

## SUSTAINABILITY IN THE PROCESS OF DEVELOPMENT PERMIT ACQUISITION (ARMENIA)

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### Abstract

**Introduction:** Sustainability is becoming more integrated into different fields in many countries. Architecture and urban development are no exception. International agreements, charters, and national strategies have already been adopted around the world. Nonetheless, the relevant procedures and applications are just as important. In Armenia, despite the existence of several National Standard upgrades and the development of the Buildings' Energy Passport, there is still no building sustainability assessment system. **Methods:** This article analyzes development documentation, particularly the application form and acquisition of design permits, in terms of its sustainability, based on legal research, the Developers Guide, and the author's own professional experience. **Results and discussion:** This analysis shows that generally, applications and permits include sustainable aspects, but need several improvements in order to make development more sustainable. In turn, the main issues affecting the process are timing, communication, and project presentation capacity.

### Keywords

Sustainable architecture, sustainable development, documentation, environment, society, economy.

### Introduction

Buildings produce 40% of the total waste in many countries of the world (John et al., 2000) and consume nearly the same part of the total energy produced in the world, accounting for, once again, about 40% of total carbon dioxide emissions (UNEP, 2019). To reduce these consumption levels and control the environmental degradation caused by these problems, international organizations, unions, and separate countries address the matter as something requiring an urgent solution.

The United Nations' Rio Conference in 1992 (United Nations, 1992), the Kyoto Protocol in 1997, and the European Union's Gothenburg meeting on sustainable development were aimed at finding a way to reduce the impact of human activities, including construction and development, on the natural environment, as well as a way to ensure a healthy future for the next generations, as mentioned by the Brundtland Commission in its definition of sustainable development. As a result, programs like HABITAT were formed and executed. In the European Union, the European Norms were created as well, each addressing separate aspects of construction and design. On top of the European Norms, each country can use its national norms simultaneously (as of the moment of writing this article).

Many professional organizations have created rating systems to assess buildings' environmental footprint. This includes the American LEED, the German DGNB, the Australian Green Star, the

Japanese CASBEE, the French HQE, the British BREEAM, and many others. According to Vierra (2011), there are nearly 600 different rating systems in the world. Each has its own methodology, limitations, and advantages. Some of the systems became obligatory in different countries only partially, or are applicable to some types of buildings. For example, BREEAM is obligatory in the United Kingdom for the projects financed by ministries responsible for health and education (Schweber, 2013), San Francisco requires LEED Silver for high-rise residential development and LEED Gold for new large commercial development (City and County of San Francisco, 2019).

Despite international agreements and charters, various countries have their own national standards, requirements, and strategies for sustainable development and the urban environment. For example, Singapore's authorities have Master Plans, which include many projects relevant to sustainable construction. In 2009, they announced a program for fostering new and existing buildings to help them achieve the Green Mark. The aim was to transform 80% of all buildings into sustainable ones by 2030 (Low et al., 2014).

In 2008, the Russian Government decided to assess all buildings for the Olympics by BREEAM. In so doing, they wanted to spread ideas about sustainable architecture and sustainability (Brodach, 2013). It is very likely that the same initiative was used for PR campaigns promoting the Olympics as

well. Several standards were updated in the country later on, like the GOST R 54963–2012, or the STO NOSTROY 2.35.4–2011, which now include some components similar to BREEAM standards. The government even created a rating system. Known as the Green Zoom, it still stays far behind BREEAM and LEED, with only 70 registered projects, 23 of which are under construction and 47 are in the design stage.

In Armenia, there are no national rating systems, but there are standards and norms that regulate the construction and design processes. Most of them have been updated, with tangible improvements. In addition, the country also developed the Buildings' Energy Passport, as part of UNDP/GEF (2014).

Despite the absence of a national rating tool, in Armenia, there are three buildings assessed by LEED and BREEAM. One more has already been registered in the BREEAM dictionary (Vardanyan, 2021). The low number of certified projects reveals the need for a national strategy or rating system.

However, standards and strategies alone do not assure sustainability. Procedures are equally important for the development of a sustainable project, and processes involving application forms can play a crucial role in project execution. For this reason, this article will analyze sustainability-related design permit application processes and forms used in the Republic of Armenia.

