my building is green
A LIFE PROJECT

LIFE my building is green

LIFE17 ENV/EN/000088

Application of Nature-Based Solutions for local adaptation of educational and social buildings to Climate Change

Action: Mainstreaming and transferability at local, national and European level

Deliverable: Protocols (2) for expert workshops for consulting and insurance companies

Date: 31/10/2023

LIFE my building is green - LIFE17 ENV/ES/000088

Deliverable: **Protocols (2) for expert workshops for consultancies and insurance companies.**

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1. SUMMARY IN ENGLISH

This deliverable is part of action C5. "Integration and transferability at local, national and European level". It includes two short protocols on possible considerations to be taken into account by insurance companies when including insurance policies in nature-based solutions.

The first one aims to reflect on the concerns that may arise in the field of consultancy and insurance companies due to the impact that buildings and their users may suffer from heat waves resulting from the effects of climate change. The general problem is addressed and the singular points where relevant implications can be detected are identified.

In a second protocol, the new challenges faced by consultancy firms in the building sector due to the new requirements arising from the impacts of negative situations associated with climate change, such as heat waves, droughts, strong winds or floods, are addressed. Specific challenges arise for consulting firms in areas related to construction, engineering and sustainability. Some of the most important impacts and how consulting firms can address them are described here.

2. RESUMEN ESPAÑOL

Este entregable forma parte de la acción C5. "Integración y transferibilidad a nivel local, nacional y europeo". Se incluyen dos breves protocolos sobre posibles consideraciones que deben tener en cuenta las compañías aseguradoras a la hora de incluir pólizas de seguro en soluciones basadas en la naturaleza.

En el primero de ellos, se pretende reflexionar sobre las inquietudes que puedan surgir en el ámbito de las empresas consultoras y de seguros debido al impacto que puedan sufrir los edificios y sus usuarios por las olas de calor derivadas de los efectos del cambio climático. Se aborda la problemática general y se identifican los puntos singulares donde se pueden detectar implicaciones relevantes.

En un segundo protocolo, se trata de abordar los nuevos retos a los que se enfrentan las empresas consultoras en el sector de la edificación debido a los nuevos requerimientos que surgen por los impactos de las situaciones negativas asociadas al cambio climático, como olas de calor, sequias, fuertes vientos o inundaciones. Se presentan desafíos específicos para las empresas consultoras en áreas relacionadas con la construcción, la ingeniería y la sostenibilidad. Aquí se describen algunos de los impactos más importantes y cómo las empresas consultoras pueden abordarlos.

3. RESUMO EM PORTUGUÊS

Este resultado faz parte da ação C5. "Integração e transferibilidade a nível local, nacional e europeu". Inclui dois pequenos protocolos sobre possíveis considerações a ter em conta pelas companhias de seguros aquando da inclusão de apólices de seguro em soluções baseadas na natureza.

O primeiro visa refletir sobre as preocupações que podem surgir no domínio da consultoria e das companhias de seguros devido ao impacto que os edifícios e os seus utilizadores podem sofrer com as ondas de calor resultantes dos efeitos das alterações climáticas. O problema geral é abordado e são identificados os pontos singulares onde podem ser detectadas implicações relevantes.

Num segundo protocolo, são abordados os novos desafios que se colocam às empresas de consultoria no sector da construção devido às novas exigências decorrentes dos impactos de situações negativas associadas às alterações climáticas, tais como ondas de calor, secas, ventos fortes ou inundações. Surgem desafios específicos para as empresas de consultoria em áreas relacionadas com a construção, engenharia e sustentabilidade. Alguns dos impactos mais importantes e a forma como as empresas de consultoria os podem abordar são aqui descritos.

4. PROTOCOL A

4.1. Target

The aim is to reflect on the concerns that may arise in the field of consulting and insurance companies due to the impact that buildings and their users may suffer from heat waves resulting from the effects of climate change. It addresses the general problem and identifies the singular points where relevant implications can be detected.

4.2. Impact of heatwaves on buildings and the impact on insurance companies

Heat waves, increasingly frequent weather phenomena due to climate change, have a significant impact on buildings and pose challenges for both property owners and insurance companies. These extreme heat waves not only put human health at risk, but can also adversely affect built infrastructure, resulting in damage that can be costly to repair and cover. As these events become more common and intense, a debate has arisen over the liability of insurance companies in this situation.

Buildings are particularly vulnerable to heat waves due to several factors. Firstly, high temperatures can cause expansion and contraction of building materials, which can eventually lead to cracks and structural damage. In addition, intense solar radiation can accelerate the wear and tear of roofs, facades and exterior cladding. Rising temperatures also increase the demand on cooling systems, such as air conditioners, which can overload the electricity grid and result in power outages. This not only affects the comfort of occupants, but can also affect the integrity of sensitive electronic equipment.

