The situation and solutions to develop Green Building in Vietnam

Housing in Vietnamese megacities is quite expensive due to limited land availability. Besides, green housing investment requires higher implementation costs than non-green housing investments, plus a Green Building certification fee implemented by international organizations. Despite specific difficulties and problems, green real estate projects bring economic benefits to both investors and users in the long run.

Green building development is a trend that is particularly interested in by governments and real estate developers.

Through analyzing the current status of Green Building development in Vietnam, the authors have discovered barriers, limitations, and proposed solutions.

To develop green buildings effectively, investors need to operate a 5-step process throughout the project life cycle, including Green planning — Green design — Green construction — Green operation — Green lifestyle. Using environmentally friendly materials, energy-saving efficiency in green housing is no longer an unattainable dream for urban residents in Vietnam.

Keywords: green construction, green building, real estate, green real estate

INTRODUCTION

Integration with the world’s development trend of using environmentally friendly materials, efficient energy use, and sustainable development, Vietnamese consumers are increasingly interested in a healthy and green lifestyle. Vietnam is an emerging and dynamically developing economy in the Asia-Pacific region, attracting intensely foreign investment sources.

Economic development and industrial production have undesirable consequences on living environment, especially environmental pollution in big cities where the population concentrates and high traffic density. The housing demand increases, while the ability to respond is limited. Although construction costs are high and the land is expensive and scarce, having a green place is always everyone’s desire. Green Building investment costs are still required higher than non-green housing investments, plus a Green Building certification fee implemented by international organizations. Despite specific difficulties and problems, green real estate development requires higher implementation costs than non-green housing investments, plus a Green Building certification fee implemented by international organizations.

IFC is a member of the World Bank Group forecast that in the near term, through 2025, Green Building has a $3.4 trillion investment potential. The investment opportunity summary for Vietnam $ 2.16 trillion for Commercial, $ 20.0 trillion for Residential, and 260,000 Residential Units [1].

IFC has a strategy to promote global green finance for the project, including a four-part process: 1) Investment & Advisory for Banks; 2) Investment & Advisory for Building Sector; 3) Green building Codes & Incentives; 4) EDGE Certification [1].

According to the Vietnam Green Building Council, by the second quarter of 2020, the total number of certified green buildings in Vietnam only stopped at 146 projects, with 3.2 million m², relatively low compared to the number of green buildings in Southeast Asian countries [2].

With many years of experience in green project development, Ecopark shows that there are four biggest challenges in Green Building implementation in Vietnam: 1) increasing investment costs; 2) the State has not had a specific support mechanism for real estate development under the green model; 3) there is a particular barrier to the creation of exterior architectural design; 4) the state regulations only have methods for assessing works (the September 2017 standard), there is no assessment method for green urban areas [3].

From the perspective of Green Building certifiers, difficulties in Green Building development in Vietnam include: 1) big developers are not ready; 2) design consultant, contractor has not paid due attention; 3) the additional cost of consulting and construction is not fully understood; 4) not yet drastic from the management agency [4].

Capital House said that Green Buildings’ investment costs increase by 1 to 5% depending on the type of building and EDGE or Lotus certification (Table 1) [5]. They believe that Green Building is suitable for all segments, especially the affordable segment,
and needs to apply green solutions from the beginning and look at the whole project life cycle instead of look at the initial investment cost.

From the perspective of state management, experts of the Ministry of Construction stated that there are two reasons to promote Green Building development and efficient energy use: 1) Vietnam’s demand for energy increases; 2) the development of construction science and technology. Accordingly, the tasks of factors to promote faster and more active Green Building development include: 1) government: international commitment to protect the environment, reduce emission and apply energy-efficient buildings and green buildings standards; 2) investors: competition in products and real estate rental price competition; 3) residents: higher requirements for living facilities, quality of housing and working environment [6].

Besides, the mobilization of investment capital for Green Building development is still tricky because credit institutions’ mobilized capital is mainly short-term with commercial loan interest rates on the market. While investing in green fields (renewable energy, green buildings) has a long payback period, enormous investment costs, and many risks. Since then, banking experts propose to the Government the following solutions: 1) early issue guidelines on the list and criteria for identifying green projects suitable for Vietnam; 2) develop a comprehensive roadmap, policy mechanism (taxes, fees, capital, engineering, market, planning, development strategy) of each sector/field; 3) there is a mechanism to encourage all economic sectors (including credit institutions) to participate in Green Building development [7].

Compared with other countries in the world, investment costs for Green Buildings in Vietnam are higher [8].

