local areas in five Swedish (Uppsala, Göteborg, Örebro, Strängnäs and Hällefors), two Russian (St Peters-burg and Petrozavodsk), two Latvian (Jelgava and Livani), one Polish (Gdansk) and one Danish (Copenhagen) Cities (Figure 1). Additional studies were carried

out in a third townscape type in four of the Swedish Cities, which are reported only briefly in this paper.

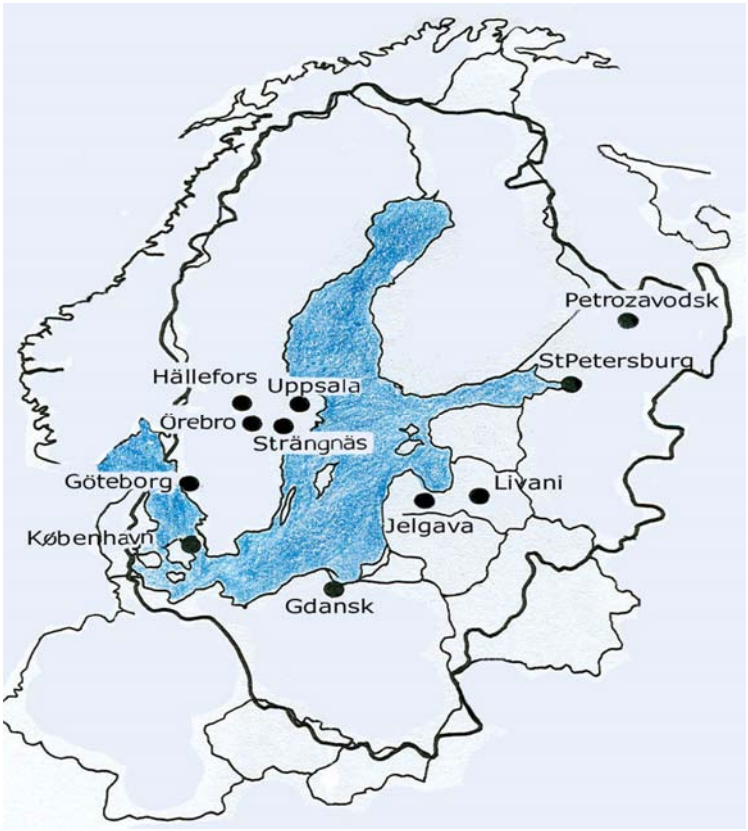


Figure 1. The 11 cities were selected *strategically*. They represented cities of different size, economic strength, where the research group had earlier co-operation with planners, researchers and communities in research and education programs in the Baltic Sea Region (BSR – black line).

There were three large cities (StPetersburg, København and Göteborg), five mid-sized cities (Uppsala, Örebro, Gdansk, Jelgava and Petrozavodsk) and three towns (Hällefors, Strängnäs and Livani). The size is of limited importance in this paper, but the differences can be seen in the results – especially for small towns where differences between townscape types sometimes are smaller than in larger and mid-sized cities.

## 2. 2 Selection of townscape types

The two main townscape types were *small house areas on small plots* at short or moderate distance from the city centres and *multifamily houses* mostly at greater distances from the city centre. A summary of the townscape types is shown in Table 1. Important criteria for the chosen townscape types when they were chosen in Sweden was that they should represent the habitation of a significant part of the population and have a history.

Table 1. General characteristics of the two chosen townscapes in the BSR cities and towns

| *Townscape Type* | *Characteristics* |
|---|---|
| ***Small houses*** | - Close to the city centre and with a history of at least 50 years<br>- The original houses were 50-80 $m^2$ on 400 – 1000 $m^2$ plots<br>- The housing area gives habitation for a significant part of the population |
| ***Multi family houses*** | - At larger distances to the centre and with a history of at least 30 years<br>- The houses include mainly average sized rented or owned apartments<br>- The housing area gives habitation for a significant part of the population |

The third type of housing area, that we report on very briefly in this paper, is somewhat exclusive for war-free Sweden – since it was erected just before, during and just after WW2. At that time the first modern three-storey houses for rent with large green inner court-yards were erected – as the small house areas they were also built rather close to the city centre.

In Sweden the small-house areas were built with advantageous governmental loans for families with small incomes starting from the 1930-ies. They were partly self-constructed and deliberately planned near larger work-places like shipyards, brick-works and other factories. In the Baltic States and Russia the houses were often built after WW2, also partly self-built, for worker families with a small income and close to industrial areas and agriculture. Small house areas in Sweden are popular with a high technical standard. Small house areas in Latvia and Russia have developed from the summerhouse - *Datja*-culture. They are frequently described as worn down areas with a low technical standard and a poor population (Granvik, 2005). The multifamily houses in Sweden were not - as in the east and south – integrated with industry expansion from the 1960-ties. Instead they were built to handle the great urbanisation wave between 1960 and 1975 (*the million program areas*). These housing areas have been described as socially and economically problematic but with a great potential for change. Eastern multifamily house areas have a low degree of segregation and a reasonably high technical standard (Lavrov, 2003). All the selected area types, had a 40-60 year history, which is valuable for assessing its function over time and generations (figure 2).


Figure 2. Examples of chosen sites in Western and Eastern cities and towns. Uppsala: Kungsgärdet small house area (A); Gottsunda multifamily-house area (B). Selected sites in Petrozavodsk, Russia: Perevalka small house area (C); Drjevlanka multi-family house area (D)

## 2.3 Method triangulation and research organisation

The 26 case studies were monitored through method triangulation (Stake, 1995) with enquiries to residents, interviews with residents, sometimes with planners and site managers and through observations on site. In the Swedish cases there were often a good statistical material and in the eastern cities, general statistics for whole cities were studied with the help of local teams of planning researchers. The core of the data collection was the enquiries, which were distributed to a representative selection of respondents in the residential areas (about 50 enquiries were collected at each site). The enquiry questions and answers were translated to the respective language of the respondents and back to English and distributed to all local areas with the help of local research teams. The teams consisted of one senior planning researcher, one PhD-student and two or more university students at each site helping with distribution and collection. For the Swedish cases the authors constituted the practical research team. During the initial part of interviews one or more of the authors were present with interpreters to synchronise the work in all the local areas in all the cities in all the countries. The interviews were transcribed and translated to English and analysed by the authors. Observations of local sites were conducted during at least two occasions for each site at different seasons together with the local research teams.

