Raising standards for consumers

POSITION PAPER

Laying the foundations for sustainable buildings

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Executive Summary

On the occasion of the evaluation of the Energy Performance of Buildings Directive, ANEC uses this paper to call for development of a European strategy for sustainable construction, one able to achieve reliable and sustainable performance assessment of buildings and provision of meaningful measurement indicators and information.

This should be part of a democratic and balanced process that reflects the needs of society, avoiding the commercial interests of parties involved.

We recommend aspects that need to be considered when tackling key topics:

Durability - suggesting binding producer claims with respect to the service life of a product (or even a building)

Focus on energy savings – looking at both how to provide meaningful certificates and considering the economic impacts on consumers and energy use patterns - rather than on the transition to alternative energy sources that increase costs and detriment to consumers and the environment.

Proper information provision to enhance sustainable choices for consumers and construction professionals.

We highlight the importance to consider and enhance - at the design stage of the constructions - these crucial features:

- Accessibility and adaptability
- Deconstruction at the end of life to allow recyclability and reusability of parts and avoid waste

We also identify areas where political frameworks need to be developed to ensure affordable energy prices for vulnerable consumers; to stimulate a trade system for used building products and to address emissions to indoor air.

Certain principles need to be taken into account in these discussions:

- The use stage of the building is of paramount importance with respect to the energy balance.
- Energy efficiency should be the focus.
- The provision of energy certificates based on the calculated demand of the building should be obligatory and their implementation enforced.
- A legal framework at EU-level is necessary to ensure affordable energy supply to vulnerable consumers.
- The concept of design for disassembly and deconstruction should be promoted.

- The durability of buildings and construction materials needs to be addressed.
- Life Cycle Assessment (LCA) or Environmental Footprint methodologies do not provide meaningful indicators for the assessment of buildings. Hence, a debate on alternatives is needed.
- Indoor emissions from all relevant emission sources should be addressed by a new legal framework.

1. Introduction

The importance of the European building sector to society, environment and the economy is well-known. The European Commission has stated - based on previous studies - that

> "*The construction and use of buildings in the EU account for about half of all our extracted materials and energy consumption and about a third of our water consumption. The sector also generates about one third of all waste and is associated with environmental pressures that arise at different stages of a building's life-cycle including the manufacturing of construction products, building construction, use, renovation and the management of building waste*[1]."

To tackle the problem, a plethora of initiatives[2] has been initiated, not only at EU-level but also in Member States at national or even regional level. They constitute different approaches (e.g. life-cycle-approach, performance indicators, risk analysis) aimed at different targets (e.g. sustainability as a whole, reduction of adverse environmental impacts, energy consumption etc.) using different means (directives, standardisation, voluntary agreements, labels). As such, the issue is addressed in an inconsistent and complex way that creates confusion (not least for consumers).

Undoubtedly, there still is a great potential for improvement with regard to building performance. Apparently, varied approaches need to be applied to new buildings and building stock, as work on the EU-Ecolabel for office buildings clearly revealed. However, to keep it simple for consumers, there is a need to adjust the initiatives, embed them in a political framework and disseminate effective information. This will initiate a mid-term evolution in the building sector that will help reach the long-term EU greenhouse gas reductions target for 2050.

Consequently, ANEC calls for development of a robust European strategic approach for sustainability in the construction area and is willing to participate in a discussion that should be led without prior conclusion, even if established assessment schemes and methodologies prove unsuitable.

[1] COM(2014) 445 'European Commission communication on resource efficiency opportunities in the building sector'

[2] E.g. Recast of EPBD (Directive 2010/31/EU), Roadmap to resource efficient Europe COM (2011) 571, A lead market initiative for Europe COM (2007) 860, Addressing the challenge of water scarcity and droughts in the European Union COM (2007) 414, Directive 2008/98/EC on waste (Waste Framework Directive), the 7th Environment Action Program to 2020, just to mention a few.

2. Starting point

Various interested parties in the building sector, such as architects, investors, communities, product manufacturers, project developers & construction companies, have different perspectives and interests, pursuing potentially diverse goals. Any decision taken will always be a value choice but has to be based on appropriate information. It is **crucial that developments are controlled by a democratic process taking due account of the needs of the public rather than by the commercial interests of the parties involved (including private certification schemes)**. ANEC raises its voice for tenants, owner-occupiers and owners who rent out on a small scale. Hence, the following considerations aim primarily at residential buildings but could easily extended to public buildings and industrial sites.

