

1) Define and exemplifies the concept of environmental impact.

The environmental impact is defined by the ISO 14001 standard as any change to the environment, whether adverse or beneficial, wholly or partially resulting from environmental aspects (activities, products, services that can interact with the environment) of an organization. It can be: positive or negative, short-term or long-term, reversible or irreversible, direct (primary) or indirect (secondary), critical (negative or positive). The human action of an organization has an impact on so-called environmental components, category of physically identifiable elements that make up the environment considered, such as: the atmosphere and climate, water environment, soil and subsoil, vegetation and ecosystem and finally the human environment itself. Examples: construction of a dam that severely alters the ecosystem, air pollution due to emissions from industry, noise pollution, pollution from electromagnetic fields, radiation, increasing the concentration of salts in the soil, raising the temperature of the seas, the consequences of deforestation.

2) Describe the environmental components (defined as areas of interest and attention in the preparation of environmental impact studies).

In Italy the characterization of the environment is based on the list of the main natural and anthropic components indicated in D.P.C.M. 27 december 1988 (based on information supplied by the European Directive 337/85). In particular in the drafting of an Environmental Impact Study, assessing the effects of the work on the environmental system, the components that are evaluated are: atmosphere, water environment, soil and subsoil, vegetation, flora, fauna, ecosystems, public health as individuals and communities, noise and vibration, radiation, landscape.

3) Define and illustrate the concept of environmental impact. So exemplify the relationship between source of impact, impact and indicators for the evaluation with reference to at least 2 environmental components.

The environmental impact is defined by the ISO 14001 standard as any change to the environment, whether adverse or beneficial, wholly or partially resulting from environmental aspects (activities, products, services that can interact with the environment) of an organization. The environmental impact may be positive or negative, reversible or irreversible, direct or indirect, short- or long-term, critical. For example the activity of a steel industry: emits CO₂ into the atmosphere during the production of steel (source of impact 1), consumes much electric energy for the operation of the furnace (source of impact 2), it uses raw materials which come from the underground (impact source 3). The impacts of the sources are: the atmosphere and climate (1), has an indirect effect on the atmosphere (plant emissions) and subsoil (extraction of non-renewable resources), underground (3). The key indicators that refer to the three impacts are: total greenhouse gases in tons CO₂/year (1), the total direct consumption of electricity in MWh/year (2), ores consumption in tonnes/year (3).

4) Define and exemplifies the concepts of environmental component and environmental impact.

The environmental impact is defined by the ISO 14001 standard as any change to the environment, whether adverse or beneficial, wholly or partially resulting from environmental aspects (activities, products, services that can interact with the environment) of an organization. It can be: positive or negative, short-term or long-term, reversible or irreversible, direct (primary) or indirect (secondary), critical (negative or positive). The human action of an organization has an impact on so-called environmental components, category of physically identifiable elements that make up the environment considered, such as: the atmosphere and climate, water environment, soil and subsoil, vegetation and ecosystem and finally the human environment itself. The D.P.C.M. 27 december 1988, based on the European Directive 337/85, which defines the environmental components to be considered in the preparation of an Environmental Impact Study, also adds categories: public health, noise and vibration, radiation, landscape. For example the activity of a steel industry: emits CO₂ into the atmosphere during the production of steel (source of impact 1), consumes much electric energy for the operation of the furnace (source of impact 2), it uses raw materials which come from the underground (impact source 3). The impacts of the sources are: the atmosphere and climate (1), has an indirect effect on the atmosphere (plant emissions) and subsoil (extraction of non-renewable resources), underground (3).

5) Explain the structure and the essential content of a EIS (SIA) relating to the redevelopment of abandoned industrial site.

The EIS, the environmental impact study, is the tool that provides the technical elements on the environmental impacts of the work necessary to assess its compatibility with the environment. The EIS is divided into:

- Programmatic Framework: provides the elements of knowledge on the relationship between the work planned and acts of planning and territorial and sectoral planning
- The design Framework: describes the project and the solutions adopted as a result of studies and the inclusion in the territory
- Environmental Framework: developed according to descriptive, analytical and forward criteria.

