MoreSpace - Strategies for an Intensive Use of Built Environment over Time

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ABSTRACT

Corporate social responsibility (CSR) in regard to the development and management of our built environment signifies: The intensive use of built environment over time, as it is the fastest and most cost-efficient way to save CO_2-emissions and money. Furthermore it advances within buildings' life cycle.

The research which was undertaken is based on a series of (empirical) projects titled „MoreSpace". These surveyed the intensity of use of public buildings in Austria, Germany and Switzerland. Evaluations elucidate the tremendous saving potential for available space resources: For instance, rooms for office spaces or educational purposes are out of use for 90 % to 95 % of their lifetime. Models with an improved space management implemented in Austrian grammar schools show that 40% of classrooms could be used for other purposes – or in other words: 80m € in user costs of buildings per year as well as 5,000 tons of CO_2 emission per year can be saved. Improved booking processes within the University of Technology Vienna saved 50 % of the reservations of lecture halls and contribute to reduce failure bookings by up to 80%.

Moreover the author suggests a layout for a new research field, aiming for a diverse understanding of Facility Management (FM) – crucial for the implementation of Social Corporate Responsibility. Buildings are a key target area in the realisation of EU climate goals. Therefore, the importance of stakeholder interests, a professional diverse FM know-how and new key performance figures for the measurement of sustainable efficiency of built facilities are discussed.

Keywords

Facilities Management (FM), Refurbishment, Corporate Social Responsibility (CRS), System Thinking, Real Estate Management

1 INTRODUCTION

Portfolio management of public facilities lies in the realm of public authorities. A non-efficient management of public real estate property and the subsequently undesirable irresponsible way public financial resources are dealt with are-Europe-wide issues. The EU-directive on „the energy performance of buildings" (The European Parliament, 2010) requires that standards on the energy efficiency of buildings be improved in order to reach EU-climate goals within the next years.

Buildings are identified to be a crucial area for the realisation of the EU climate goals (Amann, 2010) and – with the implementation of essential improvements – beneficial effects can be derived from their features. An inactive attitude inevitably hinders positive achievements.

For the authors understanding there is a lack of awareness for the connection between the existing high potential within the real estate sector and the poorly used property effects, creating negative building performances in respect to their environmental impact. Positive effects of refurbishment often remain unexhausted, as buildings are not used efficiently, which in turn results in high vacancy. But a holistic view shows that users' behaviour significantly affects energy-efficient performance of buildings. "Available space capacity per person (m^2)" is still anchored to social prestige. Therefore it leads to social constraints lowering ones' "status" – even though, in general the actual space requirements are highly exceeded.

Other core problems of utilisation of public facilities and buildings are (KGSt, 1996):

- a lack of inducement for economical utilisation
- diversity of in transparent responsibilities
- a lack of overall responsibility
- a lack of data of space resources and costs
- a lack of information on operation time and
- a lack of foresight.

The research and development approach is managerial as it tries to answer the question: How intensive is our built environment, e.g. school buildings, used? But apart from that the author discusses the thesis / a layout for a new understanding between the relationship of FM and SCR for a foresight development, management and new benchmarks of/for ecological and economical sustainable space facilities.

The development of new (1) FM strategies - encompassing sophisticated organisational processes - and (2) new ecological benchmarks and (3) encouraging an efficient utilisation of corporate, public and private space resources, are important aspects of CSR, as they deal with socio-economic and ecological aspects.

Moreover the intensive use of built environment over time supports public authorities' goals of saving CO_2 emissions and it has the added benefit of saving funds in times when every state is forced to reduce public expenses et al.. Money savings can be reinvested into energy savings measures and the improvement of buildings' flexibility - resulting in highly utilised spaces. The alternative - investing into new building developments or structural enlargements – offer only marginal benefits in comparison.

2 RESEARCH- AND DEVELOPMENT APPROACH

Buildings which are heated, cooled and maintained but remain largely unused over time are not ecologically efficient! It is a widespread belief that the more efficient the property the lower the total occupancy costs per square metre Net Internal Area (NIA). This analysis proposes new key figures for the measurement of ecological and economical efficiency over buildings' life time. Eco-efficient aspects of the built environment, the flexibility of buildings and the potentials for high utilisation of properties are discussed in the course of this research approach, which also considers the following aspects:

How can professional Facility Management assist in reaching EU climate goals? That means: to which extent is it possible to save CO_2 emissions, financial resources and net energy through a more intensive utilisation of built environment and more efficient business operation processes?

How can "MoreSpace" encourage key actors to invest savings from improved buildings' operations into the energy optimisation of new buildings and/or the refurbishment of existing assets?

How can "MoreSpace" contribute to raising general awareness of the ecological efficiency of the built environment as a relevant part of SCR?

How can "MoreSpace" ensure that an efficient use of space facilities means the reduction of available (personal) space but also the growth of 'feel more space' through an intelligent space management, improved organisational structures and positive incentives for the stakeholders - even though the utilisation performance of the space environment increases?

Possibilities for renting vacancy or vacant space resources, as well as parallel utilisation by additional uses in succession of corporate and public buildings are aims of the ongoing research.

Consequently, the research approach addresses property users, tenants, operators, owners as well as developers and designers of dynamicly utilised properties (a) on a facility management basis, (b) in consideration of structural issues and (c) for a higher utilisation of corporate, public but also of private space facilites to create raise energy savings and ecological efficiency of built environment.

To analyse and to evaluate these approaches, the paper is based on (1) an empirical evaluation presenting current results of a series of ongoing scientific studies at the University of Technology Vienna. It contains representative results of the surveyed educational buildings in Austria, detailing e.g. the intensity of use of public educational buildings.

Moreover the author (2) presents a layout with the intention to open a new research field for a diverse understanding of Facility Management, by the means of the intensive use of our built environment as important part of Corporate Social Responsibility (CSR). The MoreSpace approach is equally understood as a social challenge so System Thinking and a foresight view are the fundamentals of this research. Not at least in that approach the research is focussing on (unused) potential in order to generate the highest possible positive environmental impacts as well as to develop win-win models for the stakeholders' motivation and benefits.

