

AUSTRIA – COUNTRY REPORT

1.1 Response on questionnaire

- Questionnaire filled in by ATP sustain GmbH
- Questionnaire on sustainable building in Europe, Austria, prepared in the framework of the 3rd European Ministers conference on “Sustainable Housing”, Genval, Belgium, 27-28 June 2002, filled in by Donau-Universität Krems, for Austria
- ‘The legal two-tier approach in the new Austrian Building Codes’, by Rainer Mikulits (OIB), RICS/COBRA conference, Dublin 4-5 September 2008
- The impact of energy performance regulations on systems of building control’ by H.Visscher/E. Mlecnik/F. Meijer (RICS COBRA Research Conference, University of Cape Town, 10-11th September 2009)

1.2 Introduction of construction regulatory system in Austria

Austria is a federal republic which consists of nine provinces (Länder). Due to the distribution of responsibilities according to the constitutional law from 1929 there has never been one single building law in Austria, but at least nine different systems, each consisting of a building law (covering the procedures and functional requirements for building works) and related ‘ordinances’ (covering the technical requirements).

The building regulatory system is currently in the process of being changed. In the future (for most of the Länder starting in 2008 or 2009) the requirements will be purely functional and harmonized at the level of provincial laws. Detailed requirements will be set in so called ‘OIB-guidelines’, issued by the Austrian Institute of Construction Engineering (OIB), a private institution founded by the state governments, which have also transferred certain duties to OIB. Most of the Länder will in their ordinances refer directly to these OIB-guidelines, which will also be made compulsory by the ordinances.

In drafting the OIB-guidelines, the principles of performance based building regulations have been taken into account as far as possible. Nevertheless, the first generation of these guidelines will include a mix of performance based and prescriptive requirements, in order to insure a certain continuity in the practical application of building regulations in the Austrian provinces. It is envisaged to replace the remaining prescriptive requirements with performance-based requirements, in a step-by-step manner, in future editions of the OIB-guidelines. Revisions will be made approximately every three to five years.

It will be possible to deviate from the OIB-guidelines, when an equivalent level of safety can be demonstrated. The OIB-guidelines themselves can also further refer to Austrian standards and other technical documents.

The purpose of the building law, which applies to all buildings, is to ensure that all buildings are constructed in accordance with good building practice and the legal provisions. The planning and building control law are embodied within the same document and therefore both aspects are considered at the same time and a joint permit is issued. Consideration is given to land-use zoning, the size of the building relative to the site area and the height and type of building.

A building notification can be served for minor internal alterations with photographs instead of plans, but for most other building work a building permit is required. Any applications for a building permit must be made by an architect, engineer or qualified builder (*Baumeister*). A *Baumeister* can design, build and supervise other trades during construction provided he has a licence to practice, for which a formal qualification is necessary.

The local authority has six weeks to determine applications and the level of site inspection is determined when the approval is given. The owner has to appoint a building supervisor and either the local authority carries out inspections or an engineer not connected with the builder or owner.

1.3 Building regulations

Building regulations in Austria, under the new system (see par.1.1) cover the field of the six 'essential requirements' (mechanical strength and stability, safety in case of fire, hygiene, health and the environment, safety in use, protection against noise, energy economy and heat retention) as well as access for all. Building regulations do not cover electrical installations, which are regulated by a federal law. Building regulations apply to all kinds of construction works (buildings and civil engineering works), except those which are covered by special federal law (e.g.: railways, motorways, waterways, avalanche barriers, military buildings) or by special provincial law (e.g. provincial roads, secondary roads and other public roads). Each state can have special regulations relating to buildings dependant on a purpose group ('Sonderbauten').

The OIB intends to draft also an OIB guideline for the new Basic Works Requirement 7 as defined in the Construction Products Directive. However, the OIB thinks that the methodology for possible indicators of sustainability is not yet enough consolidated.

1.4 Regulation and requirements to sustainable construction

1.4.1 Regulated sustainability topics for new buildings

Except for water conservation/efficiency techniques and the usage of recyclable or renewable materials, all topics related to *ecological quality* are regulated in Austria, at different governmental levels.

The implementation of the EPBD is (was) mainly the responsibility of the Ministry of Economy and Labour. However, additional requirements may be set by the Länder. In 2006 the 'Energy Certification Providing Act' ('Energieausweisvorlagegesetz EAVG') was adopted, which obligates vendors and landlords to provide energy certificates for buildings when they are sold or rented. The law refers to the Länder regulations as far as methodologies, requirements and procedures are concerned.

With regard to *economic quality*, only a few topics are regulated (mostly at state or local level): the density of the development (e.g. minimal number of dwellings per area), mixed land use, and the usage of local labour in construction.

Several aspects of *social quality* are regulated: provision of safe and healthy work environment, provision of adequate local services and facilities, provision of affordable housing, conservation of local heritage and access to green space within a certain distance.

Most aspects of *functional quality* are regulated at the level of the *Länder* or at local level. Only the accessibility of buildings for disabled people is regulated at a federal level.

All aspects of *technical quality* are regulated at federal and state level. Limitation of construction time (planning) is also regulated at a local level.

4 La responsabilité des constructeurs

1.4.2 Regulated sustainability topics for existing buildings and for renovation of existing buildings

Regulations on energy performance and waste reduction also apply for existing buildings. For functional and technical quality relaxations of the regulatory provisions are possible. For the rest there are no requirements for existing buildings.

Most regulation that applies for new building also applies for renovation, but the energy performance requirements only apply case of a major renovation of buildings larger than 1000 m².