Consider the natural and human components (atmosphere, water environment, soil and subsoil, vegetation flora and fauna, ecosystems, noise and vibration, radiation, public health, landscape), the interactions between these and the environmental system taken as a whole. The contents of an EIS are listed in Legislative Decree no. 152/2006 (the Consolidated Environment) and are: the project description, the description of the main alternatives, the description of the components of the environment that are subject to impact, the description of impacts, the description of the measures envisaged to prevent, mitigate or compensate for any negative impacts, the description of the measures envisaged for monitoring, the description of the cultural and/or landscape elements, the development of a non-technical summary.

6) Certification EMAS and ISO 14001 definition and difference

EMAS	ISO 14001
Voluntary registration scheme. Private and public organisation may apply for registration	Voluntary certification scheme. Private and public organisation may apply for certification
The registration is released by a governmental body (in Italy "comitato ecolabel/ecoaudit" within ministry of environment.	The certification is released by private companies (certification bodies) that works under accreditation (In Italy ACCREDIA works as accreditation body 3rd party) In order to be a certification, we need to have: <ul style="list-style-type: none"> - Something to be certificated - Third party that issue the certificate - Fulfillment of specific requirements
Basic requirements: -environmental management system in place; -environmental declaration -validation of the environmental declaration by an environmental verifier recognized by Ministry of environment. 5 steps!!	Basic requirements: -environmental management system -independent audit of the management system by a certification body that issue a certificates of conformity to the ISO 14001 standard

7) List and describe the environmental components that are used to describe the environment within the EIA (VIA) procedure

EIA entails the systematic collection and analysis of information about the environmental effects of a project by the developer in order to enable the competent authority to decide if and how the project should be carried out. The objective of the EIA is to assess in advance effects on the environment that arise from a project and therefore to assess its environmental compatibility. Step:

1. EIA is done before the build permit;
2. Public Authority check if the project is compatible;
3. If it is the Authority releases the build permit.

EIA, is sometimes perceived in a wrong way, more as a barrier instead of useful tool aimed to avoid the human activities negative impact on the environment and it is also seen as a permission to build/do/act instead of a good orientation for a sustainable development project.

8) VIA(EIA) e VAS(SEA)

VIA	VAS
Valutazione di OPERE e PROGETTI	Valutazione di PIANI e PROGRAMMI
Analisi del SITO e dell'AREA DI INFLUENZA	Analisi dell'AREA VASTA e costruzione degli SCENARI
Azioni analitiche e valutative PUNTUALI	Processo analitico di valutazione INTEGRATA
Procedura SEPARATA dalla fase progettuale	Procedura INTEGRATA alla fase programmatoria
Procedura di valutazione operata da un ENTE ESTERNO che esprime un parere VINCOLANTE ai fini della successiva autorizzazione	Procedura di valutazione interna all'ENTE RESPONSABILE DEL PIANO/PROGRAMMA che individua le autorità ambientali competenti per un parere CONSULTIVO
Partecipazione "PASSIVA" (relazione non tecnica e osservazioni)	Partecipazione "ATTIVA" (piu consultazioni in itinere)

9) Describe the difference between the concepts of degradation and obsolescence, and how these concepts must be taken into account in the context of a due diligence.

The degradation is the progressive decay of the physical integrity (alteration) and/or of the performance efficiency (performance decay) of a building component. There are two types of degradation: durability degradation is produced by the usual degradation phenomena given by the agents' action and linked to reaching of the foreseeable service life end, while pathological degradation is produced by defects caused by mistakes of design, execution or management and it comes before the foreseeable service life end. The obsolescence instead refers to a change in the expected quality level. There are three types of obsolescence:

- Functional: items become functionally obsolete when they can no longer adequately perform the function for which they were created.
- Technological: a new product or technology supersedes the old, and it becomes preferred to use the new technology in place of the old.
- Economic: dependent on the dynamics of developments in the housing market on certain types of buildings.

In the context of a due diligence, the obsolescence is considered in the investment plan as a future development of the assets, while the degradation is considered as a possible discount on the sale price.

10) List and describe the main areas of risk associated with the acquisition of real estate assets that can be identified by the due diligence.