3 METHODOLOGY

Empirical data concerning time of use were collected and analysed in a representative selection of educational buildings. On one hand (1) the optimisation of building space resources and the utilisation of lecture halls and classes within the University of Technology Vienna, Austria, via booking-process-management were assessed. The work is still in progress. On the other hand (2) the utilisation and space management of Austrian public grammar schools were evaluated.

(1) The tool "MoreSpace" was developed for ongoing research within the University of Technology Vienna (Emrich, Zerlauth, Tauböck, Bruckner, Popper, 2010). The tool calculates the optimisation of building-space-resources combined with the required space for education within available lecture halls and classes. The simulation combines the methods of Discrete

Event Simulation (DEVS), business process modeling (BPM) and space management. Booking regulations and parameters for the simulation need to be defined in advance to calculate the most ideal units available. The outcomes are (a) assignments of lecture halls /classes to events / courses (b) utilisation of lecture halls /classes in percentage (c) wrong bookings of lecture hall /classes (list).

The methodology - assessing empirical data of Austrian public classrooms - was not only employed to review (2) the calculated performance, but also to consider legal regulations, approved planning and construction guidelines, financial aspects and the current incentives of the various stakeholders to support an increasing utilisation of the considered classrooms. The listed environmental factors influence the research findings and therefore the actual assessed element (= utilisation of classrooms in Austrian grammar school [in percentage]) in respect to the understanding of the research field as complex and dynamic system.

Theoretical basis for strategies gathering in an integrated system thinking (Ulrich, Probst, 1988, Bleich 2004) and a systemic managerial approach (Ulrich, Krieg, 1974), build the basis for the evaluation of research questions which – from the author's point of view – cannot be answered yet. Incentive structures of the various stakeholders are reflected using the guidelines of the Principal Agent Theory (Fritsch, Wein, Ewers, 2003; Picot, Dietl, Frank, 1997; Winter, 1996), and findings of work scientist and psychologist Frederick Hertzberg (Hertzberg 1986).

The empirical part of this paper (see Fig. a, b and c) refers to data collected from all of the 259 Austrian public grammar schools, corresponding to 5 % of the Austrian public school portfolio of the school year 2009/2010 (Statistik Austria, Schulen im Schuljahr 2009/10 nach Schultypen). The space management tool of the *Austrian Federal Ministry for Education, Arts and Culture (BMUKK,* tenant of public school-buildings*)*, "e-fast"[1], provided data of every single room within the whole portfolio of Austrian public schools. The *Bundesimmobiliengesellschaft (BIG,* property owner*)* offered data on (a) operational costs and (b) calculations of the annual heat demand of representative school buildings.

The possible savings of CO_2 emissions per year were calculated on the basis of these data by using an online benchmarking tool for CO_2emissions of public educational buildings[2]. User costs of school buildings per year were calculated manually on the basis of DIN 18960 (Feb 2008) and through expert information sourced from personal interviews. The regular timetables for Austrian grammar schools were also considered as a basis for designing improved space management strategies.

(b) Current adjustments with reference to planning, building and operating parameters legislation were studied. Additionally, information was sourced from several personal interviews with the relevant authorities – the *Austrian Federal Ministry for Education, Arts and Culture (BMUKK)* and the *Bundesimmobiliengesellschaft (BIG)*. The questions focused on contractual arrangements relating to stakeholders' interests in gaining potential and methods for an enhanced utilisation of their facilities.

[1] Facility Administration Service Tool, http://www.efast.at/, accessed December, 2011, with exclusive administration authorization

[2] http://benchmark-nwg.klimaktiv-co2-rechner.de/de_DE/popup/, accessed January 2011

(c) Hence conclusions of the stakeholders' inducements for essential measures, ensuing an improved *ecological footprint* (Wiegand, 2011) of the educational buildings, are analysed. Information about key stakeholders' interests (the user, the operator, the owner, the financer) were requested during the personal interview sessions. Current incentives, encompassing the following – are discussed and analysed:

- encouraging an intensive use of classrooms and thus
- supporting a more energy efficient built environment by improved facility management and
- reducing the annual heat demand through a conscious user behavior
- investing in energy optimisation of new buildings or in the refurbishment of existing assets

4 FINDINGS

4.1 Evaluation - space utilisation within buildings for office and educational purposes:

The analysis of empirical data demonstrates the enormous potential for saving available space resources (see table 1). Rooms for office spaces or educational purposes are out of use for 90 % to 95 % of their lifetime. Studies elucidate the intensity of utilisation of office space or of regular classrooms if we consider the possibility that, in general, the analysed space is available 24 hours a day, 7 days a week and 365 days a year (amounting to a usage of 100 %). If we update the evaluation to 8 hours per working day, a 5-day working week, considering holidays, recreational periods, illness and other needs within the evaluation the outcomes show a poor usage of 5 % of the available office space. Looking at rooms for educational purposes (e.g. lecture halls and classrooms) cancelling of classes and failure bookings reduce the capacity utilisation to 10%.

Table 1 Usage of space for office and educational purposes (Wiegand, 2010)

office purpose			educational purpose
use of office space 24h/day	100 %	100 %	use of classrooms 24h/day
five-day working week	71 %	71 %	five-day school week
public holidays and holidays	63 %	51 %	school holidays
eight-hour day	21 %	17 %	eight-hour day
recreation and illness	16 %	16 %	cancellation of classes
social and organisational needs	5 %	10 %	inefficient space management

Enhanced booking processes – using the tool "MoreSpace" (Emrich, Zerlauth, Tauböck, Bruckner, Popper, 2010) - saved 50 % of the reservations of lecture halls and moreover helped to reduce failure bookings by up to 80% within the University of Technology Vienna (Wiegand, 2010). The tool is currently being further developed.

