Sustainable urban regime adjustments

The endogenous agency that urban governments increasingly portray by making conscious and planned efforts to adjust the regimes they operate within is currently not well captured in transition studies. There is a need to acknowledge the ambiguity of regime enactment at the urban scale. This directs attention to the transformative implications of conscious strategic maneuvering by incumbent regime actors, when confronting regime structurations. This article provides insight to processes of regime enactment performed by local governments by applying a flow-oriented perspective on regime dynamics, inspired by Actor-Network Theory to demonstrate that regime incumbent actors can induce gradual regime adjustments at the urban scale. This is done through a case study of an urban development project, where the Municipality of Egedal in Denmark has successfully promoted energy efficient buildings through adjustments in existing planning and building procedures. © 2012 Elsevier Ltd. All rights reserved.

A conceptual framework for addressing complexity and unfolding transition dynamics when developing sustainable adaptation strategies in urban water management.

To achieve a successful and sustainable adaptation to climate change we need to transform the way we think about change. Much water management research has focused on technical innovation with a range of new solutions developed to achieve a 'more sustainable and integrated urban water management cycle'. But Danish municipalities and utility companies are struggling to bring such solutions into practice. 'Green infrastructure', for example, requires the consideration of a larger range of aspects related to the urban context than the traditional urban water system optimization. There is the need for standardized methods and guidelines to organize transdisciplinary processes where different types of knowledge and perspectives are taken into account. On the basis of the macro-meso-micro pattern inspired by complexity science and transition theory, we developed a conceptual framework to organize processes addressing the complexity characterizing urban water management in the context of climate change. In this paper the framework is used to organize a research process aiming at understanding and unfolding urban dynamics for sustainable transition. The final goal is to enable local authorities and utilities to create the basis for managing and catalysing the technical and organizational innovation necessary for a sustainable transition towards climate change adaptation in urban areas.
Corporatization of the water sector: Implications for transitioning to sustainable urban water management

In the context of climate change, the Danish water sector is experiencing two major pressures. On one hand, a number of agents are pushing towards more sustainable urban water management (SUWM) approaches with the aim of improving surface water quality and mitigating flood risk. On the other hand, as part of an international trend, the municipal water management departments were transformed to locally created not-for-profit corporatized companies. Main drivers for corporatization are increased efficiency and cost recovery by reduced municipal control on utility budgets. Scholars have described the influencing factors for transitioning to SUWM and highlighted the potential governance attributes for enhancing and/or constraining such change. This paper explores the corporatization of the water sector and its implications for transitioning to SUWM. On the base of a preliminary literature review we identify the rationales for and drawbacks of corporatization and compare them with the critical factors to build institutional capacity for SUWM. Preliminary results suggest that corporatization is expected to create a range of challenges that might hinder the transition towards more SUWM approaches. A more direct collaboration of the national regulator of competitive performances with government institutions and other non-governmental actors might be an effective answer to such challenges.
local interpretation of "creativity". Furthermore, it presents theoretical perspectives on creativity from different fields of literature on creativity (like Ericsson 2001) and urban planning (like Landry 2000). While the three cases include more traditional work space, the fourth case includes an urban perspective on creative environments Results and practical implications: A central point in the lessons learned is the need to abandon the focus on special rooms and office design as keys to facilitate creative environments. Instead, broader perspectives on the organisation need to be considered, including the concrete correlation between facilities, facilitation and culture.

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Kreative miljøer - mellem faciliteter og facilitering
The discourse of creativity has hit the societal debate during the last decades in relation to cities, businesses and society as a whole. The strength of the creativity discourse can be seen in the fact that the UN has implemented creativity in diagnosing a better future for the global society (United Nations 2008). Furthermore, the year 2009 was labelled the "Year of creativity and innovation" by the European Union. In this report we explore the development and implementations of this discourse in Denmark by a theoretical analysis and by six Danish case studies, with a special emphasis on exploring how creative environments are facilitated and on the relationship between facilities and facilitation?

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Local niche planning and its strategic implications for implementation of energy-efficient technology
It is widely recognised that the world is facing climate challenges that necessitate transitions towards more energy-efficient buildings. A key challenge is that visions of energy efficient buildings in policies often fail to become aligned with existing local practices. In order to overcome such a gap between policy visions and their implementation in practice specific forms of strategic work is needed, according to new transformative ideas in spatial planning. The aim of this paper is to characterize the transformative capacities of this kind of strategic work at the spatial scale of the town in order to assess how such activities engage with sustainable transitions. The theoretical contribution of the paper is to compare strategic work performed in transformative forms of spatial planning with the strategic work intended in strategic niche management, which represent a change-management process for enabling transitions. The study outlines the proactive spatial planning of a Danish local authority in order to illustrate how the strategic work performed in this kind of local development project represents a special form of niche management that is able to create room for innovation and challenge existing socio-technical regimes in the building sector, but still different to typical strategic niche management processes. Based on this empirical study, the paper challenges the narrow focus on niches around technology development processes in strategic niche management by pointing towards niche planning in local development projects as another relevant context for niche management. However, as discussed in the paper, this assumes a more strategic form of planning than is often practised today, where more emphasis is put on how planning can contribute to promoting
A theoretical Framework for Sustainable Transition towards Climate Change Adaptation in Urban Areas

Facilitating Creative Environments - Lessons from Danish cases at different organizational scales
keys to facilitate creative environments. Instead, broader perspectives on the organisation need to be considered, including the concrete correlation between facilities, facilitation and culture.

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Håndtering af regnvand er ikke længere kun for spildevandsingeniører

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Transitions in practice: less energy-consuming dwelling practices: The role of urban planners in the reproduction of dwelling practices

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Urbanising facilities management: The challenges in a creative age.

