INSTITUT FÜR ÖKOLOGISCHE RAUMENTWICKLUNG e.V.
Mitglied der Wissenschaftsgemeinschaft Gottfried Wilhelm Leibniz

„Building-Passport“ – A Tool for Quality, Environmental Awareness and Performance in the Building Sector

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In: OECD/IEA Joint Workshop on the Design of Sustainable Building Policies – Summary and Conclusions and Contributed Papers. Part 2. Paris, 2001

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Introduction

The Institute of Ecological and Regional Development (IOER) is a research institute, which is mainly publicly funded[1] and is active in the areas of documentation, evaluation, and communication of environmental properties of buildings. Some of the key terms in this context are ‘Building Passport’ and ‘environmental labelling for buildings’. The term ‘Building Passport’ is currently being used with differing meanings. It can denote a two-paged certificate displaying the most important performance characteristics and technological data of a building - comparable with motor vehicle documents – as well as a comprehensive collection of various building-related documents (plans, calculations, lists and declarations of materials and products used, operating and maintenance guidelines etc.).

In this context, the federal state of Schleswig Holstein commissioned the IOER to develop the basic structure for a ‘Building Passport’-scheme. With this project a welcomed opportunity was opened to transfer the theoretical preparatory work to a more practical and application oriented basis.

The main target of the project was to outline an instrument which was to render both information on building quality in general as well as open a perspective on environmental characteristics and performance criteria. The instrument is supposed to provide guidance for user groups (architects, planners, clients, owners, tenants, financiers) and thereby support appropriate decision making and at the same time serve as a means for strengthening the competitiveness of extraordinary voluntary environmental performance in building practice.

The results of this work are presented in the following. The first section contains general theoretical aspects of the ‘Building Passport’ approach and empirical findings concerning attitudes and expectations of players in the building sector. The second section gives an overall view on the example of the „Building Passport Schleswig-Holstein“, which is here considered as a toolbox rather than a single instrument. The framework and starting points of the development are explained, the core elements of the scheme and recommendations regarding its implementation presented.

1 Theoretical basis and principal requirements

Sustainable development in the building and construction industry is faced with two central challenges (in addition to that of building economically): firstly, ensuring classic quality in building and, secondly, achieving a continuous improvement of the environmental performance of buildings that will take them above and beyond the general standard reached already.

The problem of ensuring classic quality in building, which is a task in itself and is also the minimum necessary requirement when it comes to building ecologically[2], is increasingly important as a result of deregulation and the presently difficult economic situation in the construction industry. In addition, the goal of high energy efficiency in buildings results in high

[1] IOER is jointly funded by the German Federal Ministry of Traffic, Building and Housing (BMVBW) and the Ministry of Science and Arts of the Federal State of Saxony. The project “Building Passport Schleswig-Holstein” was financed by the Ministry of the Interior of the Federal State of Schleswig-Holstein.

[2] For further information see notes on ‘Understanding Quality’ in Section 2.3

requirements with regard to general quality. At the same time the necessary excellence in insulation and air tightness (e.g.) is not easily discernible in the finished product and advanced ecological and health related qualities of buildings are even more difficult to assess. Laudable voluntary environmental activities in the construction industry can today hardly be recognised amongst a host of fantasy and exaggerated declarations. The (self-) declaration as a “ecological building product“ (or “environmentally-friendly” or “sustainable” etc.) often appears arbitrary. Supporting and promoting high-quality construction that is earnestly ecologically oriented therefore first of all depends on increasing the degree to which good practice is recognised: transparency instead of “finish“[3] and real ecological orientation instead of “green-washing”.

1.1 Effectiveness of (environmental) labelling as an instrument for the promotion of quality and ecological orientation in building

It is a basic phenomenon that product characteristics which are directly perceptible, as a rule, have a greater effect on the investment decisions than characteristics of quality that tend to be more hidden: While it is difficult enough for experts to assess the quality of construction and environmental performance of buildings, this is almost impossible for the clients and/or users. This fact encourages providers of building services to (deliberately or immanently) take a low-quality “cost-dodging“ approach, which in practise leads to a decrease in the attractiveness of high-quality construction. This relationship becomes even clearer when looking at the possibilities consumers have to identify properties of a product. Product attributes can be divided into three theoretical categories, which are reference points for gathering information in a decision-making process[4]:

"Search attributes": This category deals with product characteristics that are directly perceptible when making a choice. The effort needed to gather information is low and is limited to the simple comparison of products. An example from an ecological perspective is how lavish the packaging is for products that are otherwise equal.

"Experience attributes" are characteristics or properties that can only be perceived or examined when experience with the product has been gathered. The effort needed to collect information is relatively high. These characteristics only result in a gain in information and improved decision-making on the part of the consumer in situations where the decision to buy is made frequently. For this reason, these characteristics are, in general, not helpful for the support of the decision-making processes where the “product“ is a building.

“Credence attributes”: These are characteristics that can neither be recognised directly nor perceived by means of experience with the product. They are a matter of faith in the supplier.

Now, the problem in making an environmentally oriented decision for a product is that from the point of view of the consumer environmental properties of products predominantly are “credence”-properties. In the case of a building as a very complex commodity, this is also true for many general characteristics of quality. The result is a structural imbalance in the information that the suppliers and the consumers have on a large number of the essential qualities of a building. This in turn enables suppliers of relatively low quality to pass this off as higher quality whilst on the other hand little trust is shown in those earnestly offering high quality. A continuous process of “adverse selection” results, in which higher-quality products – such as buildings or building-concepts in this case – cannot succeed in the market to the degree desired.