1.4.3 Background in EU-Directives

According to ATP the following regulated topics have a background in EU-directives:

- Energy performance
- Implementation of energy efficiency techniques
- Thermal insulation
- Limitation of CO₂-emission, ozone depleting gasses, green house gases
- Usage of local labour in construction
- Accessibility of disable people
- Fire resistance and fire safety.

1.4.4 Ordering of the regulations

In general, the regulations apply to all buildings. Only for energy performance and social quality there is a set of regulations of different building types.

1.4.5 Type of requirements and deemed-to-satisfy solutions

The regulations are a mixture of performance based requirements, functional requirements and prescriptive requirements. For many aspects of sustainable construction there is documentation on accepted of deemed-to-satisfy solutions.

1.5 Process of implementation

In case of energy performance, waste reduction, economic quality and social quality, the regulation was implemented as a cooperative process (governmental parties collaborated with the construction sector). For the other aspects of ecological quality, and for functional and technical quality it was a top-down process (central government led process).

1.6 **Enforcement of regulation and requirements to sustainable construction**

1.7 General

Building control is performed by the building authorities. Private experts or private institutions are only involved in certain cases, which can either be on behalf of the building authority, or contracted by the builder (building owner) as provided for in the procedural regulations. This differs, however, from state to state. Verification is done in most of the cases through an assessment of the designs, and only in few cases (e.g., for larger or more complicated projects) by additional inspections on site. Only registered designers, contractors and specialists are allowed to be involved. The professional requirements for those registered designers, contractors and specialists are relatively high in Austria (professional education at secondary or university level plus several years of professional experience plus additional examination). Assessment is done before the work starts, hence building permits can be seen as 'design permits'. After

completion, in most of the Länder a confirmation of the builder is required that all legal requirements as well as conditions and orders of the building permit have been duly respected.

Site inspections are normally only carried out for larger and/or more complicated projects. In order to make inspections at the right time, the building authority can oblige the builder to notify to the building authority when certain stages of the construction process have been achieved (e.g. completion of the foundation, placement of the reinforcement etc.).

1.8 Sustainability topics

Building plans are monitored on all aspects of sustainability aspects, except for aspects related to economic quality and social quality. The checking is performed by municipal authorities for functional and technical quality. The other aspects of sustainability are checked either by the architect, a technical advisor on behalf of the authorities or the owner, or other public authorities. The monitoring process is regulated in the building law of the Länder. Checking is done superficially, mostly by means of a visual check, sometimes by means of a paper checklist and sometimes by checking the registration of the architect.

Work under construction is checked on some aspects of ecological quality, like waste reduction, and on functional and technical quality. This monitoring is performed by the municipal authorities, by the technical advisor on behalf of the municipality or by other public authorities. The monitoring process is regulated in the building law of the Länder.

Prior to occupation, the finished building is checked on most aspects of sustainability, except on economic quality and on the technical execution /quality of the construction process. This is done by the municipality, by other public authorities, or by a technical advisor.

Existing buildings are only checked on aspects of functional and technical quality by other public authorities than the municipality.

1.9 **Role of the EU**

On the question: “Do you see any role for the EU to stimulate sustainable construction in your country?”, ATP answers: “No”. On the question: “Do you see any role for the EU to stimulate sustainable construction in your country?”, the ATP-respondent answers: “No. In Austria I never heard something from EU about some thought of sustainability in accordance with buildings. In Austria we know the green building certificate which is an ‘only energy saving label’. In my opinion, at the moment they have created this energy label the EU has lost the chance for a sustainable label. So at this moment the different countries started different labels and on top Austria has 2 labels for sustainable buildings (ÖGNI and ÖGNB). My wish would be a common label for Europe probably based on BREEAM with country ref. sheets for the different adoptions as well as LCC and LCA calculations on thermal comfort and so on from DGNB. For my opinion sustainability labels shouldn’t be perfect as DGNB, they should be practical to create a new way of thinking, design and development. The process will get more and more complicated to find a common and practical solution for countries, developers, owners and auditors if the EU is still waiting and thinking. The role of the EU has to be a platform to create a sustainability label based on the different labels in the next 2 years because this label has to be for our future AND a commercial target for each developer in Europe similar to LEED.”

1.10 **Complementary sustainable construction initiatives – including public and joint public-private initiatives**

On the question “How would you describe in general the relationship between government regulation to sustainable construction and complementary sustainable construction initiatives in your country?”, ATP



answers: “The governmental regulations only relate to energy saving. The theme of sustainable construction is left to initiatives, and sometimes the regulations are counterproductive or even contradictory to the different themes of sustainable construction.”

Example 1: Austrian Program on Technologies for Sustainable Development

The Austrian Federal Ministry of Transport, Innovation and Technology (BMVIT) has initiated a five years R&D programme to support innovative sustainable buildings in Austria. The Austrian Program on Technologies for Sustainable Development aims at supporting the economy with future-oriented innovations and developments. It initiates and supports trendsetting research and development projects and the implementation of exemplary projects.

The sub-programme has clearly shown the demand for a comprehensive and integrated top-down and bottom-up approach to speed up innovation towards sustainable development in the building sector. As the building industry is characterized by incremental innovations, major steps can only be reached by a concerted improvement of the total system (building) with focus on socio-economic aspects to secure market diffusion.

