About sustainable installations

Despre instalații sustenabile

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Abstract
The paper presents the importance and approach of sustainability, with particularization for the construction works. A way of determining by score and qualitative appreciation of sustainability is provided.

Keywords: *sustainability, installations, construction*

1. Preliminary considerations – generalities

MAN is (should be) considered as the ultimate beneficiary of all socio-political, scientific-technical, cutural-artistic and sporting activities, of all human activities (of individuals, groups, professional associations, etc., governments, parliaments, international organizations); humanity is, in substance, the sum of all individuals/ people.

MAN (if he is HUMAN) must live (to live) in harmony with Heaven and Earth (fig.1)

MAN is understood both as an individual and as a society (to whom it is incumbent upon the task/debt of giving thanks/to ensure the well-being of the individual) and has an obligation to respect the laws that make him a partner with the universe [1].

For good ”knowledge” in the universe, man has a duty to know them and take into account its laws by issuing its own laws (at all levels) and their correct application.

The level of knowledge of these laws differentiates (intellectually and in terms of obligations) individuals, maintaining their equality in front of life.

Reaching ”perfection” is the purpose of all human activities (including laws), to which everyone must knowingly participate.

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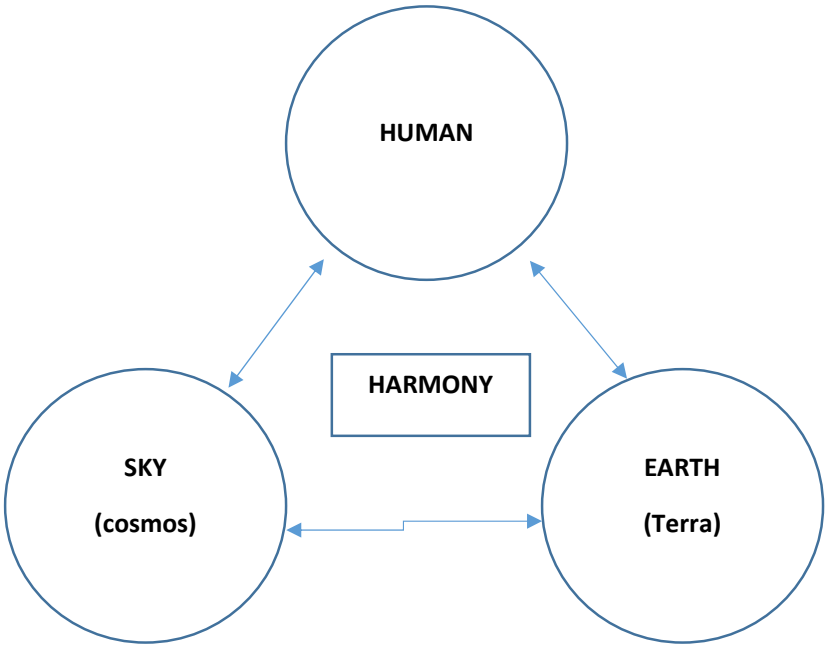

Fig. 1. Premise of life

Harmonization ”legalized” OM-NATURE is provided in Law 10/1995 (with subsequent additions), for constructions and related installations, at Art.5 lit.g) ”s sustainable use of natural resources”, and at pct.2) Specification is made:”fundamental requirements are established by domains/subdomains and categories of constructions and by specialties for installations related to constructions.”.

According to DEX, sustainability is ”the quality of an anthropogenic activity to unfold without depletion of available sources and without destroying the environment, so without compromising the satisfaction of the needs of future generations”.

2. Method of approach

The constructions/buildings are differentiated in:

a) Existing;

b) New, that is, in the design/preparation phase of the execution work.

For the existing works, the possibility of interventions (the case of maintenance works, capital repairs, change of destination, demolitions) is analyzed.

The new works will take into account (and will take into account) technological progress, raw materials, human health (and other living things).

For construction installations, sustainability will be analyzed from ”source”, which can be warehouse/store/warehouse/manufacturer (in no case sand quarry or iron extraction moun/coal, etc., or dam that provides water to a hydorcentral, etc.).