[3] One participant who took part in an interview of experts summarised the problem of quality by stating: “The Germans are experts when it comes to giving something a good finish“.

[4] Karl et al (1999)

Especially when establishing sustainable concepts for the building industry in which an attempt is made at balancing economic, social and ecological aims it is important to develop transparent methods of assessing and awarding respective performance[5].

Since the introduction of new standards cannot hope to gain general acclaim in the current building industry development, which tends to move towards deregulation, the promotion of high-quality construction essentially depends on the use of more subtle tools. Such tools (e.g. self-commitment, financial incentives, information and consultancy) may be combined into a label for good quality building (from documentation via certification to a quality label). One one hand, suppliers can emphasise their particular quality (“signalling“), and on the other hand customers receive an initial orientation on qualities, which are to a large degree invisible and comparatively difficult to comprehend. In this way, labels referring to quality contribute to transforming credence into search attributes thus increasing the chances that for instance real-estate customers, tenants, sponsors or financers can better include environmental as well as general and traditional characteristics of quality of buildings in their decision-making process (“screening”)[6].

1.2 Basic requirements

In order to satisfy the requirements of the target groups appropriately, the tool should have certain characteristics, which can be derived from the general literature on product labelling as well as from experience with already existing similar tools[7]. In general, it can be stated that a label of (environmental) quality apart from turning “credence” into “search” attributes (cf. above) should mediate the poles of “no information“ and “information overload“ by transforming the input of information *required in practice* into information output *acceptable to the recipients*. Depending on the concept of the label, this transformation induces a major or minor aggregation of the information input. Figure 1 shows the main elements of an (environmental) quality label in a schematic graph.

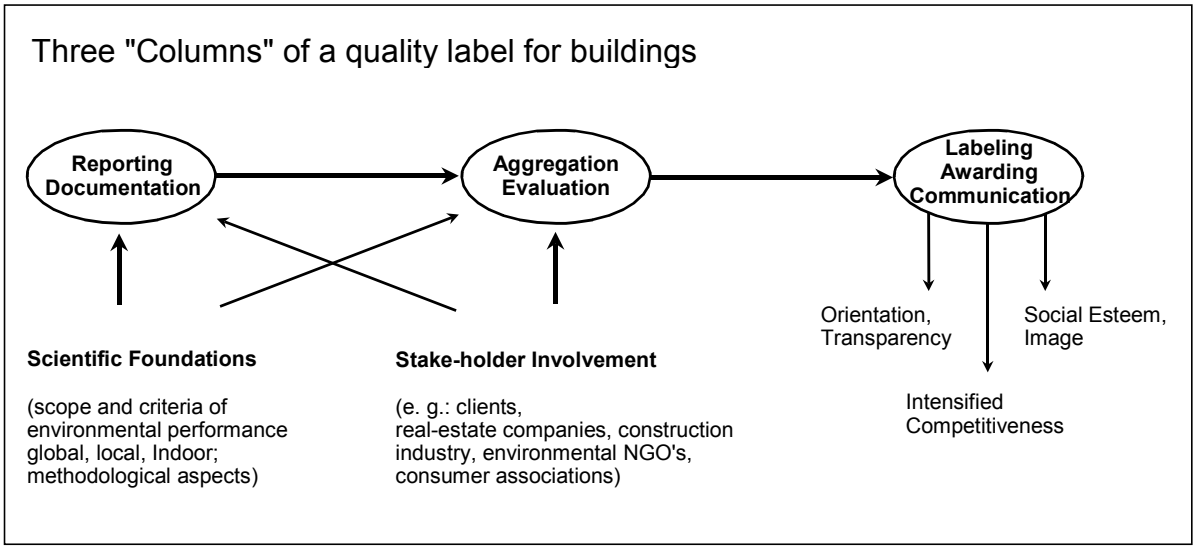

Figure 1: The main elements of an (environmental) quality label for buildings (Blum et al, 1998)

On the input side (Figure 1: Column 1, ‘documentation’), the tool should first of all record the relevant information on environmental impact as comprehensively as possible. In the case of the assessment of buildings this may for instance imply adding site-dependent impacts to the

[5] According to BMBF (1996)

[6] Rubik et al (1996)

[7] Due to the limited space in this paper, no examples are presented in detail. However, some important examples are listed with the references.

product-induced ones. Furthermore, according to the concept of sustainable development, aspects of social usefulness and economic feasibility should also be taken into account. In addition it is important that the framework of a quality label is left open to revision and modifications so that both new knowledge and new aims can be included periodically.

The attractiveness of a label signalling and rewarding (outstanding) quality of a building (Figure 1: Column 3) is a further important aspect. Benefits to be expected from a label (transparency in the market, social rewards, competitiveness) are one point, questions of the formal data presentation (accessibility and readability) and an aesthetically attractive presentation (symbolism etc.) another. For an effective use of the label it is not enough to use pure symbolic labels (typical eco labels[8]) alone to communicate the very complex qualities of buildings (Figure 1: Column 3). Rather what is needed are tools that on one hand quickly give a general impression relevant to environmental aspects and health issues by means of *striking messages*, but on the other hand offer *detailed information in the background,* which can be referred to as need arises. At the same time this also makes the processes of aggregation and evaluation more transparent (Figure 1: Column 2) and in turn substantiates the tool's credibility.

In the conception of this tool it must be kept in mind that from the viewpoint of suppliers of high-quality buildings organisational expenses and actual costs are decisive for the acceptance of the procedure. Also, suppliers will naturally want to emphasise the positive aspects of their products. A 'Building Passport' and quality label as a voluntary instrument can fulfill this requirement especially when a choice between several approaches exists. It has to be noted, though, that the existence of different procedures improves the performance and usefulness of a labelling approach for the *applicants* but at the same time usefulness and acceptance for the *users* depend on the compatibility and comparability of approaches and evaluation systems at least in basic characteristics (for instance via a "fourth party establishment", cf. below).

