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POTENTIALS FOR SUSTAINABLE DEVELOPMENT BY AMALGAMATING SOCIAL AND ENVIRONMENTAL ASPECTS: EXPERIENCES FROM REFURBISHMENT PROJECTS IN SWEDEN

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Summary

The Swedish Government has assigned SEK 6.2 billion for Local Investment Programmes (LIP) for the period 1998-2005. The funding programme intends to facilitate for municipalities, in cooperation with business companies and non-governmental organizations, to achieve environmental improvements. The programme encouraged the inclusion of social aspects in the municipal packages of measures. More than two hundred programmes have received subsidies; about eighty have had a multidimensional character – i.e. encompassing a number of environmental aspects and social aspects. The Swedish Environmental Protection Agency has commissioned an evaluation of these programmes in order to understand more about the advantages of multidimensional efforts. The question is: What is the potential for sustainable development, if amalgamating social and environmental aspects? The evaluation is carried through as a case study of ten refurbishment programmes having a multidimensional character. Data about the environmental effects is gained from a special LIP-database and official documents. Quantitative and qualitative information about the social aspects is collected by studying mass media articles and statistics of the area and by carrying out interviews with project leaders and involved inhabitants. The analysis of the empirical material is conducted with help from theories on sustainable development, the so-called MAIN^{tetra} which supports the discussion on the *relationship* between environmental aspects and social aspects in local processes aiming at sustainable development.

1. Introduction

The Swedish Government has assigned SEK 6.2 billion for Local Investment Programmes (LIP), a commitment initiated 1998 and going on until 2005. The intention of the funding programme is to facilitate for municipalities, in cooperation with business companies and non-governmental organizations, to achieve environmental improvements. The programme encouraged the inclusion of social aspects in the municipal packages of measures. More than two hundred programmes have received subsidies of which about eighty-six have had a multidimensional character, i.e. encompassing a number of environmental aspects and social aspects. These multidimensional programmes, which have received subsidies of about SEK 770 million, are often conducted in housing areas from the fifties, sixties and seventies that are suffering from problems related to stigmatization and social exclusion, and as a consequence, undertaking the environmental challenges in the LIP-programme by including also participation of the inhabitants in the local initiatives to make sure the funding programme fulfil their requirements. In order to understand more about the advantages of multidimensional efforts, the Swedish Environmental Protection Agency (SEPA) has commissioned an evaluation of these programmes with the overarching question: What is the potential for sustainable development, if amalgamating social and environmental aspects? Thus, the intention is to understand more about how inhabitant participation in local development work can be related to environmental concern – with a specific focus on so called exposed housing areas that are stigmatized for different reasons.

1.1 Aim & goal

The aim of the project is to evaluate the LIP-financed housing refurbishment programmes from a sustainable development perspective and to answer the question whether this kind of funding is the “right” way into the

future. A further aim is to contribute to increased knowledge dissemination to relevant actors. The project intends to:

- A) analyse which environmental effects, both positive and negative, the LIP-financed housing refurbishment projects have given rise to. This part also includes a statement about how well the projects have fulfilled their goals.
- B) discuss whether the realized projects (both physical and informative) have led to lasting effects.
- C) evaluate the social aspects. How well did the projects succeed in integrating and engaging the inhabitants in the planning and execution phase? How has project information been disseminated and how have the inhabitants experienced the LIP-funding?
- D) elucidate whether the housing areas have gained a better status, i.e. whether the support has created attractive housing areas.

1.2 Method

The method is based on a case study evaluation (Yin 1994; 2000) of ten refurbishment programmes having a multidimensional character, i.e. programmes encompassing as many as possible of the, on the one hand, environmental aspects such as energy, water, material, chemicals and biological diversity, on the other hand, social aspects such as stigmatization and inhabitant participation. The evaluation is additive because it is based on material collected after the programs have been finished. The case programmes are selected in cooperation with the commissioner after criteria such as complexity of aspects of sustainable development, completeness of data, and comparability of the programmes in-between.