### **Methodology**

This article studies the requirements for the design permit acquisition process, as well as its limitations and specifics in Armenia. The aim was to understand if any of the above is relevant to the sustainable aspects of architecture, construction, and urban development. For the purposes of the study, we applied qualitative research methodology, particularly desk research and case studies. During desk research, we reviewed literature and analyzed Armenian legislation. While organizing the structure of this study, the literature review was given the first priority. To create a list of possible literature on the subject, we searched the archives of the National Library of Armenia and Google Scholar to find potentially relevant materials. As the second priority, we studied the legislation describing the design and construction permit issuance process, using the Armenian Legal Information System (ARLIS) and the website of the Ministry of Urban Development (MUD). Unfortunately, we did not find any literature publications that were relevant to the research topic and could be useful for answering the research questions of the study. We did carry out a separate study of the main legislative acts and other related materials from the ARLIS and MUD databases. Specifically, we studied Government Decision of the Republic of Armenia No. 596-N dated March 19, 2015, the Developers Guide published by the Ministry of Urban Development in 2016, and the

accepted forms of Design Permits (DP). We will start by briefly describing the development and DP issuance process. Later, we will present the sections of the DP form as the first and guiding document of the whole project, discussing them in terms of social, economic, environmental, and institutional aspects of sustainability to understand if they reflect sustainability and how much they support and foster sustainable design and development. In order to understand how legislation is applied in practice, we carried out a case study. The current project, which is being managed by the author, with sustainable features during the design permit acquisition process, will be subject to analysis based on professional experience. Recommendations will be given for updating the process and the form for issuing design permits.

### **General Process of Development**

All the development processes depend on the building's category, which reflects the risk level. There are five levels in all. The low-risk level includes maintenance works, landscaping, minor construction tasks that do not require projects, and emergency works on infrastructure (however, such works must be done after notifying the local authorities). The average risk level includes sites where project documentation does not require expert assessment, which is replaced by recommendations of the designing company, while the technical construction inspection is replaced by respective recommendations as well. The above-average risk level includes sites with characteristics between category II and IV, where project documentation is subject to a basic expert assessment (done by the client). The high-risk level includes special and important sites, which require comprehensive government assessment (done anonymously and coordinated by the authorities) for project documentation. The highest risk level includes projects that are particularly hazardous and technically complex and also projects where other countries are involved. Project documentation for projects of this kind is subject to special comprehensive expert assessment. All the permits and construction timing are decided by the government for each project separately (Government of the Republic of Armenia, 2015).

Generally, a development project includes the following phases: design permit (DP; or architectural planning task), project development, project expert assessment, construction (demolition) permit, completion certificate (occupation permit).

The DP defines the obligatory requirements and limitations according to the community's (city's or village's) spatial planning documents. These matters are defined by the aforementioned law. To get the DP, the developer must apply to the head of the community again, using an accepted form. The DP must be issued within a period of 5 to 20 days,

depending on the building's risk level.

After the DP is given, a licensed architect/firm starts developing the project according to standards and norms. Documentation undergoes an expert assessment adequate to its risk level. With the expert conclusion, the developed project is handed to the authorities, whereupon the construction permit is given (Ministry of Urban Development of the Republic of Armenia, 2016).

This is a quite general description. It does not go into too many details, as they do not relate to this research. Below are the discussions for typical buildings, usually under categories II, III, or IV. Particularly, the case study that we discuss here is a category IV building according to N596 List 3.

**Design Permit Application**

In the DP application, the developer asks for a permit to design a new building at the lot address and asks to be provided with technical requirements for the utility infrastructure (water, sewage, gas, electricity). Later on, there are two lines to describe what is to be built. Underlined, are the guidelines for function, external measures, height, lot and

construction area, and power. Then, the following documents must be attached: the lot plan, specifying the location of the proposed development, as well as coordinates and the neighboring lots' functions and buildings; the floor plan in case of functional changes of the lot; and the ownership certificate for the area.

**Design Permit Form**

The form consists of four sections, including general information, lot characteristics, project requirements, and additional requirements. Altogether there are 27 clauses, with subclauses (Figure 1).