4.2 Evaluation - potential Savings of square metres by an improved classroom management in 259 Public Austrian Grammar Schools:

The calculation basis for the usage of classrooms are the following parameters: number of classes, number of classes per age group, information about square metres per classroom, the regular time table and the consideration statutes for regular schooling. In Austria, the principle of permanent classrooms is widespread. This means that the students own their permanent classrooms and change for special lectures only. The top illustration in Fig. a shows the classroom usage of 1st level of education of a-public

grammar school with four year-groups considering the referred aspects. If we modify the classroom management from permanent classes to course classrooms, the bottom graphic (see Fig. a) illustrates that four classrooms can be merged to two classrooms through an improved space management and a more intensive use of the space capabilities. This saves up to 40 % of classrooms for other purposes. The red box summaries the overall potential savings in an overview of the assessed 259 Austrian public grammar schools.

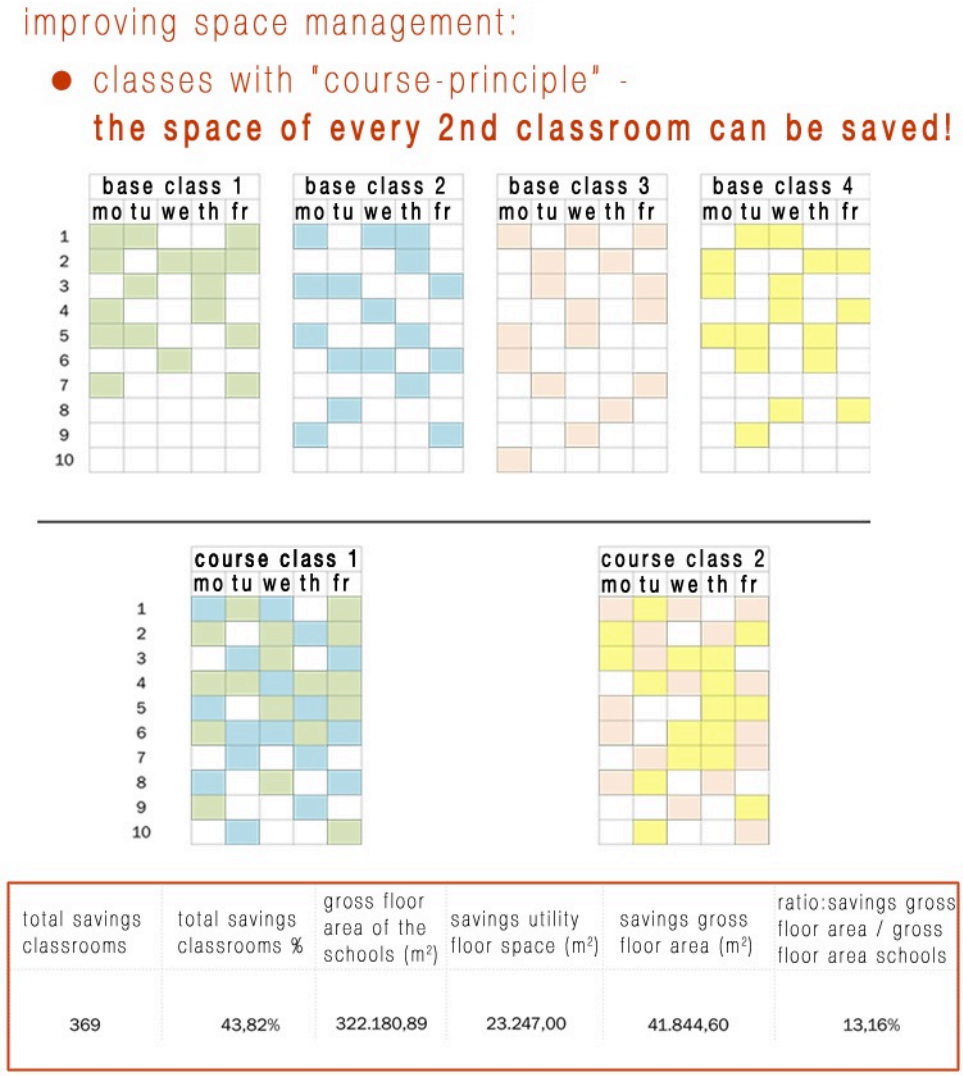

Figure a Potential space-savings within classrooms by an improved space-management in Austrian grammar schools (Kovacs, 2011)

4.3 Evaluation - potential Savings of usage costs per year through an improved classroom management in 259 Public Austrian Grammar Schools: Consequently, the evaluated results illustrated in Fig. a the potential savings of usage costs are assessed evaluated. The basis for the calculations are: DIN 18960[3], the calculation of 1,600 € /m^2 Net floor area[4] and

[3]DIN 18960 is a standard benchmark in Austria and Germany to calculate usage costs of building-constructions

a Total gross floor area of 3,050,000m^2. The left table in Fig. b shows the actual usage costs / year for the 259 evaluated school buildings. The right table shows that 80 m € user costs per year can be saved from the benefits of a modified facility management within the 259 school buildings.

- cost-saving potential through implementation of classes with "course-principle"

saving potential: 44 % of the base classrooms

	construction costs		5.075.200.000€	667.896.320€
DIN 18960	100 costs of capital	4%	203.008.000€ /a	26.715.853€ /a
	200 costs for property management			
	300 operating costs	8%	406.016.000€ /a	53.431.706€ /a
	400 costs for maintainance			
	usage costs / year			
	life cycle costs / year		609.024.000€ /a	80.147.558€ /a

- cost-saving potential through keeping the base classes but integrate special courses

saving potential: classrooms for special courses

	construction costs		5.075.200.000€	735.904.000€
DIN 18960	100 costs of capital	4%	203.008.000€ /a	29.436.160€ /a
	200 costs for property management			
	300 operating costs	8%	406.016.000€ /a	58.872.320€ /a
	400 costs for maintainance			
	usage costs / year			
	life cycle costs / year		609.024.000€ /a	88.308.480€ /a

Figure b Potential savings of user costs of buildings per year by an improved space-management in Austrian grammar schools (Kovacs 2011)

4.4 Evaluation - potential Savings of heating demand and CO_2 emission through refurbishment insulation or/and the reduction of evaluated unused total gross area in 259 Public Austrian Grammar Schools: The average annual heating demand of a representative selection of the analysed school buildings accounts for 96 kilowatt hour per square metre per year [kWh/m^{2}a] (Kovacs, 2011). Therefore the average school building is classified as 'Category C' within Austria's standardised 'Energy Performance Certificate for buildings'[5]. Summing up the total gross area of the 259 Grammar Schools the overall average heating demand accounts for 292,800,000 kWh/m2 per year.