The **social aspects of sustainability** (such as shelter, poverty reduction, job creation, worker safety, human health, avoidance of child labour) are broadly acknowledged by society on a global level, whereas at local level, the goals differ depending on the focus of the individual parties (e.g. urban sprawl versus rural depopulation, prestige (skyscrapers), use of the built environment (social infrastructure), identification and commitment, social mixture versus gated communities). Despite any aforementioned aspect, consumers generally focus on human health and comfort, accessibility and adaptability of the building to enable them to live independently in their familiar surrounding as long as possible. This aim is also quite frequently mentioned in the discussion on demographic trends.

Diverging goals are even more evident with respect to the **economic aspects of sustainability**, also among consumers. Tenants focus on affordability and running costs. Although the latter is also interesting for owners, this group will additionally consider value over lifetime, costs for maintenance and repair and - if they rent out their property - the return on investment and income (by rental fees).

The **ecological aspects**, however, were the initial points for the sustainability discussion in the building sector with the reduction of energy and mass flows and their associated emissions, the use of renewable energy and the independency from rare and limited resources.

For the time being, the assessment of building performance by labels, certificates or claims is increasingly based on **Life Cycle Assessment** (LCA), which has been strongly criticised by ANEC[3] with respect to the methodology (e.g. high subjectivity, poor robustness and precision, etc.) and the choice of indicators (dubious models, questionable relevance, etc.). However, ANEC acknowledges LCA is an excellent tool for (rough) orientation in the initial phase of environmental product labelling or

[3] ANEC Position paper "Environmental assessment goes astray – a critique of environmental footprint methodology and its ingredients", Brussels, 2012

criteria setting, and for comparing system alternatives, but only with respect to those (few) aspects adequately covered by LCA, i.e. those which are quantifiable, can be aggregated and reliably modelled in a sound scientific manner (e.g. total energy consumption).

The basic criticism as regards methodological drawbacks using LCA holds also for Product Environmental Footprints (PEF) and standardisation work, generally using the same concept but adding additional concerns. ANEC provided basic research[4] and criticizes the approach[5], albeit to no avail, with the effect that we withdrew our participation in the work of CEN Technical Committee, CEN/TC 350 "Sustainability of construction works".

Even **certificates based on legislation** (e.g. Energy Certificates according to the EPBD-Directive[6]) have created confusion among consumers with respect to the type of energy certificate (energy demand versus energy consumption) and raised doubts on their reliability.

We call again for a systematic approach, driven by political target setting, using meaningful concepts and instruments in order to enable consumers and others to contribute to a sustainable development in the building construction sector, based on truthful, transparent and unbiased information.

3. Durability is key

A study[7] performed by JRC revealed the predominance of the use stage of a building with respect to energy consumption and other related environmental impacts in comparison with the remaining life cycle stages. Based on the assumption of a use stage lasting (only) 40 years, it was concluded the primary energy demand related to the use stage amounts to about 80% of the total energy consumption of new European buildings.

Commercial buildings are more frequently substituted not for technical but for economic reasons and should be tackled by a restrictive legal framework. With regular maintenance, the use stage of residential buildings can be considered more in the range 80-100 years or even more. From this follows that the share of the

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[4] ANEC Study "Benchmarking and additional environmental information in the context of Type III environmental declarations", performed by Force Technology, December, 2007

ANEC Study "Environmental product indicators and benchmarks in the context of environmental labels and declarations", performed by Öko-Institut, December, 2008

ANEC Study "Environmental and health related criteria for buildings" performed by IBO, Vienna, 2011

[5] ANEC Position paper "Sustainable construction – a building site without end. Alternatives to flawed standards", September, 2011

[6] Directive 2010/31/EU

[7] Environmental Improvement Potentials of Residential Buildings (IMPRO-Building), JRC-IPTS, 2008

total life cycle energy consumption attributable to the use stage can be expected to be even higher in residential buildings. Consequently, the **use stage should be in the focus when assessing the energy performance of buildings**.

However, the energy content of building materials is not quite irrelevant and other environmental aspects, such as material consumption for building activities and processing of waste volumes following repair/renovation or deconstruction, need to be taken into account.