The character of the institution providing the label plays a significant role in the acceptance of the tool. It is plausible that a quality label devised by an individual company will be viewed as less credible than that devised by neutral institutions, especially when these are well known and have a good reputation. Three forms of institutional establishment may be distinguished depending on the institution's position in the market: "first party", "third party" and "fourth party" establishment[9].

"First party" establishment

This notion summarises self-declarations of products or product-lines established by individual private companies. These labels vary significantly with regard to content and concept and use a most varied range of terms[10]. It is not excluded that purely private labels are backed by a serious commitment, but in public view acceptance and usefulness are often marred since objectiveness and quality of the results are questioned.

"Third-party" establishment

This category deals with reviews, certificates and labels that are offered by neutral third parties. A distinction can be made between tools that are private, semi-public, public or publicly authorised.

[8] The "Blue Angel" in Germany or the European "Marguerite" are examples.

[9] Karl et al (1999)

[10] Examples of such terms for Germany, some of which also have a corresponding logo, are "Eco-House", "Naturehouse", "close to nature", "Naturebuilding"; "Bio-House", "Eco-domo" etc. (from the small ads section of the German "Oeko-Haus" magazine, translated freely by the author)

Private labels are assessment and certification tools that are supplied as a neutral service, for example, by engineering consultancies. Examples of combinations of first party *declarations* and private third party *certification* are found in product advertising.

Semi-public tools can, for example, be supported by general business or consumer associations or quality assurance associations and may be designed for specific product groups (e.g. timber-frame construction, low energy building etc.). Although the improvement of the competitiveness of the applicant company is of importance here, too, the outstanding goal however is better market transparency. (Environmental) quality labels that are provided by independent associations require more expenditure on the side of the applicant but provide more credibility and thus have a potentially greater effectiveness.

Public tools or publicly authorised tools primarily aim at promoting initiative and innovation. As voluntary achievements in particular are generally at a disadvantage on the market (see “adverse selection” above), these public tools are a form of intervention in the market in order to support good practice. Nevertheless this interventionalistic character at the same time is the major reason why in Germany up to now a ‘Building Passport’ and in particular an (environmental) quality label for buildings have not yet been very far developed in public institutions, at the contrary encouraging the private sector to provide appropriate services[11].

Whilst public or publicly authorised third party approaches can generally be expected to be acceptable as far as their credibility is regarded, they at the same time display another weakness in that as far as the content is concerned, they tend to set low standards. The reason is that public institutions have to achieve consensus amongst groups with the varied interests. When influencial groups with vested interests in low requirements win over the standard is lowered altogether. Fourth party concepts reflect on this aspect.

“Fourth party” establishment

In fourth party schemes, the various options for establishing quality labels as described above are maintained. However, a general authority is appointed as a means of safeguarding the reputability and comparability of the programs involved. The tasks of this institution include, for example, monitoring the quality of the criteria applied, integration of ecological information, monitoring of internal processes and involvement of interest groups (including the issue of financing) as well as various methods of sanctioning, if failures to meet the stipulated requirements[12] arise. A central element is that of ensuring minimum standards regarding conception and content whilst allowing for a certain variety and competition of tools that have differing and possibly higher requirements (e.g. regarding the scope or standards for environmental criteria).

1.3 General requirements and expectations of target groups for the tool

Irrespective of what conception is chosen, both a ‘Building Passport’ and an (environmental) quality label should not only be based on scientific expertise but should also meet the subjective requirements of the target groups[13].

In order to gain an insight into general attitudes and expectations in the building sector towards environmental labelling for buildings[14], a survey of major player and interest groups in

[11] For example to the former German Minister for the Environment Toepfer in a paragraph in the press; Toepfer (1997)

[12] According to Karl et al (1999)

[13] Rubik et al (1996)

[14] For the context of this survey „Environmental quality seal for buildings“.

the German building sector was conducted in 1999[15]. The groups involved were the associations of architects/planners, owners/clients, tenants/users/consumers, and estate agents at federal and federal-state level. In addition, the federal associations of major environmental organisations and numerous prefabricated house suppliers were surveyed, as well as financing institutions. The survey was divided into a pre-survey by telephone and a subsequent standardised questionnaire. A total of about 160 associations and institutions were contacted. Roughly a third were then approached within the sample telephone survey, whilst roughly a quarter returned the questionaire (46). The survey was essentially divided into questions on specific content and conceptual requirements as well as questions on how the general approach was accepted. The following presentations are limited to the results on the general aspects.

General findings

Although the findings from the exploratory investigation cannot claim to be representative in statistical terms, the synoptical evaluation of the qualitative and standardised sections of the survey does yield a useful initial picture of the general mood[16] amongst the various player groups in the building sector. Both the qualitative impression and the quantitative data reveal that approximately a quarter of those surveyed are clearly amenable to the idea of an “environmental quality seal for buildings” (Figure 2). Roughly half are vaguely in favour or adopt a cautious attitude. Besides acknowledging positive aspects of the approach and showing a general willingness to debate the issue, this grouping also offers serious criticism. Doubts are aired, for example, with regards to the practicability of the tool, the accessibility of data or the costs involved. The costs issue in particular is a matter of some sensitivity for all respondents. Only just above 10 % of respondents regard higher costs for certification as acceptable without reservation, whilst about 30 % consider them to be “possibly acceptable” (Figure 2). Opposition to higher costs was particularly voiced by planners’ and architects’ associations, whereas greater acceptance was found with consumer/tenant associations and prefabricated house suppliers.