## 2. 4 Seven key resources as a sustainability framework

From the policies of the Habitat agenda (UNCHS, 1996) we have developed a framework of seven key *resources*, directly or indirectly affecting community sustainability (Berg, 2004; Granvik, 2005). They constitute a framework (table 2) for choosing relevant variables, for structuring questions to informers, for organising data of the local cases, for SWOT-analysis of cases, for choosing general, townscape-type specific and place specific results and finally in the formulation of local sites' sustainability strategies.

Table 2. Seven local community resources with examples and numbers of measured/ estimated variables (Var). The resource categories constitute the framework for investigation of the two (three) townscape types in eleven BSR Cities and Towns. Additional background variables were 14.

| *Resource Category* | *Examples* | *Var* |
|---|---|---|
| ***Physical (P)*** | Clean water, air, energy, matter and soil available to the residents of the local community. | 17 |
| ***Economic (E)*** | Houses, roads, tools, knowledge and informal economic services of importance to the residents in the local community. | 11 |
| ***Biological (B)*** | Species, biotopes and ecosystems in natural and cultural landscapes within or closely connected to the local community. | 15 |
| ***Organisational (O)*** | Community structure, land-use structure, infrastructures, services, formal and informal rules connected to the local community. | 16 |
| ***Social (S)*** | Relationships and local co-operation within the community. Moving and staying rates within the community. Health status and skills of inhabitants used in the local community. | 20 |
| ***Cultural (C)*** | Knowledge of older and younger history and cultural patterns. Existence of fine arts, traditions and ceremonies, in or of significance to the local community. | 13 |
| ***Aesthetic (A)*** | Sensuous (e.g. visual, auditory, olfactory, tactile and kinesthetical) impressions, influencing individuals' mood and atmosphere in a community. | 8 |

Data were collected from the 22 (26) sites through interviews, enquiries, observations, studies of statistical records, written sources and maps. The data was sorted into background material and the seven resource categories. In Table 3 a selection of variables related to the seven resources are listed with an explanation on their relevance to sustainability.

Table 3. Examples of Variables within seven resource categories and their relevance to sustainable function of local communities. R=Resource category according to table 2. hh=households

| *R* | *Variables* | *Explanation and relevance to sustainability* |
|---|---|---|
| **P** | 1. % Renewable heat/hh | Exchange of non-renewable fossil fuel to solar based energy. |
| | 2. Living area/ capita | Affects the heat, electricity and material consumption/ capita |
| | 3. Liter of water/ cap/ day | Affects eutrophication of water and the need of water cleansing |
| | 4. % hh drive car less | Affects the need for non-renewable fuel and atmosphere quality |
| **E** | 1. % Dwelling costs | The share of income used for dwelling affects the freedom to act |
| | 2. % Self construction | Residents' own work affects the long-term dwelling costs |
| | 3. % Informal economy | Can add to formal incomes, which can contribute to saving or living |
| **B** | 1. % hh with garden | A garden give food, sensory input, recreation and health |
| | 2. % access to forest | Forests provide walking space, relaxing, clean air and health |
| | 3. % access to park | Parks provide tranquillity, personal mobility and health |
| **O** | 1. % public transport | High access to bus, trams and train reduce $CO_2$ emissions |
| | 2. % access to shop | Local shops are natural meeting points for social interactions |
| | 3. % access to council | Community council can solve problems and promote local visions |
| **S** | 1. Turnover rate | The moving rates affects the stability and security of a community |
| | 2. No of recognitions | The recognition of neighbours enhance local area trust and safety |
| | 3. % helping neighbour | Human support enhance local economy and the spirit of community |
| **C** | 1. % know place history | Place knowledge promote a sense of meaning to residents |
| | 2. % likes architecture | Attractive buildings signals that the residents are valuable |
| | 3. % local culture | A local culture adds meaning to local places for inhabitants |
| **A** | 1. % visually attractive | Visually attractive places add to the meaning of places |
| | 2. % auditory attractive | Auditory attractive places add to the meaning of places |
| | 3. % good micro-climate | Well designed courtyards and green structure adds to comfort |

## 2. 5 Setting of target values and performing SWOT analysis

The data was then analysed to find the site's specific strengths, weaknesses and threats (SWOT-analysis) for all the seven resources according to the Habitat Agenda. To achieve this all actual or estimated values were compared with the chosen target values (benchmarking), which was set from best practices or with other criteria determining what is a reasonable goal for the resource variable. For the physical variable *energy use per $m^2$ living area* for instance, the target value was set according to what is possible to achieve – both for small houses and for multifamily houses in current research and development. The target value was 90 KWh/$m^2$ and has been achieved for several housing types in several examples in a mid-Swedish climate. Target values were set for most of the 114 variables except for some of the socio-economic background variables – since it is not reasonable to connect for instance a certain *education level* to sustainability.

## 2. 5 Transformation of data and construction of site strategies

The primary results could then be transformed into a normalised scale of four value categories, irrespective of the original quantity, from 0 - 4: the resource variable was not at all considered /poorly planned (0); the resource variable had just started to be used /implemented (1); the resource variable was significantly used but can be substantially more utilised (2); the resource variable was strongly used but not at its maximum (3), the resource was used to its maximum (4). The transformation was not necessary for comparison of measured values and target values – but it

was done to make some comparisons easier to illustrate – especially to compare sustainability patterns composed by many different variables.

Strong points were thus identified, which are local area characteristics that should be *protected* for the future. Weak points were identified, which was the basis for *change* and which could be *strengthened*. Special key problems or possibilities were identified for each area. The results from this assessment, provided the background material for constructing the *micro-comprehensive plan* of each local area sustainable development. Each local plan consisted of three parts: one *general part* which could be used for several and sometimes for all the cases; one *townscape type specific part* which was pertinent to all cases of the same common type; and finally one *site-specific* set of recommendations and plans which was pertinent only for the chosen site.

For each local plan also the *key changing factors* and the *key changing actors* were identified. The first refers to site-specific problems of visions, that was typically identified by residents and which – we suggest – could be the starting point of a much broader commitment to and implementation of sustainable community development. Our data indicated that such key changes seemed to empower the local community to make them more open to other changes – *i.a.* initiated by the municipality to save resources, protect the environment or improve the health of the citizens.

## 3. RESULTS

### 3. 1 Selection of sustainability variables and delimitation of local area plans

The whole material included 114 variables for each of the two townscape types for each of the 11 cities (2508 data points). They were divided into seven resource categories – on the average 14 variables for each resource – and one category of data with socio-economic background information. For the purpose of this paper we have selected a number of variables and a number of local areas to illustrate the results of our method.