Risk is defined in ISO standard 73 as the effect of uncertainty on objectives. An effect is a deviation from what is expected in both positive and negative. Goals can touch different themes (financial, health and safety, environmental, etc.) and can be explored at different levels (strategic, organizational, project, product and process). You can identify three areas of risk during the due diligence process:

- Economic and financial risk: typically considers its strategic and operational aspects of the activity performed by the company being acquired.
- Legal risk: it can relate to civil damages as a result of damage caused by defective products or criminal proceedings due to accidents at work or environmental crimes.
- Technical Risks: can relate to the degradation of the property and their obsolescence or the state of efficiency and safety of installations or the environmental aspects of its activities or territory related to real estate.

11) Describe the concept of benchmarks in the context of due diligence. List, also with examples, the possible sources that can be used to define the reference criteria for the inspection in the context of a due diligence.

Evaluation means to compare what is with what should be. The "what should be" meets the benchmarks that during the due diligence are taken into account by the professional team. They may be national laws, European regulations, voluntary technical standards (UNI, EN, ISO), the specific requirements expressed by the client. For example, as regards the inspection activities of the plants in a building it is essential to deal with: D.M. 37/2008 (declaration of conformity systems), D.P.R. 162/99 (elevators), D.P.R. 74/2013 (air conditioning), D.P.R. 462/2001 (electrical grounding systems), etc.

12) Describe also with examples the concepts of due diligence "of first, second and third part" identifying possible subjects intervening, the contextual conditions in which these activities can be carried out and their purpose.

Due diligence is the process analysis of the conditions of an asset for a potential transaction before the transfer of ownership or transfer of rights or obligations related to the well being formalized in a contract. DD can be carried out by three different subjects:

- Part One, the audits are conducted by the owner/seller for three reasons: to know the opportunities of development and redevelopment of the property; obtain useful information for a better presentation of the asset to be sold or to identify the best methods for disposal; obtain the information necessary for proper re-organization of the maintenance service.
- Part Two, the audits are conducted by the customer or others in the customer to obtain information in order to develop the project management and real estate maintenance.
- Part Three, the audits are carried out by independent external organizations by the parties involved to get the information for the proper management of risks related to the acquisition of the asset with respect to investment and development strategies.

13) Describe the main features of the due diligence document and report a summary list of some documents that may be requested and examined.

The documentary due diligence phase must preliminarily be prepared by the acquiring organization, in the time available and providing the maximum possible information. The main points which should address the due diligence team are:

- Identification of the applicable standards - Examination of the applicable rules
- Identification of the official status documents (certificates, licenses, complaints, claims, compliance, etc.)
- Identification of the technical documentation
- Identification documents that testify to the past history of the buildings

List of documents:

- Identification and consistency (cadastre, conservatorship of registers etc.).
- Urban planning aspects
- Technological requirements grouped by "essential requirements": mechanical resistance and stability, safety in case of fire, safety in use, hygiene health and environment, energy saving, noise protection

14) List and describe the content of the various stages of the due diligence process.

Due diligence is a process of analysis of the conditions of an asset for a potential transaction, carried out before a change of ownership or obligations in relation to the asset being formalized in a contract.

The DD is held in 5 phases:

1. Preliminary examination of available information: gather and examine the technical and administrative information regarding the asset and its parts.
2. Detailed planning of the activities: the examination of documents allows the DD team to investigate the detailed planning and operational programming of inspection activities in the field.
3. Inspection activity: provides a description of the well both in terms of information on materials and components, both in terms of identification of any deficiencies.
4. Identification and quantification of corrective action: the DD team identifies the costs to correct the anomalies. It essentially determines the "real cost" of the acquisition.
5. Drafting of the final report and presentation: concludes the inspection and processing of information acquired. The objective is to revise and transform the technical information in a synthetic instrument that helps the potential buyer in decisions, which is not always able to understand the technical language.

15) Definition of "immediate cost" and "short-term cost" - ASTM 2018-08

The buyer chooses the due diligence team (in-house or using external consultants or third-party) and agree the scope of work in relation to its needs for knowledge and its acquisition and development strategy. Insurance company will ask us to fulfill the requirements given by Factory Mutual standards for safety in building. The final report of the assessment identifies any physical deficiencies of the assets involved in the transaction and quantify the corresponding restoration cost. We can find into it a lack of compliance with short term cost (non-compliance cost, renovation cost) and immediate cost for safety and environmental issues. Based on information provided, the buyer defines the terms of the guarantee and any adjustments to the sale price.