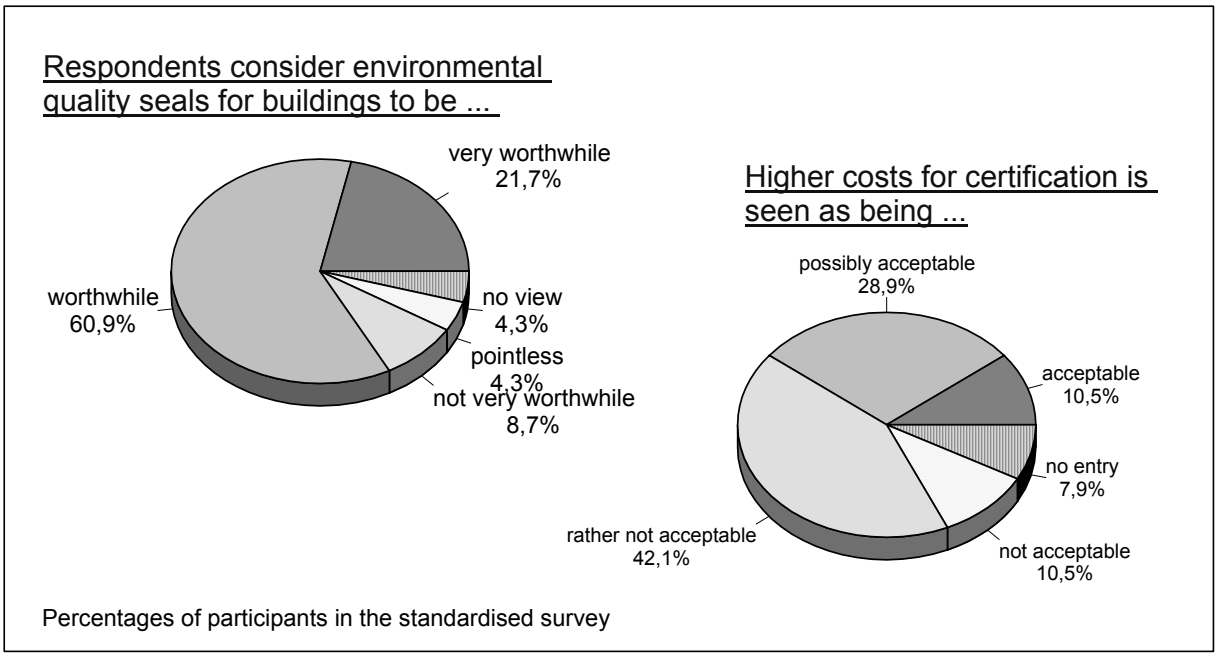

Figure 2: General attitudes towards environmental labelling for buildings (Blum et al, 1999)

[15] Blum et al (1999)

[16] The values given in the Figures relate exclusively to the written part of the survey.

A stance of opposition to environmental quality seals for buildings was taken up by around a quarter of respondents, backed in some instances by explicit resolutions by the institutions concerned. The approach is rejected primarily on the grounds that, given the complexity and uniqueness of a building, any attempt to assess its environmental impacts or special characteristics in a comprehensive and comparable way will be fraught with great difficulties. Attention is also drawn to the organisational and financial input associated with testing and certification. Any not purely private – and voluntary – tool is criticised as being unnecessary governmental intervention in the market and causing further bureaucratisation of the building sector. Even endeavours to standardise existing (private) schemes are likewise rejected as first steps towards legal regulation and compulsory adoption.

An environmental quality seal for buildings is given a predominantly positive rating by tenant and consumer associations and also by financial institutions. The former in this approach see in the first place an important information tool for the demand/user side. Above all, tenant and consumer associations hope that market transparency in the sphere of ecological construction will be enhanced and that knowledge of how to operate and use a building will be provided – for tenants and owners alike. Also, information on health matters as well as on operational characteristics and costs (energy consumption, servicing/maintenance etc.) is of particular interest. Financial institutions appear to be increasingly viewing ecological factors as an important aspect of the long term value of a building. Environmentally-oriented financiers in particular, but some general financing institutions too, are already including environmental issues in their valuations of real estate and credit management activities. An environmental quality seal is viewed as a helpful information tool in this respect. Some of these institutions are also currently developing their own specific environmental assessment tools. Due to the economically focussed background energy consumption in particular is often addressed. A very interesting tool for example – even under the ambition of sustainability – is the “ImmoPass”, developed on initiative of the German HypoVereinsbank[17].

Regarding the building industry and trades, notably representatives of the growing building materials recycling sector welcomed the dismantling information expected to be provided within the frame of a ‘Building Passport’. In the case of associations representing real estate agents and the construction industry, it became apparent in the course of the telephone survey that these groups see themselves as heavily dependent on customers’ choices. They therefore do not regard themselves as suitable discussion partners on the issue of environmental quality labels.

On the whole, it can be deducted on the basis of this survey – and further work in Schleswig-Holstein has confirmed these assumptions - that serious interest in the building and construction industry exists in having a tool such as the environmental quality label/’Building Passport’ at disposal. Nevertheless any development of such tools should take seriously the criticism and be carried out in close cooperation with all players in the building sector.

2 “Building Passport Schleswig-Holstein” as an Example

2.1 Basic conditions

The development of the “Building Passport Schleswig-Holstein” was carried out in three stages: stock-taking of existing specific conditions and possible ‘anchor-points’, definition of the aims and requirements of the political players and interest groups in the building and construction industry, and finally a draft of the basic concept and development of an imple-

[17] DEKRA (2000)

mentation scheme. Basic orientations on the topic of environmental product labelling were taken from the ISO standards 14020 f.[18].