For approaching part A) and B) an environmental matrix is developed, with the purpose to analyze and systematize the quantitative values which have been reported to a specific LIP-database. Missing data is obtained by telephone/e-mail contacts and personal interviews of property managers. Part C) addressing the social aspects is approached by qualitative analyses of the material in the database and reports, with additional interview studies with inhabitants and project leaders. Certain quantitative data (number of people moving in and out, rent increases etc.) are added. In part D), socio-economic statistics is triangulated with images and descriptions from inhabitants and media. The image conveyed by media is based on analysis of mass media articles.

The analysis of the empirical material is conducted with help from theories on sustainable development, the so-called MAIN^{tetra} (Kain 2003). The MAIN^{tetra} provides a framework to discuss the relationship between environmental aspects and social aspects in local processes aiming at sustainable development.

Several researchers with different competences are involved in the evaluation to cover the broad range of questions. As the study is still in the evaluation phase (to be finished in April 2005), preliminary results are presented and a more general discussion is laid out in this paper.

2. Ten cases

2.1 Selection of cases

The ten cases have been selected from the LIP-database storing data on all funded programmes. The criteria for the selection of cases are: they should be a) complex programmes containing all aspects of sustainable development to the greatest extent possible, b) programmes having as comprising data as possible, and c) programmes similar to some extent for comparison of the programmes between. Shortly, as much as possible of the following aspects should be fulfilled:

| Social aspects | Environmental aspects | Delimitation because of comparison | Delimitation because of practical reason |
|---|------------------------|---|--|
| - the housing area is stigmatized | - water | - housing area | - good data exist |
| - one goal of the project is to involve the inhabitants | - energy | - refurbishment project, i.e. partly reconstruction projects, partly yard transformations or learning processes | - programmes are not too old |
| | - material | | - reasonable travel distances for the researcher |
| | - chemicals | | |
| | - biological diversity | | |

2.2 The programmes

The chosen programmes for the case study are listed in Table 1 and below a short summary of the projects is given. The duration of the LIP-projects is marked in the parenthesis.

Table 1 Ten programmes have been selected

| No | Selected projects | Number of flats | Year of construction | Subsidies LIP [10 ⁶ SEK] | Number of social aspects | Number of environm. aspects |
|----|-----------------------|-----------------|----------------------|-------------------------------------|--------------------------|-----------------------------|
| 1 | Ringdansen Norrköping | 1600 | 1968-72 | 260.0 | 2 | 4+ |
| 2 | Rannebergen Göteborg | 1600 | 1972-75 | 4.6 | 2 | 4 |
| 3 | Augustenborg Malmö | 1600 | 1948-59 | 40.0 | 2 | 4+ |
| 4 | Markbacken Örebro | 1200 | 1958-63 | 3.8 | 2 | 3+ |
| 5 | Nacksta Sundsvall | 400 | 1966-72 | 3.0 | 2 | 3+ |
| 6 | Bergsåker Sundsvall | 475 | 1972-73 | 4.4 | 2 | 3 |
| 7 | Rådhusrätten Lund | 470 | 1966-67 | 2.3 | 2 | 3+ |
| 8 | Östlyckan Alingsås | 324 | 1959-61 | 9.0 | 1 | 4 |
| 9 | Norrleden Kalmar | 1089 | 1970 | 2.8 | 1 | 3+ |
| 10 | Inspektoren Kalmar | 159 | 1955-57 | 5.0 | 1 | 3+ |



2.2.1 Ringdansen Norrköping (1998–2003)

In this programme, the eco-cycle adaptation was in focus. Changes of energy system, water and sewage distribution system, outdoor environment, steer- and reporting system are carried out and the participation of the inhabitants in the process was an important part. Ringdansen was the most extensive project regarding the total cost and the level of physical change of the outdoor environment.