The key aspect here is **durability** - an aspect that has received limited attention in the past. This concept is mostly expressed in terms of functional performance of the building structure and its components and quite frequently reduced to the durability of technical building systems (heating, cooling etc.). Architects and engineers should carefully consider which parameters would make their creation last and form part of the cultural heritage of society. There is a plethora of examples of buildings in every country going back several hundred years, not only made of solid materials but also including timbered houses or iron/steel structures. Of course, modern life with its changing use patterns may require adaptability of the building structure, but this does not contradict product durability aspects. The problem is to get realistic statements on the durability of products.

Testing could be one approach. There are quite a few groups of building materials that are exposed to environmental impacts, undergoing frost-thaw test cycles (e.g. roofing tiles) or UV-light and artificial weathering exposure (e.g. jointing products) according to a standardised procedure. However, these tests are generally not too demanding and the respective standards reproduce the market situation rather than trying to predetermine the possible lifetime of the product.

Industry is afraid that predicted lifetime claims will be confused with warranty times of the product. However, to prolong product lifetime by making use of enhanced warranty provisions would be another interesting approach worth investigating from a consumer's perspective in line with the general discussion on preventing planned obsolescence. **Binding producer claims** with respect to the **service life of a product** (or even a building) could be required, associated with a guarantee period. This would oblige producers to take distinct care on the quality of their building product, especially when building products need to be exchanged on site with the costs implicated for removal and installing.

With regard to this policy option, we draw attention to a study on the necessary adjustments of applicable civil and public law in order to strengthen sustainable consumption covering 'obligatory commercial guarantee statements' that was

commissioned by UBA, the German environmental protection agency[8]. The paper is a useful input to further investigation at the European level.

The enhanced quality of building products would have to come with an enhanced quality of the construction works. Building inspection should be strengthened in order to avoid deficiencies in the construction that adversely affect the durability of the entire building.

4. Design is paramount in the environmental performance of a building

Major renovation of a building is not only due to maintenance and need to enhance its energetic performance, but also to the adaptation reflecting an alteration in the personal situation of the user (such as change of family situation; constraints in physical ability). It is self-evident that the environmental performance of a building rates much higher if the **accessibility aspects** are taken into account from the onset. This will avoid energy and mass flows in the use stage because no adaption of the building is necessary. A Swiss study[9] revealed that on average "accessible design causes less than 2% of the construction costs for new buildings". By nature, the sum varies and is higher the smaller the project. In existing buildings, special constraints often do not allow the use of a wheelchair or walking frame. Even to adapt flats to the highest accessible degree possible is costly and quite often impossible (door width, thresholds, lifts.) Hence it is inevitable that new buildings should require accessibility, not only for a limited number of apartments, but to the highest degree possible.

The use pattern of a building can also change, be it because members of the family are moving out (or in); be it as reaction to changes in the basic social conditions (e. g. conversion of barracks into asylum for refugees) or simply for economic reasons due to changes in the real estate market (e. g. conversion from office buildings to residential homes). Hence, **buildings need to be adaptable.** To avoid enormous energy and mass flows in the process of building modification, the technical building systems (such as ventilation systems, heating, cooling, domestic hot water supply), ground plans and spatial structures need to be easy to access, flexible and upgradeable.

More architectural "guidance" on the importance of good urban and building design for sustainable building is needed. Passive design elements for climate (ventilation, orientation, IAQ), optimisation of space, space conditioning, etc., denote the

[8] Stärkung eines nachhaltigen Konsums im Bereich Produktnutzung durch Anpassungen im Zivil- und öffentlichen Recht, Münster, 2015 (Containing an English summary)

[9] Hindernisfrei in Franken und Rappen, Wie viel kostet hindernisfreies Bauen in der Schweiz, ETH Zürich, 2004

importance and need for standardisation. Contributions about social aspects in environmental design and design education are two distant ends that need to meet and collaborate. Standardisation as participatory work on diverse occupations like sustainability, innovation, design for all, smart cities and indoor air quality is a vital process for regulating and protecting daily life that needs more and better recognition among consumers, educators, government bodies and institutions.

As we have already commented in the public consultation on sustainable buildings[10] ANEC repeats the importance to consider at the design stage how to dismantle a building at the end of its lifetime into parts that can be reused or recycled in order to avoid the creation of waste.