The final plans for all 22 local areas could not be confined in this one paper. We will therefore give two examples of such local area plans - each containing (1) a universal part, (2) a townscape type specific part and (3) a place-specific part with unique plans and recommendations. The universal part will contain examples of strategies in seven key areas, that is commonly needed in all or most of the cases we have seen and which can be expressed in absolute terms for all areas. The townscape-specific part of the local area sustainability plan contains strategies which is useful in all local areas with similar properties: in this case *small-house areas* and *multifamily house areas* as they are defined and delimited in this investigation. Also the townscape-specific proposals will relate to the seven dimensions of the Habitat agenda. Many of the changes needed on the universal and townscape-specific levels, will have to be initiated and implemented by actors outside the local community. In this respect these parts of the local plan is a nuanced manual for decision-makers in municipalities, housing companies or even on the government level.

Finally the place-specific strategies will have its starting point in the data and observations describing the unique properties of each individual place, where its very site specific strengths and weaknesses are the basis for proposals. On this level also a typical *key issue* are identified, which are single place-specific

problems or visions, often mentioned by interviewees or often noted in enquiries. This part of the plan will also contain elaborations on the specific problems of specific places. As this is done the quantitative results will be modified and sometimes even receive an interpretation that is contrary to the townscape specific conclusions.

### 3. 3 General results from local area analysis

Several basic *socio-economic variables* confirmed some general expected differences between typical Swedish/Danish and Baltic/Russian/Polish households. The numbers of persons per households, the share of households with children, the average dwelling time were all lower in the Western countries, while the numbers of cars per capita were higher (Tab. 4). The table also displayed some differences between Swedish townscape types, where particularly the differences in dwelling time and cars per capita is important for local sustainabililty.

Table 4. Average differences in socioeconomic variables between Western (Swedish+Danish, N=6) and Eastern (Latvian, Russian and Polish, N=5) Cities. hh= Households; %=per cent households; numbers in brackets are standard errors.

| *Townscape type* | Persons/ hh | % with children | Dwelling time | Cars/ capita |
|---|---|---|---|---|
| ***Small houses (Swedish)*** | 2.3 (0.1) | 43 (6) | 18 (1) | 0.41 (0.03) |
| ***Multifamily houses (Swedish)*** | 2.1 (0.5) | 33 (2) | 7.6 (1.1) | 0.27 (0.03) |
| ***Small houses (Eastern)*** | 3.2 (0.1) | 75 (2) | 25 (2) | 0.14 (0.03) |
| ***Multifamily houses (Eastern)*** | 2.9 (0.5) | 74 (1) | 24 (3) | 0.14 (0.03) |

#### *3.3.1 General results on physical resources*

The share of renewable energy in heating is not sustainable in the BSR and transportation is far from sustainable. The average energy needed for heating houses is too high in all of the BSR cases. The living area is in general within the limits in all BSR cases and in the east even sometimes too low to be socially sustainable. Waste sorting is in general too low in the east, whereas water consumption is unsustainably high in the west. Regional food is substantial in the east but very low in Sweden. If we look at attitudes to various eco-technologies, the oral acceptance of such technology is massive in the west for a number of variables, and systematically somewhat weaker in the east. Acceptance for driving cars less is much lower in the east than in Swedish local areas. Examples of strong and weak points are displayed in table 5. They will later constitute the basis for *general strategies* of local areas.

#### *3.3.2 General results on non-physical resources*

For economic resources a good example was related to variables on the inhabitants' preparedness to manage *local common property* and to *exchange local area services, goods and products*. This was in general rather low (40-50%) for both housing area types for all cities for all countries.

For biological resources an example of a general result in all cases, was that it was of great importance for dwellers to be able to *grow flowers/vegetables* in their residential area, which was rather high (70-90%).

For organisational resources one interesting result was that most respondents in all cases regarded their access to public transport was good (75-80%), although observation on site contradicted this view: multifamily house area residents had in general much better access to buses, trams or trains than dwellers in small houses.

One general strong point on social resources concerned the attitudes on *the importance to recognise your neighbours,* which was high in most cases (80-90%), whereas the actual *co-operation* with neighbours often differed between housing types and was much lower for a number of variables. A similar pattern could be seen for cultural resources, where most respondents thought that the local area culture was important (80-90%) but they had different views in small houses and multifamily houses on *what kind of cultural aspects* were important (see below).

Table 5. Selected strong and weak points in general, for different physical aspects of sustainability, according to local community surveys in Swedish (10) and Eastern (10) local communities. Mean values of 10 cases in figures. Strong and weak refer to the sustainability performance of the variable. "Strong" is related to a clear ambition and real implementation to reach the goals.

| *Variables on physical resources* | Swedish Areas | | Eastern Areas | |
|---|---|---|---|---|
| | **Strong** | **Weak** | **Strong** | **Weak** |
| ***1.Share of renewable energy for heating/hot water*** *(Target value: 100%)* | 53% | | | 30% |
| ***2.Share of renewable energy for transportation*** *(Target value: 100%)* | | 11% | | 8% |
| ***3. Average energy / $m^2$ living area*** *(Target value: 90 KWh/ $m^2$)* | | 211 | | 141 |
| ***4. Living area*** *(Target value: 30 $m^2$ / capita)* | 33 | | 18 | |
| ***5. Share of households sorting waste*** *(Target value: 100%)* | 58% | | | 4% |
| ***6. Water consumption / capita / day*** *(Target value 100 l /cap /day (Swe) 50l /cap/day (East)* | | 193 | 58 | |
| ***7. Share of food from microregion to local area*** *(Target value: 30%)* | | 4% | 36% | |
| ***8 – 12. Attitudes to various eco-technologies (recycling and conservation of materials, low-energy houses, solar energy, healthy materials, waste sorting systems).*** *Target values (100% positive)* | 70% | | 59% | |
| ***13. Attitudes to less car driving and more public transport.*** *Target value (100% positive)* | 62% | | | 32% |

## 3. 4 Townscape type specific results

The analysis of strengths and weaknesses revealed a great number of differences between small house areas and multifamily houses. A very strong tendency was – however – that the differences in general was much more pronounced in the Swedish and Danish cases. In table 6 we have listed some townscape type specific differences which have a strong connection to sustainability problems. The first striking result is the three variables on *satisfaction of residency, the share of residents with the intention to stay* and *the share of residents with the intention to move.* They strongly suggest that the small house residency is strongly preferred before multi-family house dwelling (see figure 3). This is true for all cases with one very strong exception – Petrozavosk in Russia, where multi-family house dwelling is much more preferred than small-houses. This will be commented further below.