General information must be provided, such as the description of the site with its name, construction type if it is new, and information on renovation, reinforcement, or conservation and functional changes if there are any. Furthermore, the address of the lot, the developer's contact information, and the ownership certificate must also be provided.

Lot characteristics cover eight clauses. The first clause is location. The guidelines indicate that this implies "lot location in the urban environment, its aim, and functional meaning". The second clause is

Ձև N 1-2



**ՀԱՅԱՍՏԱՆԻ ՀԱՆՐԱՊԵՏՈՒԹՅՈՒՆ**  
(մարզ, համայնքը)

**ՆԱԽԱԳԾՄԱՆ ԹՈՒՅԼՏՎՈՒԹՅՈՒՆ**  
**(ՃԱՐՏԱՐԱՊԵՏԱՀԱՏԱԿԱԳԾԱՅԻՆ ԱՌԱՋԱԴՐԱԼՔ)**

N \_\_\_\_\_ 20\_\_ թ.

Օբյեկտ \_\_\_\_\_  
(օբյեկտի անվանումը, կառուցում, վերակառուցում, ուժեղացում, վերակառուցում, գործարանական նշանակության փոփոխություն)

(հավկորճ ընտրությամբ, հզորությունը)  
**Նախագծային փաստաթղթերի մշակման համար:**

ոխակայության աստիճանը (կատեգորիան), նախագծման փուլերը և այլն)

Գտնվելու վայրը \_\_\_\_\_  
(մարզի, համայնքի, փողոցի անվանումները, շենքի համարը, հողամասի ծածկագիրը)

Կառուցապատող \_\_\_\_\_  
(կազմակերպության անվանումը, գտնվելու վայրը, ֆիզիկական անձի անունը, ազգանունը, բնակության վայրը, հեռախոսահամարը, էլեկտրոնային հասցեն)

Առաջադրանքի տրամադրման հիմքը \_\_\_\_\_  
(կառուցապատման նպատակով ՀՀ օրենսդրությամբ սահմանված

կարգով հողամասի տրամադրման, անշարժ գույքի փոփոխման իրավունքը հաստատող անիրաւեշտ փաստաթղթերը)

Առաջադրանքի գործողության ժամկետը \_\_\_\_\_  
(N 1 հավելվածի 32-րդ կետին համապատասխան)

**ՆԱԽԱԳԾՎՈՐ ՀՈՂԱՄԱՍԻ ԲՆՈՒԹԱԳԻՐԸ**

**(աստղանիշով (\*) նշված դրույթների գրաֆիկական արտացոլումը տրամադրվում է կից ներկայացվող ամփոփ սխեմայով՝ Մ 1:500)**

1. Հողամասը գտնվում է \_\_\_\_\_  
(հողամասի դիրքը քաղաքաշինական միջավայրում, դրա նպատակային և գործառնական նշանակությունը)

2. (\*) Հողամասի չափերը \_\_\_\_\_  
(հողամասի սահմանները՝ կողողնատային նշահարմամբ, մակերեսը (հա)

3. Հողամասի առկա վիճակը \_\_\_\_\_  
(ոնիւնֆի բնութագիրը, շենքերի (այդ թվում՝ քանդան ենթակա) առկայությունը (օգտագործումը, նշանակությունը, հարկայնությունը, շինարարական նյութերը և այլն), կանաչապատումը, քարնեկարգումը և այլն)

Figure 1. Accepted Form of the Design Permit

the size of the lot, which must include its coordinates and area. The third clause describes the lot's current situation, from the general terrain to the existing buildings with their description, including function, height, materials, green areas, and landscaping. The fourth clause is the transportation requirements: here, all the roads and other means of transportation must be mentioned, including railways. The utility infrastructure networks in the lot or in the neighboring area, including underground ones, must be mentioned in the fifth clause. Borders with neighboring lots and their names are to be given in the sixth clause. The seventh clause concerns any special natural and/or historical protected areas or cultural landmarks if located within the lot or overlapping with it. The name and status of the area/landmark(s) must be indicated. And the eighth and final clause in this section is about floor plan limitations, in case there are industrial sites in the area, as well as protected objects or utility infrastructure, or limitations against other sites, including servitudes.