16) Describe the role and main characteristics of the real estate census process.

For real estate census means the operations system and procedures to define the qualitative and quantitative characteristics of a real estate portfolio. The goal is to provide the basis of necessary information for setting, planning, execution and control of maintenance and management services. This aim is achieved through a variety of activities and procedures, interrelated, such as embossing, research, data collection, critical selection, validation, the organization of information and documents related to the property and its context. The census refers to two categories of knowledge:

- Quantitative consistency of a property: it involves the acquisition of information relating to quantities and dimensional aspects.
 - Technical characteristics of the buildings: it implies the acquisition of information relating to the technical elements.
- The real estate census is characterized by gradualness, dynamism, specificity, level of approfondimento, multiplicity of sources.

17) Areas and activities of the technical evaluation.

The scenarios in which you can make a technical assessment are: real estate transactions, sales of business units, outsourcing of operation and maintenance services, enhancement of heritage, public communications, reorganization of management and maintenance activities, risk management. Any activity that is made on real estate assets requires a technical evaluation. The activities include: real property census, due diligence, property technical file, audit, technical diagnosis, technical investigations.

18) What is the maintenance global service?

Homeowners are increasingly using the outsourcing formula. Outsourcing is the transfer, on the basis of contracts, the production of services and instrumental activities. Global real estate maintenance service is the property maintenance system with full responsibility by assumpor on the results in terms of achievement and/or maintenance of predetermined performance levels by the client. A portion of the payment to the supplier is fixed, a part variable in function of the results obtained. In the preliminary stage of setting the client performs an analysis to assess the technical and managerial needs in relation to their property and to the strategies it intends to take. The results of this phase are collected in a preliminary address document, in order to support the next phase of offer request.

19) How is the maintenance global service? What are the prerequisites?

According to UNI 11136 the client performs an analysis to assess the technical and managerial needs in relation to their property and to the strategies it intends to take. The results of this phase are collected in a preliminary address document, in order to proceed with the bid and setting the service project. The preliminary address document reports the analysis that led the customer to the choice of maintenance global service: analysis of the characteristics of the assets, analysis of the costs and results of previous contracts, analysis of the internal organizational structure, census of necessary resources. The prerequisites for setting the maintenance global service are: qualitative and quantitative knowledge of the real estate assets, definition of the physical state, maintenance and performance of the building, definition of the levels of availability of the main environmental and technological components. There are 3 types of analysis and evaluation: technical (how is the building), functional (which functions are performed), organizational (what resources I need).

20) List the major classification systems built.

- UNI 8290: technological system. Classification and terminology. This standard does not take into account the processes, but only the parts of the building. The decomposition, which occurs for macro-families, is a limit. Also thermal units are not distinguished in hot/cold.
- Unifomat II: is the most widely used classification system in the world. It is a classification of construction elements and site based on functions. High gradual deepening. This system improves reporting at each stage of building life. However, it is weak because it does not breaks down the "objectivity" of the building.
- OmniClass: series of tables that describe the built environment and processes. Based on ISO 12006-2, used by designers and builders to decompose services into components for the construction process and cost estimates. The importance of this management tool lies in its ability to identify systems within a structure.
- Overall Construction Classification System (OCCS)
- CI/SfB: a Swedish classification system.
- UNI 11337: Construction and civil engineering - Criteria coding works and construction products, activities and resources.

21) Definition of requirement, supplies of construction works, environmental unit, environmental requirement and serviceability.

- A requirement is what is required of necessity for the correct performance of an activity of the user or a technological function (UNI 10838).
- The supplies of construction works is the behavior of a building structure or its parts in the operating conditions and stress. It may be: technological or environmental.
- Environmental unit is the grouping of the user activity derived from a particular intended use of the building organism, temporally and spatially compatible with each other.
- The environmental requirement is the translation of a requirement in the physical-environmental factors and in demands for technological services, acts to identify the conditions of satisfaction on the part of an environmental unit.
- The serviceability is the ability of a building to implement the functions for which it is designed and used.