As the EU-policy framework shows, the European Commission supports the idea to extend product lifetime and re-use of components or recycle materials. We believe that it is necessary and feasible to extend this principle to any construction product to minimize environmental impacts. Today, the term "recycling" tends to mean "downcycling" (e.g. concrete slabs to road foundations), with the implicated energy demand for the process. Although these downcycled products do substitute natural resources, the **re-use of building components** should be investigated more rigorously, also with respect to modular design approaches.

The market supplies choices for consumers, as the British example of Materials Reuse Centres[11] proves. However, the demand has to be stimulated. Especially with respect to quality of the used material and content of dangerous substances, more scientific research is needed. In practice, existing pre-fabricated buildings made of concrete were successfully converted into new residential homes[12] and research was carried out with respect to the economic feasibility[13].

A political framework to stimulate a trade system for used building products needs to be established.

5. Energy consumption and energy savings

For consumers, the **energy demand of the building** is of paramount importance because it determines the size of the bill for any energy carrier they depend on. The costs of upstream processes are calculated within the energy price. Hence, primary energy demand is of less importance to consumers and generally does not mean

[10] ANEC response to 2013 DG ENV consultation on Sustainable buildings consultation

[11] http://makinglewes.org/2014/06/25/building-materials-reuse-and-materials-reuse-centres/

[12] http://www.sueddeutsche.de/wirtschaft/exportfaehig-vom-plattenbau-zum-einfamilienhaus-1.919722

[13] „Wissenschaftliche Vorbereitung und Planung des Rückbaus von Plattenbauten und der Wiederverwendung geeigneter Plattenbauteile in Tschechien" gefördert von der Deutschen Bundesstiftung Umwelt", Cottbus, 2008

anything to them. The consumption of energy is highly dependent on use pattern, personal lifestyle and comfort level, and therefore should neither be focused on in any sustainability assessment nor in the debate on energy certificates. However, a **change in use and consumption patterns** should also be debated among consumers with respect to the rising demand of living space per capita, which is connected to the overall energy demand and the associated environmental impacts. The efficient use of energy has a high potential for energy savings and should therefore be promoted.

As stated earlier, the **use stage** is of overriding importance to the construction phase and end-of-life treatment with respect to total energy balance of a building. Therefore, the concept of **Nearly Zero Energy Buildings** (NZEB), as introduced in the Energy Performance of Buildings Directive, is in principle supported by ANEC. However, the directive leaves room to manoeuvre to the Member States: "It is the sole responsibility of Member States to set minimum requirements for the energy performance of buildings and building elements". Furthermore, the definition of NZEB is too vague; the calculation methods need a higher level of harmonization; the conversion factors for primary energy vary among Member States and are not wholly scientifically-based. The obligation for energetic retrofitting (if economically feasible) is linked to the prerequisite that at least 25% of the surface of the building envelope undergoes renovation (or the economic rule respectively) which is not supervised in all Member States. It is evident that the building stock needs to be energetically retrofitted in order to achieve the goals for energy savings and the reduction of greenhouse gas emissions. This cannot be done cost effectively for individuals without financial incentives. Hence, a respective **financial framework is necessary**. Also legal obstacles need to be eliminated (i.e. majority decisions for owners corporations; economic advantages for building owners to improve the energy performance of their flats rented out). Also, the use of energy certificates based on energy demand should be made obligatory and implementation enforced.

Despite all warnings, **energy certificates** based on the consumption are generally associated with the energy bill, which poses a problem for the credibility of such certificates when consumers rent apartments where these kinds of certificates are provided. The provision of energy certificates based on the calculated demand is a prerequisite to assess the energy performance of a building.

Along with the reduction of energy demand, the EPBD promotes the idea of **renewable energy**. Not all Member States follow the route to renewable resources with the same level of ambition. It can be debated whether the use of renewable energy is the universal remedy. Taking into account the environmental impacts of the production of photovoltaic panels, the chemicals used, the limited lifetime and land use for wind turbines (which also affects the appearance of the environment

and leads to increased noise emissions), the efficient use of energy seems to be the more promising way.