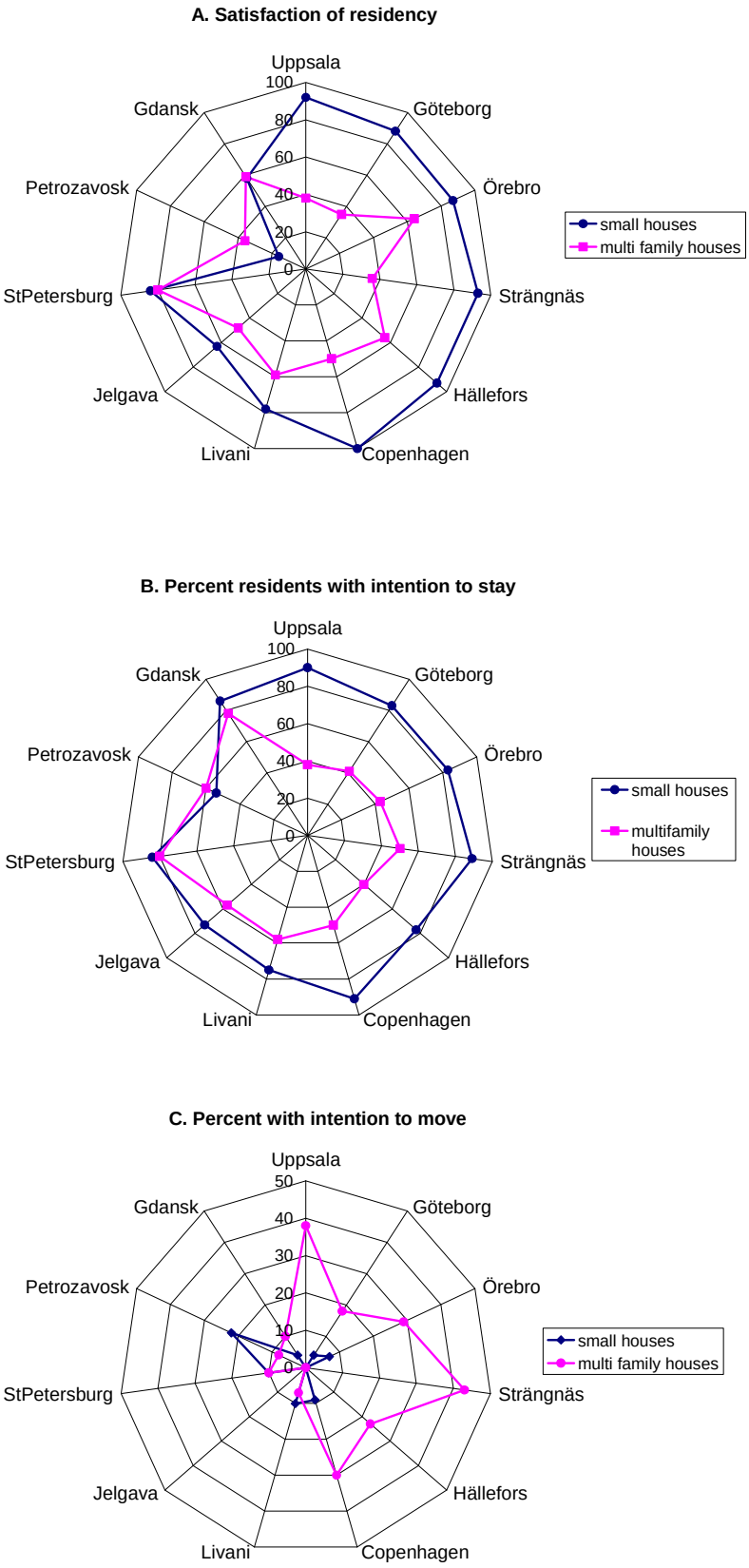


Figure 3. Variables on satisfaction of residency (A), Intention to stay (B) and Intention to move (C)

Examples of townscape type specific results are given in Table 6. For physical resources small-house areas were contributing systematically more than multifamily house areas in Latvian and Russian cases with regard to share of renewable energy for heating, whereas Swedish multifamily house areas were better in this respect. Private car driving was higher for all small-house cases.

Another typical feature of small houses were the activity level of the dweller to create, maintain or improve the habitat. The first small house owner were originally contributing in the actual construction of the house and the following generations of dwellers were also involved personally in its maintenance and renovation, as well as in the economic management of the house and also in cultivation in the garden.

Strong points for all multifamily houses were the access to public transport, other municipal services and in particular to local food shops.

A number of social variables underline the superior co-operation between neighbours in western small-house areas *e.g.* on looking after children, assisting elderly, lending tools or watching the neighbour's house. In Latvia, Russia and Poland the social support in the neighbourhood was quite clear for both small houses and multifamily houses and seemed to be a function of a long residence time rather than house type. The number of recognition relations were typically high and even in all eastern neighbourhoods, whereas they were considerably lower in Swedish and Danish multifamily house areas.

The most typical result with regard to cultural resources was the strong consciousness about the place's history among small house residents, which was clear for all cases with the exception of Petrozavodsk. Similar results were noted for the aesthetic resources, where small house areas – with the clear exception of Petrozavodsk, were much more appreciated compared to modernistic multifamily house areas.

Table 6. Examples of townscape type specific strong points and weak points. Western areas typically comprised cases from Sweden and Denmark. Eastern areas comprised Latvian, Russian and Polish examples. S=Strong and W=weak refer to the sustainability performance of the variable compared to the target value. SHA=Small house areas; MHA= Multifamily house areas

| *Variables* | Western Areas | | Eastern Areas | |
|---|---|---|---|---|
| | **SHA** | **MHA** | **SHA** | **MHA** |
| ***P. Travel length in private car in km /capita***[1]<br>*(Target value: 2000 km/capita)* | W<br>4400 | S<br>2400 | S<br>1350 | S<br>1100 |
| ***E. Inhabitants regarding dwelling costs reasonable***<br>*(Target value: 100%)* | S<br>78% | W<br>45% | W<br>50% | W<br>45% |
| ***B. Households think local area has valuable green***<br>*(Target value: 100 %)* | S<br>85% | S<br>86% | W<br>45% | S<br>60% |
| ***O. Conceived "close access to local food shops"***<br>*(Target value (100%)*<br>***O. Actual access to local food shops within 500m***<br>*(Target value: 100%)* | W<br>61%<br>W<br>37% | S<br>83%<br>S<br>97% | S<br>71%<br>S<br>66% | S<br>96%<br>S<br>96% |
| ***S. Mean number of neighbours recognised***<br>*(Target value: 50 persons / capita)*<br>***S. Household turnover rate***<br>*(Target value: 3-5% households moving in/out)* | S<br>32<br>S<br>4.9% | W<br>22<br>W<br>12.0% | S<br>41<br>S<br>4.1% | S<br>37<br>S<br>4.5% |
| ***C. Conscious about the place's history***<br>*(Target value: 100%)* | S<br>66% | W<br>26% | S<br>64% | S<br>62% |
| ***A. The built area is "aesthetically attractive"***<br>*(Target value: 100%)* | S<br>83% | W<br>30% | S<br>66% | W<br>50% |

1) Western areas in this case comprised Sweden, Denmark and Poland with similar car intensity per capita.