22) Define what are the assets, facility, requirement, output specification. Explain the difference between brownfield project and greenfield project.

- According to the ISO 55000 asset is the potential or actual value for an organization. Any property owned by a company that can be monetized and then used for the payment of debts.
 - Facility is the physical structure used to serve a specific purpose. The term may refer to part of a building, an entire building or more of a building and may include related constructions that, overall, they serve a specific function. The term includes both the physical object, either its use.
- A requirement is what is required of necessity for the correct performance of an activity of the user or a technological function (UNI 10838).
- The output specification indicates, in terms of output, what you should get from the structures and the services that are provided. The output specification precises such requirements has to meet, and not in which way. The output specification should reflect the user's needs, to be clear, brief and must ensure the tenderers the information needed to decide on the services and the costs to offer.
- The greenfield project is when the ground is free, no pre-existence that may affect the project. The brownfield project is when the land is occupied, there is a pre-existence. It is required remediation, highly expensive. It is recommended to entrust remediation and new construction to a single company.

23) Describe the main phases of the transaction.

1. Preliminary activities of the seller: the seller identifies the property and collects information and data, including also the accompanying documentation of the buildings. Then he defines a sale price, the advertising conditions of its offer, the conditions of selection of potential bidders. 2. Preliminary buyer activity: the buyer after choosing to purchase real estate, develops the preliminary analysis of the feasibility from an economic-financial point of view and taking account of the development strategies and management. 3. Preparation of the preliminary contract: the parties write a preliminary agreement defining clauses, terms and conditions. 4. Due diligence activities: the buyer chooses the due diligence team and defines the purpose in relation to development strategies. The final survey report identifies the property physical deficiencies and quantifies the costs of restoration. Based on the information the buyer defines the terms and the selling price. 5. Preparation of the final contract: agreement between the parties following the due diligence. 6. Signing of contract 7. Subsequent activities for signing the contract: transfer of property and obligations, management during the period established under contract, ...

24) What is the declaration of conformity?

The declaration of conformity applies to all systems of buildings of any destination of use, as regulated by Decree No. 37 of 2008. At the end of the work, the installer company delivery to the customer the declaration of conformity in which is also present the design and materials used. The statement must be submitted within 30 days from the installation of the plant. If not provided the service will be suspended. The authorities after receiving the declaration of conformity shall deliver the certificate of viability. The owners retain the administrative and technical documentation, instructions for use and maintenance.

25) Lista and describe NDT non destructive tests, that can be used in association with the due diligence process

Traditionally, non-destructive controls have been developed in the field of structural testing or in the determination of the residual resistance of existing buildings. Non-destructive controls are divided into two main categories:

- Direct (eg, out-of-the-box, microcarotage) - Indirect (ultrasound, pacemaker, sclerometer, ...).

- Indirect test of concrete strength concrete rebound hammer

The Schmidt hammer, sclerometer, is basically a surface hardness meter and rebound number. The sclerometer consists of a steel mass that is launched against the surface to be investigated. The mass bouncing, carries with it an indicator flowing on a graduated scale. The rebound value is related to the elasticity of the material and implicitly with its resistance. The rebound value is related to the elasticity of the material and implicitly with its resistance.

- Infrared thermography

All objects with temperature above 0 K emits electromagnetic radiation in the infrared region of electromagnetic spectrum. Infrared radiation (wavelength in the range of 0.75–1000 μm) is positioned in-between microwave and visible part of the electromagnetic spectrum. This vast range can be further subdivided into near infrared or NIR (0.76–1.5 μm), medium infrared or MIR (1.5– 5.6 μm) and far infrared or FIR (5.6–1000 μm). In 1800, Sir William Herschel discovered infrared radiation and the recording of the first thermal image was done by his son John Herschel which added new dimension to the temperature measurement.

- Ultrasonic Test

The sonic tests are based on the measurement of a mechanical pulse propagation time between the transmitter probe and the receiving probe. This speed depends on the elasticity and the strength of the material: the higher the speed, the greater the elastic modulus and therefore the resistance, being in fact every interruption or heterogeneity of the material, due to a signal delay.