Project requirements are covered in clauses 9 to 21, with their subclauses. The ninth clause is about spatial architectural requirements, with subclauses 9.1–9.7: distance from the building line, distance from the neighboring lots (sites), maximum height (in case the height exceeds the maximum, additional measures, including calculations and reinforcement methods must be taken to follow the requirements of Seismic Construction Design Norms), development density (construction area/lot area, waterproof area/lot area), and green areas in percentages. The last subclause, 9.7, is for additional requirements. The tenth clause is about the demolition or movement workflows of existing projects; the eleventh clause is about the usage conditions of underground or basement floors. The twelfth clause is about utility networks and equipment. It has six subclauses, including: water, sewage, hot water, electricity, gas supply, digital communication cables, and corresponding manholes near the lot. These have to be attached separately, as the relevant documentation is issued by the supplier companies. Clauses 12.5 and 12.6 describe low streams and waste collection. The thirteenth clause pertains to the lot's preparation, including water draining and utility protection measures. The fourteenth clause concerns landscaping, which includes hardscape elements, fences, lawns, etc. The fifteenth clause lists suggested construction materials. The sixteenth clause includes safety structures for protecting people and buildings during emergencies.

All fire safety requirements and measures are covered in the seventeenth clause. Under the eighteenth clause, all accommodations for people with disabilities must be mentioned. The nineteenth clause is about environmental protection. Serving as a guideline, it instructs the applicant to write down all

the measures taken to avoid any harmful effects on the surrounding environment. The twentieth clause covers construction organization, aiming to avoid negative effects and to assure uninterrupted flows of the urban economy and transport. Dates for the DP validity are indicated under the twenty-first clause.

The Additional Requirements section has six clauses, specifically: type of expert assessment, intermediary agreements, public audit, agreements or professional opinions, postal box installation, and other requirements (under the twenty-seventh clause). Intermediary agreements might be required by some interested parties. Public audit is, once again, regulated by law. Agreements and professional opinions under the twenty-fifth clause apply to natural, historical, or cultural heritage and must be discussed with the authorities responsible (Government of Armenia, 2015).

### **Case Analysis**

A well-known charitable public organization, which provides dental, ophthalmological, and social services to children and their families in Armenia and Artsakh, is currently working on a development project for a new center to provide better services. The site was chosen in the downtown, near a metro station, a walkable distance away from the main public transport hub, so the stakeholders of the services would have multiple opportunities to use public transport to reach the center, which is currently difficult as the existing center is located in the part of the city where only one minibus line operates.

Before the site purchase, the organization's representatives had a meeting with the chief architect of the city, who was responsible for new developments at the time. They described what they wanted and how that could be accomplished, as they wanted to be certain that the lot was worth buying. The developers even hired an architect to sketch a building for them. In the list of clauses we just discussed, one thing was clear: before the purchase, nothing specific could be recommended to the developer. Taking the risk, the developers purchased 10 separate neighboring lots with residential buildings, over a total area of about 1500 sq. m.

After selecting the architect, a project sketch was developed and a decision was made to have a sustainable building with all possible facilities that could benefit a charitable organization. The architect considered design strategies, while the developers aimed to get certified by LEED or BREEAM. Discussions were had with consultants in order to understand which possible efficient solutions could be implemented to have a healthier environment and to save money while operating the building.

After the workflow was established, a decision was made to apply for the demolition permit and the design permit separately to gain more time. Over the

course of several team meetings with the owners, the architect, the lawyer, and the real estate agent, two main procedural problems were revealed:

- Land unification: going into the permit issuance process with 10 separate lots could cause difficulties; on the other hand, unifying the lots into one would require taking measurements of all the buildings. The team concluded that measurement and the following processes were too expensive in comparison with the possible difficulties. The unification process could be done after the demolition when the unified lot would be free of any buildings.
- Neighbors' permit: usually, the municipality asks for neighbors' permits to assure smooth workflow in the future. Some clauses in the law require this, but they are not specific and, in most cases, they can be bypassed with the right approach.