The energy balance for renewables is dependent on the refinement of certain parameters, such as the conversion factors, consideration of embedded energy, double-counting (calculation of the fraction of renewables within the building energy balance or the grid, if exported…). Moreover, legal obstacles need to be solved with respect to the promotion of local grids for combined heat and power generation, which are highly efficient and easy to install in urban areas. The role of consumer cooperatives as intermediaries for community owned local grids for low income groups has also been considered[14], but these have not developed much and have a high cost of trade.

Even if these problems were solved, there is rather **limited data on the energy performance and the state of refurbishment of the national building stock** available[15]. So far, the saving potentials are based on assumptions and scenario calculation, which affects the reliability of statements on the building stock in each Member State. The more so because reliable data is necessary to prove whether the calculated energy (and emission) savings are achieved.

With respect to the **existing buildings,** a British study[16] stated that: "The potential 'energy savings' from improved energy efficiency are commonly estimated using basic physical principles and engineering models. However, the energy savings that are realised in practice generally fall short of these engineering estimates".

One explanation is that improvements in energy efficiency encourage greater use of the services (e.g. heat or mobility) that energy helps to provide. Behavioural responses such as these have come to be known as the energy efficiency "rebound effect". Although rebound effects vary widely in size, in some cases they may be sufficiently large to lead to an overall increase in energy consumption, an outcome that has been termed 'backfire'".

However, even if the realised energy savings fall behind estimations, it seems that saving energy remains the most promising approach to reduce environmental burdens and is therefore strongly recommended by ANEC for both new and existing buildings as a key goal.

[14] ANEC position on the draft report "Shift, not drift: Towards active demand response and beyond" by THINK, European University Institute, 2013
[15] One approach is the publicly available Odyssey-Mure database (http://www.indicators.odyssee-mure.eu/energy-efficiency-database.html)
[16] The Rebound Effect: an assessment of the evidence for economy-wide energy savings from improved energy efficiency UK Energy research centre, October, 2007

6. Economic impacts on consumers need to be taken into account in energy policy

The energy transition in Germany - meaning the exit from nuclear and fossil-fuel energy - can used as an example of impact on consumers. Statistics published by the German Association of Energy and Water Industries (Bundesverband der Energie- und Wasserwirtschaft - BDEW), show that the **price for electrical energy** in Germany increased continually - in fact it doubled in the past 15 years. German consumers pay the second highest price for a KW/h in the EU (after Danish consumers). This is partially caused by the principle to share the cost of the investments in renewable energy generation among all users, with exceptions for energy-extensive industries that have to compete on external markets. In the end, private consumers have to pay ~20% of the price for 1 KW/h as contribution to this investment. This has already led to the situation that consumers have had problems to pay electricity bills. The same observations were made for **heating services**, in a study[17], performed by the energy think tank insight_E, analysing the diverging approaches to prevent energy poverty among vulnerable consumers in the EU.

From the technical point of view, the energy generated on site not self-consumed is fed into the grid and may cause dangerous peaks. Due to the fact that urgently needed high voltage lines are missing to transport electricity generated by wind turbines along the coastline to the south of Germany, the electricity bypasses at peak times through the grids of neighbouring countries (especially Poland and the Czech Republic). This can cause severe hazards in their transformer stations with respect to thermal overload. As a reaction to this, solutions focus on intelligent demand response and the use of flexible thermal power stations (which are rather costly as they operate on demand). However, the development of efficient and cost-effective electrical power storage systems will become more and more important.

Decentralised on-site generated electrical power (not self-consumed) has to be stored to make it available to the grid when needed. A respective **standardisation roadmap** has been published and IEC Technical Committee, IEC TC 120 "Electrical Energy Storage (EES) Systems", created. The development of the respective technology may still take some time. It is questionable whether consumers will benefit financially as new technologies are connected to high investments. Hence it is most likely that energy prices will rise. This will affect every consumer and especially vulnerable consumers who have problems to pay their electricity bills.

Additionally, comparably low prices are paid for electricity generated on site and fed to the net, but sold at normal prices. This will most likely lead to increasing the **energy consumption on site** (e.g. by additional air conditioning) which runs

[17] "Energy poverty and vulnerable consumers in the energy sector across the EU: analysis of policies and measures Policy Report" Insight_E, May, 2015

counter the effort of energy efficiency. The aforementioned problems are more or less valid for the use of renewables other than solar power: wind, use of biomass & biofuel, with all the negative environmental impacts of the latter (i.e. competition with food production and additional inputs required for farming and processing that basically outweigh the delivered energy).