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Publication date: 2011
Water in urban areas: Building sustainable cities in light of climate change

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Facilitating creative environments: When the winds of creativity hit FM

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Innovation i nyere bæredygtigt byggeri: Notat til workshop I IDA-huset

General information
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Organisations: Innovation and Sustainability, Department of Management Engineering, Planning and Management of the Built Environment, Aalborg University
Contributors: Jensen, J. O., Jørgensen, M. S., Lauridsen, E. H., Quitzau, M., Clementsen, A., Elle, M.
Number of pages: 36
Publication date: 2010
Learning from the social construction of environmental indicators: From the retrospective to the pro-active use of SCOT in technology development

This article explores the challenges, advantages and limitations of the pro-active use of the social construction of technology (SCOT) to improve the methods applied in the development of technology for use by a broad range of actors. Our example is the development of environmental indicators for buildings (EIFOBs). We compare the pro-active use of SCOT with both the 'traditional' use of SCOT and with the 'traditional' way of developing EIFOBs. Pro-actively applying SCOT in developing EIFOBs has the potential of bridging some of the communication gaps at the boundaries between the various professional groups in a multi-actor decision-making process. Using SCOT in a pro-active way means the research becomes action research and the researcher goes beyond the role of a mere observer and becomes an actor too. This means the researcher has to consider the criteria for valid action research when designing and carrying out the research. (C) 2009 Elsevier Ltd. All rights reserved.

Managing transition towards energy efficient housing at the local level

The energy standards of housing are currently locked-in, since a deadlock persists in terms of supply and demand of energy efficient housing in the building sector. Although incremental escalation of energy standards of buildings are taking place, especially through tightening of building regulation in several European countries, the general picture remains that existing regimes in the building sector are withheld and that little innovation in terms of new radical energy efficient solutions is taking place. In order to dissolve such a deadlock in the building sector, there is a need to target a wider number of systemic factors at different levels of society, as argued in transition theory, in order to overcome the co-evolving barriers for diffusing energy efficient housing at a more radical and larger scale. The aim of the paper is to look into the formulation of local policies that have the capability to coordinate and facilitate this complex transition process. The local scale of policy-formation has been chosen in this paper in order to describe transition processes from the perspective of practitioners, who are hands on the specific building projects. The local scale provides an in-depth study of how specific practitioners, such as local planning authorities, building firms, building developers, technical experts and suppliers, interact and coordinate their efforts in the local arena of a specific building project (within a more general framework). The focus on the local scale allows a theoretical discussion of the significance that the interplay of practices in real time has for conditions for managing transition processes. The study is based on a specific case study, where the Danish municipality of Egedal has engaged in a process of managing a transition towards more energy efficient housing in a new urban development area. This initiative is just one example of a new wave of initiatives among Danish
municipalities, who make serious efforts to mobilise local stakeholders to implement energy efficient technologies through new forms of strategic planning practices. The study describes the framework in which the different actors manoeuvre, and how the initiatives of the local planning authority impacts the coordination and catalysing of more or less radical changes in the specific building projects in the area. Through this case study, the transition management strategies of the local planning authority, and the challenges encountered through the facilitation process are laid out and discussed. An international perspective is added to the discussion based on similar cases of initiatives of local planning authorities in Italy, France, Estonia and Romania. The paper shows that local planning authorities may play an important role in managing the transition towards more radical energy efficient housing standards, and lays out some of the challenges in terms of necessary competences among these authorities in order to manage such processes successfully. The paper also argues for the need to consider transition processes specifically at the level of practitioners, since the local framework and patterns of interaction among local stakeholders is shown to play an important role for the conditions for transition management.
Denmark
This publication summarises the activities of the COST C23 Action entitled ‘Strategies for a Low Carbon Urban Built Environments (LCUBE)’ which took place over the period 2004 to 2009. This publication is supported by COST. The main objective of the COST C23 Action was to investigate, through a network of nineteen countries across Europe, ‘how carbon reductions can be achieved through appropriate design and management of the urban built environment’. This involved investigating the built environment at building and urban scale, focusing on minimising energy use and associated carbon dioxide emissions. The Action investigated how nineteen EU member states were active in reducing carbon dioxide levels in the built environment, not only in line with buildings meeting the requirements of the Energy Performance of Buildings Directive (EPBD) (1), but also in taking standards further and looking at how national and regional planning initiatives are being developed to reduce the energy use of urban areas. A collection of case studies was compiled to illustrate the development and implementation of low carbon strategies at urban and building scales.

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Mobilizing the Courage to Implement Sustainable Design Solutions: Danish Experiences
Within the built environment, stakeholders tend to implement well-known design solutions, even though sustainable alternatives exist. The key question posed in this paper is: what characterizes successful processes of implementing sustainable design solutions? In an attempt to answer the question, the work focuses on examples of successful implementation in an attempt to understand the competences required. Danish frontrunner projects are described and analysed; one case concerns the implementation of low-energy houses and another describes innovative planning processes in the water sector in order to ensure consideration of sustainable design criteria in the early phases of building projects. In the first case, the public authority succeeds in supporting design managers and other stakeholders to implement sustainable design solutions; in the second case, establishment of new multidisciplinary networks and creative work forms constitutes the outset for change. The work is inspired by the actor-network theory, emphasizing the momentum of prevailing practices, and the need to (re)develop networks to support implementation of sustainable design solutions. Conclusions point to the importance of design managers and others to develop socio-technical networks and storylines to integrate sustainability in the design and building processes. Implementation of sustainable design solutions takes more than courage; it requires key competences in catalysing network changes.