## 3. 5 Site specific results

Our quantitative data have revealed a large number of clear results on the general level and on the townscape specific level. There are also single quantitative data which diverge from the above categories. Such results are sometimes hard to explain, but many times the pattern of data reveals the unique situation. Also the interviews and personal experience of places which the research co-ordinators (PGB: Uppsala, Örebro, Hällefors, StPetersburg, Livani, Jelgava and Gdansk); (TE: Göteborg and Copenhagen); (MG: Strängnäs and Petrozavodsk) have got together with local teams – all contribute to the understanding of local places. In the following we will therefore give one example of a specific place with a special profile and also a few examples of single issues which can be explained for specific places if you just know them well enough. Such place-specific knowledge – both quantitative data and personal experience, will have a great impact on the suggestions and recommendations we will be able to give for a "micro-comprehensive plan" for sustainable community development.

### *3.5.1 Site profiles for Petrozavodsk*

As an example of site profiles we will here give some examples on what characterises the two Petrozavosk sites in Russia. Petrozavosk is called the "capital of Karelia" quite close to the Finnish border and in many ways affected by the Nordic culture, *e.g.* in its emphasis on experience of wild nature. It is of course also much affected by the Soviet history – in its city planning, housing policy and in the mentality of its citizens *i.a.*: "what can we do – nothing" – "it is the local government that should be responsible for necessary changes" (Granvik, 2005). For all the cases in Sweden, in Latvia, Poland and Denmark, small house areas have a number of measured and expressed advantages over multifamily house areas. At the same time small houses are still rather affluent with regard to many physical resource variables. The Russian examples break these strong tendencies in many respects and in particular the cases from Petrozavodsk. From a number of variables it seems clear that small-house areas in Petrozavodsk are regarded as socially and organisationally problematic and unattractive areas, whereas the multi-storey multifamily house areas is the ideal. The modernistic blockhouse areas are what attract most citizen categories. In figure 4, the first diagram shows the *socioeconomic* profile of the investigated areas in Petrozavodsk. The variables are shown as the relative difference between the housing areas with the highest value for each variable set to 100. The second diagram shows a *physical resource profile* with the same method. The socioeconomic diagram illustrate the relative attractiveness of large scale housing areas with no direct connection to sustainability aspects. The second diagram, however, shows that the multifamily house area from all physical resource aspects - except *willingness to reduce car driving*, is inferior to the small house area.

### *3.5.2 Sustainability performance in Petrozavodsk cases.*

In figure 5. the physical resource variables have been transformed to sustainability values from 0-4, which adds a last important step before we can start formulating a local micro-comprehensive plan. Together with the acquired personal site knowledge in the research group and its assisting local team, the sustainability value tables and diagrams add up to a logical pattern – for Petrozavosk almost totally opposite to most other investigated areas in the Baltic Sea Region.