2.2.2 Rannebergen Göteborg (1998–2000)

The aim of the project was to establish an area where all involved actors act for a, from an ecological point of view, sustainable society. The project was expected to result in both soft and hard measures. Soft measures mean generation of engagement and educational processes. Hard measures imply mainly technical features of energy and water saving and increased recycling of waste. The goals for savings of energy, water, waste and decrease of the use of chemicals are judged as fulfilled by the project owner.

2.2.3 Augustenborg Malmö (1998-2005)

In Augustenborg several projects were carried out addressing resource management, i.e. local and ecological handling of surface water, ecologically adapted waste management, environmentally adapted electric driven local traffic, and other measures such as environmentally adapted reconstruction of yards (school yards and parks), squares and traffic environments, environmentally adapted reconstruction to a media- and culture centre, and re-establishment of a culture-historical environment in connection with energy savings.

2.2.4 Markbacken Örebro (1998–2000)

This programme focused on the reconstruction of the housing area including goals of a more beautiful architecture, increased safety and accessibility, improved outdoor environment, reduced car traffic, energy savings and reduced emissions of carbon dioxide and nitrogen oxides. The work has been driven in an ecological way by taking care of environmentally harmful substances and recycling when possible. The improvements are carried out in co-operation with the inhabitants and are still lasting in parts of the area.

2.2.5 Nacksta Sundsvall (1998–2000)

The aim of the Nacksta programme was to carry out a powerful transformation of the outdoor environment to create a green local environment, to facilitate for cultivations and strive for a more human scale in the area. The efficiency of the energy use should be increased and the environmental impact decreased.

2.2.6 Bergsåker Sundsvall (1998–2000)

The aim of the programme was to perform an environmentally adapted selective demolition of parts of the buildings in Bergsåker to create a more small-scale environment, with greenery as an important part. Another aim was to carry out diminishing measures of resource use on a large scale.

2.2.7 Rådhusrätten Lund (1998–2002)

The programme intended on the one hand to strengthen the social environment and on the other hand to contribute to environmental improvements. It consists of three parts: new construction of eleven recycling buildings, a number of recycling projects in the existing buildings and construction of three new blocks of flats. Also, the new construction of 18 flats is a part of the environmental project conducted in the area.



Figure 1 Picture of a) Nacksta in Sundsvall and b) Bergsåker in Sundsvall. Photo: Jenny Stenberg.

2.2.8 Östlyckan Alingsås (1998–2002)

The purpose with the measures carried out in the programme was manifold: to increase the efficiency of the energy use, to increase the reuse and recycling of domestic waste, and to encourage and support peoples' engagement in the adaptation to a sustainable development.

2.2.9 Norrliden Kalmar (1998–2002)

The project goal was to carry out environmental activating reconstructions to establish an attractive area with possibilities to live according to Agenda 21. This was realized by investments into environmental buildings with waste separation and composting of domestic waste. The outdoor environment was improved to invite people to meet and an educational programme was elaborated for the inhabitants and the staff concerning resource management and environmental questions aiming at increased knowledge and engagement.

2.2.10 Inspektoren Kalmar (1998–2002)

The goal of the programme was to refurbish the quarter Inspektoren with the highest possible housekeeping of natural resources, eco-cycle adaptation and support for the inhabitants to participate in the process. At the same time the rents should not be raised more than normal. A number of flats have been reconstructed illustrating different levels of change from which the inhabitants could chose the style for the "new" flat.

3. Environmental matrix

When analysing which environmental effects, the LIP-financed housing refurbishment projects have given rise to, it is necessary to systematize the environmental effects from the projects and to identify the changes of the environmental impact. All environmental data from the final LIP-reports are structured in a matrix, Table 2, together with general information about the projects.