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Municipalities as promoters of energy efficient buildings: Idea catalogue for proactive planning practices

Planning authorities generally experience difficulties in disseminating energy efficient technologies in the built environment. Although planning authorities formulate objectives to promote energy efficient build-ings, these objectives often turn out to be declarations of intent, since the authorities fail to mobilise the stakeholders to implement energy efficient technologies in local building practices. This points towards a need to reframe policy initiatives in order to take the complexity of the challenge of dissemination of energy efficient technologies in practice into account; acknowledging that singular instruments are seldom sufficient to boost a wider transition in building practices, since no simple cause or driver for change exists. The municipal level is essential in facilitating change within energy efficient technologies, since municipals have strong interrelations with practitioners in the building sector at the local level. The aim of this report is to look into municipal efforts to promote energy efficient buildings to learn from their experiences: What types of challenges are municipalities facing, when attempting to disseminate energy efficient technologies in local building projects through municipal planning practices, and how do they cope with these challenges? The report is based on an in-depth study of proactive planning practices performed by municipal partners in the Class 1 project and a series of experiences, strategies and instru-ments are identified. The study of municipal planning practices shows that the municipalities make serious efforts to mobilise local stakeholders to implement energy efficient technologies through municipal planning practices, and that they are struggling to cope with the reluctance of these stakeholders to change their building prac-tices. The municipalities experience that the well-established planning instruments are often neither applicable nor effective in order to induce the necessary changes in local building practices. Instead, the municipalities develop custom-designed planning approaches by exploiting their strong understanding of and involvement in local building processes. Through such planning approaches with a strong local context-ual rooting, the municipalities are capable of facilitating changes in local building practices, leading to the implementation of energy efficient technologies in local building projects. The conclusion of the study is that the prevailing planning and regulation framework need to be reconsid-ered in order to cope with the complexity of mobilising local stakeholders to implement energy efficient technologies in the built environment: Existing planning instruments need to become more readily applicable and effective in promoting energy efficient buildings at the local level. New facilitative planning instruments need to be adopted in order for planning practices to better cope with the complexity of mobilising local stakeholders. In order to support such a modernisation of planning practices, more proactive planning cultures need to be established (and encouraged) among international, national and municipal planning authorities. The first part of the report focuses on different policy instruments, while the second describes the cases in detail. The reader wanting to get an overview of the possible planning means may focus on section 2, while the reader wanting to learn more about the implementation processes and the technological details may also study the cases in section 4 and 5. In section 1 the reader can study the background and the frames for the study.
Sustainable Buildings: DTU Climate Change Technologies

The scientific community agrees that: all countries must drastically and rapidly reduce their CO2 emissions and that energy efficient houses play a decisive role in this. The general attitude at the workshop on Sustainable Buildings was that we face large and serious climate change problems that need urgent action. The built environment is an obvious area to put effort into because of the large and cost-effective energy saving potential and potential for Renewable Energy-based supply systems for buildings.

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User preferences in Stenløse Syd: House owners' and tenants' perspective on energy efficient dwellings

This report studies the preferences of house owners and tenants in Stenløse Syd (Stenløse Syd) - a new urban development project with low energy dwellings. The aim of the study has been to create more knowledge about aspects that may promote or hamper low energy dwellings in order to develop the market for this type of buildings. The report is a delivery of work package 1 in the European Concerto project called 'Class 1'. This project was launched on the basis of the experiences of the Danish municipality of Egedal who initiated an urban development project explicitly promoting energy efficient buildings. The main focus of the study is the target groups that these dwellings have appealed to, and it reports on basic demographic and socio-economic features of the residents as well as their set of motivations to buy/rent a dwelling in this particular settlement, including the importance of the low energy perspective. The report concludes that the residents generally are very positive towards low energy dwellings, and the low energy requirements posed in Stenløse Syd do not per se seem to discourage any potential buyers. However, the survey also concludes that the environment is just one aspect of choosing a dwelling, and for most residents the environment is not the most important. Therefore the report argues that environmental perspectives by themselves do not work as a motivating factor for most people. Another important point is that the clients develop knowledge and competences about the environment during the building process. The report confirms the complexity of residents' preferences in relation to their choice of dwelling and to the patterns of moving, and draws some interesting pictures of role of environmental aspects. As this has not been the focus of many investigations, hopefully this report will contribute to the knowledge basis about user preferences and further inspire national and European authorities and other stakeholders on how to support low energy dwellings.

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Water changed the cities

An improvement in water infrastructure and cleaning up the waters changed many harbour cities in Denmark at the beginning of the 90s. The harbour cities changed from dirty, run-down industrial harbours to clean and attractive harbour dwelling creating new city centres and vital city areas

General information
Low-energy buildings on mainstream market terms: A study of a municipal translation process
This paper looks into the challenge of actually implementing energy efficient technologies and concepts in mainstream new build. The aim of the paper is to point out some of the provisos of promoting low-energy buildings on mainstream market terms, emphasising the need to understand forces working against implementation of low-energy buildings. The study is based on actor-network theory, emphasising the relations and struggles that form the basis for pushing for low-energy buildings. The paper is based on a case study of the proactive attempt of a Danish municipality to force through an actual implementation of strict energy performance requirements in mainstream building. The paper describes how the municipality of Egedal experienced a collapse in regulation for low-energy buildings and what struggles it had to take on in order to convince the mainstream building industry and their customers to implement energy efficient technologies and concepts in the municipal urban development project. In conclusion, the paper underlines that even incremental steps towards more energy efficient buildings require setting up of the appropriate frames, establishing the necessary network, mediating actors to enrol and support innovative thinking.

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Miljøstyret bygningsdrift i danske boligejendomme: - under forskellige ejerformer

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Publication information
Exploring the use of tools for urban sustainability in European cities

This paper outlines the main findings from case studies analysed within the Practical Evaluation Tools for Urban Sustainability (PETUS) project, about the practical use of tools for sustainable urban development in European cities. The paper looks across 60 case studies and identifies the main drivers for using tools, the benefits gained by using them and discusses why, in genera, there is limited use of available tools. The main question raised by the PETUS project was, 'why are so few tools for urban sustainability being used, when so many are available?' Recent years have shown a growing number of theoretical tools to assess and evaluate urban sustainability. However, experience also shows that only a few of such tools are being used in practice. The paper outlines the motivations for actors to use tools, the benefits achieved and the barriers for using tools. From this, different possibilities for improvements in the use of tools are discussed.