The average size of the 259 school buildings looked at amounts 11,796 m^2 total gross area. Nearly all schools use district heating. So the energy consumption of a school building of a size of 11,796 m^2 total gross area sizes 1,132,392 kWh per year – which effect 147,21t CO_2

[4]reference: *Austrian Federal Ministry for Education, Arts and Culture* (BMUKK), tenant of public school-buildings (Kovacs, 2011)
[5]http://www.klimaaktiv.at/article/archive/31335/ accessed: 18.12.2010

emissions annually.[6] Fig. c illustrates several scenarios for the reduction of the yearly consumption of heating demands and thereby the potential for saving CO_2 emissions of the school buildings. Three scenarios are likely: The top table - Scenario I shows the potential savings of the consumption of yearly heating demands if the 259 school buildings were upgraded from category C to category A through refurbishment insolation. Scenario II shows the potential savings of the consumption of yearly heating demands if the total gross area of the 259 school buildings was reduced by 13%. Scenario III shows the high saving potential for the yearly heating demand, when Scenario I and Scenario II are realised subsequently. The bottom table - calculates the potential savings of annual CO_2 emissions based on the same scenarios.

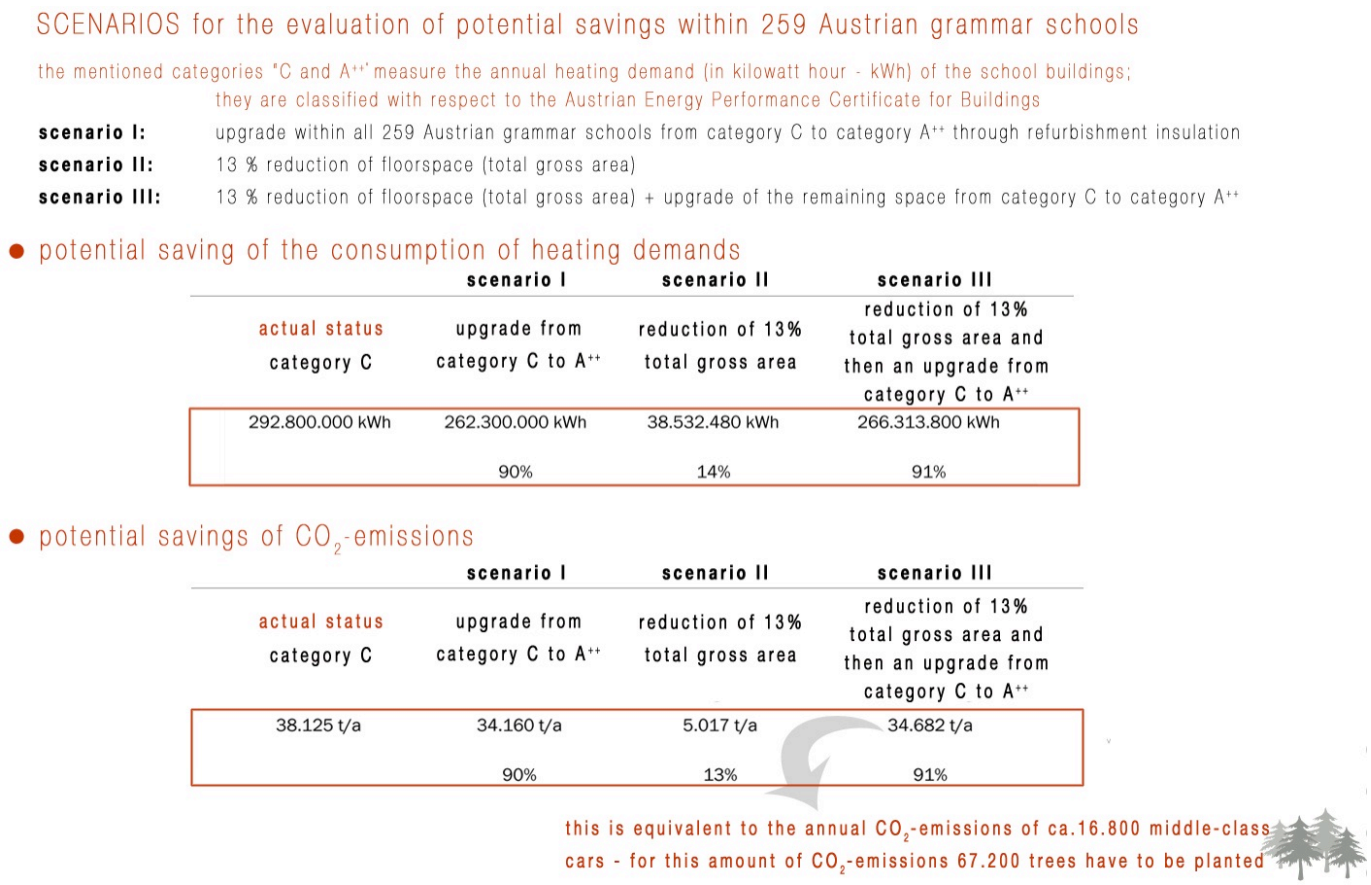

Figure c Potential savings of CO_2-emissions and savings of the annual heat demand by an improved space-management and additional by modernizing insulation within Austrian grammar schools (Kovacs 2011)

Or in other words: up to 90 % of the yearly heating demands of the yearly CO_2 emissions of the analysed Public Austrian grammar school buildings can be saved by an improved facility management and additional effective refurbishment insulation.