Table 2 Structure of environmental data

| Category | Each category is subdivided into: |
|--|---|
| Energy (kWh/year) | - System changed from-to (i.e. is it a question of improved efficiency or a conversion of system) |
| Traffic (vehicle km/year or fuel consumption/year) | |
| Water (m ³ /year) | - Technical measures (description of the measure) |
| Waste water (m ³ /year) | - Management related measures (description of the measure) |
| Domestic waste (m ³ /year) | |
| Building material: purchase & waste (m ³ /year) | - Involvement of inhabitants (description of the measure) |
| Purchase of chemicals (sort, number of chemicals) | - Quantity before/after measure (reported quantity) |
| Biological diversity (% of covering, number of biotopes) | |

3.1 Data collection

Additional to the basic data set obtained from the LIP-database, missing data is identified in every category. Hereby, it is clearly marked if certain data exists and if non-existing data is available or not from other sources. Missing data is accomplished later on from the interview study and from statistics and aerial photographs. In this way the filled-in matrix provides the framework for the comparison of the ten projects.

3.2 Preliminary results

Up to now, the matrix is filled-in but the evaluation is not yet finished. One of the reflections so far is the problem with the projects' reporting of environmental effects in different parameters, bringing about difficulties of finding reliable transformation tables. This problem is partly caused by municipalities using different systems for charging and measuring material (weight or volume), although the late instructions from the SEPA about how to report environmental effects also had an impact. The development of the matrix also relatively soon revealed the need to evaluate the environmental effects in relation to a wider context. The intention now is to evaluate each category in relation to (a) the project owners' goal settings, (b) similar LIP-projects, and (c) Fair Environmental Space. However, not only the environmental data is structured, but the matrix also gives the foundation for the discussion about whether the realized projects have led to lasting effects or not, which is followed up on the one hand in the interviews and on the other hand with help from statistics of the environmental effects after the projects have been completed and reported.

4. Study of mass media articles

Mass media has been claimed to have a central role in forming public attitude, especially if the public is repeatedly exposed to messages advocating a particular view (Eagly and Kulsea, 1997). In Sweden, mass media has had a considerable role in creating and spreading a stigmatized view of suburban areas built in Sweden during the 1960s and 1970s (Ericsson et al, 2002). In order to assess the change in stigmatization and attractiveness of the evaluated housing areas concerned by LIP-investments, media is one important source of information. The aim for this content analysis study has been to evaluate if the media convey a positive or negative image of the area – a stigmatized image or not – and if the image has changed over time. Furthermore, the study focuses on the LIP-funding visibility in media.

4.1 Data collection

A search has been made in four large Swedish databases which include all nation wide mass media, trade press, notices from central Swedish news agents and some local press. These databases have material that date back to the early 1990s. In cases where the national databases did not include local press of the area in question, a supplementary search has been made in web versions of local press on the internet which is limited to the years 2001 – 2004, i.e. not covering the time before the projects were initiated. In total a corpus of 2499 has been collected of which 1810 were found in web versions of local press on the internet.

4.2 Analysis

The corpus of articles has firstly been structured and coded in tables and secondly evaluated qualitatively by classifying the content in every article as belonging to one of eleven thematic categories: crime, accidents, social aspects, public sector, physical planning, trade and industry, environment, nature, culture and sport. Additionally, the tone conveyed in each article (neutral, negative or positive) has been evaluated.

The results from the analysis are graphical representations of the number of articles that represent a neutral, negative or positive view of the areas in question over time as well as graphical representations over the number of articles in a specific category. Figure 2 represents the project Ringdansen, one of the LIP-projects that has attracted the most media attention in nation wide press. In this case the corpus of articles in the local press is not included as it only covers the years 2001 – 2004 and would have given a distorted representation over the total span. Instead a separate analysis has been made of the local press.