Integrated sustainable urban infrastructures in building projects

Current strategies in urban planning and development merely promote standardized building solutions, while failing to prioritize innovative approaches of integration between building projects and sustainable urban infrastructures. As a result of this, urban infrastructures – the urban veins – are outdated from a sustainability perspective. This paper looks into more holistic ways of approaching building projects and discuss whether this provide a basis for an increased integration of urban infrastructures within building projects. In our study, we especially emphasise how conventional ways of approaching building projects are influenced by lock-in of existing infrastructural systems and compare this with two examples of more holistic ways of approaching building projects, developed by two architecture firms. The paper points out that such holistic perspective in building projects provide an improved breeding-ground for more innovative integration of sustainable urban infrastructure, but we also point out other important issues to be dealt with.
Sustainable Buildings in Interaction

The first attempts to build sustainable buildings in Denmark were typically located on the countryside. The basic idea was to create buildings that were independent of the technical infrastructure. District heating has, however, been the dominating solution to heating in buildings in Denmark, and the focus on sustainable building have gradually turned from special houses on the countryside to normally looking houses in the urban fabric, integrated in the technical infrastructure. Some new built urban areas in Denmark will, however, not have to be supplied with district heating – these developments are going to consist of passive houses. The first sustainable buildings were built by their users, and the user–building interaction still play a decisive role for the performance of the present sustainable buildings. The users have to understand how the building functions. Urban design is essential for the possibilities of a sustainable building design: orientation and access to infrastructure are important factor. And the building design is decisive in making the city truly compact: dense in activities. In future, the interaction between the technical infrastructure, the buildings and their users will become even more complex, and the local authorities could play an essential role in finding solutions that reflect the specific local context.

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Uddannelse af fremtidens tekniske chefer på DTU!

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Byækologi og bæredygtighed i lokalplanlægningen
The report explores the possibilities of including conditions related to sustainable building in the Danish municipal local planning. It discusses the need for new ways of regulating buildings in relation to the challenges of sustainable development, and describes the views of a number of municipal planners.
Environmental indicators: Establishing a common language for green building

Environmental indicators for buildings have the potential to serve as a means of making the environmental impacts (and possibly benefits) of buildings visible to all relevant actors. In addition, indicators facilitate the consideration and management of an array of environmental issues in the relevant decision-making situations. The broad acceptance of indicators across different groups of decision-makers in different phases of a building’s life cycle is especially important when indicators are not enforced in building regulation but are to be used in voluntary bottom-up initiatives. The objective of this study was to investigate if (and to what extent) consensus on environmental indicators for buildings as ‘a common language for green building’ can be reached among core actors in the Danish building sector and what such indicators could look like. Based on an analysis of current indicator systems and a qualitative investigation of the views of different actor groups on environmental indicators for buildings, the areas of consensus and lines of conflict between the actor groups were identified. Four different technological frames were used to identify four different perceptions of environmental indicators. Applying the theory of the social construction of technology (SCOT) in a prospective way (in contrast to a retrospective analysis of present or past technology), the findings show that a closure of the indicator-debate on the basis of an all-actors consensus within the near future is unlikely. Instead, three likely scenarios are described for the future development of the indicator debate and the directions are identified into which different actors need to move in order to establish indicators that can serve as a common language for green building.

Middelgrunden Windfarm, Copenhagen
Practical Implementation of Sustainable Urban Management Tools

The paper discusses how to promote the use of decision support tools for urban sustainable development. The interest in decision support tools based on indicators is increasing among practitioners and researchers. The research has so far focused on indicator types and systems of indicators and goals for urban sustainability whereas less focus has been on the context of implementation and even less on what we can learn from practical experiences about the usefulness of urban sustainable indicator tools. This paper explores the practical implementation of urban sustainable management tools. It is generally agreed that in order to make indicators and other sustainability management tools work it is necessary that they are integrated in the relevant urban organisational levels, in a way that creates commitment to the subsequent goals. This includes involvement of organisations, individuals and other urban actors around indicators, goals and actions for sustainable urban development across organizational levels. Hence the key question is how to implement urban sustainable management tools in urban management gaining validity from an expert perspective as well as a lay-man perspective. The paper points to the importance of intermediary actors as bridge-builders between municipal administration, citizens and infrastructure bodies, and their role in anchoring the tool in the local context. We use the Ecological Modernisation as a frame for understanding the need for tools and the development of intermediary actors. The paper is based on the Danish part of the PETUS-project (Practical Evaluation of Urban Sustainability) and the INTERMEDIARY-project (New intermediary services and the transformation of urban water supply and waste water disposal systems in Europe). Further the paper draws on Danish experiences with urban sustainable management tools. The experiences rank from simple approaches of municipalities publishing indicators or green accounts, to more advanced approaches of urban sustainability integrated in environmental management systems.

The Kolding Pyramid

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Contributors: Elle, M.
Number of pages: 336
Waste Sorting in Copenhagen

A green building Esperanto?

Environment and Energy Offices as Intermediaries: Goodbuy to innovation and learning potential?
Exploring aspects of urban sustainability and the use of tools in Europe
This paper explores the different aspects of urban sustainability that are embedded in the PETUS cases and the different ways tools are being used – and not used – in the cases. The PETUS cases illustrate the diversity and the complexity of projects aiming for urban sustainability in Europe. The cases operate on different scales and in different sectors – or attempt to be cross-sector (holistic). The case study comprises of both projects – limited in time and space – and policies for urban sustainability. There are many good examples on tools having provided more sustainable urban infrastructure, for instance through evaluations, that motivates actors to improve the project or policy, or by tools opening for using sustainable solutions by involving new types of actors in the decision-making process. In most of the cases, a number of tools are used. When tools are used in practice means that they are adapted to fit the context, social as physical. This means that the tools are not necessarily used in its "pure" or intended form; elements from the original might not be used, others might be added, procedures might be changed etc. In this way, the tool is being developed through its practical use.