[6] http://benchmark-nwg.klimaktiv-co2-rechner.de/de_DE/popup/

4.5 Analysis: The stakeholder incentives to support refurbishment of Public Austrian Grammar Schools: Refurbishment of buildings on the basis of life-cycle costs and benefits are evolving slowly. The energy optimisation of the built environment will only take place if positive deal structures, which take the stakeholders' interests into account, are designed. The key stakeholders' motivations (financier, owner, operator and user) within Austrian grammar schools, namely (1) to support an improved space management and encourage an intensive use of classrooms, (2) to reduce the annual heating demand by a conscious users' behavior – Fig. d, as well as (3) to support the investment in energy optimisation of new buildings or in the refurbishment insulation of existing assets with the assessed school buildings – Fig. e, are currently negative in nearly all aspects (Kovacs 2011). This achievement is based on the analysis of the current (a) legislation, (b) development guidelines, (c) organisational structures within administration departments and school organisation and (d) competences of the key stakeholders regarding demanded management skills and the understanding of system thinking principles (see 4.6 and 4.7) - as they decide or strongly influence actions and modifications within the complex organisational structures and environments of schools.

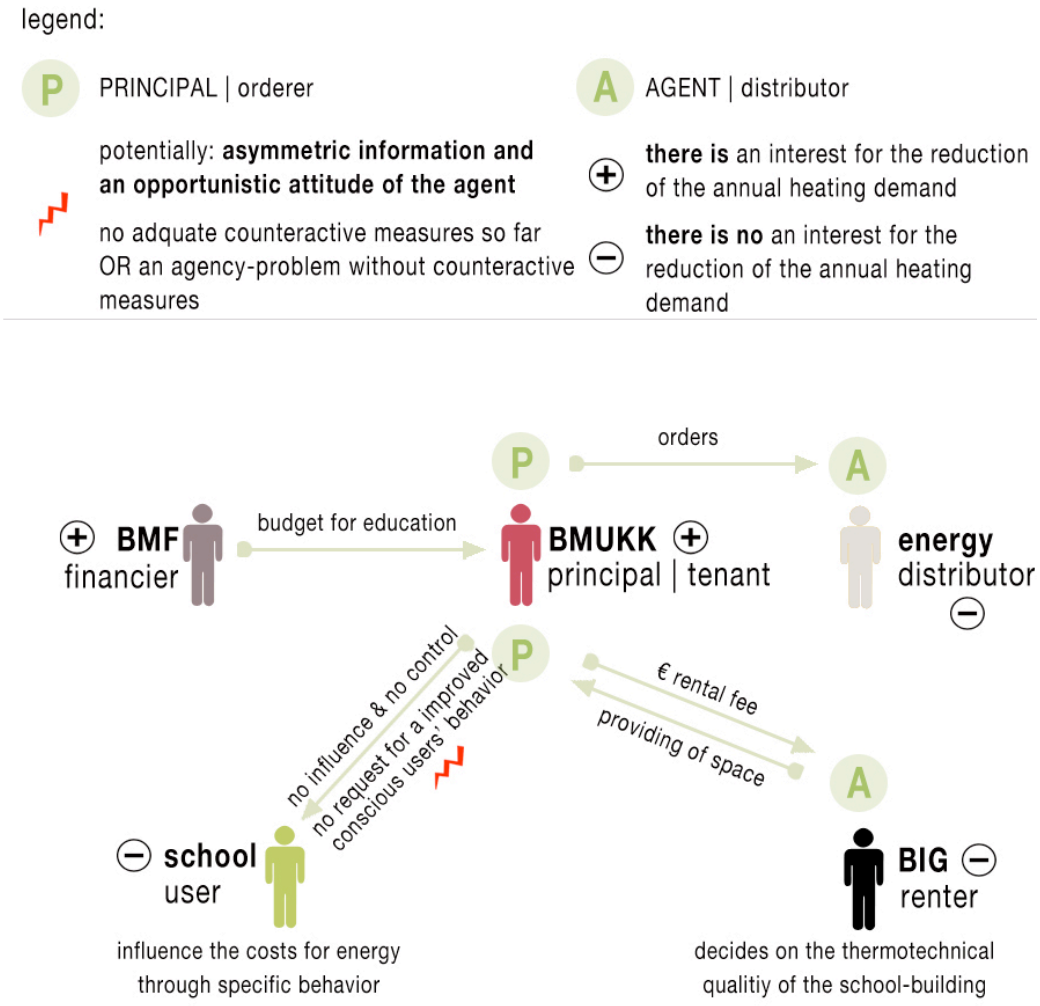

Figure d Current incentive to reduce the annual heat demand by a conscious users' behavior within Austrian grammar schools (Kovacs, 2011)