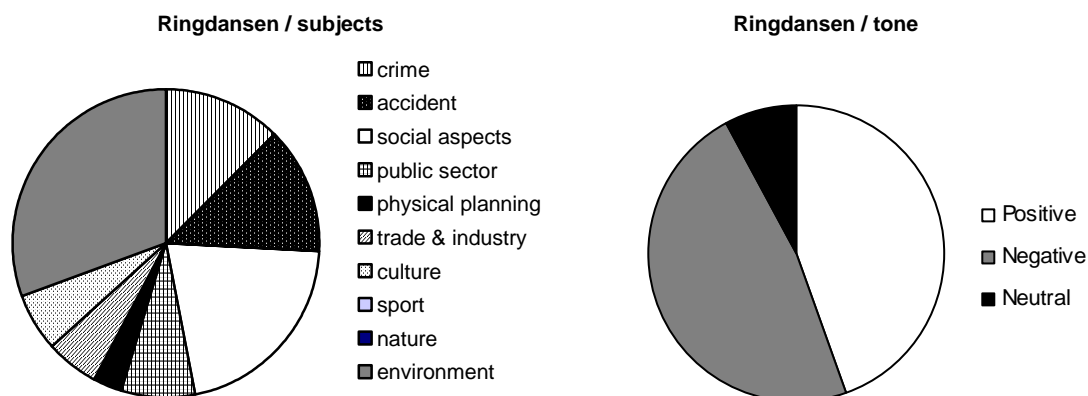


Figure 2 Diagrams showing the share of each thematic category (to the left; note that "sport" and "nature" are zero) and the tone of the corpus of articles about Ringdansen found in the nation wide press (to the right).

4.3 Preliminary results

In general the LIP-investments are poorly conveyed in the Swedish media. Some projects like Ringdansen and Augustenborg have had some impact while other LIP-investments as in Rådhusrätten, Bergsåker, Östlyckan and Norrliden are not mentioned in one single article. It can be seen as a failure as one of the ideas with LIP was that these projects should be visible for the public. Instead, articles about crime and negative articles are overrepresented in many cases. For example, regarding Nacksta over 50% of the articles are negative and a majority concerns crime. The few positive articles from the LIP-investments are thus little visible in the total volume of press. However, it must be underlined that these results can be part of a problem with the collection of empirical material especially through the web versions of the local press, as these do not cover all articles published in the paper versions. Through a study of the content of the articles it can also be seen, that the stigmatized image is still present in articles after the LIP-investments, as is the case, for example, with Markbacken.

The study shows that the media's interest in reporting about the LIP-investments decreases when this is no longer news. In the case of Markbacken, from which the empirical material covers local press from the early 1990s, most articles were written before the LIP-investments and less after. It is interesting to note that in the case of Augustenborg where the project involves some successful visible and tangible features such as green roof gardens, this has been a way to attract the media's attention.

In two cases, Ringdansen and Rådhusrätten, the area in question has changed name after the LIP-investments as a way to change a stigmatized image. The media study shows that this has been successful. Regarding Ringdansen a total of 53% of the articles reports about the LIP-investments and a majority are positive. Only one article out of 117 in the local press reports a crime. It is interesting to note that when searching for articles using the keyword Navestad, the previous name for the same area, a different picture is obtained. During the same period 2001 – 2004, fewer articles are found reporting the LIP-investments (6%) but on the other hand more articles reporting crime (18%).

5. Social aspects - Interview study

The evaluation seeks answers about whether the realized projects have led to lasting effects, how the inhabitants have been involved in the processes of change, and, not at least, the inhabitants' own perception about these processes and changes. In order to evaluate the social aspects, interview studies are conducted with actors in the projects. The interviews also aim at studying if the areas have gained a better status.

5.1 Approach

The interviews, which are of a quite close character, are carried through with project owners of the housing company, the municipality, and with three to five inhabitants per project. Not only the inhabitants recommended by project owners are interviewed, but also those are included who are not directly engaged in the project, but have an opinion about it, or those who were involved in the project but may be critical.