Example 2: Österreichische Gesellschaft für nachhaltige Immobilienwirtschaft (ÖGNI)

This is a partner organisation of the German Green Building Council (DGNB). The goal of ÖGNI is to achieve a transparent system for the integrated assessment for all sustainability criteria of buildings, for the Austrian real estate sector. The organisation is still in its early phases. It has not/hardly been used in projects. It coexists with government regulation, but there is no relation. The relationship with government regulation has not changed.

The rating system sets higher criteria than formal regulation.

Anyone can join the initiative. There are certain rules for the processes, procedures, and products delivered by initiative members. The members are allowed to carry the initiative's logo, they are certified (or comparable) by the initiative's organization

See www.ogni.at

Example 3: klima:aktiv Baustandard (passive house standard)

klima:aktiv is the Austrian climate protection initiative launched in 1998 by the Federal Ministry of Agriculture, Forestry, Environment and Water Management, embedded in the Austrian federal climate strategy, consisting of a bundle of measures of regulation, taxes, and subsidies.

The primary objective of klima:aktiv is to introduce and promote climate friendly technologies and services. klima:aktiv has gathered all voluntary and supportive measures under one umbrella. In the four thematic clusters Building, Energy Efficiency, Mobility, and Renewable Energy, specific programmes are carried out by various programme managers of different institutions. These programmes follow a comprehensive and systematic approach in supporting the market introduction of climate-friendly technologies, services and activities.

klima:aktiv follows the idea of market transformation. Market transformation is a targeted effort to change the market. This approach's main characteristic is an active and comprehensive inclusion of all relevant market players and stakeholders. The main advantages of a market transformation approach are comparably low costs and high sustainable effects. In this case, market transformation aims to raise the share of energy efficient products and services.

Klima:aktiv's core activities are:

- Training of klima:aktiv professionals
- Setting standards and safeguarding quality
- Providing information and raising awareness
- Providing advice and support

- Activating and networking partners

The initiative is now catching on; it is used in a small number of projects. It coexists with government regulation, but there is no formal relation. It sets higher criteria than formal regulation. An organization has been set up to administer and steer the initiative. Anyone can join the initiative. Members have to meet a code of conduct and they are monitored by the initiative organization's representatives. Members are disciplined when non-compliance with the system is found.

The paper 'The *impact of energy performance regulations on systems of building control*' by H.Visscher/E. Mlecnik/F. Meijer (RICS COBRA Research Conference, University of Cape Town, 10-11th September 2009) gives the following information on the passive house standard:

"In Austria the passive house standard is highly popular. In connection to the national policy the Programme of the Austrian Government for the period between 2007-2010 is to be cited, where the Austrian government mentions and defines the passive house standard for the first time. The Austrian pioneer federal state is Vorarlberg, where the federal government constituted at the beginning of 2007, that for new buildings of public housing associations passive house standard is obligatory. In 2008 the city of Wels signed a declaration to build all future municipal buildings in the passive house standard. In Austria nine different housing grant schemes exist, so verification can be different in different regions. The certification of passive houses in Austria basically happens by means of the Passive House Planning Package and/or the Austrian methodology according the guideline no. 6 of the Austrian Institute of Construction (OIB), when it comes to housing grants. Since 2005 the Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management supports the dissemination and implementation of minimum criteria concerning the energy performance and the ecological quality of new built residential buildings within its klima:aktiv haus program.

Within the klima:aktiv haus programme criteria for so-called klima:aktiv passive houses were defined. They must be heat –bridges-free and airtight, their heat energy demand and their total primary energy demand must be verified by the PHPP, they must be equipped with energy efficient ventilation systems with heat recovery and water saving fittings. Further they must not be built of HFCH or PVC containing building materials and they must fulfill requirements concerning summer suitability. Some differences occur between the Austrian OIB methodology and PHPP, especially concerning surface definition. Very optimistic default values for internal heat gains and shading of the OIB methodology have been criticized, while PHPP shows good validation."

Example 4: 'Low-Energy-Building Cluster Tirol'

The Niedrigenergiehauscluster Tirol is a private-public initiative of the Austrian Federation of Industry Tirol and private firms primarily from the construction industry. Its mission is to accelerate the market diffusion of low energy buildings and to increase the construction quality of new buildings as well as refitting of buildings. This mission is to be reached by networking, professional training and the definition of common quality standards.

To secure permanent networking a private institute has been established that offers a broad range of supporting activities from know-how-transfer to corporate marketing, research and development and political lobbying.

Regarding the construction perspective, the Cluster guarantees a high and continuous increase in construction standards with special focus on energy efficiency.

To secure low energy buildings (including Buildings in Passiv House standard) at high quality standards, cluster management is active in the following areas:

- Standardization of products (e.g. Passive Houses) over firms;
- Development of innovative products and services (e.g. contracting);
- Motivation and qualification of employees (and firms);
- Re-adjust public regulation and general market conditions in favour of low energy buildings;



- “Clustering” independent firms to teams.