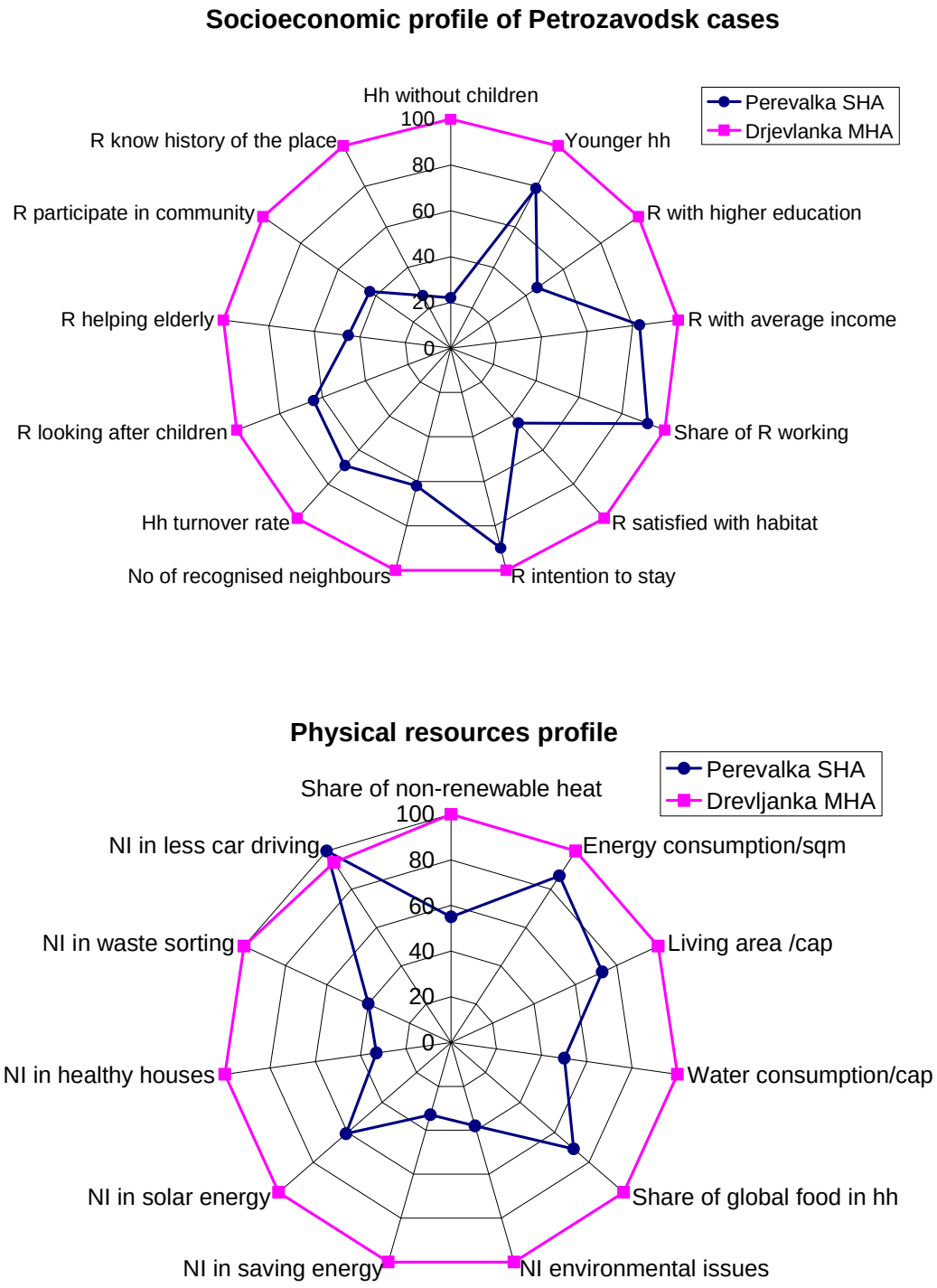


Figure 4. Socioeconomic profiles for Perevalka small house area (SHA) and Drjevlanka multifamily house area (MHA). All values have been normalised to 100 for the highest value recorded. Thus only relative comparisons can be done in these diagrams. This is a way of comparing socioeconomic general data - which is difficult to relate to sustainability (like education level and numbers of young households) - with data which have obvious implications for sustainability. R= residents; Hh=Households; NI= not interested

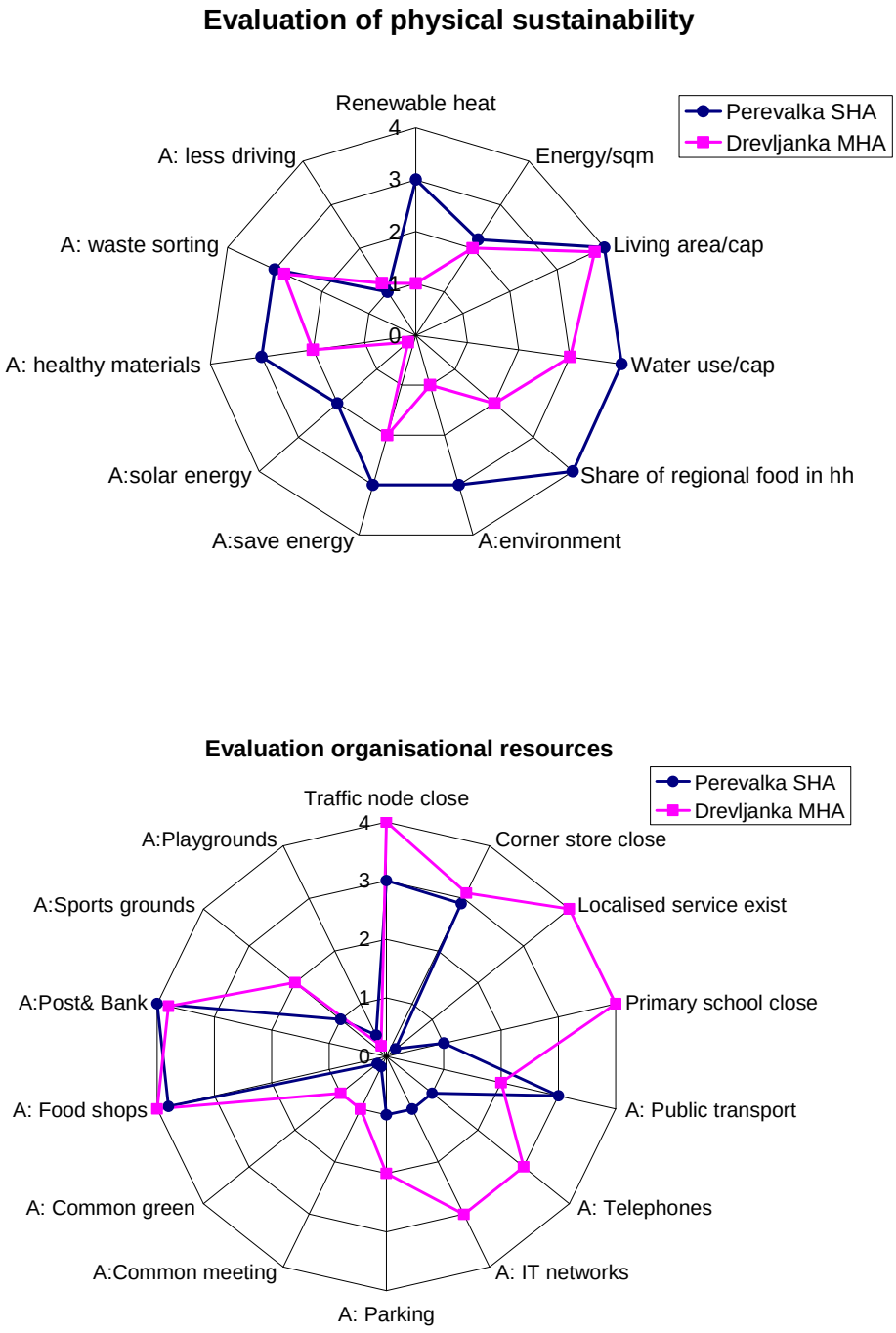


Figure 5. Sustainability evaluation of resource variables. The upper diagram shows the same variables as in figure 4(lower diagram) but now the sustainability performance has been evaluated for each variable. The evaluation relies on a thorough an consequent analysis on what levels of the variable correspond to one of five categories from 0-4, where 0=the resource was not at all considered or poorly planned for; 1= the resource was intentionally used but to a very limited extent. 2= the resource was significantly used but could be substantially more implemented; 3= the resource was strongly used but not at its maximum; 4= the resource was used to its maximum. A in the upper diagram = Attitudes to using the different ecotechniques in habitation. A in the lower diagram =Attitudes expressed by residents on good access to the given resource.

### 3. 6 Outline of micro-comprehensive plans for sustainable community development

In the final phase the micro-comprehensive plan is formulated, where general, townscape-type specific and site specific strategies are formulated. For this purpose the analysis procedure we have described in this paper should be used. In the following we give two examples of the organisation and content of such a plan. A complete plan should comprise between 20 and 50 pages including illustrations on additional buildings, courtyards, entrances, technology, local infrastructure, new spaces with new functions, economic assessments, a time plan and proposed actors. Below we will present the procedure and two simple examples on how the micro-comprehensive plan can be created.