Existing tools and possible ‘anchor-points’

The political and economic conditions in Germany, (especially with the upcoming energy saving ordinance expected to be enacted in 2001, increasing energy prices and a tendency towards a tenant-dominated market[19]) along with the numerous initiatives and programs in ecologically-oriented construction in Schleswig-Holstein, provide a good starting point for the development and implementation of a ‘Building Passport’. In particular, a committed *“Low Energy Standard for Buildings”* [20] has recently been included in the public guidelines for subsidised housing development of the federal state; measures in the *“Initiative Program for Thermal Refurbishment”* [21] attempt at supplying information as a basis for environmentally responsible action.

The *“Criteria for ecological planning and building”* published by the Ministry for Nature and the Environment of the federal state of Schleswig-Holstein as far back as 1993 are also particularly noteworthy. Irrespective of the degree to which some of the criteria today had to be revised (in the area of energy requirements, for instance), the content of the brochure may, on the whole, be seen as a public consensus and thus provides an excellent starting point for the conception of an updated ‘Building Passport’.

Expectations, reservations and requirements expressed by the interest groups

In order to achieve a high level of acceptability communication with the interest groups made up a large part of the project work. Representatives in Schleswig-Holstein of the major institutions concerned were interviewed by telephone and questioned on their opinion on issues of a ‘Building Passport’. Additional information came from the nationwide study mentioned above. The results of the survey were presented as a feedback to the participants at a workshop with the aim of focussing major topics. The following essential issues were recorded for the conception of a ‘Building Passport’:

- the basic problem of *formulating clear goals* and the identification of target groups,
- the main focus of *quality assurance* (with integration of ecological goals and in particular goals related to health issues),
- the *simplicity* of the tool with regard to *readability/comprehensibility* as well as
- orientation on *information for the end user*.

The necessity of continuous updating and amendments as an important element of the concept of a ‘Building Passport’ was discussed in this context. Regarding the content, the topics of building materials choice (ecological aspects and health issues) and energy were stressed as being most important.

Political targets

With the aim of defining the central objectives of the political players involved four typical scenarios were outlined for appropriate ‘Building Passport’ concepts and were presented for

[18] ISO (1998)

[19] During the series of expert-interviews, the average rate of residential vacancy was stated to be 3 to 5%.

[20] “Niedrigenergie-Haus-Standard” (NEH-Standard)

[21] “Impulsprogramm waermetechnische Sanierung“

discussion with the advisory board of experts[22]. The four scenarios were labelled *“Good construction Practice / Assurance of Quality”* (main focus: traditional/classic qualities in building and construction as the basis for ecological orientation), *“Ecological performance through competition”* (main focus widespread implementation and transparency), *“Ecological excellence ”* (main focus in environmental policy: promoting innovation) and *“Foot in the Door”* (a combination of (low level) tools and long-term implementation).

The discussions resulted in the decision to use a combination of scenarios one and two as the primary orientation with the main target being assurance of quality. Some important key words were: ecological aspects as an important component of general quality in building, building stock as the primary working area, simple and pragmatic tool as a starting point and to ensure widespread use. The public players clearly signalled their support for the tool to be developed, but considered a widespread implementation to be achievable essentially through the market. In introducing the tool it was, though, suggested that the “protected sphere” of the semi public intermediary organisations be used. This suggestion referred in particular to the “Working Group of Contemporary Construction“ (ARGE)[23] in Schleswig-Holstein.

ARGE was established in 1946 to organise emergency programs and self-help programs in post-war housing, and is today still a very interesting institution both politically and professionally. Almost all important institutions of the building and construction industry and housing development are represented in this association. This situation predestines the association as a link between private economy and public players in the development and implementation of a ‘Building Passport’ for Schleswig-Holstein.

2.2 Basic models

As a starting point for the design of the “Building Passport Schleswig Holstein” *three typical separate models* were drafted. These models represent the three basic components of a comprehensive approach[24]:

Model ‘Building Logbook’

Key words: transparency, widespread use, comparatively low costs, integration of all participants, communication, responsibility

Especially in the case of owners of buildings and tenants, there is a need to introduce a tool that besides presenting data on the properties of the building and archiving relevant documents also provides guidelines for operation and maintenance. As a “building logbook“ it should be kept up-to-date by the user or owner, for instance with regard to ressource consumption (water, energy etc.), maintenance, and structural changes. The “building logbook“ itself does not include any assessment but is the basis for further modules that can be added.

Model ‘Building Passport’

Key words: regulation and assurance of quality, avoidance of building damages, consumer protection, marketing, promotion of competition

As inspection regulations under public law are being increasingly reduced there is a shortage in monitoring the technological properties of buildings. At the same time requirements on planning and good building practice grow steadily and the need for new forms of quality assurance achieved by means of free market tools increases.

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[22] The advisory board of experts was made up of representatives of the important participating public and semi-public institutions of the federal state of Schleswig-Holstein

[23] „Arbeitsgemeinschaft zeitgemaesses Bauen e.V.“ (ARGE, o.J.)

[24] Documentation, evaluation, awarding/communication; see Section 1 Figure 1

The concept of a building passport as an independent tool therefore is a good starting-point. Although buildings are not explicitly assessed, a widespread use of ‘Building Passports’ can lead to better market transparency by means of gradually developing a reference system.