The most important goals of the Cluster are:

- Diffusion of innovative technologies in the building sector; strengthen the innovation process in the construction industry;
- Development and marketing of low energy buildings;
- Increase of employment through (high quality) refitting of buildings;
- Development joint consulting, design and construction tools and services;

The ‘Niedrigenergiehauscluster Tirol’ is organised as a private membership society, which has been established in 1999. and working as a focus point between public authorities, most notably the Federal State Tirol, the Federation of Industry Tirol, and the construction industry. It is managed by a cluster manager. It is integrated into a network of related organizations in Tirol (e.g. ‘Energie Tirol’, University of Innsbruck, training institutions) and other organizations all over Austria/

The general background of the Niedrigenergiehauscluster Tirol is the demand for a sustainable housing policy including:

- Economic aspects (building industry a leading branch of the economy, employment, job security)
- Social aspects (increasing qualification of employees, improved building quality)
- Economic aspects (reduction of energy demand, renewables)

The Niedrigenergiehauscluster Tirol is a neutral platform for all companies, that are members of the Cluster. The Cluster is open to new members as long as they meet defined criteria. The Cluster is a follow up of the Tiroler „economic concept“ (Wirtschaftsleitbild). Since its foundation the number of members increased from 18 to 62 companies. As a result of its activity the a number of low energy buildings in Tirol has tripled.

The Cluster is based on a bottom-up approach, following a top down analyses of the regional economy, where economic priorities for Tirol have been defined. As it has shown its success over the last years, comparable networks have been established all over Austria (e.g. Passive House Cluster).

As other examples have shown, its main problem is to secure a specific economic advantage for the members to justify the annual membership fee. Therefore, a starting period of 3-5 years should be cofinanced by public authorities, without neglecting the responsibility of private companies for the success of the Cluster.



Appendix: Abstract of paper, 'The legal two-tier approach in the new Austrian Building Codes', by Rainer Mikulits (OIB), RICS/COBRA conference, Dublin 4-5 September 2008

Background

Given the size of Austria, with roughly 8.3 million inhabitants and an area of 84.000 km², it has always been criticised to have nine different building regulations, which is why already in 1948 the first attempt was made to establish one 'model building law' which should have been taken over by the provinces one by one. Similar initiatives have been regularly made over the following years but have never succeeded. Even worse, over the years the building laws (containing mainly the procedures of building control) and the technical regulations have developed partly in diverging directions, a fact that has never been understood by the stakeholders (designers, contractors, producers of construction products, etc.), and periodically repeated criticism has been supported by studies according to which harmonization of building regulations would potentially allow a reduction of costs for residential buildings by 10 to 15 %.

In 2000 the provinces decided that an expert group be established and given the task to draft a new proposal for the harmonization of building regulations in Austria. This latest attempt was restricted to the technical requirements on buildings and other construction works, whereas the procedures for building control were excluded. Furthermore, the expert group should cooperate with the Austrian Institute of Construction Engineering (OIB), an organization which was established in 1992 by the provinces and which functions as a common platform of the provinces in the field of construction and construction products. OIB has also been assigned other tasks like acting as a European technical approval body and as an accreditation body for testing laboratories, inspection bodies and certification bodies.

The task of the expert group was to draft together with OIB a treaty ('Vereinbarung gem. Art. 15a B-VG über die Harmonisierung bautechnischer Vorschriften') containing the new harmonized legal requirements on buildings and construction works and a commitment of the provinces to replace the existing legislations by this new common text.

The concept of the new building regulations

Since it was a unique opportunity to establish a totally new set of building regulations, it was decided to start from scratch with an innovative and forward-looking concept. The most influential inspirations were taken from the following two sources:

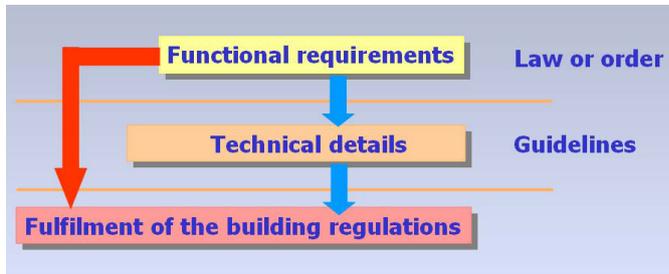
- The discussion paper on performance-based building regulations (IRCC 1998)
- The new approach for technical harmonization and standards (Council resolution (85/C136/01) on a new approach to technical harmonization and standards [1985] OJC136, 04/06/1985 1-9)

According to the 'new approach' legislative provisions should be restricted to 'essential requirements', whereas more technical and detailed requirements should be transferred to referenced non-legal documents like standards. While this 'new approach' was intended for the harmonization of technical requirements for products, this idea has been taken up by the expert group and OIB, and combined with the principles of performance-based building regulations.

This resulted in the following two-tier approach for the new building regulations:

- The provisions laid down at legal level (laws or orders) shall be restricted to purely functional requirements, whereas any performance-based or prescriptive requirement shall be laid down in guidelines established by the Austrian Institute of Construction Engineering (OIB).
- When a project has been designed according to the performance-based or prescriptive requirements of the OIB-guidelines, the project is deemed to satisfy the functional requirements of the legislative provisions.

- However, it is also possible to deviate from the OIB-guidelines as long as the designer or the builder can demonstrate that this solution ensures an equivalent level of safety, as if the OIB-guidelines had been applied.



In this context the terms “functional requirement”, “performance requirement” and “descriptive requirement” have the following meaning:

Type of requirement	Meaning	Example
Functional requirement	A requirement expressed using only qualitative terms, and stating a goal which shall be achieved	“Buildings must have escape routes which allow users to leave the building sufficiently quickly and safely, taking into consideration its purpose and size, and whether emergency equipment can be used”
Performance requirement	A requirement expressed using quantitative terms, and the fulfilment of which can be determined by calculation, testing or simulation	Limit values of oxygen concentration, carbon dioxide concentration, carbon monoxide concentration, smoke interface height, temperatures, etc. which must not be exceeded
Descriptive requirement	A requirement expressed using definitions, particular (product) types or classes, or design features	“From any point in a room the travelling distance to a direct exit to a safe spot outdoors or to a staircase must not exceed 40 m

The major advantage of this approach is to provide on the one hand guidelines which can be easily applied, which are understood by everybody and which don’t need much expertise to demonstrate compliance for the majority of traditional construction projects, while on the other hand it is possible to realise more sophisticated design solutions, if it is possible to demonstrate an equal level of safety. This allows for the necessary flexibility for innovative architecture and complex building projects. Everything is possible, as long as it can be demonstrated that the functional requirements are fulfilled.