New Intermediary services and the transformation of urban water supply and wastewater disposal systems in Europe: Intermediaries - final report

Sustainability in the existing building stock: - the role of sustainable facilities management
This paper explores the role of Facilities Management in the relation to sustainable development in the existing building stock. Facilities management is a concept still developing as the management of buildings are becoming more and more professional. Many recognize today that facilities management is a concept relevant to others than large companies. Managing the flows of energy and other resources is a part of facilities management, and an increased professionalism could lead to the reduction of the use of energy and water and the generation of waste and wastewater. This is, however, QRWfacilities management's most important contribution to sustainable development in the built environment. Space management is an essential tool in facilities management – and it could be considered a powerful tool in sustainable development; remembering that the building not being built is perhaps the most sustainable building. In other words: the question is if it sensible to talk about a 'sustainable building' without taking the activities in the building into account? In many contexts, maintenance of the existing building stock is not a hot political topic. Facilities management can, however, be a vehicle for more political attention to the large problem of maintenance, especially when facilities management is in focus of new public private partnerships or other new ways of collaboration.
Useful design tools? Innovation and experiences from sustainable urban management

Tools for design management are on the agenda in building projects in order to set targets, to choose and prioritise between alternative environmental solutions, to involve stakeholders and to document, evaluate and benchmark. Different types of tools are available, but what can we learn from the use or lack of use of current tools in the development of future design tools for sustainable buildings? Why are some used while others are not? Who is using them? The paper deals with design management, with special focus on sustainable building in Denmark, and the challenge of turning the generally vague and contested concept of sustainability into concrete concepts and building projects. It describes a typology of tools: process tools, impact assessment tools, multi-criteria tools and tools for monitoring. It includes a Danish paradigmatic case study of stakeholder participation in the planning of a new sustainable settlement. The use of design tools is discussed in relation to innovation and stakeholder participation, and it is stressed that the usefulness of design tools is context dependent.

Water Saving Strategies & Ecological Modernisation: Transitions, Targets & Tools

Drawing on case studies of water saving campaigns and new collaborations, the paper will serve, on the one hand, as an interpretation of the water saving strategy in Copenhagen in the light of Ecological Modernisation, and on the other hand, as a critical discussion of Ecological Modernisation as a frame for understanding resource management. The water management in Copenhagen has in recent years undergone a rather radical transition. Along with strong drivers for resource management in the region the municipal water supplier has tested and implemented a number of initiatives to promote sustainable water management. The paper focuses on the experiences from different water saving initiatives carried out since the mid 80s relating them to some central aspects of Ecological Modernisation theories: ·Demands for tools and targets ·New tasks and roles for suppliers, consumers and stakeholders and the emergence of a new group of intermediary actors ·The changing logics of sustainability and the development of storylines The ecological modernist discourse implies a participatory approach, by which citizens are made co-responsible and included in efforts towards a sustainable development; however, the paper challenges the way this perspective is developed by Ecological Modernisation scholars. Empirically, the paper draws on case studies from the Copenhagen region, where water saving activities have resulted in a radical decrease of water consumption in household - from 168 l/capita/day in the 80s to 125 l/capita/day in 2002. A series of different strategies, targets and tools have been implemented: Emphasizing demand side instead of supply side, using and communicating indicators, formulating goals for reducing water consumption and developing learning processes in water management. A main feature is the use of intermediary actors as links between suppliers and consumers, and as facilitators of learning processes in water savings and local water management. Hence
the questions are: How does EM help us understand the development of water saving activities and the emergence of intermediary services such as water metering, lo-cal water saving campaigns and new collaboration? How can the EM approach to citi-zens’ participation be developed? The paper is based on research carried out in the two EU-based research projects, PETUS and Intermediaries. While the first discusses practical evaluation tools in urban sustainability, the last explores the emergence and roles of a new group of actors in ur-ban infrastructure.

General information
Publication status: Published
Organisations: Section for Planning and Management of Building Processes, Department of Civil Engineering
Contributors: Hoffmann, B., Jensen, J. O., Elle, M., Nielsen, S. B.
Number of pages: 90
Publication date: 2005

Host publication information
Title of host publication: Proceedings of the 9th international conference on Environmental Science and Technology
Volume: Vol A - Oral Presentations
Place of publication: Rhodes
Publisher: UNIV AEGEAN
ISBN (Print): 960-7475-33-X
(Proceedings of the International Conference on Environmental Science and Technology).
Source: orbit
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Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2005 › Research › peer-review

Billeder af en bæredygtig fremtid

General information
Publication status: Published
Organisations: Section for Planning and Management of Building Processes, Department of Civil Engineering
Contributors: Elle, M.
Number of pages: 189
Publication date: 2004

Host publication information
Title of host publication: Samarbejde om bæredygtig udvikling: Nye perspektiver på samarbejde mellem skole og eksterne aktører
Place of publication: Copenhagen
Publisher: Danish University of Education Press
ISBN (Print): 87-76-13056-8
Source: orbit
Source-ID: 153930
Research output: Chapter in Book/Report/Conference proceeding › Book chapter – Annual report year: 2004 › Research › peer-review

Managing facilities in an Scandinavian manner: creating a research agenda

General information
Publication status: Published
Organisations: Section for Planning and Management of Building Processes, Department of Civil Engineering
Contributors: Elle, M., Jørgensen, B., Koch, C., Nielsen, S. B.
Number of pages: 206
Pages: 60-68
Publication date: 2004

Host publication information
Title of host publication: Proceedings of the third European research symposium in Facilities Management
Place of publication: Trondheim, Norway
Publisher: Norwegian University of Science and Technology
ISBN (Print): 82-7551-028-7