The responsibility of insurance companies in this context becomes crucial. As heat wave damage becomes more frequent and intense, building owners may rely heavily on their insurance policies to cover repair and reconstruction costs. However, this poses challenges for insurers, as extreme weather events can exceed previously established coverage limits.

To address this issue, insurance companies need to consider several aspects. First, they should review and adjust their insurance policies to reflect climate risks.

changing climate conditions. In addition, insurers could work closely with building owners to promote the adoption of mitigation measures, such as the implementation of cool roofs, thermal insulation and more efficient cooling systems or the implementation of Nature-Based Solutions.

Building standards could evolve to include measures to improve the resilience of buildings to extreme temperatures. The introduction of sustainable and adaptive building technologies could become a key approach to minimise the risks and costs associated with heat wave damage. This niche exploration includes the adoption of innovative measures such as the application of Nature-based Solutions (NBS) as elements to improve comfort, reduce energy demand, and increase the resilience of buildings.

In summary, heat waves pose a growing threat to built infrastructure, and insurance companies have an important role to play in managing the associated risks. Adapting insurance policies and promoting more heat-resistant building practices can help address the challenges posed by this climatic phenomenon, safeguarding both the well-being of buildings and the peace of mind of their owners.

4.3. Identification of possible building damage due to heat waves

Heat waves, characterised by extremely high temperatures for prolonged periods, can have a detrimental impact on building infrastructure. Identifying potential damage caused by these extreme weather conditions is essential to take preventive and mitigation measures. An overview of the possible damages that buildings could face during heat waves is provided:

1. Deformation and Stretching of Materials: High temperatures can cause building materials to repeatedly expand and contract. This can result in cracks in walls, ceilings and floors, which in turn can weaken the building structure.

2. Deterioration of Exterior Cladding: Cladding on facades, roofs and windows can degrade more rapidly due to prolonged exposure to high temperatures and intense solar radiation. Peeling paint, discoloured or brittle materials are signs of possible damage.

3. Roof and Insulation Problems: Roofs can be particularly vulnerable, as they absorb and retain heat. This can affect the performance of thermal insulation and make it less effective in keeping the building interior cool.

4. Effects on Electrical and Electronic Installations: High temperatures can overload the building's electrical and electronic systems, which can result in short circuits and failures.

5. Wear on Metallic Elements: Metallic components such as steel structures, railings and ducting systems can experience increased corrosion and wear due to extreme weather conditions.

6. Impact on Energy Efficiency: Increased use of cooling systems, such as air conditioners, can increase energy consumption. This can result not only in higher utility bills, but also in increased stress on the electricity grid.

7. Damage to Indoor Spaces: High temperatures can make indoor spaces uncomfortable and unusable. Excessive heat can damage materials such as paints, wood finishes and furniture.

8. Excessive heat for users: The discomfort that can be reached inside buildings when they do not have a cooling system can lead to penalties or repercussions on working hours. In Spain, Royal Decree 486/1997 of 14 April 1997, which establishes minimum health and safety provisions in workplaces, specifies;

   "The temperature in premises where sedentary work i n offices or similar premises is carried out shall be between 17 and 27 °C".

   Above 27°C the work activity would not be appropriate and may result in demands on the institution and/or serious health problems for the users.

4.4. Aspects to be taken into account by insurance companies

Insurance companies should consider several aspects that could involve the inclusion of specific coverage for damage caused by heat waves and other extreme weather events.

Insurers offer a variety of coverages for buildings related to climate change and extreme weather events, with the aim of protecting owners from the costs associated with damage and losses caused by these phenomena. Some of the common coverages include:

- **Damage from Extreme Weather Events**: This may include damage caused by severe storms, floods, tornadoes, hurricanes and other extreme weather events. Coverage extends to damage to the structure of the building as well as internal contents.

- **Wind and Hail Damage**: Insurers often provide coverage for damage caused by high winds and hail. This may include damage to roofs, windows, siding and other exposed items.

- **Flooding**: Some insurance policies do not include flood coverage as a standard part, so homeowners may choose to add this additional coverage. Flooding can result from heavy rains, overflowing rivers, coastal storms and other events.

- **Snow and Ice Damage**: In areas where snowfall and ice formation are common, insurers may offer coverage for damage caused by snow accumulation on roofs, as well as ice formation in gutters and pipes.

- **Forest Fire Damage**: In regions prone to forest fires, insurance policies may cover damage caused by these events, including damage to the structure and contents of the building.

- **Extreme Heat Damage**: Some policies may cover damage caused by extremely high temperatures, such as deformation of materials, cracking and other effects related to intense heat.

- **Temporary Shelter and Loss of Use Expenses**: In the event that the building is rendered uninhabitable due to damage caused by extreme weather events, some policies cover temporary shelter expenses and loss of use of the building.