A political framework is needed to allow for affordable energy supply to vulnerable consumers.

7. Demand response is no solution

Next to energy generation and distribution, the energy use pattern of consumers is also a key issue. The European Commission tried to trigger consumer behaviour through **smart meters**, expecting that demand response will lead to a uniform capacity utilization of the grid and to reduced energy costs for the individual consumer. This aim has not been reached.

First of all, for private consumers, there are hardly any tariffs available that offer inexpensive electrical energy at off-peak hours. The costs for a smart meter would have to be paid by tenants and are by no means reasonable (also bearing in mind that a change of apartments would imply the costs for mounting and dismounting). Additionally, suppliers[18] of smart meters themselves claim that "Smart meters are designed to stay online for 10, 15, or even 20 years, without requiring components be replaced or directly maintained". This is a shorter lifespan than conventional meters. **Consuming patterns cannot change** severely because certain appliances need to run at certain times of the day, creating a peak demand, (e. g. boilers for domestic hot water and kitchen appliances in the morning and evening for the working population; ovens at lunchtime during the weekend). For practical reasons, no one wants to run a washing machine in the middle of the night because the machine needs to be emptied and there will be noise problems in apartment blocks. A Swedish study[19] reveals: "In summary, three overall conclusions may be drawn from the analysis. First, economic incentives for individual households to reschedule their electricity consumption over the course of the day are small. Second, the compensation an average household would need in order to systematically reschedule its electricity use is considerably higher than today's incentives. And third, the 'price' of demand flexibility depends on when, how and what household we are talking about".

[18] http://www.electricenergyonline.com/show_article.php?mag=&article=516

[19] An electricity market in transition - Is consumer flexibility for sale, or even for real? Umeå University, published in CERE Working Paper, 2015:6

Even information on the actual energy use and the associated price is a feature only of use to technically savvy consumers. The only evident advantage is the possibility for meters to be read remotely by the energy provider. This one benefit is definitely not worth the exercise. A study[20] commissioned by the German federal ministry for economic affairs & energy stated that "profitability of smart meters is not given for all consumer (households) similarly" and that "the launch and roll-out all over the country of smart meters are associated with significant costs, technical challenges and risks."

This was enough for the German government to step back from an obligation to install smart meters in every household. Only a consumption of more than 6.000 KW/h per annum would result in such an obligation. The average[21] consumption of a German household of 4 people was 5.000 KW/h in 2014, including the electricity demand for domestic hot water.

8. Choice of useful indicators

As we have already said in our contribution to the circular economy consultation, ANEC believes meaningful indicators are needed for the overall **resource use** at EU and Member State level. These indicators are needed particularly for energy, water, relevant materials, waste and change in land use.

Indicators are also needed to measure the **per capita overall consumption level** of citizens. To this end, it will be crucial to measure direct and indirect resource consumption, (including the consumption embedded in products) by citizens for energy, water and relevant materials, or per capita consumption of key products associated with high resource consumption.

At micro-level for buildings, the **use-stage indicator energy demand** and **indoor air emissions** are considered to be appropriate. For the assessment of chemicals in building products, the authors of the IBO-Study "Environmental and health related criteria for buildings" differentiate between a minimum level and an excellent level for substances/groups of substances to be avoided or even banned. This is to complement the **indicator on indoor air emission**. Here, ANEC repeats its call for addressing emissions to the indoor air from construction and other products in a separate legal framework, following provisions given in existing national legislation (Germany, Belgium, France)[22].There are different views on the importance of the

[20] Ernst & Young GmbH: „Kosten-Nutzen-Analyse für einen flächendeckenden Einsatz intelligenter Zähler", 2013

[21] Stromspiegel für Deutschland 2014 (http://www.die-stromsparinitiative.de/stromspiegel/)

[22] ANEC Position paper "Hazardous chemicals in products. The need for enhanced EU regulations", Brussels, 2014

indicator, "embedded energy", for consumers. In the building context, it may be relevant for heavy shell materials, such as brick and concrete, whereas for most of the remaining materials it is negligible taking into account the lifetime of the building. However, it may again become relevant for products that have to be replaced after a limited life time. This is especially the case for solar panels that are promoted along with the use of renewable energy. Their overall environmental performance may be questioned, also with respect to the decreasing performance of solar panels over time.