### 3.7 Two examples of micro-comprehensive planning

*The procedure starts with (1) a description of the area, (2) inventory of the place according to the 7 resources, (3) Analysis according to the procedure described above (Level 1 – general strategies; Level 2 - townscape-type strategies and Level 3 – site-specific strategies. And finally (4) a proposal for sustainable community development is formulated. In the examples below we focus on step 3.*

Example 1. Kungsgärdet small house area in Uppsala

*Level 1. A General sustainability housing strategy*

Our results show that all 22 residential areas need to address common issues to become more sustainable. In Table 7 a selection of general strategies has been formulated according to the Habitat agenda based on the results of our research. The proposals could in principle be implemented in all local areas in the Baltic Sea Region but with different emphasis, time span and methods.

Table 7. General strategies for Kungsgärdet with proposed actors. R=Resource categories

| *R* | *Strategy* | *Actors* |
|---|---|---|
| ***P*** | - Increase renewable energies in local areas<br>- Compile a library of best practices on the community intranet | Government, Municipality, Energy company, Local community planner |
| ***E*** | - Decrease or keep living areas/capita to/on sustainable levels<br>- Develop a plan for a supplementary informal local economy | Housing policy makers,<br>Local community planner (LCP) |
| ***B*** | - Increase the access of green for local inhabitants<br>- Make a local plan integrating built and green areas | Municipal planners<br>Local community planner (LCP) |
| ***O*** | - Increase access of public transport by improving local nodes<br>- Produce a plan for convenient local mobility | Municipal planners,<br>Traffic companies, LCP |
| ***S*** | - Introduce community councils in local areas<br>- Make a plan for increasing community co-operation | Local area residents, companies and schools, LCP |
| ***C*** | - Reinforce local culture and neighbourhood play<br>- Inventory art, traditions and ceremonies; publish on homepage | Community council, schools, local organisations. LCP |
| ***A*** | - Inventory local community aesthetic strong and weak points<br>- Make an intersensory plan for local areas | Residents, Community council,<br>Local community planner. |

*Level 2 – Townscape type strategies – Small-house areas in Sweden*

The townscape type analysis revealed some common strengths and weaknesses which are translated into suggestions for change in table 8. The proposals could thus be implemented in all Swedish small house areas. The areas can be expected to be different in their demographic development, why time plans, methods and actors may vary greatly between different Swedish small house areas. The size of the city or town, the regional economic development and context would also probably affect the implementation of such a plan.

Table 8. Townscape type strategies for Kungsgärdet with proposed actors. R=Resource categories; SHA= Small house areas. LCP= Local Community planner

| *R* | *Strategy* | *Actors* |
|---|---|---|
| ***P*** | - Ecotechnological adaptation of small houses.<br>- Compile garden plan best practices, publish on intranet | House owners, researchers, consultants and small house associations |
| ***E*** | - Make long-term cost-benefit analysis on eco-refurbishment<br>- Introduce local exchange and trading systems in SHA | House owners, researchers, consultants and small house associations |
| ***B*** | - Inventory the green values of SHA<br>- Protect and reinforce public green space in SHA | House owners, landscape architect and small house associations, LCP |
| ***O*** | - Introduce intelligent co-travelling and car sharing in SHA<br>- Reintroduce local corner stores/ kiosks in SHA | Municipality business office, consultants potential shop-owners, SHA inhabitants |
| ***S*** | - Support and enhance a high rate of neighbour recognition<br>- Increase and improve local community meeting places | Small house association, landscape architects and planners |
| ***C*** | - Inventory and support local art, traditions and ceremonies<br>- Produce historical and well-layouted booklets & homepages | Small house association, schools. Local organisations, historians and artists. |
| ***A*** | - Inventory threats to high quality sensorial SHA environment<br>- Make a plan for area protection against recurring winds | Small houses associations, municipal planner, Landscape architects, |

*Level 3 – Site specific strategy – Kunsgärdet small-house area in Uppsala*

One key problem in Kungsgärdet mentioned by many inhabitants is related to traffic. One such earlier problem was the proximity of city-flow traffic near the area, which caused noise, pollution and insecurity. The traffic also constituted a barrier between the residential area and attractive green areas. This problem was actually solved by moving the main traffic beyond the green areas.

A *key* remaining *problem* is the "traffic of others". Both households with a car and households without a car see the parking on the street (there is room on most garden plots for 1 or even 2 vehicles) and the security problem with cars going too fast as a collective problem, although this is typically caused by the concerted action of the "others" in the area. If this problem can be resolved with the help of experts in environmental communication, traffic planners and the small house association, it may open up for other changes towards sustainability. In table 9 the main place-specific problems for Kungsgärdet and solutions are listed.

Table 9. Site specific strategies for Kungsgärdet with proposed actors. R=Resource categories; SHA= Small house areas. LCP= Local Community planner

| *R* | *Strategy* | *Actors* |
|---|---|---|
| ***P*** | - Make use of high interest for ecotechnology in Kungsgärdet<br>- Spread information on solar energy, waste sorting etc | - Researchers, energy advisors, small house association, informer |
| ***E*** | - Couple eco-refurbishment to saving of high living costs<br>- Demonstrate the value of local informal economy | - Researchers, family advisors on economics, small house association |
| ***B*** | - Strengthen and develop the central common green<br>- Expand high interest for gardens with cultivation information | Landscape architect and small house associations, Local community planner |
| ***O*** | - Plan and implement a new local corner store<br>- Build a common house to make meetings easy | Municipality business office, architect consultants potential shop-owner, LCP |
| ***S*** | - Involve adolescents and children in formation of clubs<br>- Support the children rich area with community sports | Small house association, sports clubs, Parents and fire-in-the-souls |
| ***C*** | - Combine eco-refurbishment with a good design<br>- Support the local art museum and art in the school | Small house association, school. Local organisations, historians and architect. |
| ***A*** | - Inventory & display the good area views, sounds, fragrances<br>- Make the common house a beautiful local landmark | Small houses associations, municipal planner, Landscape architects, architect |

Example 2. Russian multi-family houses in the Moskovsky district

The Russian example will focus mainly on the site-specific strategy with a few comments on the general and townscape-type levels. A *general* strategy (level 1) is similar to the one in table 7 with one important exception for economic resources.

Living areas in Russian residential areas are not to large – they are too small for a number of reasons. The strategy for living area should therefore not be to decrease but rather to increase living areas/capita to *socially* sustainable levels.