Model ‘Quality label’

Key word: Best practice

A quality label for buildings as an element of an ambitious building and environmental policy formally puts into operation the main goals of the issuing institution – in this case the federal state of Schleswig-Holstein – with regard to a sustainable development in the building and construction industry. The quality label honours outstanding voluntary and innovative achievements concerning environmental and health aspects in building projects. As well as being effective in marketing, a label, which is awarded as publicly as possible, should also communicate best practice.

2.3 The basic conception of the “Building Passport Schleswig-Holstein”

Due to the tight framework of the project, the aim of designing a tool for the building stock has been postponed and the basic concept was oriented towards new buildings, which are somewhat easier to handle. Nevertheless significant information has been provided for adapting the tool to the building stock.

Whilst working on the project, different primary aims and requirements of the “Building Passport Schleswig-Holstein” became clear. The following aims in particular should be mentioned: achievement of widest possible utilisation (to make the application of the tool affordable!), creation of a tool that is marketable (‘Building Passport’ as a service), achievement of quality assurance and promotion of environmentally oriented construction that also takes health issues into account.

Integrated definition of quality

An integrated definition of quality is necessary if the passport is to comply to the concept of sustainable development[25]. In detail the integrated definition of quality in the basic concept of the “Building Passport Schleswig-Holstein” compiles the following core elements:

Quality of Building / Quality of construction and planning[26]

The necessity for all parties involved in construction to develop an awareness of quality and sensitivity to typical weak points, especially with regard to buildings that have requirements for low energy consumption stands in the foreground. Quality in this sense denotes a reduction in the risk of shortcomings in quality especially with regard to typical cases of damages in buildings[27]. Consultancy during the planning stage, monitoring throughout the construction process and final inspection of the building (cf. below) are central to an appropriate process.

Environmental Quality

Unlike problems of (technical) building quality, which at least can generally be dealt with objectively by means of technology and legal requirements, the definition of the environmental quality of a building heavily depends on a political (or more general: social) consensus regarding environmental aims and criteria. For this reason, the ‘Criteria for Ecological Planning and Building’ mentioned above were referred to in this project. Particularly regarding a wide-

[25] Ministry of the Environment, Nature and Forestry of the federal state of Schleswig-Holstein (2000 / Oeko-Institut)

[26] Technical characteristics of a building, which can be treated objectively, are central to the term ‘quality of a building’. The inclusion of other, notably aesthetic, aspects will be examined during later development.

[27] Comprehensive information provides the “3rd report on damages in buildings”; BMBau (1996)

spread implementation, the ‘minimum standards’ laid down in this manual provide a very good starting position for development of a basic conception for the ‘Building Passport’. By listing ‘further measures’ the criteria are made dynamic: The guidelines presented are more than just the political consensus of the moment (at the time of publication, 1993) but rather include further reaching recommendations that opt as the basis for future development.

Health Aware Construction

The assessment of the degree to which a building considers health issues in a ‘Building Passport’ is methodically difficult due to various reasons. This applies both to the methodology of actual measurements and the standards used in evaluation along with the fact that well-being and health cannot be separated from individual user-specific requirements and sensitivities. Therefore, the examination of the finished building with regard to health-related issues by means of comprehensive monitoring of chemically, biologically and physically harmful substances in the ‘Building Passport’ does not appear appropriate. It would also not comply to the aim of keeping costs low[28]. Estimation of health risks and their reduction to a minimum should be handled beforehand by measures such as choice of location, careful planning, well-targeted choice of building materials, documentation and declaration (!) (e.g. through product and material lists). Monitoring for harmful substances should only be restricted to cases of actual doubts and then be selective and well targeted.

Components of the basic conception of the ‘Building Passport’

Based on the integrated definition of quality laid down above a concept for the tool was suggested that combines ‘soft‘ pragmatic elements (checklists, consultancy) with actual requirements regarding priority target areas (air tightness, energy consumption, building materials etc.). In accordance with the general aim of supporting high quality construction, this approach cannot be limited purely to documentation of the (eventually inadequate) *status quo*. Therefore the range of tools covers consultancy during the planning and monitoring during the construction process before entering the phases of documentation, certification and updating. It is important that the tool is not centred around control and the imposition of ‘correct’ solutions but rather around cooperation according to the principle that “two heads are better than one”. The basis for this cooperation is the approach already described, i.e. promotion of high quality construction not by means of stipulating desired characteristics of a building but rather by creating a general awareness of quality issues and especially the risks of quality failure. Experience of external consultancy in the area of subsidised building in Schleswig-Holstein shows that it is possible not only to qualify a project but also as a general rule to save costs in this process.

The basic concept for the “Building Passport Schleswig-Holstein” developed as a basis for further discussion and development contains five main components (Figure 3):

1. Consultancy

The consultancy component includes an initial review, which is free of charge (clarification and discussion of project aims) and a more detailed consultancy as a basis for planning. In order to prepare detailed consultation the parties interested are handed out a “Planning Checklist”. The specification of monitoring focuses during the construction process is also discussed during the second consultation stage. The consultancy is primarily aimed at the building contractors’ architects or project managers. The participation of the client is desirable (team orientation, ‘awareness of quality’).

[28] This differs when the tool ‘Building Passport’ deals with existing buildings: compiling an inventory of the used building materials often proves to be considerable difficult, monitoring is necessary where harmful substances are suspected in order to record the extent of the contamination qualitatively and quantitatively and undertake appropriate steps in refurbishment.

2. Guidance / Monitoring / Final inspection

Guidance includes one or several intensive on-site inspections during which sensitive/problematic points or building phases identified in the consultation are monitored, as well as random checks as need arises. The final inspection consists of a review of the completed building and in particular includes a test for airtightness (“blower door” measurement).