- Magnetic test

A pachometer (covermeter) is used to detect the presence of ferromagnetic materials (e.g. steel and iron) embedded in concrete. Its primary use is to determine the thickness of the concrete cover over the steel reinforcement, hence the name, covermeter. The pachometer operates by generating a magnetic field and measuring the reaction between the magnetic field and the metal. The intensity of the response is then related to the location and size of the embedded material.

- Flat jacks

The flat jacks technique can be employed to establish the working tension, the breaking tension and the deformability module of a masonry. The stressing state measurement (with a single jack) is based on the variation of the tension state generated in a zone of the structure through a cut made in the normal direction to the surface. The tensions releasing causes the cut's closing detectable by measuring the convergence between the two points symmetrical to the cut.

26) List and discuss the possible impact area AS/NZS 4360 that can be used to classify the potential consequences of the findings or issues that may arise from a technical assessment of a building

This classification comes from the Australian/New Zealand Standard on risk management. Impact Areas

a) Asset and resource base b) Revenue c) Costs d) People e) Community f) Performance g) Timing and schedule of activities h) The environment i) Intangibles (reputation, ...) j) Organizational behaviour

The Risk is given by the Impact multiplied by the Probability. Impacts may have a low consequence but high probability, or a high consequence and low probability, or some intermediate outcome. In some cases, it is appropriate to focus on risks with potentially very large outcomes, as these are often of greatest concern to managers. In other cases, it may be important to analyse both high and low consequence risks separately. For example, a frequent but low-impact (or chronic) problem may have large cumulative or long-term effects. If someone is injured more than one impact area will be affected; for example, the economic one (the insurance should pay a reparation), the asset area (the broken asset should be repaired), the Intangibles area (the reputation could be negatively affected), the schedule of activities may suffer delays and so on. Concerning the consequences, they could be treated according to three levels of risk treatment approaches : "not tolerable", "best available technique (BAT)" and "as low as reasonably practicable (ALARP)"

27) List at least two environmental certification instruments applicable at the building, summarizing for each the methodology and the evaluation criteria used.

- BREEAM (Building Research Establishment Environmental Assessment Method) is a British system of 1998. In this method you use 7 macro areas (management, health, comfort, energy, water, materials, land use, pollution) to assess the level of sustainability achieved by the intervention according to the choices made during the planning and design. The evaluation criterion is based on a "scoring" system. environmental requirements are identified (7 macro areas) for which you define the expected performance, verifiable through indicators. For each indicator is assigned a score and the scores weighted sum allows you to express a clear overall assessment of the building. Each building totals a score given by the sum of the individual items. At the conclusion of the process it is released an information document which certifies the performance level of the building.

- LEED (Leadership in Energy and Environmental Design) is an American system of 1998. It is a certification based on checklists organized for ecological issues (energy, atmosphere, water, ...). Unlike other systems, the LEED system not associate with various indicators a weight value, in fact all the requirements have the same weight. Even LEED certification is based on "scoring system", in particular on the definition of credits corresponding to specific actions in

the field of sustainable construction. The sum of the scores of the credits can be up to maximum 110 points and determines the level of the building certification. There are four levels of certification depending on the score obtained: basic, silver, gold, platinum. The procedure to obtain the certification is: registration of projects, preparation, presentation and review of documentation, certification.

• The protocol ITHACA (Innovation and Transparency of Contracts and Environmental Compatibility) is an Italian system for the evaluation of the requirements and sustainable building thresholds. It follows the methods and standards of BREEAM and LEED, which are a series of assessments and tools to help the construction industry to understand and mitigate the environmental impact in the design development and construction of buildings. They were established 10 basic principles that must characterize the green building. The full protocol is divided into 70 evaluation boards and sets minimum requirements for building sustainability. It has also developed a simplified protocol of 28 cards.

28) What are the regulatory references and for what types of intervention the energy performance certificate is mandatory, to date?