Often **semi-quantitative and qualitative indicators** are a better choice – e.g. to address noise and dust emissions of construction sites and end-of-life treatment. In this context, ANEC promotes the use of best available techniques, as displayed in the EMAS Reference Document on Best Environmental Management Practice in the building and construction sector published by the JRC IPTS in September 2012.

9. Information provision eases decision making

One of the major problems that consumers experience within the construction sector is the lack of information with respect to the **materials used and their environmental impacts**.

Various incidents in the past revealed that products used in a building due to state-of-the-art (e.g. wood preservatives, asbestos) proved to be dangerous for human health and the environment.

Concerning environmental information, even interested consumers were in the past able to assess only specific products for which an environmental label Type I was available. Despite all the initiatives and efforts taken to assess and communicate environmental information of building products, this situation has not improved much. This statement is founded on the ANEC position paper[23] with the fundamental critique of LCA-based environmental assessments schemes that are promoted for several years now: "ANEC has strong reservations to rely predominantly on LCA-methodology, as it features fundamental shortcomings, including dependency on numerous subjective choices, lack of adequate data and limited precision. Further, LCA methodology does not characterize all environmental impacts in a suitable way."

Of course, it is important to compare the environmental performance of building materials in the **design stage** and compare different design alternatives. This is also valid for products and components to be replaced during **maintenance works**. However, it is critical the information given is correct, relevant, easy to understand

[23] ANEC Position paper "Environmental assessment goes astray – a critique of environmental footprint methodology and its ingredients", Brussels, 2012

and comparable. The key point is consumer information on dangerous substances. Not even information based on the Construction Products Regulation conforms to these consumer needs. A way forward is outlined in the ANEC position paper.

To allow in-built materials to be exchanged once they have proved to have adverse effects on human health and the environment, they need to be tracked. It is therefore indispensable to provide a **detailed list of materials used**, preferably indicating the places where there were installed in the building. If the materials themselves were marked (e.g. with a specific key code), this would ease their recycling (see example of plastics) and would also impact maintenance and repair. On flat roofs for example, often sheeting is used made of different types of plastics for different buildings. In case of repair, tests need to be made on site whether the material intended to be used for repair is compatible to the built-in product. If the **type of material** originally used was to be found in a documentation or on the roofing product itself, these tests would become obsolete.

On the building level, information is needed with respect to the assessment of the environmental performance, but also with respect to the documentation on the final layout of the building and the technical installation (not to mention missing user manuals for heater, boilers etc. in case of tenants).

Concerning adaptability of buildings (e.g. to change in user behaviour or user needs) a documentation of the construction and the technical installation as realised is desirable. Most frequently, only the primary design plans are available to the user (if at all), without the indication of alterations, caused by the client's wish or technical reasons. **Documentation on technical installation** is hardly available. This impedes consumers on a small scale e.g. with respect to alterations on building automation, the electrical wiring or heating system. On a larger scale, alterations to the building (e.g. extension, retrofitting) would be much easier to plan and realise without time and money consuming examination of the load-bearing structure.

As a side effect, reliable documentation will also affect the quality of construction work because failures would be more easily traceable to the companies. Eventually, this will help to avoid legal disputes.

10. Conclusions – ANEC recommendations

To conclude, with this paper ANEC calls again for a systematic approach to tackle all sustainability issues in the building construction sector at the same level, while keeping the solutions simple for consumers. It is of paramount importance that all developments associated with this process are controlled by a democratic procedure taking due account of the needs of the public, rather than by the commercial interests of the parties involved (including private certification schemes).

Discussion should be driven by political target setting, using meaningful concepts and instruments in order to enable consumers to decide to contribute to a sustainable development in the building construction sector, based on truthful, transparent and unbiased information.

The meaningful change of production and consumption patterns within the building sector needs to be debated among all relevant actors. ANEC is willing to participate in the next steps on behalf of European consumers.

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About ANEC

ANEC is the European consumer voice in standardisation, defending consumer interests in the processes of technical standardisation and conformity assessment, as well as related legislation and public policies.

ANEC was established in 1995 as an international non-profit association under Belgian law and is open to the representation of national consumer organisations in 33 countries.

ANEC is funded by the European Union and EFTA, with national consumer organisations contributing in kind. Its Secretariat is based in Brussels.

Raising standards for consumers

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