- **Liability**: In addition to covering property damage, some policies may also include liability coverage in case third parties are injured or suffer damage to the building due to extreme weather events.

4.5. The role that Nature-Based Solutions could play in premium reduction

Nature-based solutions (NBS) can play a key role in reducing insurance risk premiums by effectively addressing the impacts of climate change and mitigating extreme weather events. Successful implementation of BNS can lead to a more resilient environment and ultimately lower claims and damage costs, which could be reflected in lower insurance premiums. Some examples are cited:

- **Natural Disaster Risk Mitigation**: BNS, such as wetland restoration and coastal vegetation, can reduce the vulnerability of communities to natural disasters such as floods, storms and landslides. By minimising the impact of these events, insurers may consider reducing risk premiums due to reduced potential damages.

- **Infrastructure Protection**: Implementing BNS can help protect critical infrastructure, such as roads and buildings, from the adverse effects of climate change. A resilient natural landscape can decrease exposure to climate risks.

- **Reduction of repair costs**: The presence of SbN can reduce the intensity and frequency of damage to property and assets. By reducing repair and replacement costs associated with extreme weather events, insurers may consider adjusting premiums in line with these reduced risks.

- **Improving Urban Resilience**: Urban planning that integrates BDS can increase the resilience of cities to climate change. This not only decreases exposure to climate risks, but can also decrease insurance claims related to property and infrastructure damage.

- **Promoting Prevention and Mitigation**: BNS often promote sustainable land and water management practices. This can lead to a more proactive approach to risk prevention and mitigation, which could ultimately lead to reduced insurance premiums by demonstrating investment in risk reduction measures.

- **Data Generation and Risk Assessment**: Implementing SbN can generate valuable data on the effectiveness of these solutions in reducing climate risks. This allows insurers to more accurately assess risks and adjust their premiums accordingly.

- **Engaging Local Communities**: BNS often involves local communities in the sustainable management of their natural environments. This can strengthen the capacity of communities to respond to and recover from extreme weather events, which can positively influence insurance premiums.

4.6. Opportunities and requirements for appropriate inclusion of Nature-based solutions in the construction and insurance sector

The proper inclusion of Nature-Based Solutions (NBS) in the construction and insurance sector requires careful planning and effective collaboration between various stakeholders. Some aspects of interest are listed below:

Integration in design is necessary. BNS should be considered from the earliest stages of design and planning of building projects. This involves identifying opportunities to incorporate natural elements, such as green areas, green roofs, and natural drainage systems into architectural designs.

Conduct **cost-benefit assessments** that demonstrate how BNS can generate long-term savings in terms of maintenance, energy efficiency and risk reduction. This can influence decision making and investment in BNS.

The successful inclusion of BNS in construction requires the **collaboration of architects, engineers, urban planners, biologists and other experts**. The combination of expertise ensures the proper and effective implementation of BDS.

Ensure that **BNS complies with local regulatory requirements and building codes**. This may include aspects related to structural safety, drainage and water quality. This path requires collaboration with the institutions responsible for issuing Technical Building Codes.

In this line, it is convenient to document by means of **technical suitability certificates**, the suitability for the use of this type of solutions to be admitted as alternative techniques for a project evaluation by insurance companies. In the case of Spain, the DIT document, issued by the Instituto Eduardo Torroja de Ciencias de la Construcción (IETcc) of the Consejo Superior de Investigaciones Científicas (CSIC), is used as a guarantee certificate.

Collect **robust data on the effectiveness of BNS in mitigating climate risks and their impact on damage reduction**. This data will support accurate risk assessment and allow insurers to adjust their policies and premiums accordingly.

Develop **customised insurance products that recognise and reward BDS implementation in buildings and properties**. These products could include premium discounts for BDS-integrated properties.

Offer **incentives and premium discounts** for customers who implement BDS in their properties. This encourages the adoption of natural solutions and rewards climate-smart action.

Ultimately, the successful inclusion of NBS in the building and insurance sector requires a long-term vision and a shared commitment to address the challenges of climate change. Collaboration between architects, engineers, insurers, governments and local communities is essential to fully realise the benefits of Nature-Based Solutions.

5. PROTOCOL B

5.1. Target

Consulting firms face new challenges in the building sector due to new requirements arising from the impacts of negative situations associated with climate change, such as heat waves, droughts, strong winds or floods. Specific challenges arise for consulting firms in areas related to construction, engineering and sustainability. Some of the most important impacts and how consulting firms can address them are described here.

5.2. Impact of heatwaves on buildings and new approaches for insurance companies

Structural and Material Damage: Heat waves can cause expansion and contraction of building materials, which in the long term can result in cracking and structural damage. Consulting firms can play a vital role in assessing current damage and implementing solutions to prevent future damage. This may include specifying more heat-resistant materials and construction monitoring.