Most of the interviews are pre-booked per telephone but often some are added on site. The interviews follow an interview guide and they are recorded and stored digitally. The interviewed are anonymous in the report because the evaluation touches issues that may be perceived as sensitive. When visiting the projects, usually one and a half day, time is devoted to walk round in the area both at day time and in the evening. People are approached when opportunities appear; sometimes a youth recreation centre is visited or somebody who works in the area is made contact with; all this to get an as richly varied picture as possible during the short stay in the area. Photographs are taken during the visits, despite that the time of year does not give a fair representation of the projects. However, to get a more comprehensive image, project owners and inhabitants are asked for pictures describing how the area is used in summer time.

5.2 Preliminary results

The interview studies are accomplished (about 80), but the empirical material has not yet been analysed. A primary impression is that lasting changes of peoples' behaviour is much depending on their world view, e.g. their perception of the importance of environmental issues or their interests in tenancy rights. For example, separation of waste and reduction of water use is not necessarily lasting. First, the educational measures need to be followed up because peoples' motivation is fading if not reminded about e.g. the environmental value of this behaviour. Second, new people continuously move into the area and need to be informed and motivated. Although well informed, some people may refuse waste separation because of a five year old television program criticising what they call meaningless waste handling, as all waste according to the rumour is transported with the same vehicle to a dump. Such hearsays seem to survive for ages and influence peoples' actions although it is true that some just use the information as an excuse for not being involved.

Furthermore, economic incitements play an important role. If the housing company, and indirectly the inhabitant, is saving money, the change of behaviour seems to be more lasting. The better the knowledge about the

economic conditions is and the more the savings are visible on the bill (rent) every month, the better the motivation to act environment friendly. However, this is not always the case. If the process of change has been carried out in a bad manner, the inhabitants may act totally different. For example, if separate flat-wise measurement and payment of the water use is installed together with water using kitchen waste disposers, maybe the tenants do not put biological waste in the disposer because the water has to be paid by them. It is not really a matter of extra cost; it is the principal that is important. In the same way individual measurement of heating energy can push people to act strange, if introduced in a manner the tenants experience as wrong, for example, when the tenants association agrees without discussions about the effects on the rent.

Thus, when discussing prolonged effects of changes, other than technical, it is necessary to reach peoples' mind and understand their worldview. Even the mind of the employees is important to be aware of. For example, if a new landlord is engaged without receiving signals from the employer that the tenants are important as persons, when e.g. considering the housing companies' environmental work, the landlord probably tend to care mainly for the technical management of the area; and the social part, as to know the tenants and what they think about different things, is not prioritised.

In the study there exist examples of housing companies being quite aware of these conditions, some of them preventing problems quite effectively during the period of the refurbishment process by including the tenants in the processes to a great extent. However, shortly after the project being completed, the return to status quo seems to be high while there are also examples where the organization of the housing company actually has been changed as a consequence of the experiences from the project, thus, transformed in order to meet the need for a more interminable, intimate relationship with the tenants.

6. Other empirical material

The above described methods for data collection give a manifold empirical material. However, to give an as comprehensive image as possible about the ten projects and the housing areas the projects have been a part of, supplementary empirical material is collected. Partly, statistics is asked for from the municipalities about the inhabitants of the area before and after the project has been carried out, partly aerial photograph are organized to study how biological diversity has been treated because there are few indicators in the final LIP-reports. Regarding the attractiveness of the areas, price development of nearby tenant-owned flats is studied. Finally, statistics of the number of empty flats is collected, as well as moving activities and property owner certifications from the housing companies involved in the projects.

7. Triangulation with help of the MAIN^{tetra}

The overall question of this evaluation is 'What is the potential for sustainable development, if amalgamating social and environmental aspects?', i.e., the analysis of the empiric material in relation to the broad meaning of the concept of sustainable development. This analysis of the whole material is conducted with help from theories on sustainable development, the so-called MAIN^{tetra}, developed at the Department of Built Environment & Sustainable Development at Chalmers Architecture (Kain 2003) and testified in pilot studies evaluating efforts towards sustainable development of society (Kain and Söderberg 2002; Kain et al in prep).