Functions of construction installations (fig.2), specific to the buildings/ constructions served, are defining in the selection/preference of beneficiaries.

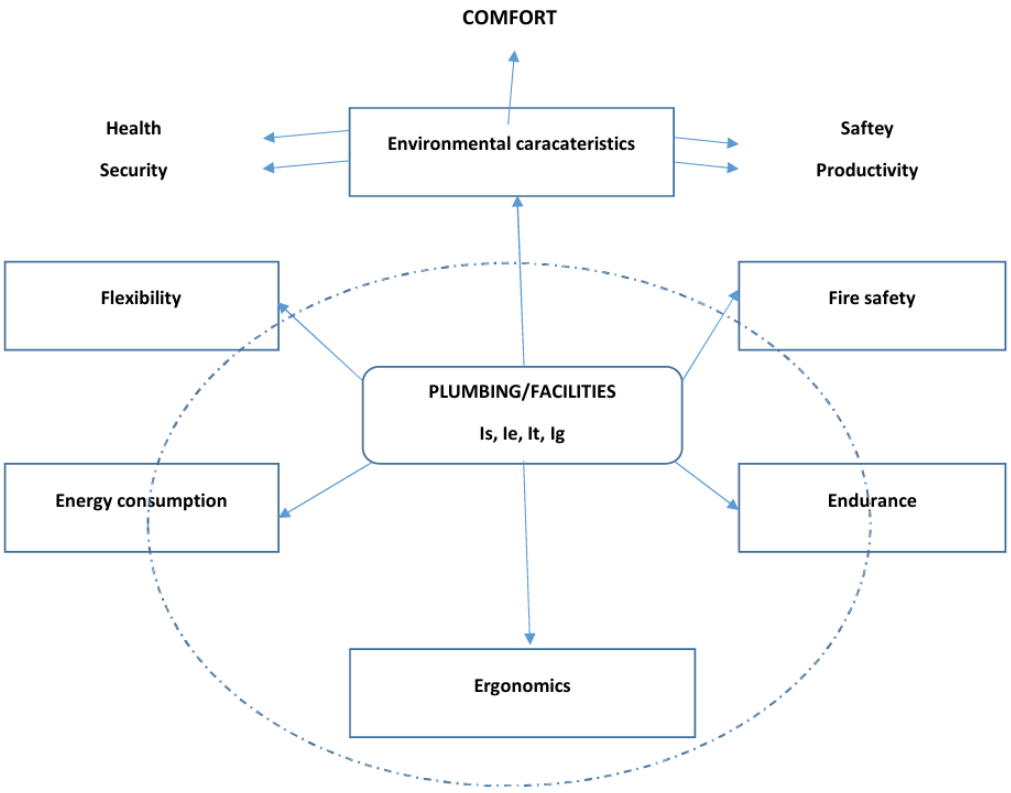

Fig 2.

The sustainability of the installations can be approached (characterized) globally, or by specialties by:

a) Defining footprint: ecological; carbon; water;

b) Methodologies (drafted by authorized companies) based on weighted criteria/ parameters (influenced by the importance of the objective, but also by the ”interest of the developer).

Location, through climatic parameters, requires the determination of the approach to sustainability.

3. Technical aspects

The conceptual/functional realization of the installations [2] aims at ensuring:

1) Reducing energy consumers ”classic” by renewable energy replacement, as well as by increasing yields (through new constructive concepts) to consumers;

2) Environmental protection (ambientally by noise reduction, air quality assurance, optimized lighting, but also by what and how ”transfer” to the outside environment):

3) Insured comfort (removal of excesses/”sclavagism” comfort);

4) Ensuring sustainability.

The expected help from the architect is essential for both the installer and the structurist, so a correct collaboration is required, taking into account existing

technologies and equipment of the executor and taking into account the directives, the, normlatives, standards that propose ”Save life on Terra”.

Each specialist, by what he does, is considering reducing waste, reusing materials (”circular economy”) and promoting new materials/equipment/technologies/principles of approach, but also refurbishments/modernizations.