With regard to *townscape type specific strategies* (Ievel 2), a few examples from the material is prominent: for physical resources the single most important strategy is to rebuild the large multi-family house program areas, which is home for 60% of the Russian population (Granvik, 2005). This rebuilding will in its initial stage save large amounts of fossil energy and experiences within the Moskovsky district (the so called *Eco-house*) shows that this is not unbearably expensive and can be done partly with the help of the apartment owners. Another example from the organisational resources concern the old public transport system serving the large scale housing area with worn-down but well functioning metro, trams and bus systems. There is today a strong temptation to throw the old system away "with the old vehicles and technical systems". It is therefore imperative in the Russian, Latvian and Polish MHA cases to transform the old environmentally friendly system with a new, convenient and still more efficient system. Similar strategies should be followed for the "local markets near traffic nodes system".

*Level 3 – Site specific strategy – 10$^{th}$ block, Moskovsky district in StPetersburg*

A site-specific strategy starts with a vision. It is the popular movement of a small ideal organisation of elder women, who are spreading the idea to introduce attractive green space within and near the 9- and 5-storey houses of the 10$^{th}$ block. It started more than 10 years ago with the "garden-on-the-roof", where a retired soviet engineer started to grow seedlings in simple flowerbeds on the roof of the multifamily house where she lived. It is now clear that the roof plantations, the emerging entrance greenery and public space gardens near the big roads has become a *key vision* to co-operation and envisioning in the whole neighbourhood. So in the Moskovsky case – the key action is to make a plan – an illustrated green plan which in a longer perspective could inspire and awake a peaceful, constructive popular movement for introducing *e.g.* new energy, save water, strengthen the neighbourhood spirit and give the retirees something more to save from their meagre pensions. In table 10, there is a selection of site specific strategies that emerged from the data material and from many observations and interviews on site.

Table 10. Site specific strategies for 10$^{th}$ block, Moskovsky MHA with proposed actors. R=Resource categories; MHA= Multifamily house areas. LHC= Local House Committee

| *R* | *Strategy* | *Actors* |
|---|---|---|
| ***P*** | - Experiences from the area has pointed out energy saving<br>- Introduction of composting, production of clean soil and plants | - Researchers, Low-tech engineers, Local House Committees, Municipality |
| ***E*** | - Reduce dwelling costs through saving of energy and water<br>- Reinforce traditional local informal economy | - Researchers, Informal economy advisors. LHC and inhabitants |
| ***B*** | - Expand the planting on roofs, courtyards and by roads<br>- Make an well-illustrated plan on private and public green | Landscape architect LHC, Green elder womens association |
| ***O*** | - Use the growing local committee to expand the local shop<br>- Negotiate to rent a common meeting room for neighbours | Economic sponsor, common room owner, Informal LHC and inhabitants |
| ***S*** | - Involve adolescents and children in formation of clubs<br>- Support the children rich area with community sports | Sports clubs, youth clubs, LHC Parents and fire-in-the-souls |
| ***C*** | - Carry out an architectural upgrading of house architecture<br>- A landscape architectural upgrading of the outdoor spaces | City council, architect, landscape architect, LHC |
| ***A*** | - Make use of the residents preference to show visitors the area | LHC and local womens association |

## 4. DISCUSSION

From the starting point of the Habitat-agenda – which states that citizen participation is a necessary requirement to attain sustainable development, that the local level is closest to a citizen´s everyday activities and that each specific place has different prerequisites depending on their *e.g.* physical, biological or organisational circumstances – this study suggests that the concrete local place with its specific context is central as a starting point in the discussion of sustainable urban development. Contextual planning can be deduced all the way from the works of Patrick Geddes (1904). It is the same message from Lewis Mumford (1938) for the overall planning of cities and Ian McHarg (1969) for the contextual adaptation to nature. Also Christopher Alexander *et al.* (1977) demonstrated in his classic *Pattern language* – a planners guide from regions to neighbourhoods and houses with 253 inter-connectable context-supporting patterns of good architecture and planning. In modern community studies (Nelisher and Burcher, 1997; Falkheden, 1999, Berg and Nycander 1997; Berg 2004) the context is further emphasised (Granvik 2005).

### 4. 1 On combining universal and contextual place knowledge

But the practical use of the earlier studies have often been limited. Either because the researchers have relied on universal indicators or because they became buried in the wealth and complexity of a case. What we hope we have shown is that we have to combine the precision of quantitative variables (or indicators) with qualitative observations and site contextual understanding, which makes it possible to understand the measured values. By organising the data and other affecting information, within a relevant and appropriate sustainability framework, we may come close to what Christopher Day (2002) calls “the spirit of the place”. A local context approach combined with the measurement of well-chosen and well-defined variables means to understand each urban environment as a unique place with a social meaning which is about the everyday life that occurs on that particular place. By combining general, townscape-type-, sometimes also country-specific- and city size specific properties with unique place properties, we can produce realistic and at the same time nuanced plans for the different parts of the city.

### 4. 2 Concluding remarks

To function as a sustainable city – the local areas need to be supported with renewable energy and utilise its local economic resources more efficiently. Urban performance is further dependent on local areas where green structure and cultural assets are esteemed by its inhabitants and accessible for all. Local areas need to become good and safe neighbourhoods and at the same time be characterised by good organisation of convenient public transport, local shops and schools. Local culture and an aesthetic appearance of residential areas and its inter-woven green structure are other timeless values for a good and sustainable life in the city.

And all the non-physical resources are – in one way or another – strongly linked to the physical performance of the local areas. It is there the inhabitants can choose to lead a sustainable life, with reasonable dwelling areas, well-insulated houses and a resourceful consumption of electricity, water and commodities and a modest production of sorted, mostly harmless waste. It is in the attractive and well-organised neighbourhood the inhabitants can co-operate on practical matters, experience a part of their cultural life and traditions, perform a part of their work

and studies and become awed by its local nature and beautiful gardens. The planning of and living in the local community will, as our study and many other repeatedly show, thus indirectly affect the consumption of physical resources, the state of the environment and the health of the population.

Today there is evidence for preferences growing for living in small-house areas again – even in Russia. At the same time Western ideals talk about dense urban-like dwelling as one post-modern ideal – it remains unclear how well established this notion is among inhabitants in general. We thus have to plan for different types of areas, different types of ownerships and different types of prerequisites for sustainable urban development. For that this and similar methods of site analysis and strategy formulation is needed. We have to be able to make nuanced plans for nuanced places – always with some general components – always with some townscape-type characteristics and – always with unique contextual strategies.

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