### Table 1. Increased investment costs in the green projects of Capital House [5]

<table>
<thead>
<tr>
<th>No.</th>
<th>Project</th>
<th>Increased investment costs</th>
<th>Certificate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>EcoLife Capitol</td>
<td>3 %</td>
<td>EDGE — home</td>
</tr>
<tr>
<td>2</td>
<td>EcoHome Phuc Loi</td>
<td>1…1.5 %</td>
<td>EDGE — home</td>
</tr>
<tr>
<td>3</td>
<td>EcoHome 3</td>
<td>1…1.5 %</td>
<td>EDGE — home</td>
</tr>
<tr>
<td>4</td>
<td>EcoLife Riverside</td>
<td>1…1.5 %</td>
<td>EDGE — home</td>
</tr>
<tr>
<td>5</td>
<td>EcoHome Nhon Binh</td>
<td>1…1.5 %</td>
<td>EDGE — home</td>
</tr>
<tr>
<td>6</td>
<td>Genesis School</td>
<td>5 %</td>
<td>LOTUS Non-Residential — GOLD</td>
</tr>
<tr>
<td>7</td>
<td>Capital House Office</td>
<td>5 %</td>
<td>LOTUS Interiors — Certified</td>
</tr>
<tr>
<td>8</td>
<td>Sales Center</td>
<td>5 %</td>
<td>LOTUS small Interiors — Certified</td>
</tr>
</tbody>
</table>

When evaluating the efficiency that a Green Building brings, it is necessary to assess the efficiency in its entire life cycle. A Life Cycle Assessment (LCA) is the systematic analysis of products or services’ potential environmental impacts during their whole life cycle [10]. The benefits, energy efficiency, environment, economics, and health that green buildings bring are evident and proven in Green Building certified projects.

### 3. MATERIALS AND METHODS

The policy of Green Building development is in line with the world trend of environmental protection, climate change response, and sustainable development, and the Vietnamese government has issued a system of legal documents, including:

- Law No. 62/2020/QH14 dated June 17, 2020, on construction;
- Resolution No. 55-NQ/TW dated February 11, 2020, of the Politburo on “Vietnam’s National Energy Development Strategy Orientation to 2030, Vision to 2045”;
- Resolution No. 140/QN-CP dated October 2, 2020, of the Government, promulgating the Government’s Action Program to implement Resolution No. 55-NQ / TW dated February 11, 2020, of the Politburo on “direction of the National Energy Development Strategy of Vietnam to 2030, with a vision to 2045”.

### Table 3. Green Building certification systems in Vietnam [2]

<table>
<thead>
<tr>
<th>Projects</th>
<th>EDGE</th>
<th>LEED</th>
<th>LOTUS</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of certified projects</td>
<td>39</td>
<td>79</td>
<td>28</td>
<td>146</td>
</tr>
<tr>
<td>Gross Floor Area (GFA) of certified projects</td>
<td>1,995,439</td>
<td>878,002</td>
<td>331,161</td>
<td>3,206,603</td>
</tr>
</tbody>
</table>

In terms of local organizations, Vietnam Green Building Council (VGBC) is a member of the World Green Building Council Network launched LOTUS — the first local Green Building certification program for Vietnam in 2007 [11]. In particular, LOTUS certification has used some Vietnamese state standards instead of international standards.

Due to rising construction costs, many investors believe that green buildings are only for high-end housing when customers have...
high affordability, but green housing development by many developers shows how more positive. Capital House recommends that Green buildings are very suitable for affordable housing with reasonable prices from implementing its green projects [5].

Through learning the experience of developing many green real estate projects, it is clearly seen that business efficiency is shown in many aspects as follows: 1) good price; 2) fast consumption time; 3) high brand value; 4) access to green finance. The survey at the HAUSNEO green housing project in District 9 Ho Chi Minh City showed that the construction difference cost increased by 1%, but the effect is enormous: fast sales, secondary gains bring sound effects, buyers are excited about new products, and investors are optimistic about business performance.

However, there are many difficulties and obstacles in developing green real estate projects, mainly due to increased investment costs, not positive customer sentiment, and lack of supportive policies and mechanisms from the state:

- increased investment costs reduce price competitiveness. Meanwhile, although operating costs decrease, most customers do not pay attention to this when buying an apartment, only looking from the initial purchase price’s perspective, utility works to decide.
- the financial support mechanism is not specific yet for green real estate developers. There is no support for customers of energy-efficient housing projects.
- green sector/sector classification criteria are not specific, and there are no particular regulations on green buildings, current technical standards on energy-efficient buildings;
- propaganda is not effective. Most customers are not aware of the benefits of economical housing, so there is not much demand for housing. Green real estate investment and development companies have not yet linked practical needs with the need to use energy efficiently in buildings, so customers are less interested.