3. Documentation / ‘Building Logbook’

The documentation corresponds in principle to the building documentation described as last planning stage in the German federal regulations on remuneration of architects and engineers[29]. Nevertheless it is supplemented by documents specific to the ‘Building Passport’ such as the planning checklist, records of the inspections or the list of materials used. A pre-prepared index is provided as a formal basis (‘Building Logbook’). The ‘Building Logbook’ is a supplement to the actual ‘Building Passport’ (cf. certification).

4.Certification / ‘Building Passport’; extension to a ‘Quality label’

The certification process leads to the actual issuing of the ‘Building Passport’. Certification primarily refers to the formal requirements of the ‘Building Passport’ procedure. Regarding the content compliance with the ordinance on energy saving in buildings mentioned above is a central point. In addition, fulfilment of certain criteria in the planning checklist will be checked including the degree to which the material recommendations have been adopted. An extension of the ‘Building Passport’ into a graded quality label by coupling it with minimum standards regarding procedures or content is possible. The ‘Building Passport’ is valid for a period of four years at first.

5. Continuous Use / Updating

Structured updating and archiving of important documents and information on a building over the whole lifetime is a significant element of the “Building Passport Schleswig-Holstein”. A logbook that has been kept up-to-date provides important basic information both in the case of letting or selling of the building, and in building operation in general from everyday use to modification or maintenance and renovation. Maintenance of the building logbook and updating of the ‘Building Passport’ is supposed to take place during and after the four years’ validity and is required when applying for an extension of the passport.

[29] Honorarordnung Architekten und Ingenieure (HOAI)

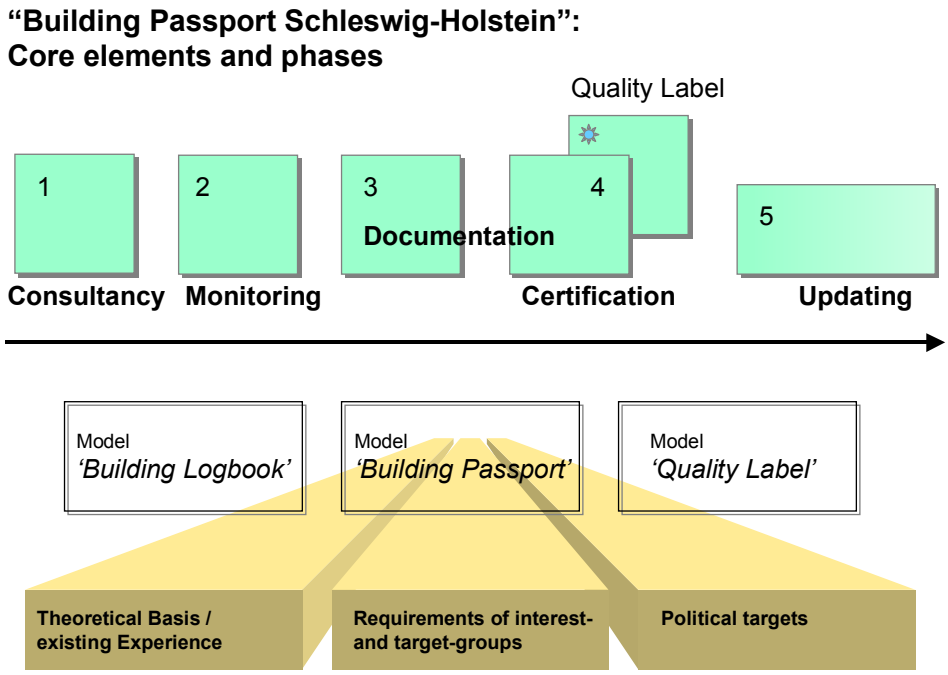

Figure 3: Basis, starting points and core-elements of the basic conception for the "Building Passport Schleswig Holstein" (Blum et al, 2001b)

Building passport for existing buildings

A building passport for existing buildings must be structured more flexibly and open than one for new buildings. The section of a ‘Building Passport’ dealing with documentation will be prevalent and the sections on assessment will be more difficult to organise than those for new buildings. The agreements on on-site reviews cannot simply refer to the installation and/or modification of (new) building components but rather will be determined by the need to scrutinise the existing structure and condition of the building-substance (e.g. with the help of specialists on structural damage, timber experts, checking for harmful substances etc.). Instead of consultancy in the planning stage and the first on-site inspection, as suggested for new buildings, a more detailed review will need to be conceived, indeed including analyses on possible harmful substances.

If the tool for existing buildings is to contain more than just documentation, it will be necessary to provide an evaluation in three or four categories. A section on evaluation would only be possible if a criterion on adequacy is included. Reasons for such a restriction are for example the location of the building (taking into account the local real estate market), aspects of preservation of historical buildings and last not least the age of the building (concerning for instance the adequateness of contemporary building technologies).

2.4 Suggestions for implementation

Organisational structure

For further development and later implementation and use of the “Building Passport Schleswig-Holstein” it was suggested that a ‘Building Passport’ working group be formed that is established by the Ministry of the Interior (Chairmanship). All relevant ministries and important (semi) public institutions of the building and construction industry in Schleswig-Holstein should be represented. The working group (or steering committee) should furthermore involve the specialised public by means of an additional extended advisory board in which private organisations dealing with certification are also represented (Figure 4). With regard to

an organisational basis, it was suggested that the Working Group of Contemporary Construction (ARGE, cf. above) would be a suitable organisation supervising the tool.