Energy Efficiency: High temperatures can increase the demand for cooling systems in buildings, which can result in increased operating costs. Consulting firms can advise on design and renovation strategies that improve energy efficiency, such as the implementation of thermal insulation and advanced temperature control systems.

Urban Design and Planning: In urban areas, heat waves can cause urban heat islands due to the concentration of heat-absorbing buildings and pavements. Consulting firms can address this by recommending more sustainable urban designs that include green areas, green roofs and permeable streets to reduce urban temperatures.

Risk Assessment and Adaptation: Consulting firms can help assess the risks associated with heat waves and develop adaptation strategies. This can include identifying vulnerable buildings and recommending mitigation measures, such as installing shading systems or improved ventilation.

Climate Data Analysis: These companies can collect and analyse climate data to assess the impact of heat waves in specific geographic areas. This is critical to understanding the magnitude of the problem and developing customised solutions.

Sustainability and Resilience: They can advise on sustainable design and construction practices including the incorporation of BNS and the implementation of heat resilience measures. This can help reduce the impact of heat waves on buildings and increase their resilience.

Regulations and Compliance: Consultancy firms should keep abreast of local regulations related to heat and sustainability in construction. They can provide guidance on how to comply with these regulations and ensure that buildings are safe and energy efficient.

5.3. Contribution of the LIFE-myBUILDINGisGREEN project and connection with consultants

The prototypes of Nature-based Solutions (NBS) that have been developed in the project, implemented and monitored in 3 pilot buildings, have demonstrated their effectiveness in mitigating the negative effects of climate change. Consultancy companies have a great potential in the market aimed at setting, marking, and limiting the criteria for action, both in design and implementation, as well as in the generation of new knowledge and help guides. Some of the niches that have been detected are:

- Consulting companies can generate a training structure among their technicians that allows them to contemplate, design and adapt the different Nature-based solutions according to the projects.
- The involvement of consultancies in ensuring good construction practice can help to generate normative material that helps technicians to make good use and design of BMS according to site and climate requirements.
- Integrated Design: Collaborate with architects, engineers and other professionals to integrate BDS into architectural design and urban planning.
- Monitoring and Evaluation. Monitoring and evaluation systems can be established to measure the impact and effectiveness of BNS on the project over time. This may involve measuring water quality, local biodiversity and other key indicators.

- Develop Maintenance Plans: Assist in the creation of long-term maintenance plans to ensure that BMS remain effective over time. This may include staff training and identification of sustainable maintenance practices.

- Education and Awareness Raising: Educate clients and stakeholders on the benefits and importance of NBS in sustainable and resilient construction. This may involve organising workshops, seminars and informative presentations.

5.4. Workshop outline for consulting companies in the treatment of BNS

Organising workshops for consulting firms on Nature-based Solutions (NBS) can be an effective strategy to promote the understanding and application of these solutions in construction and design projects.

The following aspects can be taken into consideration for planning:

Clear objectives: Clearly define the objectives of the workshop. A general introduction to BDS or a specific workshop on its application in a particular type of project.

Audience Identification.

Duration and Format: Establish the duration of the workshop and the format.

Identify the experts who will conduct the workshop. They should have solid knowledge of BDS and experience in construction or design.

The content should include a **programme** that addresses issues relevant to the audience, including definitions of BDS, practical examples, benefits and challenges. Also case studies with concrete examples of projects that have successfully implemented BDS. This helps to illustrate the actual implementation and results.

Provide **tools, resources and guidance** that participants can use in their projects, such as checklists, design guidelines and feasibility studies.

To consolidate knowledge, it is interesting to incorporate **practical activities** so that participants can apply what they have learned. This can include design exercises with BDS or group case studies.

6. BIBLIOGRAPHY

Civil Liability Insurance for Architects (ASEMAS): https://www.asemas.es/portal/

Web of the Technical Suitability Document on the website of the Eduardo Torroja Institute of Construction Sciences (IETcc-CSIC): https://dit.ietcc.csic.es/

Order of 23 December 1988 approving the Regulations for the Granting of the Technical Suitability Document (DIT) for non-traditional materials used in construction, published in BOE no. 15, 18 January 1989, pages 1429 to 1431: https://www.boe.es/boe/dias/1989/01/18/pdfs/A01429-01431.pdf

Impacts, vulnerability and adaptation to climate change in the insurance business. Ministry for the Transition Ecology y the Challenge Challenge, 2020: https://www.miteco.gob.es/content/dam/miteco/es/cambio-climatico/temas/impactos-vulnerability-and-adaptation/informe_cc_activ_aseguradora_tcm30-517392.pdf