Organisation of the drafting process

For the drafting of the OIB-guidelines, project groups had been established which consisted of experts from universities, testing laboratories, building authorities and specialised design offices. These project groups were supervised by a steering group composed of representatives of the OIB and the provincial governments. This steering group drafted the terms of reference for the project groups and met with them on a regular basis in order to comment on the recent drafts of the guidelines. A novelty in the project management for the drafting of the OIB-guidelines was involving stakeholders already at a very early stage of the drafting process. For this purpose a so called “Contact Forum” had been established, and the drafts of all guidelines were discussed in numerous meetings of this ‘Contact Forum’. In this ‘Contact Forum’ participated all relevant sub-organisations of the chamber of commerce, the chamber of architects and consulting engineers, the chamber of labour, the chamber of agriculture, the Austrian medical chamber, the Austrian standards institute and the relevant federal Ministries.

As a result of this procedure, the final official consultation for the guidelines – as technical regulations to be taken over by legislation – went very smoothly.

After adoption of the OIB-guidelines, the steering committee was converted into a standing committee, from then onwards responsible for discussing comments and questions related to the OIB-guidelines, and for future revisions of the guidelines. For these revisions of OIB-guidelines an interval of three to five years is envisaged. One first outcome of this standing committee is the FAQ-site on the homepage of OIB, which has proven to be a very useful tool especially in the first year of application of the new guidelines.

4. Scope and content of the regulations

The structure of both levels of the 'two-tier approach' follows the system of the six 'essential requirements' which have been established by the Construction Products Directive. Although this directive relates to construction products, the essential requirements relate to construction works (buildings and civil engineering works). When the provinces had implemented the construction products directive, the essential requirements had already been taken over in their respective legislation, but only in a few cases the provinces have so far followed this structure in their building regulations, which were rather organised according to parts of the building (foundation, walls, envelope, roof etc.) than according to functions, as this is the case with the essential requirements.

However, while for traditional buildings (e.g. one family houses, conventional multi-family houses) the 'parts of buildings approach' is sufficient, for projects with a more sophisticated architectural concept or for complex projects it is much more appropriate to deal with the different functions which need to be fulfilled by the building, like structural stability, fire protection, energy efficiency etc.

Therefore the structure of the new legislation follows these essential requirements, only for 'safety in use' the requirements concerning 'accessibility' have been added (see figure 2).

(1. Mechanical resistance and stability, 2. safety in case of fire, 3. Hygiene, health and the environment, 4. Safety in use and accessibility, 5. Protection against noise, 6. Energy economy and heat retention.)

Legislative provisions

In the course of the year 2008 four out of nine Austrian provinces have already taken over the new building regulations. In these countries the so far detailed technical provisions have been removed and replaced by the same set of functional requirements. This new legal text has only about eight pages, covering all six essential requirements. There are no technical values, no classes, the wording of the requirements is just purely functional. These legislative provisions have either the form of a law, or of an order (Ordinance of the provincial government), depending on the legal tradition of the respective province. (One example of such a legislative provision is the decree of the government of Tyrol: Technische Bauvorschriften 2008, LGBl. 93/2007.)

The laws or ordinances refer to the OIB-guidelines which are thus made compulsory. However, this provision is always complemented by a clause according to which the project may deviate from the OIB-guidelines if an equal level of safety is met, and if this has been clearly demonstrated (e.g. through an expertise).

OIB-guidelines

The guidelines have been published by the Austrian Institute of Construction Engineering (OIB) and are available in the internet on the homepage of OIB9. There is one OIB guideline for each essential requirements, with the exception of 'safety in case of fire' where there are one general guideline as well as two specific ones for 'industrial buildings' and for 'garages, roofed parking spaces and multi-storey car parks' respectively. Furthermore there is one common document on 'definitions' and another common listing all 'cited standards and other technical regulations'. The OIB-guidelines are, although more detailed than the functional requirements, still quite slim: their size varies between three pages and nineteen pages.

The requirements in the guidelines are mostly descriptive, but sometimes also performance-based. The

most prominent example of performance-based requirements is the energy efficiency coefficients in OIB-guideline 6 “energy economy and heat retention”. This guideline is also implementing the EPBD as far as technical requirements are concerned.

The structure of each guideline follows the articles and topics of the respective chapter in the legal provisions (functional requirements). These again have been inspired by the so called ‘interpretative documents’, which are complementary documents to the construction products directive.

Under OIBguideline 6 ‘Energy economy and heat retention’ there is also a manual for the calculation of the energy performance characteristics of buildings, which has been published as a separate document.

This manual contains the methodology for the assessment of the energy efficiency of buildings as required by the EPBD.

The interrelationship between the two tiers

The functional requirements of the legal provisions are the benchmark for the building authority when assessing a building project. From this starting point, there are two possible ways to demonstrate compliance with the legal requirements:

- Application of the OIB-guidelines and fulfilment of the performances and descriptive requirements established in these guidelines, or
- Demonstration that an equal level of safety is achieved through an expertise by a qualified expert.