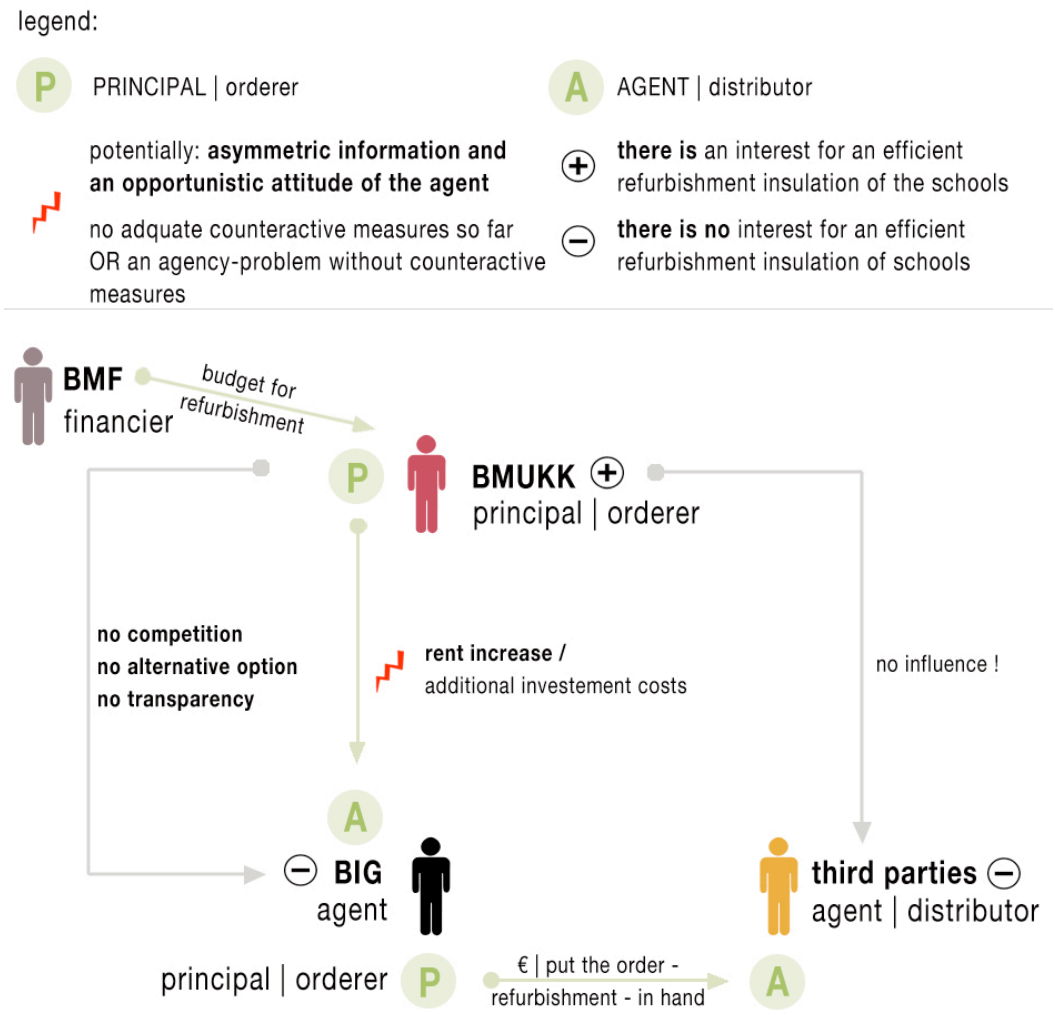

Figure e Current incentive to investment into the energy-optimization of new buildings or into the refurbishment of existing assets within Austrian grammar schools (Kovacs, 2011)

Therefore the key stakeholders must be well-educated and satisfied. Awareness raising as well as the initiation of positive incentives considering the various interests of the stakeholders are one way to achieve a higher utilisation of the built infrastructure and to approximate the potential positive effects mentioned.

4.6 Discussion - New organisational and management approaches: The research demands new business models as well as the establishment of diverse management know-how to develop highly integrated and flexible buildings. The optimisation of business processes as well as know-how and competences on management skills must be established within companies and the public authorities, which manage real estate assets. Fig. d sketches necessary tasks (top table) and skills (bottom table) for an improved space utilization of public and corporate buildings. These tasks and skills should be established and provided by the responsible management organisations.