### Table 4. Green Building Standards [2]

<table>
<thead>
<tr>
<th>No.</th>
<th>LEED</th>
<th>LOTUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>ASHRAE 62.1 — Ventilation for Acceptable Indoor Air Quality</td>
<td>TCVN 5687:2010 — Ventilation-air conditioning Design standards</td>
</tr>
<tr>
<td>4</td>
<td>ASHRAE 189.1 — Standard for the Design of High-Performance Green Building</td>
<td>N/A</td>
</tr>
</tbody>
</table>

### Table 5. The Ecohome three project gets the EDGE Green Certificate [5]

<table>
<thead>
<tr>
<th>Project scale</th>
<th>Benefits</th>
<th>Increased investment costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location: Tu Liem, The west of Hanoi</td>
<td>Energy savings: 25 % (1.7 million MWh/year, 230,000 $/year)</td>
<td>Total investment increased 1...1.5 %, equivalent to $ 830,000</td>
</tr>
<tr>
<td>Site area: 67,000 m²</td>
<td>Water savings: 36 % (98,500 m³/year, $ 30,000/year)</td>
<td></td>
</tr>
<tr>
<td>Density of building: 30 %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 blocks, 31–35 floors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3,744 apartments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Area 39.9...76.7 m²</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price: 700 $/m²</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Procedure: Third quarter of 2020</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

West Bay Sky Residences Apartment [12]
The study has analyzed the current state of Green Building development in Vietnamese cities, the current state of the green certification system, the state management policy system, and international financial institutions' participation. Green real estate projects are deployed in different market segments, from low-end to high-end, and bring clear economic benefits to investors.

Real estate project implementation reveals difficulties and reasons for limited green building development, including increased investment costs, investor and user awareness, and saving solutions energy in design, construction, and materials and equipment used in Green Buildings.

The financial support and supporting mechanisms and policies from the authorities are not appropriate.

The study also proposes solutions to promote Green Building development for investors, consultants, residents, state management agencies, and credit institutions.

5. DISCUSSIONS, CONCLUSIONS

State management agencies' role is vital for Green Building development, including policy-making, support and propaganda mechanisms, and public awareness. Green Building development should be carried out throughout the building's lifecycle, including 5 phases: Green planning — Green design — Green construction — Green operation — Green lifestyle.

It is essential to study the international system of Green Building certification standards. The state should also issue the Vietnamese standards for Green Building certification and the accompanying identification of technical standards.

The issuance of Green Building rating standards and Green Building certifications contributes significantly to environmentally friendly natural materials, efficient energy use, and overall sustainable development.

Initial results show that real estate developers and people are very interested in green housing products and a healthy living environment. This is an essential premise to continue developing green real estate projects in the future, especially in Vietnamese megacities.

Acknowledgement

Specially thank National University of Civil Engineering in providing support and enable publications of this research.

REFERENCES

Состояние зеленого строительства и решения для его развития во Вьетнаме

Цены на жилье в мегаполисах Вьетнама довольно высокие из-за ограниченного количества земли. Кроме того, инвестиции в зеленое жилье требуют более высоких затрат на реализацию, чем инвестиции в обычные проекты, поскольку они ускоряют расходы на сертификацию зеленого строительства, необходимую по международным стандартам. Несмотря на определенные трудности и проблемы, проекты зеленой недвижимости в долгосрочной перспективе приносят экономические выгоды как инвесторам, так и пользователям.

Развитие зеленого строительства — это тенденция, которая особенно интересует как государственные органы, так и частных девелоперов. Анализируя текущее состояние развития зеленого строительства во Вьетнаме, авторы обнаружили препятствия, ограничения и предложили решения.


**Ключевые слова:** зеленое строительство, зеленое здание, недвижимость, зеленая недвижимость

**Литература**


Об авторах: Донг Дьюонг Хай — заведующий кафедрой экономики и управления недвижимостью; Ханойский строительный университет; Вьетнам, Ханой, Хайбачынг, ул. Зиа Фонг, д. 55; dduonghai2003@gmail.com; Донг Тхи Хюонг Зуен — аспирант, преподаватель; Ханойский строительный университет; Вьетнам, Ханой, Хайбачынг, ул. Зиа Фонг, д. 55; dduonghai2003@gmail.com; Доан Хай Уен — студентка; Национальный исследовательский Московский государственный строительный университет (НИУ МГСУ); 129337, г. Москва, Ярославское шоссе, д. 26; dduonghai2003@gmail.com.