A DP application was prepared and filed, including a demolition project, which had been developed by the project's architect and had passed an expert assessment by a licensed company. 10 days later, the project manager and the architect had a meeting at the municipality with the Head of Urban Development Projects, to present the project sketch and discuss the DP application. During the project meeting, the neighbors' issue was discussed, among other questions. There seemingly were no other problems, except that the submitted demolition permit had to be recalled because there was no reason for demolition. The head of the department listed the three options available. Each could cost the charitable organization a certain amount of money, which was not preferable. While discussing this issue, the head of the department suggested another possible option for obtaining a demolition permit, which was to apply for a DP and make it the basis for demolition.

The DP application was submitted on the following day. After a week, the architect talked over the phone to municipality representatives, discussing the issue of the neighbors' permit. During sketch development, the law and standards were strictly followed by the design team, to avoid any need of involving the neighbors in the project in any way. The distances, openings, heights, and entrances were all adjusted to comply with the law in a way that would make a permit unnecessary.

Another week later, the municipality sent out notices, asking for technical requirements to be issued for the project. This process took an additional three weeks, until every utility company sent its answer, including site visits with the project manager. The project was even sent to the National Security Agency, due to the lot's proximity to the National Assembly.

After the technical requirements were met by the

utility suppliers, the municipality experts found some disparities in the ownership certificates for the lots, and the issue of unification was brought up again. However, since it had previously been decided to do the demolition and later unify the lots, that issue was also resolved.

By the time of writing this article, despite all internal processes being agreed upon and all approvals being obtained, the DP has still not been issued after 2.5 months of discussions, agreements, meetings, and site visits.

### Discussion

The process of permit acquisition starts with the DP application. Its content must be presented properly. The accepted form for the application is a one-page document, with limited space for filling in the answers. Except for the information about the lot, there is only one line, where the developer is supposed to write what they want to get, also noting the external sizes. In case of functional changes, the master plan is required by the law, however, it is often limited to a project sketch submitted alongside with main architectural drawings: the master plan, the floor plans, the facades, the sections, and the roof. This requires the developer to have an architect at hand in situations when they do not yet know if they will be able to complete the project. For some groups of developers — public organizations like in this case study — this can be a barrier for taking steps, as the process involves additional costs, while the companies do not know if there will be an opportunity to develop something that matches their vision. This represents economic and social issues, preventing transformation and development.

There are no guidelines on the planned approaches to be implemented in projects in terms of sustainability features. Such approaches can include PV panels, geothermal pumps, glazing types, construction workflow, and anything that is mentioned in the DP. The use of renewable energy on-site affects the use of the grid, as well as the "power" parameter that needs to be mentioned in the application form.

The later-stage phone conversations and site visits take much longer than assumed, which is incompatible with the deadlines set in the laws and community regulations. The uncertainty of these deadlines creates many risks for developers and likely leads to changes in the plans.

The DP comes with the name filled in and with the buildings' risk level mentioned, along with the contact information. The validity period is specified in the first part of the application.

The second part, which characterizes the lot, also has transportation access information. This is a helpful point that can be used for sustainability assessment. In this aspect, the sixth clause (the one about neighboring plots) provides a good explanation of the urban environment and can

serve as a starting point for an assessment of social integrity and zoning. The form goes even beyond that and mentions specially protected areas under its seventh clause, which implies that the project has to undergo a comprehensive government assessment. The eighth clause puts limitations on the floor planning and can include exits, windows, and fence restrictions, based on the neighboring site functions and development. These limitations have a strong social impact, usually subject to contention, but by providing and reinforcing the associated limitations or agreements, social solidarity can be achieved among all stakeholders, leading to social sustainability in some aspects.