Bibliographical note
Published later in a revised version in 'Facilities'
Source: orbit
Source-ID: 153925
Managing facilities in a Scandinavian manner: creating a research agenda

Presents the aims and needs of research in facilities management (FM) at the section of Planning and Management of Building Processes at BYG*DTU. As the building stock in Denmark is rapidly increasing, socio-demographic developments implies profound changes in both the needs of inhabitants and the way that buildings are used, combined with an increased consciousness of sustainability. Buildings should be seen as long-term 'investments' while also keeping in mind the construction sector's needs for increased productivity, long-term product quality and enhanced value. This is the background for developing a research position. Identifies the Scandinavian Way as using FM on a multiactor level, rather than just to serve the interests of a single organisation. The aim is to focus on small and medium sized enterprises, non-profit associations and tenants, as well as the bodies administrating infrastructure within the mainstream FM field. There is an urgent need to address how society can best manage the growing (and decaying) building stock, to develop life-cycle rooted infrastructure and building design, and finally allow buildings to be appropriated by their current and future users.

General information
Publication status: Published
Organisations: Section for Planning and Management of Building Processes, Department of Civil Engineering
Contributors: Elle, M., Engelmark, J., Jørgensen, B., Kock, C., Nielsen, S. B., Vestergaard, F.
Pages: 311-316
Publication date: 2004
Peer-reviewed: Yes

Sustainable Facilities Management: Lessons to be learned from the Danish public housing

The Danish public housing sector has more than 20 years of experience with sustainable facilities management based on user involvement. The paper outlines this development in a historical perspective and gives an analysis of different approaches to sustainable facilities management. The focus is on the housing departments and strategies for the management of the use of resources. The research methods used are case studies based on interviews in addition to literature studies. The paper explores lessons to be learned about sustainable facilities management in general, and points to a need for new intermediary services to facilitate implementations of new and environmentally sound technologies and everyday practices.

General information
Publication status: Published
Organisations: Section for Planning and Management of Building Processes, Department of Civil Engineering
Contributors: Nielsen, S. B., Elle, M., Hoffmann, B., Jensen, J. O.
Number of pages: 206
Pages: 7-15
Publication date: 2004
The Seven Challenges of Sustainable Cities
The departing point for this paper is that we do not know what a sustainable city is. The present situation is characterised by small demonstration projects and strategies for urban sustainable development that are not coherent. The modern city can be viewed as a complex technological system. The urban infrastructure, the buildings and their users interact in numerous and increasingly complex ways. The paper analyses some of the challenges cities meet in their quest for sustainability: Lack of awareness and ethics; Lack of tools for decision making; Lack of models for sustainable urban management; Lack of diffusion of innovations; The momentum of existing infrastructure; Counteracting trends in the development of modern society and the need for reinventing planning.

General information
Publication status: Published
Organisations: Section for Planning and Management of Building Processes, Department of Civil Engineering
Contributors: Hoffmann, B., Elle, M., Nielsen, S. B., Jensen, J. O., Hoffmann, B.
Pages: 379-387
Publication date: 2004

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Title of host publication: COST C8 final conference on Sustainable Urban Infrastructure: approaches - solutions - methods
Place of publication: Trento, Italy
Publisher: Temi Editrice
ISBN (Print): 88-85114-80-6
Electronic versions:
CostC8_artikel_379_3871.pdf

Bibliographical note
Final Conference for COST C8 'Best Practices in Sustainable Urban Infrastructure'
Source: orbit
Source-ID: 140788
Research output: Chapter in Book/Report/Conference proceeding » Article in proceedings – Annual report year: 2004 » Research » peer-review

Værktøjer til bæredygtig byudvikling

General information
Publication status: Published
Organisations: Section for Planning and Management of Building Processes, Department of Civil Engineering
Contributors: Jensen, J. O., Elle, M.
Pages: 46-51
Publication date: 2004
Peer-reviewed: Unknown

Publication information
Journal: Stads og havneingeniøren
Volume: 95
Issue number: 11
ISSN (Print): 0038-8947
Original language: Danish

Bibliographical note
PETUS er beskrevet på www2.byg.dtu.dk/proj_webs/petus/index_petus.htm
Source: orbit
Source-ID: 153935
Research output: Contribution to journal » Journal article – Annual report year: 2004 » Communication

Webværktøj til bæredygtig lokal håndtering af spildevand

General information
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Organisations: Department of Environmental Engineering, Department of Civil Engineering
Pages: 60-65
Publication date: 2003
Peer-reviewed: Unknown
Infrastruktur i forandring

General information
Publication status: Published
Organisations: Section for Planning and Management of Building Processes, Department of Civil Engineering
Contributors: Nielsen, S. B., Elle, M., Jensen, J. O.
Pages: 76-79
Publication date: 2002
Peer-reviewed: Unknown

Vurdering af bæredygtig spildevandshåndtering i kloakløse bebyggelser

General information
Publication status: Published
Organisations: Department of Environmental Engineering, Department of Civil Engineering
Publication date: 2002

Conclusions: Planning for Sustainable Urban Flows
The chapter concludes on the 3 local agenda 21 studies in the book.