Problems/weights arise when the price factor appears (which contributes to the depth of the social and economic gaps - real sources of ”sabotare” global sustainability.

Criteria/parameters of ””/”precise”/”recise” sustainability, specific to each methodology (BREEAM-Building Research Establishment Environmental Aaassment Metot, LEED-Leadriding in Energy and Environmental Design, etc, DGNB-Deutsche Gesellshoft fur Nachhaltiges Bauer etc.) have in common:

- Energy – required and consumed;
- Location – access and facilities;
- Water assurance – quality, assurance, recirculation and reuse, etc.;
- Embedded materials – quality, provenance, characteristics;
- Ecology – land use, additional works, etc.;
- Pollution reduction – in any form;
- Innovation – with positive functional and environmental effects;
- Health and comfort/well-being;
- Priorities – local, regional – in fact interests;
- Management etc.

Obs.1) These specific constructions/parameters, respectively buildings, are also to be taken into account the installations, for construction – global approach or specialties - .

The parameters/criteria taken into account must characterize the reality (desired/ existent), operation, operation and maintenance.

No time (respectively criterion/parameter) should be considered except in correlation with the environment.

The complexity of the objective/installations, if they do not reduce the negative impact on the environment, does not affect sustainability.

Installations, equipment, materials (which give ”life” buildings) have their sustainability according to their production, virtually unknown to the installer (the manufacturer does not pass it in the technical book) – it will not take it into account.

Table 1 proposes/shows the table head for establishing the sustainability of a goal (building installations, ventilation installations – air conditioning, lighting/ force/ signalling installations, water supply installations, etc.).

Sustainability. Objectively

Table 1

Nr. crt.	Parameter (criterion)	% participatory (П)	Note parameter / criterion	Score
0	1	2	3	4
TOTAL		100	-	0....10

Obs. 1) The parameters/characteristics (n) defining sustainability are determined by the holder of the methodology, by distinct types of objectives (eg installations).

Obs. 2) The participatory percentage [3] established by the holder shall take into account the contribution made by the parameter/criterion in protecting the environment.

Obs. 3) note the parameter Ni, i=1..n; is recommended as n≤12 with exceptions being contained/represented by the note.

Obs. 4) The P score is calculated with the relations:

Pi=(·Ni)/100 and P=ni

Depending on the score obtained, sustainability can be assessed by the scale shown in Table 2.

Sustainability scale

Table 2

Score	≥9	8,9÷7,5	7,4÷6,1	6÷5	4,9÷4	≤
Sustainability	Exceptional	Great	Better	Satisfactory	Unsatisfactory	Unacceptable
	Platinum	Gold	Silver	Bronze	Mud	Manure/Compost

The calculation of sustainability depends on the good definition of the objective, the degree of accuracy of the determination of parameters and their weighting equally the grade given to them that depends on quality, physical and functional condition.

For a subject – objective: man, building, locality, area etc. – can determine (taking into account the sum of activities, behavioural etc.) the ecological, carbon, carbon footprint, water with which it is possible to decide and sustainability.

4. Conclusions

SUSTAINABILITY and SUSTAINABLE DEVELOPMENT do not equal, sustainability includes sustainability.

MAN, the recipient of all activities in society, has the purpose/debt of living in harmony with Heaven and Earth to understand and recognize/apply their laws.

The legislation is intended to ensure progress in compliance with the needs of life factors.

Installations in construction, through equipment, operation and maintenance, reflect the degree of education, civilization and responsibility of man and society.

For construction installations it is recommended to assess sustainability by starting from ”source” (warehouses, manufacturers, distributors) of materials and equipment (which could also provide information about sustainability (useful of choice).

The definition of the sustainability of a concrete objective (for example, the indoor heating installation of an educational building) depends on the parameters (criteria) envisaged (e.g. heat source – district heating system; own heating system operating on natural gas/wood/electricity/unconventional sources).

For each of the parameters/criteria, depending on the environmental effects, the weight is specified and it receives a note – from 1 to 10 – (taking into account the yield/functional quality; with these the score is determined.

Based on the score the appreciation appears in the sustainability scale by providing information to those interested.

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