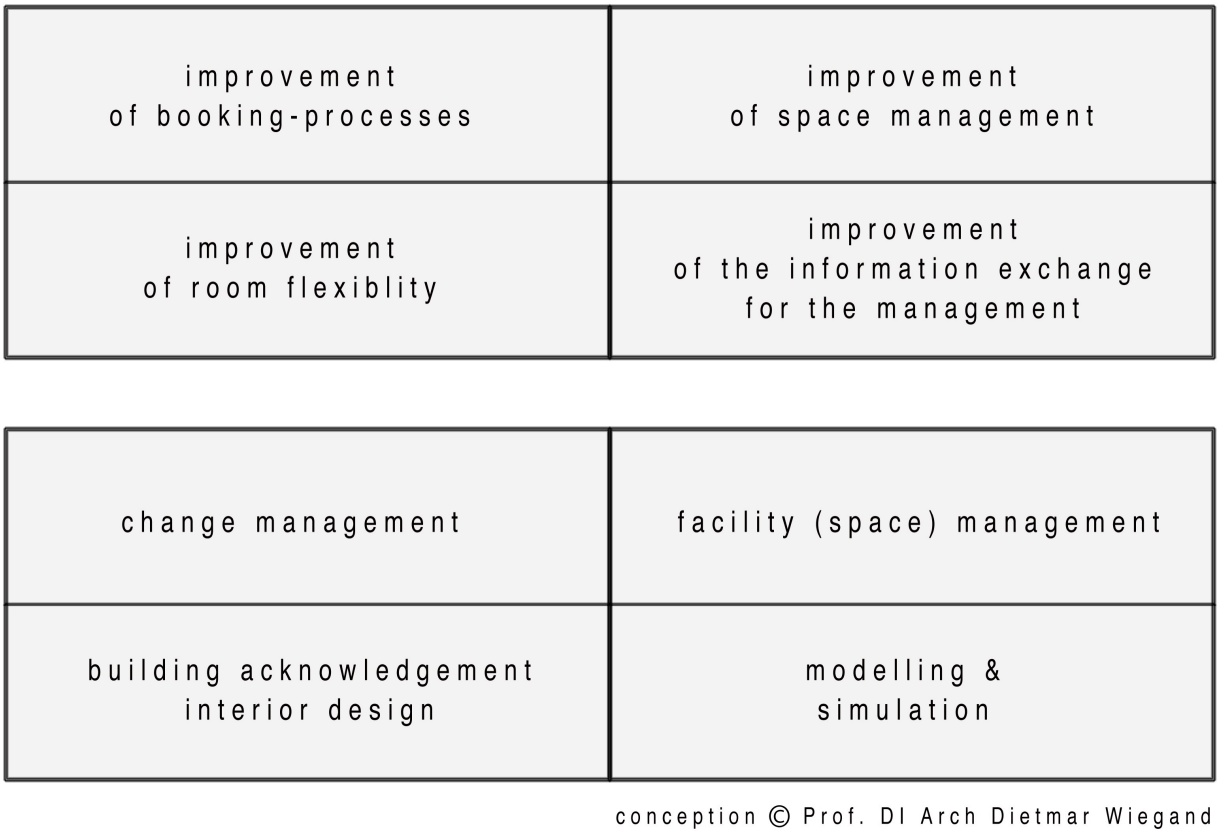

Figure f Provisions for the implementation of an improved space-management in public classrooms and lecture halls (Wiegand, 2012)

At present passive portfolio management of public facilities is "state of the art". However, to establish reliable studies, the evaluation of basic data, which give information on floor space, on patterns of utilisation, the annual heating demand and cost of building operation and building construction, are necessary as well. Data describing (1) the actual space demand, (2) required utilisation units, (3) user costs of buildings per year and (4) information on FM relevant business-processes are even more meaningful in that regard. But the research reveals that data pools are poor. A representative German-wide study comes to the conclusion that public authorities, which are in general the main owner of public real estate assets and which are responsible for Public Real Estate Management (PREM), have no coherent data of their property assets (Ecke, 2004). Therefore the potential of available resources – the reduction of CO_2 emissions and user costs through an intensive use of built environment over time - remains mainly unused at the moment.

Still from the author's current state of knowledge is not clear how established acknowledgement and diverse management skills can be implemented successfully within the companies' organisations, if – especially within the public authorities – responsibilities of facility management remain unclear, the companies' organisational processes are not well explained or defined. (Kovacs, 2011)

4.7 Discussion - New benchmarks to measure ecological property efficiency: Property assets, but also the user of buildings, produce impact on the environment. Reducing adverse environmental effects by (1) more flexibility and (2) higher utilisation of the built environment and by (3) an improved awareness through user behavior must be forced.

It is a widespread belief that the more efficient the property the lower the total occupancy costs per square meter Net Internal Area (NIA). But the author has a different point of view: vacancy of built environment is irresponsible and economically and ecologically inefficient.

A new approach is the inclusion of 'human activity' as one key element in order to measure an ecologically efficient use of our built environment. Sustainability Certificates for 'green' buildings, which already consider human activities, are not known to be up-to-date. Strategies to measure the "ecological property efficiency by actual utilised capacity per utilization unit" (Wiegand, 2011) are open for research and discussion. The linked impacts of (a) the user behaviour, (b) the intensity of use real estate, as well as (c) the impacts of the operation of buildings are pooled into a new performance figure - the *"ecological property efficiency by utilization unit"* - Fig. g.

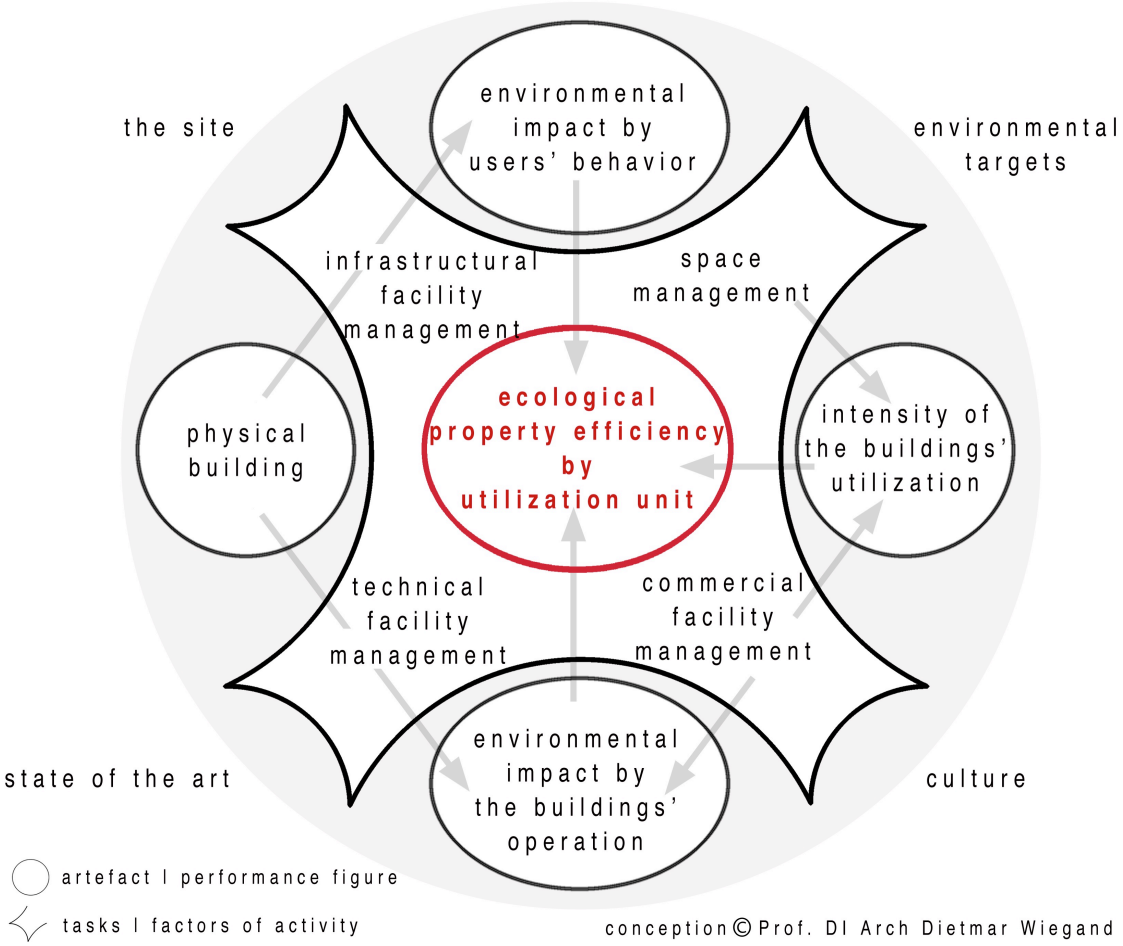

Figure g: Property's ecological efficiency per utilisation unit (Wiegand, 2011)