Very shortly, the theories build upon the concept that "sustainable urban development comprises four different kinds of overlapping knowledge domains about the town, its inhabitants and its surroundings" (Kain and Söderberg 2002: 5, own translation). This four-part intends to increase the understanding of a complex and often messy reality. Thus, the MAIN^{tetra} does not try to describe the reality but illustrates the vision about sustainable development with help of a "tetra" with apexes consisting of four dimensions labelled *Mind* (the knowledge and the worldview of the inhabitants as well as the employees), *Artefact* (the physical environment built by human beings), *Institution* (the formal and informal organizations, their jurisdiction and norms), and *Nature* (the ecosphere and the lithosphere). Its volume consequently has to be considered as the vision about sustainable development. Figure 3 highlights the importance of understanding not only the four aspects of sustainable development, but also the links between the four aspects. In this way, the MAIN^{tetra} provides a framework to discuss the *relationship* between environmental and social aspects aiming at sustainable development. By analysing the quantitative as well as the qualitative empirical material of the LIP-evaluation with the MAIN^{tetra} the relationship between environmental aspects and social aspects in the ten investigated projects can be discussed.

In this evaluation the first link shown in Figure 3, between mind and artefact, may be exemplified with the interplay between a technical system such as an open pond for infiltration of surface water, and the knowledge and view of the inhabitants about this pond, as well as the worldview of the employees about the same pond. How do the different understandings affect the technical function of the pond? The second link, between mind and institution, may be illustrated with the learning process the inhabitants and the employees go through in a local regeneration process, and the interplay with the organizational learning of the housing

company, concerning knowledge of the tenants. The third link, between artefact and nature, may be exemplified with the material welfare a typical turn-around project leads to, the relationship to environmental stress that follows as a result of the project, and the amount of natural resources used for the construction. Finally, the fourth link, between the three knowledge areas mind, artefact and institution, may be illustrated with the disposition for innovation a planned solar heating system must have, if positioned in a housing area and included in the existing district heating system; a disposition influenced by the system itself (artefact), the inhabitants' and the employees' understanding of the system (mind), and the decision-making of the municipal organization (institution).

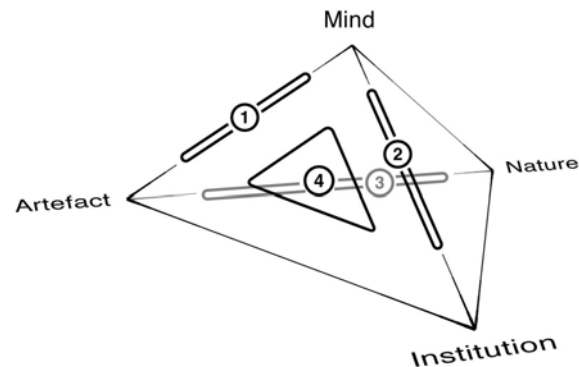


Figure 3. The MAIN^{tetra} – a knowledge model on sustainable urban development (Kain 2003: 332-335).

8. Conclusion and outlook

A case study evaluation of ten refurbishment programmes facilitated by LIP-subsidies and having a multidimensional character has been presented. The quantitative values on environmental impacts have been structured with help of an environmental matrix, the social aspects have been approached by interview studies with inhabitants and project leaders, and the image conveyed by media has been analysed by studying mass media articles. Finally, a framework, the MAIN^{tetra}, has been introduced to discuss the relationship between environmental aspects and social aspects.

So far, the evaluation is not yet finished and only preliminary results have been outlined. Shortly it can be summarized that LIP-investments are poorly conveyed in the Swedish media and that lasting changes of peoples' behaviour is much depending on their world view, e.g. their perception of the importance of environmental issues. The environmental matrix gives the foundation for the discussion about whether the realized projects have led to lasting effects and different kinds of goal evaluations.

Still remains the synthesising analysis of the results from these studies with help of theories on sustainable development - the MAIN^{tetra}. Thus, the final answer about the concrete potential for sustainable development, if amalgamating social and environmental aspects, can first be given when the study is completed.

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