For the second case, the expertise needs to be conclusive, and it is left to the building authority’s discretion to evaluate such an expertise.

For the different OIB-guidelines, as well as depending from the degree of deviation from the OIB-guidelines, the extent and quality of the expertise may be different. Only for OIB-guideline 2 ‘safety in case of fire’ there are clear provisions for the content of this expertise, which needs to be in this case a ‘Brandschutzkonzept’ („Brandschutzkonzept“ means, literally translated, “fire prevention concept”, and there is an informative guide available at www.oib.or.at for the drafting of such concepts.)

One challenge of this system is that the provisions in the OIB-guidelines are not always performance-based, but in many cases descriptive. In such cases a quantitative benchmark is missing for the evaluation of the expertise. When there are no clear metrics and performance requirements, the demonstration of an ‘equal’ level of safety will reflect only a knowledge- and experience-based judgement of the experts that the solution which has been designed offers – from an overall point of view – the same general safety level as is implicitly given in the descriptive provisions. Moreover, the actual level of safety achieved by different buildings which are all fulfilling the same descriptive requirements may be different, due to the simplification inherent to any descriptive requirement. In an ‘ideal world’ the safety level (or accepted risk) ought to be set using performance indicators, which are the benchmark for engineering solutions as well as the basis for simplified descriptive requirements, by this ensuring a consistent level of safety, independent of the route which has been taken by the designer (following the descriptive requirements or deviating from them). The discussion of this problem is already ongoing, especially with regard to fire safety.

State of implementation

The functional requirements and the OIB-guidelines have already been taken over and implemented in the Austrian provinces of Burgenland, Tirol, Vorarlberg and Vienna . Three other provinces start with an implementation of OIB-guideline 6 ‘Energy economy and heat retention’, which is already in force in Kärnten (Carinthia) and for which the implementation is under preparation in Oberösterreich (Upper Austria) and Steiermark (Styria). Generally spoken, all other provinces, or the missing OIB-guidelines respectively, will be taken over and implemented successively.



Naturally, when such a fundamental change of the building regulations takes place, many questions will arise during the first months of the practical application. It is the task of the newly established experts committee, which has been already mentioned above, to discuss these questions and to interpret the provisions of the OIB-guidelines. The results of the discussions of the expert committee are published in the internet on the website of the Austrian Institute of Construction Engineering (OIB), where a particular FAQ-page can be found.

Conclusions

In an effort to harmonise the so far disparate building regulations of the nine Austrian provinces, a new system of functional requirements at legal level and building code type “OIB-guidelines” has been introduced in Austria. This two-tier approach has been chosen in order to provide sufficient flexibility for innovative architectural design and engineering solutions. For the first time stakeholders have already been involved in a very early stage in the preparation of a legislative project, independent from, and much earlier than the official consultations, which are usually only performed on the basis of final drafts. This approach turned out to be very useful.

This new system has been put into force in the first Austrian provinces by 1 January 2008, and has been implemented in four provinces by now. The other provinces will follow successively. The first experiences with this new system shows that there is still a number of questions popping up in the practical application, but in general the transition went astonishing smoothly. Although the flexibility offered by the two-tier approach has been generally applauded, in practice most of the projects apply the partly performance-based and partly descriptive OIB-guidelines.

In a standing committee which has been set up for this purpose, practical questions of the implementation and application are discussed, and together with the answers put on a FAQ-page of the OIB-website in the internet. This standing committee will in future also prepare revisions of the OIB-guidelines, which are intended to be published every three to five years.