Figure g reflects a integrated systemic approach/understanding, differentiating between activity elements (tasks) and key performance figures with respect to their influence on each other and into the ecological efficiency of buildings. To influence the key performance figures effective, comprehensive facility management know-how (tasks) is required. Thus external influences/regulation factors, like location qualities, cultural interest, technical standards e.g., have to be taken into consideration. (Wiegand, 2011).

For the standardisation to measure the effective usage of 'utilisation units' in office buildings, office working hours (OWH) should be considered for evaluation as following (Wiegand, 2010):

$$\frac{E_x}{OWH_x} = \frac{E_X}{WWH_{FTA} \bullet FTA_x \bullet (1- CF_E) \bullet (1 - CF_H) \bullet (1 - CF_O) \bullet (1 - CF_R)} = \mathbf{EE_{OWH\ x}}$$

E_x =	energy demand of the builing x of the analysed year (business or calendar year)
OWH_x =	number of office working hour in the office building
WWH =	weekly working hours
FTA_x =	number of the average full time equivalent working in building x of the analysed year
CF_E =	correction factor external work
CF_H =	correction factor home office
CF_O =	correction factor overtime hours
CF_R =	correction factor recreation hours spent in the office building x
$EE_{OWH\ x}$ =	ecological efficiency of the office working hour in the office building x

Consequently new standardised benchmarks can be sketched (Wiegand, 2010):

Savings**: € / m² /utilization-unit**

or

Savings: **CO_2-emission / m² / utilization-unit**

or

Savings**: CO_2-emission / human activity**

Of course the benchmarks must be differentiated by branch and type of working place amongst others. In addition data of the building during operation must be collected to verify the relevance between the intensity usage of building and the climate protection goals. (Wiegand, 2010) One message can be accented already: "*ecological property efficiency by utilisation unit*" provides relevant statements looking at an integrated energy performance of built environment.

5 CONCLUSION AND OUTLOOK

CSR concerning sustainable development and management of properties means:

- the intensive use of built environment over time as well as
- the invention of new strategies for public and corporate real estate management which incorporate human activity as an important dimension in the measurement of sustainable property efficiency.

All in all, goal is to develop the most ecologically and economically efficient built environment possible. This includes 'constructional' measures 'only', part of a complex and dynamic system environment, as substantial legislative, socio-economic, organisational, perceptive and cultural barriers to reach this goal are identified. From the author's point of view the question how to successfully implement the complex approaches and turn them into future development processes and regulations cannot be answered at present.

The development of sustainable properties needs the rethinking of (1) 'approved' facility management systems (2) the growth of organisational processes within companies and public authorities, (3) 'up-to-date' benchmarks for sustainable buildings' performances (4) well-defined socio-economic and cultural values and (4) the consideration of the diverse interests/goals of the various stakeholders.

Corporate and public assets usually fulfil the higher utilisation requirements, but it is important to keep in mind that some assets cannot improve their conditions without complex and expensive structural measurements. Still, every new building development can be designed using the "MoreSpace" approach.

It is important to understand that flexibility and a higher utilisation of buildings do not create negative effects for the usability. An improved space management affords users with "more-felt-space" for less energy and costs. Savings can be invested in energy savings measures, improving buildings' flexibility and highly utilised spaces instead of investment in new building development or structural enlargements. The investment is equal, but the negative impact is reduced. This strategy can be defined through new stakeholder contracts, but in the long term legislation supporting these approaches are necessary. The author also recommends the encouragement of the renting of building vacancy and the preparation or adaption of real estate assets and real estate development with respect to a more flexible and additional utilisation over time.

Conclusio - scientific research is needed – so researchers and developers are encouraged to conduct studies in this largely unexplored research field, also considering the following questions – amongst others:

How can existing barriers be removed, changing negative into positive inducements for the key stakeholders?

How can positive incentive structures be implemented in 'approved' business processes of companies?

How can diverse and complex management skills be established and built up successfully within property administrative authorities?

This paper can only sketch different layouts for a new research approach, as the theses are new and the research field appears to be young. The exchange of experiences and of research results

will help in dissipating the identified barriers and potentials and finally supporting the development of successful strategies out of it.

The approach of "MoreSpace" is effectively considering aspects of actual requirements and buildings' flexibility during the early phase of real estate development. At present the research is being extended to office building and housing in Austria and Switzerland. Further data collection of educational and public buildings throughout the EU is in preparation - not only because our daily routines and space requirements change. The approach of "MoreSpace" is also understood as a social challenge, able to support the reaching of governmental goals of reducing CO_2 emissions and costs in times of financial crisis. To fill up the lack of such understanding can be match-winning.

Still one obstacle remains: The low level of the public authorities' transparency and the lack of representative data of public real estate assets. It is imaginable that for the foreseeable future detached companies will lead the way, but in the long term legal regulations must be concluded in order to eventually implement the "MoreSpace" approach into future property development and management processes.

ACKNOWLEDGEMENTS

I owe my deepest gratitude to Univ.-Prof. Dipl.-Ing. Arch Dietmar Wiegand for the fruitful discussions, his support in providing new findings and for sharing the approaches of his ongoing studies in the paper's context.

Thank you also to the anonymous reviewers as well – their recommendations significantly helped to evolve the line of argument of the research approach.

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