General information
Publication status: Published
Organisations: Planning and Management of the Built Environment, Department of Management Engineering, Leibniz Institut für Regionalentwicklung und Strukturplanung
Contributors: Moss, T., Elle, M.
Number of pages: 212
Pages: 192-194
Publication date: 2001
Infrastructure and Local Agenda 21: The Municipality of Albertslund in the Copenhagen Region
The Chapter explores the future of technical networks from the perspective of local aspirations for sustainable forms of flow management as expressed by LA21 initiatives

General information
Publication status: Published
Organisations: Planning and Management of the Built Environment, Department of Management Engineering
Contributors: Elle, M.
Number of pages: 212
Pages: 160-172
Publication date: 2001

Host publication information
Title of host publication: Urban Infrastructure in Transition : Networks, Buildings, Plans
Publisher: Earthscan
Editors: Guy, S., Marvin, S., Moss, T.
ISBN (Print): 1-85383-689-3

Bibliographical note
The chapter is a revised version of the similar chapter in the EU-report, published in 1998
Source: orbit
Source-ID: 250056
Research output: Chapter in Book/Report/Conference proceeding › Book chapter – Annual report year: 2001 › Research › peer-review

Towards Sustainable Flow Management - Introduction
Outlines the conditions for the three Local Agenda 21 case-studies in the Sustainable Flow Management project

General information
Publication status: Published
Organisations: Planning and Management of the Built Environment, Department of Management Engineering, Leibniz Institut für Regionalentwicklung und Strukturplanung
Contributors: Moss, T., Elle, M.
Number of pages: 212
Pages: 141-142
Publication date: 2001

Host publication information
Title of host publication: Urban Infrastructure in Transition : Networks, Buildings, Plans
Publisher: Earthscan
ISBN (Print): 1-85383-689-3

Bibliographical note
The chapter is a revised version of the similar chapter in the EU-report, published in 1998
Source: orbit
Source-ID: 250055
Research output: Chapter in Book/Report/Conference proceeding › Book chapter – Annual report year: 2001 › Research › peer-review

Vurdering af spildevandsløsninger i det åbne land - et casestudie om Hillerød Kommune

General information
Publication status: Published
Organisations: Department of Environmental Engineering, Department of Civil Engineering
Publication date: 2001
Assessing the potential of change in urban infrastructure systems

General information
Publication status: Published
Organisations: Department of Planning
Contributors: Nielsen, S. B., Elle, M.
Pages: 403-412
Publication date: 2000
Peer-reviewed: Yes

Assessing the sustainability of small wastewater systems. A context-oriented planning approach

General information
Publication status: Published
Organisations: Planning and Management of the Built Environment, Department of Planning, Section for Planning and Management of Building Processes, Department of Environmental Science and Engineering
Pages: 347-357
Publication date: 2000
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Vurdering af bæredygtig spildevandshåndtering i kloak-løse bebyggelser: Afrapportering af fase II

General information
Publication status: Published
Organisations: Department of Planning, Department of Environmental Science and Engineering
Number of pages: 30
Publication date: 2000
Assessing the sustainability of small wastewater systems: A context oriented planning approach

General information
Publication status: Published
Organisations: Department of Planning, Department of Environmental Science and Engineering
Contributors: Hoffmann, B., Nielsen, S. B., Elle, M., Gabriel, S., Eilersen, A. M., Mikkelsen, P. S., Henze, M.
Publication date: 1999

Host publication information
Title of host publication: Assessing the sustainability of small wastewater systems
Source: orbit
Source-ID: 174397
Research output: Chapter in Book/Report/Conference proceeding – Article in proceedings – Annual report year: 1999 – Research – peer-review

Assessing the sustainability of wastewater handling in non-sewered settlements.

General information
Publication status: Published
Organisations: Department of Environmental Science and Engineering, Department of Planning
Contributors: Eilersen, A., Nielsen, S., Gabriel, S., Hoffmann, B., Moshøj, C., Henze, M., Elle, M., Mikkelsen, P.
Publication date: 1999

Host publication information
Title of host publication: (eds. Kløve, B., Etnier, C., Jenssen, P. & Mæhlum, T.)
Place of publication: Ås
Publisher: Jordforsk, Department of Agricultural Engineering, The Agricultural University of Norway & IEES
Source: orbit
Source-ID: 172929
Research output: Chapter in Book/Report/Conference proceeding – Article in proceedings – Annual report year: 1999 – Research – peer-review

Momentum in Transformation of Technical Infrastructure

General information
Publication status: Published
Organisations: Department of Planning
Contributors: Nielsen, S. B., Elle, M.
Pages: 1980-1987
Publication date: 1999
Peer-reviewed: No

Publication information
Journal: Conference Proceedings
Volume: 4
Original language: English
Source: orbit
Source-ID: 174371
Research output: Contribution to journal – Journal article – Annual report year: 1999 – Research

Vurdering af bæredygtig spildevandshåndtering i kloak-løse bebyggelser. Afrapportering af fase 1

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Publication status: Published
Organisations: Department of Environmental Science and Engineering, Department of Planning
Bæredygtig infrastruktur

General information
Publication status: Published
Organisations: Department of Planning, Technical University of Denmark
Contributors: Nielsen, S. B., Jensen, J. O., Elle, M.
Pages: 40-45
Publication date: 1998
Peer-reviewed: No

Publication information
Journal: Aktuelt miljø
Volume: 5
Issue number: 1
Original language: Danish
Source: orbit
Source-ID: 174369
Research output: Contribution to journal – Journal article – Annual report year: 1998 – Research

Infrastructure and Local Agenda 21: the Municipality of Albertslund in the Copenhagen Region

General information
Publication status: Published
Organisations: Department of Planning
Contributors: Elle, M.
Pages: 123-132
Publication date: 1998

Host publication information
Title of host publication: Final Report for TEGchnical Networks as INstrurments of Sustainable Flow Management
Place of publication: Berlin
Publisher: IRS
Source: orbit
Source-ID: 171423

Recycling - Danish Waste Management Strategy

General information
Publication status: Published
Organisations: Department of Planning, Danish Board of Technology, Aarhus University, Danish Society for the Conservation of Nature, RenoSam, Rockwool International, Danish Waste Management Organisation, Rendan - technical knowledge centre
Number of pages: 34
Publication date: 1998

Publication information
Place of publication: Copenhagen
Publisher: Danish Board of Technology
Original language: Danish
URLs:
http://www.tekno.dk/udgiv/984/984all.htm
Sustainable Flow Management in a Danish Perspective