Energy certification refers to Legislative Decree 192/2005 (implementation of Directive 2002/91 /EC on the energy performance of buildings) and its modifications: Legislative Decree no. 311/2006 and Legislative Decree no. 28/2011 (promotion of energy from renewable sources). The energy performance certificate ACE was replaced by Legislative Decree no. 63/2013 with the EPA energy performance certificate, which is valid for 10 years. The energy performance certificate is mandatory for: new buildings, buildings subject to major renovation, purchase, lease. It must not be produced for: industrial and commercial buildings, non-residential farm buildings, isolated buildings with a total useful area of less than 50 square meters.

29) In relation to the environmental certification list the different types of labels.

The labeling system indicates with a logo the products with a reduced environmental impact in relation to the entire life cycle. They may be mandatory or voluntary. If mandatory, follow the CE regulation 1272/2008 called CLP (Classification, Labelling and Packaging). It introduced a new classification system, of all substances labeling and packaging. They are mono criterion, referring to a specific environmental factor. The categories which indicate the relationship between product, health and environmental concern are: toxic and dangerous products, appliances/buildings, packaging, energy from renewable sources. If voluntary, internationally the ISO 14020 standard (Environmental Labelling) have been developed which set the guidelines for voluntary environmental labels and declarations, defining three types: TYPE I based on the minimum requirements (European Ecolabel), TYPE II based on the principle of ' Environmental claims, TYPE III based on LCA procedures.

30) List and describe briefly prerequisites/credits considered in the LEED certification.

- Site sustainability: the mandatory prerequisite is the prevention of pollution from construction activities. Limit the impact generated by the construction activities.
- Water management: the mandatory prerequisite is the use of water reduction.
- Energy and atmosphere: regard to improving the energy performance of buildings.
- Materials and resources: the mandatory prerequisite consists of the collection and storage of recyclable materials.
- Indoor environmental quality: the required prerequisites are the minimum benefits for air quality and environmental control of smoking.
- Innovation in design: identification of design aspects that develop innovation and sustainability in the construction of buildings.
- Regional priority: encourage designers to focus on the environmental characteristics of the place where the project is located.

31) With reference to LEED certification of a hospital, briefly describe the procedural process and the macro areas for the assessment of environmental quality.

MACRO AREAS:

- Site sustainability: environmental aspects of the hospital in relation to the context.
- Water management: reduce water consumption and re-use of rainwater.
- Energy and atmosphere: use of energy from renewable sources.
- Materials and resources: use of local materials.
- Indoor environmental quality: safety and comfort of the rooms inside the hospital.
- Innovation in design: use of innovative techniques applied in the construction of the hospital.
- Regional priority: consideration during the design phase of local environmental peculiarities.

PROCEDURAL PROCESS:

1. Registration of the projects: declaration of building certification intent. Chose the rating system and paid the registration fee, project management can be followed by the online portal.
2. Preparation of documentation: the design team collects information and performs the calculations for all the prerequisites/credits chosen.
3. Presentation of the documentation: the design team gathers the necessary documentation and send it via the online portal.
4. Document revision: begins review of the documentation, which can vary.
5. Certification: at the end of the process, the project receives a certificate of recognition and instructions for future marketing actions. At the discretion of the owner, the project can be included in the list of certified projects available on the website of the Green Building Institute.

32) Describe the main characteristics of the environmental labels type I, II, III and list some example of their application

INTERNATIONAL STANDARD ISO 14020 – Environmental labels and declarations - Environmental labels are VOLUNTARY. 3 types: 1. Ecolabels, 2. Green claims, 3. Environmental impact:

1. Type I labels (ISO 14024) are: Multicriteria; Thresholds limits are defined (acceptance limit); Issued by third parties;
2. Type II labels (ISO 14021) are: Either single or multicriterion; Thresholds limits are not defined; No involvement of third parties. Type II environmental labelling are based on the idea of environmental claim (statement, symbol or graphic that indicates an environmental aspect of a product, a component or packaging);
3. Type III labels (ISO 14025) are: Multicriteria; Thresholds limits are not defined; They can be verified by third parties. 50% degli ecolabelled products in Europe refer to construction.

33) The balance between risk and inspection.