In the project requirements, clauses 9.1–9.4 are typical urban development regulations. Clauses 9.5 and 9.6 cover the percentages of the construction area and the green areas, which are probably among the most important environmental factors of development. Clause 9.7 includes additional points, which are not common for usual building and development types and conditions. Clauses 12.1–12.6 include the requirements for utility services, most of which are attached and provided by the supplier companies. However, these clauses do not allow for any limitations, and everything is left for companies to fill in. Clauses 13 and 14 govern engineering preparation and landscaping works, both of which correlate strongly to the environmental footprint. Under the thirteenth clause, a water drainage system and other measures can be applied, while the landscaping section can include concrete tasks relevant to sidewalks, lawns, and lighting. Clause 15 is about the usage of the materials and finishes; however, recycling and local materials are not presented in the requirements, despite being vital for sustainable architecture and construction. Special attention must be given to these clauses, as the Armenian market strongly depends on local natural materials, and the physical and thermodynamical characteristics of those can change over time as they are excavated from deeper levels of the soil (Vasilyeva, Vardanyan, 2017). Following this, there are emergency and fire protection requirements under clauses 16 and 17, which are regulated and checked by the Ministry of Emergency Situations. The eighteenth clause of the DP only mentions accommodations for the disabled. The idea of separating the abled from the disabled is negative from the social standpoint, however, the municipality usually makes a point to ensure that everyone is serviced at the building properly. The nineteenth clause considers the protection of the surrounding environment from hazards; but when it comes to sustainability, the environmental footprint and influence must be assessed throughout the building's entire existence, from "cradle to grave", not just at a given moment. Thus, more specific steps can be mentioned or additional subclauses can be

added, including not only the activities during the construction period but also the life cycle activities of materials and buildings in their entirety. The twentieth clause is about construction technology, organization, and workflow. This part also needs to be expanded to include more specifications, because many factors are affecting this, and in case of wrong or deficient supply, urban economy or transportation can be disturbed, or the rights of the neighboring areas' residents can be violated. The last, twenty-first clause in this section mentions a validity period for developing the project and possible phases. The phases are a good option for developers to gain time, by getting the permit for different parts of the development separately. This is a truly economic aspect of sustainability, which can foster the execution of big and complex projects, thus boosting the economy.

The additional conditions section poses requirements generally relating to official procedures. In other words, if we count the institutional component as one of the aspects of sustainability, which many researchers do (Doan et al., 2017; Littig and Grießler, 2008; Spangenberg, 2002), this whole section relates to this aspect. It mentions the type of expert assessment and the need for integral agreements with different stakeholders, including public audits. For additional points, there's the last clause, which can be applied very broadly, depending on the project.

### **Conclusion**

Analysis of primary and secondary data shows that the design permit application process has both gaps and strong points. Obviously, in case of some adjustments, the process of issuing a DP and the DP form itself can become a well-defined guideline for sustainable design and construction in all of its aspects: the social, the environmental, the economic, and the institutional. Generally, the form and applications are well-made and can cover all the necessary aspects; that said, some strong institutional and procedural updates should be implemented. The institutional aspect of sustainability ought to be more integrated and effective in the field, in case the timing and procedures need to be revised. For better performance, preliminary meetings with municipality representatives from the development department can be organized on a mandatory basis, in order to discuss possible developments. It is only after these meetings that the developer will be able to invite an architect and pay for sketches to apply for a DP; otherwise entering into an agreement with an architect can cause financial losses, affecting the economic aspect of sustainability. The economic aspect is not covered or considered by the current procedures, while in reality, there is a significant need to refer to this aspect. This aspect can be enhanced through simple

tax and state fee exemptions or property tax reductions. In the general perspective, as mentioned above, regulated institutional processes can be viewed as tools to foster economic growth. The social aspects, despite the existing clauses on neighbors' permit and disability access, do not fully assure the social sustainability of new development, if not to say that the aspect is covered superficially. Legislation related to real estate and ownership rights must be updated to avoid contradictions and contentions. The environmental aspect is a field where the public authorities have a strong toolkit to use. Already existing clauses and procedures can reduce environmental harm by covering information about all types of roads, accesses, and parking requiring specifications, rather than leaving these details for the developers to figure out. The latter can lead to non-sustainable solutions in some

ways. Some vital environmental aspects, such as renewable energy usage, recycling, local material usage, as well as dust, noise and waste control, are missing from the process of permit acquisition entirely.

#### **Limitations and Future Research**

This article attempted to give a general notion of the sustainable aspects' integrity in the documentation and requirements for new development in Armenia. The lack of literature and research in the field confined the author to legislation review and case studies. Most of the organizations addressed were not open to sharing their experience with the municipality or considered it private information.

Future research can be done in two ways: by reviewing more case studies, and by going deeper into legislation and standards in search of sustainability aspects.

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