General information
Publication status: Published
Organisations: Department of Planning
Contributors: Elle, M.
Number of pages: 206
Publication date: 1998

Host publication information
Title of host publication: EHNRA - Book of Abstracts
Place of publication: Cardiff
Publisher: Cardiff University
Source: orbit
Source-ID: 171426
Research output: Chapter in Book/Report/Conference proceeding – Article in proceedings – Annual report year: 1998 – Research

Sustainable infrastructure

General information
Publication status: Published
Organisations: Department of Planning, Technical University of Denmark
Contributors: Nielsen, S. B., Elle, M., Jensen, J. O.
Pages: 40-45
Publication date: 1998
Peer-reviewed: No

Publication information
Journal: Aktuelt miljø
Volume: 5
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Original language: Danish
Source: orbit
Source-ID: 171590
Research output: Contribution to journal – Journal article – Annual report year: 1998 – Research

The Future of Urban Ecology

General information
Publication status: Published
Organisations: Department of Planning
Contributors: Elle, M.
Pages: 50-54
Publication date: 1998

Host publication information
Title of host publication: Urban Ecological Annual Report 1998
Place of publication: Aarhus
Publisher: Danish Centre for Urban Ecology
Source: orbit
Source-ID: 171421

Towards Sustainable Flow Management - Introduction

General information
Publication status: Published
Towards Sustainable Flow Management: Local Agenda 21 - Conclusions

General information
Publication status: Published
Organisations: Department of Planning, Leibniz Institut für Regionalentwicklung und Strukturplanung
Contributors: Moss, T., Elle, M.
Pages: 143-144
Publication date: 1998

Host publication information
Title of host publication: Final Report for Technical Networks as Instruments of Sustainable Flow Management
Place of publication: Berlin
Publisher: IRS
Source: orbit
Source-ID: 171425
Research output: Chapter in Book/Report/Conference proceeding › Book chapter – Annual report year: 1998 › Research › peer-review

Urban Ecology Solutions - Status of Knowledge and Experience: Byøkologiske Løsninger - status for viden og erfaringer

General information
Publication status: Published
Organisations: Department of Planning
Contributors: Elle, M., Jensen, J. O.
Number of pages: 396
Publication date: 1998

Publication information
Place of publication: Copenhagen
Publisher: Ministry of Housing
ISBN (Print): 87-987188-2-0
Original language: Danish
Source: orbit
Source-ID: 171645
Research output: Book/Report › Book – Annual report year: 1998 › Education

2nd Interim report for the RTD-project: Technical Networks as Instruments of SFM

General information
Publication status: Published
Organisations: Department of Planning, Leibniz Institut für Regionalentwicklung und Strukturplanung, Newcastle University, ELIUS
Number of pages: 96
Publication date: 1997

Host publication information
Title of host publication: 2nd interim report for the RTD-project: Technical Networks as instruments of SFM
Place of publication: Berlin
Are the Planning of the Sustainable Future to be left for the chemical engineers?

General information
Publication status: Published
Organisations: Department of Planning
Contributors: Elle, M.
Pages: 16-17
Publication date: 1997

Host publication information
Title of host publication: The Modern City
Place of publication: Hørsholm
Publisher: FSL, Ministry of Environment and Energy
Source: orbit
Source-ID: 169149
Research output: Chapter in Book/Report/Conference proceeding – Annual report year: 1997 – Research

Evaluation of Vester-Gror: An internal report to Vester-Gror and the Green Fund

General information
Publication status: Published
Organisations: Department of Planning
Contributors: Elle, M.
Number of pages: 23
Publication date: 1997

Publication information
Original language: Danish
Source: orbit
Source-ID: 169132

From Here to Sustainability

General information
Publication status: Published
Organisations: Department of Planning
Contributors: Elle, M.
Pages: 10-11
Publication date: 1997
Peer-reviewed: No

Publication information
Journal: Netnyt
Issue number: 1
Original language: Danish
Source: orbit
Source-ID: 169292
Research output: Contribution to journal – Journal article – Annual report year: 1997 – Research

Planning the invisible city: about infrastructure and municipal planning

General information
Publication status: Published
Organisations: Department of Planning, Technical University of Denmark
Contributors: Elle, M., Jensen, J. O., Nielsen, S. B.
Pages: 18-21
Progress Report for the RTD-project: Technical networks as instruments of Sustainable Flow Management

Can the National Centre take Care of it all?

Integrated Solutions in Urban Ecology - Dream or Reality?
General information
Publication status: Published
Organisations: Department of Planning
Contributors: Elle, M., Jensen, N.
Pages: 13-23
Publication date: 1996

Host publication information
Title of host publication: 14. danske byplanforskermøde - bæredygtig byudvikling, fra biotop til byplan
Place of publication: Hørsholm
Publisher: Danish Building Research Institute, Aalborg University
Source: orbit
Source-ID: 165476
Research output: Chapter in Book/Report/Conference proceeding – Article in proceedings – Annual report year: 1996

Sustainable Flow Management and Urban Ecology in Denmark

General information
Publication status: Published
Organisations: Department of Planning
Contributors: Elle, M.
Pages: 69-75
Publication date: 1996

Host publication information
Title of host publication: Managing the Invisible City - the changing function of technical networks in Europe
Place of publication: Berlin
Publisher: Institut für Regionalentwicklung und Strukturplanung
Source: orbit
Source-ID: 165475
Research output: Chapter in Book/Report/Conference proceeding – Article in proceedings – Annual report year: 1996

Urban Ecology is more than three Aberrations

General information
Publication status: Published
Organisations: Department of Planning, Copenhagen Municipality
Contributors: Elle, M., Lading, T.
Pages: 1
Publication date: 1996
Peer-reviewed: No

Publication information
Journal: Ingeniøren
Issue number: 19
Original language: Danish
Source: orbit
Source-ID: 165479
Research output: Contribution to journal – Journal article – Annual report year: 1996