The degree of inspection depth is inversely proportional to the level of risk that you can expect. The balance between risk and inspection, can be based on:

- The possible inspection level (I*), with a limit that can result from various factors (time or conducting business).
- The acceptable inspection level (R*), can be managed through contractual warranty clauses. Extreme situation: if any anomaly manifested from the building at any time subsequent to the sale can be charged to the contract to the seller, due diligence is not necessary because the risk level is zero. This situation identifies the limit of I to R, any risk is acceptable because it transferred to the selling party.

34) Explain the steps of the risk management process.

The risk management process is divided into 4 phases:

1. Risk identification: the research process, recognition and description of risks. This involves the identification of sources of risk, their causes and their potential consequences. To identify the risks you can use: brainstorming, physical inspections, checklists, flowcharts, HAZOP analysis, ...
2. Risk analysis: process where you determine the nature of the previously identified risk and the level of risk, as a combination of the gravity of the outcome and the probability that happen.
3. Risk assessment: technical aspects and hazard identification are compared with the comparison criteria (Risk Criteria, ISO 73) that the organization has set. The comparison criteria enable organizations to relate risk with its acceptability or tolerability defined by the same criteria.
4. Risk treatment: process to modify the risk. The risk can be considered: tolerable (it uses the concept of reasonableness), intolerable (treatment of risk is absolutely necessary), negligible (it is not important take into consideration the treatment of risk).

35) What are the most important aspects to be assessed for fire safety?

A fire is the rapid oxidation of combustible material with development of smoke and heat. To develop there must be 3 components: combustible material, oxidizing substance and priming. To reduce the probability of fire propagation is necessary to reduce the risk of starting or the amount of combustible material, contain the fire within confined areas, evacuate people occupying the spaces, ensuring the safety of rescue teams. You can accomplish this by: management of material and equipment, the fire load control, partitioning of buildings in areas, planning of escape routes, fire resistance of structures.

36) Explain the process for the Fire Prevention Certificate (CPI).

The fire prevention certificate (CPI) is a certificate that certifies compliance with fire prevention regulations, that certifies the existence of the fire safety requirements. It is issued by the provincial command of the fire brigade. The CPI then certifies that the situation was found by firefighters complies with fire regulations. Some activities that require the certificate are: thermal power plant (> 116 kW), network gas, warehouses (> 800 square meters), generators (> 25 kW),
Process for obtaining CPI:

1. Verification of the activity being subject to fire prevention
2. Drafting of the fire prevention project by the professional
3. Project presentation in command of firefighters
4. The command gives the opinion of conformity (45gg)
5. Execution of the work
6. At the end of work, is required to survey and CPI
7. Inspection of firefighters
8. Issue of the CPI (15 days), at the same time the command sends the receipt of the declaration which attests the compliance of the work on the project

37) List the document that could be required during the document review stage in a due diligence review in the aspects of safety in case of fire

The documents that are required during the document review related to “safety in case of fire” are:

1. CPI certification, related to the activities conducted in a building, is a certification that certifies compliance with fire prevention regulations, that certifies the existence of the fire safety requirements. It is issued by the provincial command of the fire brigade.
2. Certifications of building components (doors, passive protection systems, curtains, coating materials, ...).
3. Fire safety logbook (registro controlli antincendio), where the inspection/control activities on fire extinguishers, hydrants, REI doors and safety exits, emergency lights, first aid devices,

electric circuit breakers, alarm buttons and fire detectors are reported. 4. SCIA (Segnalazione Certificata di Inizio Attività), it is a certification for the low-risk activities. The documents above must be present, updated (when required) and valid according to the law DPR151/2011.

38) Describe the main issues related to the presence of asbestos in building

Asbestos has been largely used in buildings since the end of the Second World War. It was widely utilized until 1992 when it became outlaws. Law 257/1992 concerned the disposal of asbestos; DM 06/09/94 describes the procedures of Confinement, Encapsulation and Disposal of asbestos; all the procedures must be carried out by a certified company. Nowadays the protection against the risks related to asbestos are regulated by the D.Lgs 81/2008

The dangers of asbestos are mainly due to the fact that its fibers (fibrous material) are easily released into the air and are potentially inhalable. Especially the particles released during machining or any external stress (handling, vibration, air currents, moisture infiltration etc.).