Regulations on sustainable construction – ATP Sustain

Subject	Topic	Regulation?	REGULATIONS WHICH SPECIFIES SUSTAINABILITY ASPECTS OF				REGULATIONS WHICH SPECIFIES SUSTAINABILITY ASPECTS OF CONSTRUCTION					Do the reg's apply to existing building?	Do the reg's apply to renovation of existing building?	How are the reg's drawn up?	Is there any documentation on accepted or deemed-to-satisfy solutions?	PROCESS OF IMPLEMENTATION		
			Level of regulation				Ordering of the regulations											
			National/federal	Regional/state	Local	Quasi-mandatory	all reg's apply to all buildings	a set of reg's per building						a set of reg's per building				
Ecological quality																		
Energy	To use renewable energy sources	No		X	X					X	X	X	X	Yes	Yes, but only for renovation of existing buildings	As prescriptive regulations (construction methods are stipulated)	No	Cooperative, governmental parties collaborated with the construction sector
	To implement energy efficiency techniques (e.g. low energy light bulbs)	Yes	X															
	To thermal insulation	Yes		X	X													
	To reduce air permeability	Yes		X														
Water	To implement water conservation techniques	No																
	To implement water efficiency techniques (e.g. low-water flush toilets)	No																
	For water metering	No																
Minimize pollution	To minimize waste during construction	Yes	X	X	X					X				Yes	Yes, for all renovation	As functional regulations (goals)	No	Cooperative, governmental parties collaborated with the construction sector
	To register waste production (e.g. in site waste management plan)	Yes	X	X	X													
Other aspects related to ecology	To separate/recycle waste	Yes	X	X														
	To limit emission of CO2	Yes	X	X						X				No	Yes, for all renovation	As prescriptive regulations (construction methods are stipulated)	Yes	Top-down, it was mostly a government led process
	To limit ozone depleting gasses	Yes	X	X														
	To limit green house gasses	Yes	X	X														
Protect biodiversity and natural	To conserve flora on sites	Yes	X	X														
	To conserve wildlife on site	Yes	X	X														
	To conserve natural habitats on site	Yes	X	X														
Minimize the use of resources	To use recyclable materials	No																
	To use renewable materials	No																
	To refurbish and redevelop existing buildings in stead of demolition and new development	Yes			X													
Economic quality																		
Enable businesses to be efficient and competitive	To reduce energy consumption during the construction process	No												No	I dont know	I dont know	I dont know	Cooperative, governmental parties collaborated with the construction sector
	To reduce waste during the construction process	No																
	To keep water use to a minimum during the construction process	No																
Support local economic diversity	Top construct adaptable buildings	No																
	To the density of the development (e.g. minimal number of dwellings per area)	Yes		X	X													
	To mixed land use	Yes		X	X													
Provide employment opportunities	To use local material/goods in construction	No																
	To use local labor in construction	Yes	X															
Social quality																		
Adhere to ethical standards during development	To ensure ethical trading throughout supply chain	No								X	X	X	X	No	Yes, for all renovation	As prescriptive regulations (construction methods are stipulated)	No	Cooperative, governmental parties collaborated with the construction sector
	To provide safe and healthy work environment	Yes	X	X														
Provide adequate local services and facilities	To provide information to local community during construction activities	Yes	X	X	X													
	To provide space for training workmen	No																
Provide housing that meets needs	To provide local schools, health, social facilities	Yes		X														
	To develop a mix of tenure types	No																
	To provide affordable housing	Yes		X														
Integrate development in local context	To provide housing for the elderly	No																
	To reject or discourage gated development	No																
	To provide transport links to local context	No																
Conserve local heritage	To provide links to adjacent neighborhoods	No																
	To reuse locally valued buildings	Yes		X	X													
Access to green space	To have green space within a certain distance	Yes		X	X													
Functional quality																		
Design optimization	To the shape of the exterior	Yes		X	X					X								
	For aesthetics	Yes		X	X													
	To planned service life of structures	No																
	To planned service life of building services	No																
Building envelope	To the demand of space per occupant and/or dwelling	Yes		X	X													
	To moisture protection of the building envelope	Yes		X	X													
	To wind protection of the building envelope	Yes		X	X													
Health, comfort and user satisfaction	For electric-magnetic shielding	No																
	For indoor air-quality	Yes		X	X													
	To thermal comfort in winter	Yes		X	X													
	To thermal comfort in summer	Yes		X	X													
	To acoustic comfort	Yes		X	X													
	To in-door daylight entry	Yes		X	X													
Usability for disabled	To the capability of conversion by a construction/building user	No																
	To accessibility for disabled	Yes	X	X														
Technical quality (construction process)																		
Technical execution /quality of the construction process	To limit construction time (planning)	Yes	X	X	X					X								
	To construction management	Yes	X	X														
	To keeping records on construction progress	Yes	X	X														
	To level of education/experience of builders	Yes	X	X														
	To the structural safety of the construction	Yes	X	X														
	To fire resistance of the construction	Yes	X	X														
	To the safety of a construction during a fire	Yes	X	X														

Checking of building plans – ATP Sustain

CHECKING OF BUILDING PLANS																			
Subject	Are building plans monitored to check compliance with sustainability criteria in construction regulation?	Who is monitoring sustainability criteria?								Is the monitoring process regulated in law?	How are building plans normally monitored to check compliance with sustainability criteria in construction regulation?					How thoroughly are building plans normally monitored to check compliance with sustainability criteria in	If from this monitoring non-compliance is found, how is this disciplined?	If the monitoring shows compliance with sustainability regulation, is this reported to the future owner of the building	
		Municipal authority	Other public auth.	Architect	(Tech.) advisor on behalf of auth's	Techn. adv. on behalf of insurers	Techn. adv. On behalf of (future) owner	Utility company	Private Inspector		Building owner	Other	A visual check, to find if/how criteria have	A check based on a paper checklist, to find	A computer aided check based on a				Check on registration of the architect
Ecological quality - Energy	Yes			X			X			X	Yes, on regional/state level	X			X		Superficial, mostly a check only assesses if criteria have been integrated	The building permit will be issued under the condition that this non-	Yes, a proof on paper is issued (e.g. a report, a letter, a permit or certificate)
Ecological quality - Water				X							Yes, on regional/state level	X					Superficial, mostly a check only assesses if criteria have been integrated	The building permit will be issued under the condition that this non-	Yes, a proof on paper is issued (e.g. a report, a letter, a permit or certificate)
Ecological quality - Waste	Yes			X			X				Yes, on regional/state level	X					Superficial, mostly a check only assesses if criteria have been integrated	The building permit will be issued under the condition that this non-	Yes, a proof on paper is issued (e.g. a report, a letter, a permit or certificate)
Ecological quality - Other	Yes		X	X	X						Yes, on regional/state level	X					Superficial, mostly a check only assesses if criteria have been integrated	The building permit will be issued under the condition that this non-	Yes, a proof on paper is issued (e.g. a report, a letter, a permit or certificate)
Economic quality	No																		
Social quality	No																		
Functional quality	Yes	X	X	X	X						Yes, on regional/state level	X	X				Superficial, mostly a check only assesses if criteria have been integrated	The building permit will be issued under the condition that this non-compliance is	Yes, a proof on paper is issued (e.g. a report, a letter, a permit or certificate)
Technical quality (construction process)	Yes	X	X				X				Yes, on national/federal level	X	X				Superficial, mostly a check only assesses if criteria have been integrated	The building permit will be issued, reference is made to the non-compliance, but no conditions are stipulated	Yes, a proof on paper is issued (e.g. a report, a letter, a permit or certificate)