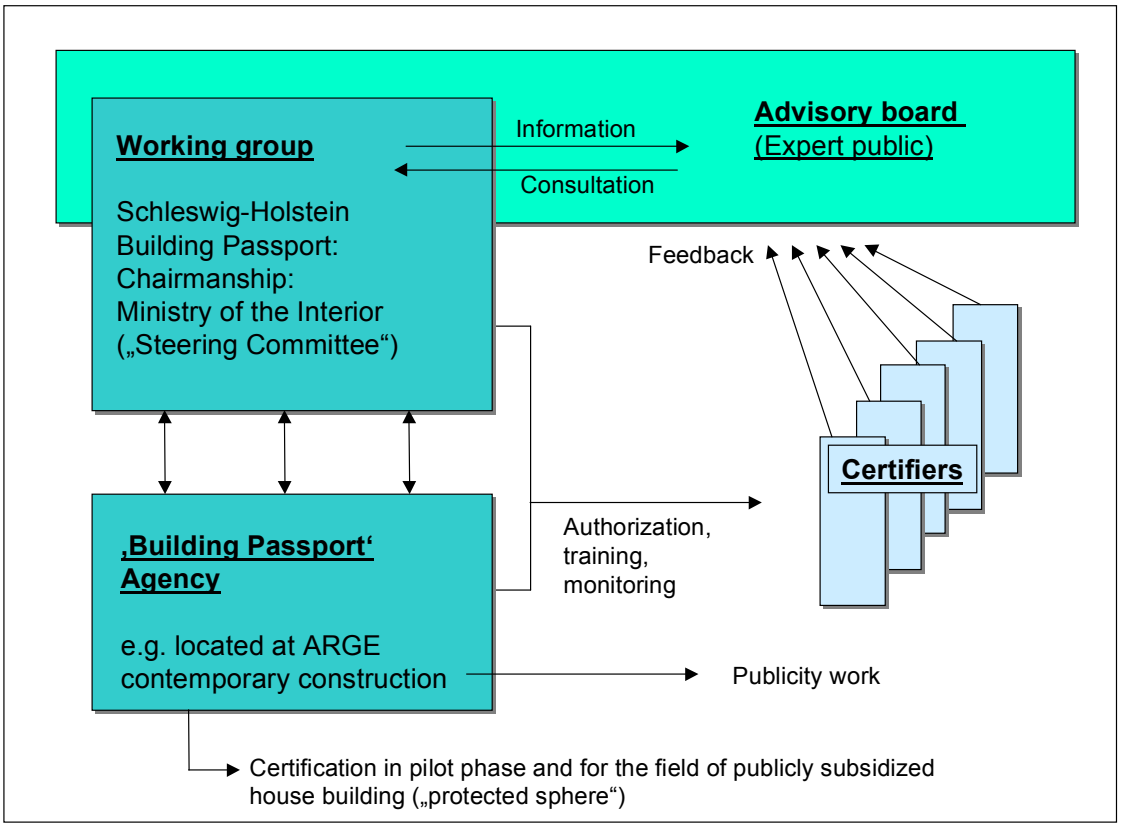

Figure 4: Outline of an institutional structure for administration of the tool (Blum et al, 2001a)

Pilot model and pilot phase

With the aim of achieving the widest level of acceptability possible a pragmatic basic concept for a ‘Building Passport’ was developed as a first step. Development of a committed tool will require a significantly longer period of development and indeed would have endangered the success of the project as conceived here[30] at an early stage. Conflicting interests (e.g. expenditure and demands regarding a comprehensive scope) were discernible during discussions with the player groups. It was therefore suggested that the outlined basic concept should in the future be developed into a first *pilot model* that can be tested in a *pilot phase*. The ‘Building Passport’ agency will then have the task of putting the tool into practise in a pilot phase and supervising the further development. The ‘protected sphere’ of subsidised public housing projects may be an appropriate starting point.

Authorisation / Integration of other approaches

The widespread establishment of the “Building Passport Schleswig-Holstein” among the various existing tools for quality assurance and certification is a basic goal. Ideally, a number of specialised ‘Building Passport’ models will later be developed on the basis of the pilot model. Each of these will contain the same core elements (basic concept) but will have a different main focus or degree of detailing. In this way differing requirements are satisfied whilst at the same time ensuring compatibility by referring to the common basis. Authorisation to issue the ‘Building Passport’ will be granted when the institute applying adopts the basic conception and trains its employees accordingly.

[30] See the theoretical notes on publicly established quality labels in Section 1.2.

Updating

To ensure the tools' functioning the content (criteria, recommendations) as well as methods and procedures will regularly be reviewed and if necessary modified (possibly every two to three years).

Financing

In principle the “Building Passport Schleswig-Holstein” is supposed to be established as a marketable service. This means that the issuing costs are to be covered by a fee, which will be paid by those applying for a passport. As far as acceptability of such charges is concerned only estimations are possible. With planning costs as a guideline, a figure of 1% of the project costs appear as realistic. Nevertheless, costs that are incurred by the public (fourth party-) establishment (administration, further development etc.) should, at least in the initial phase, be carried by public institutions, keeping in mind the political target of a widespread use of the tool.

Setting a good example

The Guideline of Sustainable Building[31] which was published at the beginning of 2001 by the German Ministry of Transport, Building and Housing for federal buildings already today provides a good basis for handling buildings in possession of the federal state of Schleswig-Holstein. As a concluding result it was therefore suggested that – accompanying the 'Building Passport' process – a system of environmental and quality management – including a 'Building Passport' – be set up for these public buildings. This would not only incur positive environmental (and economic!) effects but also state a good public example in order to support the implementation of the general tool “ Building Passport Schleswig-Holstein“.

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