Checking of work under construction – ATP Sustain

CHECKING OF WORK UNDER CONSTRUCTION																			
Subject	Is work under construction monitored to check compliance with sustainability criteria in construction regulation?	Who is monitoring work under construction?								Is the monitoring process of work under construction regulated in law?	How is work under construction normally monitored to check compliance with sustainability criteria in construction	How thoroughly is work under construction normally monitored to check compliance with sustainability criteria in	If from this monitoring non-compliance is found, how is this disciplined?	If this monitoring shows compliance with sustainability regulation, is this reported to the future owner of the building					
		Municipal authority	Other public auth.	Architect	(Tech.) advisor on behalf of auth's	Techn. adv. on behalf of insure	Techn. adv. On behalf of (futura	Utility company	Private Inspector						Building owner	Other			
Ecological quality - Energy	No																		
Ecological quality - Water																			
Ecological quality - Waste	Yes	X	X								X	Yes, on national/federal	A visual check, to find if/how	Thorough, mostly a check	The contractor is requested to	Yes, a proof on paper is issued			
Ecological quality - Other	Yes	X	X		X						Yes, on regional/state	A visual check, to find if/how	Thorough, mostly a check	The contractor is requested to	Yes, a proof on paper is issued				
Economic quality	No																		
Social quality	No																		
Functional quality	Yes	X	X		X						Yes, on national/federal	A visual check, to find if/how	Thorough, mostly a check	The contractor is requested to	Yes, a proof on paper is issued				
Technical execution /quality of the construction process	Yes	X	X		X						Yes, on national/federal	A visual check, to find if/how	Thorough, mostly a check	The work is halted until the	Yes, a proof on paper is issued				

Checking of finished construction work – ATP Sustain

CHECKING OF FINISHED CONSTRUCTION WORK PRIOR TO OCCUPATION																	
Subject	Is the finished construction (a finished building) monitored to check compliance with sustainability criteria prior	Who is monitoring sustainability criteria prior to occupation of the building?										Is the monitoring process of sustainability criteria of finished construction work regulated in law?	How is finished construction work normally monitored to check compliance with sustainability criteria in	How thoroughly are building plans normally monitored to check compliance with sustainability criteria in	If from this monitoring non-compliance is found, how is this disciplined?	If this monitoring shows compliance with sustainability regulation, is this reported to the future owner of the building	
		Municipal authority	Other public auth.	Architect	(Tech.) advisor on behalf of auth's	Techn. adv. on behalf of insurers	Techn. adv. On behalf of (future) owner	Utility company	Private Inspector	Building owner	Other						
Ecological quality - Energy	Yes	X			X		X						Yes, on regional/state level	A visual check, to find if/how criteria have been integrated	Thorough, mostly a check assesses if and how criteria have	The building may be occupied under the	Yes, a proof on paper is issued (e.g. a report, a letter, a permit or
Ecological quality - Water																	
Ecological quality - Waste	Yes	X	X										Yes, on national/federal level	A visual check, to find if/how criteria have been integrated	Thorough, mostly a check assesses if and how criteria have	The building may be occupied under the	Yes, a proof on paper is issued (e.g. a report, a letter, a permit or
Ecological quality - Other	Yes		X										Yes, on regional/state level	A visual check, to find if/how criteria have	Superficial, mostly a check only assesses if	The building may be occupied	Yes, a proof on paper is issued (e.g. a report, a
Economic quality	No																
Social quality	Yes	X											Yes, on regional/state level	A visual check, to find if/how criteria have	Superficial, mostly a check only assesses if	The building may be occupied	Yes, a proof on paper is issued (e.g. a report, a
Functional quality	Yes	X	X		X		X						Yes, on national/federal level	A visual check, to find if/how criteria have been integrated	Thorough, mostly a check assesses if and how criteria have	The building may be occupied under the	Yes, a proof on paper is issued (e.g. a report, a letter, a permit or
Technical execution /quality of the construction process	No																

Checking of existing constructions in use – ATP Sustain

CHECKING OF EXISTING CONSTRUCTIONS IN USE																	
Subject	Are existing constructions monitored to check compliance with sustainability criteria when in use?	Who is monitoring sustainability criteria of constructions in use?										Is the monitoring process of constructions in use regulated in law?	How are constructions in use normally monitored to check compliance with sustainability criteria in construction regulation?	How thoroughly are constructions in use normally monitored to check compliance with sustainability criteria in	If from this monitoring non-compliance is found, how is this disciplined?		
		Municipal authority	Other public auth.	Architect	(Tech.) advisor on behalf of	Techn. adv. On behalf of (future)	Utility company	Private Inspector	Building owner	Other							
Ecological quality - Energy	No																
Ecological quality - Water																	
Ecological quality - Waste	No																
Ecological quality - Other	No																
Economic quality	No																
Social quality																	
Functional quality	Yes		X										Yes, on national/federal level	A visual check, to find if/how criteria have been integrated during construction work	Thorough, mostly a check assesses if and how criteria have been integrated	Other	
Technical execution /quality of the construction process	Yes		X										Yes, on regional/state level	A visual check, to find if/how criteria have been integrated during construction work	Thorough, mostly a check assesses if and how criteria have been integrated	Other	